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Insecticidal Potentials of Black Seed, (*Nigella Sativa*) Powder as an Eco-Friendly Bio-Pesticide in the Management of *Dermestes Maculatus* in Codfish *Gadus Morhua* (Gadidae: Gadiformes)

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Abstract

Background: Insecticidal potentials *Nigella sativa* powder as an eco-friendly bio-pesticide in the management of *Dermestes maculatus* in codfish was evaluated in a laboratory. **Results:** Adults of hide and skin beetle were obtained from infested smoked fish and cultured in laboratory. The culture was kept at room temperature and RH in order to obtain F1 generation of the insect for the experiment to develop. Uniform age and unmated adults *D. maculatus* were obtained for the experiment. *Nigella sativa* seeds were purchased from a vendor of foreign spices and ground into fine powder. Five levels (0.4 g, 0.8 g, 1.2 g, 1.6 g and 2.0 g.) were weighed using a sensitive balance and added into 40 g codfish kept in a Kilner jar. Two pairs of *D. maculatus* was introduced into the different concentrations and left on work bench for observations. Phytochemical analysis of *N. sativa* was conducted. Data such as mortality were corrected using Abbot Formulae while % weight loss was assessed by direct weighing method and effectiveness of different treatments in protecting the codfish was also calculated. The results indicated that codfish treated with different doses of powders of *N. sativa* had similar number of larvae development after 35 days. Mean of number of adult *D. maculatus* emergence on codfish treated with *N. sativa* powder at different doses was significant. Percent protection conferred by the botanical in the management of *D. maculatus* showed that all the doses applied were effective. Characterizations and quantification of phytochemical properties of *N. sativa* indicated eleven active chemical compounds. **Conclusion:** The finding posited therefore that *N. sativa* seed powder possesses secondary metabolites with high bio-pesticide potentials and may considered being use in IPM programme in stored codfish especially in the tropics.

Keywords: black seeds, *Nigella sativa*, *dermestes maculatus*, stockfish, progeny emergence

1. Introduction

Fish being one of the cheapest source of protein across the globe especially in the developing world is consumed both fresh and processed (Osarenren & Ojor, 2014). Over 3 million people especially in Africa depend on fish wholly or partially either as sources of protein or other means of livelihood (Adewuyi *et al.*, 2013). The industry in Africa is put at \$3 billion worth (El Shaika *et al.*, 2014). *Gadus morhua* is an unsalted cured fish usually dried (Thorarinsdottir *et al.*, 2004) and relished widely across African continent in many dishes and therefore sold at a high cost (Frederick 1969; Dale & Uwonkunda, 2017). It is a good source of high quality protein which aid in building healthy immune system and other health benefits such as assisting in proper weight management (Tidwell and Allan, 2001), brain and nervous system function, prevention of excess fat and stabilizing blood pressure (Berr *et al.*, 2009).

As soon as fish is caught, deterioration commences immediately, therefore, traders device a means of overcoming it by processing such as salting, smoking or even sun drying though it does not preclude it to heavy insect infestation. Zakka *et al.* (2009) earlier reported *Dermestes* sp and ham

beetle as the major pests on cured fish especially when stored over a long period of time. To avert such loss especially in qualitative and quantitative, traders and even consumers that buy fish in bulk apply different types of synthetic insecticides as control strategy (Abolagba et al., 2011). This leads to several health challenges to the consumers since most of them end up in the environment (Oguh et al., 2019) as run-off or directly exposing animals, and farmers as well as consumers to health risks. Such risk can be overcome by the use of non-synthetic pesticides (biopesticides) such as pyrethrum (*Tanacetum cinerariifolium*) (Sarwar 2015), neem (*Azadirachta indica*) [Castillo-Sánchez et al., 2015], garlic (*Allium sativum*), turmeric (*Curcuma longa*), ginger (*Zingiber officinale*) and thyme (*Thymus vulgaris*) (Joseph and Sujatha, 2012; Sharafzadeh, 2011).

Mahmood et al. (2016) opined the use of biopesticides as an age long tradition until the recent introduction of synthetic pesticides. However, the threat to both environment and human health attributed to the synthetic pesticide (Nefzi et al., 2016) has led to the advocate of the use of plant derived material in pest management that are safer (Karaca et al., 2017; Mishra, 2018), available and mostly edible (Srijita, 2015), inexpensive (Castillo-Sánchez et al., 2015) and easily integrated into other pest management option. Others qualities include its low toxicity to beneficial organism with none or little allelopathic effect (Gurjar et al., 2012) and none residual effect (Dubey et al., 2008; Dubey, 2010). The plant parts utilized ranges from the bark to floral parts and fruits or seeds to special structures like rhizomes and bulbs which is either dried and ground into fine powder and extracted with organic solvents (Chougule & Andoji 2016) and utilized either as plant extracts, essential oils or both (Mizubuti et al., 2007). But biopesticides shortfalls include ability to break down very quickly in sunlight and degrade fast due to its acidic or alkaline nature (Kole et al., 2002; Oguh et al., 2019).

Black seed plant is found in southwestern Asia and parts of the Mediterranean and African continents. It has a long history of use in diverse culinary and traditional medicine (Hassanien et al., 2014) and is widely grown for its pungent seeds and used as a spice, skin cream for treating eczema and to stimulate lactation. Other uses include treatment of intestinal worms, digestive disorder, asthma, bronchitis and rheumatoid arthritis (Babayan et al., 1978). The seeds have an aroma similar to fennel and have a pungent flavour somewhat similar to nutmeg (Bharat, 2009) and usually roasted and ground as a spice in some parts of India, the Middle East, and North Africa (Karapinar & Aktug, 1987).

The seed was earlier reported to have pharmacological potentials (Colovic et al., 2013) and contains a variety of chemicals such quinone compounds with thymoquinone as the most abundant (Kahsai, 2002). There is also clinical evidence of antimicrobial, antiparasitic, and antifungal properties and ability to suppress tumour (Shanmugam et al., 2017). *Dermestes maculatus* like any other major pest of stored product has developed some resistance to certain pesticides thereby leading to significant economic losses. Therefore, there is need to study and ascertain, certain natural protectants of codfish against *D. maculatus* infestation. This study examined the insecticidal potentials of *N. sativa* on the development of hide beetle on codfish in the laboratory.

Materials and Method

***Dermestes maculatus* culture**

Adults of skin beetle were obtained from naturally infested smoked fish from open market and cultured in laboratory on codfish purchased from Rumuokoro Market in Obiokpor Local Government Area in Port Harcourt, Rivers State and placed in plastic containers. The top of the lids were cut open but covered with netting material to allow for sufficient aeration and to avoid escape of the *D. maculatus* culture and entrance of unwanted insect pest. The culture was kept at ambient temperature and relative humidity for new generations of *D. maculatus* for the experiment to develop.

***Dermestes maculatus* sub-culture**

In order to obtain adult *D. maculatus* with uniform age and unmated adults, the last larval instars were carefully handpicked using soft brush and placed in a well labeled test tubes containing pieces of codfish and allowed to complete their life cycle and left unmated until needed.

Preparation of Black seed (*Nigella sativa*) powder

Nigella sativa seeds were purchased from a vendor of foreign spices who imports them from India with the approval by National Agency for Food and Drug Administration and Control (NAFDAC) was taken to the laboratory. The Black seeds were ground into fine powder using laboratory pestle and mortar and sieved using 250µm standard test sieve and stored in a specimen bottle for 24 hrs prior to the start of the experiment to avoid possible depreciation of the active ingredient.

Experimental set-up

40 g fleshy parts of the codfish were weighed and placed in plastic containers. The plant materials at 5 levels (0.4 g, 0.8 g, 1.2 g, 1.6 g and 2.0 g.) were weighed using a sensitive balance and added into each substrate. Two pairs of *D. maculatus* was introduced into the different concentrations and left on work bench for observations. Each treatment was replicated four times.

Sexing of *Dermestes maculatus*, DeGeer, 1776.

Dermestes maculatus adults were sexed using the features described by Imai *et al.* (1990) that the males are distinguished from the females by their possession of a deep depression and brush of hairs on the 4th abdominal sternite.

Phytochemical Analysis of Black seed, *Nigella sativa* powder

Quantitative Phytochemical analysis of *N. sativa* was conducted in Autino Research laboratory using the method described by Harborne (1973) and Obadoni and Ochuko (2002).

Corrected mortality

Data on percentage adult *D. maculatus* was corrected using Abbott's, 1925 formula

$$\% \text{ Corrected mortality} = \frac{(\text{Po} - \text{Pc}) \%}{(100 - \text{Pc}) \%} \times 100$$

Where: Po = Observed mortality
Pc = Control mortality

Weight Loss Assessment

Percentage weight loss was determined by direct weighing method in which the initial and final weights of each fish substrate were recorded and the percent weight loss calculated.

Percent Protection of Treatment

The effectiveness of different treatments in protecting the codfish was calculated according to (El-Ghar *et al.*, 1987).

$$\text{Percent protection} = \frac{\text{Total F1 progeny in control} - \text{Total F1 progeny in treatment}}{\text{Total F1 progeny in control}} \times 100$$

Data collection and analysis

Data collected were progeny development such as number of larvae, pupa and adults, frass weight, adult mortality, percentage weight loss and protection. All data were subjected to analysis of variance (ANOVA) and significant means were separated using LSD at 5% level of probability.

Results and Discussion

Table 1 shows the result of *D. maculatus* progeny developed on cod fish *Gadus morhua* in a laboratory treated with *Nigella sativa* powder as an eco friendly bio-protectant. Cod fish treated with different doses of the plant bio-pesticide responded differently at each development stages. From the result higher mean number of larvae was recorded in a control experiment while codfish treated with different doses of powders of *N. sativa* had similar number of larvae developing on them after 35 days while codfish treated with pestox had the least number of larvae. From the same table the result shows that controlled experiment had higher mean number of pupae though not significant from codfish treated with pestox and *N. sativa* powder at different doses except at 0.4 g dose where least mean

number of pupae was recorded. Mean of number of adult *D. maculatus* emergence on codfish treated with *N. sativa* powder at different doses was higher in control experiment followed by cod fish treated with 0.8 and 0.4 g *N. sativa* and the least was recorded in codfish treated with 2.0 g *N. sativa*.

Table 1. Progeny development of *Dermestes maculatus* on codfish treated with *Nigella sativa* powder at different doses as eco-friendly bio-control strategy.

Treatment	Larvae	Pupae	Adult emergence
0.4	103.50 ^b	7.75 ^b	2.50 ^{bc}
0.8	83.00 ^b	13.50 ^{ab}	4.25 ^b
1.2	82.75 ^b	12.50 ^{ab}	2.75 ^c
1.6	103.50 ^b	11.00 ^{ab}	1.25 ^c
2.0	77.00 ^b	8.25 ^{ab}	1.00 ^c
Pestox	25.75 ^c	9.75 ^{ab}	1.25 ^c
Control	131.75 ^a	14.00 ^a	9.50 ^a
LSD	25.26	5.77	1.89

The result of bio-efficacy of *N. sativa* powder as protectant against *D. maculatus* infestation in *G. morhua* is shown in table 2. Percent protection conferred by the botanical in the management of *D. maculatus* showed that all the doses applied were effective as the conventional insecticide (pestox) used as a check and control experiment had the least percent protection efficiency. Percentage weight loss in codfish after 45 days of infestation by *D. maculatus* was higher in control experiment although not significantly different from codfish treated with *N. sativa* powder at 0.4, 0.8 and 1.2 g while the least weight loss was recorded in cod treated with pestox. Corrected mortality of *D. maculatus* adults after 45 days of exposure to the different doses of *N. sativa* was higher in codfish treated with pestox followed by *G. morhua* treated with 2.0 g and the least was recorded in codfish treated with 0.4 g of *N. sativa* though was not significantly different from those treated with 0.8 g *N. sativa*. Frass weight generated by *D. maculatus* activity in codfish treated with *N. sativa* powder at different doses was higher in control closely followed by codfish treated at 1.6 g though not significantly different from those treated at 0.4 and 1.2 g while the least mean frass weight was generated in a cod treated with pestox.

Table 3 shows the characterizations and quantification of phytochemical properties of *N. sativa* carried out showed eleven active chemical compounds with Phenol compounds being the highest which was followed by Alkaloid in terms of quantification while Oxalate was the least compound isolated.

Table 2. Bio-efficacy of *Nigella sativa* powder as protectant against *Dermestes maculatus* infestation in *Gadus morhua* in a laboratory at different rates.

Treatment/Dose	% protection	% Weight loss	% Corrected mortality	Frass weight
0.4	70.50 ^a	89.17 ^a	2.82 ^d	3.09 ^b
0.8	75.06 ^a	85.83 ^a	7.36 ^{cd}	2.81 ^b
1.2	73.28 ^a	66.50 ^b	9.39 ^c	3.05 ^b
1.6	85.82 ^a	89.00 ^a	13.20 ^c	3.39 ^{ab}
2.0	88.95 ^a	69.05 ^b	19.25 ^b	2.78 ^b
Pestox	85.38 ^a	26.09 ^c	36.20 ^a	1.70 ^c
Control	46.35 ^b	91.11 ^a	9.21 ^c	3.93 ^a
LSD	23.59	12.99	5.80	0.75

Table 3 Chemical compounds and percent compositions of *Nigella sativa*.

S/No	Chemical compound in <i>N. sativa</i>	% composition
1	Phenol	9.105
2	Alkaloid	5.040
3	Phylate	2.970
4	Flavonoid	1.700
5	Cardiac Glycoside	1.601
6	Terpenoid	1.078
7	Saponin	0.836
8	Tannin	0.629
9	Athraquinone	0.101
10	Steroid	0.052
11	Oxalate	0.036

Discussion

The presence of high phenol and alkaloid chemical compounds isolated from *N. sativa* agrees with earlier findings which suggest its pharmacological potentials (Colovic et al., 2013) though the presence of thymoquinone (Kahsai, 2002) and athraquinone were not the high as reported by (Kahsai, 2002). However, secondary metabolites such as steroids, alkaloids, tannins, terpenes, phenols, flavonoids and resins as common bioactive compounds identified may suggest its potential candidature as a botanical pesticide such insecticidal, antifungal, antibacterial and antioxidant (Ahmad et al., 2017). But further research on its mode of action as biopesticide especially in *D. maculatus* needs to be established which was beyond the scope of this research.

The use of biopesticide in the management of insects infestation in store products has been widely reported (Don-Pedro, 1996; Adedire and Ajayi, 1996; Okonkwo and Ewete, 1998; Okonkwo and Ewete, 2000). The marginal protection conferred by *N. sativa* especially at higher doses over the conventional insecticide suggests that it can be adopted in an IPM strategy in stored products especially in tropical stored products. Although the low mortality rate observed in the study was at variance with Okonkwo and Okoye (1996) who worked on powder seed of *Dennettia tripetala* admixture at 1.5g /25g dried *Clarias sp.* and obtained an impressive mortality results in 7 and 14 days in adult *D. maculatus* and *Necrobia rufipes* (Degeer) respectively. This difference therefore may be attributed to the different active ingredients in the plant species and dosage of application. It may as well be attributed to the mode of action which may have not led to total kill but reduction in weight loss as observed in the study since bio-pesticides exhibit varying degree of mode of action ranging from repellence, inhibition to denaturation of proteins. Grdiša and Grši (2013) posited such observation in pyrethrum as targeting nerve cells of insects resulting in paralysis and later death while neem-based act as antifeedant, repellence, moulting abnormalities, oviposition deterrence and disruption of endocrine system. The response of *D. maculatus* to *N. Sativa* could have resulted to any of those and not necessarily death of the insect pest. One of such behaviour was observed by Mbaye et al. (2014) who reported a repulsive effect of *Crataeva religiosa* (Forst.) against *Dermestes spp.* where smoked-dried fish treated had larvae and adults of skin beetles aggregating toward the edges of the jar.

The result indicating lower larvae and pupae progeny over the control suggest that *N. sativa* may have an inhibitory effect at those developmental stages and also may have led to the delay in adult emergence. It may also suggest as posited by Okonkwo and Okoye (2001) in a similar study that cured fish treated with *Dennettia tripetala* and *Piper guineense* powders had fewer or no eggs after 7 days and suggested that the extracts may have affected eggs production and deposition due to the repulsive action of the powders on the insect pest and thereby prevented mating among them.

Increased dose led to reduction in progeny fecundity and adult emergence. Similar result by Don-pedro (1985) on toxicity of some citrus peels to *D. maculatus* was observed where high doses suppressed F1 development of *D. maculatus*. But contrary to Jatau et al. (2014) that *Piper guineense* caused 100 % mortality of the larvae at all the concentrations before pupation and Akinwumi et al. (2006) that powders of *D. tripetala*, *Eugenia aromatica*, *P. guineense* and *Monodora myristica* effectively prevented adult emergence in fish protected against *D. maculatus* and *N. rufipes* and had

suppression rate of adult emergence of both insect pest, but not different from Adesina et al. (2016) who worked on powder of *Clorodendrum capitatum* and recorded lower reduction in adult emergence. The variations observed could be due the length of experiment and response of the insect pest to the available active ingredients in the different test plants which has high tendency to interfere with insect behaviour, physiological activities, biochemical processes, morphology and metabolic pathways (Rattan, 2010).

Conclusion

N. sativa seed powder possesses secondary metabolites with high bio-pesticide potentials and may considered being used in IPM programme in stored codfish especially in the tropics which could be a better management option so as to reduce the over reliance on the synthetic chemical compounds.

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Interventions to Scale Up Breast Feeding: Implications for Public Health Practice in Achieving Sustainable Development in Nigeria

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Abstract

This paper reviewed public health interventions for effective breast feeding as a strategy to improve child health and reduce morbidity/mortality among children. The importance of breast feeding is overwhelming and cuts across the mother, child, community and the nation at large. Breast milk is the first food for the start of life. The milk has all the nutrients required for growth and development, hence the child should not be denied the pleasure. The national policy on food and nutrition recommends that 50% exclusive breastfeeding rate be achieved by 2025 following the WHO 1981 Code for safe and adequate nutrition. To achieve this, every year globally, breast feeding week is celebrated and each year has its theme. The 2021 world breastfeeding week was marked in the first week of August with the theme ‘Protect Breastfeeding: A Shared Responsibility’. The 2022 world breast feeding week was held from the 1st – 7th of August with the theme “Step up for breast feeding: Educate and support”. This paper has explained some public health interventions such as health education, advocacy, focus group discussion, peer counselling, health facility and home-based activities among others for promotion and sustenance of breast feeding.

Keywords: public health, interventions, breast feeding, development

INTRODUCTION

The epistemological theory by John Locke during the 17th century, posits that a human is born with no in-built mental contents and that human knowledge comes from experience and perception (Dawes, 2017). The mind’s initial resemblance to ‘white paper’, void of all characters’ with ‘all the materials of living and knowledge’ derived from experience (Maden, 2021). This implies that since the human mind is completely empty at birth, the content of his environment and his interactions determines his behaviour and attitude. Applying this theory to child health, one can succinctly state that the human stomach is empty at birth, lacks essential nutrients for growth and development until it comes in contact with the breast milk through breast feeding at birth. As humans gain knowledge through experience, so they also gain nutrient needed for growth through breast milk during the early years of life because that is the only food that can be tolerated by the digestive system at that time.

According to Majka (2020), 820,000 deaths of children under 5 years could be avoided annually with optimal breastfeeding from 0-23 months as undernutrition is responsible for 45% of children’s deaths worldwide. WHO (2022) also observed that nearly 2 out of 3 infants are not exclusively breastfed for the recommended 6 months and there has not been any improvements in decades. Child health is very paramount that is why the millennium development goal 4 and the sustainable development goals captured child health interventions exclusively. Over time there has been various interventions, programmes and services aimed at improving child health. The child survival strategies have captured all the interventions and programmes in one acronym presented as GOBIFFETHE which stands for: G-Growth monitoring, O- Oral Rehydration therapy, B- Breast feeding, I- Immunization, F-Food fortification, F-Female education, F- Family planning, E-

Environmental sanitation, T-Treatment of common ailments, H-Health education and E-Essential drug list.

This focused of this paper is on breast feeding as one of the interventions for child survival. The importance of breast feeding is overwhelming and cuts across the mother, child, community and the nation. The national policy on food and nutrition recommends that 50% exclusive breastfeeding rate be achieved by 2025 following the WHO Code of 1981 (adopted by the World Health Assembly) to promote safe and adequate nutrition for infants, by the protection and promotion of breastfeeding (WHO, 2009). To this end, breast feeding day is marked and celebrated every year globally to reinforce the importance and ensure practice.

In 2020 the theme for the breastfeeding week was “Support breastfeeding for a healthier planet” The environmental friendly impact of breast feeding such as conservation of scarce resources, prevention of pollution because it does not require packaging, shipping or waste disposal were the emphases of the week’s celebration (Federal Ministry of Health, 2020). The 2021 world breastfeeding week was marked in the first week of August with the theme ‘Protect Breastfeeding: A Shared Responsibility’. It reinforced the maintenance of breastfeeding-friendly environments for mothers and babies as a priority in all work places and institutions. As a shared responsibility, individuals, families, communities, government at all levels, groups and essential others must all strive to ensure the effectiveness of breastfeeding (Boateng & Ufere, 2021). In 2022 the theme was “Step up for breast feeding: Educate and support” and it was held from the first to seventh day in August 2022.

Problem Statement

The importance of early nutrition in childhood cannot be over emphasized. The type, quantity and quality of food a child is fed with during the formative years have direct relationship with the mental, physical and social wellbeing of the child. Child nutrition has become a global concern, not just because of maintenance of health but for the fact that if children are not given the right food to enhance their growth, the future of the country and the world at large is at stake because there will be no healthy individuals to grow the economy. This is the reason government all over the world deemed it necessary to periodically develop and review strategies to ensure healthy growth and development of children and reduce death and illnesses. One of these strategies is early initiation of breast feeding within the first hour of birth and exclusively breastfeeding for the first six (6) months of life (WHO, 2018). According to the National Demographic and Health Survey (2018), the early initiation rate of breastfeeding was 42% indicating that not up to half of the children are breastfed within one hour of birth. Also, the exclusive breastfeeding rate in Nigeria was 29% implying that only an insignificant percentage of infants aged 0-6 months are exclusively breastfed leaving as much as 71% of infant not breast-fed. It was also revealed that only 9% of organizations have a workplace breastfeeding policy.

Globally, the rate of exclusive breastfeeding for infants under six (6) months of age is 40%. In Africa, nearly 70% of countries have high rates of continued breastfeeding at one year, compared to 28.7% in Nigeria (Majka, 2020). The author also revealed that 820,000 deaths of children under 5 years could be avoided annually with optimal breastfeeding from 0-23 months as undernutrition is responsible for 45% of children’s deaths worldwide, and 3 out of 5 babies are not fed in the first hour of life, known as the “golden hour”. To this end it becomes very imperative that public health officers should embark on aggressive interventions to enhance the practice of breast-feeding among nursing mothers.

Objective of the review

The objective of this review is to explain the need for individuals, families and groups to be committed in the drive to achieving success in exclusive breast feeding and explore public health interventions to support and scale up practice of breast feeding as a means of achieving sustainable development.

Meaning of Breast Feeding

Breastfeeding is the act of feeding a baby with the natural milk that is produced from the breast. This is achieved few minutes after birth and continues exclusively for first six months up to two (2) years, in addition to complimentary household food or infant cereals/formula, according to the choice of the

mother. It is recommended that babies should be breastfed on demand. However, when signs such as lip licking or sticking out the tongue, rooting (which is moving the jaw, mouth or head to search for the breast), putting the hand or finger in the mouth, opening the mouth or sucking on things are observed, it indicates that the baby is hungry and so should be fed.

The breast milk is produced in three phases. The first phase is the production of colostrum which is rich in antibodies and also has a laxative effect that helps the child to pass out the first stool (Meconium: usually black in colour). The second phase is called transitional milk and the third phase is called mature milk. Milk produced in all three phases contains essential nutrients for child's growth. The quantity of milk produced is directly proportional to the duration and frequency of breast feeding: the more a baby is breast fed, the higher the level of milk production and vice versa. A sufficiently breast fed baby should not lose more than 7% of his birth weight in the first few days after delivery. The baby should be content for about 1-3 hours between feeds and should have at least 6 wet diapers with very pale or clear urine by the time he is 7-10 days old (American Academy of Paediatrics, 2022; Taylor, 2022; Healthline, 2020)

The breast (also referred to as the mammary gland) is the organ responsible for lactation. It develops under the influence of oestrogen and progesterone. They are two in number located in the thoracic cavity. There are compound secreting glands composed of varying proportions of fat, glandular and connective tissue arranged in lobes. The lobes are 20 in number which further divides into lobules. They are made of glandular tissues. The lobules consist of cluster of alveoli that opens into small ducts which unit to form large excretory ducts known as lactiferous ducts. The ducts converge towards the centre where they form reservoir for milk. The lactiferous sinuses open to the nipple. The nipple is covered with epithelium and contains cylindrically arranged smooth muscles and elastic fibre.

During the second trimester, the alveoli epithelial cells develop into lactocytes. They produce small quantity of secretion known as colostrum. After delivery, the level of placenta hormone (especially progesterone), falls significantly to allow the already high level of prolactin to initiate milk production. Touch stimulus causes the release of prolactin; this is made more effective as the baby's mouth touches the nipple. Oxytocin also plays a role by causing the muscle and tissues to contract to further eject the milk. The contraction and relaxation of the elastic fibres and smooth muscles in the nipple cause the milk to flow into the baby's mouth and after suckling, prevents further flow of milk. The more the baby is breast fed, the more the milk is produced. This is the principle guiding exclusive breast feeding (Tauber, 2021; Marshal & Raynor, 2014; Waugh & Grant, 2006)

The breastfeeding code

The breastfeeding code was adopted in 1981 by the World Health Assembly to promote safe and adequate nutrition for infants, by the protection and promotion of breastfeeding and by ensuring the proper use of breast-milk substitutes. One of the main principles of the Code is that health care facilities should not be used as centres for promotion of breast milk substitutes, feeding bottles, teats, or the distribution of free formula by individuals or organisations (WHO & UNICEF, 2009).

The following are the statements of the code:

1. There should be no advertising of breast-milk substitutes and other products to the public.
2. Free samples of breast milk substitutes should not be given to mothers.
3. Breast milk substitutes should not be promoted in the health facilities.
4. Supplies of breast-milk substitutes or other products should not be donated freely or subsidized in any part of the health care system.
5. No breastmilk company personnel should contact or advise mothers.
6. Health workers should not be given gifts or samples of the product.
7. No pictures of infants, other pictures or text idealizing artificial feeding should be placed on the labels of the products.
8. Only scientific and factual information should be given to health workers.
9. Information on artificial feeding should explain the benefits of breastfeeding and the costs and dangers associated with artificial feeding;
10. Unsuitable products, such as sweetened condensed milk, should not be promoted for babies.

For efficient and effective implementation of the code, health workers (which according to the code includes any person working in the health care system, whether professional or non-professional, including voluntary and unpaid workers, in public or private practice) have been admonished by the World Health Assembly to make themselves familiar with their responsibilities under the Code, to be able to encourage and protect breastfeeding. This implies that everyone working in a public or private health facility, having direct or indirect contact with the mothers should understand the principles of the code and ensure full implementation.

Public health interventions to scale up breast feeding

Achieving success in breast feeding will require collaboration and understanding among individuals, family, community and institutions to implement the following:

1. Health Education: Effective health education produces behaviour and life style changes for health promotion. Green in Achalu (2019) defines health education as any combination of health education and related organisational, economic or political interventions designed to facilitate behavioural and environmental changes conducive to health. Health education for effective breast feeding involves enhancing both cognitive and motor skills. Education will border on the content and benefits of breast milk as well as techniques for breast feeding. This implies teaching nursing mothers the right positions to adopt during breast feeding, the duration for breast feeding, good nutrition to ensure production of breast milk and breast feeding hygiene, intense health education during ante-natal on breast preparation for effective breast feeding, such as rubbing and pulling the nipple, use of firm brassier, exercise of the chest muscle, proper latching and sitting position during breast feeding, good nutrition and fluid intake to enhance breast milk formation.

2. Advocacy: To advocate means to lend a voice. Advocating for promotion of breast feeding involves collection of actions to arouse the individuals, institutions and government to encourage nursing mothers. Institutions must ensure complete compliance to the breast feeding code. Managers of institutions, legislators and executives must include in their policies strategies to support nursing mothers to help them breast feed their babies sufficiently.

3. Encourage community focus group discussion: This involves creating forum for shared experiences and opinions among nursing mothers and the health care providers. This forum increases motivation and encouragement to achieve success in breast feeding.

4. Develop peer counselling programmes in health care settings and communities: Women who have succeeded in breast feeding will serve as peer educators to beginning mothers. Learning is achieved when the learner and the educator are at the same level and have the same objective.

5. Health facility-based and home interventions: These include early initiation of breast feeding (first hour after birth) for normal delivery, and when the mother regains consciousness after a caesarean section. Rooming-in with the mother 24 hours a day to facilitate bonding. Eating balanced diet and copious fluid intake. Pacifiers must be avoided. Recognising signs of hunger which is not only expressed by crying is important. These include sucking of thumb, licking of lips, turning head towards mother's chest among others. However, there are many other reasons that could make a baby cry therefore, breast feeding should be on demand: Up to 12 times in 24 hours in the first few weeks while exercising patience because breast feeding duration is dependent on baby's appetite. Baby should spend 10 to 20 minutes feeding on each breast, this is to ensure complete emptying of the breast and also help to prevent breast engorgement. (WHO, 2018; Adewuyi & Adefemi, 2016)

6. Government and employers' interventions: Employers must allow women the time and space they need to breastfeed by providing safe private rooms in the workplace and including paid longer maternity leave in the condition of service. Funding research to uncover new knowledge to promote breast feeding. Concretize global efforts on baby-friendly hospital initiative, and guidelines on breastfeeding counselling in both public and private organizations. Including breast feeding as part of family life education in the academic curriculum beginning from the primary school level.

NB: Maternity leave period for nursing mothers could be increased to 6 months and strictly observed to ensure that the 6 months exclusive breast feeding is carried out without interference or obstructions.

Implication of breast feeding to public health practice

Exclusive breastfeeding for 6 months has a lot of benefits to the mother, child, family and the nation at large. The health benefits of breast feeding to the mother will reduce the burden of health care. This is because the number and frequency of hospitalization is reduced, thus giving room and enabling the health system cater for more critically ill patients. The knowledge of this fact, therefore implies that all stakeholders in the health industry and the general public must ensure that the breast feeding policy and code are implemented at home, hospital and other work places. Health services providers who have direct contact with the nursing mother and public have no reason not to provide the right information as it pertains to breast feeding to the patient and family members who will provide support. This also means that they must be knowledgeable to be able to inform and educate. Health services are provided at all settings, such as school, home, church, community, private sectors etc. it also implies that those who are found in these areas must be informed and educated on the benefits of exclusive breast feeding. By these means larger population will receive information and education. It also means greater acceptance and practice and lesser burden of morbidity on the health system. The health care providers will also play advocacy role to intercede between the people and government and relevant agencies/individuals that can make contributions, laws and policies that would encourage successful breast feeding

Conclusion

Child health is a global interest because children are the future of the nation, so it is important to take care of their health and wellbeing. The child survival strategies represented in the acronym GOBIFFETHE is one of the programmes put in place globally to achieve child health. Breast feeding is one of the strategies. The practice of breast feeding must be exclusive for six (6) months and continues for two (2) years with complimentary feeding. Individuals, families, groups, institutions and government at all levels must encourage the practice of exclusive breast feeding because its benefits are overwhelming.

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Knowledge and Practice of Under-Two Children Weaning among Mothers Attending Two Primary Health Care Centres in Port Harcourt Local Government Area of Rivers State

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Abstract

The study determined the knowledge and practices of under-two children weaning among mothers attending primary health care centres in Port Harcourt Local Government Area of Rivers State. The study used descriptive research design. The population for the study was 127 and applying census technique a sample size of 127 respondents was selected from these two primary health care institutions during the period. The instrument for data collection (primary source) was the questionnaire. The data collected were analysed using simple percentage and Chi-square statistics. Findings from the study revealed that the average knowledge level of mothers regarding under-two children weaning was averagely high (75.03%). Mothers' practices regarding under-two children weaning was also high with an average value of 69.82%. The perceived outcome on under-two children weaning practices on mothers and children revealed average value of 59.84%. There was no statistical difference between level of both knowledge and practices of mothers on under-two children weaning in the two centres ($p < 0.05$). It was recommended that nurses should continue to educate and train mothers on appropriate under-two children weaning practice techniques. Hospitals with government support should regularly organize programmes to educate and train mothers on under-two children weaning to improve their knowledge and practices including publishing of handbooks on them. Awareness on under-two weaning should be raised in children welfare clinics and community centres to improve mother's knowledge and practices regarding under-two children weaning.

Keywords: knowledge and practice, mothers, under-2 children, weaning

Introduction

Breastfeeding has been a usual and intermittent activities of mammalian animals. Undertaking this task in the most appropriate way is a matter of utmost importance. When a baby needs the extra nutrients and their body is ready to process those existing solids, the best foods to try with are those that are easily digestible and unlikely to cause an allergic reaction. Babies love feeding themselves, so offer them finger foods right from the get-go. It is very important to wean your baby rightly, for mothers to have a complete healthy baby that is free from various sickness, infections or malnutrition there is need to yield to the right weaning habit (i.e. weaning at the first 6months of child's life). However, for a baby to be healthy to adapt to weaning activities, necessary weaning knowledge and practice are often required. It was founded on the knowledge that babies have an inherent iron reserve that lasts for almost six months until it runs out, necessitating the consumption of iron-rich solid foods like pulses, meat, and fish.

On this premise, the American Academy of Pediatrics (2012) recommended feeding infants only breast milk for the first 6months after birth. Health professionals define weaning as: The period when breast feeding or formula feeding is gradually supplemented with other foods in the infant's diet. Weaning is also when a baby moves from breast milk to other sources of nourishment (Nemours, 2014). According to UNICEF (2012), starting a safe, nourishing complementary diet at the age of six months is essential for obtaining the best possible levels of growth, development, and health. The

process varies from culture to culture and is often regulated by the child's individual needs. It should be the usual practice in all antenatal clinics to enquire about the age and diet of the child at home, since the occurrence of pregnancy is a danger signal for the previous child, who now becomes weaned according to local practices. Healthy babies of weaning age are growing and developing very well in communities around the world. Shaili et al. (2014) explained the dangers of such practices that poor weaning practices during infancy and early childhood do result in malnutrition, contribute to impairment of cognitive and social development, poor school performance and reduced productivity fast, so great care has to be taken to see that they are getting enough of the right kind of food. According to Inayatii et al. (2012), prevalent behaviors in later life include inappropriate weaning from breast milk, early introduction of complementary feeding, and infant weaning with extra feeds of breast milk substitutes.

There may be many issues throughout the weaning process, and there is typically a knowledge gap on how and when weaning occurs. Children must receive adequate nourishment during infancy and the early years of life in order to grow and develop (Ashmika et al., 2013). It is well acknowledged that breastfeeding benefits both mothers and children, and that breast milk is the best source of nutrition for infants (ku & Chow, 2010). Halif (2011), reported that the World Health Organization (WHO) advises that newborns should be nursed exclusively for the first six months, following which supplemental foods should be offered until they are two years old or older. The child's growth and development are most influenced by the first two years of life. Any harm brought on by nutritional undernutrition at this time could result in hampered joint development, reduced academic success, and low economic production (Kimani-Murage et al., 2011). Weaning can be a dangerous time for babies. In many places babies of weaning age do not grow well. They often fall ill and get more infections, especially diarrhoea, than at any other time. Babies who are malnourished may get worse during the weaning period, and babies may become malnourished for the first time during weaning period.

Poor feeding and illness stop many children of weaning age from growing well. This shows up on the growth chart as poor weight gain or in more serious case as weight loss. Halif (2011) recommended a gradual weaning period from 6 months to two years, for this allowed for the child to still receive the benefits from breastfeeding, while also consuming the necessary nutrients from the complementary foods. Furthermore, studies have shown that, while complementary foods are being added to children's diets, over half of mothers (52%) abruptly weaned their children, just 11.6% did so gradually (Somiya, 2014). It is expected that food would be adequately prepared, have the necessary nutrients, and be served at the right temperature and with the right texture. Malnutrition and sickness may result from improper weaning techniques, a lack of awareness of the child's food needs, and improper weaning techniques. Thus, Somiya (2014) narrated that the weaning period is a vulnerable time when the child should be attentively cared for and observed so as to maintain healthy condition. Therefore, information gotten on weaning will improve mother's practice of weaning since the mother is the most important person as well as its psychosocial care and growth. Mother-infant relationship is the most vital formative relationship for the child.

The primary proximate causes of malnutrition in the first two years of life include ineffective breastfeeding and complementary feeding techniques, high rates of morbidity from infectious illnesses, and these factors together. Breastfeeding benefits a kid both now and in the future; it lowers infant mortality and infection rates, enhances mental and motor growth, and guards against obesity and metabolic illnesses later in life (WHO 2010). The WHO advised exclusively nursing during the first six months, starting from the baby's first hour of life, to meet the infant's nutritional needs and promote optimal growth, development, and health, according to Kimani-Murage et al. (2011). The majority of nutrition issues in rural areas were caused by improper use of weaning food; however, to complement breastfeeding and then completely wean off breast milk requires choosing light nutritious food with thicker food for easy absorption, then replacing light nutritious food with thicker food using hygiene practices when preparing them (Shadia et al., 2013). The factors that influence the breastfeeding and weaning processes vary by country. Infant feeding issues, such as unwillingness to eat, colic, diarrhea, and vomiting, can affect the weaning process (Ashmika et al., 2013). These elements provide difficulties for moms (Gonah & Mutambara, 2016), which may in turn have a direct or indirect impact on the feeding schedule.

The provision of timely, enough, and balanced weaning food is probably one of the most significant single and direct remedial approaches to fight baby malnutrition, according to the study by Shaili et al. (2014). The development of young children is influenced by the right timings, as well as the right quantity and quality in a clean atmosphere and enhanced mother engagement time. In addition, clinical studies of the effects of different frequencies of feeding and composition of meals on total daily energy intakes by fully weaned children indicated that both energy density and meal frequency independently affected children total daily energy intake. The researchers unintentionally identified that some mothers visiting primary health care facilities in the Port Harcourt Local Government Area of Rivers State seemed to lack the necessary expertise of weaning a kid. Therefore, the researchers decided to research mothers visiting primary health care centers in Port Harcourt Local Government Area of Rivers State regarding their knowledge and practices of weaning infants under the age of two. They did this because they were concerned about the impact of incorrectly practiced processes on the developmental stages of the children, which results in the deaths of ten million children under the age of five every year.

Research questions

- i) How well-informed are women using basic healthcare facilities in Port Harcourt Local Government Area on weaning young children?
- ii) How do mothers who visit primary health care facilities in Port Harcourt Local Government Area handle weaning infants under the age of two?
- iii) What are the perceived resultant effects of practices regarding under-two children weaning on lactating mothers and children in Port Harcourt Local Government Area?
- iv) What differences exist in the knowledge and practice of under-two children weaning among mothers attending Elekahia and Orogbum Primary Health Care Centres in Port Harcourt Local Government Area?

Hypotheses

Ho1: There is no difference in knowledge of mothers on under-two children weaning in Elekahia and Orogbum Primary Health Care Centres.

Ho2: There is no difference in the practice of mothers on under-two children weaning in Elekahia and Orogbum Primary Health Care Centres.

Methodology

The study used descriptive research design with institutional setting. A total number of 127 mothers attending two primary health care centres in Port Harcourt Local Government Area of Rivers State constitute the study population (71 from Orogbum and 56 from Elekahia). Mothers who had children with ages from birth to 23 months were included whereas mothers whose previous child's age was less than 4 months were excluded. A sample size of 127 mothers was used based on sampling technique of enumeration or census. Stratified and systematic sampling techniques were applied. The instrument for primary source of data collection was the questionnaire. The pilot study was at Rumuigbo Health Care Centre. Use of Pearson Product Moment Correlation (mean method) coefficient gave reliability index of 0.77. The data from the 127 copies of the questionnaire were tallied, coded and presented using tables but analysed using percentage. Test statistics (Chi-square) were applied in the hypothesis testing.

Results

Tables 1 - 4 contained the results indicating response to the research questions.

Table 1

Knowledge of mothers regarding under-two children weaning

Variable (N=127)	Response	
	Yes (%)	frequency No (%)
Weaning as introducing supplementary food	95 (75)	32 (25)
Weaning basically from 6 months	71 (56)	56 (44)
Good weaning diet improve children immunity	110 (87)	17 (13)
Rice and pap as non-weaning diet	98 (78)	29 (22)
Proteinous diet not important when weaning	50 (39)	77 (61)
Physical development as one benefit of weaning	124 (98)	3 (2)
Poor weaning practice associated with child disease	119 (94)	8 (6)

Table 1 showed knowledge of under-two children weaning. Majority of mothers answered the question on knowledge of mothers regarding under-two children weaning in the affirmative and the item with highest affirmation so-answered by the mothers is 124 (98%). Again the mothers were knowledgeable on the fact that poor weaning practice is associated with presence of child diseases (119, 94%). Similarly, these mothers knew that appropriate weaning diet improve children immunity (110, 87%). These levels of knowledge were not surprising because they attend both antenatal and post-natal clinics. The average knowledge level was 75.03%.

Table 2

Mothers' practices regarding under-two children weaning

Variable (N=127)	Response	
	Yes (%)	Frequency No (%)
Giving children another food during weaning	100 (79)	27 (21)
Giving children proteinous food	77 (61)	50 (39)
Giving children vitamin supplements	121 (95)	6 (5)
Steadily increasing semi-solid food	85 (67)	42 (33)
Giving children any solid food	61 (48)	66 (52)
Giving children cereal and grains	88 (69)	88 (69)

Table 2 is mother's practice regarding under-two children weaning. Most of the mothers answered the question on mothers' practices regarding under-two children weaning in the affirmative. This position taken by these mothers were not unconnected with desired information acquired during attendance of both antenatal and post-natal clinics. The extent of practice is not in doubt, for these mothers were seen in health facility. The level of practice as expressed by these respondents is commendable, e.g. "Giving children vitamin supplements (121, 95%)", "giving children another food during weaning (100, 79%)", and "giving children cereal and grains (88, 69%)". The average practice level was 69.82%.

Table 3

Perceived outcome of under-two children weaning practice on mothers and children

Variable (N=127)	Response frequency	
	Yes (%)	No (%)
Weaning periods allow mothers ample time for other activities	52 (41)	75 (59)
Mothers hence have more leisure and rest	73 (57)	54 (43)
Improved maternal health possible	93 (73)	34 (27)
Mothers resume/start petty-trading for family support	86 (68)	41 (32)
Fostering mother-child relationship	78 (61)	49 (39)
Weaning periods allow mothers to feed baby well	87 (69)	40 (31)
Baby wellness better assured when properly weaned	99 (78)	28 (22)
Child social and motor skills developed during weaning	69 (54)	58 (46)
Solid foods help in the movement of the lips and jaw	67 (53)	60 (47)
Diarrhoea and malnutrition as common child condition during weaning	45 (35)	82 (65)
Obesity and metabolic diseases in later life obviated	89 (70)	38 (30)

Table 3 presented perceived outcomes of practices on weaning of under-2 children for the mothers and children. As persons receiving health talks during regular visits to health facilities, these mothers' responses showed affirmative regards for the stated variables/items except quite minimal for "diarrhoea and malnutrition as common child condition during weaning, 45(35%)". The first four items, e.g. 'possibly improved maternal health (93, 73%)' and 'mothers resume/start petty-trading for family support (86, 68%)' were the outcomes for the mothers. The next two: 'fostering mother-child relationship' (78, 61%) and 'weaning periods allow mothers to feed baby well (87, 69%)' were outcomes for both mothers and children. The rest, e.g. 'baby wellness better assured when properly weaned (99, 78%)', 'preventing obesity and metabolic diseases in later life (89, 70%)' and as 'period of child social and motor skills development (69, 54%)' were the outcomes for children. The average perceived outcomes of practices on weaning of under-2 children for the mothers and children was $76 \div 127 = 59.84\%$.

Table 4

a) Comparison of the knowledge on under-2 children weaning among mothers

Orogbum (N=71)			Elekahia (N=56)		
Yes	No	Total	Yes	No	Total
53	18	71	41	15	56
56	15	71	45	11	56
48	23	71	34	22	56
61	10	71	49	7	56
55	16	71	43	13	56
28	43	71	16	40	56
69	2	71	55	1	56

$\chi^2_{\text{calculated}}=0.06$, $\chi^2_{\text{critical}} = 12.59$, $p < 0.05$, Failed to reject H_0

b) Comparison of the practice of under-two children weaning among mothers

Orogbum (N=71)			Elekahia (N=56)		
Yes	No	Total	Yes	No	Total
56	15	71	44	12	56
43	28	71	34	22	56
68	3	71	53	3	56
23	48	71	37	19	56
37	34	71	27	29	56
49	22	71	39	17	56

$\chi^2_{\text{calculated}}=0.43$, $\chi^2_{\text{critical}} = 11.07$, $p < 0.05$, Failed to reject H_0

The statistical analysis, chi-square applied showed no difference between knowledge of mothers on under-2 children weaning in either Orogbum or Elekahia Primary Health Centre (Table 4a). In the

same vein, no difference between practice of mothers on under-2 children weaning in either Orogbum or Elekahia Primary Health Centre (Table 4b).

Discussion

The introduction of a soft, digestible diet that is sufficient in calories, protein, and other nutrients is necessary for weaning. Some researchers have applied the word ‘infant’ in weaning beyond the medically reserved one year, but this work noted this anomaly and preferably used the term: “under-two children”. A mixture of legumes and cereals with the quality protein-source like meat, makes a balanced form of protein. Energy intake has to be regulated.

Mothers’ knowledge on under-two children weaning --This study noted that majority of the mothers answered the questions on knowledge of mothers regarding under-two children weaning in the affirmative and that they had high knowledge of under-two children weaning. Findings, therefore, were ‘physical development as one benefit of weaning’ (98%), ‘poor weaning practice association with child diseases’ (94%), ‘good weaning diet linked to improved children immunity’ (87%), ‘rice and pap as non-weaning diet’ (78%) and ‘weaning as introducing supplementary food’ (75%). These findings were as expected by the researchers. Hasnain et al. (2013) investigated knowledge and practices of mothers for complementary feeding in babies visiting Paediatric Outpatients Department of Jinnah Hospital, Lahore, Pakistani. The present research has an average of 75.03% on knowledge of under-two children weaning which correlates with Hasnain et al. (2013) as they noted that the correct knowledge of initiation of complementary feeding was found in 54% of mothers. Furthermore, their study found that the overall knowledge of 24% mothers was good and 28% had poor knowledge of complementary feeding. It should be noted that the present study focused on mothers attending both antenatal and post-natal clinics, which status accounting for higher knowledge compared to Hasnain et al. (2013) research on mothers who merely visited Paediatric Outpatients Department. The just concluded research finding on knowledge was similar to finding of Akpor et al. (2020) in which majority of the mothers had good knowledge of feeding and weaning.

Mothers’ practices regarding under-two children weaning -- In this study most mothers answered the question on practice of mothers regarding under-two children weaning in the affirmative. Such findings include ‘giving children vitamin supplements’ (95%), ‘giving children another food other than milk during weaning’ (79%), ‘giving children cereal and grains’ (69%), ‘steadily increasing semi-solid food’ (67%), and ‘giving children proteinous food’ (61%). These findings came as expected by the researcher. The average practice level in this study was 69.83%. This high level was not unconnected with regular attendance in health talks during antenatal and post-natal clinics as in the case of these mothers. The level is higher compared with the work of Hasnain et al. (2013) revealing practiced level of only 43% whereas only 7% women had good overall practice. But they investigated mothers visiting Paediatric Outpatients Department most of whom probably had not received health talks. This study has a correlation with Akpor et al. (2020) who investigated feeding and weaning practice of mothers of under-five children in selected primary health care centres in Ado-Ekiti, Nigeria. Findings from their study revealed that main practice of feeding of the children by the mothers was at about 6-7months. Also, Akpor et al. (2020) found that the major type of weaning practiced by mothers was abrupt weaning, which was not the focus of this study.

The just concluded finding is averse to the work of Molla et al. (2017) who investigated complementary feeding practice and associated factors among mothers having children 6 to 23 months of age. They found that about 43.5% were not feeding their children complementary meal appropriately which was bound to have negative implication on the health of their children. There was a statistical significance of inappropriate complementary feeding practices with mothers’ occupation, postnatal care service, media exposure and mother’s decision on how the money is used, their study further showed.

Perceived outcomes of under-two children weaning practice on mothers and children

Findings were ‘possibly improved maternal health’ (73%) and ‘mothers resuming/starting petty-trading for family support’ (68%), ‘weaning periods allowing mothers ample time for other activities’,

'mothers thus having more leisure and rest', were the outcomes for the mothers. Others are 'fostering mother-child relationship' (61%) and 'weaning periods allowing mothers feed baby well' (69%) as beneficial outcomes for both of them. The children outcomes were 'baby wellness better assured when properly weaned' (78%), 'preventing obesity and metabolic diseases in later life' (70%), 'period of child social and motor skills development' (54%) and 'solid foods help in the movement of the lips and jaw' (53%). The researcher did not expect perceived outcomes of practice on weaning of under-2 children for the mothers and children of about 60% on average but 59.84% was obtained. There is dearth of recent information on outcomes of practice on weaning of under-2 children for the mothers and children, thus limiting comparative studies.

Difference in knowledge and practice levels on under-2 children weaning among mothers in two health centres

Using chi-square for statistical analysis to determine any differences between level of knowledge of mothers in Orogbum and Elekahia Primary Health Care Centres showed no difference. Similarly, statistical analysis to determine any differences between level of practice of mothers on under-2 children weaning in Orogbum and Elekahia Primary Health Care Centres revealed no difference. The lack of difference is not unconnected with the related contents of health talk and respondents being city dwellers whose residences were in utmost contiguity. There is still dearth of present studies of related comparative works in this area.

Conclusion

According to the study's findings, "under-two children weaning knowledge and practice are reasonably high, as evidenced in 75.03% average for knowledge and average practice level of 69.82% among women attending primary health care centers in Port Harcourt Local Government Area of Rivers State. This amount of practice made some desirable results possible. These include amongst others: 'possibly improved maternal health', 'mothers resume/start petty-trading for family support', 'weaning periods allowing mothers ample time for other activities', 'fostering mother-child relationship', 'weaning periods allowing mothers feed baby well', 'baby wellness better assured when properly weaned', and 'preventing obesity and metabolic diseases in later life'. There was no significant difference in knowledge and practice of mothers on under-two children weaning in Elekahia and Orogbum Primary Health Care Centres.

Recommendations

The following suggestions were made based on the study's findings:

- i. Children welfare clinics and community centers should create awareness about weaning young children to help mothers' understanding and practices in this area.
- ii. Nurses should educate and train mothers on appropriate under-two children weaning practice.
- iii. Hospitals should regularly organize programmes to educate and train mothers on under-two children weaning to improve their knowledge and practices.
- iv. There is need for publishing of handbooks and magazines concerning the knowledge and practice of under-two children weaning among mothers.
- v. Government should sponsor programmes to create more awareness on the knowledge and practices of under-two weaning among mothers.

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Scientific Innovations in Entrepreneurship for Sustainable Growth and Development of Nigerian Economy

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Abstract

Nigeria is still not economically developed because it lacks scientific innovation in entrepreneurial activities. This study examined scientific innovation in entrepreneurship for sustainable growth and development of the Nigerian Economy. It explained concept of scientific innovation, entrepreneurship and sustainable growth and development. This paper was anchored on the theory of Psychological Theory of Achievement Motivation by McClelland, Sociological Theory of Capitalism by Max Weber, Innovation Theory of Joseph Schumpeter and Economic Theory of Richard Cantillon. The paper revealed the effect of scientific innovation on entrepreneurship for sustainable growth and development which include to spur economic growth, add to national income create social change and community development. Also the challenges to scientific innovation in entrepreneurship were highlighted. It was concluded that the inclusion of scientific innovation in entrepreneurship is the key component of economic success, underpinning the ability to create new products and jobs that keep us competitive on the world stage. Finally it was recommended that there is an urgent need for the Nigerian government to provide an enabling environment in the forms of efficient and available basic infrastructural facilities, especially electricity and carrying out of complete feasibility study report to identify the viability, strength and weakness of a new venture should be properly done by entrepreneurs amongst others.

Keywords: entrepreneur, entrepreneurship, scientific innovation, sustainable growth and development

Introduction

Innovation is the specific tool of entrepreneurship by which entrepreneurs exploit change as an opportunity for a different business or service. There is considerable overlap between entrepreneurship and innovation (Ofili, 2014). Entrepreneurship, in its narrowest sense, involves capturing ideas, converting them into products and, or services and then building a venture to take the product to market (Imafidon, 2014). Entrepreneurship is the result of any human action undertaken in order to generate value through the creation or expansion of economic activity. In fact, entrepreneurship can only be understood as a multidimensional reality, even if that reality is often difficult to identify (Landström, 2020; Fayolle, 2018)

Innovation and entrepreneurship are the key components of economic success, underpinning the ability to create the new products and jobs that keeps us competitive on the world stage. Innovation and entrepreneurship thrive in an ecosystem that supports advances in science, technology, engineering, mathematics (STEM) and promotes interdisciplinary collaboration to adapt new ideas into creative solutions to everyday challenges. (Landström, 2020). To maintain global leadership, we need to increase investment in research and development (R&D) and tap into the innovative abilities of our diverse and inclusive workforce. Recently, however, Nigeria has failed to fully support all aspects of the innovation and entrepreneurship ecosystem. Innovation and entrepreneurship don't happen overnight; they are fostered by a sustained commitment to every step of investment in research and development (R&D) and commercialization lifecycle (Garcia & Calantone, 2002).

According to (Landström, 2020) innovation in entrepreneurship is a system that;

- embraces high-risk, high-impact research and cultivates the development of novel applications from those research ideas;
- uses robust and enabling technology transfer and commercialization capability for moving new innovations to the marketplace and;

- have a well-trained, determined, and diverse workforce focused on problem solving that can nurture and develop those ideas.

Nigeria is among the third world country which are richly endowed with human and natural resources. Even at that, Nigeria is still not economically developed because the country has so many features of underdevelopment which among others include; high unemployment rates, heavy dependence on oil, low agricultural production, low utilization of industrial capacity, high inflation rate, low literary level, poor state of infrastructure, low income per head, subsistence agricultural practices, low industrial capacity, absence of stable polity, high infant mortality and lack of industrial infrastructural base.

These constrains has been limited to lack of scientific innovation in entrepreneurial activities in Nigeria. Tapping these resources require the ability to identify potentially useful and economically viable fields of endeavors'. Thus, entrepreneurship activities and innovative ingenuity in Nigeria will foster economic growth of Nigeria through applying scientific knowledge in the area of entrepreneurship. Therefore, this study sets out to investigate the impact of scientific innovation in entrepreneurship and how it affects the economic growth and development of Nigeria.

Objectives of the Study

The objective of this study is to investigate scientific innovations in entrepreneurship for sustainable growth and development of Nigeria economy.

The specific objectives are to:

- (i) ascertain the relationship between scientific innovations and entrepreneurship
- (ii) ascertain the effect of scientific innovations in entrepreneurship and sustainable growth and development of the Nigerian economy.

Concept of Scientific Innovation

Scientific innovation is the practical implementation of ideas that result in the introduction of new goods or services or improvement in offering goods or services. Innovation can *refer to something new*, such as an invention, or the practice of developing and introducing new things. An innovation is often a new product (Adegboye, 2018). Many definitions have been proposed to explain innovation, and as a result the term has gained greater ambiguity (Garcia & Calantone, 2002). A number of process models have been developed in the literature suggesting that innovation consists of a variety of different phases: idea generation, research design and development, prototype production, manufacturing, marketing and sales (Johnson, 2001; Knox, 2002; Poolton & Ismail, 2000). However, theorists have suggested that there is more to innovation than the process. Innovation thus has many facets and is multidimensional. Also many definitions of innovation focus on the concept of newness. The newness theme is especially important to understanding the link between innovation and entrepreneurship as suggested by prior studies that emphasize its pivotal role in new venture creation and management: "new business startup", "new entry", "new organizations" and "organizational renewal" (Guth & Ginsberg, 1990). With these innovation concepts in mind, (Johnson, 2001) developed a study that investigated six different types of innovative activity:

- New products;
- New services;
- New methods of production;
- Opening new markets;
- New sources of supply; and
- New ways of organizing.

Concept of Entrepreneurship

An Entrepreneur can be defined as an innovating individual who has developed an ongoing business activity where none existed before (Adegboye, 2018). Imafidon (2014) observe that entrepreneurship is more than simply "starting a business". It is a process through which individuals identify opportunities, allocate resources, and create values.

This creation of values is often through the identification of unmet needs or through the identification of opportunities for change. It is the act of being an entrepreneur which is seen as “one who undertakes innovations with finance and business acumen in an effort to transform innovations into economic goods hence entrepreneurs see “problems” as “opportunities” and then take action to identify the solutions to those problems and the customers who will pay to have those problems solved (Onoh, 2017).

Entrepreneurial success is simply a function of the ability of an entrepreneur to see opportunities in the marketplace, initiate change (or take advantage of change) and creates value through solutions (Thompson, 2019). Entrepreneurship is known as the capacity and attitude of a person or group of persons to undertake ventures with the probability of success or failures. It demands that the individual should be prepared to assume a reasonable degree of risks, be a good leader in addition to being highly innovative (Ebiringa, 2012). In business management, Entrepreneurship is regarded as the “prime mover” of a successful enterprise just as a leader in any organization must be the environmental change agents (Adegboye, 2018).

Shane (2003) defined entrepreneurship as the process of using private initiative to transform a business concept into a new venture or to grow and diversify an existing venture or enterprise with high growth potential. Entrepreneurship is the act of being an entrepreneur, which can be defined as “one who undertakes innovations, finances and displays business acumen in an effort to transform innovations into economic goods”. This may result in new organizations or may be part of revitalizing mature organizations in response to a perceived opportunity (Nelson, 1993).

Entrepreneurship can be developed enterprises in the following areas: foodstuffs, restaurants, fast food vending, quarrying, germ stone cutting/polishing, power generations, haulage business (cargo and passengers), manufacturing and repairs of GSM accessories and the printing and selling of recharge cards, construction and maintenance of pipelines, drilling, refining bye products, refuse collection/disposal, recycling and drainage/sewage construction job, banking, insurance and stock trading, machines and tools fabrications. There is also the building and construction, where there are plan and design services and material sourcing fashion designing, photography, software production and sales etc. (Agbeze, 2012). Entrepreneurial development is conceived as a programme of activities to enhance the knowledge (body of knowledge), skill, behaviors and attitudes of individuals and groups to assume the role of entrepreneurs as well as efforts to remove all forms of barriers in the part of entrepreneurs to create society’s wealth for human capacity building. Entrepreneurship development is therefore the bedrock for human capacity building.

Scientific Innovation and Entrepreneurship

Scientific innovation involves the successful exploitation of new ideas to generate new techniques, products and processes. According to (Nelson, 1993), innovation encompasses “the processes by which firms master and get into practice product designs and manufacturing processes that are new to them.” Such a broad understanding of innovation is particularly meaningful within the context of innovative entrepreneurship insofar as upgrading technology or improving skills may lead to more efficient uses of resources or higher-quality outputs, but not necessarily to new products or patents. When innovation is included in the analysis, it is important to distinguish between innovation and invention (Fagerberg, 2006). (Fagerberg, 2006) shows, both are closely linked, and it is very difficult to distinguish one from another. But in many cases, there is a considerable lag between the two. However, a main difference between invention and innovation is that the former may be carried out anywhere, while innovation occurs mainly in firms that need to combine several different kinds of capabilities, knowledge, resources and skills (Fagerberg, 2006).

According to (Herbig et al., 1994) “Innovation requires three basic components: the infrastructure; the capital; and the entrepreneurial capacity needed to make the first two work”. Moreover, innovation has to address market needs, and requires entrepreneurship if it is to achieve commercial success (Zhao, 2001). For this reason, it is important to introduce in the analysis the role played by the entrepreneur and to determine those elements or factors that would have any effect on him (Aghion & Howitt, 1998).

Nielsen and Lassen (2012) considers that entrepreneurship activity implies innovation in the introduction of a new product, organization or process, generating a destruction process. Thus, the

entrepreneur is an actor who initiates and implements innovations. Entrepreneurs seek opportunities, and innovations provide the instrument by which they might succeed. Corporate entrepreneurship often refers to the introduction of a new idea, new products, a new organizational structure, a new production process, or the establishment of a new organization by (or within) an existing organization. From this perspective, we can presume that innovation would promote their activity, creating a feedback effect. That is, entrepreneurs innovate and the innovations stimulate other entrepreneurs to carry out their activity (Dooley, & O'Sullivan, 2001),

Sustainable Economic Growth and Development

Sustainable economic development means a process of upward change whereby the real per capita income of a country increases over a period of time (Arokoyu, 2004). The Nigerian economy is one of the most developed economies in Africa. According to the UN classification, Nigeria is a middle-income nation with developed financial, communication and transport sectors. It has the second largest stock exchange in the continent. The petroleum industry is central to the Nigerian economic profile. It is the 12th largest producer of petroleum products in the world. The industry accounts for almost 80% of the GDP share and above 90% of the total exports. Outside the petroleum sector, the Nigerian economy is highly amorphous and lacks basic infrastructure. Several failed efforts have been made after 1990 to develop other industrial sectors (Shobhit, 2019). Development does not occur spontaneously, it is as a natural consequence when economic conditions in some sense are right. A catalyst is needed and this requires entrepreneurial activity to a considerable extent, the diversity of activities that characterizes rich countries can be attributed to the supply of entrepreneurs (Shobhit, 2019).

Effect of Scientific Innovation in Entrepreneurship on the Economic Growth

The link between innovations in entrepreneurship as a catalyst of sustainable economic growth cannot be overemphasized. The impact of entrepreneurship on the sustainable economic growth of the Nigerian economy is difficult to accurately measure or estimate, but it is believed to be highly dynamic and significant. Scientific innovation is thus important for a number of reasons, from promoting social change to driving innovation which according to (Thomas, 2019) is as follows;

Spur Economic Growth

New products and services created by entrepreneurs can produce a cascading effect, where it stimulates related businesses or sectors that need to support the new venture, furthering economic development (Imafidon, 2014)

Add to National Income

It helps generate new wealth. Existing businesses may remain confined to existing markets and may hit the glass ceiling in terms of income. New and improved products, services or technology from entrepreneurs enable new markets to be developed and new wealth to be created. Additionally, increased employment and higher earnings contribute to better national income in the form of higher tax revenue and higher government spending. This revenue can be used by the government to invest in other, struggling sectors and human capital. Although it may make a few existing players redundant, the government can soften the blow by redirecting surplus wealth to retrain workers. (Adegboye, 2018)

Create Social Change

Through offering unique goods and services, entrepreneurs break away from tradition and reduce dependence on obsolete systems and technologies. This results in an improved quality of life, improved morale, and greater economic freedom. For example, the water supply in a water-scarce region will, at times, force people to stop working to collect water. This will impact their business, productivity, and income. Imagine an innovative and automatic pump that can fill people's water containers automatically. This type of innovation ensures people are able to focus on their jobs without worrying about a basic necessity like water. More time to devote to work translates to economic growth (Arokoyu, 2004).

Moreover, scientific innovation in entrepreneurship makes entrepreneurs in lesser-developed countries like Nigeria have access to the same tools as their counterparts in richer countries. They also have the advantage of a lower cost of living, so a young entrepreneur from an underdeveloped country can compete with a multi-million-dollar existing product from a developed country (Thomas, 2019).

Community Development

Where new and improved products through scientific innovation are produced, new markets is being developed. This enables further development beyond their own ventures. Some famous entrepreneurs, such as Bill Gates, have used their money to finance good causes, from education to public health. The qualities that make one an entrepreneur are the same qualities that help motivate entrepreneurs to pay it forward (Boumol & Strom, 2007).

Challenges of Scientific Innovation in Entrepreneurship

Shobhit (2019) seems to present many obstacles that hinder scientific innovation in entrepreneurship. They are stated as follows:

- Sometimes innovations aren't well received by clients. Sometimes the customers are reticent towards new idea and stuck to the same old formula.
- Innovation cannot prosper without suitable culture. Our employees have not evolved in a favorable innovation culture, as in their educational and training they were not encouraged to be creative, to take initiatives and propose new ideas
- Lack of Government support - it is hard to innovate in Nigeria because there is no aid from the government side to encourage companies to "think outside the box" and to create something new or something different.
- Lack of Funding. It is very hard to find or access the needed capital (funds) required to promote the new product or services.
- Fear of changes - change brings new methods of doing business but some proprietor refuse to adapt to change. They fear that bringing new changes may put them out of business or rub them of their position as managers.
- Poor infrastructure - poor infrastructure is one of the major challenges of entrepreneurial innovation in Nigeria, there is epileptic power supply, inadequate water supply and bad road network.
- Unfavourable and unstable government policies: unfavorable government policies inform of banned of importation of certain raw materials, products and services; high exchange rate and policies on naira and high currencies of the world like dollar and pounds and multiple tax system.

Theoretical Framework

The theoretical foundation of this paper is based on the Psychological Theory of Achievement Motivation by McClelland, Sociological Theory of Capitalism by Max Weber, Innovation Theory of Joseph Schumpeter and Economic Theory of Richard Cantillon. These theories are briefly discussed below;

Psychological Theory of Achievement Motivation

This theory was propounded by McClelland David in 1961 holds that people have three motives for accomplishing things: the need for achievement, need for affiliation, and need for power. This underscores achievement, power, desire for accomplishment, personal locus control, etc. the thinking here is that there is an inner urge or drive or force in a person that makes him/her desire a change of status or position. Outside environment and innovation, there are other variables associated with a person's desire for achievements which appears to be a driving force behind and undertaking or venture (McClelland, 1961)

Sociological Theory of Capitalism

Max Weber's sociological theory was propounded in (1864-1920). The theory viewed religion as the major driver of entrepreneurship and stressed on the spirit of capitalism, which highlights economic freedom and private enterprise. Capitalism thrives under the protestant work ethic that harps these values. The right combination of discipline and an adventurous free-spirit define the successful entrepreneur. The theory contends that an individual's environment is a key player in developing entrepreneurship spirit in a person and that ideas, traits, and motives are not enough on their own for entrepreneurship to manifest in a person. According to this theory there must be an enhancing environment as a predisposing factor before business opportunities can be harvested (Nnadi & Maduagwu, 2015).

Economic Theory

Richard Cantillon (1680-1734) was the first of the major economic thinker to define the entrepreneur as an agent who buys the means of production at certain prices to combine them into a new product. He classified economic agents into landowners, hirelings and entrepreneurs, and considered the entrepreneur as the most active agents connecting the producers with customers (consumers).

Innovation Theory

Schumpeter (1930) sees an entrepreneur as one having three major characteristic; innovation, foresight, and creativity. Innovation as a theory of entrepreneurship is the driving force behind entrepreneurship. The argument holds that every oriented venture is a function of innovation and that without innovation, the theory of entrepreneurship does not exist.

CONCLUSION

Entrepreneurship development is the race of the moment. Any country left behind in this race will remain perpetually undeveloped. This underscores the recent attention given to scientific innovation in entrepreneurship for sustainable economic growth and development. It can be concluded that the inclusion of scientific innovation in entrepreneurship is the key components of economic success, underpinning the ability to create the new products and jobs that keeps us competitive on the world stage. Innovation and entrepreneurship thrive in an ecosystem that supports advances in science, technology, engineering, mathematics (STEM) and promotes interdisciplinary collaboration to adapt new ideas into creative solutions to everyday challenges.

RECOMMENDATIONS/WAY FORWARD

Innovation in entrepreneurship is one of the major ways of creating job for people in Nigeria, it is thus recommended that;

- Carrying out complete feasibility study report to identify the viability, strength and weakness of a new venture should be properly done by entrepreneurs
- There is an urgent need for the Nigerian government to provide an enabling environment in the forms of efficient and available basic infrastructural facilities, especially electricity.
- Also venture capital should be provided through micro-finance banks and other specialized agencies to adequately empower young entrepreneurs.
- There should be introduction of entrepreneurship course across faculties and departments as general courses in the country.

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Effects of Oil Spills on Aquatic Lives: A Study of Kporghor Community in Tai Local Government Area, Rivers State

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Abstract

Oil spill incidents have occurred at different times along the Niger Delta area and Ogoni in particular. These incessant oil spills have caused tremendous pollution and death of aquatic lives. This study therefore, adopted the survey design to investigate the causes, effects, implications, prevention and remediation of the polluted aquatic environment of Kporghor community of Tai Local Government Area in Rivers State. The study population was estimated at 1500 adult men and women of Kporghor community, with a sample size of 316 purposive sampling technique. Questionnaire was used as the research instrument which was validated by experts from School of Community Health while test retest was used to determine its reliability. The results of the findings showed that the aquatic environment of the community has been badly polluted by incessant oil spills, leading to destruction of sea food, contamination of water, devastation of means of livelihood, sicknesses and death of animals and humans of Kporghor community and Niger Delta at large. It is concluded that this incessant pollution could be avoided if the local content act and the standard practices as recommended by international organizations are followed dutifully.

Keywords: aquatic, contamination, health, oil spills, seafood

1.0 Introduction

From the discovery of the first commercially viable oil wells in Oloibiri of Bayelsa, in the Niger Delta, Nigeria, in 1956 and Ogoni in 1958 to the present days, the issue of oil production and its effect on the environment has been the source of great concern between oil companies and their host communities. Shell Petroleum Development Company (SPDC) has acknowledged in some instances that, most environmental problems related to the oil industry are due to oil spills, gas flaring, dredging of canals and land taken for construction of facilities (Raji & Abejide, 2013). Large oil spills, depending on their location, may go undetected for many days or even months with untold damage to the fragile ecology of the Niger Delta aquatic and environment. These oil-related activities have affected the aquatic life and fishing activities; the major economic preoccupation of indigenes and residents of the communities.

The primary occupations of the people in the coastal areas of the Niger Delta are fishing and farming; and according to a report by United Nation Development Programme (UNDP, 2006), more than 70 % of the people of this area depend on the natural environment for their livelihood (Ebegbulem et al, 2013). However, we know that almost every resident in the community depends on the surrounding waters for one purpose or the other. According to Niger Delta Environmental Survey (NDES) sometimes ago, oil production and other industrial activities are just some of the factors that have greatly impacted on the evolution of the Niger Delta and Ogoni in particular and has drawn several attentions especially that of international community to the devastation and degradation of lands and waters in the region. The operations of the oil industries have introduced pollutants as liquid discharges and oil spills into the air, land, and water components of the environment (Omajemite, 2021). Akpofure (2020), noted that when there is an oil spill on water, spreading takes place immediately. The gaseous and liquid components evaporate while some get dissolved in water and even oxidize and some undergo bacterial changes and eventually sink to the bottom by gravitational force. The soil is then contaminated with gross effect upon the terrestrial and aquatic lives in many ways. As the evaporation of the volatile lower molecular weight components affect

aerial life, so the dissolution of the less volatile components, with the resulting emulsified water affects aquatic life.

Environmental pollution caused by petroleum is of great concern. This is because petroleum hydrocarbons are toxic to all forms of life and harm both aquatic and terrestrial ecosystems. The pollution of marine habitats has caught the attention of researchers and environmentalists. This is due to the serious impact of oil spills on marine life, as well as on people whose career relies on the exploitation of the sea's resources (Bartha & Bossert, 2014). An oil spill is the release of a liquid petroleum hydrocarbon into the environment, especially the marine ecosystem, due to human activity, and is a form of pollution. The term is usually given to marine oil spills, where oil is released into the ocean or coastal waters, but spills may also occur on land. Oil spills may be due to releases of crude oil from tankers, offshore platforms, drilling rigs and wells, as well as spills of refined petroleum products (such as gasoline, diesel) and their by-products, heavier fuels used by large ships such as bunker fuel, or the spill of any oily refuse or waste oil. It can occur by accident, or deliberate release of oily refuse by operators, pipeline vandalism and / or oil theft, or due to systemic failure as a result of poor maintenance of the facility.

Oil spills penetrate into the structure of the plumage of birds and the fur of mammals, reducing its insulating ability, and making them more vulnerable to temperature fluctuations and much less buoyant in the water. Oil spills can have disastrous consequences for society; economically, environmentally, and socially. As a result, oil spills incidences have initiated intense media attention and political uproar, bringing many together in a political struggle concerning government response to oil spills and what actions can best prevent them from happening (Wout, 2015). This is the root cause of Niger Delta militancy and agitations.

Additionally, marine life may be affected by clean-up operations. It may also be indirectly affected by the physical damage to the habitats in which plants and animals live in. Petroleum marine fuel spills, which result from damage, transportation accidents and various other industrial and mining activities, are classified as hazardous waste. They are considered to be the most frequent organic pollutants of aquatic ecosystems. In recent years, there have been numerous studies regarding the levels of contamination of the seawater by hydrocarbons. (Barron, 2012). This study however, focused on the cases of oil spill and its devastating effect on aquatic lives in Kporghor community, Tai Local Government Area of Rivers State, Nigeria as case study.

Statement of the Problem

The people of Ogoni land and Niger Delta depend largely on farming and fishing as their means of livelihood. These they do within the blessed environment provided them by God. Unfortunately, the aquatic environment and lives have been destroyed with the pollution of traditional fishing grounds, exacerbating hunger and poverty in fishing communities forcing the affected communities and youths of the land to be aggressive in some cases. Clark and co scholars as early as 1999, sums up the experience of local fishermen and farmers as follows: "having lost their traditional subsistence lifestyle to pollution and other drastic changes in their immediate environment, many oil producing communities are now forced to buy their food. This is even worse today. In Ogoni land where Shell Petroleum Development Company operated for decades and devastated the environment, operations have led to the loss of fish populations along the coasts. Fishing is available only to those who can afford large boat engines and trawlers to venture into the high seas. The rest of the population buy "ice fish" (frozen fish), a practice totally unknown some years back. This paper therefore aims at reviewing the challenges of oil spills on the aquatic environment and to suggest the way forward.

2.0 Research Methodology

2.1 Design of Study

This study adopted a survey design with the aim of investigating the impact of oil spillage on aquatic lives in Kporghor community of Tai Local Government Area of Rivers State while employing both qualitative and quantitative approach in conducting the study analysis.

2.2 Population of Study

The population of this study is made up of an estimated 1500 dwellers of Kporghor Community in Tai Local Government Area who have experienced oil spills and its devastation of the environment (both aquatic and terrestrial habitats).

2.3 Area of Study

The study was carried out in Kporghor, Tai Local Government Area. Tai is a Local Government Area (LGA) of Rivers State in Nigeria. It covers an area of 159 km² and at the 2006 Census, it had a population of 117,797. It was created in 1996 with its seat of power located at Saakpenwa. Tai is located on coordinate: 4°43'0"N 7°18'0"E. Most of the people are Ogoni, speaking the Tee and Baan languages. The primary occupations are farming, and fishing to a lesser degree.

2.4 Sample and Sampling Techniques

Stratified and simple random sampling techniques were used in selecting the sample for this study. This is because simple random sampling technique permits the researcher to have representation of the population without bias. In other words, every member of the population had equal chance of being represented or chosen. The sample size used for this study is three hundred and sixteen (316) fisher men, women, and youths of Kporghor community. The sample was determined using Tara Yamane's formula.

2.5 Instrumentation for Data Collection

The questionnaire was the main instrument for data collection; it was constructed by the researcher and submitted to the project supervisor and other experts for corrections and approval. The questionnaire was titled, Oil Spillage Implications on Health (OSIH). The questionnaire has two (2) sections, section A, and section B. Section A contains the personnel data of the respondents while Section B deals with the oil spillage and its implications on the health of Kporghor community dwellers. The respondents indicated their response on Likert 4-point scale of Strongly Agree, Agree, Disagree and Strongly Disagree.

2.6 Method of Data Collection and Analysis

The instruments were administered to the respondents by the researcher in person, with the aim of explaining items that might not be cleared to the respondents. Upon successful completion, the instruments were retrieved directly by the researcher for analyses. The responses from the respondents were collated and presented on tables. Thereafter, simple percentage was used to analyse the data and discussion was made on the analyses.

3.0 Results

Table 1 Causes of Oil Spillage on the Aquatic Environment

S/N	Research Items	SA		A		D		SD	
		Score	%	Score	%	Score	%	Score	%
1	A good number of spills occur due to pipeline and tanker accidents- whereby tanker or pipeline is damaged leading to oil spill.	253	80%	63	20%	0	0%	0	0%
2	One major cause of oil spillage is sabotage- in forms of oil theft or illegal siphoning of oil from punctured pipelines.	190	60%	126	40%	0	0%	0	0%
3	Day to day operations of oil and gas firms such as SPDC and others causes oil spill and consequent pollution of the environment.	190	60%	95	30%	32	10%	0	0%
4	Equipment failure or damage causes oil spill to aquatic environment.	158	50%	126	40%	32	10%	0	0%
5	Corrosion of pipelines and tankers cause	221	70%	95	30%	0	0%	0	0%

rupturing or leaking of old production infrastructures that often do not receive inspection and regular maintenance.

6	Prominent offshore oil platform spills typically occur as a result of a blowout due to excessive pressure on the facility.	126	40%	158	50%	32	10%	0	0%
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SA=Strongly Agree; A=Agree; D=Disagree; SD=Strongly Disagree

Table 1, considers the causes of oil spill in Kporghor community and by extension, the Niger Delta region of Nigeria. Six (6) items were considered on the possible causes of oil spill. About 253 (80%) of the respondents strongly agreed with Item 1, 63 (20%) agree while 0(0%) disagreed or strongly disagreed. On sabotage- in forms of oil theft or illegal siphoning of oil from punctured pipelines, 190 (60%) strongly agreed while 126 (40%) agree that this is one major cause of oil spill. On equipment failure or damage as a cause of oil spill to aquatic environment, 158 (50%) Strongly agreed, 126 (40%) agree, 32 (10%) were of contrary opinion. For Corrosion of pipelines and tankers, 221 (70%) strongly agreed or while 95 (30%) agreed that corrosion of pipelines is one major cause of oil pollution of aquatic environments.

Table 2 Effects / Impacts of oil Spillage

S/N	Research Items	SA		A		D		SD	
		Score	%	Score	%	Score	%	Score	%
7	Oil spillage has a major impact on the ecosystem into which it is released and may constitute ecocide (complete destruction of the ecosystem).	253	80%	32	10%	0	0%	32	10%
8	Oil spills cause immense destruction of the mangroves and seafood within the impacted areas.	284	90%	32	10%	0	0%	0	0%
9	The environment is polluted by oil spills (the water bodies).	126	40%	158	50%	32	10%	0	0%
10	Spills in populated areas often spread out over a wide area, destroying crops and aquacultures through contamination of the groundwater and soils.	221	70%	32	10%	32	10%	32	10%
11	Oil penetrates into the structure of the plumage of birds and the fur of mammals, reducing their insulating ability, and making them more vulnerable to temperature fluctuations and much less buoyant in the water.	95	30%	158	50%	63	20%	0	0%
12	Animals who rely on scent to find their babies or mothers cannot due to the strong scent of the oil. This causes a baby to be rejected and abandoned, leaving the babies to starve, exposed to predators and eventually die.	190	60%	63	20%	63	20%	0	0%

SA=Strongly Agree; A=Agree; D=Disagree; SD=Strongly Disagree

Table 2, considers the effect / Impact of oil spill on the environment. 253 (80%) strongly agreed, 32 (10%) agree, while 32(10%) strongly disagreed that oil spills result to ecocide (complete destruction

of the ecosystem). On destruction of the mangroves and seafood within the impacted areas, almost all 284 (90%) the respondents strongly agreed. For pollution of the aquatic environment, and death of aquatic animals, similar result is seen.

Table 3 Remediation and Prevention of Oil Spillage

S/N	Research Items	SA		A		D		SD	
		Score	%	Score	%	Score	%	Score	%
13	One major way of preventing oil spill is for oil companies to adopt international acceptable best practices while carrying out oil production.	188	80%	95	30%	0	0%	0	0
14	Oil sabotage in form of oil theft should be avoided by workers as it presents the potential for leakage.	253	80%	32	10%	0	0%	32	10%
15	Illegal and artisanry refining (popularly known as kpoo fire) should be avoided by community youths.	126	40%	158	50%	32	10%	0	0%
16	Bioremediation is a proven alternative treatment tool that can be used to treat certain aerobic oil-contaminated environments.	253	80%	63	20%	0	0%	0	0%
17	Biodegradation which involves treating of polluted site using biological means can be adopted in remediation of oil polluted sites in Ogoni.	221	70%	95	30%	0	0%	0	10%
18	Removal of contaminated sediment, invasive vegetation and debris can help in remediation of polluted aquatic environment.	253	80%	63	20%	0	0%	0	0%

SA=Strongly Agree; A=Agree; D=Disagree; SD=Strongly Disagree

Table 4.3, considers the analyses of ways of preventing pollution and methods of remediation. For adoption of internal best practice, 188 (80%) strongly agree, 95 (30%) agree; 80% strongly agreed that oil sabotage/theft should be avoided, 32 (10%) agreed while 32 (10%) strongly disagreed. On remediation methods, 80% favour bioremediation, 70% for biodegradation and 80% for removal of contaminated sediments and removal of debris and invasive vegetation.

4.0 Discussion of Findings

Incessant oil spills, is a common occurrence in Niger Delta and Ogoni in particular. The people of the land live with polluted environment from the activities of oil companies operating within the area. The land is devastated, the environment polluted, means of livelihoods destroyed and life is difficult. On the possible causes of oil spillage on aquatic lives, six (6) research questions were considered and all accepted. Meaning, the study found out that the causes of oil spills on aquatic lives in our communities include: pipeline and tanker accidents- whereby tanker or pipeline is damaged leading to oil spill; sabotage- in forms of oil theft or illegal siphoning of oil from punctured pipelines; day to day operations of oil and gas firms such as SPDC and others; equipment failure or damage; corrosion of pipelines and tankers; blowout due to excessive pressure on the facility among other causes. This finding is similar to those of Nwilo and Badejo (2011) who found that corrosion of pipelines and tankers can cause rupturing or leakage of old production infrastructures that often do not receive inspection and regular maintenance. When any or combination of these happened, oil spills into the aquatic environment leading to its pollution and devastation. These results and findings are also in tandem with the findings and position of Bartha and Bossert (2014) who asserted that oil spills may be due to releases of crude oil from tankers, offshore platforms, drilling rigs and wells, as well as spills

of refined petroleum products (such as gasoline, diesel) and their by-products, heavier fuels used by large ships such as bunker fuel, or the spill of any oily refuse or waste oil.

The effects of incessant oil spill on the aquatic environment is enormous and include, ecocide (complete destruction of the ecosystem); destruction of the mangroves and seafood within the impacted areas; spreading out over a wide area, destroying crops and aquacultures through contamination of the groundwater and soils; oil penetrates into the structure of the plumage of birds and the fur of mammals, reducing their insulating ability, and making them more vulnerable to temperature fluctuations and much less buoyant in the water. Also, animals who rely on scent to find their babies or mothers cannot due to the strong scent of the oil. This causes a baby to be rejected and abandoned, leaving the babies to starve, become susceptible to predators and eventually die in most cases. Also, the water is contaminated with foul-smell and chemical taste.

This is similar to the findings of Ebegbulem, Et al (2013), whose studies show that oil spill represents an immediate fire hazard and destruction of human lives within the affected vicinity. Spilled oil contaminates drinking and utility water supplies as our people rely on surrounding stream waters for drinking, cooking, washing and bathing. Contamination can have an economic impact on tourism and marine resource extraction industries negatively. Oil spills also harm air quality as toxic chemicals in crude oil are mostly hydrocarbons and can introduce adverse health effects when being inhaled into human body. The destruction of mangroves, seafood causes economic hardship as the people are majorly farmers and fisher men. Incessant oil spills have damaged the aquatic and terrestrial habitats, destroying animal, aquatic and human lives, impose hardship and trauma with all forms of attendant health challenges on the people leading to the untimely death of countless numbers (Omajemite, 2011).

Oil spillage has a major impact on the ecosystem into which it is released and may constitute ecocide (Okon, 2017). Immense tracts of the mangrove forests, which are especially susceptible to oil (mainly because it is stored in the soil and re-released annually during inundations), have been destroyed. An estimated 5 to 10% of Nigerian mangrove ecosystems have been wiped out either by settlement or oil (Simire, 2012). These positions or findings are similar to those of this research. Also, the destruction of mangroves, seafood causes economic hardship as the people are majorly farmers and fisher men who have been frustrated as their source of livelihood has been devastated by the incessant spills of oil and fire outbreak in Ogoni and Niger Delta at large.

Several methods are used for the remediation of oil polluted environment. One very effective method is bioremediation. Bioremediation is a technique that may be useful to remove spilled oil under certain geographic and climatic conditions. Bioremediation is a proven alternative treatment tool that can be used to treat certain aerobic oil-contaminated environments. Typically, it is used as a polishing step after conventional mechanical clean-up options have been applied. It is a relatively slow process, requiring weeks to months to effect clean-up. If done properly, it can be very cost-effective, although an in-depth economic analysis has not been conducted to date. It has the advantage that the toxic hydrocarbon compounds are destroyed rather than simply moved to another environment (Badejo&Nwilo, 2014).

Bioremediation is the process where microorganisms transform organic contaminants in oceans, soils, groundwater, sludge and solids, into an energy source. The two main approaches to oil-spill bioremediation are:

- i. Bioaugmentation, in which oil-degrading bacteria are added to supplement the existing microbial population, and
- ii. Bio-stimulation, in which nutrients or other growth-limiting co-substrates are added to stimulate the growth of indigenous oil degraders.

Both of these procedures can be employed to remediate the oil-polluted environment of Ogoniland and Niger Delta.

In terms of management of oil spill and the polluted environment, Badejo and Nwilo (2014) observed and advanced that a number of laws already exist in the Nigerian oil industry through extant laws. Most of these laws provide the framework for oil exploration and exploitation. However, only some of these laws provide guidelines on the issues of pollution (Salu, 1999). According to the Federal Environmental Protection Agency, Lagos Nigeria, the following relevant national laws and international agreements are in effect:

- i. Endangered Species Decree Cap 108 LFN 1990.
- ii. Federal Environmental protection Agency Act Cap 131 LFN 1990.
- iii. Harmful Waste Cap 165 LFN 1990.
- iv. Petroleum (Drilling and Production) Regulations, 1969.
- v. Mineral Oil (Safety) Regulations, 1963.
- vi. International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971.
- vii. Convention on the Prevention of Marine pollution Damage, 1972.

These regulations have to be followed strictly before, during and after decommissioning in order to prevent pollution of the environment.

5.0 Conclusion

Oil spill has occurred several times along the Nigerian coast as a result of upsurge in oil exploration and exploitation activities especially in Ogoniland and Kporghor community in particular. Causes of oil spills along our coast are corrosion of oil pipes and storage tanks, sabotage and carelessness during oil production operations. The impacts of spillage on our coastal areas are enormous. Lives have been lost, the coastal habitat and ecology have also been destroyed. There have been numerous calls and agitations for resource control by oil producing states in the country. These calls have made the Federal Government to give the states the rights to control minerals within 200m bathy lines and the coastlands. The polluted waters and lands in Ogoni and Niger Delta must be cleaned following UNEP recommendations with politicizing the process. The community must stop all forms of illegal refining and bunkering to save our environment.

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Implications of Flood on the Health of the People of Abarikpo Community in Orashi, Rivers State

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Abstract

Globally, flood disasters are reported to have one of the most devastating effects on economic development, livelihoods, agriculture, environment and the health of victims. This paper examined flood and its implications on the dwellers of Abarikpo community, Ahoada-East Local Government Area, Rivers State. The justification for this study is informed by the damages done by flood on the environment which in turn affects the well-being and the health of the people. The objectives of the study were to; examine the causes of flood in the study area; and assess its effects on the environment and health of the community dwellers. Descriptive survey design was adopted while purposive sampling techniques was employed in determining the study sample. Findings identified the causes flooding to include natural factors such as heavy rain fall; overflow of rivers and human factors such as deforestation, overgrazing, poor town planning and sanitations. The revealed effects of flooding include; overflows of farmlands, living houses, environment, drinking wells. The implications include destructions of crops, spreading of infestations on soil and water, degradation of agriculture land, contamination of drinking well-waters and wide spread of infectious waterborne diseases among the community dwellers especially children.

Keywords: diseases, environment, flood, health, infestation

1.0 Introduction

Globally, flood disasters (whether natural or human-caused) are considered to have one of the worst consequences on human existence in general, as well as economic development, livelihoods, agriculture, and health (Musah & Oloruntoba, 2013). Natural disasters have a substantial impact on health, the economy, and food security, especially in rural agricultural towns like Abarikpo where crop failures are caused by climate change-related floods and the likelihood of a food shortfall due to a bad harvest is increased (Tologbonse, et al, 2010; Tunde, 2011); the devastation of the environment; contamination of drinking waters and consequently, health challenges such as cholera and diarrhoea among other diseases.

A flood is a form of a disaster which involves an overflow of water that submerges lands that are usually dry. It could also be termed as an inflow or overflow of tide beyond the riverbank. Flood as an area of research in the hydrology field is very important to the fields of agriculture, civil engineering, and public health. People and communities are negatively impacted by floods on a social, economic, and environmental level. The consequences of floods—both positive and negative—can vary significantly depending on the location and intensity of flooding as well as the vulnerability and worth of the built and natural ecosystems they touch. There is no longer any doubt that the flooding phenomena is a component of current global environmental change. Flooding hazard turned out to be a recurrent and most commonly occurring natural hazard accounting for about one-third of all geophysical hazards negatively impacting the citizenry more than any other natural disaster as observed by Obeta (2014), Nigeria, not excluded.

Several Nigerian states, including Lagos, Cross Rivers, Adamawa, Plateau, Rivers, Bayelsa, Kebbi, and Zamfara, to name a few, have reportedly seen unprecedented flood levels (Obeta, 2014; Famous, 2013). These floods typically have wide-ranging effects on the physical, psychological, social, and cultural spheres. In addition to the loss of human lives, these calamities are followed by the devastation of homes, livelihoods, transit routes, farms, animals, marketplaces, and public utility infrastructure, which exacerbates economic and cultural challenges.

According to the Inter-Governmental Panel on Climate Change (IPCC, 2017) assessment, the rise in global average temperature is to blame for the rise in floods and other severe weather events. Scientists who have been monitoring global temperatures throughout time have seen an almost unnoticeable gradual rise in the average global temperature (Parry et al, 2017). Global warming causes warmer oceans, melting glaciers, and rising sea levels, all of which put towns at risk of floods (Gulledge, 2012; Ogbanga, 2015) particularly those found around rivers, creeks, and seacoasts, as is the case of Orashi region of the Niger Delta, where Ahoada is situated.

Also, human activities such as indiscriminate waste disposal especially in gutters, blockage of dams, burning of fossil fuel, deforestation, overgrazing and building on running waterways, among others, contribute to the occurrence of and vulnerability to flooding. Asthana and Asthana (2013) note that floods can be local, impacting certain neighbourhoods or communities, or global, affecting whole river basins and several different states or nations, as was the case during the 2012 flood disasters in Nigeria. Therefore, flooding can occur naturally or artificially. It is an issue that demands due treatment since, as, in the cases of Ahoada, Omoku, Bayelsa, and other regions of Nigeria, it has a devastating effect on the economy and the general well-being of the populace, especially their health. The implication of flooding disasters is the high rate of movement of people from the affected areas to places where they can be safe. Also, during flooding, every commercial activity is suspended, and some of them are even directly or indirectly destroyed. According to the 2014 World Flood Disaster Report, flooding is one of the most environmentally harmful disasters, and because of its extreme size, it causes more fatalities than storms (41% versus 44%). In addition to the loss of human and animal life, the annual cost of the worldwide flood damages to households' livelihood, agriculture, infrastructure, and public utilities is in the billions of dollars (Parry, et al, 2017; International Federation; Red Cross and Red Crescent Society, 2020).

1.1 Statement of Problem

Unfortunately, climate change brought on by global warming is the biggest environmental shift the world is now experiencing. The rise in sea level, one of the main effects of global warming, is anticipated to cause floods, particularly in low-lying coastal regions, which will harm the health of the most vulnerable people, particularly women and children. The intensity of floods, which worsens food shortages and health problems, is mostly brought on by modest fluctuations in rainfall. Since climate change has an impact on many facets of human and environmental wellness, the link between climate change and health is highly complicated. These include problems accessing hospitals, contamination of well and stream waters, distribution of reptiles and other life-threatening animals and insects across buildings and residential areas, food insecurity and a lot more.

Flooding among all the common catastrophes has caused extreme harm to human well-being and communities. The harm of the surge incorporates human harms and losses, overwhelmed houses, flooding of private and mechanical places, overwhelmed farmlands and misfortune in the agrarian generation, particularly in country communities like Abarikpo in Ahoada East prevailed by children, ladies and the elderly who depend generally on their farmlands for their source of nourishment and business; well and streams as the main source of drinking and utility water. It is, therefore, necessary to study flooding and its implications on the environment and health of rural dwellers of Abarikpoto suggest solutions and or mitigation measures to improve the health and living condition of the people.

2.0 Research Methodology

2.1 Design of Study

This study adopted a survey design to investigate the flooding and its implication on the environment and the health of Abarikpo dwellers in the Ahoada-East Local Government Area of Rivers State. It employed both the qualitative approach which seeks to conduct and work with more descriptive data in context and events and the quantitative approach which allows for the data collected to be analysed numerically, make predictions, test causal relationships and generalize results to wider populations.

2.2 Population of Study

The population of this study is made up of adult men and women of Abarikpo Community in Ahoada-East Local Government Area, who have experienced flooding from time to time and had felt its impacts on their health, livelihood and the environment.

2.3 Study Location

The study was carried out in Abarikpo community of Ahoada-East Local Government Area; one of the twenty-three (23) Local Government Areas of Rivers State. Ahoada East is a local government area situated in the Rivers State of the South-South geopolitical enclave of Nigeria. Created in 1996, the LGA has its headquarters in the town of Ahoada and comprises towns such as Abarikpo, Ebiro, Edeoha, Mbiama, Odiemudie, Okolobiama, and Ubie. Ahoada-East is of geographical coordinates, Latitude: 5.07027, Longitude: 6.64302 5° 4' 13" North, 6° 38' 35" East; covering an area of 34,100 hectares, 341.00 km² (131.66 sq mi) and an altitude of 10 m (33 ft).

2.4 Sample and Sampling Techniques

Purposive sampling technique was used in selecting the sample for this study. This is because the researcher needed only target respondents that have experienced and have been affected by the ravaging floods that plague the area from time to time. The sample size used for this study is three hundred and twenty-two (322) men, women, and youths of Abarikpo community who have experienced flooding in the community.

2.5 Instrument for Data Collection

The questionnaire was the main instrument for data collection. It was structured and titled, Flooding and its Implications on Health (FIH). The questionnaire has two (2) sections, section A, and section B. Section A contains the personnel data of the respondents while Section B deals with the flooding, its effects and health implications on the health of Abarikpo dwellers. The reliability of the instrument used in this research work was done through a test re-test procedure; with a correlation coefficient of 0.75 using Pearson's moment correlation.

2.6 Method of Data Collection and Analyses

The instruments were administered to the respondents by the researcher in person, to explain items that might not be cleared to the respondents. Upon successful completion, the instruments were retrieved directly by the researcher for analysis. The responses from the respondents were organized into frequency distribution tables to determine the mean. The likert 4-Point scale was used with the standard mean of 2.50 of which the item means would be compared.

3.0 Results

The results of the findings are presented in three tables- considering the causes, effects and implications of flooding.

Table 2: The Causes of Flooding in Abarikpo

Causes of Flooding	Sample	Score	Mean	Decision
1 Flooding occurs naturally due to prolonged rainfall over several days or extreme rainfall within a short space of time.	322	966	3	Accept
2 Melting of the ice cap/glaciers causes the river level to rise and overflows thereby causing flooding of dry lands.	322	934	2.9	Accept
3 Flooding could be caused by the disturbance of land acommon and primary form of environmental degradation.	322	1030	3.2	Accept
4 Overpopulation, gutters & drainage blockage and building on waterways trigger flooding.	322	998	3.1	Accept
5 Poor town planning causes flooding within an	322	1063	3.3	Accept

environment					
6	Activities such as deforestation, poor farming methods, overgrazing, over-cultivation, increase in population, levees or dam failure and development activities could trigger flooding.	322	1095	3.4	Accept

Standard mean, X = 2.5

Table 3: Effects of Flooding on the Environment

Effects of Flooding	Sample	Score	Mean	Decision	
7	The impacts of a flood are manifested in the loss of life, and damage to buildings and other structures, including bridges, sewage systems and roadways.	322	1127	3.5	Accept
8	Flooding disrupts normal drainage systems of the community making sewage spills a common occurrence in the environment; this also results in serious health hazards alongside standing water and wet materials in homes.	322	1095	3.4	Accept
9	Flooding destroys farmlands and amateur farm crops.	322	1095	3.4	Accept
10	Flooding takes over people's houses and environment.	322	1095	3.4	Accept
11	Flood pushes and spreads deadly animals like snakes, and crocodiles, to household and within the living environment of humans	322	1030	3.2	Accept
12	Flood characteristically disperses and spreads dirt, and waste, within living neighbourhoods.	322	1159	3.6	Accept

Standard mean, X = 2.5

Table 4: Implications of Flooding on Health

Implication of Flooding	Sample	Score	Mean	Decision	
13	Flood exposes humans to imminent danger and loss of lives in many instances.	322	1095	3.4	Accept
14	The destruction of crops and farmlands by flooding causes food scarcity and insecurity, starvation, hunger, and malnutrition.	322	1159	3.6	Accept
15	Destruction of both animal and human habitats exposes them to danger, infectious diseases, and death in some cases.	322	1030	3.2	Accept
16	Flooding of wells and other sources of drinking water exposes humans to waterborne diseases such as diarrhoea, corella, typhoid fever, etc.	322	1063	3.3	Accept
17.	The period of a flood could be a frightening time whereby patients in some cases cannot go to health facilities or administrations which in turn leads to tall mortality rate.	322	1095	3.4	Accept
18.	Transportation to rustic zones for satisfactory well-being care, and conveyance benefits are as a rule exceptionally troublesome during flood disasters. Subsequently, numerous pregnant ladies are not given appropriate restorative care and a few indeed deliver their babies outside the eye-watch of health facilities and personnel. This sometimes results in complications that could have been avoided.	322	1127	3.5	Accept

Standard mean, X = 2.5

4.0 Discussion of Findings

Table 2 considers the causes of flooding in Abarikpo Community of Ahoada-West L.G.A., of Rivers State. Six research questions were considered. The means of the six items were all accepted as they are above the standard mean of 2.50. In other words, the respondents agreed that flooding occurs naturally due to prolonged rainfall over several days or extreme rainfall within a short space of time. Also, the majority of them strongly believed and agreed that melting of the ice cap/glaciers causes the river level to rise and overflows thereby causing flooding of dry lands. Land disturbance is another environmental degradation that causes flooding as observed by the respondents. Over population, gutters & drainage blockage and building on water ways triggers flooding; poor town planning causes flooding within an environment and activities such as deforestation, poor farming methods, overgrazing, over-cultivation, increase population, levees or dam's failure and development activities were also identified as factors that could trigger flooding.

Table 3, shows the results for the effects of flooding on the environment of Abarikpo Community in Ahoada-East L.G.A. of Rivers State. Six items were considered under Research Question 2. The means of items 7 to 12 were all greater than the standard mean of 2.50 implying that the respondents either agreed or strongly agreed that the effects of flooding include: loss of life, damage to buildings and other structures- such as bridges, sewage systems and roadways, farmlands and the physical environment. Also, flooding disrupts normal drainage systems of the community making sewage spills a common occurrence in the environment. This in turn, results in serious health hazard alongside with standing water and wet materials in homes. Flooding destroys farm lands and amateur farm crops. It equally destroys people's houses and pollute the environment. Flood characteristically, disperses and spreads dirt, waste, within living neighbourhoods. Deadly and destructive animals like snakes, crocodiles, are pushed to households and within the living environment of humans by flood. These were all identified by the respondents as effects of flooding in Abarikpo community of Ahoada in Ekpeye land of the Niger Delta.

On the implication of flooding on the environment and health of dwellers of Abarikpo community in Ahoada, six items were considered under Research Question 3. The respective means of these items were also greater than the standard mean of 2.50, hence, they were all accepted as clearly shown on Table 4. Most of the respondents strongly agreed that the implications of flooding include: exposure of humans to imminent danger and loss of lives in many instances. This happens directly by driving water or driven objects and or exposure of humans to poisonous organisms or amphibians like snakes, crocodiles and bacteria which causes infections.

The destruction of crops and farm lands by flooding causes food scarcity and insecurity, starvation, hunger, and malnutrition and consequently, stunted growth of children, weakened immune system, avoidable sicknesses and death in some cases. Also, the destruction of both animal and human habitat by flooding, exposes them to danger, infectious diseases, and death in many cases. Flooding of wells and other sources of drinking water exposes humans to waterborne diseases such as diarrhoea, corella, typhoid fever, etc.

Besides, the period of flood could be a frightening time whereby patients need get to health centers or hospitals but are unable, which in turn leads to tall mortality rate especially among children and pregnant ladies. Typically, transportation to country regions or cities for satisfactory wellbeing medical centres is usually exceptionally difficult. Consequently, numerous pregnant ladies are not given proper therapeutic care and some give birth outside the health care facilities are not adequately and properly attended. This sometimes, results to complications and death that could have been avoided.

5.0 Mitigation Measures/ Way Forward

The way forward includes construction of floods ways- as channels of a river or other watercourse. Other proactive step that could be taken is the development of dams, supplies or maintenance lakes to hold additional water amid times of flooding: Numerous dams and their related stores are outlined totally or in part to help in surge security and control. Dams are counterfeit conduits that carry abundance stream water amid overwhelming precipitation (Ekine & Talbot, 2020).

Planting vegetation to hold additional water: Planting vegetation are characteristic flood-control structures to battle stream flooding and water surges limit waterways amid surges by giving common scope of arrive that anticipate runoffs from bursting floodplains.

Building of waterways and coastal protections: In numerous nations, waterways inclined to surge are regularly carefully overseen. Guards as levees, bunds, stores and weirs are utilized to anticipate waterways from flooding their banks.

Flood caution: Surge caution is the arrangement of progress caution of conditions that are likely to cause flooding to property and a potential chance to life. The most reason of flood caution is to spare life by permitting individuals, bolster and crisis administrations time to get ready for flooding. The auxiliary reason is to decrease the impacts and damage of flooding. Within the villages, the services of town criers, churches, associations can be employed to reach out to the people.

5.0 Conclusion

Flood is not alluring, subsequently, measures to turn away flooding must be followed entirely to turn away the negative effects of surge within the think about range and nation at large. Numerous communities in Nigeria especially those at the coast just like the Orashi region of Rivers State, are possibly uncovered to flooding coming about from extraordinary climate occasioned by such an overwhelming/ drawn out precipitation, coastal flooding and wind storm. This spells the urgent need for communities to engage in efforts aimed at combating the effects of flooding through the enhancement of community resilience and adopting local strategies to combat the flood in combination with government programs. Unfortunately, the government has not done much on flood control such as: construction of flood ways, drainages, gutters, dams, reservoirs or retention ponds, as obtainable in other climes to hold extra water during times of flooding. The community on their own part must planting vegetation to retain extra water, build rivers and coastal defences and must avoid over grazing, blocking of gutters, building on water ways as well as maintain regular weekly or monthly sanitations.

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Attitudes of Health Records Officers Towards HIV/AIDS Patient Care in University of Port Harcourt Teaching Hospital (UPTH) Rivers State, Nigeria

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Abstract

This study investigated the attitudes of health records officers towards HIV/AIDS patient care at the University of Port Harcourt Teaching Hospital (UPTH), Rivers State, Nigeria, with the aim of identifying the factors propelling their attitudes. A survey research design was adopted. A sample size of 80 was used for the study purposively. Out of the 80 copies of the questionnaire, 63 copies (79%) were properly returned. The data were analysed using descriptive statistics. Results showed that lack of motivation (61, 96.8%) and lack of standard working tools (60, 95.2%) were the leading factors for poor attitudes of health records officers towards HIV/AIDS patient care in UPTH. Findings also showed poor quality of patient care management (62, 98.4%), poor provider-patient relationship (60, 95.2%), poor referral management (59, 93.7%) and inaccurate health information sharing (58, 92.1%) as effects of health records officers' poor attitudes towards HIV/AIDS patient care in UPTH. The study recommended employee training and retraining, supply of suitable infrastructure and tools by the management of UPTH.

Keywords: attitude, health records officer, HIV/AIDS, patient care

BACKGROUND TO THE STUDY

The attitudes of health records officers are relatively enduring organizational beliefs, feelings, and behavioural tendencies towards objects. It comprises three components namely; Cognitive (Factual knowledge of an object), affective (emotional response towards an object), and behavioural (behaviour towards the object) (Elkin, 2014). The ability of health records officers to galvanize their attitudes towards patient care by collecting, analysing, and utilizing appropriate and reliable data always facilitates effective, efficient, and timely quality health service delivery to the population. Patients living with HIV/AIDS are often faced with many physical, psychological, social, and economic effects as a result of the health challenge including their loved ones and the larger community (Bachmann &Booyesen, 2003; Hilhost, et al., 2006; Hosegood, et al., 2007). Fear, stigma, and discrimination have continued to accompany the HIV/AIDS pandemic (UNAIDS, 2000). Therefore, actions or most significant steps need to be taken by the government and stakeholders of health systems to reduce and protect patients against discrimination and stigma so that the people living with HIV/AIDS's psychological well-being and general health status could be improved more efficiently.

Mahendra, et al., (2007) opined that discrimination against patients especially those living with HIV/AIDS often occurs in the health records department and the entire health sector. Studies have documented negative attitudes of healthcare workers toward people living with HIV/AIDS in healthcare settings in Nigeria and elsewhere (Fido & Al-Kamezi, 2002; Quach, et al., 2005). Good attitudes and communication attributes of health records officers can hinder or allow patients to share vital information essential for an accurate diagnosis of their problems. More so it can enable the healthcare practitioner to have a better understanding of their patient's needs and potentially leads to better symptom reduction. A positive attitude of health records officers toward HIV/AIDS patients improves patients' understanding and adherence to treatment plans, reduces work-related stress, and burnout for physicians, and leads to positive effects on healthcare costs, decrease in diagnostic testing, referrals, and length of hospital stay.

In many sub-Saharan African countries, specifically Nigeria, there have been apprehensions about the way and manner some health records officers relate to and as well as communicate with patients in health facilities. Furthermore, it has been observed that health workers including health records officers sometimes do not treat patients or clients with empathy and responsiveness. Reis et al., (2005) stated that a significant number of health professionals showed discriminatory attitudes and engaged in unethical behaviour towards patients living with HIV/AIDS when they visited health facilities for medical attention. According to Oyeyemi, Oyeyemi, and Bello (2006), physicians and nurses are always uncomfortable when administering medical procedures to HIV/AIDS-infected patients in health facilities. Fransman, et al., (2000) averred that stigma and discrimination in health care settings could jeopardize HIV/AIDS prevention and care efforts.

More, importantly discrimination and stigmatization continue to exist in health care settings. For instance, if a health care provider is infected by a positive HIV/AIDS patient in the course of delivering health services to a patient living with HIV/AIDS and the healthcare worker is unsupported by hospital authorities and colleagues it will lead to his/her unfavourable attitudes toward patients and colleagues. This act of some healthcare workers always engenders fear in other healthcare workers such that they are reluctant to be screened for HIV/AIDS, thereby putting themselves at risk by delaying the initiation of treatment in themselves (Oyeyemi, Oyeyemi& Bello, 2008). According to the World Health Organization [WHO] (2018) stated that human immunodeficiency virus (HIV) affects the cells of the immune system and destroys them or hinders their activity which in turn, leads to a continued decline of the immune system causing an immune deficiency. However, the attitude of health records officers could be in a favourable or an unfavourable mood depending on the evaluation reaction towards the patient as a result of beliefs, feelings, or intended behaviour. Hence, this study seeks to investigate the attitudes of health records officers toward patients living with HIV/AIDS at the University of Port Harcourt Teaching Hospital, Rivers State, Nigeria.

Statement to the Problem

Every patient including those living with HIV/AIDS is expected to receive empathetic and responsive healthcare services provided by reliable healthcare providers from health facilities without discrimination and stigmatization. However, in most public health facilities patients living with chronic illnesses and particularly HIV/AIDS are often faced with many physical, psychological, social, and economic effects due to unfavourable attitudes of some health care providers towards them whenever they visit health facilities for their health care interventions (Hosegood, et al., 2007). Most times, fear, stigma, and discrimination have continued to accompany the HIV/AIDS pandemic (UNAIDS, 2000), thereby leading to poor quality health service delivery. Although literature from developed countries and some developing countries has shown the influence of healthcare providers' attitudes towards HIV/AIDS patients in hospitals, little is found in Rivers State particularly on health records officers in UPTH. These observations drive the researcher's intent to investigate the attitudes of health records officers toward patients living with HIV/AIDS at the University of Port Harcourt Teaching Hospital, Rivers State, Nigeria.

Research Questions

Three research questions were formulated to guide this study:

1. What are the factors that often lead to poor attitudes of health records officers towards HIV/AIDS patient care at the University of Port Harcourt Teaching Hospital, Rivers State, Nigeria?
2. What are the effects of poor attitudes of health records officers toward HIV/AIDS patient care in University Port Harcourt Teaching Hospital, Rivers State, Nigeria?

Concept of Medical Record

In order to manage patient care effectively, health records are a crucial component. An adequate health record may indicate poor medical care, whereas good health care typically entails good health record administration practices. Health records were defined by Huffman (2010) as the compilation of health data into a jacket or case folder. She claims that quality of healthcare during hospitalization is determined by the "who, what, why, where, when, and how" of their medical record or health information. Knowledge about the patient and his or her care is included in the construction,

maintenance, and retention of proper health records. Furthermore, the patient's medical history is documented in the health records. The documented records served as a vehicle for communication among and amongst all health care workers who interact with patient care management. They contained the information required to plan, provide, and evaluate the care given to the individual.

According to Mogli (2011), a patient's health record is an organized written record that includes information about the patient's identification, medical history, physical examination results, laboratory test results, diagnosis, therapy, and surgical procedures, as well as the hospital stay. When the record is complete, so according Mogli, it should have enough information to support the investigation, diagnosis, course of treatment, length of hospital stay, and feature courses of action. He stated that specific skills were necessary for all medical practitioners to provide patients with comprehensive care. Thus, the "team" of healthcare professionals who use health records as a communication tool constantly engage and create new content as a result. As more than just a result, it is fundamental that all parties involved in the patient's care promptly document their observations, interventions, and care. It's not fate that results in effective health records administration in a hospital or other healthcare facility. As a result, all health records employees in any healthcare facility must constantly collaborate with physicians, nurses, and other healthcare professionals in order to complete patient records accurately and promptly.

Concept of HIV

The CD4 and CD8 subpopulations of T-lymphocytes, which are known to cause the Acquired Immune Deficiency Syndrome (AIDS), are destroyed or rendered inactive by the Human Immunodeficiency Virus (HIV) (Van Dam 2017). This causes the immune system to gradually deteriorate, leading in immunological weakness and the development of AIDS. The immune system eventually loses its ability to fight against infections and diseases effectively, which opens the door for certain opportunistic infections (WHO 2018). Numerous other opportunistic illnesses exist, such as toxoplasmosis, recurrent pneumonia, and tuberculosis. More than twenty (20) opportunistic infections, as well as HIV-related cancers such Kaposi sarcoma, non-Hodgkin lymphoma, and invasive cervical cancers, may really be present during this stage of the acquired immunodeficiency syndrome, which is also known as AIDS (WHO, 2018).

Concept of Attitude

Attitude refers to a manner of thinking feeling or behaving that reflects a state of mind or disposition. Thus, according to Cherry (2018), attitudes are not communicated verbally but rather through our body language, intonation, and gaze, which are always accompanied by a natural expression. A person's attitude may also be viewed as a predisposition for particular behavior toward another person or as a perspective on the world around them. Attitudes are gained through experience and contact with the world around us which could also change by new experiences and information. In essence, Cherry (2018) emphasized the notion that attitudes are created through a learning process, which can take a variety of forms, including classical conditioning, operant conditioning, observational learning, and imitation. According to Marković-Denić and Davhana-Maselesele (2016), caring for patients living with HIV/AIDS requires special skills. Hence, health workers caring for these categories of patients need to acquire relevant attitudes, knowledge, and skills as they become involved in the multi-disciplinary problems of AIDS care and prevention.

Chujor (2005) posited attitude to be the positive or negative evaluation of people, objects, ideas, or events based on the kind of result and experience obtained from the person or object one evaluated. Chujor further argued that attitude cannot be changed without changing values first and that beliefs hang on values just as attitudes hang on beliefs. If patients believe that health records officers are wicked they cannot be free to interact with the health records officers. Therefore, the patient's attitude toward the health records office usually turns negative every time they visit the hospital for their health issues. Similarly, if the patients believe that health record officers' attitudes are favourable to them, their attitudes towards health records officers will be positive and will in turn lead to their retention and loyal to the health facility. Despite the fact that some healthcare workers have negative attitudes and are always hesitant to provide healthcare services to HIV/AIDS patients in

their facilities, Zarei et al. (2015) acknowledged that some healthcare professionals do have positive attitudes towards patients living with the disease.

EMPIRICAL REVIEWS

Omole, et al., (2019) investigated the influence of health records management practice on the Disease Surveillance and Notification systems in Atakunmosa West Local Government Area, Osun State, Nigeria. The finding revealed that the survey research design was adopted to establish a relationship between health records management practice and disease surveillance and notification system in Atakunmosa West Local Government Area of Osun State, Nigeria. The result showed that 115 out of 120 questionnaires administered were retrieved with a 96% total response rate and that the data obtained were analysed using simple percentage distribution. From the findings, the author concluded that Health record management practice by all standards is the backbone of disease surveillance and notification system, which involves the official reporting of designated diseases to designated health authorities for action.

Similarly, Adebayo (2019) examined the role of health information officers in the prevention and management of HIV/AIDS in three tertiary health institutions in South Western Nigeria with the application of a descriptive survey research method and structured questionnaire. The findings revealed that the responsibilities of health information officers included the creation of helpful information for HIV/AIDS prevention, participation in voluntary counseling and testing, promotion of condom use, preaching of abstinence and faithfulness, educating HIV-positive mothers about the necessity of prophylaxis and living positively, unique identification of the patient, keeping records, filing of investigative results, serving in monitoring and evaluation, and more. The findings also showed that the presence of computers, electronic databases, air conditioning, furniture, stationery, financial compensation, training, and recognition helped health information officers perform their jobs more effectively in healthcare facilities. More so, the findings showed over expectation from supporting agencies, exhaustion due to complex services, power failures, complex protocol, and shortage of staff as factors militating against health information officers' roles in the prevention and management of HIV/AIDS in health institutions.

The study carried out by Okpala, et al. (2017) on nurses' knowledge and attitude toward the care of HIV/AIDS patients in South East, Nigeria findings revealed that there were significant relationships between age ($P < 0.05$), marital status ($P < 0.05$), a professional cadre of the respondents ($P < 0.05$) and their level of knowledge of HIV/AIDS patient care. The result showed that a descriptive survey design was used with the aid of a five-point Likert. Results of the questionnaire administered to 240 nurses caring for PLWHA revealed that 227 (94.6%) of the respondents had a positive attitude toward the care of PLWHA. The findings also showed fear of contagion 56 (82.4%), social stigma 10 (14.7%), and culture/religion 6 (8.8%) as factors that negatively influenced nurses' attitudes in caring for PLWHA. The finding further revealed that there is a need for more in-service training on HIV/AIDS for nurses to improve nurses' knowledge and positive attitude towards the care of PLWHA

METHODOLOGY

A survey research design was adopted for the study. According to Tanny (2018), survey research designs are procedures in quantitative research in which investigators administer questionnaires either in mail format, in an interview, or in a one-on-one interview to a population of interest and statistically analyze the data to describe trends in responses to questions and to test research questions or hypotheses that guided the study. For the purpose of this research, the target population of the study includes all HIV/AIDS patients in UPTH and Rivers State. The population of the study is 80 patients, both male and female HIV/AIDS patients. Based on the small population size (80), the researchers adopted a total enumeration of 80 for the study. The only research instrument for this study was a self-developed, structured, and scrutinized questionnaire. The research instrument was subjected to a validity and reliability test and found worthy of measuring what it ought to achieve before being put to use for the study. A simple random technique was used by the researchers to personally administer the research instrument to the respondents during clinic hours in the hospital. While the data collected with the aid of the structured questionnaires was analyzed using descriptive statistical tools such as

percentages and frequency distribution tables, the management of the UPTH was notified, and approval was granted to the researchers before questionnaires were administered along with consent forms to the respondents, bearing in mind confidentiality and ethical obligations.

RESULTS

Research Question 1: What are the factors that often lead to poor attitudes of health records officers towards HIV/AIDS patient care at the University of Port Harcourt Teaching Hospital, Rivers State, Nigeria?

Table 1 shows respondents' responses to factors that often lead to poor attitudes of health records officers towards HIV/AIDS patient care at the University of Port Harcourt Teaching Hospital, Rivers State, Nigeria.

S/N	ITEMS	FREQUENCY		FREQUENCY	
		YES	%	NO	%
1	Lack of ICT skills is one of the contributing factors to the poor attitudes of HROs towards HIV/AIDS patient care in UPTH and PH.	48 (76.2)		15 (23.8)	
2	In UPTH and PH, HROs' attitudes toward HIV/AIDS patient care are typically influenced by a lack of advanced knowledge in the practice of health information management.	50 (79.4)		13 (20.6)	
3	Weak policy is always conducive to HRO attitudes toward HIV/AIDS patient care in UPTH and PH.	43 (68.3)		20 (31.7)	
4	Poor leadership style is a contributing factor to the poor attitudes of HROs towards HIV/AIDS patient care in UPTH and PH.	54 (85.7)		9 (14.3)	
5	In UPTH and PH, a lack of innovation and acceptance of change always results in poor attitudes of HROs toward HIV/AIDS patient care.	47 (74.6)		16 (25.4)	
6	Lack of standard working tools contributes to the poor attitudes of HROs towards HIV/AIDS patient care in UPTH and PH.	60 (95.2)		3 (4.8)	
7	Poor attitudes of HROs toward HIV/AIDS patient care in UPTH and PH are always the result of unfavourable working conditions.	57 (90.5)		6 (9.5)	
8	Religion and cultural variety do contribute to the poor attitudes of HROs towards HIV/AIDS patient care in UPTH and PH.	39 (61.9)		24 (38.1)	
9	Poor management support frequently contributes to the poor attitudes of HROs towards HIV/AIDS patient care in UPTH and PH.	40 (63.5)		23 (36.5)	
10	Lack of motivation always contributes to the poor attitudes of HROs towards HIV/AIDS patient care in UPTH and PH.	61 (96.8)		2 (3.2)	
Total		499(79.2%)		131(20.8%)	

Table 1 revealed that items 10, 6, 7, 4, and 2 with figures 61 (96.8%), 60 (95.2%), 57 (90.5%), 54 (88.7%), and 50 (79.4%) are frequently the leading factors for poor attitudes of health records officers towards HIV/AIDS patients' care in UPTH and PH, respectively. The findings summary also revealed that all items with YES responses with a figure of 499 (79.2%) are contributing factors to the poor attitudes of HROs towards HIV/AIDS patient care in UPTH and PH.

Research Question 2: What are the effects of poor attitudes of health records officers toward HIV/AIDS patient care in the University Port Harcourt Teaching Hospital, Rivers State, Nigeria?

Table 2 shows respondents' responses to the effects of poor attitudes of health records officers towards HIV/AIDS patient care at the University of Port Harcourt Teaching Hospital, Rivers State, Nigeria.

S/N	ITEMS	FREQUENCY	
		YES %	NO %
	The followings are some of the effects of poor attitudes of HROs towards HIV/AIDS in UPTH, PH		
1	Poor provider-patient relationship	60 (95.2)	3 (4.8)
2	Lowly reputation of the hospital and healthcare providers	56 (88.9)	7 (11.1)
3	Poor quality of patient care management	62 (98.4)	1 (1.6)
4	Loss of revenue	49 (77.8)	14 (22.2)
5	Inaccurate health information sharing	58 (92.1)	5 (7.9)
6	Increase of death rate	50 (79.4)	13 (20.6)
7	Mutual conflict	43 (68.3)	20 (31.7)
8	Lack of patient retention	46 (73)	17 (27)
9	Poor referral management	59 (93.7)	4 (6.3)
10	Unwarranted legal litigation	45 (71.4)	18 (28.6)
TOTAL		528 (83.8%)	102(16.2%)

Table 2 shows that items 3, 1, 9, 5, 2, and 6 with figures 62 (98.4%), 60 (95.2%), 59 (93.7%), 58 (92.1%), 56 (88.9%), and 50 (79.4%) are frequently the leading effects of health records officers' poor attitudes toward HIV/AIDS patients' care at the University of Port Harcourt Teaching Hospital in Port Harcourt. The results summary showed that all the items with "yes" responses (figure 4528, 83.8%) are the effects of poor attitudes of HROs towards HIV/AIDS patients' care in UPTH, Port Harcourt.

Discussion of Findings

Research Question 1 focused on the factors that often lead to poor attitudes of health records officers towards HIV/AIDS patient care at the University of Port Harcourt Teaching Hospital, Rivers State, Nigeria. According to table 1, one of the major factors contributing to HROs' poor attitude toward HIV/AIDS patient care management is a lack of ICT skills (YES responses of 48, 76.2%), a lack of advance knowledge in the practice of health information management (NO responses of 15, 23.8%), and a lack of ICT skills (YES responses of 50, 79.4%). Hence, the results are in agreement with Markovi-Deni and Davhana-Maselesele (2016), who posited that caring for patients living with HIV/AIDS requires special skills.

Weak leadership, with Yes responses of 54(85.7%) and No responses of 9, poor policy, with Yes responses of 47(74.6%) and No responses of 16, and a lack of standard working tools, with Yes responses of 60(95.2%) and No response value of 4, and weak policy, with Yes responses of 43 (68.3%) and No responses of 20(31.7%). Poor management support received 40(63.5%) YES responses, while lack of motivation received 61(96.8%) YES responses, and religion/culture variety received 24(38.1%) NO responses. The findings summary of the YES responses figure of 499(79.2%) indicates that HROs generally have poor attitudes toward HIV/AIDS patients.

Research Question 2 concentrated on the effects of poor attitudes of health records officers toward HIV/AIDS patient care in the University Port Harcourt Teaching Hospital, Rivers State, Nigeria. Poor provider-patient relations, a low reputation, poor quality of care, revenue loss, inaccurate health information sharing, an increase in the death rate, mutual conflict, a lack of patient retention, poor referral patient management, and unwarranted legal litigation were revealed by table 2 findings, with YES response figures of 60(95.2%), 56(95.2%), 62(98.4%), 49(77.8%), 58(92.1%), 50(79.4%), 43(68.3%), and 46(73%). The results affirmed Chujor's (2005) investigation that revealed that if patients believe that health record officers' attitudes are favourable to them, their attitudes towards health record officers will be positive, which will in turn lead to their loyalty to the facility Similarly, these findings are consistent with the UNAIDS (2000) report, which stated that fear, stigma, and discrimination have often accompanied the HIV/AIDS pandemic as a result of healthcare providers' poor attitudes, resulting in poor quality health service delivery.

These findings imply that when HROs have negative attitudes toward patients, particularly those living with HIV/AIDS, the death rate rises. There are mutual conflicts, a poor reputation, and a

poor healthcare provider-patient relationship, all of which are bound to wreak havoc on the healthcare delivery system. This study finding corroborates Hosegood et al. (2007) results that revealed that in most public health facilities, patients living with chronic illnesses, and particularly HIV/AIDS, are often faced with many physical, psychological, social, and economic effects due to the unfavourable attitudes of some health care providers towards them whenever they visit health facilities for their health care interventions.

Conclusion:

From the findings and summary above, we can easily conclude that good attitudes of healthcare providers (health records officers) towards HIV/AIDS patients often lead to quality healthcare delivery, a good reputation, and accurate health information sharing. However, lack of ICT skills, lack of advanced knowledge in the practice of health information management, weak policy, poor leadership style, a lack of innovation embracing, a lack of standard working tools, and an unconducive working environment are some of the major factors militating against the good attitudes of HROs towards HIV/AIDS, and the effects are an increased death rate, loss of revenue, and a poor provider-patient relationship.

Recommendations:

The researchers recommended that the management of UPTH and relevant organs involved in healthcare providers adopt various ways and strategies like institutional support, training and retaining staff, making available prerequisite tools and infrastructure, implementing enabling policies, and ensuring a conducive working environment to improve the attitudes of health records officers towards patients and clients and their responsibilities in the hospital and beyond.

More so, health records officers should know that they are the backbone of quality healthcare service delivery in the facility; hence, they should develop themselves by learning different skills, including ICT, technical, managerial, and public relations skills that will boost their attitude and make them competent in providing high-quality patient care all the time. In addition, disciplinary policies should be made to reduce the negative attitudes of health records officers as well as other healthcare providers towards patients with chronic illnesses in the hospital.

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Health Information Communication among Health Personnel for Effective Patient Safety

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Abstract

This paper reviewed health information communication among healthcare personnel for effective patient safety. The paper focused on health information and healthcare personnel, evolution of written communication and media, health information communication with determinants, patient management procedure and patient safety. This paper used secondary data from internet, journals and books. A systematic analysis was applied to streamline the diverse concepts in order to determine occasional critical views to address. Findings included better, well-targeted health information communication as pivotal for optimal healthcare services and safety of the sick; improved health care and safety of the public with relative reduction in treatment cost, man-hour wastage and length of stay in hospital by patients; and needed avoidance of unexpected imposition of extra hours of work. Additionally, well-targeted health information communication directed on patient care plays a significant part in maintaining and advancing safety of patients effectively. The study recommended healthcare givers' maximum cordial relationship with patient for improved health information communication, health institution management to train staff on new high technology equipment, strict enforcement of adherence to patient management procedure by team lead of health institution along with organizing regular updates for staff to avoid error and harm to patients, management of health institution to ensure instruments for patient diagnoses and treatment are regularly serviced for maximum functionality and medical team lead strictly ensuring instructions or directives given by consultants are passed both in written and oral forms so that no excuse is given for non-implementation.

Keywords: health information, communication, healthcare personnel, patient management procedure, effective patient safety

Introduction

Man has been endowed with speaking ability by his creator. Society evolved with need for information sharing, known as communication. Life is a vital and necessary aspect of communication, without which many people could struggle to survive. Humans are tridimensional entities with a body, mind, and heart. Not only is communication necessary for knowledge and information to be passed between people, but it is also crucial for human relationships globally. This suggests that communication occurs everywhere in the context of interpersonal relationships, families, workplaces, the natural world, and tribal groups. Health information is varied but depends on any ill-health conditions. Nevertheless, it is concerned with accurate diagnosis of a disease, appropriate treatment by strictly following the planned patient management procedure which ensured desired patient safety outcome. Knowing one's level of communication abilities, personality traits, cultural backgrounds, strengths, weaknesses, and improvement areas are crucial work skills, especially in the physician-patient or caregiver-client relationship in the health care industry that ensure safety of the public with relative reduction in treatment cost, man-hour wastage and length of stay in hospital by patients.

Information sharing between people, groups, and/or organizations occurs through communication. The process of communicating meaning from one entity or group to another by the use of mutually

understood signs, symbols, and semiotic norms is known as communication (derived from the Latin verb *communicare*, which means "to share") (Bretherton, 2012). Many people define communication as the sharing of ideas, sentiments, and information between individuals (Ennis, 2013). Furthermore, he iterated that in an effort to establish mutual understanding, it is also a process by which meaning is ascribed and communicated, described by Gregory Bateson as "the replication of tautologies in the universe". There are verbal and non-verbal forms of communication. Communication, both verbal and nonverbal, begins at birth and lasts until death (Vertino, 2014). The information might be expressed orally or in writing; it could be intimate or impersonal; precise or general; relationship-focused, etc. (Sheldon, 2013). Given that nearly everyone engages in some form of automatic, natural communication, stressing its usefulness can be easily disregarded. Despite these importance of information communication, the global society faced the challenge of reduced communication especially in 2020 following diverse restrictions due to COVID-19 pandemic. Although there has been a focus on reducing in-person encounters because of the risk of COVID-19, it is still important to recognize and give priority to communication in the safe delivery of healthcare (Schnipper et al., 2021). For the most part, spoken and written words are used in verbal communication to transmit ideologies. It is crucial that verbal and nonverbal communication are in harmony, especially in stressful situations where it may be challenging to notice and comprehend changes in the nonverbal cues given by the patients with whom we may have been conversing.

The client's response to health care services is influenced by clear and kind communication, and excellent interpersonal communication is at the core of all client care. According to research (Berengere, 2017), patients who perceive and believe their healthcare provider cares about their wellbeing, who comprehend the specifics of their illness and treatment, frequently express greater satisfaction with the care they receive, and are more likely to adhere to prescribed treatment regimens. According to Charlton (2018), using a person-centered approach in interactions between patients and healthcare professionals improves care outcomes in terms of patient satisfaction, adherence to treatment regimens, and patients' health. However, it has been discovered that while competent healthcare professionals frequently think highly of their own communication abilities, patients frequently express less pleasure and ask that communication be improved. Researchers have acknowledgement on the value of interpersonal and effective communication skills, which are underemphasized in clinical training. Consequently, there is a constant need for education and awareness-raising, with a focus on the need of using efficient communication among healthcare personnel. This paper lays specific emphasis on the role of information communication in improving health care service delivery at Nigeria's sub-centre level like tertiary health care to achieve patient safety. It reviews health information and healthcare personnel, historical antecedents of communication modalities with media, effective information communication and determinants, patient management procedure as well as patient safety communication and advancement.

Health information and healthcare personnel

Any information meant to prevent, treat disease condition and maintain our optimum health status is a health information. Healthcare personnel are trained workers involved in managing ill-health of and disease in an individual. Managing disease state implies diagnosis, treatment and preventive measures. Healthcare personnel include medical officers and nurses, medical laboratory scientists, physiotherapists, pharmacists, radiographers, environmental health officers, public health officers amongst other paramedics. The veterinary doctors by their practice ensure we consume meat from healthy animals along with maintaining health of our pets and domestic animals. Health information could be curative and maintenance-oriented as well as prevention-focused. In 'Public Health' view, "Health" has been defined as the state of equilibrium between man and the physical, biological, chemical and socio-cultural factors in his immediate environment. Thus, "health" is seen as successful acclimatization to the environment, but "illness" denotes a failure of acclimatization. In a similar vein, 'health' is a relevant science, study and practice of human's well-being (Legit Organization, 2019). For example, health information is diverse in obesity aetiology and management. Some scientists considered pathophysiology of obesity and think that because simple carbohydrates (CHOs- sugars, fructose, desserts, soft drinks, beer, and wine, etc.) are absorbed into the bloodstream more quickly

than complex carbs (pasta, brown rice, grains, vegetables, fresh fruits, etc.), they contribute to weight gain through sustained insulin production. The released insulin promotes the growth of fat tissue, an endocrine organ. The majority of scientists believe that an obesity epidemic cannot be caused by a single gene. Obesity comes from a loss of control if for some reasons the body is unable to create enough leptin product/molecule (peptide hormone) or if leptin cannot instruct the brain to eat less. (Seoane-Collazo et al., 2020; Obradovic et al., 2021).

Obesity aetiology is due to unhealthy diet and inactivity with 10 other predisposing factors: a lack of sleep, endocrine disruptors, a decline in smoking rates, a rise in the use of certain pharmaceuticals that might induce weight gain, pregnancy at a later age, epigenetic risk factors passed down through generations, and speciation for higher body mass index etc. (Yazdi et al., 2015; Saxena, 2021; CDC, 2022) The diagnosis of obesity is basically clinical in nature through the symptoms and signs with associated anthropometric measurements. Obesity is treated on the basis of lifestyle changes (usually through dietary approaches as the basis of most weight loss interventions), medication and surgery. Prevention is focused on healthy diet of taming gluttony impulse but adheres to healthy eating plan, engage in streamlined daily exercise, regular weight monitoring, consistency with healthy weight maintenance plan, joining a local weight reduction/loss group, and emulate role model with expectation from parents/other adults on adjudged better steps for avoiding obesity or over-weight (World Health Organization, 2021).

Historical antecedents of written communication modalities and media

Through the ongoing advancement of technology, communication methods and concepts have changed over time. The fields of communications psychology and "media psychology" have advanced (as an emerging field of study). Advancements in written communication include three categories of "information communication revolutions", viz. utilization of cave paintings with graphic symbols carved into immovable rocks that eventually started to take on standardized and reduced forms; written communication on mobile media like papyrus, clay, wax, and paper; and information transfer through 'electromagnetic irradiation' wavelengths under control, such as airwaves, microwaves, and infrared, as well as other electromagnetic frequencies (Greenhalgh et al., 2018).

This communication collaboration and cooperation are made possible by the process, which calls on a wide range of interpersonal processing abilities, including listening, observing, discussing, inquiring, analyzing, gesturing, and assessing. It thus serves to improve patient safety. So, there is a place for spoken communication in healthcare settings. Speaking entails much more than just sharing words; it also involves taking the time to listen, connect emotionally, foster relationships, consider regional practicalities and eventualities, and identify and respond to a variety of needs. According to academics, the fourth domain of communication—aligning and responding—is essential for fostering the relationship between the doctor and the patient (Iedema et al., 2019). Such nurturing creates a "shared ground" for the discussion of delicate and intimate issues as well as mutual trust and confidence. When considered collectively, these domains support some more well-known aspects of safe communication while also broadening our understanding of healthcare communication beyond information exchange to take into account factors like the standard of the overall healthcare environment, people's listening skills, and interactional dynamics in the furtherance of interpersonal orientation.

Effective information communication and determinants

Everyone communicates, but not everyone takes the time to do it effectively. Communication is a fundamental aspect of the human condition. Particularly in the practice of health care, communication has content and value, and in order for it to be productively effective, attention must be paid to its core. How the two sides perceive the communication pattern will determine the qualities of the caregiver-patient relationship. Negative stereotypes and attitudes are typically the result of inefficient communication since the two-way capability of communication is not recognized and followed. Effective communication is not unidirectional. Berengere (2017) joined in claiming that good communication is a two-way dialogue between patients and providers, or by definition, a two-way road where both talk and are as well listened to without either interrupting, supports this viewpoint in regard to healthcare delivery. Both are able to fully grasp and understand what the other is saying and

both are able to ask clarification questions, express opinions, and exchange information (Boykins, 2014). As a result, it entails interaction where each transmitter also serves as a receiver, and vice versa (Kourkouta, 2011). The words that patients and caregivers choose to use during a care interaction have a significant impact on how well they can comprehend one another in healthcare settings. For instance, doctors utilize clinical and scientific jargon to communicate information precisely and properly with other clinicians, yet utilizing these terms with patients is inappropriate because non-medical professionals may find these terms incomprehensible (DiPrete & Lori, 2015). When patients communicate verbally with caregivers in their native tongues, accents, or terminology, it can be perplexing and upsetting for the caregivers since it can be very challenging for caregivers from different parts of the country to understand what the patients are saying. Therefore, the available care provider would need to pay more attention in such circumstances, especially where there is no substitute nurse who might comprehend such patients readily and better, in order to truly comprehend the patients' intonation.

Health staff convey services by providing patients with both verbal (via speaking) and nonverbal (through acting, demonstrating, touching, doing, etc.) medical treatment. The majority of the time, medical professionals and healthcare specialists concentrate on addressing the requirements of the human being as a bio-psychosocial-spiritual person. This position corroborates Lambrini and Loanna's (2014) assertion that providing health care requires not only scientific understanding but also excellent interpersonal communication, intellectual prowess, and technical know-how. In our attempt to co-exist as individuals, groups, cultures, religions and countries, the "how, what, why, and where" of the communication method we choose can either degrade or elevate us. Raya (2016) posited that what one says, how one says it, and what one truly means by it are all immensely and equally essential, and they all have the potential to change one's life. According to Papadantonaki (2016), this incidence is also undoubtedly present in healthcare settings. The author asserts: "the impact of the 'how, what, where and when' of communication could be extremely detrimental to both the health of patients and healthcare provider in health care settings". Papagiannis (2010) wanted verbal and non-verbal communication to agree, for in ill-health distress there has usually been difficulty seeing and understanding the change in the non-verbal communication from patients with whom we might be communicating. In recognition of a scholar's view that "Caring is health staff, and health staff is caring" implying that caring and health staff as held or believed by Watson (2018) that health professionals are capable of projecting a human-to-human interaction in which a "medical officer" both influences and is influenced by a "patient" in accordance with that knowledge. In light of the above and in order to attain the concepts of "health staff is caring" and "patient-centered care," greater attention should be put on the development of effective relationships among other health staff skills, which will improve patients' satisfaction with their care.

Words are said to express only a portion of what is being said; the remainder is transmitted by attitude, tone, and gestures. Interaction could be improved by sitting at the same level as the patient, smiling, and paying careful attention. The majority of nonverbal communication techniques and interpretations depend on the unique cultural practices of the communicator and the recipient, respectively. This assertion is supported by the fact that, in the majority of western nations, making direct eye contact can be seen as a sign of positive regard and respect, whereas decades ago, in some parts of Nigeria, it might have been seen as disrespectful of the elderly or as sending flirtatious or sensual signals to the opposite sex. The health personnel's ability to communicate with patients would be improved by having a rudimentary understanding of their cultural backgrounds. Warm greetings and/or insightful questions from the caregiver can frequently relieve the patient's anxiety and improve communication. These small gestures don't take much work but have a big impact. In the end, Ennis (2013) stated that it is important for caregivers to remember that all non-verbal cues convey information. When used effectively, communication contributes to the delivery of clear, accurate, consistent, and easy health staff services, ensuring both patient satisfaction and the protection of the health workers. The entire process occurs within a context made up of the physical world, social and cultural values, and mental condition (Verderber, 2018). The message transmitted and the message received frequently differ.

It has been discovered that individual variables and personal views influence how communications are decoded. This means that the receiver's interpretation of what they hear might not match what the

sender intended. It has also been suggested that in the field of medicine, healthcare professionals have a duty to speak on behalf of patients who may be unable to speak for themselves or advocate for themselves. Unfortunately, many people lack the ability to influence others, work effectively with others, and effectively advocate for their patients, especially newly graduated healthcare provider (e.g. staff nurse) and student (Jarrette & Payne, 2015). Evidence also suggests that healthcare professionals who have been in practice for a long time have a high tendency to communicate poorly because they may have grown accustomed to a particular style of speaking and are no longer aware of how their personal characteristics affect their ability to communicate professionally (Radsma, 2014). It has long been known that nurses and doctors commonly give different accounts of the same patient scenario. The condition of a patient could be described simply yet precisely by nurses. Medical officers may speak in coded pattern for quick explanations of clinical findings. According to Wojciechowski (2019), this communication style mismatch makes it simple for miscommunication and confusion to occur. The message or intention being delivered can be delayed or distorted by obstacles to efficient communication. The communication process may fail as a result, or it may have an unfavorable effect. These include gender differences, political correctness, information overload, filtering, selective perception, emotions, language, and silence. This also involves a lack of "knowledge-appropriate" communication, which happens when someone employs jargon, confusing or difficult terminology (such as those used in the medical or legal fields) or descriptions of an environment or a scenario that the recipient does not understand. The message or intention being delivered can be delayed or distorted by obstacles to efficient communication. The communication process may fail as a result, or it may have an unfavorable effect due to barriers like attitudinal barriers, physiological barriers, gender barriers, fear of being criticized, technological multi-tasking and absorbency, system design, pattern of phrase ambiguity, linguistic capability of someone, and bypassing.

In healthcare, poor communication skills continue to be a major problem that calls for greater awareness and remediation. Understanding the patient's feelings and how they express them is necessary for effective communication. Therefore, successful communication requires the medical officer or nurse to have the necessary abilities and a real desire to comprehend the patient's problems. According to Papadantonaki (2016), simply comprehending the patient is insufficient; the medical officer must also communicate with the patient in a way that is acceptable, clear, and understood. The World Health Organization (WHO-2010), the European Union (EU) Brussels (2014), and the Department of Health (DH) London (2014) have all worked to raise awareness of and place an emphasis on the value of excellent patient-focused communication between healthcare providers and patients. Patient happiness, inclusive decision-making, and top-notch health services have all been made possible; thanks in large part to person-centered communication, according to McCabe and Timmins (2016), who also advocated this idea as an example of best practice in health care delivery system. According to the WHO (2019), by its qualitative content analysis, patient assistance must be provided gradually, and the healthcare provider must constantly ensure that the patient has accepted and grasped the message.

Patient management procedure

Basically in a hospital set up, patient management procedure requires diagnosing, treatment and preventive steps. Usually diagnosis may require clerking to determine clinical history (symptoms), carrying out physical examination to elicit signs of a disease condition and undertaking ancillary laboratory investigation to conclude findings on the disease state. Depending on a particular disease condition specific modality of treatment is commenced. Furthermore, the patient and relatives are counselled for preventive purposes. Important public health programme areas include those for HIV/AIDS, tuberculosis, and malaria; neglected tropical diseases; behavioral risk factor surveillance; safe water initiatives; and smoking and health programmes. These areas encompass both infectious diseases and environmental and non-communicable diseases and require vigorous preventive measures. As the relative wealth of their populations rises and lifestyles change, many middle-income countries have seen a shift in the burden of disease. Countries that once viewed infectious diseases as their biggest public health challenge now struggle with non-communicable diseases, particularly those linked to tobacco use, obesity, cardiovascular disease, and cancer (WHO, 2011). On this note, understanding behavioural risk factors and putting interventions in place to change such behaviours

and encourage healthy lifestyle choices must become the top goals for public health programmes. Major public health objectives, such as those specified by disease-specific global health efforts for HIV/AIDS, tuberculosis, malaria, childhood vaccinations, and others, have been the focus of health system strengthening (Bloland et al., 2012).

The patient-centred medical home (PCMH) models are a manner of patient management that anthropological approaches could be used to assess and improve with an expanding toolbox of techniques (Goldman & Borkan, 2013). A primary care strategy called the PCMH seeks to enhance patient and provider satisfaction while lowering costs and raising quality. The PCMH models place a strong emphasis on quality and safety-driven care that is patient-centered, thorough, coordinated, and easily accessible. Participant observation, in-depth interviews, focus groups, and textual analysis are the four typical qualitative anthropological data collection techniques. Healthcare professionals gather to examine an issue, record their findings, and debate possible improvements.

Patient safety communication and advancement

The focus of the field of patient safety is on preventing, reducing, reporting, and analyzing errors and other sorts of avoidable harm that frequently result in negative patient events. Before the 1990s, when numerous nations reported sizeable numbers of patients hurt and killed by medical errors, the frequency and scale of preventable adverse events, also known as patient safety incidents, experienced by patients were not well understood. The World Health Organization (WHO) describes patient safety as an endemic concern since healthcare errors affect one in ten people globally. Patient safety has in fact become a separate healthcare field, underpinned by a young but developing substantial evidence. The science of patient safety is informed by a sizeable trans-disciplinary body of theoretical and research literature (Aiken et al., 2014). In order to help patients achieve their ideal health outcome, a healthcare provider must ensure that the patient's safety is not in danger. The promotion and protection of patient safety are greatly aided by the practice of efficient communication. The avoidance of adverse events and the response to adverse events are the two areas into which communication with regard to patient safety can be divided. Effective communication can help avert negative events, whereas inadequate communication can increase the likelihood of these occurrences (DiCuccio, 2015). To attain the best results for the patient's safety, better and more effective communication techniques must be used if inefficient communication causes an unfavorable incident. Healthcare personnel can communicate verbally and nonverbally with patients as well as employ proper communication technology to their advantage in order to maximize patient safety. Almeida (2019) advanced the idea that good communication enables us to identify dangers and establish patient safety parameters. Similar to this, Ricciardi and Shofer (2019) emphasized the need of involving patients in their care by having an open communication with medical personnel regarding their diagnosis and treatment. Patients who are actively involved as partners can recognize adverse events, guarantee safe care, and advance a safety culture.

When a mistake or blunder is made, as in other businesses, individuals search for someone to blame. This may seem normal, but it fosters a blame culture in which "who" is valued above "why" and "how." In a society where there is no blame or culpability, an occurrence is investigated for its underlying reasons rather than merely its participants. The delivery of healthcare is moving in the direction of a patient safety culture. This transfers knowledge from fields like aviation, shipping, and industrial production to the field of healthcare. If those engaged are aware that their jobs are not in jeopardy, they are considerably more inclined to be honest when examining and analyzing an occurrence. This makes it possible to create a far more accurate and detailed picture of the facts around an incident. Root cause analysis can then follow. An unpleasant or near-miss occurrence frequently involves a number of causal elements. Effective modifications that will stop a repeat of the occurrence can only be done once all the underlying causes have been identified (Burke & Onwuegbuzie, 2014). The safety of patients depends on effective communication. In order to communicate, information must first be made accessible on any operating site, but notably in the case of mobile professional services. The process of communicating goes on as administrative burden is reduced, operating staff is released, and model-driven commands are made easier to follow, enabling compliance to a well-executed procedure that is finished with a qualified minimum of required feedback. Alharbi et al. (2014) Another crucial method for making sure the recipient understands the

message that was sent is closed loop communication. Situational awareness, or knowledge of a patient's present state and expected course of care, is necessary for sharing patient-specific health information during handoff.

The drop of registered healthcare providers has recently been offset by an increase in work hours and overtime shift responsibilities for healthcare providers (e.g. medical officer or registered nurses, RNs). Nearly 400 registered nurses' logbooks showed that roughly 40% of the 5,317 work shifts they reported were longer than twelve hours. When shifts last longer than 12 hours or a healthcare worker works more than 40 hours in a week, errors are more likely to happen. The quality of patient care is negatively impacted by overtime shifts, according to studies, while some researchers "who investigated the safety of 12-hour shift duties did not find increases in medication errors." The mistakes that these researchers identified were "lapses of attention to detail, errors of omission, compromised problem solving, and errors in grammatical reasoning and chart reviewing." These are known to be caused by reduced motivation as well as fatigue. Overworked healthcare provider is a major safety concerns for the health of their patients. Working consecutive shifts, especially at night, is a major contributor to hospital healthcare provider weariness. "Less sleep, or fatigue, may lead to increased likelihood of making an error, or even the decreased likelihood of catching someone else's error." Putting a cap on working hours and shift changes could "reduce the adverse effects of fatigue" and ultimately improve the standard of patient care (Nilsson, 2018).

Despite the aforementioned argument or thought that extra working hours often weaken the individual to decline in output, it should be recalled that consistency on a particular duty leads to dexterity moreso as patient care or health care services in general is not a productive sector which churn out physical items in the factory. Therefore, application of the above view in services occupation should be done with caution. It is only abrupt increase in time for working duration that could easily lead to errors. Remember that after sometime the worker could adapt to the duty schedule in which the expected errors might not occur. Similarly, the fact that doctors and nurses work in shift, any little additional time could not immediately cause undue risks of high magnitude! Consider another scenario where a care-giver does his/her work with passion; could overtime lead to mistakes or errors? Certainly, that will not arise. Furthermore, with Situation, Background, Assessment, and Recommendation (SBAR), a dependable and validated communication tool, shows an improvement in communication among healthcare professionals, a decrease in adverse occurrences in the hospital setting, and the advancement of patient safety (Shahid & Thomas, 2018), and the likelihood of adverse outcomes in patients' health care are reduced to the barest minimum. In addition to ensuring that patients receive the best care possible, communication among healthcare workers also helps to avert any potential problems. Health care practitioners must communicate effectively in difficult situations. A variety of methods, devices, and strategies are employed to enhance communication. Any team should have a defined goal, and each member should understand their responsibilities and participate as needed. Regular feedback should be given in order to improve the level of communication amongst those engaged. Briefings, debriefings, and closed-loop discussion are all strategies that help teams stay focused on their objectives and make sure that everyone is aware of both the goal and the steps they will take to get there. Briefings foster a good atmosphere for patient safety by reducing interruptions, preventing delays, and fostering positive connections.

It is only possible to exercise and apply the health care process, which is a scientific approach, through discourse, interpersonal interactions, and specialized verbal and nonverbal communication abilities (Raya, 2016). To create a unique plan of treatment, the physician consults relevant clinical research on the reliability of diagnostic procedures as well as the effectiveness and security of therapy, rehabilitation, and prevention. He/she thus apply evidence-based medicine termed "best practices" (clinical practice guidelines) for specific medical conditions (Kirk et al., 2017). Technology for patient safety deployment, e.g. specific patient safety software and watch out for "e-iatrogenesis" is targeted for patient safety. A hospital, clinic, or health system can record incidents such as falls, medication errors, pressure ulcers, near misses, etc. using specific patient safety software, which is a standardized, modular technological solution. Unfamiliar and novel process faults frequently occur when these systems are subjected to the additional strains brought on by the spread of new technology. (Hofstede, 2011) Causes of healthcare error in context of patient safety are human factors, medical complexity, system failures etc.

Conclusion

Effective communication is still a crucial element in fostering better interpersonal connections, which has a knock-on effect on patient outcomes, speedy healing, and improved quality of life. An evidence-based practice standard known as "safety huddles" enables staff to share safety information, foster empowerment, and foster a sense of community. These factors together create a culture of collaboration and civility that raises awareness among all staff members of the importance of preventing patient harm through the promotion of patient safety. The quality of communication between caregivers and patients has a significant impact on how they both see the care provided as well as allowing top management and employee agreement on working hours to avoid unexpected imposition of over-time duty capable of increasing mistakes at work. The planned patient management procedure ensured desired patient safety outcome, relative reduction in treatment cost, man-hour wastage and length of stay in hospital by patients.

Recommendations

Considering the need for adequate and proper health information communication to enable patient safety, the researchers recommended as follows:

1. Health institution management should encourage and strictly monitor healthcare-giver relationship with patients as this would enhance adequate health information communication.
2. The authority and team leader of health institution should organize regular updates for staff on procedural case management and ensure adherence to avoid error and harm to patients.
3. The management of health institution is enjoined to ensure instruments for patient diagnoses and treatment are regularly serviced for maximum functionality/efficiency.
4. The authorities of health institutions should give training to their staff on use of new, high technology equipment.
5. The management of health institution should allow specialists to apply any recent technology so-developed for maximum success in patient management and safety.
6. Medical team lead should strictly ensure instructions or directives given by consultants are passed both in written and oral form so that no excuse is given for non-implementation.

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Socio-Demographic Determinants of the Practice of Exclusive Breastfeeding among Mothers Visiting School Demonstration Clinic, College of Health, Obio/Akpor Local Government Area, Rivers State

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Abstract

This study examined the socio-demographic determinants of the practice of exclusive breastfeeding among mothers visiting the Demonstration Clinic of Rivers State College of Health Science and Management Technology in Obio/Akpor Local Government area of Rivers State. Four (4) research questions served as a direction for this study. The research design used in this study was a descriptive study design. The population of the study consisted of nine hundred and twenty (920) mothers who visited the School Demonstration Clinic, College of Health, Rivers State during the period of the study. The sample size was determined using the Taro Yamene formula. The study adopted a simple random sampling method to sample 279 respondents from School Demonstration Clinic, College of Health, Rivers State. The instrument for data collection was a self-structured questionnaire which was developed by the researchers. The result of this study showed that the grand mean 3.13 ± 0.79 is greater than the criterion mean of 2.5 indicating a high level of the practice of exclusive breastfeeding. Based on the findings of the study, it was concluded that exclusive breastfeeding was practiced at a high level among women who visited School Demonstration Clinic, College of Health, Rivers State and the predominant socio-demographic determinants of the practice of exclusive breastfeeding found among the women were age, parity and educational background. It was recommended that nutritionists should take into consideration the age, cultural belief, and the occupation of mothers when designing nutritional programmes such as baby-friendly initiatives for women.

Keywords: socio-demographic, determinants, exclusive, breastfeeding

INTRODUCTION

Exclusive Breastfeeding is a unique process that enhances child survival and development. Breastfeeding is essential for child survival and optimal development of the child. It uniquely enhances a young child's psychological, nutritional, and immunological needs. Hanif (2011) defines exclusive breastfeeding as a method in which newborns only get breast milk throughout their first six months of life, with the exception of vitamins, mineral supplements, and medications. They are also not given any other liquids, food, tea, or other herbal preparations. For the first six months of life, newborns should only be breastfed in order to attain the best possible growth, development, and health. Therefore, while continuing to nurse for up to two years or longer, infants should be given supplemental foods that are safe and nutritionally adequate.

All the nutrients a baby needs in the first six months of life are in breast milk (Datta, 2014). In a similar vein, Okolo, Omoyibo, and Chimah (2015) noted that breastfeeding (BF) practice is said to be optimal when breastfeeding has been initiated within the hour of birth; consequently, exclusive breastfeeding is a practice in the first six months of life; following this, breastfeeding is continued up until the age of two years while appropriate complementary foods are added. It is a known truth that infants who begin breastfeeding within the first hour of life are more likely to have optimum breastfeeding and have a longer probability of doing so exclusively. This will enhance the infant's

nutritional status, encourage healthy growth and development, and eventually lower morbidity and death.

In Nigeria, the Nigerian Demographic and Health Survey (2018) showed that only 28.7% of infants were exclusively breastfed under 6 months and only 17.9% of infants were exclusively breastfed at 4-5 months. The advocacy of exclusive breastfeeding as the "optimal" feeding strategy for newborns has drawn more attention in recent decades. This has mostly been motivated by the growing body of scientific evidence demonstrating the value of exclusive breastfeeding in lowering infant morbidity and death. Exclusive breastfeeding is recognized as essential for infants' survival in resource-constrained environments where poor and sub-optimal breastfeeding practices frequently result in child malnutrition, which is a major factor in more than half of all child fatalities (Sokol et al., 2007). In fact, it is predicted that 1 million of the 6.9 million under-five children who died worldwide in 2011 may have been saved if easy-to-use strategies like exclusive breastfeeding had been used (WHO, 2012). As a result, WHO and UNICEF advise breastfeeding exclusively for six months, then introducing complementary foods and continuing for 24 months or beyond. However, some people have failed to adhere to this ideal because of things like age, parity, occupation, cultural impact, and education, all of which may be connected to practices of exclusive breastfeeding.

Poor maternal education is often associated with little or no information due to lack of exposure to the mass media for easy access to information which may influence their knowledge of EBF and the subsequent practice.

Age is a very strong determinant when it comes to health. This is concretized with the assertion of Ajayi et al. (2011) that, age is a determinant of exclusive breastfeeding which shows that mothers between the age of 25-35 are more likely to practice exclusive breastfeeding than women of 15 – 24 years. Also, the age notwithstanding, the occupation the mothers do can go a long way in determining the time she will have to practice EBF adequately.

The occupation of the mother may or may not allow her enough time for her child including the practice of exclusive breast feeding. According to Bonyata (2018) babies should be breastfed at least 10 – 12 times per day, this practice demands the mother to spend quality time with the baby which many working mothers are unable to meet up with because they are occupied with work. Culture being the way of life of a people could also influence the practice of exclusive breast feeding among mothers. The cultural factors influencing mothers' decision to breastfeed their babies according to Kakute et al. (2005) are pressures by village elders and families to supplement because it is a traditional practice, belief that breastmilk is an incomplete food that does not increase the infant's weight and belief that all family members should receive the benefit of food grown in the family farm.

For infants to survive, grow, and develop properly they require the right proportion of nutrients. Breast milk is rich in nutrients and anti-bodies and contains the right quantities of fat, sugar, water, and protein. These nutrients are major pre-requisites to the health and survival of the baby. The report from the Nigerian Demographic and Health Survey (2018) showed that in Rivers State, more than half (52.0%) did not start breastfeeding their children within one hour of birth. Certainly, several factors would have interplayed, influencing the women's practice of EBF. The tertiary health care institutions having the major population of women attending both antenatal and postnatal clinics were considered appropriate to carry out a study of this sort to perused the socio-demographic determinants of the practice of exclusive breastfeeding among mothers.

Ideally, mothers are expected to exclusively breastfeed their babies for at least six months as recommended by World Health Organization. But some mothers still find it difficult to do so due to certain factors which in one way or the other interfere with their practice of exclusive breastfeeding. These make them resort to other forms of infant feeding such as bottle feeding and inclusive breastfeeding which is not too healthy for the children. When a mother fails to breastfeed her child exclusively, it can increase the chances of a high incidence of diseases such as gastrointestinal infection, dehydration, pneumonia, diarrhea, bacterial meningitis, respiratory tract infection, necrotizing enterocolitis, and even malnourishment of the child, which are all detrimental to the health of the infant. Thus, several organizations including UNICEF are making effort to ensure an increase in the practice of exclusive breastfeeding among mothers yet, many do not still practice it. Thus, a perusal of the factors influencing its practice becomes very necessary to inform a better option and to re-strategize in such efforts. Hence, this study was aimed at investigating the socio-demographic

determinants of the Practice of Exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health in Rivers State

Research Questions

The following research questions were posed to know:

1. What is the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State?
2. What is the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State based on age?
3. What is the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State based on parity?
4. What is the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State based on their educational background?

METHODOLOGY

The research design used in this study was a descriptive study design. Descriptive research designs, according to Elendu (2010), provide data from a chosen population while observing and describing occurrences as they take place in their natural environment at a specific moment. The participants of the study comprised of nine hundred and twenty mothers who visited the School Demonstration Clinic, College of Health, Rivers State during the period of the study (COHST statistics records: 2019). The sample size was determined using the Taro Yamene formula and the study adopted a simple random sampling method to sample 279 respondents from School Demonstration Clinic, College of Health, Rivers State. The instrument for data collection was a self-structured questionnaire titled: Socio-demographic Determinants of the Practice of Exclusive Breastfeeding Among Mothers (SDPEBAM) which was developed by the researcher. The instrument was in three parts with 27 items. The first part of the questionnaire was designed to reflect the socio-demographic characteristics of the participants such as age, religion, ethnicity, educational level, occupation, marital status, parity, and social-economic status in a multiple response format while Section B was focused on the Practice of Exclusive Breastfeeding Among Mothers visiting Tertiary Health Institutions in Rivers State in a modified four-point Likert scale of Always, Sometimes, Rarely and Never which were assigned as 4, 3, 2 and 1 respectively. Section C covers the influence of cultural belief and occupation on a Yes or No response format. Two hundred and seventy-nine (279) copies of the questionnaire were firstly presented to the doctor in charge of the health centers before they were administered to the respondents with the help of two research assistants. The administered instruments were retrieved immediately after completion. The nurse/midwives and medical doctors were informed that their participation will not affect the care they render in the healthcare institutions in any way as utmost confidentiality would be maintained. They were also informed that they are free to choose not to participate in the study.

RESULTS

Research Question 1: What is the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State?

Table 4.5: Practice of exclusive breastfeeding among mothers

SN	Items	Mean	Std dev.	Decision
1	Breastfed baby	3.73	.49	High
2	Washes breast before breastfeeding	3.45	.69	High
3	Feeds baby with express breast milk when not around	3.06	1.00	High
4	Uses any comfortable position to breastfeed	3.60	.56	High
5	Feeds baby on demand	3.39	.62	High
6	Feeds baby every three hours	2.69	.95	High
7	Alternates the breast at each feeding	3.18	.86	High
8	Gives water to baby intermittently	2.53	1.08	High
9	Ensures the child belches after each breastfeeding	3.29	.77	High
10	Lays baby down immediately after breastfeeding	2.37	.95	High
	Grand mean	3.13	0.79	High

Source: Field Survey, (2022)

Table 4.5 shows the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State. The result showed that the grand mean 3.13 ± 0.79 is greater than the criterion mean of 2.5 indicating a high extent of the practice of exclusive breastfeeding. Thus, the extent of the practice of exclusive breastfeeding among mothers visiting tertiary health institutions in Rivers State was high.

Research Question 2: What is the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State based on age?

Table 4.6: Practice of exclusive breastfeeding among mothers based on age

SN	Items	≤25yrs		26-30yrs		31-35yrs		≥36yrs	
1	Breastfed baby	3.69	.47	3.77	.48	3.74	.49	3.66	.51
2	Washes breast before breastfeeding	3.33	.48	3.36	.67	3.51	.71	3.33	.70
3	Feeds baby with express breast milk when not around	3.19	1.03	3.14	.96	2.97	.106	3.32	.71
4	Uses any comfortable position to breastfeed	3.81	.40	3.75	.45	3.56	.59	3.60	.54
5	Feeds baby on demand	3.39	.84	3.44	.58	3.34	.63	3.51	.55
6	Feeds baby every three hours	2.69	.86	2.68	.92	2.74	.98	2.53	.86
7	Alternates the breast at each feeding	3.22	.87	3.30	.78	3.16	.95	3.16	.53
8	Gives water to baby intermittently	2.78	1.09	2.72	1.03	2.46	1.11	2.61	.96
9	Ensures the child belches after each breastfeeding	3.56	.50	3.17	.98	3.34	.78	3.12	.58
10	Lays baby down immediately after breastfeeding	2.31	.82	2.35	.80	2.43	1.03	2.13	.72
	Grand mean	3.19	.74	3.17	.76	3.12	.74	3.09	.67

Source: Field Survey, (2022)

Table 4.6 shows the the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State based on age. The result shows that based on

age, exclusive breastfeeding was practiced more by those aged ≤ 25 years (3.19), followed by those aged 26-30 years (3.17), those aged 31-35 years (3.12), and those aged ≥ 36 years (3.09). Thus based on age, exclusive breastfeeding was practiced more by the younger mothers than the older ones.

Research Question 3: What is the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State based on parity?

Table 4.7: The practice of exclusive breastfeeding among mothers based on parity

SN	Items	1 child		2 children		3 children		≥ 4 children	
1	Breastfed baby	3.68	.54	3.79	.42	3.73	.47	3.65	.65
2	Washes breast before breastfeeding	3.35	.76	3.50	.65	3.52	.64	3.29	.82
3	Feeds baby with express breast milk when not around	3.34	.83	3.36	.79	2.70	.18	2.92	.87
4	Uses any comfortable position to breastfeed	3.53	.63	3.57	.56	3.67	.51	3.58	.60
5	Feeds baby on demand	3.44	.72	3.43	.62	3.30	.59	3.44	.61
6	Feeds baby every three hours	2.75	.92	2.80	.87	2.43	1.03	2.94	.86
7	Alternates the breast at each feeding	3.19	.56	3.31	.65	2.93	1.13	3.39	.71
8	Gives water to baby intermittently	2.33	.94	2.43	1.05	2.67	1.13	2.59	1.10
9	Ensures the child belches after each breastfeeding	3.20	.56	3.27	.69	3.32	.88	3.31	.86
10	Lays baby down immediately after breastfeeding	2.16	.75	2.06	.79	2.61	1.01	2.69	1.08
	Grand mean	3.09	.72	3.15	.71	3.09	.75	3.18	.82

Source: Field Survey, (2022)

Table 4.7 shows the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State based on parity. The result shows that based on parity, exclusive breastfeeding was practiced more by those who had ≥ 4 children (3.18), followed by those who had two children (3.15), and those who had three and one children (3.09). Thus, based on parity, exclusive breastfeeding was practiced more by mothers who had more children than those with fewer children.

Research Question 4: What is the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State based on their educational background?

Table 4.8: The practice of exclusive breastfeeding among mothers based on their educational background

SN	Items	Primary		Secondary		Tertiary	
1	Breastfed baby	3.57	.67	3.64	.54	3.79	.44
2	Washes breast before breastfeeding	3.07	.86	3.33	.68	3.54	.66
3	Feeds baby with express breast milk when not around	2.97	1.02	3.19	.89	3.02	1.03
4	Uses any comfortable position to breastfeed	3.50	.69	3.54	.60	3.63	.52
5	Feeds baby on demand	3.43	.65	3.38	.66	3.39	.61
6	Feeds baby every three hours	2.96	.88	2.91	.86	2.58	.98
7	Alternates the breast at each feeding	3.42	.64	3.25	.78	3.13	.91
8	Gives water to baby intermittently	2.12	.101	2.32	1.08	2.66	1.06
9	Ensures the child belches after each breastfeeding	3.49	.60	3.35	.69	3.24	.82
10	Lays baby down immediately after breastfeeding	2.24	.85	2.30	.94	2.41	.97
	Grand mean	3.08	.69	3.12	.78	3.14	.80

Source: Field Survey, (2022)

Table 4.8 shows the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State based on their educational background. The result shows that based on education, exclusive breastfeeding was practiced more by those who had tertiary education (3.14), followed by those who had secondary education (3.12), and those who had primary education (3.08). Thus, based on educational status, exclusive breastfeeding was practiced more by mothers who had higher educational status.

Discussion of Findings

The finding of this study showed that the grand mean 3.13 ± 0.79 is greater than the criterion mean of 2.5 indicating a high level of the practice of exclusive breastfeeding. Thus, the level of the practice of exclusive breastfeeding among mothers visiting School Demonstration Clinic, College of Health, Rivers State was high. This finding is encouraging because it shows that women, more especially mothers are taking advantage of the benefits of exclusive breastfeeding. This finding is similar to the results of studies carried out by other scholars. The finding of this study is in keeping with that of Mbuka et al. (2016) carried out among mothers in Kenya which showed that the majority of the respondents practiced exclusive breastfeeding. The finding of this study is also in line with the study of Warille (2015) which was carried out among mothers in Sudan which showed that the practice of exclusive breastfeeding was high (63.2%). The finding of the study agrees with the result of Kumala (2017) from a study in Indonesia which showed that more than half of the mothers practiced exclusive breastfeeding. The finding of this study is similar to that of Okolo et al. (2015) whose study in Nigeria showed that more than half of the mothers practiced breastfeeding. This similarity might be because mothers are taking advantage of the numerous benefits of exclusive breastfeeding; this might be implicated in the good practice found in the different studies. However, the finding of this study is not in line with the result of Savadogo et al. (2018) who carried out a similar study in Burkina Faso which showed that the practice of exclusive breastfeeding was low. The finding of the study is at variance with that of Njeri (2012) whose study in Kenya showed that less than half of the respondents practiced exclusive breastfeeding. The finding of this study differs from the result found by Chhetri, et al. (2018) in Karnataka where only 17.5% practiced exclusive breastfeeding. The finding of this study is at variance with that of Yilmaz et al. (2017) which showed the prevalence of exclusive breastfeeding to be much lesser than fifty percent. The finding of the present study is also different from that of Rahman et al. (2017) conducted in Indonesia where a lesser proportion (26.2 percent) reported the practice of exclusive breastfeeding. The finding of this study is also at variance with that of Olayemi, et al. (2014) whose study in Nigeria showed a much lesser proportion of the respondents who practiced exclusive breastfeeding. The difference in the present study and the previous ones might be due to the difference in the sample size and the difference in the study locations.

The result shows that based on age, exclusive breastfeeding was practiced more by those aged ≤ 25 years (3.19), followed by those aged 26-30 years (3.17), those aged 31-35 years (3.12), and those aged ≥ 36 years (3.09). Based on the result, it can be deduced that exclusive breastfeeding was practiced more by the younger mothers though, the practice increased with an increase in age as. This finding may not be surprising because it is possible that as the age of the mothers increase their maturity to handle maternal activities including breastfeeding increase thus making them handle much more appropriately. The results of this study corroborate those of Olayemi et al. (2014), who found that exclusive breastfeeding was strongly correlated with maternal age among mothers in three regions of Nigeria ($p < 0.05$). This similarity found between the present study and that of Olayemi et al (2014) might be because they were both carried out in Nigeria among mothers with a similar age range. The finding of this study is also in agreement with a study carried out in Burkina Faso by Savadogo et al. (2018) which showed that age was significantly associated with the practice of exclusive breastfeeding ($p < 0.05$). This agreement found between the two studies might be because large sample size was used in both studies.

The finding of this study is also in line with that of Okolo, et al. (2015) which showed that the younger women were more likely to practice exclusive breastfeeding than the older ones. This finding might be because younger women were more energetic than older ones. The result of the study further revealed a significant relationship between age and practice of exclusive breastfeeding ($p < 0.05$). The finding of this study is not in agreement with that of Yilmaz et al. (2017) which showed a non-

significant relationship between age and exclusive breastfeeding ($p > 0.05$). The finding of this study is at variance with a study carried out on exclusive breastfeeding among mothers in Kenya by Njeri (2012) whose findings showed a non-significant association between maternal age and continuous EBF ($P = 0.09$). The finding of this study is also different from another study carried out among mothers in Kenya by Mbuka et al. (2016) which showed a non-significant relationship between age and exclusive breastfeeding ($p > 0.05$). The difference in the study population and study location might be implicated in the variations found in the present study and the previous ones.

The result shows that based on parity, exclusive breastfeeding was practiced more by those who had ≥ 4 children (3.18), followed by those who had two children (3.15), and those who had three to one child (3.09). Parity should have increased the intention of a mother to exclusively breastfeed; given that such a mother must have had enough child nursing experiences which should have enhanced the practice of exclusive breastfeeding. But this was not the case. However, it can be deduced that the stress of catering for numerous children must have wearied mothers such that they may not be able to concentrate fully to practice exclusive breastfeeding adequately. The results of this study are consistent with those of a study conducted in Sri Lanka by Agampodi, et al. (2009), which demonstrated that parity was not substantially associated with exclusive breastfeeding. This study's findings are consistent with those of Spinelli et al. (2003), who found that women who attended antenatal classes without prior children were more inclined to do so and were only about half as likely to bottle-feed. The homogeneity of the participants in the study could be responsible for the resemblance between the prior studies and the current one.

The result also shows that based on education, exclusive breastfeeding was practiced more by those who had tertiary education (3.14), followed by those who had secondary education (3.12), and those who had primary education (3.08). However, the result shows that those who had a higher educational level practiced exclusive breastfeeding more. This is expected thus not surprising because education is one fundamental tool for enhancing enlightenment about vast life matters including health and exclusive breastfeeding. The finding of this study is in keeping with that of Okolo et al. (2015) which showed that mothers with some form of education were more likely than those with no education to feed their babies with colostrum. The finding of this study also gives credence to that of Moreland and Coombs (2000) which showed that breastfeeding education that is given repeatedly in person could have a significant influence on breastfeeding outcomes. The level of education was found to influence the mother's choice in infant feeding practice. The results of this study are consistent with those of Violet Nannyu (2008), who identified a link between mother education and exclusive breastfeeding. This study's findings are similarly consistent with those of Spinelli et al. (2003), who found that women with greater levels of education were more likely to attend classes and that women who took prenatal classes were just slightly more likely to bottle-feed. The results of this study are consistent with those of Wamani (2005), who found that mothers in Western Uganda, for example, were more likely to use prelacteal feeds while also being more likely to prepare supplementary foods that were nourishing for their children. The results of this study are also consistent with those of Li et al. (2002), who demonstrated that continuing breastfeeding was facilitated by greater maternal education levels.

Conclusion

Based on the findings of the study, it was concluded that exclusive breastfeeding was practiced to a high level among women who visited School Demonstration Clinic, College of Health, Rivers State and the predominant socio-demographic determinants of the practice of exclusive breastfeeding found among the women were age, and occupation.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Nutritionists should take into consideration the age, cultural beliefs, and the occupation of mothers when designing nutritional programs such as baby-friendly initiatives for women.
2. The Government should extend the Baby-Friendly Hospital Initiative establishment to other parts of the State where it was not established to enhance the adoption of exclusive breastfeeding fully by women.

3. The National Assembly should enact laws that could promote breastfeeding to boost the nutrition indices among infants by ensuring strong regulations on the marketing of breast milk substitutes or baby formulas.
4. Traditional leaders and other stakeholders should discourage cultural practices or activities that do not promote exclusive breastfeeding among women.
5. Health care providers should intensify their effort in creating awareness among mothers on the benefits of exclusive breastfeeding this will help them in sustaining the high level of practice found among them.

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Scientific Innovations in Education for Sustainable Growth and Development of the Nigerian Economy: The Roles of Polytechnic Libraries in Rivers State

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Abstract

This study examined scientific innovations in education for sustainable growth and development of the Nigerian economy: the roles of polytechnic libraries in Rivers State. Three research questions and one hypothesis guided the study. The survey design was used for a population of 24 professional librarians from three polytechnic libraries in Rivers State namely: Kenule Saro-Wiwa Polytechnic Library, Captain Elechi Amadi Polytechnic Library and Rivers State College of Health Science and Management Technology Library. A structured four points Likert scale questionnaire of 'Strongly Agree', 'Agree', 'Disagree' and Strongly Disagree was used for data collection. Mean and standard deviation were used to answer the research questions while correlation analysis was used to test the hypothesis at 0.5 degree of freedom. Findings of the study revealed that polytechnic libraries promote scientific innovations in education through the provisions of information resources and services such as current and relevant print and electronic books, journals, newspapers, encyclopedias, dictionaries, online database, current awareness service selective, dissemination of information, academic counseling, internet services and conducive reading space. It was established that polytechnic libraries are hindered by lack of funds, lack of qualified staff, lack of modern library facilities, and poor power supply among others. This work therefore recommended that there should be improved funding for polytechnic libraries, employment of more qualified library and information professionals and better remuneration for polytechnic librarians.

Keywords: scientific innovation, education, polytechnic libraries

Introduction

There is a symbiotic relationship between education and development all over the world. Education is a major tool to drive development in the society, that is why developed economics of the world deliberately gives its educational sector very high priority in their annual developmental planning. Todaro & Smith (2011) described investment in education as a direct investment in development. Education is a dynamic mechanism of progressive change, a weapon against the vicious cycle of ignorance, disease, poverty and illiteracy which has prevented development of the individuals and the society. The important of education to development of any economy cannot be overstressed, this could be seen in the Nigerian National Policy on Education (FRN, 2004) as education is clearly been described as a major tool for national growth and development which transcend to socio-economic, political, technological, cultural development.

Clunium & Forsyth (2019) asserts that educationally induced development goes beyond increase in the Gross Domestic Product (GDP) of a nation to the acquisition of productive skills, knowledge, attitudes and habits for survival in the changing world. Education prepare man to adequately handle the challenges in the world, is a means through which value, attitude, norms of the society are transmitted from one generation to another

Educating the world for development has gone beyond mere traditional didactic pedagogy to a more scientific and innovative process of systematic experiment of empirical evidence and research. The world is not static but dynamic with influx of new ideas, skills and abilities necessitated by the advent of information and communication technology (ICT) hence, old ideas, methods, procedures, techniques are being improve on or completely replaced with innovative ones. Innovations

accordingly to Roggers (1983) as explained by John & Wheeler (2019) is an improvement over the former, it is the promotion of new ideas, adoption of new approach which would bring improvement in quality, productivity, effectiveness and efficiency. It is the act of departing from the tradition to something new and better.

Scientific innovations in education according to Luecke & Katz (2003) is seen as systematic, experimental evidence-based changes and improvement in the teaching, learning, research, administrative procedures, policies, information resources, instructional materials and others things that directly influence the outcome of the learning process. Innovation in education is an embodiment of knowledge, creativity which progress from the former with the aim of improving the outcome of the teaching and learning engagement. (Kpangban et al., 2019).

It has been established that a positive relationship exist between education and economic development but the education in most developing countries including Nigeria is not bringing the anticipated economic growth and development as there still exist wide spread poverty, ignorance, illiteracy, diseases, such countries need to improve the system of her education to be more scientific and innovative. This can best be achieved through improving on the human resources that drives the system, these include the lecturers and other personnel, the physical structures which include conducive environment, learning facilities such as modern library and information center.

Libraries are the nerves that give life to the body of any educational system that is why Anaehobi & Okoedion (2014) observed that, a fully equipped modern library in any higher institution is the livewire of that institution. The academic libraries such as the polytechnic library is concerned with the tasks of organizing, processing, storing and disseminating of information resources and services that are not only current but relevant to the information needs of the users community. Polytechnic libraries are repositories of information and education resources consciously and systematically acquired, processed, preserved and made accessible to the members of a given academic community where it is situated. (Igwe et al., 2019).

Sodiq (2016) confirmed that, the objective of a polytechnic library is to support teaching, learning and research while it services include to give users current awareness service, selective dissemination of information, lending of books, reference service, free internet service, academic counseling. Also, the library in the polytechnic gives access to current print and non print books, journals, newspapers, encyclopedias, dictionaries, online database. Students and lecturers and other staff uses the library for preparing for examination, solving assignment, preparing lecture notes, reading for promotion interviews and other consultations. Experienced library and information professionals are in charge of these libraries (Hammed & Osunrinde, 2010). This study therefore, examined scientific innovations in education for sustainable growth and development of the Nigerian economy: roles of polytechnic libraries in Rivers State.

Research Questions

6. What are the roles of polytechnic libraries in promoting scientific innovations in education for sustainable economic growth and development of Nigerian economy?
7. What are the challenges militating against polytechnic libraries in promoting innovations in education for sustainable economic growth and development of the Nigerian economy?
8. What are the possible solutions to the challenges of scientific innovations in education for sustainable growth and development of Nigerian economy?

Hypothesis

1. The roles of polytechnic libraries in Rivers State does not significantly promote scientific innovations in education for sustainable growth and development of the Nigerian economy.

Literature Review

Several studies have been conducted on the roles of polytechnic libraries in promoting innovations in education for instance, Anaehobi & Okoedion (2014) examined the use of available library services by academic staff of polytechnics in Edo and Delta States. The findings revealed that, staff of the polytechnic uses the information resources of the library such as the text books, journals, newspapers, encyclopedias, dictionaries among others. The study further revealed that, polytechnic libraries

provide free internet services, computers and conducive reading environment. Also, Sodiq (2006) carried out a study on evaluating the use of Polytechnic libraries in Nigeria, the findings showed that textbooks, journals, reference materials and newspaper/magazines are the mostly utilised information resources in the library and are consulted frequently. Most respondents used the library to prepare for examinations while Internet services and photocopy services are the mostly utilised library services. Factors like insufficient information resources, inadequate awareness of the available information resources and inability of users to utilize the electronic information resources on their own hinder the effective usage of the library information resources. Polytechnic libraries play pivotal roles in the sustenance and advancement of the academic activities of their parent institutions.

Allema (2019) conducted a work on the roles of libraries in economic development reviews the present state of library services in Ghana in relation to their contributions to the economy of the country. The writer concludes that libraries are contributing very little to the economic development of the country due to various problems such as lack of funds and the misconception of the role of libraries by administrators and policy makers. In a related study by Essam (2019) on the role of libraries as a social agents for development. Result shows that most Egyptian rural public libraries have contributed to Sustainable Development Goals.

Eze & Uzoigwe (2013) in their research paper looked into the place of academic libraries in university education in Nigeria with regards to their strategic contribution to the Nigeria's 'Education for All' initiative. The objectives of the study were to find out the different services offered by the university library in support of university education; Findings showed that most of the university libraries provided a variety of services – reference, internet, interlibrary loans in support of university education; a variety of library and information resources – textbooks, newspapers and magazines and others. Findings further showed that factors like poor funding, poor infrastructure and low level of computer literacy amongst librarians

On the challenges militating against polytechnic libraries, Oladele (2021) conducted a work on Students' Use of Selected Services in the Polytechnic library Ibadan. Findings shows that, poor funding, lack of modern library facilities, poor training and motivation packages are major challenges hindering Polytechnic libraries from meeting their mandates. Also, Hammed & Osunrinde, (2010) in their studies pointed out that government and parent institutions gives less attention to the upgrading of polytechnic libraries in terms of funds, buildings, internet and computers, out-of-date information resources like books among others. Igbeka & Ola, (2021) in their findings observed that, polytechnic libraries suffer gross under funding, lack of qualified staff, lack of promotion and better remuneration for the few library professionals.

Methodology

The study was conducted using descriptive survey design. The area of study covered all the polytechnic libraries in Rivers State but was purposively narrowed down to only three polytechnic libraries namely; Kenule Saro-Wiwa Polytechnic Library, Captain Elechi Amadi Polytechnic Library and the Rivers State College of Health science and Management Technology Library with a population of 24 professional librarians in these libraries. A four points Likert scale of 'Strongly Agree', 'Agree', 'Disagree', and 'Strongly Disagree' response type questionnaire titled 'Scientific Innovations in Education and Sustainable Development and Roles of Polytechnic Libraries Questionnaires (SIESDRPLIQ)' was used for data collection, the face and content of the questionnaires was validated by professionals in Library and Information Science while the reliability was done using split-half technique, Pearson Product Moment Correlation Coefficient (PPMC) was used to ascertain the reliability of the instrument which was 0.86 level of coefficient. The data collected was analysis using mean and standard deviation to answer the research questions, items above the criterion mean of 2.5 was accepted while items below was considered rejected. The hypothesis was tested using correlation analysis and results were presented on tables for clarity.

Results

Table 1: Demographic Characteristics of the Respondents

Gender	Frequency	Percentage	Age Range	Frequency	Percentage
Male	8	33%	20-40 Yrs	10	41%
Female	16	67%	41- 60 Yrs	14	59%
Total	24	100%		24	100%

Table 1 shows the demographic characteristics of the respondents. The majority of the library professionals 16(67%) were female and 8(33%) were male. The majority of the respondents 14(59%) were within the age bracket of 41-60years whereas 10(41%) were within the age bracket of 20-40years.

Research Question1: What are the roles of polytechnic libraries in promoting scientific innovations in education for sustainable growth and development of Nigerian economy?

Table 2: The roles of polytechnic libraries in promoting scientific innovations in education for sustainable growth and development of Nigerian economy?

S/N	Polytechnic Libraries provide	SA	A	SD	D	Mean	S.D	Decision
1	Current Awareness Service	8	15	1	1	3.2	0.70	Accepted
2	Selective dissemination of information	9	15	-	1	3.2	0.67	✓
3	Print resources for teaching and learning and research	6	13	4	2	2.9	0.86	✓
4	Electronic resources for teaching, learning and research	2	9	12	2	2.5	0.76	✓
5	Serials and reference service	3	9	10	3	2.5	0.87	✓
6	Internet services and computer gadgets	4	1	15	4	2.8	0.89	✓
7	Open Access database resources	2	2	16	4	2.6	0.88	✓
8	Audio-visual learning resources	6	13	4	2	2.9	0.86	✓
9	Information Literacy studies	6	13	2	4	2.8	0.98	✓
10	User education	5	13	3	4	2.7	0.96	✓
11	Support materials for Research	6	9	3	7	2.5	1.15	✓
12	Conducive environment	14	9	1	1	3.4	0.76	✓
						2.8		Accepted

Table 2 presents data on the service provided by polytechnic libraries to promote innovations in education for sustainable growth and development of Nigerian economy. However, respondents agreed that polytechnic libraries do provide Current Awareness Service, Selective dissemination of information, Print resources for teaching, learning and research, Electronic resources for teaching, learning and research. Serials and reference service, Internet services and computer gadgets, Open Access database resources, Audio-visual learning resources, Information Literacy studies, User education, Support materials for Research, Conducive environment.

Research Question 2: What are the challenges militating against polytechnic libraries in promoting innovations in education for sustainable growth and development of Nigerian economy?

Table3: The challenges militating against polytechnic libraries in promoting innovations in education for sustainable growth and development of Nigerian economy?

S/N	Challenges to Polytechnic libraries	SA	A	SD	D	Mean	S.D	Decision
1	Lack of funds	6	9	3	7	2.5	1.15	Accepted
2	Poor patronage from users	4	8	6	7	2.3	1.07	✓
3	Poor physical facilities	4	8	6	7	2.3	1.07	✓
4	Lack of current information resources	3	11	4	7	2.4	1.04	✓
5	Lack of qualified professionals	4	9	5	7	2.4	1.08	✓
						2.3		Accepted

Table 3 presents data on the challenges militating against service provided by polytechnic libraries to promote innovations in education for sustainable growth and development of Nigerian economy. However, respondents agreed that, lack of funds, poor patronage from users, poor physical facilities, lack of current information resources, and lack of qualified professionals.

Research Question 3: What are the possible solutions to the challenges militating against polytechnic libraries promote innovations in education for sustainable growth and development of Nigerian economy?

Table 4: The possible solutions to the challenges militating against polytechnic libraries in promoting innovation in education for sustainable growth and development of Nigerian economy?

S/N	Solutions to the Challenges	SA	A	SD	D	Mean	SD	Decision
1	Increase funds for the Polytechnic libraries	20	4	0	0	2.6	0.67	Accepted
2	Employment of more professional librarians and better remuneration	7	14	3	0	2.8	0.76	✓
3	Training and retraining of librarians in Polytechnic libraries	10	10	3	1	3.0	0.64	✓
4	Provision of technological equipment and internet for the library	15	5	2	2	2.9	0.74	✓
5	Provision of conducive environment for staff and information resources	20	4	0	0	3.2	0.64	Accepted
						3.8		

Table 4 reveals the respondent’s responses on the possible solutions to the challenges militating against polytechnic libraries promote innovations in education for sustainable growth and development of the Nigerian economy. All the items in table 5 have mean values that are above the criterion mean of (2.5), more so, the grand mean (3.8) is greater than the criterion mean (2.5), and this shows that all the items in table 4 are the solutions to the challenges.

Hypothesis 1: The roles of polytechnic libraries in Rivers State do not significantly promote scientific innovations in education for sustainable growth and development of the Nigerian economy.

Table 5: Relationship between Polytechnic libraries and scientific innovations in education for sustainable economic growth and development

Variable	Mean	Standard Deviation	N	R	p-value	Remark
Roles of polytechnic Libraries	15.1	4.39	24	0.578	0.000	Significant
Scientific innovations in education	14.6	4.36				

0.05

Table 5 shows the relationship between polytechnic libraries in promoting scientific innovations in education for sustainable growth and development of Nigerian economy. The table shows a positive correlation coefficient of 0.578 and p-value 0.000. Testing the hypothesis at the 0.05 the p-value is less than the alpha value of 0.05 which means that the null hypothesis is therefore rejected and the alternative accepted that there is a significant relationship between polytechnic libraries and scientific innovations in education for sustainable growth and development of Nigerian economy

Discussion

The findings of the study established that polytechnic libraries play major roles in promoting scientific innovations in education for sustainable growth and development of Nigerian economy. The findings showed that polytechnic libraries possess different information and education resources consciously acquired, processed, preserved, and disseminated to the polytechnic academy community, these resources include print and electronic books, journals, newspapers, encyclopedias, dictionaries, database, free internet services, current awareness, selective dissemination of information, academic counseling among others. The findings are in conformity with the study of Anaehobi & Okoedion (2014), Sadiq (2016) who also found that polytechnic libraries give access to an array of different services and resources that immensely promote scientific innovations in education for sustainable growth and development of Nigerian economy.

The findings of the study revealed the different challenges militating against polytechnic libraries from promoting scientific innovations in education, these challenges as revealed in the study include poor funds from government and parent institutions to polytechnic libraries, lack of qualified personnel, poor working facilities, lack of modern library ICT facilities, poor training and motivation packages for library staff. This is in line with the study of Hammed & Osunrinde, (2010) who revealed poor funding of polytechnic libraries is largely responsible for the poor performance in most polytechnic libraries in Nigeria

The solution to the challenges militating against polytechnic libraries promoting scientific innovations in education for sustainable growth and development of Nigerian economy as revealed in the study include increase funds for the polytechnic libraries, employment of more professional librarians and better remuneration for Library and information worker, training and retraining of librarians in polytechnic libraries, provision of technological equipment and internet for the library, provision of conducive environment for staff and provision of current print and electronic information resources. This is affirmation with the studies of Igbeka & Ola (2021) and Eze & Uzoigwe (2013) that advocated that polytechnic libraries should be given a proud of place in the allocation of funds, buildings and other facilities by the management of the institution.

Conclusion and Recommendations

It is established that libraries are very important in every academic institution. Polytechnic libraries play crucial roles by providing the necessary environment, resources and services that are essential in promoting scientific innovations in education for sustainable growth and development of the Nigerian economy. Based on the findings the following recommendations are made:

1. Government and parent institutions should make funds available to polytechnic libraries for the provision of current and relevant information resources of different formats for the promotion of scientific innovations in education for sustainable growth and development of Nigerian economy.
2. There should be provision for employment of more library and information professionals in polytechnic libraries.
3. There should be compulsory training and re-training of library staff for effective performance.
4. There should be provision of conducive accommodations and facilities for the polytechnic libraries.
5. There should be provisions of regular power supply and steady internet connection in the libraries.

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Emerging Paradox of Drug Abuse among Youths: A Case for Sustainable Development in Communities in Rivers State

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Abstract

This paper examined the effects of drug abuse on youths and community development. The import of this paper was on proffering solution to a social problem: drug abuse which inevitably affects the development of a community. Drug abuse is indiscriminate or inappropriate use of any substance which is not approved medically, culturally or socially. Its effect on youths' ability to contribute to community development is enormous and fluid. Ideas and opinions were obtained from secondary sources and analysed qualitatively. As a way forward, the paper recommended that planned quality education and emotional literacy should be developed as strategies to address the causes of drug abuse.

Keywords: abuse, community, development, drug, youths

Introduction

Each community faces one social problem or the other from time to time and the ability to surmount or sometimes, nip in the bud such problems results in grading of communities in terms of development in the areas of infrastructure, employability of youths, capacity building, tourism, education, peace and security. By implication, the destiny of every community – where they wish to be in terms of development and competitiveness – is in their hands. The good news is that it is never too late for a community to wake up and address its challenges. Youths are an integral part of a community. The word, youth is regarded in Sociology as an ascribed status, or a social construct to categorize a group of people in society rather the biological attributes of being young (Scott & Marshall, 2005). This means that you are a youth if you regard yourself as one no matter your age. However, in the context of this paper, youthful age is between 18 and 59 years. This is the age bracket that drives development in a community. Community, etymologically, is derived from Latin words, “com” (meaning with) and “unit” (meaning one) and therefore literally means “becoming one with”. Therefore, a community is a component of society defined by collective will and interest. It refers to a group of people living together in a place or who generally have a particular attribute (Obisike, 2018). It would be suicidal to leisurely underestimate the effects of drug abuse in society especially in rural areas where health promotions are “stories for the gods”. This paper makes effort to establish the impact of drug abuse on youths and community development in Rivers State through the questions stated below.

1. What is drug abuse?
2. What are the causes of drug abuse?
3. Is drug abuse a social problem in communities in Rivers State?

4. What are the indices showing that drug abuse has affected the youths and community development in Rivers State?
5. What is the way forward?
6. The emerging paradox

What is Drug Abuse?

First, a drug is, in the sense of pharmacology, any chemical substance used in the treatment, cure, prevention, or diagnosis of disease or used to otherwise enhance physical or mental well-being of humans or other animals. This is the medically desirable main effect of drugs (Bernstein et al., 2006). It is in this positive sense that we see a substance and call it a medicine. On the other hand, the undesirable side effect may include the potential for abuse. The American Psychiatric Association (2000) defines drug or substance abuse as a pattern of use that causes severe social, legal, or interpersonal problems for the user. Therefore, if a drug is not used for the purposes of wellness, it is called a poison or illicit or habit-forming medicinal substance, such as narcotics. Simply put, narcotics are those drugs that come under the restrictions of the National Drug Law Enforcement Agency (NDLEA) and they consist of mainly opiates (opium, morphine, heroin and codeine). Biologically, poisons are substances that can cause death, injury or harm to the body. This means that the abuse or misuse of drugs is what makes a drug poisonous.

Mustapha (2008) outlined the following definitions of drug abuse:

- a. It is the self medication or self administration of a drug in persistently excessive quantities which results in psychic or physical dependence, functional impairment and departure from approved social norms.
- b. It occurs when an individual indulges in a nonspecific or indiscriminate use of drugs, including alcohol, caffeine and nicotine.
- c. Drug abuse is indiscriminate or inappropriate use of any substance which is not approved medically, culturally or socially.

The first definition gives us a picture of ignorance on the part of the abuser or absence of the services of medical personnel or non availability of a functional health facility or the financial capacity to access proper medication. Here, “excessive quantity” reminds us of the fact that drugs have prescribed dose for administration depending on the age of patient, degree of the sickness, medical history and weight of the patient. Consequently, under dose is also part of drug abuse because it has medical consequences. Further explanation here may take us away from our focus, the main concern of this lecture. In sum, this definition primarily presents to us a picture of sickness and drug administration, a picture of patients and illness behaviour, a reflection of ignorance of drugs by individuals. The overall consequence here is that its impact on the health and wealth of a community is implicit.

The second and third definitions present an outright intentional act; use of drugs as a filler of a social-construct gap in the life of an individual. Here, we are presented with a picture of individuals who deliberately consume drugs, exploring their unintended functions. This category of abusers captures the main thrust of this paper. In this social context, we define drug abuse as any form of non-medical use of any substance for the purposes of stimulating the nervous system to increase strength, liveliness, boldness or social relaxation in a manner that it affects the individual and community; becomes a social problem. The argument here is that using drugs beyond medical purposes does not in itself constitute “drug abuse”; it does when it affects the productivity of the individual, when it increases criminality in a neighbourhood. Otherwise, what is the abuse when a farmer uses a drug to energize or consumes “kaikai” (local gin) for relaxation after a day's labour? Musicians, we understand, smoke and drink for energy and boldness on the stage. Certainly, we cannot classify this as a form of drug abuse culturally or socially. However, it is not our intention here to encourage farmers and musicians to use drugs as enhancers. The attempt here is to situate and explain drug abuse in the context of social and cultural situations.

So far, we have neither condemned any person who takes alcohol or cannabis or codeine or crack or cocaine nor set them free because of the advantages and disadvantages of drugs, depending on the circumstances. Contributing to this argument, Scott and Marshall (2005) state

The concept of addiction is unhelpful: it suggests a dependency with grave consequences for the individual and society. Not all

drug-users develop dependency nor do such consequences inevitably follow; the term “problem drug-user” is therefore increasingly favoured. Regarding crime, the dominant thesis is that regular drug use, coupled with the legality of supply, forces users to commit crime to pay for drugs; however, whether drug use leads to involvement in crime, or involvement in delinquent life-style introduces a person to drug use, is debated (p. 169).

While we make further attempts to establish the effects of drug abuse on the youth and community, we use the words of our Lord Jesus (in the book of John 8:11) to advise drug abusers when he commanded an adulterous woman to “go and sin no more.” It is possible to desist from drug abuse. All you need to do is to “walk in the Spirit, and you shall not fulfill the lust of the flesh” (Galatians 5:16). The conclusion here is that we should resist the temptation of substance abuse because it may lead to psychological dependence (a condition in which a person continues to use the drug despite its adverse effects, depends on it for a sense of well-being, and becomes preoccupied with obtaining the drug) or physical dependence (a physiological condition in which continued drug use becomes necessary in order to prevent an unpleasant withdrawal syndrome). One can still function without the drug at the level of psychological dependence but cannot at the level of physical dependence which leads to tolerance (a condition in which increasingly larger doses are needed to produce the same effect. At the stage of tolerance, many addicts need the drug just to prevent the negative effects of not taking it. Your guess of the financial implication here on the part of the addict, family and community is as good as ours. The truth is that many of our youths have entered the stage of drug tolerance and that is where the problem is situated. Most importantly, we should not underestimate the ease with which drug dependence develops in anyone because of its tendency to stimulate the brain's “pleasure centres”.

Causes of Drug Abuse

They include:

- a. Accessibility and availability of drugs
- b. Bad friends and families
- c. Social media influence
- d. Unemployment
- e. Desire for riches
- f. Lack of parental care and guidance
- g. Poor performance in school
- h. Lack of knowledge of the adverse effects of drugs
- i. Lack of stringent measures against abusers on the part of community and government
- j. Low self-esteem
- k. Ignoring early warning signs
- l. Depression

Is drug abuse a social problem in Communities in Rivers State?

The distinction made in defining drug abusers is useful; we can comfortably apply the term “problem drug-user” to mean any drug user whose action constitutes a social problem. A social problem is any shared condition or attitude that damages or disorganizes society such as crime, unemployment, illiteracy, among others. According to Scott and Marshall (2005), social problems refer to series of conditions and abnormal behaviours which are seen as manifestations of social disorganization. One significant characteristic of a social problem is that a community must feel its impact; as long as the community is not aware or does not feel its impact, even though it exists, it is not a social problem (Obisike, 2018). Problem, in this sense, is not an absolute term; it is only a relative term because what is a problem for one community may not be a problem for the other. Similarly, problems are not permanent; what may appear a problem today may not remain so tomorrow. If a community feels the impact of drug-users in the neighbourhood, it means that drug abuse is a social problem in that community. Drug abuse is indeed a social problem in communities in Rivers State because many communities have been devastated by youth restiveness, cultism and other criminal activities.

Nwaoku (2022) reported that 30 suspects linked to different crimes across Rivers State were arrested in the month of June, 2022. Also in September, 2022, gunmen killed a bus driver and abducted eight of his passengers along the Abonema/Degema/Emuoha road (Naku, 2022). Data from the Rivers State Response Team on Violence against Women and Children show that there were 182 sexual violence cases in 2019, 109 in 2020 and 106 in 2021 (Ezenwafor, 2021). These criminal activities could not have been perpetrated without the influence of drugs.

What are the indices showing that drug abuse has affected the youths and community development?

a. Level of aggression

One of the indications of the effects of drug abuse on youths is the degree or increased dimension of hostility and violent behaviours expressed by the youths at the slightest provocation which may be mere admonition for wrong doing. If many of the youths react violently whenever their rights are perceived to be denied, it is an indication of the adverse effects of drug abuse. Systemic research by social psychologists has established the link between drug abuse and violence (Bernstein et al., 2006). If you compare the level of aggression in our communities yester years when youths were afraid of smoking, drinking alcohol, brandishing guns and recent years, the latter period is more gruesome.

b. Increase in Criminality

With the turn of endemic rate of drug abuse, many communities have become flashpoints for rape, kidnap, robbery, thuggery, murder, arson and wanton destruction of property. This development is an expression, in verifiable terms, the link between drug abuse and crime. It is obvious that many drug abusers indulge in criminality to pay for their drugs and this hampers development of society. More destructive is the fact that many criminals operate under the influence of drugs while committing violent crimes (Pierce et al., 2017; Rafaiee et al., 2013).

c. Reduction in the number of skilled manpower among the youths

Drug abuse can cause lethargy and procrastination among users; they are good planners but poor “executioners” of strategic plans. You will know them by their tall ambitions, high hopes and by-all-means belief syndrome.

d. Lack of respect for elders and constituted authorities

Another sign of effects of drug abuse is usurpation of sacred responsibilities of elders and constituted authorities by youths. They decide when, where and how land portions are shared in communities. In some extreme cases, they take over the responsibilities of paramount rulers and CDCs. In fact, frequent agitations by youths are an early warning sign of drug abuse.

Other indicators include:

e. Indecent dressing

f. Low turnout of graduates and skill trainees

g. Low participation in sociopolitical activities

h. Low participation in sports and cultural activities

i. Low enrollment in security agencies

j. Brazen smoking of cigarettes and consumption of alcohol in public

Youths are the drivers of development in every community and the case of Rivers State cannot be different. Logically, drug-devastated youths cannot make meaningful contributions towards the development of a community. The term, development, according to Friedman (in Jhingan, 2011, p.5), is “an innovative process leading to the structural transformation of social system”. In clear terms, development means progress, change or advancement made in different areas of life for organized society. Let us take a break and ask ourselves as a community: where have we made appreciable progress in the last five years? Considering the number of graduates and postgraduates, the number of skill trainees, the number of political appointees, the number of persons who recently got paid jobs,

the state of infrastructures, the security of lives and property, the educational, tourism and religious facilities; you will be unwilling to accept that our communities are on the thresholds of development.

What is the way forward?

This paper established the link between drug abuse by youths and community development. First, an attempt was made to enumerate the causes of drug abuse and how behavioural patterns of abusers affect community development. Therefore, it is implicit that the way forward here is to address the causes of drug abuse. These causes can be tackled through different strategies; many require multifaceted approaches which may be mutually inclusive. Planned quality education, for example, is a veritable tool for community development; it has the potential to attract employment, wealth and healthy lifestyle. Beyond quality education, emotional literacy is one essential instrument which every community needs to drive development by reducing abuse of drugs among youths. Faupel (2006, p.167) describes emotional literacy as “skills and competences that are underpinned by a set of ethical and moral values”. Emotional literacy is the centre of human wholeness and it seems communities have lost it in thinking that wealth and positions are the hallmark of a “model individual.” Faupel agrees that emotional literacy is the feeling or affective aspects of human existence, and to “neglect it, to ignore it, to demean it ... may be turning us into a herd of Gadarene swine heading for disaster” (p.168).

The importance of emotional literacy is in its potency to address the needs of the poor, those people who feel they do not belong and behave badly. This is because emotional literacy makes us to understand that poor behaviour is an attempt by the individual or groups to try to meet legitimate needs. Faupel draws an analogy from the loss of Titanic to Southampton to explain the importance of emotional literacy in the life of a community. Titanic was a British luxury passenger liner that sank after it had struck the iceberg during its maiden voyage from Southampton (its home port) to New York City on the evening of Sunday, 15th April, 1912 with 2,208 passengers and crew on board. The accident took the lives of 1,500 persons, only 711, less than a third, survived. This is one famous tragedy that history will not forget; it has provoked many lessons and stories. Faupel makes the following lessons and implications for emotional literacy from it:

- a. The social redesign of the ship was probably the most important cause of how many survived and who survived.
- b. Human systems are inevitably designed by people who have power and resources, people who belong. Emotional literacy is not primarily for the poor but for the rich. The analogy here in relation to reduction of drug abuse is to appeal to bystanders (families and individuals) to change their apathy that has the greatest impact on abusers because it is in the best long-term interests of bystanders (non-abusers) to prevent the bad behaviour of abusers who do not feel as though they belong by genuinely sharing in the context of the whole community.
- c. The third lesson is that when we establish and maintain community, everybody tends to benefit. Not only would the social class distribution of survivors have been far fairer had the Titanic been designed differently, but there would probably have been far more survivors in the final analysis.

The above lessons indicate that emotional literacy is fundamentally about our feeling towards humanity, our vision and dreams for our community, what we can do to reduce criminality in our families and by extension, our communities.

The Emerging Paradox

From the foregoing discourse, it seems paradoxical to state that drug abusers (especially the youths) in a community are blame-free and practically have no role to play in deflating occasions and predisposing factors that attract abuse of drugs under this context. The blame goes to the bystanders (families, elders and community elite) and perhaps, the government. The hard truth is that the drug abusers cannot rescue themselves or initiate plans to forestall or reduce abuse of drugs; it is our responsibility which begins with the development of emotional literacy as encapsulated in the lessons of the Titanic. Expression of emotional literacy is anchored on love, patriotism, selflessness and generosity; none of these is far-fetched, they are within us if we dispose ourselves to them.

Generosity, for example, is not defined by the amount of cash or material gifts we give to people; it is defined by one's empathic nature. Empathy drives generosity in terms of giving employment to your people, providing educational materials and facilities, counseling and settling of disputes, among others.

Conclusion

The import of this paper is on proffering solution to a social problem: drug abuse which inevitably affects development of a community. We may not have exhausted all the possible solutions, but, at least, we have provoked your sensibilities towards the need to contribute to the development of your community. Your community is your mirror, a reflection of what you are, your vision, mission and dream. Your community is the basis of your identity, dignity and value which are dependent primarily on how you maintain, preserve and enhance the dignity and worth of other people. Remember, your life makes no meaning to God if you fail to live for others.

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Management Strategies of Occupational Stress: Implications for Life Expectancy

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Abstract

Employees' assimilative and adaptive skills are constantly put to the test by daily demands in the workplace. This paper considered 'Management strategies of occupational stress: implications for life expectancy' with focus on occupational stress introductory background, its consequences as well as its management strategies and implications for life expectancy. Some causes of occupational stress include having insufficient skills for the job, excessive workload, interpersonal conflicts with other staff, discrimination and harassment in workplace, threat of malpractice litigation and poor wages. Ill-health, burnout, deaths and economic loss are just some of the detrimental effects of occupational stress. Its management strategies follow a pattern of physical, cognitive, emotional and behavioural targets as well as combinational change approach or at organizational level. It was recommended amongst others that workplaces management should implement public enlightenment programmes on occupational stress and its coping mechanisms for the organization members; and that routine medical examination for all workers be made part of corporate body policies against occupational stress complications.

Keywords: implications, life expectancy, management strategies, occupational stress

INTRODUCTION

Occupation, employment, work or job, is an essential need for everyone. If some persons could be trained for a particular line of work, they are said to have a career. An occupation would typically be a part of a person's career. Occupational stress, one of the most expensive occupational health problems currently facing organizations in the twenty-first century, is now becoming a global problem that affects all nations, all employee categories, families, and society, its psychological aspect being related to one's job especially in chronic conditions. Occupational stress is really a growing global concern following its global influence. Due to the quantity of time spent there, the workplace stands out among other life events as a possible significant source of stress. Sources of work-related stress include aspects that are inherent in the employment, work environment, type of occupation, organizational structure, relationships at work, economic factors of the job, challenges with training and career growth, conflict between work and family duties, and a toxic work environment.

Karasek (2017) found an estimate of adults that spend more than 75% of their non-sleeping time working, and many find fulfillment in their jobs as a result. Moreover, Afnan et al. (2018) referred to stress as the physiological and psychological response to circumstances that threaten/challenge us requiring some specific kind of adjustment. In the light of this, Gansesan et al. (2018) had stated that two types of stress exist namely: eustress and distress adding that environmental and stressful private situations are generally referred to as "stressors." According to a global organization for stress, 75% of Americans experience moderate to high levels of stress level (Megan, 2020). But Egbelu et al. (2021) in their study of perceived stress level among community health students found moderate stress level (68.5%) for the males and high stress level (73.5%) for the females. They added that the reason might not be unconnected with the fact that larger number of respondents was females. Similarly, Singh et al. (2018) noted that girls experience more stress than boys (guys) do. A pattern of emotional, cognitive, behavioural, and physiological responses to negative and toxic features of work-

related content, work structure, and work environment are referred to as occupational stress. This paper considered causes and sources of occupational stress, its consequences, management strategies and implications for life expectancy. Causes of occupational stress are linked to diverse sources.

Both a general category of what the primary occupational stressor is and a more detailed category of what causes occupational stress can be used to group the causes of occupational stress. Among the many factors that fall under the wide category of occupational stress include poor management techniques, the demands of the job, a lack of support or autonomy, and many others. The following are some of the more specific reasons of occupational stress: lengthy hours, lacking the necessary skills for the position, discrimination, and harassment (Campbell & James, 2016). Employee stress, by definition, is an external organizational factor or stimulation that makes an employee in an organization physically, emotionally, or mentally uncomfortable. While work pressure can be positive, it has a negative impact when in excess. In this case, launch an effective and direct challenge against the situation. Although it has been highlighted that a certain level of stress is important for optimal productivity, excessive or negative stress in the workplace poses a risk to the health and safety of employees (Pulat & Ruchika, 2017).

According to Murtaza et al. (2015), occupational stress sources include factors intrinsic to the job itself, role in the organization/position held (e.g. company CEO, motor driver or ship captain), relationships at work, organizational structure, institutional determinants (poor interpersonal relations, unfair management practices), climate and extra-organizational source of stress, workplace/its environment, and type of occupation (lecturing, medical practice, nursing, engineering and occupational health and safety profession). Other sources are Financial and economic aspects of the job, conflicts between work and family responsibilities, problems with training and career development (lack of opportunities for advancement), a toxic work environment marked by an absence of leadership commitment to the organization's core values, ineffective communication methods, etc. (National Institute for Occupational Safety and Health, NIOSH, 2018). Emergency medical care is also a clear clinical source of occupational stress. Indira et al. (2019) noted that caregiving for sick patients, the anxiety of finishing clinical requirements, interacting with uncooperative patients, work overload, prolonged standing, and learning psychomotor skills, such as beds bathing and making in the ward, as well as keeping track of vital signs, are all examples of clinical sources of stress. Factors intrinsic to or associated with the job or task demands as sources of stress cut across a variety of occupations (including health care sector) and these are: poor working condition, extended working hours, work overload, position in workplace, lack of task control, role ambiguity, workplace conflict and sexual harassment. These had been attested to by Marjrahi et al. (2021). The presence of stressors emanating from these sources are not without consequences.

Some complications of occupational stress could be grouped into three namely: health effects, disease burden and death, and economic loss and physical injuries. When creating workplace treatments, the conceptualization of job stress is of utmost relevance. In an organization, both employees and employers/managers feel stressed. Stress weakens professional efficacy, compromises decision-making abilities, and hinders a provider's ability to build trusting relationships with patients. (Seigrist, 2014; Baker & Ahlbom, 2017; Ali & Ahmed, 2018; Binta, 2020). Saha, (2017) had observed that psychological suffering, in addition to physical and mental disorders, could result from work stress. Up to 440 000 persons in the UK reported experiencing illness as a result of work-related stress, depression, or anxiety; as a result, approximately 9.9 million workdays were lost in 2014/2015. According to the most current Health and Safety Executive (HSE) Report (2015), work stress is more prevalent in organizations that provide public services, with a prevalence of 1380 and an incidence of 740 per 100,000 workers (Solantaus & Punamaki, 2016; Wallace et al., 2017). Nonetheless, Pariat et al. (2014) indicated that the effects of stress can cause headache, sleep problems, anxiety, and restlessness, sadness, drinking problems, depression and many other health problems as the person experienced strain and worry. Ganesan et al. (2018) posited that the prevalence of moderate anxiety was at 67% while Bhargava and Trivedi (2018) advanced the fact that prevalence of depression was at 81.60%. According to Henderson et al. (2013), the following are some of the complications of poor stress management: menstrual issues; obesity and other eating disorders; mental health issues such depression, anxiety, and personality disorders; cardiovascular disease, including heart diseases like coronary heart disease (CHD) and arrhythmias, heart attacks,

stroke etc.; Sexual dysfunction includes impotence, early ejaculation in men, and lack of sexual desire in both men and women. Skin and hair issues include acne, eczema, psoriasis, and irreversible hair loss.

According to the World Health Organization (WHO) and International Labour Organization's first joint estimates, 1.9 million deaths in 2016 were attributable to illnesses and accidents at work (ILO). Long working hours, which are thought to operate through increased psycho-social occupational stress, were determined to be the occupational risk factor with the highest attributable burden of disease in this historic study by the WHO and the ILO (2021). Yahaya and Jaalam (2019) noted that in 2016, it is believed that workplace stress contributed to 745, 000 worker deaths from ischemic heart disease and strokes. Furthermore, Riberro et al. (2017) noted that higher education students' self-reported stress levels are typically linked to lower wellbeing and quality of life. Some were even committing suicide (Saha, 2017).

Stress at work is projected to have cost the British economy E14.3 billion in lost revenue in 2013/2014, and the increased expenses in the public sector come to E1.2 billion annually. Occupational stress is a persistent ailment brought on by job circumstances that obstruct or adversely affect a worker's advancement in their employment and overall well-being. Occupational stress is a permanent condition caused by workplace circumstances that can adversely affect employees' employment advancement and general well-being. (Yahaya & Jaalam, 2019). Stress at work has a detrimental effect on employees' attitudes and behaviours, which can be expensive for the business. According to Sutherland and Cooper (2019), such effects as attitudes changes being costly, shrinking workforce/absenteeism, high work force turnover, production reduction, lack of team work, and safety issues are often observed. Decision-making is hampered by stress, which raises the possibility of workplace accidents and material waste. These dire consequences of occupational stress call for the need to design tactics on how to assuage them.

Management strategies of occupational stress

Since people who are stressed can employ a variety of coping mechanisms to buffer, limit, or accept the impacts of the stressor, occupational stress management has been viewed as a crucial component in the stress literature. It could be referred to as physical and psychological resources that help with coping with or counteracting the consequences of work stress. It could also be viewed as an attempt made by individuals to manage environmental stressors, whether through cognition or behaviour. Confrontation, coping, distance, self-control, seeking social support, accepting responsibility, avoiding escape, tackling painful problems, and positive reappraisal are some of the management techniques. These could be organized into physical activity adjustment with reduction, cognitive process slow down, behavioural change implementation, and combinational change approach. However, these tactical techniques to managing work-related stress can also be divided into organizational and individual levels. Employee assistance programmes (EAP) and changes to job procedures are often organizational level strategies. Furthermore, according to a 2012 report by the European Agency for Safety and Health at Work, socio-demographic traits of workers have steadily become crucial elements in the evaluation and management of occupational stress. These approaches are subsequently taken below.

1. Physical Activity Adjustment: Work load of employees must be reduced by adjusting earlier required production limits downwards and/or employing more hands. The management can equally encourage decentralization of job handling. Job rotation and its enrichment need be promoted. Enterprise managers could have a productive hiring and orientation process. Taking breaks during physical exercise helps reduce tension. Employees can work hard but aim to fulfill their goals, properly handle work pressures, avoid harming their peers, families, or health, and remain stress-free (Juneja, 2019).

2. Cognitive process reduction and re-direction strategy: Slow-down of cognitive processes helps to lessen tension and ultimately stress at work. Juneja (2019) opined that an employee whose daily activity involves much of cognition could promote certain approaches for stress reduction like yoga, music, and meditating on other issues rather than what he/she is presently handling. The employee

could also release tension by cracking jokes or making any other fun as well as playing an in-door game, golf, tennis etc. Physical exercise indulgence helps to keep fit but diverts mind away from work pressures. So stop being totally pre-occupied with one-self but turn focus outwards and help others, thereby releasing some stress.

3. Emotional stress check-mating: The employer needs to provide a conducive and safe working environment. The management should encourage employee's participation in decision-making so as to release role stress. Authorities of companies must have a proper and equitable distribution of rewards and pay scales (Juneja, 2019). Organizations have to appreciate their employees when exceeding their goals and achieving their objectives. Employers should grant the employees greater independence/responsibility as well as meaningful and timely feedback. Employers should ensure more organizational communication with employees in order to avoid role ambiguity/conflict. In the same vein, managers could use better symbols and short, well-scripted indicative messages for easy identification by employees so as to avoid misinterpretation and associated stress. Similarly, a company has to ensure that the organization has specific, motivating, and attainable goals, and it gives its employees feedback on how well they are doing in achieving those goals.

The employees should make a daily duty roster of prioritized acts and organize the actions accordingly, but take regular breaks to unwind themselves while working. It is believed that by using good time management, employees can meet their goals or deadlines and reduce stress. Juneja (2019) advised that employees should possess self-awareness, emotional intelligence, and confidence at work. The staff should foster a sense of community. They ought to be close friends with some reliable coworkers or contemporaries who will listen to them out of the corner of their mouth, thus boosting their level of confidence. Building such network of social connection often help employees to overcome stress.

4. Behavioural change strategy: The employees must adopt and encourage healthy lifestyles. The employees should have healthy eating habits; have enough potable water, and take regular, adequate sleep each day. Anything short of these requirements needs immediate change. Counselling is a very effective method to combat employee stress as it helps behavioural change for success in occupational stress management. It helps the employees develop techniques for modifying their behaviour by becoming aware of their strengths and how to maximize them, as well as their flaws and how to eradicate them. Each employee is eligible to get career guidance to assist them reduce extent of their ambiguities to the career (Juneja, 2019). They have to exercise self-control at workplace.

Some coping strategies on this aspect are herein x-rayed. Studies have shown that some demographic variables (age, marital status, status of being married, number of years of employment or length of service, experience in current field, line of business, and daily hours worked, income, and hierarchical level) have a strong correlation with the coping mechanisms used by doctors, nurses, pharmacists and insurance employees (Jose & Bhat, 2013; Shafaghat et al., 2018). According to French et al. (2017) each coping strategy functions independently in stressful situation with profit of the individuals' stress perception and demographic characteristics. Ogba (2020) carried out a survey on occupational stress and its management among healthcare workers in University of Port Harcourt Teaching Hospital, Choba, Rivers State found that various cadres of healthcare workers used a variety of coping mechanisms, with doctors and nurses coming to work with a positive attitude, prioritizing and focusing on what's important at work, and managing their stress levels with support from coworkers and family; laboratory scientists have trained their minds to believe that things will improve in due course, pharmacists make sure that tasks are properly divided and that supervision is effective, administrative staff rank their tasks according to importance, and some take breaks to listen to music and talk with workmates. The following have been listed Secondary school principals can use a variety of techniques to manage their stress at work, including using their coworkers as human resources, building strong relationships with their staff, enhancing teamwork, collaborating with teachers to solve problems, and hiring qualified staff to help with administrative tasks. Principals, whether they are male or female, who do not take use of the aforementioned stress management

measures run the risk of becoming stressed out, which will lower their performance and productivity at work.

5. Combinational change approach for occupational stress management: The most effective method for preventing stress at work is frequent modification and stress management, a combinational in deed by two-prong targets. Organizations and employees can both use techniques at the individual and organizational levels (Naghieh et al., 2015). According to Pega et al. (2021) meta-analysis of experiments conducted, cognitive behavioral interventions had a greater impact on reducing psychological distress symptoms in workers than relaxation and organizational therapies. In a systematic study of stress-reduction methods for healthcare professionals, cognitive behavioural therapy was found to reduce emotional tiredness and a sense of personal failure. Understanding the stressful work environments and taking action to change them can help manage occupational stress.

In furtherance of combinational change and occupational stress management work-life balance is required. In a systematic study of stress-reduction methods for healthcare professionals, cognitive behavioral therapy was found to reduce emotional tiredness and a sense of personal failure. Understanding the stressful work environments and taking action to change them can help manage occupational stress. Griffin and Clark(2016) explained that for the lowest paid workers in particular, the intervention enhanced home life, sleep quality, and safety compliance. A recent rule in France ensures that employees may spend quality time with their families by prohibiting companies from expecting them to be available after work hours. In a similar vein, the "Thriving at Work Act" was passed in Britain, encouraging employers to assist workers who are dealing with personal issues(Management Study Guide, 2022).

Experts from numerous doable strategies to lessen occupational stress were suggested by the National Institute for Occupational Safety and Health (NIOSH) in 2018. These consist of clearly defining the roles and responsibilities of each employee, allowing them to participate in decisions that impact their jobs, fostering social contact among employees, ensuring that the volume of work is appropriate for each employee's capabilities and resources, creating stimulating work environments, and providing opportunities for employees to put their skills to use and establishing good communication about workplace issues. Achieving these implies hope for longer life expectancy.

Implications for life expectancy

Manual labour has a long history of being strongly associated with shorter life spans. A career that makes you anxious will directly affect your health and longevity. Due to the varied causes of high average lifespan or expectation of life, certain data are more difficult to understand. Therefore, skilled professionals, workers with stable jobs, and people in low-anxiety occupations may live a long life for several reasons. Stress, in contrast to apprehension over a situation, is typically negative, with accompanying unfavorable psychological and physiological changes that lead to decreased productivity, sickness, and occasionally death. A person is more likely to live a longer life if their profession has more pleasant aspects. Other significant factors include gender, nation, and statistically proven risks. (Theorell &Tores, 2018). Since stress is inevitable in healthcare workers work environment, it is fundamental that the healthcare workers do have proper perception and attitude towards occupational stress along with its management strategies as it concerns their health, well-being and effectiveness on the job.

Conclusion

The consequences of occupational stress including ill-health, disease burden/death, physical injuries and economic losses with implications for life expectancy had been x-rayed. Employers and employees are both concerned about occupational stress since it has an impact on employees' physical and mental health as well as their ability to execute their jobs with the manager worrying in meeting production targets. It is, therefore, imperative that strategic management steps and coping mechanisms be put in place against its sources and causes. It can be managed at organizational and individual levels. Ultimately, personal responsibility and employer-supported measures would inadvertently address the present crisis in organizations and result in healthier, happier workplace as well as improved organizational outcome.

Recommendations

Based on the review, the following recommendations were made:

1. The management of workplaces should implement public enlightenment programmes for the knowledge of occupational stress and coping mechanisms for members of the organization and the public.
2. Government and private sectors should review their daily activities at work in line with the capacity of the workers.
3. The company authorities employing labour should agree with workers on commensurate length of break time at work.
4. Administrators of private sectors and of government agencies should ensure the practice of routine medical examination is a regular norm for members of the organization in order to avoid illnesses that would have been prevented at the initial stage.
5. The workers' union executive should intermittently organize an interactive forum of members in any establishment to share experiences on managing occupational stress with its coping strategies.
6. Workers in an organization should encourage themselves to effectively support chosen intervention of a stress management programme.
7. The management of a company should employ more competent workers in sections of the establishment where such manpower is needed as a strategy to reduce workers stress.

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Entrepreneurship Skills in Tertiary Institutions and Poverty Debasement in Nigeria

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Abstract

The study established a link between entrepreneurship prowess and Nigerian poverty debasement. To direct this study, four research aims and four hypotheses were developed. A correlational research design was used for the study. 137 Heads of Department from the three universities in Rivers State made up the study population. 100 HODs in total took part in the study. Out of the seven higher education institutions in Rivers State, UNIPOT, RSU, and IAUE were chosen using the purposive sampling technique. To ensure that all HODs had an equal chance of being chosen, 100 HODs were chosen at random from each of the three universities using the stratified random sampling technique. There were two tools used to collect data. A 20-item questionnaire created by the researcher was used to gather data on entrepreneurship education (Entrepreneurship Education Skills Questionnaire, EESQ), and a different 5-item instrument was used to gauge poverty reduction (Poverty Reduction Questionnaire, PRQ). The instrument's dependability was evaluated using the Cronbach Alpha method. The indices were calculated using the Cronbach Alpha formula, yielding values of 0.81 and 0.82 for the EESQ and PRQ, respectively. At a significance level of $\alpha=0.05$, the Pearson Product Moment correlation statistical tool was used to test the null hypotheses. According to the study, entrepreneurship skills in Nigerian agriculture, furniture/woodworking, computer services, and food/drink/bakery have a strong and positive correlation with poverty reduction. It was finally recommended that the Nigerian government should take the task of providing our educational institutions with the necessary skill acquisition tools so that our youths can be trained in entrepreneurship skills, which will in turn promote economic growth and lessen poverty.

Keyword: debasement, entrepreneurship, poverty, skills, tertiary institution

INTRODUCTION

Education is the act or process of acquiring or imparting general knowledge, growing one's capacity for logic and judgment, and intellectually preparing oneself or others for adult life. Typically, academic institutions like universities and public schools are used to manage education. Different people have responded to this question in different ways, but (Okorosaye-Orubile, 2005) sees education as the growth of man that enables him to create and recreate himself. The pursuit of a broad range of activities planned and managed for the benefit of society and its members is how (Audu, 2004) defines it. Education is "the transmission from one generation to another, the accumulated wisdom, knowledge, skills, values, and attitudes of the society," according to Nduka (2006)."

In Nigeria, poverty has many different faces, dimensions, and disciplines. Oil is the primary driver of Nigeria's economy, accounting for 95% of export earnings, 76% of government receipts, and about a third of GDP (GDP). With its abundant natural and human resources, Nigeria has the capacity to create a thriving economy, significantly reduce poverty, and offer infrastructure, health, and education services to its thronging population. Despite the relative oil wealth of the nation, the majority of its people live in extreme poverty. According to CBN (1999), structural, economic, social, and cultural deprivations are the main characteristics of poverty. These aspects of poverty display a vicious cycle and are what cause poverty to recur on a decimal scale. Numerous successive governments have implemented one or more programs intended to reduce the scourge of poverty among Nigerians in recognition of the dehumanizing nature of poverty and all the accompanying social problems associated with it.

The notion of entrepreneurship as an alternative to conventional economic development strategies and policies is growing. Entrepreneurial development, according to proponents of entrepreneurship-based policies, generates greater returns for the public than alternative strategies like industrial recruitment, retention, and expansion. Building institutional and human capacities that will

encourage and support the development of rural dwellers is a key strategy for reducing poverty, creating income and employment opportunities, and promoting better business environments.

The private sector's contribution to the development of industry has been crucial for the majority of nations. In this regard, entrepreneurship has been extremely important. According to Ogundele (2007), encouraging and growing entrepreneurial endeavors would help disperse and diversify economic activities, as well as spur overall development in a nation. The Federal government has started a number of measures and policies to reduce the level of poverty among the masses because it is crucial for developing countries to create jobs and reduce poverty if development is to be sustained. One strategy the government has adopted to combat widespread poverty and unemployment in the nation is entrepreneurship. According to Osuagwu (2002), Nigerian entrepreneurial development should be seen as a catalyst for accelerating economic growth, creating jobs, cutting back on the import of manufactured goods, and reducing the trade deficit that these imports cause. According to Ogundele and Olayemi (2004), such entrepreneurship development will give people the skills they need to continuously innovate and improve their work. Therefore, it is widely acknowledged that entrepreneurship plays a key role in promoting economic growth, eradicating poverty, and fostering sustainable development.

In Nigeria, entrepreneurship is not a recent phenomenon. It has existed for as long as Nigeria. It began when people in the country's rural areas or hinterland began producing more goods than they needed. Until the invention of money, these required the exchange of goods for goods. Producers were able to specialize as a result of exchange, and communities realized they could focus production on the areas in which they were most qualified. As a result, Nigeria developed a culture of entrepreneurship (Nick, 2008; Rami & Towobola, 2011).

Global recognition for entrepreneurship education has grown, particularly in the fields of unemployment and national development. It is a fact that it contributes to national wealth because it opens up new market opportunities, fosters industrialization, and raises individual productivity (Jahanshashi et al., 2011). Nigeria decided to support development programs like the National Directorate of Employment (NDE), National Poverty Eradication Programmes (NAPEP), and Youth With Innovation (YOUWIN) to support poverty alleviation and youth employment in light of the advantages mentioned above, such as the provision of entrepreneurship education. Even with these gestures, unemployment continues to plague the nation as a whole and Rivers State in particular. In order to improve entrepreneurship education in universities, the National University Commission (NUC) developed intervention strategies in 2006; however, unemployment is rising.

Similar to other nations around the world, entrepreneurship education in Nigeria gives students in tertiary institutions the abilities, information, and inspiration to engage in entrepreneur activities in a variety of ventures. As a result, entrepreneurship education is provided at all levels, from primary to graduate university programs, in many Nigerian and Rivers State institutions of higher learning. This procedure aims to increase school-leavers' self-reliance.

Given this, the Federal Ministry of Education's decision to require students to take entrepreneurship education as one of their required courses in universities is viewed as a positive step in the right direction (NPE, 2014). The action will foster a spirit of independence in young people. In addition to ensuring human capacity development for national development, it will reduce unemployment. It will significantly reduce the alarming unemployment rate, especially in the Rivers State where it is reportedly worse than in other states across the country.

Aim and Objectives of the study

The purpose of this study is to examine how entrepreneurship skills in tertiary institutions relate to poverty debasement in Nigeria. The specific objectives are to:

1. Determine how entrepreneurship skills in agriculture relate to poverty reduction in Nigeria.
2. Ascertain how entrepreneurship skills in furniture/wood works relate to poverty reduction in Nigeria.
3. Investigate how entrepreneurial skills in computer services relate to poverty reduction in Nigeria.
4. Examine how entrepreneurial skills in food/drink/bakery relate to poverty reduction in Nigeria.

Hypotheses

Four (4) hypotheses were formulated to guide the study, they are:

H₀₁: There is no significant relationship between entrepreneurship skills in agriculture and poverty reduction in Nigeria.

H₀₂: There is no significant relationship between entrepreneurship skills in furniture/wood works and poverty reduction in Nigeria.

H₀₃: There is no significant relationship between entrepreneurial skills in computer services and poverty reduction in Nigeria.

H₀₄: There is no significant relationship between entrepreneurial skills in food/drink/bakery and poverty reduction in Nigeria.

METHODOLOGY

Design: Correlational research was used in the Research design. This research design was chosen because the goal of the study is to determine the relationship between the predictors and the response variables. The study's dependent variable was poverty reduction, while entrepreneurship education was its independent variable.

Population of the Study: 137 Heads of Department from the three universities in Rivers State make up the study population. The Heads of Department were used for the study because they are in a better position to explain how entrepreneurship skills in agriculture, furniture/wood works, computer services, and food/drink/bakery in Nigeria can be used to reduce poverty.

Sample of the Study: The study included 100 HODs in total. This is suitable for the target audience (Israel, 2003). Out of the seven higher education institutions in Rivers State, UNIPOT, RSU, and IAUE were chosen using the purposive sampling technique.

Sampling Method: To ensure that all HODs had an equal chance of being chosen, 100 HODs were chosen at random from each of the three universities using the stratified random sampling method.

Instrumentation: Data were gathered using two instruments. A 20-item questionnaire created by a researcher was used to gather data on entrepreneurship education (Entrepreneurship Education Skills Questionnaire, EESQ), and a different 5-item instrument was used to gauge poverty reduction (Poverty Reduction Questionnaire, PRQ). Strongly Agree, Agree, Disagree and Strongly Disagree on a modified 4-point Likert scale were used as the measurement units.

Validity: Measurement, evaluation, and education experts validated the instruments.

Reliability of the Tool: The Cronbach Alpha method was used to assess the reliability of the EESQ and PRQ. To accomplish this, copies of the EESQ and PRQ were given to a sample of 20 HODs who were not involved in the primary study. The instruments were then retrieved, scored, and coded for data analysis after filling. The indices were calculated using the Cronbach Alpha formula, yielding values of 0.81 and 0.82 for the EESQ and PRQ, respectively. This made using the study's instrument necessary.

Method of Data Collection: Before giving the instruments to the HODs, approval from the senior staff was requested. Each HOD received 100 copies of the EESQ and 100 copies of the PRQ. They were given time to react to the instrument's parts. After filing, these instruments were retrieved for data analysis.

Analysis of Data Method: The research questions were answered using mean and standard deviation, and the null hypotheses were tested using the Pearson Product Moment Correlation (PPMC) statistical tool at a significance level of =0.05. Because the data obtained was an interval data, the Pearson Product Moment correlation (PPMC) was used.

RESULTS

Hypothesis 1: There is no significant relationship between entrepreneurship skills in agriculture and poverty reduction in Nigeria.

Table 1: Pearson Product Moment Correlation Analysis (r) of the relationship between Entrepreneurship skills in Agriculture and Poverty Reduction in Nigeria (N = 100)

Variable	Σx Σy	Σx^2 Σy^2	Σxy	\bar{X} \bar{Y}	Std.	r-cal	P-value
Entrepreneurship Skills in Agriculture (x)	349.6	1245.52		3.50	0.49	0.527*	
			1224.04				0.001
Poverty Reduction (y)	346.8	1223.6		3.47	0.46		

***Correlation is significant at P < 0.05, df = 98, r-crit = 0.195**

Information on the tested hypothesis was provided in Table 1 along with the PPMC (r-value) measurement used to assess the significance of the link between Nigerian agricultural entrepreneurship and poverty reduction. The calculated coefficient of r was found to be 0.527 with 98 degrees of freedom, which is higher than the threshold r-value of 0.195. The alternative hypothesis (H₁) is retained and the null hypothesis (H₀₁) is rejected due to the significance level of p<.05. According to the analysis's statistical conclusions, Nigeria's poverty reduction and agricultural entrepreneurship skills are significantly correlated.

Hypothesis 2: There is no significant relationship between entrepreneurship skills in furniture/wood works and poverty reduction in Nigeria.

Table 2: Pearson Product Moment Correlation Analysis (r) of the relationship between Entrepreneurship Skills in Furniture/Wood Works and Poverty Reduction in Nigeria (N = 100)

Variable	Σx Σy	Σx^2 Σy^2	Σxy	\bar{X} \bar{Y}	Std.	r-cal	P-value
Entrepreneurship Skills in Furniture/Wood Works (x)	363.4	1337		3.63	0.41	0.714*	
			1266.08				0.000
Poverty Reduction (y)	346.8	1223.6		3.47	0.46		

***Correlation is significant at P < 0.05, df = 98, r-crit = 0.195**

In order to assess the significance or otherwise of the link between entrepreneurship abilities in furniture/wood works and poverty reduction in Nigeria, Table 2 provided information on the tested hypothesis as measured by PPMC (r-value). The calculated coefficient of r was found to be 0.714 with 98 degrees of freedom, which is higher than the threshold r-value of 0.195. The alternative hypothesis (H₂) is retained and the null hypothesis (H₀₂) is rejected because p<.05 level of significance. According to the analysis's statistical findings, entrepreneurship abilities in the field of furniture and woodworking and the decline in poverty in Nigeria are significantly correlated.

Hypothesis 3: There is no significant relationship between entrepreneurial skills in computer services and poverty reduction in Nigeria.

Table 3: Pearson Product Moment Correlation Analysis (r) of the relationship between Entrepreneurial Skills in Computer Services and Poverty Reduction in Nigeria (N = 100)

Variable	Σx Σy	Σx^2 Σy^2	Σxy	\bar{X} \bar{Y}	Std.	r-cal	p-value
Entrepreneurial Skills in Computer Services (x)	352.8	1267.44	1233.36	3.53	0.48	0.452*	0.006
Poverty Reduction (y)	346.8	1223.6		3.47	0.46		

*Correlation is significant at $P < 0.05$, $df = 98$, $r\text{-crit} = 0.195$

In order to ascertain the significance or otherwise of the connection between entrepreneurial skills in computer services and poverty reduction in Nigeria, Table 3 provided information on the tested hypothesis as measured by PPMC (r-value). The calculated coefficient of r was found to be 0.452 with 98 degrees of freedom, which is higher than the threshold r-value of 0.195. The alternative hypothesis (H_3) was kept and the null hypothesis (H_{03}) was rejected because $p < .05$ level of significance. According to the analysis's statistical conclusions, Nigeria's poverty reduction and entrepreneurial expertise in computer services are significantly correlated.

Hypothesis 4: There is no significant relationship between entrepreneurial skills in food/drink/bakery and poverty reduction in Nigeria.

Table 4: Pearson Product Moment Correlation Analysis (r) of the relationship between Entrepreneurial Skills in Food/Drink/Bakery and Poverty Reduction in Nigeria (N = 100)

Variable	Σx Σy	Σx^2 Σy^2	Σxy	\bar{X} \bar{Y}	Std.	r-cal	p-value
Entrepreneurial Skills in Food/Drink/Bakery(x)	356.6	1283	1243.64	3.57	0.34	0.621*	0.000
Poverty Reduction (y)	346.8	1223.6		3.47	0.46		

*Correlation is significant at $P < 0.05$, $df = 98$, $r\text{-crit} = 0.195$

In order to assess the significance of the link between entrepreneurial abilities in the food, drink, and bakery industries and the reduction of poverty in Nigeria, Table 4 provided information on the tested hypothesis as measured by PPMC (r-value). The calculated coefficient of r was found to be 0.621 with 98 degrees of freedom, which is higher than the threshold r-value of 0.195. The alternative hypothesis (H_4) is retained and the null hypothesis (H_{04}) is rejected because $p < .05$ level of significance. According to the analysis's statistical findings, entrepreneurial abilities in the food, beverage, and bakery industries are significantly correlated with a decrease in poverty in Nigeria.

Discussion of Findings

Relationship between Entrepreneurship Skills in Agriculture and Poverty Reduction in Nigeria

The purpose of this study is to examine the above. This was verified by objective one and tested with hypothesis one. Items 1-5 on the B part of the questionnaire were carefully constructed to answer this question. The grand mean stood at 3.50($SD=0.49$) for entrepreneurship skills in agriculture. The result shows that the relationship between entrepreneurship skills in agriculture and poverty reduction in Nigeria $\{r(98)=.527; > \text{critical value } (0.195), p < .0001\}$ is strongly positive and significant at .05 alpha level. Since the calculated r-value is greater than the r-critical value, we have sufficient evidence to reject the null hypothesis (H_{01}) while retaining the alternative (H_1) at .05 alpha level. This implies that there is a significant relationship between entrepreneurship skills in agriculture and poverty reduction in Nigeria.

Our research on horticultural farmers was conducted by Verhees, Kulpers, and Klopjic (2011), and their study found a connection between agricultural performance and the entrepreneurial

orientation (E.O.) method they used (Verhees et al 2011). According to a different study by Akhuemonkan, (2001), agricultural entrepreneurship involves the examination of attitudes and abilities related to relating to one's environment when starting an agricultural business. He also affirmed that a competent agricultural instructor is one who possesses leadership abilities, leadership skills, and knowledge of agriculture.

Relationship between Entrepreneurship Skills in Furniture/Wood Works and Poverty Reduction in Nigeria

The purpose of this study is to examine the above. This was verified by objective two and tested with hypothesis two. Items 6-10 on the B part of the questionnaire were carefully constructed to answer this question. The grand mean stood at 3.63(SD=0.41) for entrepreneurship skills Furniture/Wood Works. The result shows that the relationship between entrepreneurship skills in furniture/wood works and poverty reduction in Nigeria { $r(98)=.714$; > critical value (0.195), $p<.0001$ } is strongly positive and significant at .05 alpha level. Since the calculated r-value is greater than the r-critical value, we have sufficient evidence to reject the null hypothesis (H_{02}) while retaining the alternative (H_2) at .05 alpha levels. This implies that there is a significant relationship between entrepreneurship skills in furniture/wood works and poverty reduction in Nigeria.

This study concurs with a study by Malmberg and Maskel (2002) that found co-operation helps businesses. They concluded from their research that, even when it is a requirement for the curriculum, knowledge and skills in the furniture industry cannot be acquired through simple observation. They emphasized that in order for skills to be attained, students or apprentices must actually use the tools. Okoro (2005) noted unequivocally that individuals learn and practice vocational trades and subjects (including furniture making) in order to equip them with the knowledge and skills necessary for self-employment. That is to say, furniture-making knowledge and skills are crucial for independence. Obi (2010) noted that woodwork is a significant contributor to a country's economy but lamented the lack of emphasis on it in tertiary institutions. He emphasized how successful the woodworking industry is. In his study, Omeje (2013) found that woodworking involves skills such as business opportunities and is much more than what people typically refer to as "carpentry."

Relationship between Entrepreneurial Skills in Computer Services and Poverty Reduction in Nigeria

The purpose of this study is to examine the above. This was verified by objective three and tested with hypothesis three. Items 11-15 on the B part of the questionnaire were carefully constructed to answer this question. The grand mean stood at 3.53(SD=0.48) for entrepreneurial skills in computer services. The result shows that the relationship between entrepreneurial skills in computer services and poverty reduction in Nigeria { $r(98)=.452$; greater than critical value (0.195), $p<.0001$ } is strongly positive and significant at .05 alpha level. Since the calculated r-value is greater than the r-critical value, we have sufficient evidence to reject the null hypothesis (H_{03}) while retaining the alternative (H_3) at .05 alpha level. This implies that there is a significant relationship between entrepreneurial skills in computer services and poverty reduction in Nigeria.

According to a study by Daboli, Kamberova, Impagliazzo, Fu, and Curie (2010), computer education has a significant impact on students' creativity, innovativeness, and intention. Because the computing industry is one of the most dynamic fields that involves other fields and disciplines, including computer studies in students' activities will have a similar impact. Many researchers are interested in studying the field of computer services because it forms the foundation of contemporary technologies. One such interest was demonstrated by the National Center for Entrepreneurship in Education (NCEE, 2011), and the University of Strathclyde received their award as a result. In their study, they realized that the University of Strathclyde teaches skill in computer sciences to the students. In addition those specific careers have been created for staff to further intentions in computer services.

Relationship between Entrepreneurial Skills in Food/Drink/Bakery and Poverty Reduction in Nigeria

The purpose of this study is to examine the above. This was verified by objective four and tested with hypothesis four. Items 16-20 on the B part of the questionnaire were carefully constructed to answer this question. The grand mean stood at 3.57(SD=0.34) for entrepreneurial skills in food/drink/bakery. The result shows that the relationship between entrepreneurial skills in food/drink/bakery and poverty reduction in Nigeria { $r(98)=.621$; greater than critical value (0.195), $p<.0001$ } is strongly positive and significant at .05 alpha level. Since the calculated r-value is greater than the r-critical value, we have sufficient evidence to reject the null hypothesis (H_{04}) while retaining the alternative (H_4) at .05 alpha level. This implies that there is a significant relationship between entrepreneurial skills in food/drink/bakery and poverty reduction in Nigeria.

According to Odiba and Baba's (2013) study, entrepreneurship education has been recognized through the acquisition of skills in agriculture, furniture and woodworking, computer services, as well as food, drink, and bakery. This study supports their findings. Graduates with these abilities will undoubtedly be independent. Additionally, graduates in the field of entrepreneurship have been discovered to be extremely competent and perform significantly better than their peers. Because of this, entrepreneurship education should be promoted in Nigeria at all levels of education, with a focus on tertiary institutions (Charney & Libcap 2000; European Commission 2015); this will have an impact on Rivers State.

CONCLUSION

After leaving a higher education institution, graduates' ability to support themselves grows, and this invariably depends on how well entrepreneurship education is planned and delivered. Higher education graduates' ability to support themselves is improved by the practical application of entrepreneurial education concepts in the areas of electrical services, agriculture, furniture/woodworking, computer services, and food, drink, and bakery.

Recommendation

This study recommended that Nigerian government should undertake the responsibility of equipping our institutions with the necessary skill acquisition measures so as to train our youth on entrepreneurship skill which will in turn, spur economic growth and reduce poverty.

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COVID-19 Doldrums and Marketing Performance of Small Scale Business Enterprises in Port Harcourt

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Abstract

The study delved into COVID-19 doldrums and marketing performance of small scale business enterprises in Port Harcourt. The study adopted the descriptive research design. The population of the study comprised managers/owners of small scale food and beverages businesses in Port Harcourt Metropolis. The purposive sampling technique was adopted to obtain a sample size of 200 respondents drawn from the four regions of Port Harcourt, viz, the Akpor axis 50, Port Harcourt main town 50, Obio axis 50 and Rumukwurushi/Eneka axis 50. The 5-point likert scale was used in the questionnaire to obtain data from the respondents. Mean as well as standard deviation was used to answer the research questions at 3.0 mean benchmark, while the regression statistical model was used to test the research hypotheses at .05 significance level. Out of the 200 questionnaires distributed 180 which represented 85% of the copies of the questionnaire were duly returned and completed. The findings showed that there was a significant effect of price inflation on sales growth of small scale business enterprises in Port Harcourt during COVID-19. There was also a significant effect of insolvency on market share growth of small scale business enterprises in Port Harcourt during COVID-19. The study recommended that government, manufacturers and service providers should play a basic role of stimulating production in the midst of any pandemic.

Keywords: COVID-19, doldrums, marketing performance, small scale business, enterprise.

Introduction

The complexities in an ever-changing environment determine the efficiency and survival of an organization and unless the organization is fully prepared to move with the prevailing natural and economic trends financially, its efficiency and opportunity for growth and development will be eroded.

The environment of Port Harcourt offers enormous opportunities for the operation of small scale businesses and without urgent socio-economic responses, suffering will be on the increase as a result of COVID-19 lockdown that has come to put lives and livelihoods to jeopardy. The World Bank Group President; David Malpas (2020), opined that the scope and speed with which the COVID-19 pandemic and economic shutdowns have devastated the poor around the world are unprecedented and in modern times.

Grappling with weak recovery from the 2014 oil shock and the GDP growth tapering around 2.3 percent in 2019 before the COVID-19 pandemic by the Nigeria government (Chukwu & Ekeruche, 2020) and while the impact of the pandemic will vary from country to country, state to state etc, it will most likely increase poverty and inequalities at a global scale making achievements of SDGs even more urgent (UNDP, 2020).

Globally, the attention given to small scale businesses both within the academia, public/private circle is justified not only because small scale business enterprises provide the logical starting-point for big business, but because they also serve as a spring-board and training ground for big businesses and provides training in the form of apprenticeship (Baadom, 2000).

Basically, small scale business enterprises form an important part of today's economy and their successful operation is very important to the state as well as the nation's health, thus in the past the role of small scale business has been one of distinction and contribution. However, most companies classified as private company falls within the category of small scale business enterprises based on their characteristics viz; owner managers, owners, small market share, Chief Executives can

know and be known. According to Joseph (2020), micro, small and medium enterprises are especially susceptible to economic shocks due to their relatively low savings capacity and will either sink or swim in the current climate of pandemic-induced shock and artificial (but necessary) restrictions on the movement of goods and people. However, as the information about COVID-19 continued to spread, governments all over the world led by the WHO, impressed on the populace to practice social distancing that resulted into Mass self-isolation and a grinding halt in economic activities. Unfortunately, Nigeria being a developing country already face immense pressure with lack of affordable housing for millions of Nigerians, broken healthcare system with inadequate facilities, epileptic power supply, closure of businesses amongst a host of challenges, Joseph (2020) buttressed.

Indeed, the viability of small scale business in any nation is a good indices of economy growth. Reason is that small scale businesses are salient to the economic and social life of the communities they are located and are regarded to as the “big business microcosm” due to its contribution to industrial growth.

It is important to gauge how marketing activities and spending impact on small scale business enterprises in Port Harcourt during the covid-19 lockdown as marketing budget is prone to reduction during such economic downturn. Segued to marketing’s contributory and complimentary role in other areas of organization e.g. Sales, customer service etc. it is obvious that small scale business enterprises is plaque with challenges that has slowed down their return on investment during the lockdown hence the need for a deeper examination of their marketing performance in order to monitor their business progress towards their original goals.

Majority of the small scale business enterprises depends to a large extent on the movement of goods and services to maintain their supply chain and ultimately make profit which due to COVID-19 lockdowns are now starved of their daily cash-flow transactions globally due to this current global health pandemic, small scale business enterprises are now being cut in web of economic shock that has made some to swim or sink with the economic tide under a non-enabling environment of price inflation, insolvency, disruption in supply chain etc. Evidently, small scale business enterprises such as restaurant/bars, saloon/beauty shop, building materials, food stuff etc. had virtually zero revenue during the period of lockdowns in Port Harcourt. With the outbreak of the pandemic and the ensuing lockdown that caused astronomical increase in the prices of food and many other items, capital of most small scale business owners/operators has been used to sustain their families. In view of the foregoing and many others, the researcher is of the interest of finding the implication between covid-19 doldrums and marketing performance of small scale business enterprises in Port Harcourt.

Research Questions

1. What extent does price inflation affect sales growth of small scale business during COVID-19 in Port Harcourt?
2. How does the world insolvency of small scale business in Port Harcourt affect their market share growth during COVID-19 in Port Harcourt?
3. What impact does the disruption in supply chain have on sales growth of small scale business during COVID’19 in Port Harcourt?

Hypotheses

- Ho i: There is no significant effect of price inflation on sales growth of small scale business in Port Harcourt during COVID-19
- Ho ii: There is no significant effect of insolvency on market share growth of small scale business in Port Harcourt during COVID-19.
- Ho iii: There is no significant effect of disruption in supply chain on sales growth of small scale business in Port Harcourt during COVID-19.

Concept of Cóvid’19

David (2020), emphatically defined corona virus disease 2019 (covid’19) as illness caused by a novel corona virus now called severe acute respiratory syndrome corona virus 2 (SAR-COV-2), formerly called 2019-n-cov) which was first identified amid an outbreak of respiratory illness cases in Wuhan city, Hubel province, China. It was first reported to the world Health Organization (WHO) on

December 31, 2019. On January 30, 2020, the WHO declared the covid'19 outbreak a global health emergency. The World Health Organization (WHO) on March 11, 2020, declared covid'19 a global pandemic. An illness caused by SARS-cov-2,. Covid'19 is an acronym derived from "corona virus disease 2019". The name was chosen to avoid stigmatizing the virus's origin in terms of population, geography or animal associations.

According to WHO (2020), persons infected with covid'19 virus will manifest such symptom of mild to moderate respiratory illness and recover without requiring special treatment. Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease and cancer are more likely to develop serious illness.

The primary mode of transmission of covid'19 virus is through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. Therefore, it is important to practice respiratory etiquette (e.g. by coughing into a flexed elbow) WHO (2020). In this regard, the best way to prevent and slow down transmission is to be well informed about it(covid'19 virus), its causes and how it spreads. This message is all about to save yourself and others by washing your hands or using an alcohol based rub (sanitizer) frequently and not touching your face, wearing of nose mask or face shield. WHO (2020) advised at this time is "there are no specific vaccines or treatments for covid'19". However, there are many ongoing chemical trials to unraveling and evaluating potential treatments.

The Covid'19 Doldrums

The corona virus pandemic has brought about a global health as well as economic meltdown in investment, trade, employment with adverse effect on business financials goals due to restriction of movement, small scale business owners are now apprehensive of the consequences covid-19 has posed on their businesses as challenges bound in their operations resulting from increased cost of supply chain. It is pertinent that even if covid'19 is kicked-out completely, its impact on business is expected to last longer than imagined.

Imanche, et al (2020) disclosed that economists' scholars are also very keen to point out that SMEs in Nigeria can do better, but are struggling due to weak economic growth and poor government policies. That is the reason why Arefadib and Martin (2020) in Imanche et al (2020) revealed the decrease in oil prices that hitherto resulted in the reduction in value of exports by 36% in Nigeria orchestrated by the economic and social effects of the covid'19.

According to the FATE Foundation Report in <http://www.nairametrics.com>, while almost 50% of businesses were able to recognize opportunities despite the threat occasioned by the pandemic, along the line of new product creation, service expansion and diversification etc. Some business request for assistance and would like support in the area of funding, access to market and business expansion.

Dimension of Covid'19 Doldrums

9. Price inflation:

Generally, inflation simply means an increase in the price of goods and services over a period of time. Specifically, in the view of <http://www.allocadia.com>, (2020), price inflation is the increase in price of a standardized products or services over a specific period of time. Price inflation is demand pool when the amount of money available in circulation in an economic tense to grow larger yearly compare to the supply of goods available for purchase. It is cost push when the cost of inputs to the production process causes an upward push in price.

Taking price inflation from a different perspective, it could be refer to as a situation whereby the price of a goods remains the same over within some years but the amount or quantity of goods received keep decreasing gradually e.g. the quantity in stack of Beloxil crackers biscuit that cost #1 over some years now kept decreasing in weight while price remains constant.

By so doing, the coronavirus outbreak sparked off prices of commodities resulting into questions and volatility in market across the globe. For example, since covid-19 pandemic began, nutrition and livelihood cost has been on the rise. Specifically Nordhagen (2020) revealed that food price has been badly affected. Food price increased due to barriers and lack of transportation, high demand caused by shift in preference towards less perishable food etc.

10. Insolvency:

This is a situation when a company or person is unable to pay debts when they are due. For insolvent companies, it is a sort of liquidation voluntary administration and receivership. For personal insolvency, it lead to Bankrupt and personal insolvency agreement. According to Asic (2020) in March, 2020 the government passed temporary law to help business in financial distress of covid-19 pandemic but the reverse here in Nigeria (Port Harcourt) despite the rumours of COVID-19 stimulus package bailout.

Consequently, small scale businesses in Port Harcourt will go into liquidation and stop trading or go into voluntary administration and be sold as a result of the pandemic. In some cases, the outcome may lead to a company voluntary arrangement (kirks, 2020).

11. Disruption in supply chain:

The interruption of an event, activity or process caused by a disturbance is referred to as disruption. Therefore supply chain disruption could be defined as that disturbance caused by interruption in the production and distribution of goods and services.(Smith, 2019) refers to supply chain disruption as a major breakdown in the production and distribution of a supply chain including events such fine, machine breakdown natural disaster, quality issues and an unexpected surge in capacity.

It can lead to decreased productivity, increased cost, rising customer dissatisfaction etc. To Jaeger (2019), Natural disasters, drought port disruption, cargo theft and industrial are some of the top supply chain risk that should keep executives and chief risk officers on their toes. Covid'19 has disrupted supply chains around the world. There is no doubt that the pandemic has tested the ingenuity, resilience and flexibility of supply chain leaders globally as they have sought to maintain essential operators. Indeed, it is important for operators of small scale business to make rapid decision and take immediate actions to sustain their business in case of future pandemic.

Concept of Small Scale Business

Several business organizations exist in our society. These business organizations are established principally for the purpose of profit making irrespective of their sizes. Some of these organizations are relatively small in size. It is identified in terms of numbers of employees, sales turn over, capital employed or any other physical measure; perhaps because of the changes that would take place in the aggregate economy (Botton Committee of Inquiry on Small Scale, 1971).

In Nigeria and the world over, there is no specific definition of small scale business. The term small scale business, small scale industries and small scale entrepreneurs are used interchangeably to mean a small scale industry firm. Scholars, authors and schools have different ideas as to the difference in capital outlay, number of employees, fixed capital investment, sales turn over, market share, available plants and machineries and level of development which varies from one country to the other (Ayozie et al., 2013). Take for instance:

- In Nigeria, the third National Development plan defined small scale business as a manufacturing establishment employing less than ten people or whose investment in machinery and equipment does not exceed six hundred thousand naira (₦600,000). (A. Olufemi, 1980).
- Small scale business in Nigeria is any manufacturing process or services industry with a capital not exceeding ₦150,000 in manufacturing and equipment alone (The federal government small scale industry development plan of 1980).
- Small scale business are those business enterprises having investment (i.e capital and building and equipment of up to ₦50,000 pre-SAP value and employing not more than fifty persons (The small scale industry Association of Nigeria, 1973).
- The federal ministry of industry defined small scale business as enterprises that costs not more than ₦500,000 (pre-SAP value including working capital to set it up) Ayozie et al (2013).
- Small scale industry as a manufacturing, processing or servicing industry involve in a factory type of production operation employing up to 50 full time workers. In Taiwan, the small scale enterprise is defined as an enterprise with capital investment below Nts 40 million (about US \$1 million) (The Center for Management Development (CMD) of 1982).

Ekhator, (2006), buttressed the position of the United Kingdom regarding any business with an annual turnover of £2 million or less and employing not more than two hundred persons as small scale business. Also, in the United States, the small business administration defines a small business as one that is independently owned and operated and meets the employment or sales standard developed by the agency

In Nigeria, the position of the African Development Bank (ADB), Export stimulation loan (ESL) scheme defines a small and medium scale enterprise as one whose total investment excluding cost of land does not exceed US \$6.35 million. Furthermore, the National Economic Reconstruction Fund (NERFUND) defines small and medium scale business enterprise (section 2(b) of Decree No. 2 of 1969 as those with fixed cost of new investment excluding land not exceeding ten million (Ekhator, 2006). The 1989 industrial policy of Nigeria in Ekhator (2006) defines small scale industries as those with total of between one hundred thousand to two million exclusive of land but inclusive of working capital thus recognizing their existence. The above definitions describe the fluidity on the concept of small scale business arising from the result of the structural transformation required in the industrial sector coupled with the attendant production cost.

Concept of Marketing Performance

Marketing performance refers to marketing's result or outputs in comparison with the business objectives. As no business organization can exist without an element of marketing, small scale business enterprises must focus on driving and setting marketing performance criteria in order to provide guide on how their business can optimize their goal.

The American marketing association defines marketing as the performance of business activities that directs the flow of goods and services from producer to the consumer. Based on the traditional view of marketing which characterized business activities performed by individuals and organizations hence the definition by Okwandu and Ekerete (2001) that marketing refers to those activities performed by individuals or organization either profit or non-profit that enable facilitate and encourage exchange to the satisfaction of both parties. This means that if satisfaction is absent in an exchange process, marketing is underperforming. Marketing activities therefore influence intermediate outcome e.g. feelings, thoughts, knowledge etc. which in turn influence financial performance of any business be it small or big.

Marketing performance has two main drivers adopted by business executives in defining success, namely; marketing execution and marketing performance management.

- a. Marketing execution: It is the bedrock of every marketing activity undertaken by a business organization ranging from over-arching global campaigns to individual field events.
- b. Marketing performance management: (MPM): This refers to the organization capacity needed for improving return on investment (ROI) and marketing effectiveness. It ranges from planning, performance, measurement and establishment of predictive analysis. This could be achieved through;
 - Aligning marketing teams to revenue goals and corporate goal.
 - Enabling accountability and measurability etc.

Performance measurement lends support to firms in managing their marketing function by assessing how well marketing activities contributes to stimulating, facilitating, accelerating sales and the overall firm's performance (Michael, 2010). Pertinently, it is obvious that the marketing function of firms is occupied with targeting and the right products and services.

Measures of Marketing Performance:

a. Sales Growth

The percentage growth in the net sales of a business from one fiscal period to another is known as sales growth. Net sales are total sales revenue less returns, allowances and discount (Manasa, 2019). According to Sageworks (2017), small scale business that made less than \$5 million had a 6.1 percent sales growth on average. Take for instance, a food growth rate is whatever business owners and stakeholders determine to be so. Sale growth is an essential parameter for survival and financial growth of the company. Bhasin (2018) refers to sales growth as a parameter which is used to measure the performance of the sales team to increase the revenue over a pre-determined period of time. A

good sales growth can always be used for the benefit of the employees and company in terms of providing salary raise, acquiring new assets and expansion of the company or product line. A negative growth is an undesirable outcome hinting a wrong strategy or decision.

Some common types of sales growth according to Stockopedia (2020) are as follows:

- Month-on-month sales growth
- Quarterly growth
- Half year sales growth
- Annual sales growth
- Product sales growth
- Customer wise sales growth
- Competitor sale growth

In a nut shell the increase in sales over the specific period of time is a common feature of sales growth. This is important because as an investor, you want to know that the demand for a company's products or services will be increasing in the future (Stockopedia, 2020).

b. Market Share Growth

The position or portion of a market earned by a company or an organization is referred to as market share growth. In other words a company's market share is its total sales of the industry in which it operates. For instance, the purchasing activity of consumers as a whole for Toyota cars is 100% in May. If a certain brand (Toyota Camry) sells up to 60%, it implies that Camry hold 60% market share of Toyota cars. The calculation of market share takes into consideration a company's total sales of the industry in which it operates over that period (Eprime, 2020).

Two Basic Types of Market Share

According to Eprime (2020), there are two basic types of market share, namely; the value or volume market share.

- Value market share: This is the type of market share obtained based on the total share of a company out of our total segment sales.
- Volume market share: This refers to the actual numbers of units that a company sells out of total units sold in the market. The value-volume market share equation is not usually linear; a unit may have high value and low numbers which means that value market share may be low in industries like FMCG where the products are low value, high volume and there are lots of freebies.

Market share is significant because it is a measure of consumers' preference for a product over other products or market (Eprime, 2020).

Theoretical Review

The theoretical foundations underpinning this study are the Prospect and Game Theories. The prospect theory formulated in 1979 and further developed in 1992 by Amos Tversky and Daniel Kahneman, describes how individuals make choice between probabilistic alternative where risk is involved at different outcome is unknown. The prospect theory assumes that losses and gains are valued differently and thus individuals make different decisions based on perceived gains instead of perceived losses. It is also known as the loss aversions. Tversky and Kahneman opined that losses cause a greater emotional impact on an individual than does an equivalent amount of gain. For instance, if a choice is presented in two ways, with both offering the same result an individual will pick the option perceived gain. The prospect theory helps in predicting how entrepreneurs and managers will react during crunches caused by pandemic such as the corona virus.

Games theory was developed by the Hungarian born American John Von Neumann and his Princeton University colleague Oskar Morgenstern, a German-born American Economist in 1944 to solve problems in economics. According to Daniel (2019) it is the process of modeling the strategic interaction between two or more players in a situation containing set rules and outcome. They observed that economics is much like a game wherein players anticipate each other's moves and therefore requires a new kind of mathematics. Presently, games theory is a classic theory which is

applicable in almost all the fields. The main significant of games theory is the formulation of alternative strategy to compete with one another (UK Essay, 2017). In the same sense, small scale businesses with the vision of competition are likely to strategize during pandemic.

Methodology

The study adopted the descriptive research design. The relationships that exist between the dependent and independent variables were described. The population of the study includes all managers/owners of Small Scale Businesses in Port Harcourt Metropolis. The purposive sampling technique was adopted to get 200 sample size as respondents were drawn from the four regions of Port Harcourt, viz, the Akpor axis 50, Port Harcourt main town 50, Obio axis 50 and Rumukwurushi/Eneka axis 50. The 5-point likert scale was used in the questionnaire instrument to obtain responses from the respondents. The mean as well as standard deviation was used to answer the research questions at 3.0 mean benchmark, while the regression statistical model was used to test the research hypotheses at .05 significance level. The reliability of the instrument was tested using Crombach Alpha (SPSS version 23) and .922 greater than .71 was obtained which proved that the questionnaire instrument was highly reliable.

Results

Out of the 200 questionnaires distributed 180 which represented 85% of the copies of the questionnaire were duly returned and completed. The study based its analysis on the returned copies of (180) questionnaire.

Research Question 1: What extent does price inflation affect sales growth of small scale business during COVID-19 in Port Harcourt?

Table 1: The extent price inflation affects sales growth of small scale business enterprises during COVID-19 in Port Harcourt

s/n Items	N=18 0	Mini	Max	Mean	Std. Deviation	Remark
1. Price inflation brought about increased sales		1.00	5.00	3.0913	1.35924	Agreed
2. Market for commodities is volatile due to price inflation.		1.00	5.00	3.1870	.57972	Agreed
3. There is open communication link between the business and customers.		1.00	5.00	3.2087	1.79857	Agreed
4. There is a shift in product preference due to price inflation.		1.00	5.00	1.7783	.83507	Disagreed
Aggregate Mean				3.01		

Table 1 above reveals that the respondents agreed that that price inflation brought about increased sales with the mean score of 3.0913 and SD 1.35924. In item 2 mean score of 3.1870 and SD .57972 equally showed that the respondents agreed that market for commodities is volatile due to price inflation. In item 3 mean score of 3.2087 and SD 1.79857 showed that the respondents agreed that there is open communication link between the business and customers; whereas in item 4 mean score of 1.7783 and SD .83507 proved that the respondents disagreed that there is a shift in product preference due to price inflation. Thus, the aggregate mean of 3.01 which is greater than 3.00 showed that the respondents agreed to large extent that price inflation affected sales growth of small scale business during COVID-19 in Port Harcourt.

Research Question 1: How does the world insolvency of small scale business in Port Harcourt affects their market share growth during COVID-19 in Port Harcourt?

Table 2: How the world insolvency of small scale business in Port Harcourt affects their market share growth during COVID-19 in Port Harcourt.

s/n items	N=18 0	Min	Max	Mean	Std. Deviation	Remark
1. Insolvency has caused me to close down my business.		1.00	5.00	2.9783	1.23785	Disagreed
2. I went bankrupt due to my personal insolvency.		1.00	5.00	3.5696	.98101	Agreed
3. Document response procedure is done timely during covi-19.		1.00	5.00	3.7348	1.19098	Agreed
Aggregate Mean				3.02		

Table 2 above shows in item 1 mean score of 2.9783 and SD 1.23785 which shows that the respondents disagreed that insolvency has caused me to close down my business. In item 2 mean score of 3.5696 and SD .98101 imply that the respondents agreed that they went bankrupt due to my personal insolvency. In item 3 mean score of 1.4087 and SD .78072 showed that the respondents disagreed that business is placed on voluntary administration due to business insolvency. Thus, the aggregate mean score of 3.02 greater than 3.00 shows that majority of respondents agreed to how the world insolvency of small scale business in Port Harcourt affects their market share growth during COVID-19 in Port Harcourt.

Research Question 3: What impact does the disruption in supply chain have on sales growth of small scale business enterprises during COVID'19 in Port Harcourt?

Table 3: Impact does the disruption in supply chain have on sales growth of small scale business during COVID'19 in Port Harcourt

s/n items	N=18 0	Min	Max	Mean	Std. Deviation	Remark
1. Business is placed on voluntary administration due to business insolvency.		1.00	5.00	1.7783	.83507	Disagreed
2. Document response procedure is done timely during covi-19.		1.00	5.00	3.1783	1.23785	Agreed
3. There is free movement of goods and services during lockdown.		1.00	5.00	3.5696	.98101	Agreed
4. There is effective end-to-end visibility with all customers.		1.00	5.00	1.4087	.78072	Disagreed
Aggregate Mean				2.48		

Table 3 above shows in item 1 mean score of 1.7783 and SD .83507 which shows that the respondents disagreed that business is placed on voluntary administration due to business insolvency. In item 2 mean score of 3.1783 and SD 1.23785 shows that the respondents agreed that document response procedure is done timely during covi-19. In item 3 mean score of 3.5696 and SD .98101 proved that the respondents agreed that there is free movement of goods and services during lockdown. In item 4 mean score of 1.4087 and SD .78072 imply that the respondents disagreed that there is effective end-to-end visibility with all customers. Thus, aggregate mean score of 2.48 < 3.00 indicates that majority of the respondents disagreed that how the impact of the disruption in supply chain have on sales growth of small scale business during COVID'19 in Port Harcourt

Test of Hypotheses:

The hypotheses have been tested using the regression statistical model.

H01: There is no significant effect of price inflation on sales growth of small scale business in Port Harcourt during COVID'19

Table 4: Test of the effect of price inflation on sales growth of small scale business in Port Harcourt during COVID'19

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.585 ^a	.342	.334	1.10950		
ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	144.878	3	48.293	39.231	.000 ^b
	Residual	278.205	166	1.231		
	Total	423.083	179			
Coefficients ^a						
Tested items	Unstandardized Coefficients		Standardized Coefficients		T	Sig.
	B	Std. Error	Beta			
1. Price inflation brought about increased sales	3.607	.412			8.750	.000
2. Market for commodities is volatile due to price inflation.	.372	.129	.159		2.885	.004
3. There is open communication link between the business and customers.	-.445	.042	-.589		-10.636	.000
4. There is a shift in product preference due to price inflation.						
5. Price inflation has led to my source of livelihood.	-.262	.092	-.161		-2.858	.005

Table 4 above shows R value of .585^a, R-square value of .342, adjusted R square value of .334, estimated error estimate of 1.10950 and p-value of .002<.05 shows there is a significant effect of price inflation on sales growth of small scale business in Port Harcourt during COVID'19. The null hypothesis is therefore rejected.

Hypothesis 2: There is no significant effect of insolvency on market share growth of small scale business in Port Harcourt during COVID'19.

Table 5: Test of the significant effect of insolvency on market share growth of small scale business in Port Harcourt during COVID'19

Model Summary							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate			
1	.369 ^a	.136	.125	1.15813			
ANOVA ^a							
Model			Sum of Squares	Df	Mean Square	F	Sig.
1	Regression		47.767	3	15.922	11.871	.000 ^b
	Residual		303.125	174	1.341		
	Total		350.891	179			
Coefficients ^a							
Tested items	Unstandardized Coefficients			Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta				
1. Insolvency has caused me to close down my business.	1.486	.333		4.457	.000		
2. I went bankrupt due to my personal insolvency.	.441	.085	.349	5.181	.000		
3. Business is placed on voluntary administration due to business insolvency.	.164	.101	.103	1.614	.108		

Table 5 above shows R-value of .369^a, r-square value of .136, adjusted R-value of .125, estimated error of 1.15813 and p-value of .008<.05 which shows that there is a significant effect of insolvency on market share growth of small scale business in Port Harcourt during COVID'19. The null hypothesis is therefore rejected.

H03: There is no significant effect of the disruption in supply chain on sales growth of small scale business in Port Harcourt during COVID'19

Table 6: The test of the effect of the disruption in supply chain on sales growth of small scale business in Port Harcourt during COVID'19

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.287 ^a	.083	.070	1.19348		
ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	28.979	3	9.660	6.782	.000 ^b
	Residual	321.912	176	1.424		
	Total	350.891	179			
Coefficients ^a						
s/n item		Unstandardized Coefficients	Standardized Coefficients	t		Sig.
		B	Std. Error	Beta		
	1. Document response procedure is done timely during covi-19.	1.354	.485		2.792	.061
	2. There is free movement of goods and services during lockdown.	.298	.070	.327	4.238	.22
	3. There is effective end-to-end visibility with all customers.	.116	.138	.055	.846	.010

Table 6 above R-value of .287^a, R-square value of .083, adjusted R-square value of .070, error estimated value of 1.19348 and p-value of .097 greater than .05 which shows that there is a significant effect of the disruption in supply chain on sales growth of small scale business in Port Harcourt during COVID-19. The null hypothesis is therefore accepted.

Discussion of Findings

Test of hypothesis one shows that there is a significant effect of price inflation on sales growth of small scale business in Port Harcourt during COVID'19. The respondents agreed that price inflation leads to sales growth of small scale business in Port Harcourt during Covid'19. The position of the respondents is supported by <http://www.allocadia.com> (2020) stating that price inflation is demand pool when the amount of money available in circulation in an economic tense to grow larger yearly compare to the supply of goods available for purchase. It is cost push when the cost of inputs to the production process causes an upward push in price, leading to higher sales.

Taking price inflation from a different perspective, it could be refer to as a situation whereby the price of a goods remains the same over within some years but the amount or quantity of goods received keep decreasing gradually e.g. the quantity in stack of Beloxil crackers biscuit that cost #1 over some years now kept decreasing in weight while price remains constant.

By so doing, the coronavirus outbreak sparked off prices of commodities resulting into questions and volatility in market across the globe. For example, since covid-19 pandemic began, nutrition and livelihood cost has been on the rise.

In hypothesis two the test result equally showed that there is a significant effect of insolvency on market share growth of small scale business enterprises in Port Harcourt during COVID'19. The position of the respondents was buttressed by Eprime (2020) stating that the portion or portion of a

market earned by a company or an organization in other words a company's market share is its total sales of the industry in which it operates. For instance, the purchasing activity of consumers as a whole for Toyota cars is 100 in May. If a certain brand (Toyota Camry) sells 60, it implies that Camry hold 60% market share of Toyota cars. The calculation of market share takes into consideration a company's total sales of the industry in which it operates over that period. Market share according Etprime (2020) to is significant because it is a measure of consumers' preference for a product over other products or market.

In hypothesis three, the test result showed that there is no significant effect of the disruption in supply chain on sales growth of small scale business in Port Harcourt during COVID'19. Majority of the respondents were of the opinion that subscribed to the fact that disruption in supply chain does not lead to sales growth of small scale business in Port Harcourt during COVID'19. Jaeger (2019) aligned with the respondents stating that supply chain disruption can lead to decreased productivity, increased cost, rising customer dissatisfaction etc., Natural disasters, drought port disruption, cargo theft and industrial are some of the top supply chain risk that should keep executives and chief risk officers on their toes.

Covid'19 has disrupted supply chains around the world. There is no doubt that the pandemic has tested the ingenuity, resilience and flexibility of supply chain leaders globally as they have sought to maintain essential operators. Indeed, it is important for operators of small scale business to make rapid decision and take immediate actions to sustain their business in case of future pandemic

Conclusion

The study has established that price inflation leads to sales growth of small scale businesses in Port Harcourt metropolis during Covid-19. It also reached that an effect exists between insolvency and market share growth of small scale business in Port Harcourt during Covid-19. The study however aligned that disruption in supply chain does not lead to sales growth of small scale business enterprises in Port Harcourt during COVID'19.

Recommendations

Based on the findings above, the following recommendations were made:

2. Since there is a significant effect of price inflation on sales growth of small scale business in Port Harcourt during COVID'19, government and industries should ensure that production is kept at a stable level, not minding the Covid'19 pandemic. Strategies should be devised for continuous production in order to forestall inflation of prices.
3. Government should provide loans with minimal interest to operators of small scale businesses in Port Harcourt during pandemics.
4. Manufacturers and government agencies should ensure logistics are not tampered with in order to avoid the disruption in supply chain and sales growth of small scale business enterprises in Port Harcourt during COVID'19.

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Knowledge and Attitude towards Prostate Cancer Screening amongst Male Adults in Selected Communities in Rivers State

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Abstract

In this study, male adults in Kula Kingdom (Akulga) and Rumuodor (Obalga) in Rivers State were asked about their knowledge and attitudes regarding prostate cancer awareness and screening. A descriptive survey technique was used. The population of male adults in Kula Kingdom (Akulga) and Rumuodor (Obalga) were estimated 1000. Taro Yamane's approach yielded a sample size of 286 respondents (149 from the Kula Kingdom and 137 from Rumuodor) which was determined using a purposeful sampling technique and data were gathered using a well-structured questionnaire which had a reliability coefficient of 0.81 was found. Z-test was used to test the hypothesis. Results showed that the adult men of Kula Kingdom (Akulga) and Rumuodor (Obalga) had knowledge of prostate cancer through television, radio and health workers. Also, the attitude of the adult males towards prostate cancer screening enhanced early detection, improved the chances of recovery and saving of lives. It was recommended that more awareness on prostate cancer and screening campaign should be done at least every quarter in all the local government areas in the state.

Keywords: knowledge, attitude, prostate cancer, male adults

Introduction

The World Health Organization (WHO, 2011) claimed that prostate cancer is the second most frequent cause of cancer in adult males globally. A walnut-sized gland called prostate is a component of the male reproductive system. It is placed in front of the rectum and under urinary bladder. The prostate's job is to produce fluid that feeds and hides the sperm cells in the semen. The testicles create a hormone called androgen (testosterone), which regulates the prostate's activity and growth (Prostate Cancer, 2014). In addition, Ngugi and Magoha (2017) estimated that there are 0.9 million new occurrences of prostate cancer each year, along with 0.26 million fatalities. According to Ferlay et al. (2010) and Akinremi et al. (2011), prostate cancer accounts for 28,000 (11.3% of all male cancer fatalities) and 40,000 (13%) of all adult male cancer occurrences and deaths in Africa. Its incidence and prevalence in black men is in multiples of those from other races in several studies. The cause of this is not yet known, however investigations involving black men from various populations to determine if there is an enhancing element related with the racial origins of these guys may provide an explanation for the gap (Akinremi, et al., 2011). Advancements in diagnosis and treatment, death rate from prostate cancer dropped by 3.5% year from 2003 to 2012 (American Cancer Society, 2016). Akinremi et al. (2011) defined prostate cancer as a cluster of malignant cells that typically begin in the prostate's outer layer. Men may experience aches and pains in their bones, pelvis, hips, ribs, and back as early prostate cancer without treatment, progresses to adjacent lymph nodes, bones, or organs. Although the specific etiology of prostate cancer is unclear, a variety of risk factors have been linked to it. Prostate cancer risk rises in men.

Anosike (2016) reported in developed countries due to early detection, while in developing countries, most cancer victims are diagnosed with late stage, incurable tumors, pointing to the need for education schemes and better detection programs. Prostate cancer screening is an attempt to detect

prostate cancer in men who are asymptomatic. Digital rectal examination (DRE) and the measurement of blood prostate specific antigen (PSA) are the pillars of prostate cancer screening (Nakandi et al., 2013). In men with moderately and poorly differentiated illness, large population-based trials have shown that early treatment of prostate cancer improves survival when compared to no active therapy (Lu-Yao & Yao, 2017). Cancer is over twice as likely to be diagnosed in wealthy countries as in undeveloped countries. Late presentation by patients affected is a common challenge (Joe et al., 2013). This has primarily been attributed to ignorance, poor health education, a dearth of prostate cancer screening programs, poverty, subpar healthcare facilities, and an absence of specialized urological treatment (Eke & Sapira, 2012; Olapade-Olaopa et al., 2018). However, malignancies that affect men have received considerably less attention in Nigeria than cancers that affect women, particularly breast and cervical cancer. Currently there is no official prostate cancer program, which may help to explain why fewer people are conscious of the condition. This study is necessary since it will act as a starting point for the responsible parties' precise planning given those adult men who work in academic settings probably access to greater knowledge. It would also give a hint as to what might be expected in the general community. Based on a study, African-American men postponed treatment after receiving a cancer diagnosis because they thought it was a death sentence. In another study among African American men, embarrassment and the fear of a positive diagnosis were barriers to screening. Finnish participants in a randomized population-based screening trial stated previous screening, forgetfulness and not wanting to think about PC as reasons for not being screened. A study in Uganda reports that many participants failed to undergo PC screening because they did not consider PC as serious as HIV; HIV testing was considered more important than PC screening (American Cancer Society, 2016).

In Nigeria, health promotion is concerned about prostate cancer. Prostate cancer was named the most common cancer in Nigerian men and accounted for 11% of all masculine malignancies examined in a recent study, which confirmed that it is the most common malignancy among Nigerian men. Furthermore, this conclusion backs up a previous study from Enugu that identified the condition as the most frequent among the urinary tract tumors evaluated. This illness has a high rate of morbidity and mortality, with 20,000 deaths per year and a hospital incidence of 127/100,000 patients (American Cancer Society, 2016). Prostate cancer and benign prostate hyperplasia significantly increase morbidity and death among male Nigerians, according to a second study conducted in the northern Nigerian city of Zaria. According to a study titled "A Twelve-year Review of Urological Tumors of the Genito-urinary Tract in Ibadan" that used cancer registry records from the University College Hospital in Ibadan, Nigeria, from 1960 to 1979, prostate cancer had the highest frequency rate of all the urological tumors studied, with a frequency rate of 46.7%. According to a more recent review of data from the same Nigerian cancer registry, prostate cancer incidence increased between 1960 and 1996 and currently makes up 11% of all male malignancies. As shown in a Nigerian study, the median age of men with prostate cancer is 67.5 years old (WHO, 2014). The average age of men in this study was found to be 68.3 years old (9.4). Apart from age, other characteristics discovered were family history, health care access and dietary influences. The national prostate cancer risk has been estimated to be 2% (Haidula, 2014).

There are mixed results regarding the advantages of early PC screening to lower mortality. One European study indicated a 20% decrease in mortality associated to PCs. A US research, however, was unable to detect any decline in PC-related fatalities. However, it is impossible to overstate the advantages of early screening to determine cancer status, start early treatment, and lower PC-related fatalities. Approximately 75% of PC cases in Ghana are reported late to health centers at advanced stages, despite the substantial morbidity of the disease. It is suggested that inadequate understanding of PC, the availability of alternative medicines, and delayed reporting for PC screening and treatment is the causes (WHO, 2014). However, it is still true that very little research has been done to investigate perceptions..

According to research by the World Health Organization (WHO, 2014), the success of cancer treatment is significantly impacted by early diagnosis. However, it continues to be true that very little research has been done to investigate perceptions. According to Capik (2014), in Turkey and other nations, routine cancer screening programs do not contain early diagnostic tests; instead, they are performed exclusively on the advice of a doctor and only when indicated. In Nigeria, the

Demographic Health Survey (DHS) of 2013–2014 was used in earlier research to evaluate public understanding of cancer, although it omitted information on specific cancer kinds, such as prostate cancer. Prostate cancer screening, in particular, has fallen short of expectations. The Cancer Association of Nigeria (CAN) reports that because of how the examination is conducted, the majority of Nigerian men are reluctant to undergo prostate cancer screening. As a result, it's important to educate the public about prostate cancer and raise awareness of prostate cancer screening. In line with a recent article in the Villager newspaper (Moses, 2015), prostate cancer is the second-leading cause of death in Nigeria after HIV (23%) and screening tests are not widely promoted there. Instead, prostatectomy is the primary recommended course of action. The African Organization for Research and Training in Cancer (AORTIC) is dedicated to encouraging research, education, and advocacy on a number of levels to raise awareness of cancer in Africa as a result of the rising cancer burden (Cancer in Africa," 2011). According to research, prostate cancer is becoming more widely acknowledged as a serious public health issue in Africa. Prostate cancer knowledge, attitudes, and practices (KAP) were evaluated as part of the Nigerian demographic health survey that took place between 2013 and 2014. According to the study, 64% of males between the ages of 40 and 64 said they had heard of prostate cancer. Based on the DHS report (2014), only 33 (7%) men from the Oshana region had undergone a prostate cancer screening throughout the time period. Despite the fact that men in Nigeria are generally well-informed about prostate cancer, Oshana region has one of the lowest rates of males who have even heard of the disease (DHS, 2014). It is generally known that screening behavior is significantly influenced by one's level of information regarding prostate cancer (Pendleton et al., 2018).

According to anecdotal data, men in urban and rural areas are only offered the chance to get checked for prostate cancer when the doctor suspects a dangerous case. It is extremely difficult to treat if the cancer has already spread, which accounts for the high proportion of cancer fatalities (Bangma et al, 2017). It is obvious that prostate cancer is a severe public health issue that needs additional attention when the prevalence of the disease is compared to the population of Nigeria. In order to find out whether there have been any improvements in men's knowledge, attitudes, and screening practices about prostate cancer in Nigeria, the current study will look at both urban and rural areas in Rivers State (Ferlay et al., 2015).

Statement of Problem

Prostate cancer is one of the most commonly diagnosed cancers in males worldwide. When an abnormal, malignant growth of cells - which is called a tumor - forms in the prostate, it is called prostate cancer. Different parts of the body may become infected with this malignancy. Because the cancer in these situations is formed of prostate cells, it is still referred to as prostate cancer. Based on the Cancer Association of Nigeria's projection for 2022, one in eight men in Nigeria would acquire prostate cancer at some point in their lives, with the majority of men receiving a diagnosis after the age of 50. So because prostate surrounds the urethra and is situated beneath the bladder, urinary issues are frequent. Due to its location, a tumor on the prostate may press on the bladder or urethra and cause issues if it expands. The lack of adequate access to medical care, decreased documentation and reporting of cases are crucial factors contributing to late detection of the disease. Additionally, the likelihood that prostate cancer will be discovered in its advanced stages is increased by the restricted resources available for screening and detection. Furthermore, the fact that medical care and assistance are not widely accessible especially in developing countries like Nigeria may give a possible explanation for the high mortality. One of the best ways to detect cancer before any symptoms appear is to undergo a screening test. The earlier you find cancer, the easier it may be to treat. The researcher discovered limited information on prostate cancer knowledge and attitudes in certain communities in Rivers State and throughout Nigeria. Prostate cancer educational programs are being run in the neighborhood, but it's unclear whether the participants have access to the information being shared. As a follow-up, this study will evaluate the knowledge and attitudes of men in urban and rural populations in Rivers State regarding prostate cancer awareness and screening.

Objectives of the Study

The purpose of this study is to assess the level of knowledge and attitude of prostate cancer and screening amongst adult males in Kula Kingdom and Rumuodor (Obalga) in Rivers State. The following specific objectives were used to guide the study:

1. to assess the level of knowledge of prostate cancer amongst adult males in Kula Kingdom and Rumuodor (Obalga) in Rivers State.
2. to determine the extent to which attitude of adult males influence prostate cancer screening in Kula Kingdom(Akulga) and Rumuodor (Obalga) in Rivers State.

Research Questions

1. What is the level of knowledge of prostate cancer amongst adult males in Kula Kingdom and Rumuodor (Obalga) in Rivers State.?
2. To what extent does attitude of adult males influence prostate cancer screening in Kula Kingdom and Rumuodor (Obalga) in Rivers State?

Hypotheses

The null hypotheses guided the study:

1. There is no significant difference between the mean ratings of adult males in Kula Kingdom in Akuku-Toru Local Government Area and Rumuodor in Obio-Akpor with regards to the level of knowledge of prostate cancer amongst adult males.
2. There is no significant difference between the mean ratings of adult males in Kula Kingdom in Akuku-Toru Local Government Area and Rumuodor in Obio-Akpor with regards to the influence of attitude toward prostate cancer screening amongst adult males.

Methodology

The study adopted a descriptive survey design. The study was carried out in Kula Kingdom (Akulga) and Rumuodor (Obalga), Rivers State. The population of the study consisted of 1000 adult males from the study areas. From the study population, a sample size of 286 adult males was randomly selected, using the Taro Yamane's formula. The instrument used was a structured questionnaire tagged 'Knowledge and Attitude on Prostate Cancer Screening amongst Adult Males Questionnaire' (KAPCSAMQ) and structured in a four point rating scale. The researchers' personally administered the instrument on the selected respondents. Among the 286 questionnaire administered, 286 retrieved was which gave a hundred percent (100%) rating. The instrument was validated by two experts to determine its adequacy and appropriateness for the study and for its proper wordings. The Pearson Product Moment Correlation Statistics method was used for the reliability test and yielded reliability co-efficient of 0.81. The data collected from the study were analyzed using mean and standard deviation. Mean value less than 2.50 was rejected while mean value equal or greater than 2.50 was accepted for the research questions. Decision rule for the test of hypothesis was accepted if the calculated value of Z is less than the critical value and if the calculated value of Z is greater than Z critical the null hypothesis was rejected.

Results

Research Question One: What is the level of knowledge of prostate cancer amongst adult males in Kula Kingdom and Rumuodor (Obalga) in Rivers State?

Table 1: Summary of mean scores on the level of Knowledge of Prostate Cancer amongst Adult Males

	Kula adult males 149			Rumuodor adult males 137		
	X	SD	Remarks	X	SD	Remarks
1. Items Statement You are aware of prostate cancer	3.83	2.01	Agreed	3.82	2.00	Agreed
2. You got the information through television and radio	3.81	1.99	Agreed	3.80	1.98	Agreed
3. Health worker told you about prostate cancer	3.81	1.99	Agreed	3.80	1.98	Agreed
4. Community town Announcer gave the information about prostate cancer	2.59	1.30	Agreed	2.58	1.29	Agreed
5. You have experienced prostate cancer screening	2.49	1.29	Disagreed	2.52	1.29	Agreed
6. Prostate cancer screening was said to be bad	3.21	1.53	Agreed	3.10	1.47	Agreed
7. Your knowledge can provide improvement in other adult males	3.03	1.43	Agreed	3.05	1.44	Agreed
8. Grand Mean	3.25	1.64		3.24	1.64	

Field survey 20221

The result from the research question 1 as presented in table 1 reveals that majority of the respondents from Kuta Kingdom group to items 1-4 and 6 to 7, while item 5 was rejected. Also, all the items 1 to 7 on the Rumuodor community axis were all accepted. In the same vein, the grand mean of the both sections were 3.25 and 3.24 which is above the criterion mean of 2.50. Hence, all adult males accepted that standard knowledge on prostate cancer is highly desired in Kula Kingdom in Akuku-Toru Local Government Area and Rumuodor in Obio-Akpor Local Government Area Rivers State.

Research Question Two: To What extent does attitudes of adult male influence prostate cancer screening in Kula Kingdom (Akulga) and Rumuodor (Obalga Rivers State)?

Table 2: summary of mean scores on the extent to which attitude of adult males influences prostate cancer screening

		Kula adult males 149		Rumuodor adult males 137		Remarks
S/N	Items Statement	X	SD	X	SD	
9.	Busy schedule of adult male in hinders prostate cancer screening	3.80	2.01	3.80	1.98	
10.	Superstition makes adults males to refuse prostate cancer screening.	3.83	2.01	3.82	2.00	
11.	Prostate cancer is believed to be old males disease	3.03	1.45	3.80	1.98	
12.	Adult males are always afraid of the unknown about prostate cancer screening	3.21	1.53	3.10	1.49	
13.	Lack of income makes most adult males to be scared of prostate cancer screening	2.59	1.30	2.58	1.29	
14.	Illiteracy is also another inhibitor to adult male accessing prostate cancer screening	3.81	1.99	3.05	1.41	
		3.38	1.72	3.36	1.69	

Field Survey, 2022

The result from Research Question 2 indicated that all respondents accepted the views in items 8-13. Hence, since the grand mean of 3.38 and 3.36 are above the criterion mean of 2.50, both adult males from Kula and Rumuodor accepted to a high extent that, attitude influence prostate cancer screening in Rivers State.

Table 3: Z-test on the influence of level of knowledge on prostate cancer amongst adult males

Respondents	X	SD	N	DF	Z-cal	Z-crit	Decision
Kula Kingdom adult male	3.25	1.65	149				
Rumuodor Adult males	3.24	1.64	137	284	0.05	1.96	Accepted

Research data output, 2022.

The results in table 3 reveal that adult males of Kula kingdom had mean scores and standard deviation score of 3.25 and 1.65 respectively, whereas, adult males of Rumuodor had mean and standard deviation score of 3.54 and 1.64 respectively. In the basis of Z-comparison, the Z-calculated value of 0.05 is lesser than the Z-critical table value of 1.96, hence, the hypothesis was accepted. Therefore, the null hypothesis of influence of level of knowledge on prostate cancer amongst adult males in Kula kingdom and Rumuodor does not differ significantly, is retained for insufficient empirical evidence.

Table 4: Z-test on the influence of attitude towards prostate cancer screening amongst adult males

Respondents	X	SD	N	DF	Z-cal	Z-crit	Decision
Kula Kingdom adult male	3.38	1.72	149				
Rumuodor Adult males	3.36	1.69	137	284	0.1	1.96	Accepted

Research data output, 2022.

The results in table 4 shows that adult males of Kula Kingdom had mean and standard deviation scores of 3.38 and 1.72 respectively, while adult males of Rumuodor had mean and standard deviation scores of 3.36 and 1.69 respectively. On the basis of Z-comparison, the calculated Z-ratios of 0.1 is lesser than the critical table value (1.96), the hypothesis was accepted. Therefore, the null hypothesis of influence of attitude towards prostate cancer kingdom and Rumuodor does not differ significantly is retained for insufficient evidence

Discussion Findings

The findings in research question 1 indicated that, there is awareness of prostate cancer, information gotten through television and radio, community town announcer, experienced prostate cancer screening, prostate cancer screening was said to be a bad and knowledge can provide improvement in other adult males these are some of the means through which, the level of knowledge on prostate cancer are reached amongst adult males. The study's findings corroborated those of the World Health Organization (WHO, 2014), which recommended that in addition to education (disease awareness), encouragement of participation (practice), and habits that reduce the risk of contracting cancer, other steps should be taken to ensure early diagnosis. Moses (2015) further supports the conclusion that men should be educated about prostate cancer and encouraged to get screened, as was recently stated in the local newspaper. As a result, the revised hypothesis 1's findings indicate that there is no substantial difference between Kula Kingdom (Akuku) and Rumuodor (Obalga) Rivers States' mean ratings of adult males' influences on their awareness of prostate cancer.

The findings in research question 2 revealed that busy schedule of adult males hinders prostate cancer screening, superstition makes adult male to refuse prostate cancer screening, prostate cancer is believed to be old males disease, adult males are always afraid of the unknown about prostate cancer Screening, lack of income makes most adult males to be scared of prostate cancer Screening and illiteracy is also another inhibitor to adults males accessing prostate cancer Screening, the findings is in line with Yeboah- Asiamah (2017) with the view that negative attitudes and perceptions toward prostate cancer may influence screening and treatment for prostate cancer in both developed and developing nations. Kanungo *et al.*, (2015) also affirmed to the findings that a good knowledge of disease is generally associated with a better health seeking attitude and behaviour. Consequently, the null hypothesis 2 of influence of attitude towards prostate cancer screening amongst adult males in Kula Kingdom and Rumuodor does not differ significantly, is retained for insufficient evidence.

Conclusion

From the findings, it was summarized that prostate cancer is a deadly condition domiciled amongst adult males in developing and developed nations of the world. Hence, all hands must be on deck to fight to a stand-still prostate cancer through sincere conscientization process which will definitely produce pragmatic and macro communities

Recommendations

Based on the findings the following recommendations were made:

1. All stakeholders, which comprises of individuals families, different kinds of communities and not excluding the staff members of cemetery communities to effectively carryout awareness campaign on prostate cancer, its screening process and benefits at least quarterly in every community.
2. The social mobilization agencies of government NGOs and Faith-based Organization build up a positive attitude toward prostate cancer and screening in males beginning from the late adolescent age unto early adulthood (less than 40 years).

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Evaluation of Microbial Load of Some Foods Rehandled and Repackaged in Open Markets in Diobu, Port Harcourt, Rivers State, Nigeria

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Abstract

Evaluation of some packaged food sold in open markets in Port Harcourt was carried out to determine microbial load on the food due to re-handling and re-packaging practices embarked by retailers. Samples of re-packaged sugar, bread, and groundnuts were purchased from retailers and taken to the laboratory for microbial analysis. Analysis involved standard microbiological procedures. Results obtained showed that re-packaged bread had amicrobial load of 1.1×10^5 cfu/g, while sugar and groundnuts had 2.3×10^4 cfu/g, and 4.4×10^4 cfu/g respectively. The bacterial counts of *Escherichia coli* (9.0×10^3 cfu/g) and *Staphylococcus aureus* (4.8×10^3 cfu/g) obtained were significantly different ($P < 0.05$). While the heterotrophic plate count (HPC) bacteria in the food samples for bread, sugar, and groundnuts were 6.9×10^4 cfu/g, 5×10^3 cfu/g, and 2.8×10^4 cfu/g respectively, showing a significant difference at $P < 0.05$. However, heterotrophic fungi showed count of 2×10^3 cfu/g for bread, 3×10^3 cfu/g counts for cube of sugar samples and, 8×10^3 cfu/g counts for roasted groundnut ($P > 0.05$). Notable microbes isolated and identified were *Escherichia*, *Staphylococcus*, *Salmonella*, *Proteus* and *Aspergillus*. The microbial load of *Escherichia coli*, *Salmonella* spp. and *Staphylococcus aureus* counts in the food samples were at acceptable levels. Bread was the most contaminated food sample re-handled and re-packaged in the market space with higher load of microbes. Hence, re-handling and re-packaging of bread should be discouraged and if practiced, should be done hygienically.

Keywords: bread, foods, groundnuts, handle, microbial load, open markets, package, retailers, sugar

1. INTRODUCTION

Packaging of food is a process of enclosing food to protect it from damage, contamination, spoilage, pest attack and tampering during and after storage and sale. The package is often labeled with information such as amount of ingredients, nutritional content and cooking instructions (Ahenainen, 2003). Food packaging retards product deterioration and maintains or increases the quality and safety of food (Ajo, 2003). Packaging of food protects the food from external influence such as chemical, biological and physical entities that could deteriorate the food (Cassey, 2015). Hence, distinctive or innovative packaging could boost sales in a competitive market (Ajo, 2003). Food packaging may be designed for convenience such as ease of access, handling and many more (Ahenainen, 2003). Retailers re-package food to boost sales in an open-competitive market for which re-handling might influence or affect the manufacturers' packaged innovation or idea (Cassey, 2015). Consequently, the right selected re-packaging material such as leaves, plastic, aluminum foil, paper, polythene, among others should be able to maintain product freshness and quality (Marsh & Bugusu, 2007). The leaves of plants can be used to package foods. However, not all leaves are useful in food packaging as some may possess poisonous bioactive substances (Casey, 2015). Packaging food with the use of paper is not always reliable. Papers do not protect food for long period of time because paper bags have poor barrier property due to their light and weak nature (Ahenainen, 2003; Marsh & Bugusu, 2007). Sugar manufacturers in Nigeria, package sugar cubes with paper bags. The outcome of re-handling and re-packaging of table sugar cubes in Nigeria have increase with the use of polyethene or nylon bags. Economically, this practice is encouraged as a way to meet the market demand (Marsh & Bugusu,

2007). The paper board used by manufacturers to package sugar cubes are severally, disadvantaged as a result of moisture penetration, where the sugar loses its strength with increasing humidity. And also, the possibility of the paper tearing apart exposes the cubes to biological, physical or chemical influence. The un-professional practice of handling and re-packing of roasted groundnut and bread foods with the use of polyethene bag have increased sales exponentially; this practice gives the product good clarity and prevents the product from oxygen interference (Casey, 2015). Although, re-handling of these aforementioned foods are major factors in packaging practice which are not in-line with standard practices of National Agency for Food and Drug Control (NAFDAC). The retailers practice of re-handling and re-packaging a finished product into small units for the purpose of convenience, subsidized price and availability for consumers may introduce microbes into the finished product and thus lead to food borne illness (Marsh & Bugusu, 2007). Therefore, the aim of this study was to evaluate the microbial quality of table (cube) sugar, roasted groundnut and sliced bread that are often re-handled and re-packaged and retailed in the market space of Port Harcourt metropolis, Nigeria.

2. MATERIALS AND METHODS

2.1 Study area

The study was conducted at Rumuokoro axis of Port Harcourt metropolis, Rivers State, Nigeria. The area is densely populated with huge commercial activities. The huge commercial activities thus, necessitated competition amongst food vendors, geared towards meeting customers' satisfaction. With the up-spring of micro-industries such as the bakery, food vendors in their attempt to meet customers demand, embark on re-handling/re-packaging of these food (groundnuts, bread and sugar) items for customers or consumers satisfaction via food accessibility and availability.

2.3 Sample collections

Thirty (30) samples of re-handled / re-packaged cubes of sugar, bread and roasted groundnuts, comprise of 10 samples each were randomly purchased from retail-vendors. The purchased samples were transferred into sterile bags and transported to the Demonstration and Diagnostic Laboratory, Rivers State College of Health Science and Management Technology, Port Harcourt for standard microbiological analyses.

2.4 Microbial load determination

The bioload on the food samples were determined with the spread plate technique as employed by Muhammed *et al.* (2011). The technique involved taken a gram each of the food samples aseptically into a 9ml of normal saline. The composition was then serially diluted to 10^{-1} . An aliquot (0.1ml) of 10^{-1} dilution was then transferred onto freshly prepared Nutrient agar media, Mannitol Salt agar media, Salmonella/Shigella agar media, Eosin Methylene Blue agar media and Potato Dextrose agar media as carried out by Bryan *et al.* (2020) for enumeration of heterotrophic bacteria, faecal, *Salmonella*, Staphylococcal and heterotrophic fungi. The result in which the colonies were defined was determined by multiplying the number of colonies, the dilution factor and volume of inoculums, and then later expressed as colony forming unit per gram (cfu/g).

2.5 Microbial morphology and identification

Pure cultures of the isolates were characterized morphologically and identified based on their appearance on the media plates, and their biochemical and Gram stain reactions (Benson, 2002).

2.6 Statistical analysis

Data collected were analyzed and presented in tabular forms as employed by Okolie (2007). The data were analyzed using descriptive statistical methods namely; measure of central tendency, measure of variability and simple percentages. Inferential statistical method, t-test, was used to determine the level of significance at *P* value less than 0.05 between different variables studied.

3. RESULTS

3.1 Microbial load on sliced bread, cube of sugar and roasted groundnut samples

Table 1 shows the mean faecal counts of 6×10^3 cfu/g, 2×10^3 cfu/g, and 1×10^3 cfu/g derived from sliced bread, cube of sugar, and roasted groundnuts samples respectively. This shows an insignificant difference at a probability level of greater than 0.05. *Staphylococcus aureus* load on sliced bread was 2.8×10^4 cfu/g, that of sugar were 1.3×10^4 cfu/g, and that of groundnut was 7×10^3 cfu/g. The differences in these counts were not statistically significant ($P>0.05$). *Salmonella/Shigella* had no count of bacteria derived from the food samples. Heterotrophic bacteria had counts of 6.9×10^4 cfu/g, 5×10^3 cfu/g, and 2.8×10^4 cfu/g for bread, sugar and groundnut food samples respectively, showing a significant difference at $P<0.05$. However, heterotrophic fungi showed counts of 2×10^3 cfu/g for bread, 3×10^3 cfu/g counts for cube of sugar samples and for roasted groundnut, 8×10^3 cfu/g counts were derived, showing an insignificant difference ($P>0.05$). Total microbial load on bread samples was 1.05×10^5 cfu/g, while sugar samples had 2.3×10^4 cfu/g, and groundnut samples had 4.4×10^4 cfu/g counts.

Table 1: Mean microbial load on sliced bread, cube of sugar and roasted groundnut samples

Microbial Isolates	Bread (cfu/g)	Sugar (cfu/g)	Roasted Groundnut (cfu/g)	Total Microbial Load (cfu/g)	NAFDAC Permissible Limit (cfu)
Faecal	6×10^{3a}	2×10^{3a}	1×10^{3a}	9×10^3	<10
Staphylococcal	2.8×10^{4a}	1.3×10^{4a}	7×10^{3a}	4.8×10^4	<100
<i>Salmonella/Shigella</i>	0.0 ^a	0.0 ^a	0.0 ^a	0.0	0
H-bacteria	6.9×10^{4b}	5×10^{3a}	2.8×10^{4b}	1.02×10^5	<100
H-fungi	2×10^{3a}	3×10^{3a}	8×10^{3a}	1.3×10^4	<100
Microbial Load	1.05×10^5	2.3×10^4	4.4×10^4		

Keys: cfu/g = Colony-forming unit/gram, ^a =, ^b =, NAFDAC=National Agency for Food and Drug Control

H-bacteria=Heterotrophic bacteria; H-fungi=Heterotrophic fungi

3.2 Microbial phenotypic features and identification

Table 2 shows the phenotypic features of bacteria isolated and their differential biochemical reactions. *Escherichia coli* isolates presented a gray, round, and small phenotypic features. Biochemical reaction of the isolate revealed a lactose positive reaction. Yellow, round and large colonies were prime phenotypic features for *Staphylococcus aureus*, while biochemical reaction using coagulase test identified them positive.

For *Proteus* sp., they presented a colourless colony and showed a positive reaction to urease reagent.

Table 2: Phenotypic features and biochemical reactions of bacteria isolates

Colour	Shape	Size	Coagulase	Sucrose	Lactose	Urease	Catalase	Bacteria
Green	Round	Small	N	N	P	N	P	<i>E. coli</i>
Metallic Sheen								
Yellow	Round	Large	P	P	P	N	P	<i>S. aureus</i>
Colourless	Round	Large	N	P	N	P	P	<i>Proteus</i> sp.
Gray	Round	Tiny	N	N	P	N	N	<i>Salmonella</i> sp.

P=Positive reaction; N=Negative reaction

Table 3, shows the fungi phenotypic features for *Aspergillus candidus*, *Aspergillus niger* and *Candida* sp. with phenotypic features such as white grey, black growths, and creamy white and smooth respectively on the plates.

Table 3: Phenotypic features of heterotrophic fungal isolates

Macroscopic Feature	Probable Fungi
Smooth white grey colony growth	<i>Aspergillus candidus</i>
Black powdery growth	<i>Aspergillus niger</i>
Creamy white and smooth	<i>Candida</i> sp.

3.3 Frequency distribution of bacterial and fungal isolates

Tables 4a and 4b show the frequency distribution of bacterial and fungal isolates derived from sliced bread, cubes of sugar and roasted groundnut food samples respectively. For Table 4a, *Escherichia coli*, *Staphylococcus aureus*, and *Proteus* sp. accounted for 13%, 27%, and 60% of bacterial occurrence in the food samples respectively. In Table 4b, *Candida* sp. accounted for 38% of the fungal distribution in the food sample. Additional distribution of fungal in the food samples also reported *Aspergillus candidus* and *Aspergillus niger* with 29% and 33% occurrence respectively.

Table 4a: Frequency distribution of bacterial isolates

Bacteria	Sliced Bread (n=10)	Cube of Sugar (n=10)	Roasted Groundnut (n=10)	Frequency	Percentage (%)
<i>Escherichia coli</i>	2	0	0	2	13
<i>Staph. aureus</i>	2	0	2	4	27
<i>Salmonella</i> sp.	0	0	0	0	0
<i>Proteus</i> sp.	5	1	3	9	60

Table 4b: Frequency distribution of fungal isolates

Fungal	Sliced Bread (n=10)	Cube of Sugar (n=10)	Roasted Groundnut (n=10)	Frequency	Percentage (%)
<i>Candida</i> sp.	1	3	5	9	38
<i>A. candidus</i>	2	3	2	7	29
<i>A. niger</i>	2	1	5	8	33

A= *Aspergillus*; n = Number of samples investigated

5. DISCUSSION

The loads of *Escherichia coli* in the food samples (cube of sugar, sliced bread and roasted groundnut) were significantly not different. The loads of *Escherichia coli* satisfied the permissible level for *Escherichia coli* in ready-to-eat food according to National Agency for Food and Drug Control of Nigeria (NAFDAC) and thus may not present health risk although. Staphylococcal counts in the food samples showed roasted groundnut had heavy load, while sugar cubes had the least load. Basically, the loads reported in this study satisfied NAFDAC permissible level of Staphylococcal bacteria in ready to eat food. The presence and high levels of Staphylococcal bacteria in roasted groundnut may indicate frequent handling during preparation, processing and sorting (Mosupeye & Holy, 2000). Staphylococcal bacteria are part of normal flora of the human body, particularly the hand. The human body harbors large amount of *Staphylococcus aureus*, an opportunistic pathogen which transit to a new host, and becomes pathogenic (in its new environment). Staphylococcal organisms may have freely being dispersed and thus contaminated the food items.

Salmonella/Shigella loads were completely absent in the food samples, these satisfies NAFDAC's permissible level of *Salmonella* sp. and *Shigella* sp. in ready to eat food. NAFDAC recommends that there should not be any *Salmonella* sp. and *Shigella* sp. present in ready to eat food. Heterotrophic bacteria load in bread were significantly different from that obtained in roasted groundnut and cube of sugar. The loads of heterotrophic bacteria in bread were higher than groundnut and sugar, suggesting a likelihood of danger emanating from elevated level of bacteria which may pose issues in the host body when the foods are consumed (Amanidaz, 2015). Heterotrophic fungi

load in the food samples, specifically, roasted groundnut was higher than sliced bread and sugar cube, however, the loads were significantly not different probably because the fungal; *Candida* and *Aspergillus niger* were most predominant in groundnut than the other food samples as reported by Sangoyomi *et al.*(2016). Groundnut is frequently predisposed to invasion by fungi and subsequent contamination by mycotoxin-producing fungi especially in areas with humid climate which favours their growth (Bhatnagar & Ehrlich, 2002). High occurrence of *Aspergillus niger* in roasted groundnut in this study could be associated with airborne fungal spore, which may have entered the repackaged food and survived during groundnut exposure to the atmosphere (Wada *et al.*, 2018). The least of fungal load on the food samples were noticed on bread thus shows a divergent view of Muhammed *et al.* (2011) report. Muhammed *et al.* (2011) reported a high microbial load on bread sold in Zaria. Roasted groundnut is consumed in high quantities in Nigeria and by implication could lead to foodborne diseases associated with *Aspergillus niger* as documented in this study. The presence of microbes in sugar cubes are questionable, according to Solanki and Sheth (2015) proper use of salt, spices, nitrates and sugar are important means of preventing food spoilage via the control of microbes.

5.1 CONCLUSION AND RECOMMENDATION

The evaluation of microbial load of some foods packaged and sold in open-markets in Rumuokoro, Port Harcourt implicated bread as the most contaminated food sample re-handled and re-packaged in the market space. Microbial contamination may have originated from packaging material or unhygienic processes, hence, materials for repackaging must be thoroughly screened, to ward off possible hazard pose by contaminants. Picking of food with utensil should be encouraged for repackaging exercise rather than bare handling. All foods should be handled properly and hygienically to promote food safety.

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Microbial Contamination of Peeled Oranges Sold Along Roadsides in Rumuolumeni, Port Harcourt, Rivers State, Nigeria

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Abstract

Microbial contaminations of the peeled oranges for sale were investigated vis-à-vis the microbial air quality at the points of sale. Sixty (60) oranges were purchased from high, low and less vehicular/human traffic sales points and analyzed using standard microbiological procedures. Analysis involved the spread plate and plate exposure techniques, Results of the analysis showed that the mean total microbial (bacteria and fungi) load on the surface of peeled oranges at the points of sale were: 1.0×10^4 , 1.4×10^4 , 1.4×10^4 cfu/ml for less, low, and high human and vehicular movement points of sales respectively, thus shows no significant difference existed at $P > 0.05$. The counts for *Escherichia coli*, *Staphylococcus aureus*, *Salmonella* and heterotrophic bacteria on the peeled orange surfaces were; 1.5×10^3 , 2.7×10^3 , 1.8×10^3 , and 6.4×10^3 cfu/ml respectively, with results showing a significant difference at $P > 0.05$. Pearson's correlation coefficient showed 33% and 55% for bacterial and fungal spores on the peeled orange surfaces respectively were dependent on time. A total of 29 microbial isolates belonging to five genera (*Escherichia*, *Staphylococcus*, *Salmonella*, *Candida* and *Aspergillus*) were identified. The result showed that the outer surfaces of peeled oranges are contaminated with microbes of medical importance irrespective of the points of sale. *Escherichia coli*, *Salmonella* and *Staphylococcus aureus* counts satisfied the set limit of bacteria in ready-to-eat foods. However, the presence of these bacteria is an indicator of poor sanitary practice of orange vendors and of the surrounding air quality. Hence, orange vendors should receive appropriate training in hygiene matters that are in line with their work ethics and they should cover the peeled oranges displayed for sale.

Keywords: microbes, outer-surface, peeled-oranges, roadsides, points of sale, vendors,

INTRODUCTION

Oranges are round, orange-colored citrus fruits that grow on trees (Amerine *et al.*, 2007; Idise, 2011). There are many different varieties of orange, some are sweet and some sour. Common types include; sweet oranges, grape fruits, lemons, limes and hybrids (O'Neil *et al.*, 2012). Oranges first originated in Southern China and it is grown commercially, worldwide in tropical and warm temperate regions, thus, making it the most widely planted fruit tree in the world (Nicolosi *et al.*, 2020). Oranges contain very good amount of vitamin A, vitamin C and other flavonoid antioxidants such as *Alpha* and *Beta* carotenes, *Beta*-Cryptoxanthin and Zeaxanthin (Tsuda *et al.*, 2004; Ehler, 2011). Regular intake of orange juice, reduces viral infections, protects cells from damage, boosts immune system and helps eliminate cancer-causing free radicals (Tsuda *et al.*, 2004). Oranges are processed into juice, which can be consumed directly, or into concentrate, both used in cocktail drinks, punches, orange ades and liqueurs (Amerine *et al.*, 2007). Oranges are prepared or processed by handling with bare hands and peeling off the outer surface (pericarp) with the aid of a knife (O'Neil *et al.*, 2012; Idise, 2011). With proper hand hygiene, microbes are warded off and the peeled orange put up for sale in open markets for consumers to make purchase. Following this, the contact surfaces or juice sac of these peeled oranges are important and considered a microbial harbor unit because more often, consumers cut-open the juice sac with the mouth directly to obtain the juice and by this practice, come in contact with the microbes or the surfaces. The hand of the processor that comes in contact with these oranges can as well be a route of transmission of microbes. Hand hygiene, however, cannot be expected to break the

chain of microbial contamination in air environment that is heavily polluted with soot; disturbed market environment associated with human and vehicular movements accompanied with fumes and consumers unguarded touch on the displayed oranges (Anakwe, 2017). Again, air turbulence and aerosolized moisture already polluted environment (Anakwe, 2017). Unfortunately, the mechanism for evaluating the quality of fruit cleaning regimes is limited. The only method used in assessing fruit cleanliness is visual observation, which does not necessarily correspond with the microbiological risk (Jeddi *et al.*, 2014). Peeled oranges put up for sale sometimes left unattended or uncovered along the roadside for long periods of time. This act thus exposes the eating surface (Juice sac) to potential environmental hazards. This study, therefore, evaluated the permissible levels of microbial contaminations of the outer surface of peeled oranges sold along roadsides with a view to determining the ambient microbial air quality at the sales points.

2.0 MATERIALS AND METHODS

2.1 Purchase of Peeled Oranges

Sixty (60) samples of peeled oranges were purchased from three (3) different points of sale (less, moderate and high human and vehicular movement points) in street of Rumuolumeni Community of Port Harcourt, Rivers State, Nigeria. The sale of peeled oranges along the street of Rumuolumeni is noted to have increased greatly, as traders record high profits. Twenty (20) samples each from the sales point were purchased and transported in a sterile bag to the Diagnostic and Demonstration Laboratory in Rivers State College of Health Science and Management Technology, Port Harcourt, for microbiological analyses.

2.2 Physical/Sensory Examination of the Orange Samples

The peeled orange samples were virtually and physically examined before purchased as carried out by Bonvissuto (2020). The color, smell, surface area, taste, and shapes were determined by physical/sensory observation.

2.3 Microbial Air Quality Determination

The air quality with respect to bacteria and fungi micro-spore were determined at 20-, 40- and 60-minutes interval exposure time on freshly prepared Nutrient agar media and Potato Dextrose agar media respectively, at the points of sale. The air quality was determined as carried out as described by Anyanwu *et al.* (2019).

2.4 Microbiological Examination of Peeled Oranges

Microbial analysis employed standard microbiological procedures as adopted by Public Health England (2017), where several streaks of swab were taken from the contact surface of the peeled oranges and inoculated into normal saline for 12 hours. Thereafter, a 10-fold serial dilution was carried-out on the sample, and a dilution factor of 10^{-2} from which a 0.1 inoculum volume was inoculated on freshly prepared nutrient agar, potato dextrose agar, mannitol salt agar, eosin methylene blue agar and *Salmonella/Shigella* agar as modified and adopted by Wemedo *et al.* (2016). The media plates were incubated at 37°C for 24 hours for microbial growth. Growth on media were counted as colonies and recorded as colony forming unit per milliliters.

2.5 Microbial Characterization and Identification

The colonial appearances of the isolates were aseptically, examined carefully and the colonies sub-cultured in nutrient agar for biochemical identification. The microbial isolates were identified on the bases of morphological and biochemical scheme as described by Benson *et al.* (2018).

2.6 Statistical analysis

This involved determining the average of the colony counted and thereafter analyzing their differences in each batch. The least significant difference test was done as documented by Ogbeibu (2005) and data presented graphically. The data were presented in tables of frequency and analyzed

using mean and percentage while Analysis for variance and t-test were used to test the hypothesis at 0.05 significance level using Statistical Package for Social Sciences (SPSS) software.

3.0 RESULTS

3.1 Physical/Sensory Examination of the Peeled Orange Samples

Table 1, shows the physical and sensory observation of the investigated oranges. All oranges purchased and observed had similar physical/sensory properties. They all had sweet taste, same juice sac coloration, similar surface areas and shape.

Table 1: Physical/Sensory Examination of the Peeled Orange Samples at their Respective Points of Sale

Points of Sale	Smell	Surface Area	Juice -sac Color	Taste	Shape
F1	Non	Smooth	Off-white	Sweet	Spherical
F2	Non	Smooth	Off- white	Sweet	Spherical
F3	Non	Smooth	Off-white	Sweet	Spherical

Keys: F3= Less human and Vehicular Movement Sales Point, F2= Moderate Human and Vehicular Movement Sales Point, F1= High Human and Vehicular Movement Sales Point

3.2 Contact Surface (Juice Sac) Microbial Loads

Table 2 shows faecal bacteria counts of 1.1×10^3 , 1.6×10^3 and 1.7×10^3 cfu/ml, for peeled oranges sold at road side with less, moderate and high human and vehicular movement points respectively. No significant difference exists at $P > 0.05$. Similarly, no statistical difference exists at $P > 0.05$ in loads of *Staphylococcus aureus* counts at 1.6×10^3 , 3.8×10^3 and 3.2×10^3 cfu/ml for peeled oranges sold at road side with less, moderate and high human and vehicular movement points respectively. *Salmonella/Shigella* reported a bacteria population of 1.3×10^3 cfu/ml for less human and vehicular movement point, 2.2×10^3 cfu/ml for moderate human and vehicular movement points and 2.0×10^3 cfu/ml for high human and vehicular movement points. All *Salmonella/Shigella* bacterial isolated were significantly not different at $P > 0.05$. Heterotrophic counts obtained were not significantly different at $P > 0.05$ as obtained, with less human and vehicular movement points reporting a bacteria count of 6.4×10^3 cfu/ml, followed by points with moderate and high human and vehicular movement points reporting 6.1×10^3 and 6.6×10^3 cfu/ml respectively, with no significant difference ($P > 0.05$). The total microbial load at the sales point on the peeled oranges were 1.04×10^4 , 1.37×10^4 and 1.35×10^4 cfu/ml for peeled oranges sold at road side with less, moderate and high human and vehicular movement points respectively.

Table 2: Contact Surface (Juice Sac) Bacterial Loads

Bacterial Isolates	F3 (n=20) cfu/ml	F2 (n=20) cfu/ml	F1 (n=20) cfu/ml	Total Bacterial cfu/ml	WHO Permissible Limit (cfu)
<i>Escherichia coli</i>	1.1×10^3	1.6×10^3	1.7×10^3	1.5×10^3	<10
<i>Staphylococcus aureus</i>	1.6×10^3	3.8×10^3	3.2×10^3	2.7×10^3	<100
<i>Salmonella/Shigella</i>	1.3×10^3	2.2×10^3	2.0×10^3	1.8×10^3	0
Heterotrophic Bacteria	6.4×10^3	6.1×10^3	6.6×10^3	$6.4. \times 10^3$	<100
Total Bacterial Load	1.04×10^4	1.37×10^4	1.35×10^4		

Keys: F3= Less human and Vehicular Movement Sales Point, F2= Moderate Human and Vehicular Movement Sales Point, F1= High Human and Vehicular Movement Sales Point, n = number of orange sample, cfu = coliform forming unit

3.3 Air Bacteria Spore

The regression coefficient of the bacterial spore and time of exposure of the peeled orange as shown in Figure 1 reported a negative slope of -0.485 and a positive intercept of 67.34. The result implied that for every minute of exposure of the peeled oranges, there is a -0.5 bacterial spore dispersed on the peeled orange surface. Similarly, the correlation coefficient value R^2 of these relationship which is

0.327 implies that 33% of the bacterial spore so dispersed on the juice sac is dependent on time of exposure.

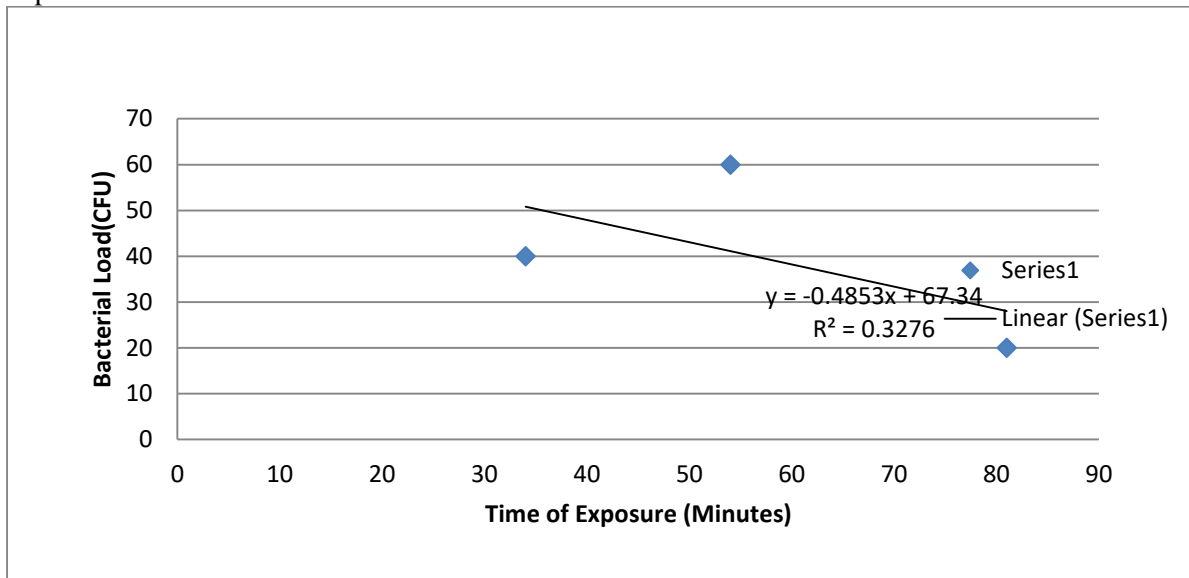


Figure 1. A regression curve showing bacterial load and time of exposure of peeled oranges

3.4 Arial Fungal Spore

Figure 2 shows the regression coefficient of the fungal spore and time of exposure on the peeled oranges. A negative slope (-1.645) and a positive intercept of 76.20 result implied that for every minute of exposure of the peeled oranges, there is a -1.6 fungal spore colony dispersed on the orange surface. Similarly, the correlation coefficient value R^2 of this relationship which is 0.534 implied that 53% of the fungal spore so dispersed on the juice sac is dependent on time of exposure.

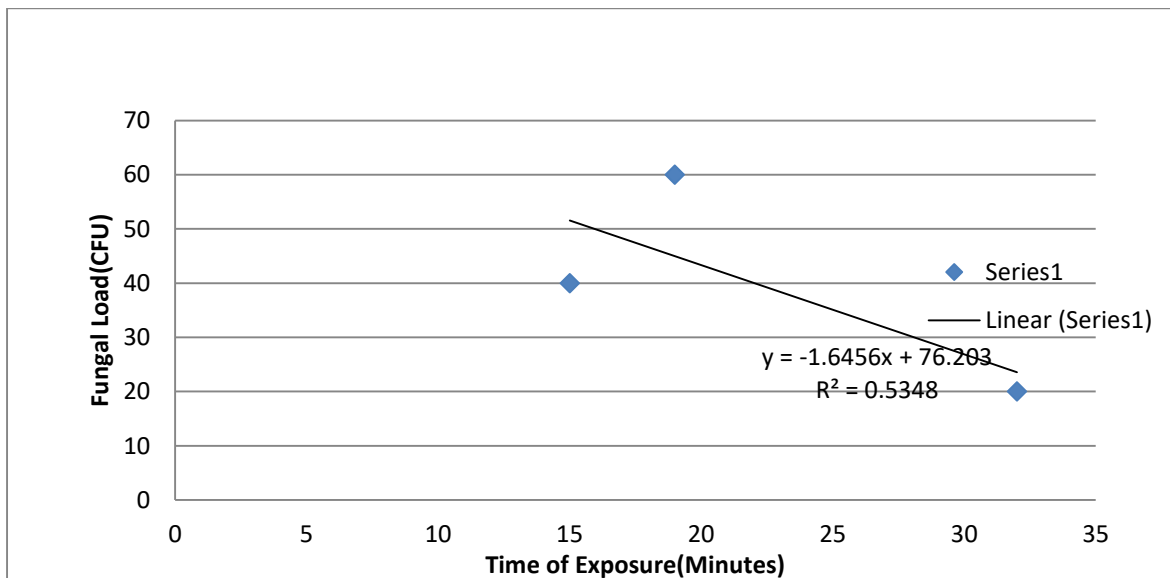


Figure 2: A regression curve showing fungal load and time of exposure of peeled oranges

3.5 Characteristics of the Isolates

Tables 3 and 4 show the bacterial morphology, biochemical reactions and fungal morphology of the isolates recovered from the orange juice sac surface from the points of sale. Phenotypic feature revealed green metallic sheen-colored colonies that are round and tiny with a positive chemical reaction to lactose sugar. *Salmonella* was identified on Salmonella/Shigella agar with a grey colony that is catalase negative. A positive coagulase test was used to identify *Staphylococcus aureus* which

reacted positive to sugar fermentation. Table 4 shows some fungi recovered. They are *Aspergillus niger* and *Mucor* sp. with 19 and 26 percentage frequency respectively as noted in Table 5. Furthermore, Table 5, shows sales point with moderate human and vehicular movement points with greater microbial density on their peeled oranges, though not significantly different from the other sales point. *Mucor* sp. was the most occurred microbes in the study; with *Escherichia coli* and *Salmonella* sp. the least occurred microbes in the study.

Table 3: Bacterial Morphology and Biochemical Reactions

Colour	Shape	Size	Coagulase	Sucrose	Lactose	Catalase	Bacteria
Grey	Round	Tiny	-	-	+	-	<i>Salmonella</i> sp.
Yellow	Round	Large	+	+	+	+	<i>Staph. aureus</i>
Green Metallic Sheen	Round	Small	-	-	+	+	<i>Escherichia coli</i>

Table 4: Isolated Fungal Macroscopic Features

Macroscopic Features	Probable Fungi
Black powdery growth	<i>Aspergillus niger</i>
Whitish with black spore	<i>Mucor</i> sp.

Table 5: Frequency Distribution and Percentage Occurrence of the Identified Isolates

Microbes	F1(n=20)	F2 (n=20)	F3 (n=20)	Frequency of Occurrence	Percentage (%) of Occurrence
<i>Escherichia coli</i>	1	2	2	5	16
<i>Staphylococcus aureus</i>	2	3	2	7	23
<i>Salmonella</i>	2	2	1	5	16
<i>Mucor</i> sp.	4	2	2	8	26
<i>Aspergillus</i> sp.	1	2	3	6	19
Total Microbes	10	11	10		

Keys: F3= Less human and Vehicular Movement Sales Point, F2= Moderate Human and Vehicular Movement Sales Point, F1= High Human and Vehicular Movement Sales Point, n = number of samples

4.0 DISCUSSION

Faecal coliforms count on the orange juice sac at the points of sale showed an insignificant difference in the loads, however, counts obtained does not satisfy National Agency for Food and Drug Administration and Control (NAFDAC) permissible limit for ready-to-eat food in Nigeria. NAFDAC states that the maximum limit of faecal bacteria on food should be less than or equal to 10 coliforms forming unit. Muyanja *et al.* (2011) raised a serious issue on the dangerous abuse of street foods. This study identified high load of faecal coliforms in the sales points with special observation on high human trafficking point with vendors' choice attributed to quick sales. The presence of faecal matter on the surface of peeled orange may be attributed to non-practice of hygienic exercise amongst vendors, given situations where Muyanja *et al.* (2011) reported the absence of toilet facilities on vending sites which could lead to dispersal of *Escherichia coli*. Situations were vendors use nearby bushes in place of toilet and clean-up with sheets of paper. Accordingly, Staphylococcal load on the juice sac were significantly not different at the points of sale basically because the hand is a common factor used in processing/preparing the orange in all sales point, thus the hand harbors *Staphylococcus aureus* as a normal flora of the body. So contamination by Staphylococcal on the peeled orange surfaces may have occurred during hand peeling by the vendors (Umoh & Odoba, 1999). Umoh and Odoba (1999) shared Ghosh (2004) study who reported that foods that are handled frequently during preparation are prime targets of Staphylococcal contamination. *Staphylococcus aureus* have reportedly been present in more than 13% of street food surveyed in Zaria, Nigeria (Umoh & Odoba, 1999). Consequently, the presence of Staphylococcal organism in this study has no threat to consumer or public health, as loads observed were below the set permissible limit of Staphylococcal in ready to

eat food. *Salmonella* counts on the orange juice sac were significantly not different at the points of sale probably, because report has it that *Salmonella* sp. can survive on human hands for more than three hours (Mensah *et al.*, 2000; Halker & Blaser, 1988). Thus, the presence of it on surface of peeled orange is unquestionable. There has been report of *Salmonella* food-borne outbreak resulting from consumption of orange juice. Heterotrophic bacteria load on the peeled orange surfaces were significantly not different, with the highest load observed in sales point with high human and vehicular movement points that are permissible, according to NAFDAC. Even at urban areas, exposure to high risk of heterotrophic bacteria on ready to eat food due to high commercial activities whereas low activities of humans and vehicular movement may have control heterotrophic bacteria contamination on the surfaces of the orange. Air quality has an impact on the peeled oranges for sale, this impact on the orange can likely have an effect on human health. The occurrence of fungal spore, specifically, *Aspergillus niger*, in this study have also been isolated from nasal swabs of occupants from market space environment (Obi *et al.*, 2018). Hence, the composition of arial microbiome with respect to bacterial and fungal spore dispersal is dependent on time.

4.1 CONCLUSION

The microbial contaminations of the outer surface of peeled oranges sold along roadsides in streets of Rumuolumeni are heavy on sales points with high human and vehicular movement points. *Staphylococcus aureus*, *Escherichia coli*, *Mucor* sp., *Aspergillus* sp. and *Salmonella* sp. are some microbes isolated from the peeled orange surfaces and thus present public health risk, given the microbes' elevated levels.

4.2 RECOMMENDATION

Purposeful hygienic practices are recommended during orange preparation and sampling for sale. Additionally, consumers are advised to cut and dispose the targeted contact surface before ingesting the oranges. Orange vendors should hence, receive appropriate training in hygiene matters that are in line with their work ethics and they should cover the peeled oranges displayed for sale.

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**Effect of Polygamy on Family Solidarity in Khana Local Government Area,
Rivers State**

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Abstract

This study investigated the effect of polygamy on family solidarity in Khana local Government Area of Rivers State, Nigeria. The objectives of the study included examination of the relationship between polygamy and family peace, and determination of the relationship between polygamy and family solidarity in Khana Local Government Area. The study employed correlational research design. Data for the study were collected through the use of a structured questionnaire. A sample size of 500 respondents was used for the study. Purposive sampling technique was used for this study. Data were presented in frequency distribution tables and analysed through the use of percentages and Pearson Product Moment Correlation Coefficient set at 0.05 level of significance. The study revealed that polygamy did not promote family peace in Khana Local Government Area. Polygamy brought about keeping of malice and sometimes quarreling among family members. One thing that was responsible for this problem as identified by the study was the failure on the part of polygamous husbands to be fair in the distribution of the basic things of life to their family members. The study also discovered significant relationship between polygamy and family peace with r-value of 0.998. The study also showed significant relationship between polygamy and solidarity in Khana Local Government Area with an r-value of 0.998. The study recommended that despite the cultural approval of polygamy in the area of study that only men that are financially well to do should go into it; husbands of polygamous families should endeavour to be as fair as possible in the distribution of the common goods to their wives and children. Communities, churches and mosques should endeavour to have family peace committee made up of men and women of good track record to handle family matters when they arise.

Keywords: polygamy, solidarity effect, family solidarity, family peace.

Introduction

According to Ohwovoriola (2022) polygamy is a type of relationship that typically involves a person marrying more than one partner. Similarly, Oxford Advanced Learners Dictionary (2005) said polygamy is the custom of having more than one wife at the same time. In polygamous setting, the wives may live under the same roof or different roof. It should be pointed out that there is no marriage bond between or among the wives. In most cases the marriages are gone into by the husbands without seeking the consent and approval of their older wives who ordinarily would not have said "Yes" to their husbands marrying more wives because of their interests, which of course they stand to protect. Traditionally, most African societies have practiced a custom of polygamy. The customs, pwesigye (2012) said allows a man to have as many wives as he can support. These wives were married according to local customs and traditions. In the understanding of the Local World View the marriages were all legal. The practice of polygamy as noted by Twesigye, was considered normal. There was also the war theory that was attached to this practice. The theory has it that only men fought wars in the past and many of them died in those wars, leaving fewer men to a lot of women. People practice polygamy for several reasons. These reasons according to Arangua (2022) include religious or societal purposes, stability, security, companionship, economic resource, production and

love. Globally 29% of the population practice polygamy. Polygamy is technically illegal in the United States, although it is decriminalized in many states such as Utah, Arangua posited. Polygamy is not legal in most countries or at least not officially recognized. Pew Research study stated that polygamy is legal in some other countries. For instance, in sub-saharan Africa, 11% of the population live in polygamous homes. In Burkina Faso, 24% of Christians live in polygamous households (Arangua, 2022). While the Christian religion tends to be against polygamy, the Islamic religion encourages its practice.

In Nigerian when viewing polygamy under civil law, the law does not recognize polygamous unions (Itoro, Akpan, 2011). However, 12 out of the 36 states in Nigeria recognize polygamous marriages as being equivalent to monogamous marriages (Wikipedia, undated). All 12 states are governed by sharia law, Wikipedia stated. The states that have thrown their doors open to polygamy are found in the northern part of the country, and they include; Bauchi, Borno, Gombe, Jigawa, Kaduna, Kano, Katsina, Kebbi, Niger, Sokoto, Yobe and Zamfara (Nigeria Faimly code, 2014). In some Nigerian traditions such as the one practiced in Khana Local Government Area of Rivers State, the size of a man's family shows the size of his wealth. Therefore, marrying more than one wife equals having more children which translates to having more hands to work on farmlands and more monetary return. However, the situation of polygamy as practiced in Khana Local Government today appears to be on a downward slide probably because of the harsh economic reality or the impact of Christianity on the populace who are predominantly Christians. Even if the number of people that are going into polygamy now seems to be on the decline, the truth remains that there are so many polygamous families today in Khana Local Government Area with their members struggling for survival like members of monogamous families.

Family solidarity is a form of social solidarity which according to Douwes, Stuttaford & London (2018) emphasizes the interdependence between individuals in a society, which allows individuals to feel that they can enhance the lives of others. It can be said to be a core principle of collective action and is anchored on shared values and beliefs among different groups in society. Solidarity in sociology, is defined as the willingness of individuals to serve and promote the collective interests of a group or of society (Meulen, 2017).

This willingness can be based on various motives, for example, because individuals have an interest to do or because they feel a certain responsibility for the fate of others (Meulen, 2017) family solidarity promotes social cohesion in the family. Family solidarity enhances responsibility on the part of the "strong" to the "weak" to enhance his welfare and progress in life, instead of using his strength to dehumanize the weak. Impagliazzo (undated) while responding to an online question, is the family solidarity important?", said the dictionary definition of solidarity is," unity or agreement of feeling or action, especially among individuals with a common interest; mutual support within a group". Continuing, Impagliazzo said:

Mutual support within the family group is essential to being a real family. You need to be able to count on each other, especially when times are tough. You do not need to be completely in unity of agreement at all times, and I do not believe it is even possible for a family to always be in agreement.

What is family solidarity all about? There is no better way to explain family solidarity than what has been said above by Impagliazzo Russell who works at university of California, San Diego.

One important ingredient for family solidarity is family peace. There cannot be family solidarity without family peace which serves as a binding force that unites members of the family. Before we consider family peace, what is peace? Peace can be seen as freedom from disturbance tranquility. According to vocabulary.com (undated), Peace is a stress-free state of security and calmness that comes when there is no fighting or war, everything co-existing in perfect harmony and freedom. Family peace is a condition where there is no conflict and disputes (Lopez, undated). Peace creates a state where there is no violence but tranquility and quietness, Lopez added. Similarly, family harmony is a situation where individuals trust and support each other which enables dispute and conflicts to be resolved constructively without looking beyond the self (Lopez, undated). Family

peace creates the basis for survival and development of each family member. It is the promoter of strong bonds among family members that drives solidarity.

In a research done by Essien (2018) on, “The interplay between conflict and solidarity in co-wife family relationship; Experience from Africa” which was a qualitative study discovered that polygamous family system is as sexually and emotionally satisfying as a monogamous one, however, co-wife conflicts especially in the early years of marriage is pervasive, and often marked by outbursts of verbal or physical violence. Continuing, the research said nevertheless, material, social and emotional factors possess ambivalent characteristics to undermine or strengthen co-wife solidarity and bonds, as well as pave way for jealousy and conflict. In another study by panda (2021) which was on, “Sibling solidarity in a Essay”, it was stated that. “Full siblings will be closer to each other and this closeness will be manifested even more in blended families. However, citing the work of Jankowiak and Diderich (2000 in Pande, 2021), it was stated that there is a rivalry between full siblings as well as between half-siblings; however, this rivalry happens between full and half-siblings. This is an indication that the level of rivalry in polygamous family is higher than a monogamous one, and this can adversely affect peaceful co-existence as well as solidarity. Polygamy is faced with the problem of acceptance from the older wife or wives right from when the husband introduces the idea to the hearing of the wife or wives that have been on ground say “Yes” to their husband, their “Yes” ends up in pretence probably because of the fear of the consequence of saying “No”. It is in recognition of this, that Muchene (2022) said even in cultures where the man is allowed to have multiple wives, it is common to hear women rejecting the idea of bringing another woman into the mix. Muchene added that if you are the first wife (in polygamy), it feels like you did all the work for strangers to enjoy especially if you built your wealth all the way up together from nothing. The unhappiness of the older wife with polygamy will always make the older wife to hate the younger wife it’s with resultant effects which are marital dissatisfaction, problematic family functioning and low self-esteem. Rediy and Teferar (undated) posited that family communication is important to maintain family relationship and family cohesion as the extend of the connectedness and solidarity among members in a family functioning.

Also, Al-Krenawi (2014) statement to counter polygamy requires longitudinal planning – a continual commitment rather than a simple fix. Such plan should be done in the context of the culture and her children; The husband may not even be excluded from this. Similarly, Hamzah (2016), who did a large scale study across Malaysia on, “Stress, quarrel and neglect; the “normal” polygamous family” discovered proof that polygamy warms everyone involved from emotionally scarred children, to wives who think they would be better off as single-parent households, and even husbands who admit “I would not recommend it for my son; it is quite stressful”. Peace undoubtedly is the foundation for family solidarity. If the situation of peace is as bleak as presented by Hamzah above then we do not need a prophet to know that solidarity is in trouble in polygamous homes. Also, Shepherd (undated) discovered that polygamy can affect significantly the mental health of women that are involved in it as it leads to a high prevalence of somatization, depression, anxiety, hostility, psychoticism, and psychiatric disorder including reduced life.

In a study carried out by Farooq Malik and Naseer (2021) on causes and consequences of polygamy: An understanding of coping strategies by co-wives in polygamous marriage in Pakistan, using exploratory qualitative design, interviewed 11 women who were in polygamous marriage to gather data for the study. Findings revealed reasons for the practice of polygamy which included infertility or having only female children, Husband love marriage, and in-laws family pressure because they wanted to secure their marriage instead of divorce. The study also revealed that polygamy promotes jealousy, unhappiness, and loneliness due to injustice. The advantages of polygamy as revealed by the study include sharing in-house responsibilities and child-rearing. The study also revealed coping strategies for polygamy which included faith in religion, faith role, and compromise with co-wives. The study concluded that since divorce is not an option for women that are involved in polygamy, the study recommends that policymakers and law enforcement agencies should pass laws for the welfare of polygamous women. Again, the study concluded that seminars and programmes should be organized for polygamous women on how to cope with the stress associated with polygamy and manage other consequences of polygamy. Finally the study was not against the practice of polygamy, rather went for improvement of the family structure of polygamous families.

Statement of the problem

Observation of the practice of polygamy in Khana Local Government Area has shown that some men married the number of wives and have children they cannot adequately take care of only for them to give attention to their younger wives and their children. This situation has led to so much ill-feeling and hatred between or among the wives and the children. This is detrimental to peaceful co-existence of the family members. Consequently, ill-feelings, bitter quarrel, fighting, and even plots to terminate the lives of fellow family members have been reported in the area. There have been situations whereby some children of some polygamous families have been left to the care of their mothers because their fathers are too busy with their younger wives and their children. Sometimes, the assistance, which these children get from their mothers and other concerned relatives, is grossly inadequate to see them through schools and other vocations. Some of the children even end up as school dropouts.

Cases of juvenile delinquency are common among children of polygamous families who did not receive proper parental upbringing. Also, there is the problem of overcrowding especially when fathers cannot provide separate accommodations for their wives and children. This gives rise to the situation whereby some of the children, especially the grown up ones, sleep outside their homes with friends. As a result of this, some of the children have ended up becoming pregnant out of wedlock, thereby creating more serious problems for themselves and their families.

Again fighting over farmlands and other properties is common among some members of polygamous families in the Local Government Area. There exists situations where some members of polygamous families, especially half-siblings have taken one another to court and other places over family lands and other properties. It is a common practice among polygamous family members especially among half-siblings not to give assistance to one another. Even when children of the older wives appear to have what it takes to give helping hand to their younger half-siblings, they simply turn to the other way probably because of the injustice they suffered in terms of unfair distribution of the common good by their father when they were growing up. This, they always attribute to the influence of the younger wives of their fathers. To some of them, now that they are grown up, it is time for pay back. The half-siblings are most of the times at the receiving end of all this, especially when the fathers are not or no longer economically viable to give the needed assistance to their younger children. It was based on the foregoing development that this study was put in place to determine the effect of polygamy on family solidarity in Khana Local Government Area of Rivers State.

Objectives of the study

The following objectives were developed to guide the study.

1. To examine the relationship between polygamy and family peace in Khana Local Government Area.
2. To determine the relationship between polygamy and family solidarity.

Research Questions

The following research questions guided the study:

1. What is the relationship between polygamy and family peace in Khana Local Government Area?
2. What is the relationship between Polygamy and family solidarity in Khana Local Government Area?

Research Hypothesis

1. There is no significant relationship between polygamy and family peace in Khana Local Government Area.
2. There is no significant relationship between polygamy and family solidarity in Khana Local Government Area.

Population of the study

The population of the study consisted of all members of polygamous families who were 18 years and above in Khana Local Government Area.

Methodology

The study adopted descriptive and correlational research designs. The population for this study consisted of all members of polygamous families who were 18 years and above in Khana Local Government Area. The population of this target group was not available as at the time for this study. However, a sample size of 500 respondents was chosen through Non-probability sample in purposive, quota and convenience sampling techniques. A structured questionnaire was raised to gather data for the study. It had 11 items with a response pattern of “Yes” or “No” except the part that concerned personal data.

The research instrument had a reliability index of 0.892 which was determined through test-retest and analyzed with the aid of Pearson product moment correlation co-efficient. A total of 500 copies of the research instrument was produced to reflect the sample size. The copies of the instrument were served to the respondents through personal contact. The Districts that made up Khana Local Government had copies of the questionnaire in the following order.

- Nyo-khana District got 167 copies
- Babbe District got 167 copies
- Ken khana District got 166 copies

All 500 copies of the questionnaire were properly filled out, and were therefore used for data analysis. Data analysis was done through the employment of percentages and Pearson Product Moment Correlation Co-efficient. For clarity, data were arranged in frequency distribution tables. The testing of hypothesis was set at 0.05 level of significance.

Result

Personal data of the respondents showed that 50 (10%) respondents were within the age range of 18-28 years, 120 (25%) were within the age range of 28-39 years, 180 (36%) were within 40-50 years, 100(20%) were within 51-61 years, and 62 and above years. For educational status of respondents. 50 (10%) respondents had First School Leaving Certificate, 200 (40%) respondents had WASC/GCE/NACO, 40(8%) had Diploma and 200 (40%) respondents got University Degrees. The Marital status of the respondents showed that 125 (25%) respondent were single, 350 (70%) respondents were married, No respondent was divorced and for widow/widower, 25(5%) respondents were involved. Occupational status of respondents revealed that 120 (24%) were farmers, 125 (25%) were traders, 85 (17%) were Civil Servants and 45 (9%) respondents were of other occupations.

Table I: Polygamy and family peace (N = 500)

Item		N	Yes	No
Do you think polygamy promotes family peace?	500	72(14.6%)	428(85.6%)	

Table I above shows that majority of the respondents, 428(85.6%) of them said they do not think that polygamy promotes family peace in Khana Local Government Area, while 72(14.4%) respondents said “Yes” to the question asked that polygamy promotes family peace in Khana Local Government Area.

Table 2(a) Polygamy and family peace (N = 500)

Item		N	Yes	No
Is it correct to say that the keeping of malice and sometimes quarreling are found among members of polygamous families in Khana Local Government Area?	500	450(90%)	50(10%)	

Table 2(a) above indicated that majority of the respondents, 450(90%) said “Yes” that it is correct to say that the keeping of malice and sometimes quarreling are found among members of polygamous families in Khana Local Government Area, while 50 (10%) respondents said “No” to the question.

Research hypothesis I: There is no significant relationship between polygamy and family peace?

Table 2n Relationship between polygamy and family peace.

Response	No of respondent	(r)	Cal-value	Table-value	Comment
Yes	450	0.998	352.14	23.34	There is significant relationship
No	50				

At 0.05 level of significance

Table 2a above tells us that “that there is significant relationship between polygamy and family peace in Khana Local Government Area”. Since the r-value was 0.998 while the calculated value was 352.14 and the table value was 23.34, the null hypothesis which says, “there is no significant relationship between polygamy and family peace in Khana Local Government Area” is rejected for the alternate hypothesis as the calculated value was greater than the table value.

Table 3 : Polygamy and family peace (N=500)

Item		N	Yes	No
Do you think the apparent lack of fairness on the part of a reasonable percentage of husbands in the provision of the basic necessities of life is a major cause of break down of family peace in Khana Local Government Area?	500	480(96%)	20(4%)	

According to Table 3 above, majority of the respondents, 480 (96%) of them said “yes” that they think that the apparent lack of fairness on the part of a reasonable percentage of husbands in the provision of the basic necessities of life is a major cause of break down in family peace in Khana Local Government Area; while 20 (4%) respondents said “No” to that.

Table 4a: Polygamy and family solidarity

Item		N	Yes	No
Do you think polygamy is responsible for some members of polygamous families in Khana Local Government Area not to receive appropriate financial support from their families?	500	474(94%)	26(5.2%)	

Table 4a above disclosed that majority of the respondents, 474(94%) of them, said “Yes” to the above question that they think that polygamy is responsible for some members of polygamous families in Khana Local Government Area not to receive appropriate financial supports from their families; while 26(5.2%) of the respondents said “No” to the question.

Research hypothesis 2

There is no significant relationship between polygamy and family solidarity?

Table 4b: Relationship between polygamy and family solidarity.

Response	No of respondent	(r)	Cal-value	Table-value	Comment
Yes	474	0.998	352.14	23.34	There is significant relationship
No	26				

At 0.05 level of significance

Table 4b above has made it clear that the correlation co-efficient R was 0.998, while the calculated value was 352.14 and the Table value was 23.34 at a level of significance of 0.05. So, since the calculated value is greater than the table value, research hypothesis 2 which states, “There is no significant relationship between polygamy and family solidarity in Khana Local Government Area” is therefore rejected for the alternative hypothesis that says, “There is significant relationship between polygamy and family solidarity in Khana Local Government Area”.

Table 5: Polygamy and family solidarity

Item	N	Yes	No
Can you say that over half of polygamous families in Khana Local Government Area do not have adequate means of livelihood to provide the basic things of life like food, shelter and clothing to their family members?	500	420(84%)	80(16%)

The Table 5 above has it that 420 (84%) respondents said that over half of polygamous families in Khana Local Government Area do not have adequate means of income to provide the basic things of life like food, shelter and clothing to their family members; while 80 (16%) respondents said “No” to the question.

Table 6: Polygamy and family solidarity

Item	N	Yes	No
Do you agree with the claim that some Polygamous husbands in Khana Local Government Area abandoned their senior wives and their children because of their younger wives?	500	380(76%)	120(24%)

The Table 6 above indicated that 380 (76%) respondents said “Yes” that they agreed with the claim that some husbands in Khana Local Government Area abandoned their senior wives and children because of their younger wives; while 120(24%) said “No” to the question.

Table 7: Polygamy and family solidarity

Item	N	Yes	No
Do you think that lack of adequate support from husbands of Polygamous families in Khana Local Government Area to their family members is a major cause of misunderstanding among the family members?	500	410(81%)	90(18%)

Table 7 above states that majority of the respondents, 410(82%) of them had the view that lack of adequate support from husbands of polygamous families in Khana Local Government Area to their

family members is a major cause of misunderstanding among the family members; 90(18%) respondents said “No” to the question.

DISCUSSION

Personal data of the respondents showed that the age range of 29-39 (36%) constituted the major age of the studied population. For educational status of the respondents, 200(40%) respondents and another 200 had WASC/GCE/SSCE/NECO and University Degrees respectively. Marital status of the respondents showed that 350 (70%) out of the total number of 500 respondents were married which implied that people that were really experienced in polygamy took part in the study. Most of the respondents (25% each) were both traders and civil servants respectively.

The result of the study proper revealed that majority of the respondents, 85.6% of them did not think that polygamy promotes family peace in Khana Local Government Area. Remember that family peace constitutes the foundation upon which solidarity thrives in any family including polygamous one. It may be difficult for solidarity to take place effectively in polygamous families in Khana Local Government Area as available statistics said polygamy does not promote family peace. Continuing, the study also revealed that keeping of malice and quarreling are sometimes found among members of polygamous families in the area as 450(90%) respondents said so. As discovered by the study, the keeping of malice and quarreling sometimes found among members of polygamous families are attributed to the apparent lack of fairness on the part of a reasonable number of husbands in the local Government Area to provide the basic necessities of life to their family members. As 96% of the respondents agreed with this position.

When research hypothesis I that states; “There is no significant relationship between polygamy and family peace” was tested, the r value was 0.998 which indicated very high relationship between polygamy and family peace. This finding is in line with the views of Farouq, Malik and Nosor (20121) who posited that polygamy promotes jealousy, unhappiness and loneliness due to injustice. Injustice here is coming from no other persons than the husbands who in course of tribulation of the common good choose to be unfair for reasons best known to them. It is in relation to this that Muchene (2022) discovered in his study that even in cultures where the man is allowed to have multiple wives, it is common to hear women rejecting the idea of bringing in another woman into the mix. Muchene added that if you are the first wife (in polygamy), it feels like you did all the work for strangers to enjoy especially if you built your wealth all the way up together from nothing. Multiple wives breeds ill-feeling especially in the older wives to the extend that it affects adversely the atmosphere of peace in polygamous families.

For polygamy and family solidarity, finding of this study showed that 84%(420) of the respondents said that over half if polygamous families in Khana Local Government Area did not have adequate means of income to provide the basic things of life like food, shelter and clothing to their family members. This situation, no doubt, affects negatively the way solidarity is handled in the families after all, you cannot give what you do not have.

Finding also indicated that some polygamous husbands in the area abandoned their senior wives and their children because of their younger wives. 76%(380) of the entire respondents said so. There is no way solidarity can be promoted and maintained when the wives and there are children abandonment by the bread winners of polygamous families. In fact, children and wives affected by this development are left to their fate which often results in suffering and denial of the basic things of life.

When null hypothesis 2 which stated, “There is no significant relationship between polygamy and family solidarity” was tested, the r -value was 0.988 which was very high. The null hypothesis was therefore dropped for the alternative one which said, “There is significant relationship between polygamy and family solidarity”. This finding is in line with the position of Hazah (2010) who stated that polygamy harms everyone involved from emotionally scarred children, to wives who think they would be better off as single-parents’ house holds, and even husbands who admit, “I would not recommend it for my son; it is quite stressful”. Peace no doubt, is the foundation for family solidarity. If the situation of pence is as bleak as the one presented by Hamzah above, then we do not need a prophet to know that solidarity is in trouble in polygamous homes. Similarly, Shepherd (undated) discovered that polygamy can affect significantly the mental health of women that are involved in it

as it leads to a high prevalence of somatization, depression, anxiety, hostility, psychoticism and psychiatric disorder including reduced life. The picture presented to us through the finding of shepherd is a direct expression of the fact that solidarity that oils the wheel of polygamy does not seem to survive easily in polygamous setting.

Recommendations

Based on the findings of the study, the follow recommendations were made:

1. In as much as polygamy has the approval of culture, men that want to go into it should be sincere with themselves by considering the cost of polygamy. People without the right economic do not have any business going into polygamy as it tends to be more expensive than monogamy.
2. Husbands of polygamous families should endeavor to be as fair as possible in the distribution of the common good.
3. Having multiple wives under the same roof tends to promote misunderstanding and quarreling among the wives and their children, therefore, having separate accommodations for the wives and their children is the best way to go as it promotes peaceful co-existence.
4. Churches, mosques and communities should endeavor to have family peace committee made up of men and women of good track record who will handle family matters when they arise free of charge.
5. Communities, churches and mosques should have professional counselors that will provide professional services to their members without any charge.
6. Seminars and talks on family should take place at worship centers and community levels from time to time.
7. Husbands of polygamous families solidarity and peaceful co-existence should endeavor to evenly relate to their wives and children as fair as possible in all spheres of life without discrimination.
8. Having a monthly meeting by members of polygamous family can help promote family solidarity and peace.

Conclusion

Man's culture has made the practice of polygamy possible. However, the way polygamy is practiced by some persons especially husbands has left much to be desired as almost everything about it is not rosy as has been disclosed by this study. The relationship between polygamy and family peace and family solidarity is indeed very high as shown by the study. Since those persons that are involved in polygamy can hardly get out of it through divorce or other means because of the implication of doing so, solutions must be proffered so as to bring down the stress associated with it, which, of course, have been provided by this study.

This study, therefore, concludes that polygamists should be fair in the distribution of the common good to members of their families without given preference to their younger wives at the expense of their older wives and their children. Again, men who do not have the economic muscle to go into polygamy should stay away from it as polygamy tends to require large sum of money to ensure family solidarity.

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