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PARENTAL PERCEPTION OF IMPACT OF OTITIS MEDIA ON COGNITION AND EDUCATIONAL OUTCOMES AMONGST CHILDREN IN LAGOS NIGERIA

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ABSTRACT: *Otitis media (OM) is one of the severe healthcare problems in the world because of the suffering it poses upon the patient and the family and because of the economic burden; it forces the health care system. This study was conducted to evaluate the parental perceived impact of otitis media on cognitive and educational outcomes amongst selected children with the purview of examine the impact of otitis media on cognitive development ;to investigate the impact of otitis media on educational achievement and to identify risk factors affecting otitis media of selected children attending Lasuth, Lagos state.Simple random sampling technique was used to select 101 amongst children attending the Lagos State University Teaching Hospital, Lagos in accordance with their hospital information. Data collection spanned two months using a self-developed questionnaire. Both descriptive and inferential statistics (chi-square) were used to analyse the data generated and level of significance was set at 5% (0.05). The result showed that One hundred and one respondents and their children with mean age 33.01±5.75 and 3.76±1.94 respectively. There were 60 females (59%) and 41 males (41%), Fifty-one (51%) of the 101 children with otitis media were from the lower socio-economic class, whereas 28(28%) and 21(21%) were from the middle and upper socio-economic class respectively. Moreover, acute otitis media 52(51%) was more common than chronic otitis media 49(49%) in children from the lower socio-economic class. Hypotheses testing revealed that there is no significant impact of otitis media on cognitive development amongst children attending the Lasuth, Lagos state, Nigeria (X2 =4.098 and p = 21.03 at 0.05 significant value) and otitis media has no impact on educational achievement amongst children attending the Lasuth, Lagos state, Nigeria (X2 =2.874 and p = 21.03 at 0.05 significant value). In conclusion, passive smoking and decline in breastfeeding, children with persistent otitis media, the degree of hearing loss, parenting style, and access to medical care, children hearing loss before the age of 12 months and rural area children who suffer otitis were risk factors affecting otitis media amongst children attending the Lasuth, Lagos state.*

KEYWORDS: otitis media, cognition, educational outcome

INTRODUCTION

Otitis media is a common ear noise and throat (ENT) disease in childhood that can adversely affect cognitive and educational outcomes. Otitis media (OM) is one of the severe healthcare problems in the world because of the suffering it poses upon the patient and the family and also because of the economic burden it forces the health care system. This disease condition can be defined as an inflammation of the mucous membrane of the middle ear which includes the middle ear cavity, mastoid air cells, mastoid antrum and the Eustachian tube (Adeleke, 2013)

and may be caused either by bacteria or virus (Massa, Cripps, & Lehmann, 2009; DeAntonio, Yarzabal, Cruz, Schmidt & Kleijnen, 2016), with affinity to spread because, all sinuses of the temporal bone are contiguous, infection of the middle ear may also cause inflammation and infection in the other three regions of sinuses (Krishnamoorthy & Ahamed, 2016). It can be acute or chronic (Amusa, Ijadunola and Onayade, 2015). It is one of the most common infectious diseases of the childhood in the world and a major cause of childhood morbidity (Mahadevan, Navarro-Locsin, Tan, Yamanaka, Sonsuwan, Wang, et al., 2012).

Many prevalence rates of Otitis media have been documented in the world (Adeleke, 2013). Infants and young children are at a higher risk of developing Otitis media. OM is prevalent among children with cleft lip and palate and other craniofacial defects, and those from lower socio-economic status. Bacteria are the most important etiological agents in suppurative or discharging Otitis media. The resistance to antibiotics is common, predisposing children to complications (Adeleke, 2013). The acute, sub-acute, and chronic terms are used. Acute Otitis media (AOM) is rapid in onset of symptoms and signs of up to three weeks duration. Chronic disease has many synonyms, including serous OM, glue ear, secretory OM, and implies middle ear fluid that has been present for three months or longer. The sub-acute term is in between. Recurring AOM is defined as three episodes within six months or four episodes within one year (Krishnamoorthy & Ahamed, 2016). Early onset of otitis media has been associated with an increased likelihood of repeated episodes, which in turn are thought to have long-term effects (Leach, 1999). Among Aboriginal and Torres Strait Islander children, rates of otitis media are high, the disease manifests early in life, and it may continue to occur in adolescence and beyond (Couzos, Metcalf, & Murray, 2001). It has been estimated recently that around 20,000 people die annually from complications associated with OM, with the highest mortality rates in the children <5 years of age (Monasta, Ronfani, Marchetti, Montico, Brumatti, Bavcar, et al., 2012). Recurrent or chronic forms of the disease can lead to considerable hearing loss and negatively affect learning ability and scholastic achievement (DeAntonio et al, 2016). Otitis media is one of the leading causes of healthcare visits and it complications are important causes of preventable hearing loss (Lim, Bluestone & Casselbrant, 2014).

In Nigeria, otitis media in children is not an uncommon diagnosis in both community- and hospital- based studies (Ilechukwu, Ilechukwu, Ubesie, Ezeanolue, Okoroafor, Emechebe et al. 2017). Ethnic differences in the incidence of otitis media may arise from disparities in socioeconomic status accessibility of health care facilities, and variations in the prevalence of environmental factors such as exposure to wood and charcoal smoke. Baculard posited in (2014) that about 62% of children under one year of age and 83% of children under three years have already had at least one acute otitis media. Several risk factors for occurrence of AOM were identified, particularly in developing countries including Nigeria (Hounkpatin, Adedemy, Flatin, Awassi, Afouda, Avakoudjo et al., 2016). Some are unanimously recognized as allergy, craniofacial malformations, iron deficiency, passive smoking and hypertrophy adenoids; other risk factors are more controversial as male or poor socio-economic conditions. Studies conducted to determine risk factors for otitis media specific to Africa are not common in the literature; da Costa, Navarro, Neves & Martin (2014) in Maputo, Mozambique had reported that the use of smoke from coal and wood for cooking was a risk factor (Hounkpatin et al., 2016). In Parakou, acute otitis media cases represented one of the most common ENT disorders in the Regional Hospital of Borgou (CHD-B). Those diseases affected the youngest subjects, with a high frequency between zero and five years (Hounkpatin et al., 2016). The impact of

otitis media on individual children's development appears to depend on the interrelationship between several factors. Children who have early-onset otitis media (under 12 months) are at high risk of developing long-term speech and language problems. Otitis media has been found to interact negatively with pre-existing cognitive or language problems. For biological or environmental reasons, some populations have a pattern of early onset, higher prevalence and episodes of longer duration; this pattern leads to a higher risk of long-term speech and language problems (Amusa, Ijadunola & Onayade, 2015). These factors suggest that indigenous children may be at higher risk of cognitive and educational sequelae than nonindigenous children. In otitis media, even though periods of normal hearing may occur, its fluctuating character leads to inconsistent sound stimulation of the auditory central nervous system, thereby distorting sound perception. Speech discrimination, especially in noisy environments, and phonological awareness skills can also be affected and consequently negatively affect school performance (Marculino, Rabelo & Schochat, 2014).

Statement of the Problems

Otitis media (OM) is one of the severe healthcare problems in the world because of the suffering it poses upon the patient and the family and also because of the economic burden it forces the health care system. However, poor living conditions, overcrowding, poor hygiene and nutrition have been suggested as a basis for the widespread prevalence of OM in developing countries including Nigeria. In the developing countries, there is differential prevalence among the different socio-economic strata of the community. Okafor (2015) found that the majority of the patients with ear disease came from poor communities living in subsistence agricultural or slum areas of the cities. His record shows that most of the children with OM came from the low income group. It is against this backdrop that this research study tends to evaluate the perceived impact of otitis media on cognitive and educational outcomes amongst selected children attending Lagos State University Teaching Hospital, (LASUTH).Lagos state, Nigeria.

Objective of the Study:

I. To examine the impact of otitis media on cognitive development of selected children attending Lasuth, Lagos state, Nigeria
II. To investigate the impact of otitis media on educational achievement of selected children attending Lasuth, Lagos state, Nigeria
III. To identify risk factors affecting otitis media of selected children attending Lasuth, Lagos state, Nigeria

Research Questions

I. To what extents does otitis media impact on cognitive development of selected children attending Lasuth, Lagos state, Nigeria?
II. What is the impact of otitis media on educational achievement of selected children attending Lasuth, Lagos state, Nigeria?
III. What risk factors affecting otitis media of selected children attending Lasuth, Lagos state, Nigeria?

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EMPIRICAL LITERATURE REVIEW

Hounkpatin, Adedemy, Flatin, Awassi, Afouda, Avakoudjo et al. (2016) examined risk factors for Acute Otitis Media in children aged 0 to 5 years in Parakou employed a cross-sectional, descriptive and analytical study (both interview and questionnaire) which was carried out on 2040 children aged 0 to 5years from both sexes, who were healthy or sick, and living in the Local government of Parakou for at least one year. Those children were randomly selected in all three districts of Parakou located in the North-East of Benin. The data were processed using Pearson's chi-square and Odd Ratio (OR) with the aid of Epi info 3.2 software and Excel 2007. The finding revealed that frequency of AOM was 2.8% and their prevalence was estimated at 16.3%.

The identified risk factors were persistent or chronic cases of rhinitis, exposure to charcoal and wood smoke, low socioeconomic status, personal history of AOM, AOM history among the siblings, and children's poor nutritional status. No relationship could be established between AOM occurrence and factors like sex, passive smoking, attendance of a day-care centre or stay in nursery, prematurity, exclusive breastfeeding and large number of siblings. Based on the finding, the study concluded that identification of those risk factors will help put in place appropriate measures to reduce AOM prevalence in Parakou. A similar study carried out Corinne & Ann (2014) determined the impact of otitis media on cognitive and educational outcomes employed descriptive design method. It was deduced from the literature review that Otitis media is a common disease in childhood that can adversely affect cognitive and educational outcomes. The impact of otitis media on individual children's development appears to depend on the inter-relationship between several factors. Children who have early-onset otitis media (under 12 months) are at high risk of developing long term speech and language problems.

The finding revealed that Otitis media has been found to interact negatively with pre-existing cognitive or language problems. For biological or environmental 29 reasons, some populations have a pattern of early onset, higher prevalence and episodes of longer duration; this pattern leads to a higher risk of long-term speech and language problems. The study concluded that these factors suggest that Indigenous children may be at higher risk of cognitive and educational sequelae than non-Indigenous children. Another study conducted by Ologe & Nwawolo (2013) investigated chronic suppurative otitis media (CSOM) in school pupils in Nigeria employed descriptive design method with the use of questionnaire. A sample of six hundred and ninety nine school pupils in the rural school and two hundred and seventy pupils in the urban school was carried out among the two populations of school children. The study was carried out among pupils of a private primary school in florin; and pupils of a public primary school in Ganmo, Kwara State. Ganmo is a village located 7km from Ilorin, the capital city of Kwara State of Nigeria. The pupils in the private primary school in Ilorin are predominantly children of relatively high-income earners in an urban setting. The pupils in the public primary school in Ganmo are predominately children of farmers and petty traders in a rural setting. Demographic data collection and otoscopy was performed on the study populations. In both Ganmo and Ilorin, information was obtained from the pupils, their teachers and parents.

The result revealed that six percent (6%) of the pupils in the rural schools had CSOM as evidenced by persistent perforation of tympanic membrane of more than three months duration. No tympanic membrane perforations were observed in the children in the urban school at the time of this study. The difference in the prevalence of CSOM between the two populations is statistically significant (P-<0.001). The difference in socio-economic status between the two populations is statistically significant in relation to the prevalence of CSOM in the two populations. The poorer rural population had a significantly higher prevalence of CSOM (P-<0.001). The study concluded that there is a world of difference in their socio-economic status, availability of social infrastructure and health facilities. A collective effort of government and well-meaning indigenes of rural communities in Nigeria can help promote the socio-economic status and enhance the availability of social infrastructure and health facilities of rural areas. This we hope will lead to a decline in the prevalence of CSOM in the rural areas. A similar study was carried out by Ilechukwu, Ilechukwu, Ubesie, Ezeanolue, Okoroafor, Emechebe, et al. (2017) determined socio-demographic factors associated with otitis media among children in Enugu, South-East Nigeria employed cross-sectional design method with the use of structured questionnaire. All consecutive children aged 0 and 17 years presenting during the months of June and August 2006 with middle ear discharge were included in the study. Informed consent was obtained from parents or guardians of the children. Assent was obtained from older subjects. Children who had discharge of the middle ear were consecutively recruited into this study. Auroscopy was carried out on all of them to ascertain middle ear pathology. Data was analysed using SPSS version 11.0 and PEPI version 4.0 statistical software. The results revealed that one hundred children aged 0 to 17 years were included in this study. There were 53 males (53%) and 47 females (47%) with a male: female ratio of 1.13:1. Twenty- five (25.0%) of the 100 subjects were from the upper socio-economic class, whereas 24/100 (24.0%) and 51/100 (51.0%) subjects were from the middle and lower socio-economic class respectively. A significant interaction was found when a chi-square test of independence was calculated between social class and type of otitis media ($\chi 2 = 8.78$; $P = 0.01$), hence chronic otitis media was more common than acute otitis media in children from the lower socio-economic class when compared with the upper and middle classes. Therefore the research work concluded that discharging otitis media was commoner among the under 5‟s population and chronic discharging otitis media tended to affect more the children from the lower social class. The health belief model (HBM) is one of the most widely used conceptual frameworks for understanding health behaviour. Developed in the early 1950s, the model has been used with great success for almost half a century to promote greater condom use, ear disease, medical compliance and health screening use, to name a few behaviours. The health Belief model is based on the understanding that a person will take a health related action if that person;

- Feels that a negative health condition can be avoided
- Has a positive expectation that by taking a recommended action, he/she will avoid a negative health condition and
- Believes that he/she can successfully take a recommended health action (Berman & Synder, 2014).

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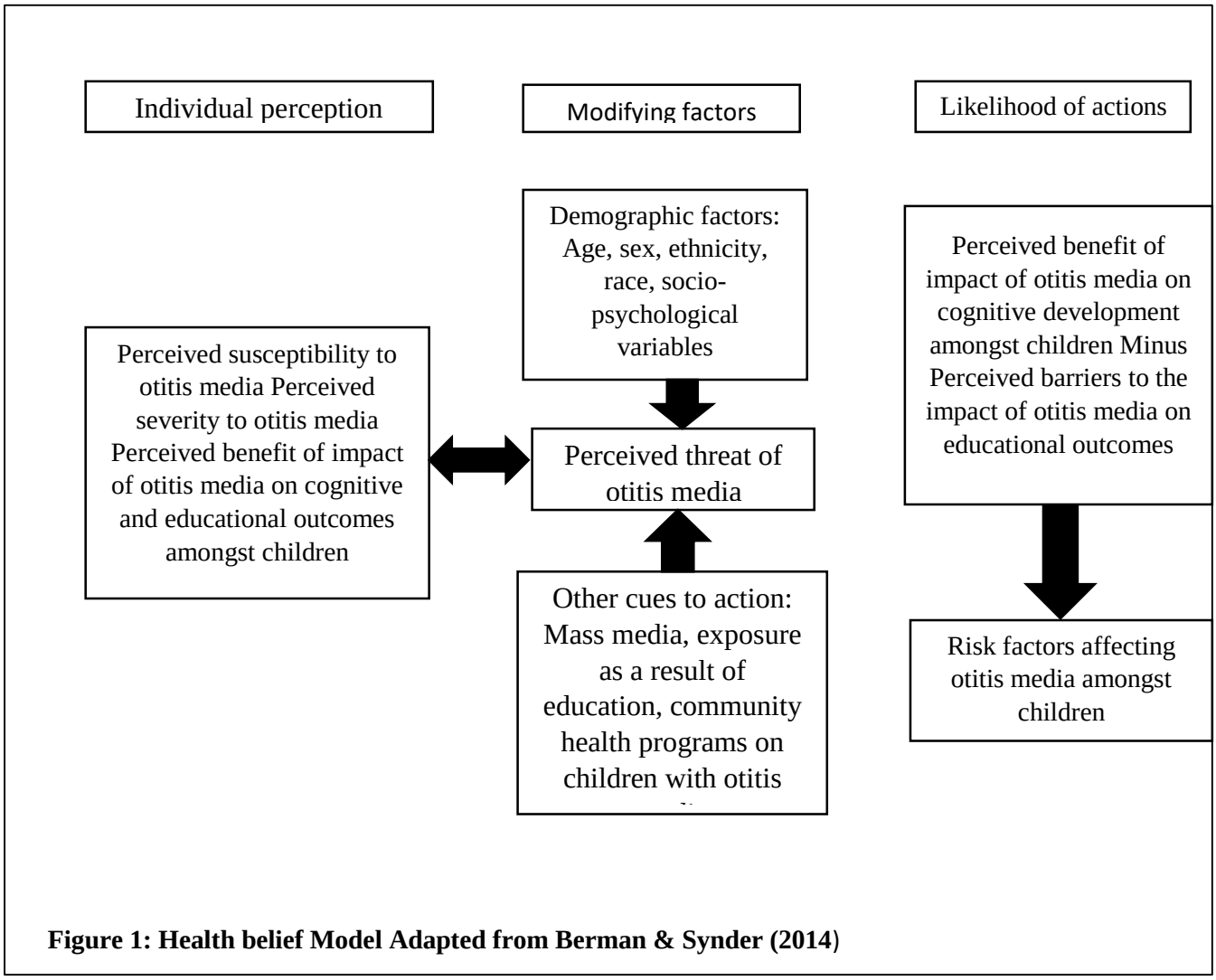

Figure 1: Health belief Model Adapted from Berman & Synder (2014)

The key components of HBM are:

i. Perceived Susceptibility: Perceived Susceptibility refers to subjective assessment of risk of developing a health problem. The Health Belief Model predicts that individuals (children) who perceive that they are liable to otitis media (OM) will engage in behaviours to reduce their risk of developing the OM while individuals with low perceived susceptibility may deny that they are at risk for contracting OM (Raingruber, 2013).

ii. Perceived Severity: Perceived Severity refers to subjective assessment of the severity of OM and its potential consequences. The Health Belief Model proposes that children who perceive a given OM as serious are more likely to engage in behaviours to prevent the OM from occurring (or reduce its severity). Perceived seriousness encompasses beliefs about the OM or ear disease itself (e.g., whether it is life threatening or may cause disability or pain or ear loss) as well as broader impacts of the disease on functioning in work and social roles (National Institute of Health, 2012).

iii. Perceived Benefit: Health-related behaviours are also influenced by the perceived benefits of taking action. Perceived benefits refer to an individual's assessment of the value or efficacy of engaging in a health promoting behaviour to decrease risk factor of OM. If an individual believes that a particular action will reduce susceptibility to a OM or decrease its seriousness, then he or she is likely to engage in that behaviour regardless of objective facts regarding the effectiveness of the action (Raingruber, 2013).

iv. Perceived Barrier: Health-related behaviours are also a function of perceived barriers to taking action. Perceived barriers refer to an individual's assessment of the obstacles to behaviour change. Even if an individual perceives a health condition as threatening and believes that a particular action will effectively reduce the threat, barriers may prevent engagement in the health-promoting behaviour. In other words, the perceived benefits must prevail over the perceived barriers in order for behaviour change to occur. Perceived barriers to taking action include the perceived inconvenience, expense, danger (e.g., side effects of a medical procedure) and discomfort (e.g., pain, ear loss) involved in engaging in the behaviour (National Institute of Health, 2012).

v. Cues to Action: The Health Belief Model posits that a cue, or trigger, is necessary for prompting engagement in health-promoting behaviours. Cues to action can be internal or external. Physiological Cues (e.g., pain, symptoms) are an example of internal cues to action. External Cues include events or information from close others i.e the media, or long term health care providers promoting engagement in health-related behaviours (Raingruber, 2013).

vi. Self-efficacy: Self-Efficacy refers to an individual's perception of his or her competence to successfully perform a behaviour. Self-efficacy was added to the health belief model in an attempt to better explain individual differences in health behaviours (National Institute of Health, 2012).

vii.

Application of HBM Theory to the Study

1. Perceived Susceptibility: awareness should be made to the family and children with OM about perceived impact of the ear disease so that they will be prepared for the treatment.

2. Perceived Severity: the risk of not engaging in treatment of OM (ear disease) should be well emphasized so that children and their family will be properly educated about it.

3. Perceived Benefits: they should be made to understand the benefits of engaging in treatment of children with OM which include elimination of risk factors such as passive smoke, reduced pain, irritability, crying, restlessness, rhinorrhoea, fever, vomiting, etc.

4. Perceived Barriers: barriers to children with OM which include the perceived inconvenience, smoking, pain, irritability, crying, restlessness, rhinorrhoea, fever, vomiting, etc should be identify and manage appropriately through effective health education to correct encourage positive attitude.

5. Cues to Action: entails continuous awareness on the benefit of treatment and management of with OM after occurrence.

6. Self-Efficacy: the promotion of health programs towards children suffering from OM should enhance their confidence and ability to self-care and focus more often on ear disease issues afflict them (pain and restlessness).

RESEARCH METHODOLOGY

A descriptive survey design was used in carrying out this study in which consecutive children presenting at the Lagos State University Teaching Hospital (LASUTH) with ear-related problems were enrolled. The study was carried out at the inpatients and out-patients ears, nose, and throat (ENT) clinic of the Teaching Hospital in Lagos State.The target population for this study is the children with otitis media (OM) within the age range from 0 to 16 years who are either on Admission in LASUTH or are refer on outpatient bases. Otitis Media Unit is a unit under Ears, Nose, and Throat (ENT) where children with acute and chronic otitis media are diagnosed. Therefore, the number of children (patients) attended to at LASUTH Ophthalmology Unit is estimated to be twenty children (20) per day. However, one hundred and forty (140) children shall be used over seven (7) days in which twenty children will be used per day for the study.

The Taro Yamane's formula for sample size determination for a finite population characteristic was adopted in this study. Therefore, the sample size for the study was one hundred and four (104) patients. Hence the sample size of one hundred and four (104) patients were drawn out of the total population of children (patients) and their parents visiting ENT clinic, LASUTH, using simple random sampling technique.

Content validity of the instrument was determined by pilot testing on ten respondents with OM which is 10% of sample size at General Hospital Marina, Lagos State. The reliability test (instrument) was estimated by examining the consistency of the responses between the two tests. To establish the level of reliability, the questionnaire was tested using Cronbach Alpha test. The Cronbach alpha coefficient of scale stipulated a standard of above 0.70 for reliability test. The reliability ratio for this work (0.792) showed that all the research questions in the questionnaire hang together and have internal consistency in solving research problems. The respondents were given questionnaire same were filled and collected cross-sectional.

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RESULT AND DISCUSSION OF FINDINGS

SOCIO-DEMOGRAPHIC PROFILE OF THE RESPONDENTS

ITEMS	RESPONSES	FREQUENCY	PERCENTAGE	MEAN
AGE OF THE RESPONDENTS	18-28	45	45.0%	33.01±5.75
	29-39	30	30.0%	
	40-50	16	15.0%	
	51-61	10	10.0%	
	TOTAL	**101**	**100%**	
AGE OF CHILDREN'S WITH OM	0-3	51	50.0%	
	4-7	43	43.5%	
	8-11	07	07.0%	
	TOTAL	**101**	**100%**	3.76±1.94
GENDER	MALE	06	05.9%	
	FEMALE	95	94.1%	
	TOTAL	**101**	**100%**	
SOCIAL CLASS	Upper/good	21	21.0%	
	Middle/Average	28	28.0%	
	Lower/poor	52	51.0%	
	TOTAL	**101**	**100%**	
Type of otitis media	ACUTE OM	52	51.0%	
	CHRONIC OM	49	49.0%	
	TOTAL	**101**	**100%**	
Level of Education	No formal Edu	30	30.0%	
	Primary Edu	51	50.0%	
	Secondary Edu	15	15.0%	
	Tertiary Edu	05	05.0%	
	TOTAL	**101**	**100%**	
Ethnic group	**Yoruba**	55	54.0%	
	Igbo	41	41.0%	
	Hausa	05	05.0%	
	Total	**101**	**100%**	

The mean age of respondents and their children with otitis media stand at 33.01±5.75 and 3.76±1.94, which means the respondents were still at active age of childbearing with children at early stage of attending school. Also the majority of respondents were women 95(94.1%) while the majority of the children with otitis media 60(59%) were female while the remaining 41(41%) were male. Most of the respondents‟ social economic class 52(51%) were lower class/poor, 28(28%) were middle class while the remaining 21(21%) were upper class/good. Majority of the children 52(51%) suffered acute otitis media while the remaining 49(49%) were of chronic otitis media type. Most of the respondents 51(50%) had primary education, 30(30%) had no formal education, 15(15%) had secondary education while the remaining 5(5%) had tertiary education. A large majority of the respondents were currently 55(54%) were Yoruba, 41(41%) were Igbo, while the remaining 5(5%) were Hausa.

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IMPACT OF OTITIS MEDIA ON EDUCATIONAL ACHIEVEMENT AMONGST CHILDREN ATTENDING THE LASUTH, LAGOS STATE, NIGERIA

S/N	ITEMS	STRONGLY AGREED	AGREED	DISAGREED	STRONGLY DISAGREED	TOTAL
1	Otitis media on has negative impact on children educational achievement	72 71%	15 15.0%	05 5.0%	09 9.0%	101 100%
2	Children who experienced recurrent otitis media with discharge has a higher likelihood of hearing difficulty and difficulties with speech, language and learning	64 63.0%	9 9.0%	13 13.0%	15 15.0%	101 100%
3	Otitis media lead to difficulties with reading comprehension and spelling among children	16 16.0%	59 58.0%	16 16.0%	10 10.0%	101 100%
4	Hearing impairment contribute to poor educational outcomes among children with OM	70 69.0%	6 6.0%	17 17.0%	8 8.0%	101 100%
5	Children with otitis media have significant poor phonological awareness in improving literacy outcomes.	73 72.0%	17 17.0%	6 6.0%	5 5.0%	101 100%

The distribution of respondents impact of otitis media on educational achievement amongst selected children attending Lasuth, Lagos State, Nigeria revealed that 72(71%) of the respondents strongly agreed that Otitis media on has negative impact on children educational achievement, 64(63%) of the respondents strongly agreed children who experienced recurrent otitis media with discharge has a higher likelihood of hearing difficulty and difficulties with

speech, language and learning, 59(58%) of the respondents agreed Otitis media lead to difficulties with reading comprehension and spelling among children, 70(69%) strongly agreed hearing impairment contribute to poor educational outcomes among children with OM and 73(72%) of the respondents strongly agreed children with otitis media have significant poor phonological awareness in improving literacy outcomes.

Testing of Hypotheses

There is no significant impact of otitis media on cognitive development amongst children attending the Lasuth, Lagos state, Nigeria

The dependent variable was tested against the independent variable at 5% level of significance using chi-square. Degree of freedom was determined for the purpose of this test. The response to table 2 & 3, figure 1-3 question 1, 2, 3, 4 & 5 are adopted in testing the hypothesis.

ITEMS	Q1	Q2	Q3	Q4	Q5	TOTAL
SA	68	24	69	64	41	266
A	13	63	17	7	32	132
D	7	8	12	11	13	51
SD	13	6	3	19	15	56
TOTAL	101	101	101	101	101	505

At 5% level of significance with a degree of freedom value of 12 on the Chi-Square distribution table we have 21.03. Since F-calculated or calculated X2=4.098 is less than F-critical value 21.03 at 5% level of significance accept the null hypothesis and reject the alternative hypothesis. The conclusion was that there is no significant impact of otitis media on cognitive development amongst children attending the Lasuth, Lagos state, Nigeria. This means that otitis media and cognitive development amongst children attending the Lasuth, Lagos state are different from each other.

Hypothesis 2

Otitis media has no impact on educational achievement amongst children attending the Lasuth, Lagos state, Nigeria.

The dependent variable was tested against the independent variable at 5% level of significance using chi-square. Degree of freedom was determined for the purpose of this test. The response to table 4, question 1, 2, 3, 4 & 5 are adopted in testing the hypothesis.

ITEMS	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**TOTAL**
SA	72	64	16	70	73	295
A	15	9	59	6	17	106
D	5	13	16	17	6	57
SD	9	15	10	8	5	47
TOTAL	101	101	101	101	101	505

At 5% level of significance with a degree of freedom value of 12 on the Chi-Square distribution table we have 21.03. Since F-calculated or calculated X2=2.874 is less than F-critical value 21.03 at 5% level of significance accepted the null hypothesis and rejected the alternative hypothesis. The conclusion was that otitis media has no impact on educational achievement amongst children attending the Lasuth, Lagos state, Nigeria. This means that otitis media has

an educational achievement amongst children attending the Lasuth, Lagos state are different from each other.

From hypothesis one, the study showed that there is no significant impact of otitis media on cognitive development amongst children attending the Lasuth, Lagos state, Nigeria. This study is in line with the work of Vernon-Feagans et al. (2017) who stated study found that there was mixed results regarding the development of speech, but found that, on balance, there is insufficient evidence to suggest that otitis media is a significant risk to cognitive development of children.

From hypothesis two, the study revealed that otitis media has no impact on educational achievement amongst children attending the Lasuth, Lagos state, Nigeria. This study is consistent with the work of Corinne & Ann (2014) who opined a review indicated that there is no conclusive evidence that otitis media affects academic achievement, the evidence is mixed, with some studies showing effects on reading, emergent literacy skills and mathematics.

Summary

This study was designed to explore the perceived impact of otitis media on cognitive and educational outcomes amongst selected children attending Lagos State University Teaching Hospital, Lagos state, Nigeria. The specific objectives of the study were to examined the impact of otitis media on cognitive development, investigated the impact of otitis media on educational achievement and identified risk factors affecting otitis media of selected children attending Lasuth, Lagos state, Nigeria. Literature was extensively reviewed on the concepts, theory and empirical studies. Descriptive cross sectional design was successfully adopted for the study.

Convenience sampling technique was employed to draw a sample size of one hundred and one (101) children attending the Lagos State University Teaching Hospital, Lagos state, Nigeria. Questionnaire was the only tool used for data collection. This shows the results of the questionnaire and a step by step analysis through the use of chi-square statistics. The results indicated sufficient evidence for rejecting the alternative hypotheses (Ho) and accepting null hypotheses (H1). In conclusion, the chapter discussed the findings of the research project in light of previous studies and highlighted the implications of the findings.

CONCLUSION

Based on the finding, the study concludes that there is no significant impact of otitis media on cognitive development amongst children attending the Lasuth, Lagos state, Nigeria, otitis media has no impact on educational achievement amongst children attending the Lasuth, Lagos state, Nigeria and majority of the respondent opined that passive smoking and decline in breastfeeding, children with persistent otitis media, the degree of hearing loss, parenting style, and access to medical care, children hearing loss before the age of 12 months and rural area children who suffer otitis were risk factors affecting otitis media amongst children attending the Lasuth, Lagos state. Therefore, there is a need for better ear care and screening programme for early detection and management of this disease in Lagos state.

Recommendations

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

i. Undertake an information, education and communication program to sensitize guardians, children and teachers on OM in terms of cause, preventive measures and curative services

available in health facilities. Primary school teachers and parents or guardians are capable of playing a significant role in control of OM if empowered through imparting them with the requisite knowledge and skills.

ii. There is need for greater efforts towards improving the living standards of children. Interventions known to protect against acute respiratory tract infections in infants such as exclusive breastfeeding should be encouraged.

iii. Step up training of ENT specialists and post them to rural health facilities in order to augment ENT services.

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