



Knowledge and Attitude of Mothers towards Immunization in Emohua Local Government Area of Rivers State

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ABSTRACT

This study examined knowledge and attitude of mothers concerning immunization in Emohua Local Government Area of Rivers State. Four (4) research questions were formulated to guide this study. Descriptive cross-sectional survey design was employed in the study with the population of 15078 pregnant women. A sample size of 400 nursing mothers was used for the study. The Questionnaires which had a reliability index of 0.89 was used to obtain data for the study. Data was analyzed using mean and standard deviation. The result of the study revealed that the grand mean score (2.11) was less than the criterion reference mean (2.50) indicating that mother's knowledge of immunization was poor. While the attitude of mothers was strongly positive towards immunization with the grand mean of $\bar{X} = 3.11$ greater than the 2.50. The result also illustrates that age, education, and religious background were major factors that influence mother's attitude toward immunization ($X = 3.01, 3.11, 3.22$). In conclusion, the knowledge of mothers was relatively poor despite their level of positive attitude towards immunization. It was recommended that awareness campaigns should be intensified by health educators using various media channels to child bearing mothers in Emohua Local Government Area of Rivers State, that immunization should be done for all the children for both serious and non-serious diseases.

Keywords: Knowledge, attitude, immunization, mothers

INTRODUCTION

Immunization today saves more than three million lives a year. However, millions of children still do not have access to basic immunization and die from diseases that can be prevented by available vaccines (WHO, 2013). Certain factors influence the effective utilization of childhood immunization which includes educational background of mothers, age, marital status, socio-economic status and religious background among others. Immunization program is more systemized in developed countries, but the situation is poor in most populous countries. The preventive measure against diseases at childhood stage is basically through immunization which is a complete course of injection that are administered to children soon after birth. Mojinyinola and Olaleye (2012) assert that immunization of children is aimed at providing primary prevention against killer diseases during childhood. These diseases take several precious lives to death all over the world especially in the third world, like Africa and Asia.

In Nigeria, educational level of mothers is not up to the mark unlike in the developed countries. Unfortunately, despite a lot of effort by the government to eradicate childhood diseases like polio, measles, tetanus, whooping cough etc. the challenges still remains. However, Nigeria was recently declared polio free by the United Nations (GIVS 2018). According to Awosika (2012), the main reason behind these problems is the lack of public awareness about the importance of immunization and lack of education

Knowledge is an important factor influencing immunization. A number of studies indicate that mothers who have inadequate knowledge about immunization and immunization schedules are more likely to have children who are not immunized or partially immunized. Marfe (2007) explains that parents' knowledge and understanding of immunization is important so health care providers can provide support. Mothers

must receive information on vaccine benefits and risks, so they can make an informed decision about immunization. Mother's knowledge affect to a great extent towards the immunization of their children due to their level of education. Mother's knowledge about immunization and their attitudes towards them are likely influence uptake (Awosika, 2012). Low level of literacy and religion may also alter the knowledge of mothers towards childhood immunization (Wilson, Baker, Nordstrom, & Legwand, 2008). According to them most mothers are not aware of the vaccine preventable childhood diseases and as such avoid immunization programmes.

Mothers attitude are an important predictor of childhood immunization. Mothers often weigh the risks and benefits of immunization versus disease. Children who are under immunized are more likely to have parents who have attitudes, beliefs, and behaviours indicative of concerns of safety of vaccines. At the same time, concerns about the safety of vaccination are also prominent in parents who immunize. In one national telephone survey of parents, most mothers the benefits of vaccination, but many had significant misconceptions that acted to decrease their confidence in vaccines (Wu et al, 2008). One of the objectives of healthy people 2,010 is for 90% of young children to have full vaccination coverage; thus, understanding parental concerns about vaccination is important. Their educational level and their attitude play an important role in determining the health condition of children. If only they know that immunization helps the child to be mentally healthy and active. Most people will not feel reluctant to allow their women to go for education and other chores in life due to low literacy rate. Along with this, there are several obstacles that influence the attitude of mothers toward the immunization of their children which are social and cultural misconceptions. According to Ophori et al (2013) ethnicity and religious belief of mothers affect their attitude towards childhood immunization.

Attitude of mothers towards immunization refers to the behaviour of mothers towards immunization of children against the killer or deadly diseases. Some mothers have unconcerned or nonchalant attitude towards matters that concerns the immunization of their children. The centre for disease control and prevention (CDC), (2009) stated that the general attitude of parents was negative among most of them towards childhood vaccination programs. Moreover, some parents thought that polio immunization will decrease the fertility rate of their children thus, the parents attitude plays important role in vaccination process as they are the decision makers for their children (Falade, 2014).

Age can influence Mothers attitude towards immunization. The age of the mother could be responsible for the negative attitude exhibited by some mothers towards the immunization of their babies and children. The people that hold this view about age of the mothers contend that the younger mothers appear to appreciate the need to immunize their children more than the older mothers who appear to be more attuned to the use of herbs to take care of *their* children. It is also believed that the older mothers who may be saddled with their farm work may be less prepared to take out some of their time to go to hospitals and health centres to have children immunized.

Apart from above reasons other observers conjecture that the reason for the apparent unresponsive attitude of these mothers could be related to the amount of the household chores they carry out at home. Some of these nursing mothers who cannot afford house helps may be consistently tied down by housework such that they may not have the time to take out their children for immunization at the designated periods and places of the immunization process. The observers suggest that when these mothers miss these immunizations for some time they get accustomed to not carrying out their children for immunizations.

Mothers differ in their attitude towards immunization of their children against childhood ^ killer diseases based on their age (Abdullahi, 2012). Some person who felt disturbed by the apathy of these nursing mothers say that one of the reasons for this negative attitude is shyness, especially as observed among teenage mothers. The teenage mothers are often considered as under-age girls, and more often than not give birth to their children out of wedlock. And because of this anti-social behaviour and the way some adults may look at them with disapproval, many of such under-age single mothers may feel shy to present their children at hospitals and health centres for immunization. This is a strong position being canvassed by these people.

The attitude of educated mothers to illiterate mothers may not the same, because of the fact that educated mothers can read and write and respond to instructions. More so, since they can read they could get first-hand information about immunization from their reading. Apart from this, it is assured that they can

interact better with the health workers during their enlightenment campaigns, and so obtain deeper understanding of these things more than their less educated, and illiterate counterparts could. It is also believed that the education level of the mothers could also affect their attitude towards immunization of their children. The more educated mothers are believed to be more favourably disposed towards the immunization of their children than their counterparts who are less educated. It is assumed that the more educated mothers should be able to see the need for immunizing their children more than the less educated mothers and the illiterate mothers since the more educated mothers must have learnt about immunization while they were in school.

Birhanu, Antench, Kibie, and Jejaw (2016) on the knowledge, attitude and practice of mothers towards immunization of infants in Health Centres at Addis Ababa, Ethiopia. Cross-sectional survey was conducted from March 1st to April 1st 2013. Multistage sampling techniques were used for participant selection. The sample size was 634 which were allocated to the proportionally to the selected health centre. The data was collected by 18 well trained nurses through face to face interview using interviewer-administered questionnaire to collect information on socio-demographic variable and KAP of mothers regarding infant immunization. The data were then entered and analyzed using SPSS version 16.0. Descriptive statistics and 5% level of precision. The results revealed that the mean age of respondents was 26.6 ± 4.8 years, 576 (92%) of the study participants were married and 5.6% were single. Only 60.1% were house wives, 11.7% were employees, 20.3% were private. Regarding infant immunization practice of mothers, 594 (94.9%) was always bringing their infants for immunization according to schedule. The literate respondents who attend elementary school were about two times (AOR = 1.688, 95% CI: (1.058-2.707) where as mothers who achieved higher education were two times (AOR = 2.160, 95% CI: 1.208 – 3.864) had positive attitude towards infants immunization than illiterate respondents. Mothers who had infants aged from 2-3 months were two times (AOR = 2.014, 95% CI: (1.044-3.883%) significantly associated with positive attitude about infant immunization programme. Mothers who had infants aged from 1-2 months were about four times (AOR = 3.921, 95% CI: (1.543-10.036) and respondents who had infants from 2-3 months and 9-12 months were four times (AOR = 4.135, 95% CI: (1.726-9.911) and [(AOR = 4.159, 95% CI: (1.515-11.418))] respectively more likely to practice infants immunization than mothers with their infants aged from 0-1 months. It can be concluded that only 55.0% and 53.8% of respondents had good knowledge and attitude towards immunization of infants respectively. Despite inadequate knowledge and attitude of mothers toward infants immunization, the majority 84.0% of mothers had good practice. This study is related and relevant to the current study because of variables such as knowledge, attitude, practice, mothers, immunization among others.

Another study carried by Ramadan, Soliman, and EI-Kader (2016) on the knowledge, attitude and practice of mothers towards children obligatory vaccination. A cross-sectional survey was utilized for the study. The sampling method used was the cluster sampling technique promoted by World Health Organization. Total number of the cluster was 30 clusters and 7 months from each cluster. The total number of sample was 210 from 5 districts (1050 mothers). The data collection was done through the use of questionnaires to sought data relating to socio-demographic characteristics of respondents. The data collected was analyzed and entered using statistical package for social sciences (SPSS) were descriptive statistic and inferential statistics was conducted. The results revealed that the mean aged of 29.67 ± 6.28 years, 559 (53.2%) of the studied mothers were aged 20 to less than 30 years. Concerning the family numbers 578 (55%) of the families were composed of 1 to 4 member, while 472-(45%) were than 4 members. 850 (81%) of the studies mothers were housewives, and 1031 (98.2%) of them were married. 625 (59.5%) of the mothers had intermediate education and only 30 (2.9%) of them had primary education. Only 462 (44%) of the mothers had poor knowledge score while 328 (31.2%) had good knowledge score; 735 (70%) of the respondents had good attitude score while the minority 6 (0.6%) of them poor attitude toward immunization; 373 (35.5%) of mothers had good practice of children's immunization while 265 (25.2%) of them had poor practices score. Also, that 211 (64.3%) of educated mothers with intermediate education and 91 (27.7%) mothers with higher education had a good knowledge. As for the source of information 161 (49.1%) of the studied mothers who acquired their information from health centres had a good knowledge. There was statistically significant association

between knowledge level and education and also with source of information ($r^2 = 89.201 \times 30.558$) respectively at $P < 0.001$. It was concluded that less than half of the studied population had poor knowledge and only 1/3rd of the mothers had good knowledge. This study is related and more relevant to the current study because they share similar variables.

Angadi, Jose, Udgiri, Masali, and Sorganvi (2013) on the study of knowledge, attitude and practices on immunization of children in Urban Slums of Bijapur city, Karnataka, India. A community based, cross-sectional survey was adopted to conduct a study in the Urban Slums (October-November, 2011). Convenience sampling technique was used to select the population. House to house survey was done and the data collected through the use of questionnaire with oral consents. The results revealed that a total of 155 children in the age group of 12 to 23 months were included in the study. A vast majority of the mothers were housewives (85.16%) and 50.32% were illiterate. Concerning immunization status, 69.05% of the respondents had immunization cards, and others did not. A large number or proportion of children 78.71% had received their immunization from government establishment. Only 34.84% were fully immunized, 97 (62.58%) were partially immunized, and 4 (2.58%) were not immunized. Among 139 children who received the first dose of DTP, only 64 got the 3rd dose, with a dropout rate of 53.96% for DPT1/OPV1 to DPT3/OPV3. Majority of the respondents (65.16%) believed that diseases could be prevented by immunization, while only 11.61% could name two or more disease that could be prevented by the schedule. This study is relevant and related to the current study based on knowledge, mothers, and children's immunization.

Another study conducted by Brown, Oluwatosin, and Ogundiji (2015) on the experiences, perceptions and preferences of mothers towards childhood immunization reminder/recall in Ibadan, Nigeria. A cross-sectional survey was adopted and the population of 014 mothers of infants attending routine immunization clinic in four (4) randomly selected communities PHC in Ibadan. The data collections involve the use of semi-structured questionnaire with 5 points likert scale. The data was analyzed using SPSS version 21.0 software. Descriptive statistics were computed to describe participant's socio-demographic characteristics, Logistic, Regression modes were used. The results revealed that the age of the participants ranged from 15 to 42 years with mean age 29 ± 4.9 years. Almost all 98.7% were married to their infant fathers and 45.9% completed secondary education. Also, 580 (95.6%) believed that adherence to immunization schedule is important; 374 (60.9%) were of the opinion that mothers should not forget their children immunization appointments. The results also revealed that mothers with post-secondary education were twice as likely as others mothers to prefer text message/sms (OR 2.3, 95% CI: 1.7-3.3), phone calls (OR 0.5, CI: 0.32-0.1). There is no significant association was found between maternal age and their preferred source of funding for immunization reminder/recall ($P < 0.05$). However, a significant association was found between maternal education and preferred source of funding for immunization reminder/recall: mothers with post-secondary education were as twice as likely to prefer government as the source of funding for immunization reminders/recall to other sources of funding (OR 2.218, 95% CI: 1.02-3.49). It was concluded that mothers in Ibadan had little experience about immunization reminders/recall system.

Studies carried out by Siddiqui, Gaikwad, Kunil, Ankushe, Doibale, Pund and Kumar (2017) on is mothers' knowledge and practice regarding childhood immunization compliant with immunization completeness? A cross-sectional study was undertaken in the immunization OPD of Government medical college and hospital from 1st September till end of December, 2015. The sample of 364 mothers was used for the study. The data was collected using standard semi-structured questionnaire, face to face interview method was also used. The data collected was analyzed using the software SPSS version 21.0. Descriptive statistics were used to describe all variables. Chi-squares and Mann Whitney U test was employed for comparing KP scores (P value < 0.05). The result showed that a total of 364 mothers between age group of 21-40 years were assessed. 76% of mothers belonged to age less than 25 years. The mean age of the respondents was 28.4 years. 286 children were immunized with all vaccination does (78.5%), but 78 (21.4%) children had one or more than one missed does (partially immunized). The result showed an average score of 12.28 SD = 2.95 with a median score of 12. There was a significant association of immunization completeness immunization with total knowledge and practice groups

($P < 0.05$). Shahla, Zinat, Reza & Zohreh (2007) on the mothers and vaccination: knowledge, attitudes and practices in Iran. Cross-sectional study between March and August, 2005 - with the population of 668 mothers. The data collected using questionnaire based interview. The disproportionate sampling techniques used for selecting the participants. The results shows that about of half of children 341-51.1% experienced vaccination delay. Results of logistic regression analysis showed increase in birth order, number of children in household, and mother's age significantly predicted vaccination schedule ($P = 0.02$, $P = 0.02$, and $P = 0.04$ to $P = 0.001$) respectively. Masadah, Alzoubi, AL-Azzam, AL-gedi, Rashid, and Mukahash (2014) on public awareness regarding children vaccination in Jordan. This study was a community based; cross-sectional study was adopted to be performed at public places in Irbid city. The sample size of 506 mothers was determined for the study. The multistage sampling technique was used to select the women. Data was collected using questionnaire and oral interview to assess their knowledge and positive attitude and practice toward vaccination. The data was analyzed and entered using statistical package for social science (SPSS). The descriptive and inferential statistics were used for the analysis. The result revealed that majority of mothers had acceptable knowledge and positive attitude toward vaccination. Most of mothers (94.7-86.8%) were able to identify vaccines that are mandatory as per the NPI. Lower, knowledge was observed among mothers (71.6%) for HIB vaccination being mandatory. Most mothers (97.2%) had vaccination card for their baby from the NPI. Vaccination delay was reported about 36.6% of mothers and was shown to be associated with significantly ($P = 0.001$) lower vaccination knowledge/attitude score. Additionally, mothers who reported to be regularly offered information about vaccination during visit and those who identified medical staff members as their major information source had significantly higher vaccination knowledge/attitude score ($P = 0.002$).

AL-Zaharani (2013) on the knowledge, attitude and practice of parents towards childhood immunization. A cross-sectional study was conducted at two primary care centre in Sandi Arabia. The population of study was 150,000 patients of which one third are children. The sample size was estimated based on assumption that 93% and adjusted to 400 samples. The results revealed that the study included parents of 390 children and response rate was 96%. Over 43% of children were below 1 year old and more one third of them (36.4%) were between one and three years. More than half of them were males (56%) and 69.7% had a birth weight of above 2.5kg. mothers represent 60.2% of the participants and majority of them (86.2%) were not employed and 29.7% had their education up to university/college level. More than half of the participants believed that vaccine is for all ages and the majority of them recognized correctly that vaccination prevent disease (82.6%). The parents' knowledge score ranged between 1 and 11.4 (out of 11) with a mean of 8.08 and SD of 1.8. Parent with first order children showed higher significant total knowledge score about vaccination than those with second or more child birth order (8.42 ± 1.87 Vs 7.97 ± 1.79), $P > 0.026$. Younger mothers (< 30 years) showed higher significant total knowledge score about vaccination than order (8.42 ± 1.63 Vs 7.79 ± 1.91) $P > 0.001$. Employed mothers showed higher significant total knowledge score about vaccination than non-employed (8.9 ± 1.55 Versus 7.95 ± 1.81), $P > 0.001$. Educated mothers had significant higher total knowledge score about child vaccinated than less educated (8.97 ± 1.64 Versus 7.77 ± 1.79 , $P < 0.001$). Parents attitude total score ranged between 0-4 (out of 4) with a mean of 3.67 and Standard Deviation (SD ± 0.68). Higher educated mothers had significant higher total attitude score towards vaccinated than less educated (3.79 ± 0.64 Versus 3.62 ± 0.69), $P = 0.019$. Higher educated furthers had significant higher total attitude score towards vaccination than less educated (3.88 ± 0.41 Versus 3.62 ± 0.72 , $P = 0.004$). There was a significant positive correlation between total knowledge score and total attitude score of child vaccination ($r = 0.382$, $P < 0.001$). In conclusion the prevalence of a positive attitude towards immunization was excellent with insufficient knowledge. The result revealed that only 17% of respondents had good knowledge of childhood immunization was generally positive (96.6%) and their immunization uptake was good (88.1%). The prevalence of individuals who had missed their immunization was 14%.

Vonasek, Bajunirwe, Jacobson, Twesigye, Dahm, Corant, Sethi and Conway (2016) in their study titled: Do maternal knowledge and attitudes towards childhood in rural up and correlate with complete childhood vaccination? A cross-sectional survey was carried out from September to December (2013) with a total population of 1,000 parlous women. The sample size of 302 was derived for the study and a

purposive sampling technique was used to select the participants. The result revealed that 88% of the children received age- appropriate, on-time immunizations. Only 93.5% of the women were able to state that childhood immunizations protect children from diseases. The women not able to point this out were significantly more likely to have an under-vaccinated child (PR = 1.354; 95% CI: 1.018 – 1.802). The prevalence of children fully vaccinated decreased as reported distance traveled to site of vaccination increased (PR = 0.975, 95% CI: 0.954 – 0.996). When stratified by type of travel, this association increased in the group that reported that they walk to vaccination sites (PR = 0.968, CI: 0.940, 0.996).

Šeškute ,Tamuleviciene and Leviniene (2018) researched on Knowledge and Attitudes of Postpartum Mothers towards Immunization of Their Children in a Lithuanian Tertiary Teaching Hospital. It was a cross-sectional survey design. The questionnaire was distributed to 300 postpartum mothers' selected using simple random sampling technique. Data was analyzed using chi-square. The analysis revealed that majority (63%) of respondents had higher education. The child was the first one for 49.7% of the mothers. The women indicated that their main sources of information about children's vaccination were the doctor, the Internet and mass media. Most respondents (87.3%) considered vaccine-preventable diseases to be dangerous but only 57.3% of them knew that vaccines provided efficient protection. Only 57% of the respondents considered vaccines to be safe but 75.3% thought that the benefits of vaccines were greater than the risks. We evaluated the knowledge as good in 36.3%, average in 41.3% and poor in 22.3% of mothers. Most of the respondents (81.3%) planned to immunize their child in the future with all the vaccines included in the national immunization program, however, 72.7% were worried about possible adverse events following vaccination. Of the mothers whose knowledge was evaluated as good, 74.8% had never refused or had doubts about having their child immunized (= 0.198, $p < 0.001$). The mothers with better knowledge were also less likely to be concerned (= 0.211, $p < 0.001$).

Tagbo, Davidson and Babatunde (2013) investigated Mothers' Knowledge and Perception of Adverse Events Following Immunization in Enugu, South-East, Nigeria using a cross-sectional survey design. A questionnaire was administered to 235 mothers' selected using simple random technique. Data was analysed using percentages and chi-square. The findings showed that most mothers (50.1%) had tertiary education, 39.6% and 9.4% had secondary and primary education respectively while 0.9% had no formal education. Five did not know why children were immunized, 188 knew it was to prevent major killer diseases, 33 believed it was to prevent all diseases while 9 believed it was to treat diseases. The knowledge of reason for immunization was significantly associated with maternal educational ($p=0.000$). Most (89.8%) also knew that the major content of vaccines were chemicals/substances that could help prevent killer diseases. While 1.3% believed vaccines contained harmful materials, 8.9% had no knowledge about the content of vaccines. This was significantly associated with maternal education ($p=0.001$). Majority (34%) were unable to mention any adverse event, 31.6% mentioned only one adverse event. While, 23.8% mentioned two, 10.6% mentioned three or more AEFI. Eighty percent would continue if their children suffered adverse events, 6% would not continue, 13.6% were undecided and 0.4% did not respond. Tagbo, Uleanya, Nwokoye, Eze and Omotowo (2012) researched on Mothers' knowledge, perception and practice of childhood immunization in Enugu, using a cross-sectional descriptive survey design on a sample of 207 mothers selected using simple random sampling technique. Data was collected using a semi structured questionnaire and analyzed using percentages and chi-square. The results showed that forty-eight per cent of the mothers had tertiary education, 42% had secondary education, and 9% had primary education while 1% had no formal education. Eighty-two per cent knew that children are immunized to prevent major killer diseases, 14% and 3.4% believed it was to prevent all diseases, and to treat diseases respectively. Most mothers took their children to health facilities for routine immunization (95.2%) and also accepted immunization on immunization campaign days (75.4%). However, 23.6% had never immunized their children during campaigns. On the other hand, 13% (27) of mothers had out-rightly rejected immunization during campaign while 85% (177) had never rejected immunization. The remaining 2% were not immunized due to reasons other than rejection. More mothers significantly rejected campaign immunization than the number that did not go for routine immunization ($p=0.000$). Maternal highest educational level was significantly associated with knowledge of reason for

immunization and acceptance of immunization ($p=0.000$). Religious denomination was not significantly associated with rejection of campaign immunization ($p=0.056$). It was concluded that most mothers studied had good knowledge and positive perception and practice of immunization. However, the Campaign immunization rejection rate was relatively high for the south eastern Nigeria where it is often assumed that non-compliance is not a problem. Similarly, the proportions of mothers with wrong knowledge and poor perception of immunization require policy attention.

Religion can also influence mothers' attitude towards immunization. It is assumed that the religious beliefs of mothers could also influence their attitude either positively or negative towards immunization of the children. Some religious beliefs may be opposed to immunization and so mothers who are adherents of such religions may not want to take their children for immunization or to health facilities when they take ill, they may prefer to consult their spiritual heads instead of seeking help from medical experts. On the other hands, mothers whose religions encourage orthodox medical treatment may respond quickly to immunizing their children at the least opportunity. Adegoke (2008) while explaining the factors influencing health beliefs among the people of South-West Nigeria reported that African conception of illness and disease causation have one often linked to a form that does not happen by chance and attribute more than a half to spirituality. Odebiyi and Ekong cited in Ogunjuyigbe (2004) corroborated this point when he observed that in traditional Yoruba setting, measles attack is considered to be punishment for breaking family taboo or evil deed from witches or enemies or the consequence of rivalry between co-wives in a polygamous setting. Ogunjuyigbe (2004) explained that despite the fact that major childhood diseases have been identified by modern technology, yet children from African countries die in their large numbers from attack of these diseases because of the deep rooted beliefs.

Research questions

The following research questions were asked to guide the study;

1. What is the knowledge of mothers concerning immunization in Emohua Local Government Area of Rivers State?
2. What is the attitude of mothers towards immunization in Emohua Local Government Area of Rivers State?
3. What is the knowledge of mothers concerning immunization based on age, education, and religion in Emohua Local Government Area of Rivers State?
4. What is the attitude of mothers towards immunization based on age, education, religion in Emohua Local Government Area of Rivers State?

METHODS

Research Design: The study employed the descriptive cross sectional survey research design.

Population of the Study: The population of this study consisted of all 15,078 pregnant women in Emohua local government area who according to the WHO are the target population for immunization schedule 2018.

Sample and Sampling Techniques: The sample size for the study was 400 mothers in Emohua local government area of Rivers State. Multi stage sampling procedure was adopted in this study.

Instrument for Data Collection: The instrument for data collection was a standardized questionnaire. The instrument was made of two sections. Section A, concentrated on the socio demographic characteristics of the respondents, information such as age, education, religion, monthly income were asked. Section B concentrated on knowledge of immunization. The instrument had a reliability index of 0.89.

Data Analysis: Data was analysed using frequency counts, percentage, mean and standard deviation on the statistical package for social sciences, version 21.

RESULTS

Table 1: Mean and standard deviation on the knowledge of mothers towards immunization in Emohua Local Government Area of Rivers State

		N=400						
S/N	Mothers Knowledge of Immunization	Yes	No	Do not Know	Mean	SD	Remark	
1	Following the directives of vaccination accordingly, children are prevented from some infectious diseases and complications.	176	111	113	2.16	0.84	*	
2	The first dose of vaccination is given to children at birth.	194	119	87	2.27	0.80	*	
3	Giving children more than one vaccine at a time have no negative impact on their health	174	134	92	2.21	0.79	*	
4	It is important to vaccinate the children when the campaign is ongoing.	161	147	92	2.17	0.78	*	
5	Autism could be caused by immunization	79	165	156	1.81	0.74	**	
6	It is recommended to vaccinate children against seasonal diseases	129	172	99	2.08	0.75	*	
7	Some of the sickness are not contraindicated for vaccination	125	203	72	2.13	0.69	*	
8	Healthy children also need vaccination against deadly diseases	98	177	125	1.93	0.74	**	
9	The children that are sick are the ones due for immunization against deadly diseases	151	88	161	1.98	0.88	**	
10	A particular vaccine can immunize all the diseases	164	150	86	2.20	0.77	*	
11.	A particular disease has its vaccine for its immunization	205	125	70	2.34	0.76	*	
Grand mean						2.11	0.43	

Key; * = Accepted, ****** - Rejected

Table 1: shows that the mean and standard deviation on the knowledge of mothers towards immunization in Emohua Local Government Area of Rivers State was 2.11, SD=0.43. The key knowledge of mothers towards immunization in Emohua Local Government Area was that a particular disease has its vaccine for its immunization (M=2.34, SD=0.76) and was followed by the knowledge that the first dose of vaccination is given to children at birth (M=2.27, SD=0.80). The least was that It is recommended to vaccinate children against seasonal diseases (M=2.08, SD=0.75).

Table 2: Mean and standard deviation on the attitude of mothers towards immunization in Emohua Local Government Area of Rivers State

N=400

Mothers attitude towards								
S/N	Immunization	SA	A	D	SD	Mean	SD	Remark
1	Immunization is important for non-serious disease only	251	70	55	24	3.37	0.93	*
2	Immunization prevents children from deadly disease	232	102	42	24	3.36	0.89	*
3	During immunization, the side effects of vaccination on children are dangerous	207	106	48	39	3.20	0.99	*
4	Most of the vaccines on children makes them sick	232	85	64	19	3.33	0,91	*
5	Immunization is for the children of wealthy parents	206	84	54	56	3.10	1.10	*
6	Immunization is an exercise for both children from poor and rich homes	147	131	78	44	2.95	1.00	*
7	Giving the vaccines to children is more beneficial than harm on them	147	177	51	25	3.12	0.86	*
8	My religion prohibit children immunization	125	100	134	41	2.77	1.00	*
9	A child that has been given vaccine for immunization can be infected after immunization with the disease	173	117	51	59	3.01	1.07	*
10	Educational level of mothers have important role to play on children immunization	198	149	26	27	3.30	0.86	*
11	Most mothers that comply to immunization schedules always have positive results.	110	194	56	40	2.94	0.90	*
12	Immunization is an exercise that keep children healthy from the deadly diseases	138	160	74	28	3.02	0.90	*
Grand mean						3.12	0.54	*
Criterion reference mean (2.50)								

Table 3: Mean and standard deviation on the extent mothers' education influence their attitude towards immunization in Emohua Local Government Area of Rivers State

S/N	Mothers attitude towards immunization	Mean	Sd	Mean	Sd	Mean	Sd
	Grand mean	3.09	0.65	3.14	0.51	3.31	0.56
Criterion reference mean (2.50)							

Table 3 shows that the mean and standard deviation on the extent mothers' education influence their attitude towards immunization in Emohua Local Government Area of Rivers State were 3.09; SD-0.65, 3.14, SD=0.51 and 3.31, SD-0.56 for No-formal education, formal education and tertiary education respectively.

Table 4: Mean and standard deviation on the extent mothers age influence their attitude towards immunization in Emohua Local Government Area of Rivers State

S/N	Mothers attitude towards Immunization	20-29 years, N=165	30-39 years, N=201	40 years and above, N=34			
	Grand mean	3.11	0.53	3.14	0.54	3.09	0.64

Criterion reference mean (2.50)

Table 4 shows that the mean and standard deviation on the extent mothers' age influence their attitude towards immunization in Emohua Local Government Area of Rivers State were 3.11, SD=0.53, 3.14, SD=0.54 and 3.09, SD=0.64 for age brackets 20-29 years, 30-39 years and 40 years and above respectively.

Table 5: Mean and standard on the extent does mothers' religion influence their attitude towards immunization in Emohua Local Government Area of Rivers State

S/N	Mothers attitude towards Immunization	Christian N=251		Islam N=87		Traditional religion N=62	
		Mean	SD	Mean	SD	Mean	SD
	Grand mean	3.11	0.52	3.22	0.51	3.01	0.67

Criterion reference mean (2.50)

Table 5 shows that the mean and standard on the extent does mothers' religion influence their attitude towards immunization in Emohua Local Government Area of Rivers State were 3.11, SD=0.52, 3.22, SD=0.51 and 3.01, SD=0.67 for Christian religion, Islamic religion and Traditional religion respectively.

Table 6: Mean and standard deviation on the extent mothers' education influence their knowledge of immunization in Emohua Local Government Area of Rivers State

S/N	Mother Knowledge of Immunization	No formal education, N=60		Formal education, N=234		Tertiary education, N=106	
		Mean	SD	Mean	SD	Mean	SD
	Grand mean	2.15	0.37	2.22	0.43	2.30	0.45

Criterion reference mean (2.50)

Table 6 showed that the mean and standard deviation on the extent mothers' education influence their knowledge of immunization in Emohua Local Government Area of Rivers State were (2.15, SD = 0.37), (2.22, SD = 0.43) and (2.30, SD = 0.45) for No-formal education, formal education and tertiary education respectively.

Table 7: Mean and standard deviation on the extent mothers' age influence their knowledge of immunization in Emohua Local Government Area of Rivers State

S/N	Mothers Knowledge of Immunization	20-29 years, N=165		30-39 years, N=201		40 years and above, N=34	
		Mean	SD	Mean	SD	Mean	SD
	Grand mean	2.11	-0.42	2.1	0.45	2	0.37

Criterion reference mean (2.50)

Table 7 that the mean and standard deviation on the extent mothers' age influence their knowledge of immunization in Emohua Local Government Area of Rivers State were 2.11, SD=0.42), (2.10, SD=0.45) and (2.22, SD=0.37) for age brackets 20-29 years, 30-39 years and 40 years and above respectively.

Table 8: Mean and standard deviation on the extent mothers' religion influence their knowledge of immunization in Emohua Local Government Area of Rivers State

S/N	Mothers Knowledge of Immunization	Christian, N = 251		Islam, N=87		Traditional religion, N=62		Mean	SD
		Mean	SD	Mean	SD	Mean	SD		
<u>Grand mean</u>		2.12	0.42	2.11	0.46	2.11	0.44		

Criterion reference mean (2.50)

Table 8 shows that the mean and standard deviation on the extent mothers' religion influence their knowledge of immunization in Emohua Local Government Area of Rivers State were (2.12, SD=0.42), (2.11, SD=0.46), and (2.11, SD=0.44) for Christian religion, Islamic religion and Traditional religion respectively.

DISCUSSION OF FINDINGS

Mothers towards Knowledge of Immunization

The result of this study indicated that the grand mean 2.11 SD = 0.43 was less than the criterion reference mean (2.50) depicting that the knowledge of mothers concerning immunization was poor. The result is in line with the study of Ramadan et al (2016) which states that 31.2% of mothers had poor knowledge of immunization. Most women fail to complete immunization of their children because of little or no knowledge of the benefit of immunizing children. Studies of Brown et al (2017) also buttressed that incomplete immunization was as a result of low level of knowledge. There is need to increase the knowledge of mothers as well as parent toward immunization especially on the huge benefits on the health status. Vonaseck et al (2017) affirmed that women who could not point out the benefit of vaccination are more likely to under immunize their children. The current study was in credence with the study of Seskute et al (2018) that over 22.3% of mothers had poor knowledge regarding child immunization. Therefore, strategies should be considered to improve the level of knowledge of mothers towards immunization in order to maintain good health of the child, mother and family.

Mothers immunization Knowledge based On educational status, age and religion

The result of this shows that the grand mean of 2.22 was relatively less than the criterion inference mean (2.50). This means that the level of education has a potential influence on the knowledge of mothers regarding immunization. The age and religious influence accounted for 2.10, and 2.11 respectively. The mothers between the age of 30-39 years are more likely develop good of knowledge of immunization. The result of this study is in concordance with studies of Siddiquid et al (2017) that mothers within 28 years and above are more likely to immunize their children fully while Shahla et al (2007) asserted that mother's age is a significant predictor of vaccination of children (p = 0.02). This study is in line with finding of Al-Zaharam (2013) that younger mother above 30 years have high significant level of knowledge about immunization (P>0.001), whilst educated mothers are more likely to developed good knowledge than those who are less educated (8.97 vs. 7.77, p<0.001). Tagbo et al (2013) added that maternal education is more significant to determine the level of knowledge of immunization. Tagbo et al (2012) agreed that religious affiliation does not significantly influence the knowledge of immunization of mothers (p = 0.056). The knowledge of vaccination seems to be high among Christians more than the Muslim faithful.

Attitude of Mothers towards Immunization

The results of this study indicated a positive attitude of mothers concerning immunization with grand mean (3.12) significantly greater than criterion reference mean (2.50). It is pertinent to note that mother's attitude was good in regard to immunization which goes a long way to promote good health and well-being. The result of this current study is in credence with the studies of Al-Zaharani (2013) that shows

positive correction in attitude. Angadi et al (2013) affirmed that 62.58% was immunized completely. Ramadan et al (2016) agreed to this study that over 70% of mothers had good attitude regarding immunization.

Attitude of mothers towards immunization based on education, age and religious background In the light of this, the result of this study revealed that mother's education, age and religious background have a potential on the attitude of mothers concerning immunization with a grand mean of 3.31, 3.14 and 3.11/3.22 respectively more higher than the criterion reference mean (2.50). This indicated that the above demographic factors influence the attitude of mothers concerning the proper immunization.

However, this result is in concord with the studies of Ramadan et al (2016), Angachi et al (2013), that children born of mothers with secondary and above level of education and older than 25 years are more likely to receive full immunization. Masadati et al (2014) affirmed that mothers are able to identify vaccines that are mandatory as per the NPI. Thereby accept immunization on daily basis. Al-Zaharami (2013) further buttressed that mothers with higher educational status are more significant to develop higher attitude toward vaccination as compared with the less educated counterpart (3.79 vs. 3.62 ± 0.69 , $P = 0.019$). In regard to this study, the prevalence of positive attitude concerning immunization was excellent with insufficient knowledge. Studies of Seskute et al (2018) also support this study that huge numbers (70%) of mothers consider the benefits of vaccines more higher than the risk. This study is also in credence with studies of Raji (2013) that mothers older than 29 years are likelihood to vaccinate (AOR = 2.97) and being from Hausa/Fulani are positively associated with complete immunization (AOR 1.86). And also, there is a decrease utilization of vaccination among faithful Islamic (AOR = 0.70) as compared with Christians (AOR = 2.21), (Raji, 2013). The study of Wodele et al (2010) added that age and ethnicity are significantly related with their good attitude towards immunization. The knowledge of mothers towards immunization was inadequate inspite of the positive attitude.

CONCLUSION

The study concluded that mothers in Emohua local government area of Rivers State have positive attitude but their knowledge is insufficient. Grassroot campaign and maternal education will improved their knowledge.

RECOMMENDATIONS

Based on the findings of the present study, the discussion and conclusions therefore, the following recommendations were made:

1. The Federal Government should work out plan for more regular availability of vaccines, materials and equipment in Emohua Local Government Area of Rivers State and other areas to ensure effective and efficient delivery of the immunization services and activities in this area.
2. All aspects of immunization should be free, including the cost of syringes and needles in health facilities, and efforts should be made to discourage health workers via prosecution who extort during immunization services.
3. Donor Agencies should monitor the level of utilization of funding allotted to immunization at all levels in the health care system.
4. Emohua Local Government should organized programme for the education of the public on vaccine preventable diseases using rightful channels of communication by health educators and health workers in all -health facilities in the study area.
5. All aspects of immunization should be free, including the cost of syringes and needles in health facilities, and efforts should be made by the authorities to discourage health workers via prosecuting those who extort during immunization services.

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