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Knowledge and Attitude of Mothers towards Children Vaccination in Health Centres in Nnewichi, Nnewi North Local Government Area of Anambra State

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ABSTRACT

The goal of public health is to prevent diseases. Children vaccination is much easier and more cost effective way to prevent a disease than to treat it. This study was designed to determine the knowledge and attitude of mothers towards children vaccination in health centers at Nnewichi Nnewi North L.G.A. of Anambra State. The design of the study was a descriptive survey research design. The area of the study was Nnewi North L.G.A of Anambra state. The population of the study consisted of 1,075 mothers attending vaccination at the various primary health centers (PHCs) in Nnewichi Nnewi North L.G.A. the sample of the study consisted of 248 mothers. Stratified random sampling technique was used to get the number of mothers from the PHCs. The instrument for data collection was a researcher developed instrument titled knowledge test and attitude questionnaire of mothers towards children vaccination (KTAQMTCV). Validation of the instrument was done by three experts. Reliability of the instrument was done using Kudder-Richardson (K-R20). Method for the knowledge test yielded a value of 0.639, also Cronbach Alphas internal consistency measure was used for the attitude items and yields a value of 0.814. The data was analyzed using statistical package for social sciences version 25. Mean was used to answer the research questions while hypotheses 1 and 2 were tested using one sample t-test while hypotheses 3 and 6 were tested with analysis of variance (ANOVA). The results of the study revealed that mothers had good knowledge of children vaccination and also had positive attitude towards children's vaccination. Based on the finding, conclusions and recommendations were made; mothers need to be exposed frequently to seminars, conferences, and workshop in order to sustain the high knowledge and positive attitude of mothers towards children vaccination.

Introduction

The goal of public health is to prevent diseases. It is much easier and more cost effective to prevent a disease than to treat it. That is exactly what vaccinations can do. When one gets sick, the body makes antibodies to fight the disease to help the sick person get better. These antibodies stay in our body even after the disease is gone, and protect the body from getting the same illness again which is known as immunity. Sometimes, one does not need to get sick to develop immunity. Immunity can be gotten through vaccination.

Immunization or vaccination protects people from diseases by introducing a vaccine into the body that triggers an immune response just as though one had been exposed to a disease naturally. Vaccination is a process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine which stimulates the body's own immune system to protect the person against subsequent infections or diseases World Health Organization (WHO, 2018). Furthermore, vaccination could also be seen as the process by which an individual's immune system becomes fortified against an agent known as immunogen. Vaccination protects us from serious diseases and also prevents the spread of these diseases to others.

Vaccination saves 2-3 million lives each year, by protecting children against serious diseases and plays a central role in ending preventable child death (UNICEF, 2019). Also UNICEF (2019) stated that vaccines now protect more children than ever before, but nearly one in five infants misses out on the basic vaccines they need to stay alive and healthy, and these low vaccination level among poor and marginalized children compromise gains of vaccination and child health.

Childhood vaccinations do not only protect children from deadly diseases such as polio, tetanus, and diphtheria, but they also keep other children safe by eliminating or greatly decreasing dangerous diseases that used to spread from child to child (Stanford Children's Health 2020). The benefit of vaccination is that children would be protected from diseases that could cause them serious health problems. The Expanded programme on Immunization was established in 1974 by WHO to ensure that all children have access to routinely recommended vaccines (Vakili et al, 2015). In Nigeria, the National Primary Care Development Agency has a National Vaccination policy that was revised in 2009. The policy has a vaccination schedule designed to include all children 0-1 year who shall receive one dose of Bacilli Calmette Guerin (BCG) against tuberculosis, one dose of yellow fever vaccine, 3 doses of Diphtheria, Pertusis and Tetanus (DPT), 3 doses of Hepatitis B vaccine, 4 doses of Oral Polio virus (OPV) and one dose measles vaccine before the age of one. Globally, vaccine preventable diseases are one of the major causes of illness and deaths among children. Vaccination saves 2-3 million lives each year, by protecting children against serious diseases and plays a major role in ending preventable child death (UNICELF, 2019). UNICEF (2019) also reported that measles vaccination averted an estimated 21.1 million deaths between 2000 and 2017. In 2018, UNICEF reached almost half of the world's children with life-saving vaccines. Since 2000, 2.5 million children have been vaccinated and the number of polio cases has fallen by more than 99 percent, dropping to just 22 cases in 2017.

Furthermore, Nigeria leads the ten countries with most unprotected children and accounted for 3 million (15.5%) out of the 19.4 million unvaccinated infants in 2018 (Oli, Ogwaluonye, Onubogu, Ozumba, Agbaenyi and Okeke, 2021). Before the coronavirus pandemic, more than 13 million children didn't receive any vaccines and at least 20 million children below the age of one did not receive the recommended vaccines against measles, polio, and other preventable diseases (UNICEF, 2021). Furthermore, UNICEF (2021) also stated that now, COVID-19 is leaving many of the world's most marginalized children without access to vaccination. Unless the COVID-19 vaccine response is bold enough, there is a risk for lasting negative impact on routine vaccination coverage.

Children who have never been vaccinated are at the greatest risk of contracting diseases such as measles, whooping cough and tetanus, which may be fatal or lead to long-term debilitating effects on survivors. Poverty, over-crowding, poor hygiene and sanitation as well as insufficient nutrition and healthcare increase the risk of diseases such as pneumonia and measles; diseases that are easily preventable with vaccines during the first half of the years because of higher temperatures. Measles vaccination coverage across Nigeria remains low, with a little over 50 percent of children reached. Despite the progress, challenges including inaccessibility due to conflict and insecurity in some areas, variation in campaign quality, massive mobile population and in some instances, parental refusal have prevented health workers from reaching all children everywhere with some of the preventable diseases. (Relief web, 2019).

Previous studies also revealed misconceptions on parents' knowledge, and negative attitudes towards children vaccination. Also mother's knowledge about vaccination was found to be quite low and their educational status was significantly associated with children vaccination. Mother's knowledge about children vaccination could also change the mother's attitude with regards to children vaccination.

Parental attitude and knowledge regarding vaccination services was low and parents have negative beliefs about measles and vaccination programs (Adeleye & Mokogwu, 2016). Religion, social and cultural misconceptions may influence the attitude of mothers towards childhood vaccination (Bello & Daniel, 2017). Some of the factors that could affect mother's knowledge and attitude include the mothers age and level of education. Olugbenga, Jimoh, Oke and Oladejo (2017) reported in their study that there was no statistically significant difference in the age of the mother and children vaccination also their study showed no significant difference in the maternal education level and children vaccination. Furthermore, Beckie, Nwachinemere, Ikenna, Jude and Babatunde (2012) reported that education was significantly associated with knowledge and acceptance of children vaccination.

Finally, because of the importance of children vaccination and the various health problems associated with inadequate children vaccination. This study intends to determine the knowledge and attitude of mothers towards children vaccination in health centres at Nnewi-ichi, Nnewi North L.G.A of Anambra State.

Purpose of the Study

The main purpose of this study was to determine the knowledge and attitude of mothers towards children vaccination in Nnewichi, Nnewi North L.G.A in Anambra state. Specifically, the study will determine:

1. The mean knowledge scores of mothers towards children vaccination in Nnewichi, Nnewi North L.G.A of Anambra State based on their age.
2. The mean knowledge scores of mothers towards children vaccination in Nnewichi, Nnewi North L.G.A of Anambra State based on their educational level.
3. The mean attitude score of mothers towards children vaccination in Nnewichi, Nnewi North L.G.A of Anambra State based on their age.
4. The mean attitude score of mothers towards children vaccination in Nnewichi, Nnewi North L.G.A of Anambra State based on their educational level.

Research Questions

The following research questions guided the study:

1. What is the mean knowledge score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their age?
2. What is the mean knowledge score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their educational level?
3. What is the mean attitude score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their age?
4. What is mean attitude score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their level of education?

Hypotheses

The following hypotheses will be formulated and will be tested at 0.05 level of significance.

1. There is no significant difference in mean knowledge score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their age.
2. There is no significant difference in the mean knowledge score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their educational level.
3. There is no significant difference in the mean attitude score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their age.

4. There is no significant difference in the mean attitude score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their educational level.

METHOD

The design for the study was a descriptive survey research design. According to Nworgu (2015) descriptive survey are those studies which aim at collecting data on, and describing in a systematic manner, the characteristics, features or facts about a given population. The research was conducted in Nnewi North L.G.A of Anambra State. Anambra is one of the 36 states of Nigeria, located in South-Eastern region of the country. The population of the study consisted of 1,075 mothers attending vaccination at the various Primary Health Centres (PHC) that is the six PHC in Nnewichi, Nnewi north L.G.A of Anambra (Ministry of health, 2020). The sample size of the study consisted of 248 mothers attending children's vaccination in PHC in Nnewi-ichi Nnewi North L.G.A. Stratified random sampling technique was used to get the number of mothers to be chosen from PHC. The instrument for data collection was a structured questionnaire titled knowledge test and attitude questionnaire of mothers towards children vaccination" (KAMTCVQ). The data collected were analyzed using statistical package for social sciences version 25 (SPSS). Research questions were answered with mean. Hypotheses 1 and 2 were tested using one sample t-test while hypotheses 3 to 6 were tested with analysis of variance (ANOVA). Where the p-value was less than or equal to 0.05 the null hypothesis will be rejected, where it was greater than 0.05 the null hypothesis will not be rejected. The scoring for vaccination knowledge was as follows: Each correct answer on the instrument was awarded 1 while wrong answer was awarded zero, since the items were 20 in number, the knowledge scores ranged from 0 – 20. The scale average/midpoint score was 10. For the attitude scale the possible range of scores were 20 – 100. The lowest score was 20 (where the respondent ticked strongly disagree all through) and the highest was 100 (where a respondent ticked strongly agree all through) while the midpoint/average was 60. This was derived by multiplying the 20 items by the neutral point (3). All negatively worded items were reverse coded before the summation of the scores.

Presentation of Data

Research Question 1: What is the mean knowledge score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their age?

Table 1 :**Mean Knowledge and Standard Deviation Scores of Mothers on Child Vaccination Based on Age**

	Age	**N**	**Mean**	**SD**
	15-25	84	16.60	2.65
Vaccination Knowledge Scores	26-40	139	17.35	1.77
	41 and above	22	17.14	2.44
	Total	245	17.07	2.19

Table 1 shows the mean knowledge of children's vaccination by mothers of different age range. Mothers between the ages of 15 and 25 had a mean knowledge of 16.60; those between the ages of 26 and 40 had 17.35 while those between the ages of 41 and above had 17.14. These mean scores indicate that mothers between the ages of 15 and 25 had the least knowledge while those between the ages of 26-40 had the highest.

Research Question 2: What is the mean knowledge score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their educational level?

Table 2: Mean Knowledge and Standard Deviation Scores of Mothers on Child Vaccination Based on Educational Level

	Educational Level	**N**	**Mean**	**SD**
	Primary Education	25	16.88	1.42
Vaccination Knowledge Scores	Secondary Education	141	16.89	2.58
	Tertiary Education	79	17.44	1.48
	Total	245	17.07	2.19

Table 2 reveals that mothers with primary education had the lowest knowledge vaccination (Mean = 16.88), those with secondary education had slightly higher mean knowledge while mothers with tertiary education had the highest mean knowledge of vaccination as shown by the mean

knowledge score of 17.44. This implies that mothers with tertiary education had greater knowledge of children's vaccination than those with lower levels of education.

Research Question 3: What is the mean attitude score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their age?

Table 3 : Mean Attitude and Standard Deviation Scores of Mothers on Children Vaccination Based on Age

	Age	N	Mean	SD
	15-25	84	74.57	10.21
Vaccination Attitude Scores	26-40	139	73.48	8.95
	41 and above	22	68.27	6.52
	Total	245	73.39	9.34

Table 3 shows that mothers between 15 - 25 years had mean attitude score of 74.57, those from 26-40 had 73.48 while those from 41 years and above had mean attitude score of 63.27. The mean scores suggest that younger mothers had more positive attitude to vaccination of their children than older ones.

Research Question 4: What is mean attitude score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their level of education?

Table 4: Mean Attitude and Standard Deviation Scores of Mothers on Children Vaccination Based on Educational Level

	Educational Level	N	Mean	SD
	Primary Education	25	70.88	7.82
Vaccination Attitude Scores	Secondary Education	141	72.49	9.33
	Tertiary Education	79	75.79	9.42
	Total	245	73.39	9.34

Result displayed in Table 4 shows that mothers with primary education had lowest mean attitude score of 70.88 while those with tertiary education had the highest mean attitude score of 75.79. This implies that more educated mothers have more positive attitude to the vaccination of their children.

Hypothesis 1

Mean knowledge score of mothers on child vaccination will not differ significantly from average score.

Table 5: One sample t-test on Mean Knowledge of Mothers on Child Vaccination

	N	Mean	SD	Test value	Mean Diff.	df	t-value	*p*-value	Decision
Vaccination Knowledge Score	245	17.07	2.19	10	7.07	244	50.58	.000	Significant

The result from the one sample t-test displayed in Table 5 shows that there was a significant difference between the obtained mean knowledge score of mothers on child vaccination (mean = 17.07) and scale average of 10, t(df, 244) = 50.58, p=.000. Since the p-value was less the 0.05 the null hypothesis was rejected. This implies that mothers' knowledge of child vaccination was significantly greater than average.

Hypothesis 2

Mean Attitude score of Mothers towards child vaccination will not differ significantly from neutral mean attitude score.

Table 6: One sample t-test on Mean Attitude of Mothers towards Child Vaccination

	N	Mean	SD	Test value	Mean Diff.	df	t-value	*p*-value	Decision
Vaccination Attitude Score	245	73.39	9.34	60	13.39	244	22.43	.000	Significant

The result displayed in Table 6 shows that there was a significant difference between the obtained mean attitude score of mothers towards child vaccination (mean = 73.39) and scale neutral point of 60, t(df, 244) = 22.43, p=.000. Since the p-value was less the 0.05 the null hypothesis was rejected. This implies that mothers' attitude towards child vaccination was significantly above neutral point and therefore positive.

Hypothesis 3

There is no significant difference in mean knowledge score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their age.

Table 7: **Analysis of Variance on Mean Knowledge of Mothers on Child Vaccination By Age**

Source of Variation	Sum of Squares	Df	Mean Square	F	*p*-value	Decision
Between Groups	29.57	2	14.78	3.14	.045	Significant
Within Groups	1138.25	242	4.70			
Total	1167.82	244				

ANOVA result presented in table 7 shows that mothers of different age groups differ significantly on their mean knowledge on child vaccination, F(2,242) = 3.14, p=0.45. Since the p-value was less than 0.05 the null hypothesis was rejected.

Hypothesis 4: There is no significant difference in the mean knowledge score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their educational level.

Table 9 :Analysis of Variance on Mean Knowledge Scores of Mothers on Child Vaccination By Educational Levels

Source of Variation	Sum of Squares	Df	Mean Square	F	*p*-value	Decision
Between Groups	16.28	2	8.14	1.71	.183	Not Significant
Within Groups	1151.54	242	4.76			
Total	1167.82	244				

ANOVA result presented in table 9 shows that mothers of different educational levels were not significantly significant in their mean knowledge of child vaccination, F(2,242) = 1.71, p= .183. Since the p-value was greater than 0.05 the null hypothesis was not rejected.

Hypothesis 5 : There is no significant difference in the mean attitude score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their age.

Table 10 :Analysis of Variance on Mean Attitude Scores of Mothers on Child Vaccination By Age

Source of Variation	Sum of Squares	Df	Mean Square	F	*p*-value	Decision
Between Groups	694.52	2	347.26	4.08	.018	Significant
Within Groups	20607.64	242	85.16			
Total	21302.16	244				

Table 10 shows that mothers of different age groups differ significant on their mean attitude scores on child vaccination, $F(2,242) = 4.08$, $p=.018$. Since the p-value was less than 0.05, the null hypothesis was rejected.

Hypothesis 6: There is no significant difference in the mean attitude score of mothers towards children vaccination in Nnewi-ichi, Nnewi North L.G.A. of Anambra State based on their educational level.

Table 12: Analysis of Variance on Mean Attitude Scores of Mothers towards Child Vaccination by Educational Level

Source of Variation	Sum of Squares	df	Mean Square	F	*p*-value	Decision
Between Groups	724.95	2	362.47	4.26	.015	Significant
Within Groups	20577.22	242	85.03			
Total	724.95	2	362.47			

Table 12 shows that mothers of different educational levels were significantly different in their mean attitude scores towards child vaccination, $F(2,242) = 4.26$, $p=.015$, hence the null hypothesis was rejected.

Discussion of Results

Knowledge of mothers on children vaccination.

Finding of the study showed that mothers' are highly knowledgeable about children's vaccination. The mothers between the ages of 26-40 years had the highest knowledge about children vaccination than mothers between the ages of 15-25 years. This result was expected because mothers between the ages of 26-40 years would have had more than one baby. They are mostly not new mums at that age. The experience they had with the previous pregnancy would expose them to knowing the dangers of not getting their children vaccinated. Mothers between the ages of 15-25 years are likely new mums who are not well experienced in the area of children's vaccination. Mother with primary education had the lowest level of knowledge of children's vaccination, while mothers with tertiary education had the highest knowledge of children vaccination. The result is so because mothers who had attended tertiary education are more exposed to higher education. Their level of education exposed them to read wide both on printed media and electronic media. They are more versatile and might have had one or more experience with regards to children vaccination. For other levels of education that is primary and secondary, some of them might not be knowledgeable to read and attend programmes where they would learn more about children vaccination. The mothers with tertiary education might even be doing good jobs like white collar jobs with people of different background; through their interactions they might get to know or learn new things about children's vaccinations. This study was not in agreement with the findings of NIH (2018) that mothers lack knowledge and unawareness of the needs for some of the children vaccinations. However it is in line with Yousif, Ahemed, Mustafa and Abubaka (2013) which stated that the parent's knowledge about vaccination could influence children vaccination. Just as the tertiary education mothers had higher knowledge of children vaccination. It was also not in line with the study of Tengizm, Mariam, Ana, Revaz and Beka (2019) which found out that there was lack of knowledge of children vaccination. The same thing occurred with the study of Khalid, Alshafee, Mastora and Zienab (2017), mothers had poor knowledge about children vaccination. It was in line with the study of Muda, Egle and Giedra (2018), that mothers had good knowledge of children vaccination. The null hypothesis of no significant difference in the mean knowledge of mothers towards children vaccination was rejected.

Attitude of mothers towards children vaccination.

The findings of this study showed that mothers had positive attitude towards children vaccination. The findings showed that younger mothers between the ages of 15-25, had positive attitude to vaccination of their children. This result is expected because health education on sudden infant death has exposed so many mothers to the fact that when a child is not vaccinated, the child might die suddenly or suffer one deformity or the other. This would make young mothers take their children for vaccination. The older mothers might not be interested because they feel that they know what to do on their own if their children become sick. All these might be the reason for their different attitude toward children vaccination. The findings of the study also revealed that mothers with primary education had the lowest mean attitude score while mothers with tertiary education had the highest mean attitude score. This might also be expected because proper and adequate education could lead to change in attitude and behavior. Mothers with primary education are limited when it comes to knowledge; they are not exposed and some of them might be either unskilled labourer or house wives; this condition will not allow them to have full exposure of knowledge on children vaccination thereby, making them to develop negative attitude towards children vaccination. Their counterpart the tertiary education mothers are highly educated and could also acquire more experiences from their colleague in their place of work, which will in turn lead to positive attitude toward children vaccination. The study is in line with the study conducted by Oluwatoyosi,Oluchi,and Mobolanle (2019), that there was a statistically significant association between the mother's age, occupation, level of education, nature of family. Also the study of Jolsna, Vijayalaksmi, Narayana, Reddy and Sushma (2015) also support this study, they stated that gender of the child, birth order, mother's educational status, monthly income of parents and religion significantly affected the vaccination status. The study, this agreed with the study conducted by Mabruka (2008) that illiterate mothers and mothers with lower education had more complete vaccination to mothers who are highly educated. The study was also in line with the study conducted by Helvinder, Visshal, Rose and Santibuaria (2019),that mothers education, age, occupation were found to be be associated with attitude toward childhood vaccination. The study did not also agreed with the study conducted by Mohammed, Nurul, Thiya et al (2020), that none of the socio-demographic determinants significantly affected the attitude and perception score of children vaccination. The study agreed with the study of Yousif, Ahmed, Mustafa, and Abubakar (2013) that gender; residence and

educational level were found to be significantly associated with both parent's knowledge and attitude towards children vaccination. The null hypothesis of no significant difference for both age and educational level was rejected.

Conclusion

Based on the findings of the study, the following conclusions were made;

1. All the demographic variables of the study was significant except for educational level in relationship to knowledge was rejected because generally, the mothers are knowledgeable not minding their demographic variable.

2. This increase in knowledge and attitude calls for constant and more exposure of these mothers to good knowledge which can come through seminars, workshop and so on, to keep the increase knowledge and positive attitude high.

Implications of the Study.

This study has shown from its findings that children's vaccination is a well known fact among mothers in Nnewichi, Nnewi North Local Government Area of Anambra State. If the increase in knowledge and positive attitude would be sustained, mothers should be exposed to more experience that would sustain their high knowledge and positive attitude towards children vaccination.

Recommendations

The following recommendations were made based on the findings and conclusion of the study

1. There is need to sustain the increased knowledge and positive attitude of mothers towards children vaccination by conducting more sensitization through seminars, workshops, conference and many other medium or channel of communication
2. Mothers with primary education or no education at all should be educated informally by health workers through door to door home sensitization to encourage them to participate in children's vaccination.

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