Knowledge and Attitudes of Healthcare Providers to Paediatric Pneumonia Among Patients Attending Primary Health Centers in Osun State, Nigeria

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ABSTRACT

Background: Pneumonia is one of the deadliest causes of childhood mortality. Thus, healthcare providers must have a sound knowledge and demonstrate positive attitudes toward containing the disease.

Objective: The purpose of this study is to assess the level of knowledge and attitudes of healthcare providers to pneumonia among patients attending primary health centers in Osun State, Nigeria.

Methods: A well-structured questionnaire was used to collect the data. The data was analyzed using SPSS Version 21 with level of significance set at $P < 0.05$.

Results: Majority of the participants have appreciable knowledge of the causes of pneumonia. However, the participants lacked proper awareness of the risk factors of Pneumonia. Furthermore, age, gender and category of health worker were found to be associated with basic knowledge of pneumonia but not statistically significant (p-values >0.05). The study only found a significant association between Years worked as Health Worker and basic knowledge of pneumonia (p-value 0.036).

Conclusion: The study showed a lack of in-depth knowledge of pediatric pneumonia among most of the respondents and lackadaisical attitudes especially to preventive strategies for reducing pneumonia. Massive retraining of staffs is recommended to address these gaps.

Keywords: Pediatric Pneumonia, Healthcare providers, Knowledge, Attitudes, Nigeria.

INTRODUCTION

Pediatric pneumonia is among the most common reasons for hospital admission and one of the leading causes of preventable deaths for children living in the world's poorest countries (1, 2). According to the World Health Organization (WHO), pneumonia is a form of acute respiratory infection that affects the small sacs of the lung called alveoli which fill with air when a healthy person breathes but when an individual who has pneumonia breathes, the alveoli are filled with pus and fluid instead, this makes breathing painful and limits oxygen intake (3).

Most of pneumonia deaths occur in developing countries where access to care is incomplete, and interventions that have improved care in developed countries like routine vaccination, improved nutrition, appropriate antimicrobial treatment and effective oxygen therapy are scarce. For example, in 2018, 71 million children did not receive the recommended three doses of PCV which put them at higher risk of ARI especially Pediatric Pneumonia (4, 5).

Currently, 84% of child deaths from pneumonia occur in just 30 countries, mostly in Sub-Saharan Africa and Asia. This makes Pneumonia a disease of poverty and a marker of inequities both within and between countries and so a lot more must be done to ensure all children living within these high mortality countries have access to protective, preventive and curative services (6, 7).

Pneumonia is caused by a variety of infectious agents including bacteria, viruses, fungi and chemical irritants through inhaling of food, liquid, gases or dust (8). The most common pathogens causing Pediatric Pneumonia are bacteria, viruses and mycoplasma (9).

Most healthy children can fight Pneumonia infections with their natural defenses, children whose immune systems are compromised are at higher risk of developing pneumonia. A child's immune system may be weakened by malnutrition or undernourishment, especially in infants who are not exclusively breastfed (3, 10).

Pre-existing illnesses e.g. symptomatic HIV infections and measles can increase a child's risk of contracting pneumonia.

Other factors that can increase a child's susceptibility or risk of developing pneumonia are Indoor air pollution caused by cooking and heating with biomass fuels such as wood or dung. According to the World Health Organization, 45% of pneumonia deaths in children under five are due to household air pollution (3). Living in crowded homes, Parental smoking, Swallowing or coughing problems have also been identified as major risk factors for developing pediatric pneumonia (3).

The World Health Organization recommends immunization, adequate nutrition, addressing environmental factors/air Pollution and HIV prevention as key strategies for preventing pediatric pneumonia (3).

MATERIALS AND METHODS
STUDY DESIGN
A descriptive cross sectional survey was used for the study.

SCOPE OF STUDY
The study focused on the of knowledge and attitudes of healthcare providers about the risk factors, prevention and management of pediatric pneumonia among patients attending primary health centers in Ede, Osun State, Nigeria.

A questionnaire was used to get qualitative data from the healthcare providers working across various facilities within the study area.

STUDY AREA

The study area is Ede North Local Government Area in Ede, Osun State, South-Western Nigeria. This local government area has a large concentration of primary health centers with a total of 18 primary health centers comprising 2 government licensed private primary health centers.

STUDY POPULATION

This was a hospital-based study, conducted across primary health centers in Ede North Local Government Area, Ede, Osun State, South-Western Nigeria. The study population comprised healthcare providers that have been working in these Primary health centers for at least within the last one year.

INCLUSION CRITERIA

Only healthcare providers who give informed consent were included in the study.

EXCLUSION CRITERIA

Healthcare providers who met the inclusion criteria but do not give consent were excluded from the study.

SAMPLING METHOD

Systematic sampling method was used to select the facilities for this study. Purposive sampling method was used to select the participants for the Key informant interview to get qualitative data.

ETHICAL CONSIDERATIONS

Introduction letter obtained from the Department of Public Health and Ethical approval letter from the Adeleke University Ethics Review Committee was given to the managements of the facilities. Informed consent of participants was obtained. Confidentiality of participants' information was ensured.

DATA COLLECTION INSTRUMENTS

A structured questionnaire served as the primary source of information for the study. It was divided into different sections consisting of socio-demographic characteristics of the respondents, general knowledge, attitudes, management and prevention of Pediatric Pneumonia.

VALIDITY

The data collection instruments were presented to professors and other senior lecturers in the public health department for necessary criticisms, corrections, inputs and approval to ensure their validity.

RELIABILITY

The Cronbach Alpha technique was used to determine the split-half reliability of the instruments. Split-half reliability helped the researchers to determine the extent to which all sections of the questionnaire contributed to results of the study.

DATA COLLECTION TECHNIQUE

The researchers used questionnaire forms as part of the instruments of the KII to obtain qualitative information from key stakeholders mostly health care providers of pneumonia patients.

METHOD OF DATA PROCESSING AND ANALYSIS

Data retrieved from the answered questionnaire forms and the other collection instruments was analyzed using the Statistical Package for Social Sciences (SPSS) Version 21. The results were organized and presented in tables and figures.

PRESENTATION OF TABLES

According to table 1 below, a total of 107 health care providers were included in the study. The category of workers was divided into five sections with 43% being nurses, 29% being other categories of health care providers comprising Surveillance officers, M & E officers, Health records officers, Laboratory technicians, Environmental officers, Community health extension workers, Junior Community health extension workers and Nutritionists, 20.6% were Community health officers, 4.7% were Health assistants and 2.8% were Medical officers of health.

Table 1: Category of Workers

Category of Workers	Frequency	Percent
Doctor	3	2.8%
Nurse	46	43%
Community health officer	22	20.6%
Health assistant	5	4.7%
Others	31	29%
Total	107	100%

From, table 2 it can be seen that 136 (33.6%) of the participants were aged 17 to 24 years and this group represents the majority, 23 (21.5%) were aged 25 to 32 years, 21 (19.6%) were aged 41 to 48 years, 19 (17.8%) were aged 33 to 40 years and 8 (7.5%) were aged 49 to 56 years. Around 89.7% were females and 10.3% were males. 37.4% of the participants have worked in their respective facilities for >5years while 81.3% have worked for < 5 years, of these 29.9% have been attending to Pneumonia patients for less than 6 months, 13.1% within the last 6 to 12months, 12.1% within the last 1 to 2 years, 13.1% in the last 2 to 3 years and 31.8% for over 3 years (Table 2).

Table 2: Socio-demographic Variables

Variable	Category	Frequency	Percent
Age Group	17-24 years	36	33.6%
	25-32 years	23	21.5%
	33-40 years	19	17.8%
	41-48 years	21	19.6%
	49-56 years	8	7.5%
	Total	107	100%
Gender	Male	11	10.3%
	Female	96	89.7%
	Total	107	100%
Marital status	Single	44	41.1%
	Married	58	54.2%
	Divorced	2	1.9%
	Widow	1	0.9%
	Others	2	1.9%
	Total	107	100%
Years worked as a	<1year	15	14%

health care provider	2-3years	18	16.8%
	3-4years	14	13.1%
	4-5years	20	18.7%
	>5years	40	37.4%
	Total	107	100%
Duration attending to Pneumonia patients	Less than 6month	32	29.9%
	Last 6-12months	14	13.1%
	Last 1-2years	13	12.1%
	Last 2-3years	14	13.1%
	Over 3years	34	31.8%
	Total	107	100%

Table 3 and figure 1 showed that majority of the participants agree with the definition (57% agree; 27.1% strongly agree), common types (61.7% agree; 15.9% strongly agree) and sources of Information (50.5% agree; 28%) therefore have good basic knowledge about Pneumonia disease (Tables 3 - 5).

Table 3: Basic Knowledge of Pneumonia (Definition)

Pneumonia is an infection that inflames the air sacs in the lungs	Frequency	Percent
Disagree	3	2.8%
Strongly disagree	5	4.7%
Neutral	9	8.4%
Agree	61	57%
Strongly agree	29	27.1%
Total	107	100%

Figure 1: Proportion with basic knowledge of Pneumonia (Pneumonia is infection that inflames air sacs in the lungs)
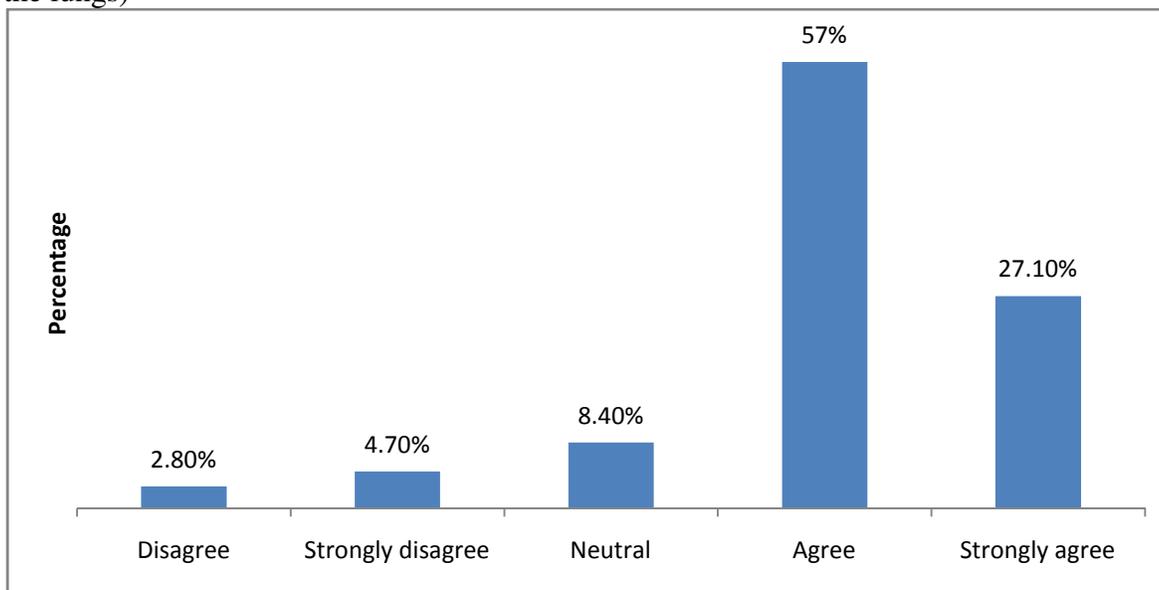
As shown in table 4 and figure 2 below, most of the participants affirmed the common types of Pneumonia with 17(15.9%) participants strongly agreeing and 66 (61.7%) agreeing. Only 5(4.7%) participants disagreed.

Table 4: Basic Knowledge of Pneumonia (common types)

Community acquired pneumonia, Hospital acquired pneumonia and Health care acquired pneumonia are the common types of Pneumonia	Frequency	Percent
Disagree	5	4.7%
Strongly disagree	3	2.8%
Neutral	16	15%
Agree	66	61.7%
Strongly agree	17	15.9%
Total	107	100%

Figure 2: Proportion with basic knowledge of Pneumonia (Common types of Pneumonia are Community acquired, Hospital acquired & Health care acquired
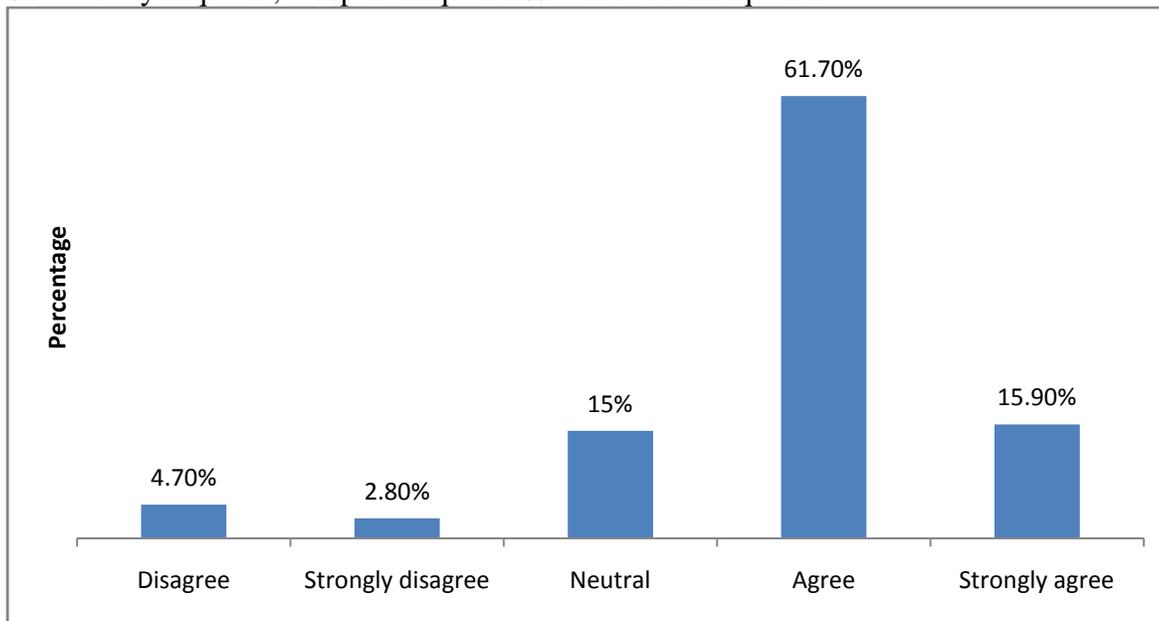

Table 5 and figure 3 showed that 14 (13.1%) of the participants disagreed and 4 (3.7%) strongly disagreed with the most common sources of information indicating a knowledge gap among the healthcare providers.

Table 5: Basic Knowledge of Pneumonia (sources of Information)

Academic institutions, Staff training, Radio/Television jingles, Social media are the major sources of Information about Pneumonia	Frequency	Percent
Disagree	14	13.1%
Strongly disagree	4	3.7%
Neutral	5	4.7%
Agree	54	50.5%
Strongly agree	30	28%
Total	107	100%

Figure 3: Proportion with basic knowledge of Pneumonia (sources of information are academic institutions, staff training, radio/television jingles and social media)
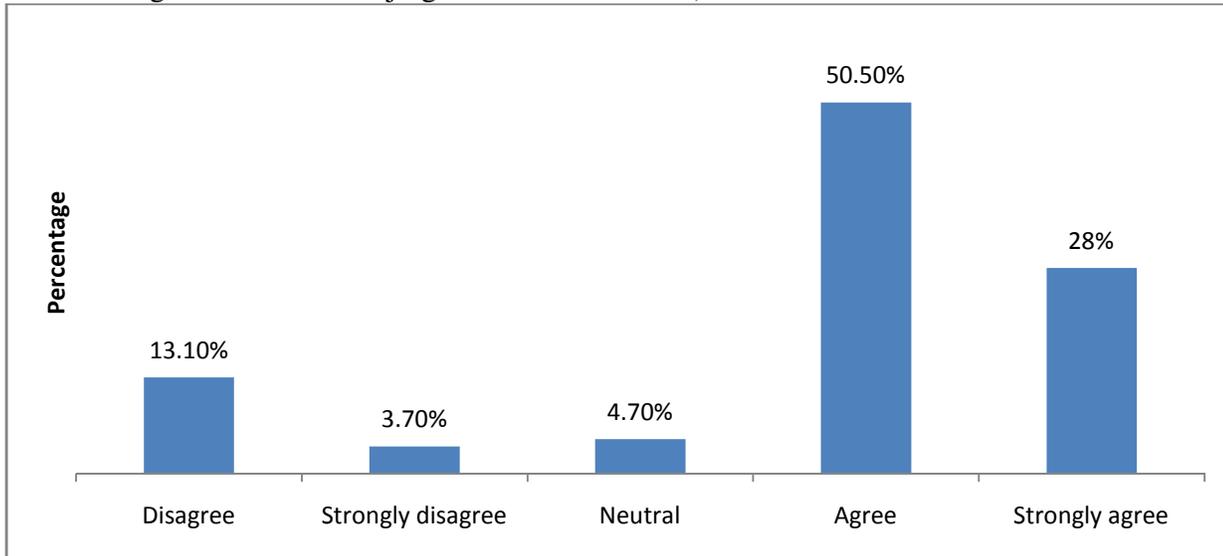
As shown in table 6 and figure 4, most of the participants showed appreciable knowledge of the causes of pneumonia with 92.5% and 68.2% correctly recognizing Bacteria and Viruses as the major causes of Pneumonia with about half of the participants (53.3%) recognizing Mycoplasma as also a pathogenic cause of Pneumonia (Table 6).

Table 6: Causes of Pneumonia

Causes of Pneumonia in Children	Frequency	Percent
Bacteria	99	92.5%
Virus	73	68.2%
Mycoplasma	57	53.3%

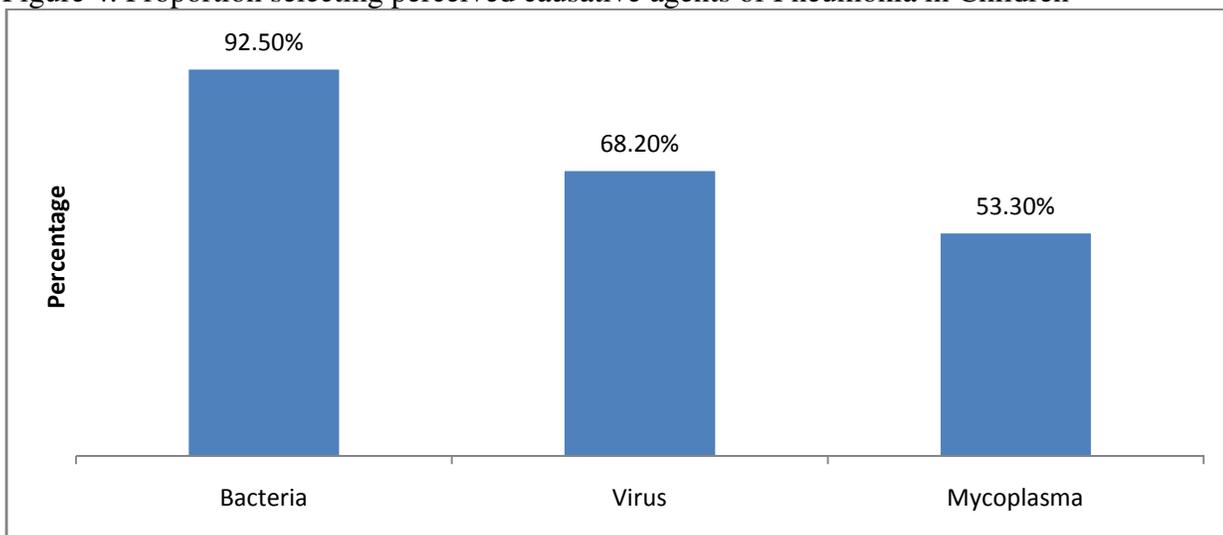Figure 4: Proportion selecting perceived causative agents of Pneumonia in Children

Table 7 and figure 5 showed that the participants lacked proper awareness of the risk factors contributing to the development of Pneumonia as only 42% identified and correctly ranked Household air pollution caused by cooking with firewood as the most significant risk factor in Nigeria (Table 7).

Table 7: Risk factors for Pneumonia

Risk factors for developing Pneumonia	Rank in order of significance, rank	Frequency	Percent
Household air pollution caused by cooking with firewood	First	45	42%
Swallowing or coughing problems	Second	40	37.4%
Parental Smoking	Third	11	10.3%
Living in crowded homes	Fourth	11	10.3%
	Total		100.00%

Figure 5: Proportion selecting perceived risk factors for developing Pneumonia ranked in order of significance
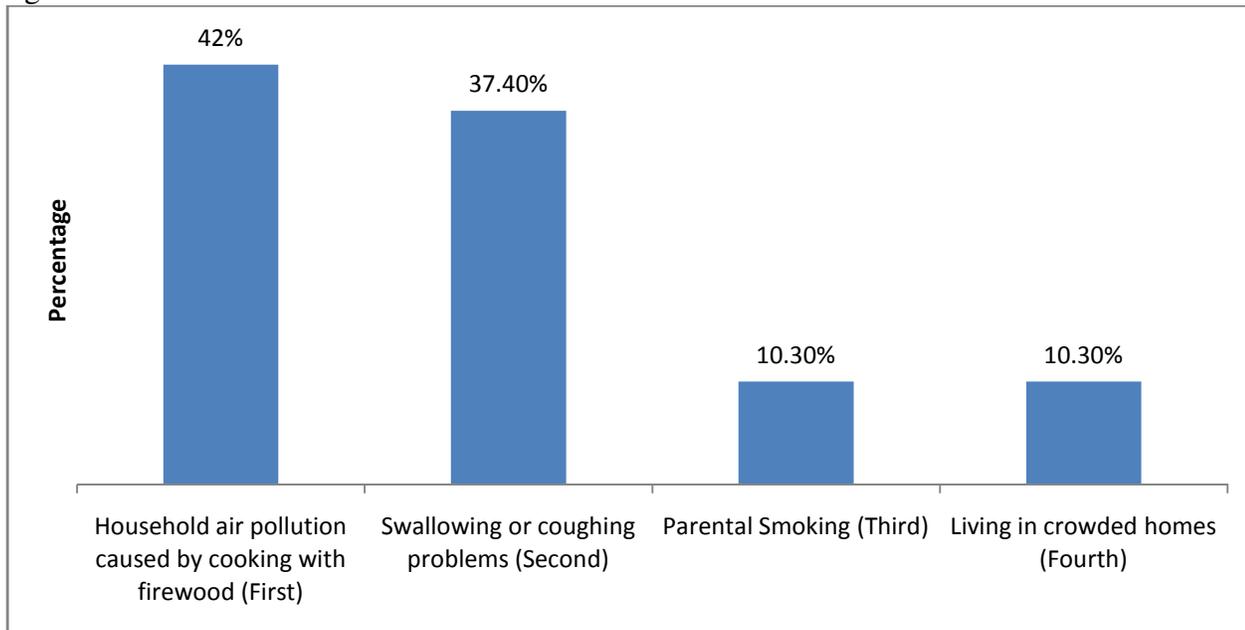
As shown in tables 8 - 9 and figures 6 – 7, most of the participants did not show satisfactory knowledge and attitude regarding viable strategies for preventing pneumonia disease as more ranked "HIV prevention" above "Reducing environmental/air pollution" per significance. However majority showed strong positive attitude to Immunization as 92.5% answered that it could protect a person from getting pneumonia indicating good knowledge about the protective role of vaccination against this serious disease.

Table 8: Prevention of Pneumonia

	Rank in order of significance, rank	Frequency	Percent
Immunization	First	64	59.8%
Promoting adequate nutrition	Second	21	19.6%
HIV Prevention	Third	12	11.2%

Reducing environmental/air pollution	Fourth	10	9.4%
	Total	107	100%

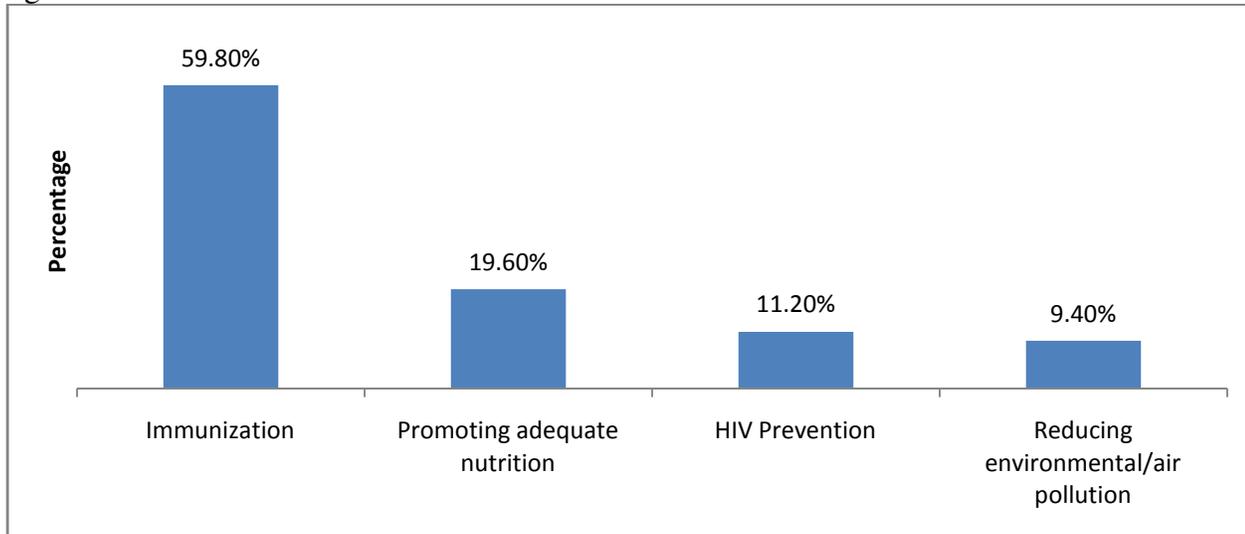Figure 6: Proportion selecting perceived Pneumonia Prevention Interventions ranked in order of significance

Table 9: Attitude towards preventive strategies (Immunization)

Immunization can protect against Pneumonia infections	Frequency	Percent
Disagree	2	1.9%
Neutral	6	5.6%
Agree	65	60.7%
Strongly agree	34	31.8%
Total	107	100%

Figure 7: Proportion perceiving that Immunization protects against Pneumonia infections
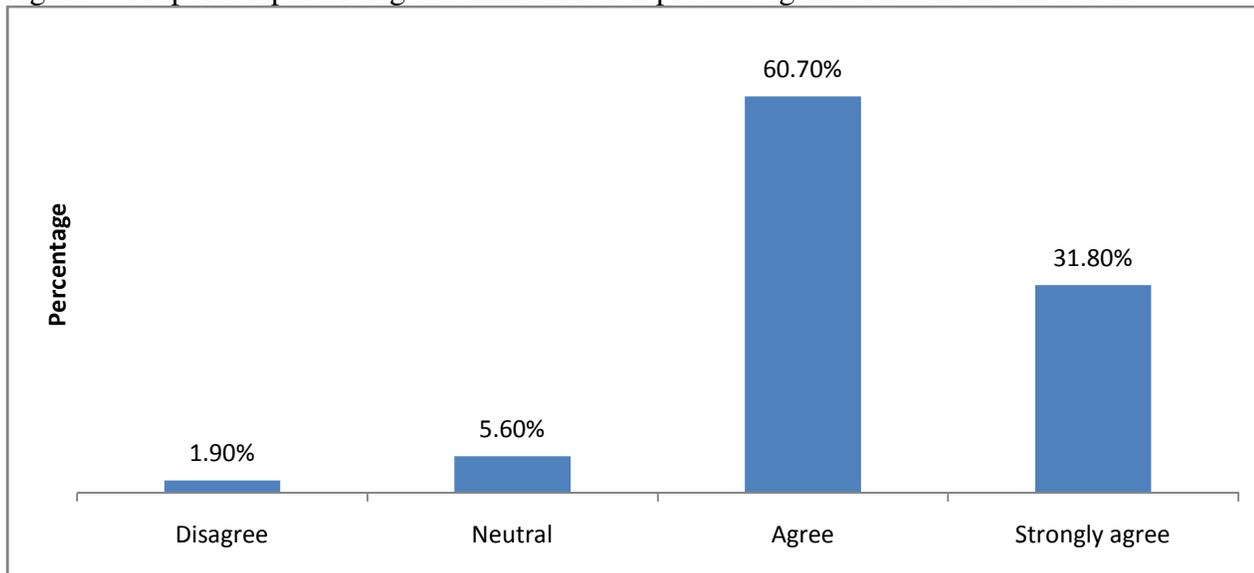
It can be deduced from tables 10 – 11 and figures 8 – 9 that the overall attitude of the participants toward Good hygiene and Sanitation as a preventive strategy to reduce pneumonia was good as 85.9% of them agreed and 12.1% were neutral. Also, a considerable number of them (29.9%) strongly agreed that Balanced diet is a good recommendation to prevent Pneumonia infections among children with 64.5% agreeing while 3.7% preferred to remain neutral.

Table 10: Attitude towards preventive strategies (Good Hygiene)

| Good hygiene and Sanitation can reduce pneumonia infection among patients	Frequency	Percent
Strongly disagree	2	1.9%
Neutral	13	12.1%
Agree	79	73.8%
Strongly agree	13	12.1%
Total	107	100%

Figure 8: Proportion perceiving that Good hygiene and Sanitation reduces pneumonia infection
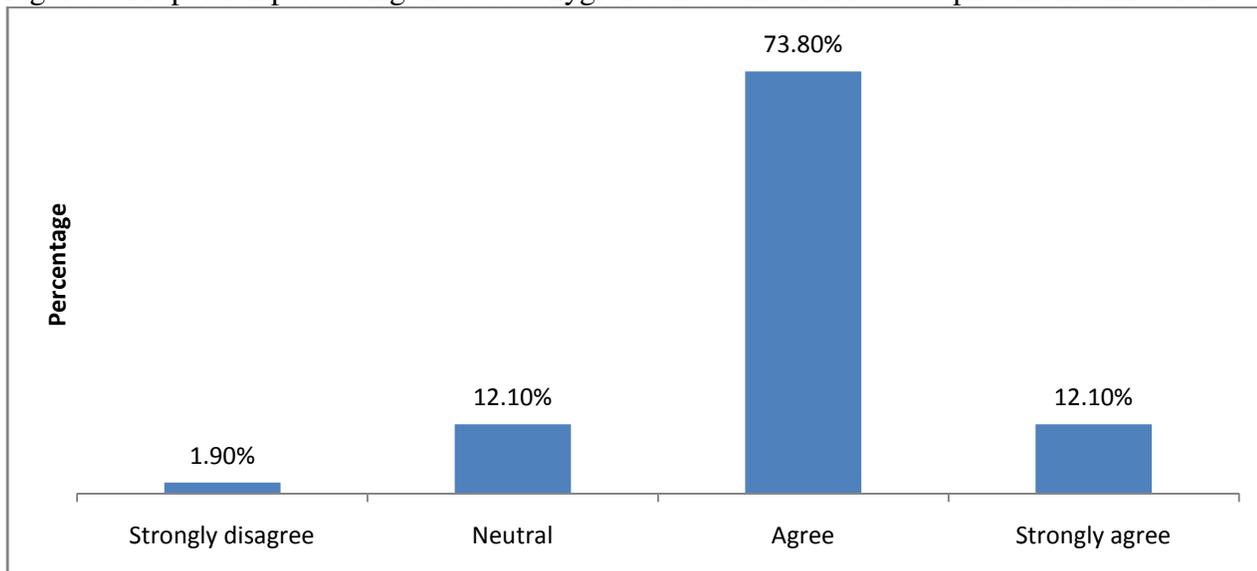
Table 11: Attitude towards preventive strategies (Balanced diet)

Balanced diet is a good recommendation to prevent Pneumonia infections	Frequency	Percent
Disagree	1	0.9%
Strongly disagree	1	0.9%
Neutral	4	3.7%
agree	69	64.5%
Strongly agree	32	29.9%
Total	107	100%

Figure 9: Proportion perceiving that Balanced diet is recommendation to prevent Pneumonia infections
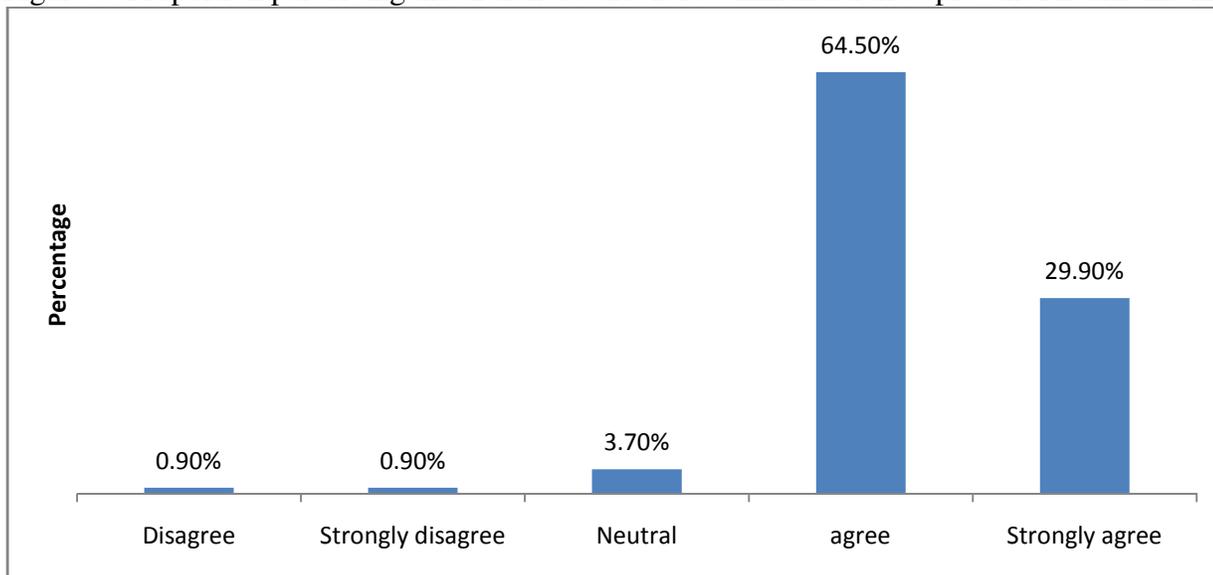

As shown in table 12 and figure 10 below, a high percentage of the participants 100 (93.5%) favored antibiotic use as the preferred method of managing pneumonia followed by appropriate diet and oxygen therapy respectively.

Table 12: Management of Pneumonia

Ways of managing Pneumonia	Frequency	Percent
Antibiotics Use	100	93.5%
Oxygen Therapy	85	79.4%
Appropriate Diet	97	90.7%

Figure 10: Proportion selecting methods of managing Pneumonia
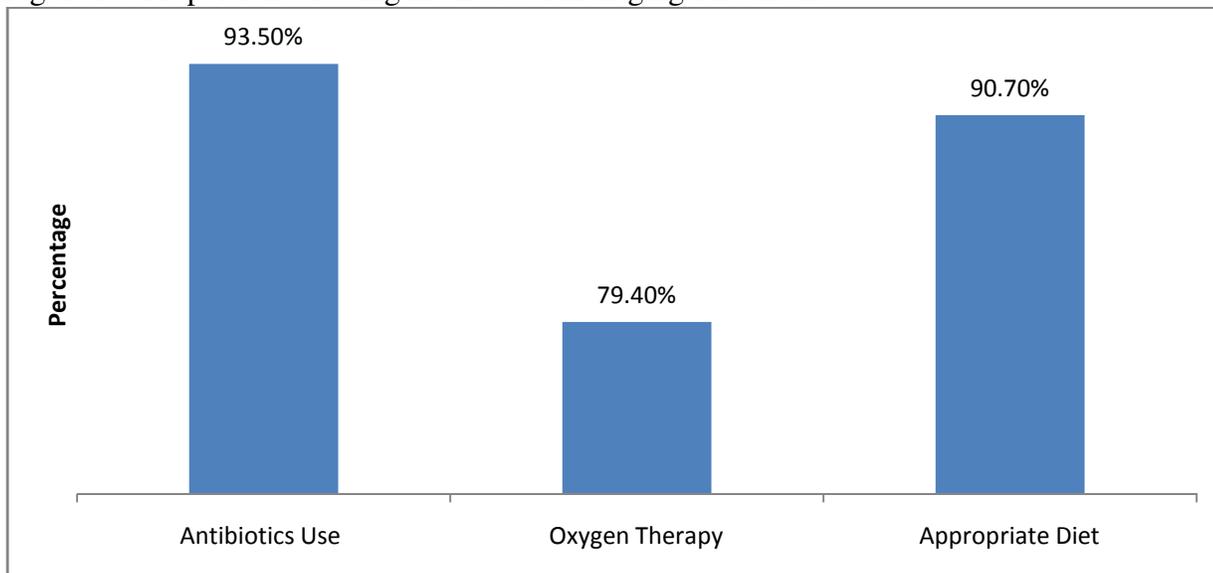
According to table 13, the major hindrance to the treatment and management of pediatric pneumonia in most of the facilities is shortage of personnel.

Table 13: Hindrance to the treatment and management of pneumonia

Most Significant Hindrance	Frequency	Percent
Poor Financing	33	30.8%
Inadequate Supply of Drugs	24	22.4%
Shortage of Personnel	36	33.6%
Poor Attendance/ Utilization	14	13.1%
Total	107	100%

Table 14: Association between Basic Knowledge (Pneumonia Definition) and Years worked as Health Worker

		Years Worked					Total	P-Value
		<1year	2-3years	3-4years	4-5years	>5years		
Pneumonia Definition	Disagree	0	1	1	0	1	3	0.036
	Strongly disagree	0	1	1	2	1	5	
	Neutral	5	1	0	0	3	9	
	Agree	9	13	9	10	20	61	
	Strongly agree	1	2	3	8	15	29	
Total		15	18	14	20	40	107	

RESULTS AND DISCUSSION

This study was designed to assess the level of knowledge and attitudes of healthcare providers about the risk factors, management and prevention of Pediatric Pneumonia among patients attending primary health centers. Pediatric Pneumonia is a life threatening disease and one of the deadliest causes of childhood morbidity and mortality; it is therefore important for health care providers especially those responsible for managing the disease to have a sound knowledge and demonstrate positive attitudes and practices toward containing the disease. The study found majority of the healthcare providers across the facilities surveyed to have at least basic knowledge of the disease and preventive strategies of tackling the disease.

Age, gender and category of health worker were found to be associated with basic knowledge of pneumonia but not statistically significant (p-values >0.05). The study only found a significant association between Years worked as Health Worker and basic knowledge of pneumonia (p-value 0.036) as can be seen in table 14 above.

This indicates that more experienced health care workers are generally more knowledgeable than the less experienced ones.

The study even though found that a good proportion of participants have a fairly good knowledge and positive attitudes towards prevention of pneumonia, results from the analysis showed that the association between attitudes towards preventive strategies and years of work to is not statistically significant. This is a hindrance because education and awareness of healthcare providers regarding the benefit of key preventive strategies like immunization, good hygiene and sanitation and adequate nutrition despite being a critical step is not enough in reducing pediatric pneumonia disease and improving patient quality of life. Both should have translated to attitudinal change especially among providers with over five years working experience if it is to generate any measurable impact which unfortunately is not so according to the findings of this research.

These findings are similar to findings from a study in Saudi Arabia by Alharbi et al. (2021) which was aimed at assessing the knowledge attitude and practice (KAP) of Saudi adults including healthcare providers toward pneumococcal vaccine commitment and benefits. Their study showed poor knowledge and practice pattern and positive attitude level among participants to pneumonia prevention. This incomplete KAP of adults has posed a barrier to the success of vaccination programs generally across Saudi Arabia.

The current study also found no statistically significant association between Attitudes towards preventive strategies with age, gender, category of health workers and years of work (p-values > 0.05). This shows that these variables have no influence on their attitudes towards prevention of pneumonia.

This is similar to another study by Gold et al. (2019) on the management of bronchiolitis and community-acquired pneumonia which surveyed pediatric providers at six children's hospitals in the New York City area, the researchers found discordance between some participants' knowledge of and attitudes toward the guidelines for managing bronchiolitis and community-acquired pneumonia cases. They also found that working experience were not significantly associated with routine management of these diseases and attending physicians who finished training >10 years ago were more likely to proffer same care. In fact the study suggested that older providers have difficulty in providing appropriate care plan despite their long years of work. These findings showed that the dissemination of guidelines and provider education may result in only modest improvements in the reduction of cases of these diseases and suggested better strategies to influence attitudinal change to management and prevention may be needed.

However, another study in Iran by Haghighat et al. (2021), found the score of knowledge and practice of female nurses higher than that of male nurses with a significant difference between both genders. This implies a statistically significant association between practices towards pneumonia management with gender of health workers unlike the results of this current study. The findings of the research has shown that more research are needed in pediatric pneumonia management and prevention especially in low-income countries as there is obvious knowledge gap among even healthcare providers in these areas.

The Limitation of the study is that the researchers relied solely on the responses of the respondents in drawing inferences which could be subject to bias.

CONCLUSION

The study showed a lack of in-depth knowledge of pediatric pneumonia among most of the respondents. Also, it indicated gross lackadaisical attitudes especially to preventive strategies and this is an obstacle to reducing pneumonia in Osun State. Thus, the study recommends massive retraining of staffs and launch of educational programs on pneumonia management and their importance in reducing childhood mortality. This can be achieved with the assistance of the health ministry, relevant international Non-governmental organizations and development partners. The study results are valuable to the framework of the Osun State ministry of health, to launch more campaigns in order to enhance the management and prevention of pneumonia in Osun State.

DECLARATION OF INTEREST

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