PERCEPTION AND ACCEPTANCE OF ROTAVIRUS/PNEUMOVAX AMONGST MOTHERS IN A SELECTED TERTIARY INSTITUTION, BENIN CITY, NIGERIA

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ABSTRACT

The study assessed the perception and acceptance of mothers of under-5 aged children's utilisation of immunization clinic in the selected tertiary institution towards rotavirus and pneumococcal conjugate vaccine. Descriptive survey design was employed, questionnaire was the instrument used for data collection. Simple random sampling procedure was used to select 170 participants. The findings revealed that majority of the respondents (66.5%) were between the age of 20-34years and were married (62.9%). Majority of the respondents (48.5%) had moderate knowledge of rotavirus and pneumococcal Conjugate vaccines. The study also established that the respondents had negative perception towards rotavirus and pneumococcal Conjugate vaccines while a majority 137(82.0%) had high level of acceptance of the vaccines. The mothers' level of acceptance of the Rotavirus vaccine and Pneumococcal conjugate vaccines was not significantly associated with educational level of mothers. The findings further showed that the level of knowledge of mothers of these vaccines was not significantly associated with the parity of the mothers. There was a significant relationship between knowledge and perception as p < .05. Accordingly, there is need for significant campaign about these vaccines and it should be freely available and affordable to meet the goal of good health and well-being for all.

Keywords: Acceptance, Rotavirus and Pneumococcal conjugate vaccine, Perception

Introduction

Immunization is a proven mechanism for controlling and eliminating life-threatening infectious diseases such as diarrhoea, measles etc. (Young, Nimmo, Cripps & Jones, 2014). The World Health Organization [WHO] (2018) stated that immunization prevents an estimated 2 to 5 million deaths worldwide annually. Pneumococcal vaccines are vaccines against the bacteria Streptococcus pneumoniae (Calvin, David & Shelton, 2016). There are two types of pneumococcal vaccines: conjugate vaccines and polysaccharide vaccines given by injection intradermal or intramuscularly (WHO, 2013). They also recommend the use of the conjugate vaccine in the routine immunizations given to children including those with HIV/AIDS. The recommended three or four doses are between 71 and 93% effective at preventing severe pneumococcal disease.

Rotavirus vaccine and Pneumococcal Conjugate vaccine help to eradicate diarrhoea and pneumonia respectively (Tate, 2016; Kuchenbecker, Chase, Reichert, Schiffner-Rohe, Atwood, 2018). Pneumonia is the single largest infectious cause of death in children worldwide (Blasi, *et al*., 2017). According to Ruuskanen *et al., (*2013), pneumonia killed an estimated 935 000 children under the age of five in 2013, accounting for 15% of all deaths of children under five years old. Vaccines have the potential to reduce the incidence of pneumonia. The conjugate vaccine prevents immunized children from asymptomatic pharyngeal carriage for which a considerable herd effect has been seen (Adegbola *et al.,* 2013). Rotavirus is the leading cause of severe gastroenteritis in children worldwide. Globally, infection results in more than 600,000 deaths each year in children less than 5 years' old who die from severe dehydration and electrolyte and acid-base disturbances. It is estimated that more than 80% of all rotavirus-related deaths occur in resource-limited countries in Sub-Saharan Africa and Asia alone (Kundra, Kumar & Singh, 2015). According to Seale, *et al*., (2015), ignorance, low level of awareness and knowledge of the benefits of the vaccines, mixed feeling towards the use of the vaccine, expensive vaccine, non-availability of the vaccine especially in rural areas were the listed factors that influenced the acceptability of the vaccines

In Nigeria, studies have revealed that there is apparently low of mothers' perception and acceptance; previous history of intussusceptions with introduction of Rota shield, low routine immunization coverage, high mortality among children under 5 years and initial poor acceptance of these vaccine in the country. (Pringle, *et al*., 2014). It is therefore important to elicit the perspectives of mothers as well as their acceptance towards these vaccines. Despite advances in prevention and treatment of vaccine-preventable diseases, diarrhoea and pneumococcal diseases remain a major source of morbidity and mortality among

children worldwide. Pneumonia accounts for 16% of all deaths of children under 5 years old, killing 920,136 children in 2015 (WHO, 2015). Many countries in which Pneumococcal vaccines (PCVs) were introduced as part of routine immunization have shown reduction in vaccine type invasive disease (Pilishvili, *et al*., 2016; Miller, *et al*., 2014). In south-east zone Nigeria, the awareness and perception of these vaccines is low and for those mothers that are aware certain factors such as cost, religious beliefs, tradition have bluntly refused them from accepting the vaccines (Enwonwu, IIlka, Ifeadike, Aniemena, & Egeonu2018). In view of this, this study is designed to assess mothers' perception and acceptance of Rotavirus vaccine as well as Pneumococcal Vaccines in south–south zone of Nigeria

Theoretical Framework

The theoretical framework for this study is the Health Belief Model. It was first developed in the 1950s by social psychologists Hochbaum, Rosenstock and Kegels working in the U.S. Public Health Services. Perceived susceptibility, perceived severity, benefits and barriers comprise the four main components of the Health Belief Model. Specifically, perceived susceptibility refers to an individual's subjective assessment of his or her risk for contracting an illness. Perceived severity, on the other hand, refers to an individual's feelings about the seriousness of contracting an illness. Benefits refer to an individual's beliefs regarding the effectiveness of a health action in reducing the disease threat. This can also involve both medical and psychosocial aspects. Finally, barriers refer to the potential negative aspects of certain health actions and can involve both practical and psychological costs.

First, the perceived susceptibility of the under-five children contracting the disease, these children are vulnerable to contract pneumonia and diarrhoea because their immune system is weak at this stage. They are at high risk of contracting these diseases if an alternative course of action is not taken. Secondly, the perceived severity of these diseases by the mothers if contracted by a child is devastating. When mothers perceive such severity of pneumonia and diarrhoea and its consequences, they become motivated to immunize their children to avert the impending risks. Thirdly, the perceived benefits are important factors that can determine the course of action toward health issues. The benefit is that it will prevent or stop the child from being at risk of contracting the Childhood Killer Diseases (CKD). Fourthly, the costs or barriers that could hinder mothers from complying to immunize their children are numerous. These include the lack of knowledge of the killer diseases that will enable them to seek for immunization, their attitude due to religious affinity, culture, distance to immunization centres, husbands' permission to take the child for immunization, poverty, the costs of accessing health service etc.

Objectives of The Study

The aim of this study is to assess the perception and acceptance of Rotavirus/ Pneumococcal vaccines among mothers of children aged under 5 in University of Benin Teaching Hospital, Benin City. The specific objectives of this study are:

1. To assess the knowledge of Rotavirus and pneumococcal Vaccines among mothers of under-five years children.
2. To elicit the perception of under-five year's mothers towards the Rotavirus and pneumococcal Vaccines.
3. To determine the acceptance of under-five years mothers of the Rotavirus and pneumococcal Vaccines.

Hypotheses

1. There is no significant association between knowledge level of Rotavirus/pneumococcal Vaccines and parity of the mothers of under-five-years children.
2. There is no significant association between acceptance of Rotavirus/pneumococcal Vaccines and educational level of the mothers of under-five-years children.
3. There is no significant association between knowledge level of Rotavirus /pneumococcal Vaccines and perception of the mothers of under-five-years children

Materials and Methods

This is a descriptive survey study. The settings used for this study was the University of Benin Teaching Hospital (UBTH), Benin City, Edo-State, Nigeria. Edo-State is an inland state in the southern part of Nigeria. The target population for the study comprised of all women attending immunization clinic in UBTH, Benin City in duration of one to two months.

To determine the sample size, the researcher used the formula for a Using the Yamane (1967) formula: The average attendance to the immunization clinic is 90 mothers per clinic, there are two clinic days in a week, therefore, for two weeks an average of 300 mothers were expected to visit the clinic. Hence the estimated sample size is 171, the selection was done

through simple random sampling technique. Mothers whose child/children are under five years of age irrespective of parity, and those who are willing to participate in the study and give an informed written consent were included in the study. Primiparous mothers, young girls, those who are not available at the time of data collection and those not willing to participate were excluded from the study.

Instrument for Data Collection

The instrument used for this study was a self-structured questionnaire containing 36 items. Section A contains the demographic data of the mothers; Section B contains the knowledge of rotavirus/pneumococcal vac-cines; Section C contains the perception of mothers towards the rotavirus/pneum-ococcal vaccines, and Section D contains items on acceptance of mothers towards the rotavirus/pneumococcal vaccines. The face and content validity of the research instrument was ascertained. Also, the reliability was ensured using Cronbach's Alpha approach and yielded reliability coefficient of 0.77.

Method of Data Collection

Data for this study was collected through the administration of questionnaires to respondents and it was shared after the explanation of the topic to the mothers. Those who showed interest were given and it was duly filled and collected immediately. The study was carried out in six (6) months (June-November 2018). In other to promote candid responses, the women were assured of anonymity.

Method of Data Analysis

On retrieving the questionnaires from the respondents, the data was coded, cleaned and analysed using Statistical Package for Social Sciences (SPSS) version 24.0. The statistical techniques employed in the data analysis was descriptive statistics (frequency, simple percentages, means as well as inferential statistics (chi-square statistical test) to test the null hypotheses. The level of significance was set at $p<0.05$. The knowledge questions were scored and grouped into three (Poor knowledge = 0-49.9%, Moderate =50-69.9%, High = 70-100%); the level of acceptance was scored as (Poor = 0-49.9%; Good = 50-100%); perception was scored as (Negative 0-2.49; Positive = 2.50-4.00).

Results

Socio-demographic Characteristics of Respondents

As presented in Table 1 many participants, 111 (66.5%) were within the age group of 20-34 years, 15 (9.0%) were <20yrs, while the remaining 41 (24.6%) were 35-49yrs of age. 105 (62.9%) were married, 47 (28.1%) were single, 15 (9.0%) were divorced. Similarly, 56 (33.5%) of the respondents were full time housewives, 73 (43.7%) were employed, 27 (16.2%) were working in private firms, while 11 (6.6%) were from other occupational sectors. 4 (2.4%) have no educational background, 16 (9.6%) have primary education, 69 (41.3%) have secondary education, while 78 (46.7%) of the mothers have tertiary education. Also, 45 (26.9%) of the respondents were primiparous, 49 (29.3%) were para 2, 24 (14.4%) were para 3, while the rest were para 4 and above. Majority (43.7%) of the respondents had previous deliveries at Federal hospital, 45 (26.9%) delivered in state hospitals, 44(26.3% delivered in Primary Health Centre (PHC) while 5 (3.0%) reported that they had their previous deliveries in other hospitals.

While Figure 1 showed vaccination already taken by the under-five children. 158 (94.6%) mothers had accepted their children to be immunised with BCG vaccine; 73.1% had accepted their children to be immunised with PCV, while only 26.9% had accepted their children to be immunised with DPT. Uptake of PCV and Rotavirus virus in this study is 73.1% and 47.9% respectively.

Table 1 Socio-Demographic Characteristics of Respondents

	Categories	N	%
Age	<20yrs	15	9.0
	20-34yrs	111	66.5
	35-49yrs	41	24.6
	Total	167	100
Marital Status	Married	105	62.9
	Single	47	28.1
	Divorced	15	9.0
	Total		
Mother's occupation	House wife	56	33.5
	Employee	73	43.7
	Private	27	16.2
	Others	11	6.6
	Total		
Mother's education	None	4	2.4
	Primary	16	9.6
	Secondary	69	41.3
	Tertiary	78	46.7
	Total		
Parity	1	45	26.9
	2	49	29.3
	3	24	14.4
	4+	49	29.4
	Total		
Hospital delivered	Federal Hospital	73	43.7
	State Hospital	45	26.9
	Primary Health Centre (PHC)	44	26.3
	Others	5	3.0

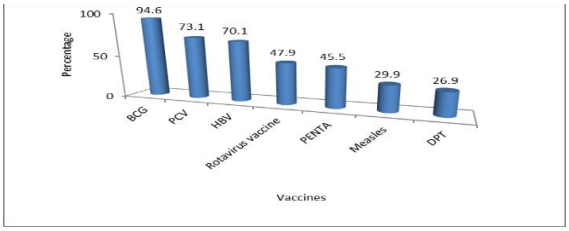

Figure 1: Vaccines Already Taken by Under-Five Children

Knowledge of Mothers towards Pneumococcal and Rotavirus vaccines

As presented in Table 2, of the 176 participants, 12 (7.2%) stated that the uptake of pneumococcal vaccines prevents children cough, 4(2.4%) reported it prevents children from typhoid, 134(80.2%) reported Pneumonia, while 17(10.2%) reported catarrh. Ninety-four (56.3%) of the respondents reported that pneumococcal vaccines are vaccines against bacteria, 36(21.6%) reported it is against virus, 17(10.2%) as against fungi, while 20(12.0%) don't know. Fifteen (9.4%) of the mothers reported that only one dose of Pneumococcal vaccines is to be taken, 85(53.5%) reported two doses, 45(28.3%) reported three doses, 7(4.4%) reported four doses as well as five doses. Twenty-eight (16.8%) of the respondents reported that rotavirus vaccine prevents children from malaria, 15(9.0%) reported rotating virus, 103(61.7%) reported it prevents diarrhoea, while 21(12.6%) reported measles. Seventy-four (44.3%) of the respondents reported that PCV vaccine is administered at six weeks, 71(42.5%) reported ten weeks, 17(10.2%) reported fourteen weeks, while 5(3.0%) reported six months. One hundred and six (63.5%) reported that Rotavirus vaccine should be administered at teen weeks, 48(28.7%) reported fourteen weeks, 7(4.2%) reported six months, while 6(3.6%) reported nine months.

Table 2: Knowledge of Mothers Towards Pneumococcal and Rotavirus Vaccines

Variables	Options	N	%
The uptake of Pneumococcal vaccine prevents children from which of these illness	Cough	12	7.2
	Typhoid	4	2.4
	Pneumonia	134	80.2
	Catarrh	17	10.2
Pneumococcal vaccines are vaccines against what	Bacteria	94	56.3
	Virus	36	21.6
	Fungi	17	10.2
	I don't know	20	12.0
How many dose(s) is expected to be taken of Pneumococcal vaccines	One	15	9.4
	Two	85	53.5
	Three	45	28.3
	Four	7	4.4
	Five	7	4.4
Rotavirus vaccine prevents children from which of these illness	Malaria	28	16.8
	Rotating virus	15	9.0
	Diarrhoea	103	61.7
	Measles	21	12.6
At what age is the PCV vaccine administered	Six weeks	74	44.3
	Ten weeks	71	42.5
	Fourteen weeks	17	10.2
	Six months	5	3.0
At what age is the Rotavirus vaccine administered	Ten weeks	106	63.5
	Fourteen weeks	48	28.7
	Six months	7	4.2
	Nine months	6	3.6
At what age is the Rotavirus vaccine administered		106	65.8

Participants' knowledge of Pneumococcal and Rotavirus vaccines

Table 3 showed the responses to the knowledge questions by mothers about Pneumococcal vaccines and rotavirus vaccines. 134 (83.2%) got the correct answer of the preventive action of the uptake of Pneumococcal vaccines, 94(58.4%) reported correctly that pneumococcal vaccines were vaccines against bacteria, 45(28.0%) of the respondents reported the correct number of dose(s) to be taken of Pneumococcal vaccines, 103(64.0%) reported correctly that rotavirus vaccines prevents children from diarrhoea, 74(46.0%) reported correctly the age at which PCV is administered,

while 106(65.8%) correctly reported the age at which rotavirus vaccine is administered.

Table 3: Participants' Knowledge of Pneumococcal and Rotavirus Vaccines

	N	%
The uptake of Pneumococcal vaccines vaccine prevents children from which of these illness	134	83.2
Pneumococcal vaccines were vaccines against _____	94	58.4
How many dose(s) is expected to be taken of Pneumococcal vaccines	45	28.0
Rotavirus vaccine present children from which of these illness	103	64.0
At what age is the PCV vaccine administered	74	46.0

The overall knowledge level as presented in Figure 2 revealed the level of knowledge of mothers towards pneumococcal and rotavirus vaccines. Out of the 167 participants, 48 (28.7%) of the mothers have low knowledge, 81(48.5%) have moderate knowledge, while 38(22.8%) have a high knowledge of pneumococcal vaccine and rotavirus vaccine

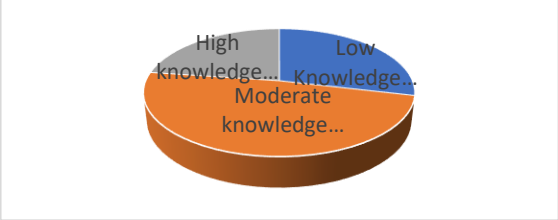

Figure 2: Level of knowledge

Perception of Mothers Towards Pneumococcal and Rotavirus Vaccines

Table 4 revealed the perception of mothers towards pneumococcal and rotavirus vaccines. In all the items the women showed negative perception towards the vaccines, except for items on Expansion Program for Immunization (EPI) should be made free for all (3.12) and Pneumococcal vaccines and Rotavirus vaccines were important for infants (2.77) which gave a mean perception score greater than 2.5 and as such indicative of positive perception. We therefore conclude from this table that the women generally have a negative perception towards these vaccines

Table 4: Perception of Mothers Towards Pneumococcal and Rotavirus Vaccines

	SD	D	A	SA	M	SD
Pneumococcal vaccines and Rotavirus vaccines were for the severely ill children	60 (35.)	71 (42.)	34 (20.4)	2 (1.2)	1.8	0.77
Infants were exposed to overdose of so many vaccines	37 (22.)	58 (34.)	52 (31.1)	20 (12.)	2.33	0.95
Expansion Program for Immunization (EPI) should be made free for all	18 (10.)	15 (9.0)	63 (37.7)	71 (42.)	3.12	0.97
Traditional medicine in the treatment of diarrhoea and pneumonia will be faster for prevention than these orthodox vaccines.	64 (38.)	62 (37.)	31 (18.6)	10 (6.0)	1.92	0.90
I prefer other drugs be given to my babies rather than Pneumococcal vaccines and Rotavirus vaccines	48 (28.)	68 (40.)	37 (22.2)	14 (8.4)	2.1	0.92
Pneumococcal vaccines and Rotavirus vaccines were important for infants	18 (10.)	43 (25.)	66 (39.5)	40 (24.)	2.77	0.94
Rotavirus vaccine is better administered in adulthood	43 (25.)	80 (47.)	38 (22.8)	6 (3.6)	2.04	0.79
The Pneumococcal conjugate vaccine is safe to use in adults	39 (23.)	86 (51.)	28 (16.8)	14 (8.4)	2.10	0.86
Pneumococcal vaccines and Rotavirus vaccines can lead to child mortality	53 (31.)	76 (45.)	29 (17.4)	9 (5.4)	1.96	0.84
PCV/Rotavirus vaccines will not work/have no use	44 (26.)	93 (55.)	27 (16.2)	3 (1.8)	1.93	0.704
Pneumococcal vaccines and Rotavirus vaccines is just for experimentation by vaccinators.	53 (31.)	77 (46.)	25 (15.0)	12 (7.2)	1.98	0.871
My parents never accepted the administration of vaccines for me, so it is not important for my children.	63 (37.)	66 (39.)	23 (13.8)	15 (9.0)	1.94	0.936

Cut off mean = 2.5; overall mean = 2.17

Acceptance of Pneumococcal Vaccines and Rotavirus Vaccines

Table 5 showed the acceptance of pneumococcal vaccine and rotavirus vaccines. 82(49.1%) of the respondents accepted that the cost of the vaccines is not too high, 110(69.6%) reported that they will be willing to take it. Majority of the respondents 132(83.5%) reported that religion/culture were in support of these vaccines. 130(77.8%) and 139(83.2%) of the respondents reported that they have the intention to let their children receive the

pneumococcal vaccine as well as the rotavirus vaccines respectively.

Figure 3: Level of Acceptance of Rotavirus and Pneumococcal Vaccines

Figure 3 showed the level of acceptance of rotavirus and pneumococcal vaccines. 30(18.0%) of the mothers have low acceptance, 137(82.0%) have high acceptance of the vaccines.

Table 5: Acceptance of Pneumococcal Vaccines and Rotavirus Vaccines

	Yes	No
The cost of Pneumococcal vaccines and Rotavirus vaccines is too high	82(49.1)	85(50.9)
If the PCV/Rotavirus was free of charge, would you be willing for your child to be vaccinated with the vaccine	110(69.6)	48(30.4)
Is your religion or culture against the acceptance of these vaccines for your child/children?	26(16.5)	132(83.5)
Do you intend to let your child receive the Pneumococcal vaccine?	130(77.8)	37(22.2)
Do you intend to let your child receive the Rotavirus vaccine	139(83.2)	28(16.8)
PCV2	123(96.1)	5(3.9)
RV2	68(93.2)	5(6.8)
Will the reduction in prize make you accept this vaccine	137(82.0)	30(18.0)

Hypothesis one: The level of knowledge of mothers of the Rotavirus vaccine and Pneumococcal conjugate vaccines is not significantly associated with the parity of the mothers.

Table 6 showed the association of parity with level of knowledge. The table showed that as parity increases, proportion of good knowledge increases, except a drop among mothers that were para 4 and above. This difference in distribution is not statistically significant ($p>0.05$). We therefore accept the null hypothesis which states that the level of knowledge of mothers of the Rotavirus vaccine and Pneumococcal conjugate vaccines is not significantly associated with the parity of the mothers.

Table 6: Association of Parity with Level of Knowledge

Parity	Poor	Moderate	Good	X^2	P
1	16(35.6)	18(40.0)	11(24.4)	12.269	0.056
2	18(36.7)	19(38.8)	12(24.5)		
3	5(20.8)	11(45.8)	8(33.3)		
4 and above	9(18.4)	33(67.3)	7(14.3)		

Hypothesis Two: The level of acceptance of the Rotavirus vaccine and Pneumococcal conjugate vaccines is not significantly associated with educational level of mothers.

Table 6 showed the association of educational level of mothers with level of acceptance. The table showed that mother with no education educational background had lower level of acceptance, than those with tertiary education. This association is however not statistically significant, we therefore accept the null hypothesis which states that the level of acceptance of the Rotavirus vaccine and Pneumococcal conjugate vaccines is not significantly associated with educational level of mothers.

Hypothesis three: There is no significant relationship between mothers' knowledge of Rotavirus and Pneumococcal conjugate vaccines and perception towards the vaccines.

Table 7: Association of Educational Level of Mothers with Level of Acceptance

Educational level	Low	High	X^2	P
None	2(50.0)	2(50.0)	3.180	0.365
Primary	3(18.8)	13(81.2)		
Secondary	13(18.8)	56(81.2)		
Tertiary	12(15.4)	66(84.6)		

Table 7 showed the association between knowledge of mothers and perception towards the vaccines. The table showed that there is a significant relationship between knowledge of mothers of the rotavirus and pneumococcal conjugate vaccines and perception towards the

vaccines. We therefore reject the null hypothesis which states that there is no significant relationship between knowledge of mothers of the Rotavirus vaccine and Pneumococcal conjugate vaccines and Perception towards the vaccines and accept the alternate.

Table7: Association Between Mothers' Knowledge and Perception Towards the Vaccines

	Negative	Positive	X^2	P
Poor	26(54.2)	22(45.8)	21.557	0.000
Fair	66(81.5)	15(18.5)		
Good	36(94.7)	2(5.3)		

Discussion

The study revealed that most of the women were married and within their reproductive age. There were more Christians than Muslims because the city where this study was carried out is Christian dominated. More women had tertiary education and only very few had education at all; this is interesting as more countries are trying to breach sex differences in education. Majority of the women are employed, and this will reduce financial dependence on their spouses. In this study, most of the women were multiparous; this is significant as they would have had experiences concerning immunization. The study revealed that women had their babies delivered in a Federal Government Owned Hospitals. In this part of the world, federal hospitals are better equipped well educated staff and standard equipment, thus the elite are likely to patronize such institutions. This study revealed higher level of with mothers with tertiary education.

In this study, the level of the women's knowledge on rotavirus and pneumococcal vaccine can be described as moderate. This study reported a moderate level of knowledge (48.5%) than (Rathi, Meher, Revathy, Narayanan, & Mukerjee, 2015) who reported a high knowledge level of 10% among final year undergraduate medical students. This may be attributed to the women's level of educational exposure. Also, the study showed that there is no statistically significant association between level of education and knowledge level of rotavirus and pneumococcal vaccines. This is a deviation from the finding of Gasim & Mohammed (2017) who reported significant statistical association between level of education and knowledge level of rotavirus vaccines. They found level of high knowledge among mothers with secondary level of education, while this study found highest level of knowledge among mothers with tertiary education. It can be said that the educational level of the women in this study has influenced their knowledge. The study did not find any significant association between parity and level of knowledge; however, it did find higher proportion of good knowledge in multiparous women.

This study revealed that mothers had negative perception towards Rotavirus Pneumococcal vaccines. This contrasts with the finding of Trojanowska, Zarzycka, Brodowicz-Krol, Jedrzejewski & Wiktor (2016) who reported a positive perception to vaccination among parents in Poland. Knowledge of the vaccination was found to show a significant association with perception towards these vaccines.

The study also revealed that the mothers had high acceptance level for the rotavirus and pneumococcal vaccines. In accordance with the study of Burghouts et al., (2017) who did not find any influence of religion on decision making on uptake of the vaccines, this study reported that majority of the mother agreed that their religion is not against the acceptance of the vaccines. The level of good acceptance of the vaccines in this study (61.1%) is lower than the reported acceptance (88%) proportion of (Daniels, Gouveia, Null, Gildengorin & Winston, 2016). The reason for this higher acceptance in their study can be traced to the fact that the intervention study was based on their acceptance following recommendations from nurses. Association between educational level and acceptance of the vaccines showed that there is no significant relationship between these variables. However, mothers with tertiary education had higher proportion with good level of acceptance of the vaccines, then least proportion for mothers without any formal educational background.

Implication for Nursing Practice

This study highlighted the need for nurses to implement measures that would significantly eliminate pneumonia and diarrhoea morbidity and mortality in this locality. Furthermore, nurses should be able to disseminate information to the government on the non-availability of vaccines and propagate reduced cost effectiveness of the vaccines for mothers. The need for training of nurses to provide

continuous health education to mothers on diarrhoea and pneumonia prevention, control and appropriate home management practices.

Conclusion and Recommendations

This result from the study showed that the mothers had moderate knowledge, negative perception and high acceptance of rotavirus and pneumococcal vaccines. There was no significant association between educational level and acceptance of the vaccines. Based on the findings from this study, it was recommended that, there is a need to strengthen social mobilization for information dissemination, both at individual and community levels, to address the value of these vaccines. Further subsidizing of the price and availability of the vaccines will go a long way to improve the acceptance of the vaccines.

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