

Knowledge and Attitude of Mothers towards Childhood Immunization in Bauchi Local Government, Bauchi State - Nigeria

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Abstract

The increasing numbers of child mortality resulting from inability of mothers to effectively accept the immunization of their children against childhood killer diseases, such as poliomyelitis, measles, diphtheria, whooping cough, tuberculosis, among others, in Bauchi Local Government Area of Bauchi State necessitates this research. The study examined knowledge and attitude of mothers towards immunization of their children against those childhood killer diseases. It specifically assumed that lack of education, religious practices, etc. of mothers determine their knowledge in addition, to the behavior of health workers that influence their attitude. Further, the study also established the link as to whether access to health care facilities influence mothers' compliance towards childhood immunization against killer disease in the study area. The research adopted the health belief model because its utility to mothers' response to health seeking behaviors in relation to the immunization of children against childhood killer diseases. This does not however downplay the importance of other theories. The study made use of survey and in-depth interviews where a total sample size of three hundred and twenty-two (322) respondents were selected. Data was summarized using percentages, while the qualitative data was analyzed using the thematic approach to the objectives of the study. The findings of the study reveal that the level of mothers' education relates to their knowledge and tend to encourage childhood immunization. The study recommends that government should employ more health officials, such as nurses to meet the World Health Organization (WHO) health staff ratio of one nurse for four patients as the numbers is grossly inadequate. In addition, there is need to remove all cultural impediments that prevent women from immunization by empowering them with decision making at home. The study also believed that there is the need to encourage women or girl-child education as well as to educating husbands, parents, and community leaders on the dangers associated with lack of immunization especially of the mentioned five killer diseases.

Keywords: *Childhood, Immunization, Attitude, Knowledge, Killer Diseases*

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Background to the Study

The preventive measure against diseases at childhood stage is through immunization which is complete course of injection that is 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 African and Asian countries. There is a schedule for children below the ages of five by the health department for the immunization of children, and vaccines are provided by expanded program on immunization (EPI) which plays a vital role in controlling childhood diseases.

Immunization program is more systemized in developed countries, but the situation is poor in most populous countries. 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. The main reason behind these problems is lack of public awareness about the importance of immunization and lack of education. Due to these factors disease rate is high in developing countries.

Parents' education (especially women) and their attitude play also an important role in determining the health condition of children. Immunization helps the child to be mentally healthy and active. Most people are 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 religious, social and cultural misconceptions. It is against the above background that this study therefore, investigates the knowledge and attitude of mothers towards the immunization of their children against childhood killer diseases, as there is the need to replace their misconceptions about immunization through proper knowledge and education as well as attitude to be shaped susceptible for childhood immunization.

Statement of the Research Problem

Scholars (such as Shehu, et al., 2015 and Imoh, 2013, among others) assert based on available records that without the immunization against childhood killer diseases, such as poliomyelitis, measles, diphtheria, whooping cough, tuberculosis, among others, about 216,000 Nigerian children will die each year, an average of about 600 per day and an additional 100,000 children are liable to physical disability. Thus, child mortality is of a serious concern to various stakeholders, such as the United Nations- Millennium Development Goals (MDGS), United Nations Children Funds (UNICEF), Federal and state governments, agencies, families and individuals. This is because the continuity of any generation depends on the ability to raise new ones and ensure their survival.

The Expanded Program on Immunization (EPI) which was introduced in 1979 in Nigeria with the responsibility of ensuring childhood immunization against killer diseases, under the auspices of primary health care at the local government level is being confronted with challenges to effectively carry out the exercise. Inadequacy of fund i.e the monthly federal allocations of local government were not forthcoming from Bauchi State government. This

has made them unable to provide necessary logistics, procure vaccines, mobilizes volunteers, etc. to administer childhood immunization. Also, the facilities, such as health centers, health personnel and infrastructures required for the success of the campaign are grossly inadequate and have made the success of the campaign difficult.

Mothers are responsible for the immunization of their children therefore knowledge about vaccines preventable diseases can ensure the success or otherwise of the campaign against the prevailing childhood killer diseases. In the northeastern part of Nigeria, Bauchi state in particular, which is one of the educationally backward states, mothers' knowledge on childhood immunization is poor, as very few of them have acquired western education which serves as a channel of knowledge. Human actions are supposed to be based on proper knowledge, without which it may not be taken or taken wrongly. Though many mothers may have been informed about childhood immunization through the mass media e.g. radio, television, newspapers etc., they need to be encouraged by important others, such as Imams, Pastors and community head to avail their children for immunization. But, most of them are skeptical about the exercise having different perspectives about it let alone promoting and urging their followers to key into the program for their children.

Moreover, religion and culture also contribute to the attitudes of mothers toward childhood immunization. In the northeastern part of Nigeria, childhood immunization is seen as a western strategy to control their population which goes contrary to religious injunction to 'multiply and fill the earth'. This makes the acceptance of childhood immunization difficult. Also, the attitude of mothers in terms of attending antenatal care (ANC) from trained health personnel is shaped by their culture. Mothers in the rural areas and even some in urban areas patronize traditional birth attendants (TBA) when pregnant and at the time of delivery than western health institutions. Attending antenatal care gives mothers the opportunity of knowing about childhood related illnesses and measures to overcome them. But when mothers prefer traditional birth attendance due to culture or distance, denied them the opportunity to have knowledge of pregnancy related issues including childhood killer diseases and immunization which guarantees child survival (Abidoye, 2013).

Poverty is another factor that has affected the success of childhood immunization. In developing countries and by extension northern part of Nigeria (Bauchi), as millions of people are living below the poverty line which is one dollar a day. Consequently, the earnings of people are prioritized on daily sustenance, such as food, shelter rather than medical expenses for the survival of their children. Health facilities are mostly situated in the urban centers, this means for the rural dwellers to access health facility, they have to travel a distance, which many cannot due to transportation difficulty and other charges. This discourages mothers from complying with childhood immunization.

The patriarchal nature of our society also deepens the challenges of childhood immunization. This means that women are under the strict control of their husbands; their actions or inactions depends on the permission (approval) of their husbands. This especially in the northeastern part of Nigeria is the culture which is strictly observed. Even if mothers have the knowledge of childhood killer diseases and immunization, her movement to comply is determined by her husband. So the attitude of the husbands is determined by their

knowledge and the importance of childhood immunization. Therefore, many mothers who are willing to immunize their children cannot unless permitted by the husband.

The negative attitudes of health personnel also have affected the compliance of mothers to childhood immunization. Health workers who are considered to be professionals in handling health seekers, often times scares mothers from accessing childhood immunization. Most of the health personnel and volunteers such as nurses, CHEW (community health workers) are expected to exhibit professionalism by being (polite, hospitable and friendly), but contrary to this, most of them are being harsh, hostile and unfriendly to health seekers (mothers) on their quest for child survival.

Literature Review and Theoretical Framework

The Mothers' Educational Status

Mothers are the most known determinant factors of child immunization for instance, Tagbo, Uleanya, Nwokoye, Eze, and Omotowo (2012), in their study found that maternal highest educational level was significantly associated with knowledge of reason for immunization and acceptance of immunization. According to Babalola and Adewuyi (2006) the more educated a mother is, the higher the chances that her children would be immunized against childhood killer diseases. Thus, a study done at southern district of Nigeria revealed that mothers with lowest education and unemployed women were less likely to complete a child immunization. Education empowers a woman to access relevant health services, interact effectively and assimilate information relating to parental care, childhood immunizations and nutritional needs (Becker, et al., 1993).

In similar vein, Caldwell (1979) mentioned that maternal education is a significant determinant of child health and no other factor has such impact. Bryce, et al., (2005), observed maternal education as the strongest independent factor for protection against childhood mortality. In the study conducted in Ghana by Buor, (2001) there was an obvious significant increase in children's vaccination pattern with mother's education level. Jamil, et al., (1999) found that mothers who completed at least primary level of education were 1.7 times more likely to have their children fully immunized compared to those who had no education. It was also indicated that children whose mothers were aged less than 30 years were 2.26 times more likely to be fully immunized (Abubakar and Gajida 2005). Socio-economic status (particularly education and wealth status) of individuals strongly controls the behavior of individuals and thereby controls health-seeking behavior and ultimately child survival (Becker et al., 1993).

Also, study conducted by Abidoye (2013) in Lagos state shows that most (89.5%) of mothers knew about BCG while 85.5% and 78.5% of the respondents had knowledge of OPV and DPT, respectively. However, based on knowledge of what vaccine protect against, about 54.5% of them knew what measles, OPV and yellow fever vaccines prevent. 36% of them knew what DPT vaccine prevents. Also, the mothers' knowledge about the different kinds of immunization was quite impressive as majority of them (89.5%; 85.5%; 78.5%; 71%; and 73.5%) knew about BCG, OPV, DPT yellow fever and measles vaccinations respectively. These high knowledge percentages for BCG, OPV, DPT yellow fever and measles vaccinations, may be due to the fact that the vaccines are named by the diseases they prevent

and to some extent, by the educational status of the respondents. Regarding the knowledge of the diseases prevented by these different kinds of vaccines, roughly half (54.5%) of mothers knew what measles vaccine, OPV and yellow fever vaccines prevent and a fewer proportion (36%) of these mothers responded correctly to what DPT vaccines protect against. Although, more than three-quarter (89.5%) of the mothers were quite aware of BCG vaccination, only a quarter (25%) of them actually knew what it does.

Knowledge and Awareness of Mothers about Immunization

Odusanya, et al. (2008), investigated the determinants of vaccination coverage in rural Nigeria found that mother's knowledge of immunization and vaccination at a privately funded health facility was significantly correlated with the rate of full immunization. Abdulraheem, Onajole, Jimoh., and Oladipo (2011), argue that the main sources of information on immunization were health workers (72.7%), town announcers (10.3%), radio (5.1%), family members (4.9%) and friends (3%). Only 97 (14.1%) knew that the vaccination against childhood killer diseases should be completed at the age of nine months with the yellow fever and measles vaccines. Less than one-fifth (12.8%) of mothers knew that BCG is being given at birth while only 41 (6%) new that Hepatitis B vaccine could also be given at birth and these mothers were the teachers and other educated staff of the LGA. Immunization was mentioned by 138 (20.1%) as a means of prevention against childhood killer diseases. Less than half (37.2%) of the mothers completed routine immunization schedules for their children by the age of 9 months (Abdulraheem, et al., 2011).

Rahji and Ndikom (2013), affirm that most common reasons for non-immunization were lack of knowledge about childhood immunization schedule and where to sources for it. Other reasons include lack of awareness about health benefits of immunization. About one- fifth of the women gave reasons that revealed their lack of knowledge about immunization benefits, routine immunization schedule and the required number of doses. Some women believed that their children were too young to receive specific vaccines, particularly those involving the use of needles and syringes. More over few women believed that their child had received some vaccines and were apparently well and thriving there was no need for additional vaccines. Some women also believed that too many vaccines could be harmful to the child. Large percentage of women gave reasons that showed total reliance on immunization campaigns for child immunization.

Shehu, et al. (2015) noted that awareness is a key role in the adoption of new ideas towards solving human problems, especially as they relate to health seeking behavior. Access to health facilities like antenatal care and place of delivery are other factors that are associated with the immunization status of children. Studies indicate that mothers who attend ANC and give birth at health facility are more likely to fully immunize their children as antenatal clinic is a means for women to be aware of immunization programme (Mutua et al., 2011; Takum et al., 2011). In a study conducted in Nigeria by Adedayo et al., (2009), most of the mothers interviewed (65.7%) got their awareness of immunization at the antenatal clinics. It is also similar to the study done in Columbia on the behavioral and attitudinal determination of immunization of hepatitis B among infants which showed that immunization was significantly associated with suggestion from health care practitioners (Big bam et al., 2006).

In another study done in Nigeria revealed that there was an association between the place of delivery and immunization status of a child (Oyo-Ita et al, 2012). A child born in a health unit was significantly more likely to have been vaccinated with BCG which is given immediately after birth, and to be up to date with their vaccination compared to a child delivered at home (Andre, 2003).

Theoretical Framework

The Health Belief Model

Health belief model was one of the first, and remains one of the best known social cognitive models. It is a health behavior change and psychological model developed by Irvin Rosenstock in 1966 for studying, promoting and the utilization of health services and why some people do not use health facilities such as immunization and screening. The health belief model (HBM) was furthered by Becker and colleagues in the 1970s and 1980s. Originally, the model was designed to predict behavior response to the treatment received by acute and chronic patients, but in recent years the model has been used to predict more general health behavior.

The HBM seeks to explain preventive health behavior of individual and groups. The model assumes that people's action towards health measures are based on their belief and attitudes. It also acknowledges that beliefs and attitudes are not spontaneous; rather they are a function of the professional experience of the individual. Hence, in a general sense, the model does not only look at the individual as a unit of analysis, but considers the socio-cultural environment which conditions the individual to adhere to certain beliefs and predisposes him or her towards behaving in a defined and culturally prescribed manner. The basic argument of this theoretical model is that an individual's attitudes and beliefs direct his line of action in health seeking both preventive and curative diseases. The model focuses on the factors and variables that are considered in the decision to seek or not to seek health care and from what sources to seek for it. There are four core constructs: the first two refer to a particular disease whereas the second two refer to a possible course of action that may reduce the risk or severity of that disease.

The Relevance of HBM to Childhood Immunization

The major propositions of this model are:

1. Perceived susceptibility of the child to contract childhood killer diseases,
2. Perceived severity of the diseases when contracted by a child,
3. Perceived benefits of adopting the alternative course of action- immunization
4. Perceived barriers or cost

These are determinants of possible course of actions that may reduce the risk of severity of disease. Based on this theory, there are factors that make an individual to take an action against a threat.

First, the perceived susceptibility of the children contracting the disease, children that are under five years of age are vulnerable to contract childhood killer diseases because their immune system is weak at this stage. They are at high risk of contracting the disease if an alternative course of action is not taking.

Second, the perceived severity of the diseases by parents if a child contracted it, it is devastating. If a child contract any of the childhood killer disease could lead to permanent body damage example, being cripple, handicap or even death. When parents perceive such severity of the CKD and it consequences, they become motivated to immunize their children to avert the impending risks. So the pressure to adopt a health measure (childhood immunization) to reduce to risk of the severity of the diseases when it occurs becomes necessary.

Third, the perceived benefits are important factors that can determine the course of action toward health issues. A person weighs the benefits or otherwise of embarking on any action including health care related issues. The benefit is that it will prevents or stops the child from being at risk of contracted Childhood Killer Diseases (CKD).

Fourth, the costs or barriers that could hinder parents from complying to immunize their children are numerous. These include the lack of knowledge of childhood killer diseases that will enable them to seek for immunization, their attitude due to religious affinity, culture, distance to health centers, husbands' permission to take the child for immunization, poverty, the costs of accessing health service etc. These are few of the obstacles that could stand as a hindrance to complying to childhood immunization.

Methodology

Population of the Study

Population is a census of all the element or subject of interest and may be finite or infinite (Asika 2001). The study focuses on the knowledge and attitude of mothers toward childhood immunization in Bauchi LGA. The population of the study includes the mothers in the nineteen (19) political wards in Bauchi Local Government Area. According to National Population Commission (NPC, 2006), the population of mothers in the study area were 134,905.

Sample Size

The sample size which is an important feature of any empirical study in which the goal is to make inferences about a population from a sample. Therefore, quota sampling method was used to get the sample size. The total sample size for the study is three hundred and twenty two (322). Respondents for quantitative data comprised of three hundred and twelve (312) while respondents for qualitative data were ten participants, which comprised of two health officials, two traditional birth attendants, two religious leaders, two staff of Non-governmental Organizations (NGOs) working in health related areas and two traditional leaders (such as *Mai Uguwa*).

Sampling Methods

The nineteen (19) political wards in the study were considered as cluster and multistage sampling method was used to select the respondents. At the first instance, a probability sampling using simple random technique was conducted to select four (4) wards. The names of the nineteen (19) persons were tag on them as proxy to the wards and each person picked a piece of paper from the container. The piece of paper picked was then handed to the research assistant to unfold it in the presence of all the representatives of the wards. The selected wards

were Miri, Hardo , Zungur and Dawaki. Secondly, seventy eight (78) numbers of mothers (respondents) was allocated to each selected ward using quota sampling based on the homogeneity of the study area and questionnaires were administered. Thirdly, in each of the four sampled wards, eight mothers were selected from different houses in each street using convenient and accidental sampling techniques, as respondents were selected based on immediate accessibility and willingness to give information on the research topic.

Similarly, the ten participants for in-depth interview were purposively selected and interviewed. That is two health officials, two traditional birth attendants, two religious leaders, two staff of Non-governmental Organizations (NGOs) working in health related issues and two traditional leaders (such as *Mai Unguwa*).

Methods of Data Collection

Primary data was used for the study using survey (questionnaires) and interview to collect information from the respondents. They were supplemented with the secondary data obtained from text books, journals, official gazettes and materials from internet source. The questions were designed in English and in some cases administered in local dialect where necessary by the researcher and his assistants.

In the case of the interview, it was conducted using interview-guide. The interview was conducted in a place conducive and convenient to the interviewees. Tape recorder was used to capture the voice of the participants on their permission and where not permitted, a note was taken as the participants gave out information.

Data Presentation

The data generated from the study are presented below:

Demographic and Socio-Economic Variables of the Respondents

This section of the study presents the demographic and socio-economic variables of the respondents as follows:

Table 1: Demographic and Socio-Economic Variables of the Respondents

Variables	Frequency	Percentage	
Age	15-24	67	21.8
	25-34	125	40.6
	35-44	78	25.3
	45 and Above	38	12.3
	Total	308	100
Marital Status	Married	235	76.3
	Widow	36	11.7
	Divorce	37	12.0
	Total	308	100
Education	No Formal Education	57	18.5
	Primary Education	31	10.1
	Secondary Education	81	26.3
	Tertiary education	139	45.1
	Total	308	100
Occupation	House Wife	145	47.1
	Student	57	18.5
	Business	37	12.0
	Teacher	25	8.1
	Civil Servant	38	12.3
	Others	6	1.9
	Total	308	100
Religion	Christianity	127	41.2
	Islam	181	58.8
	Total	308	100
Number of Children	Only One	61	19.8
	Two-five	169	54.9
	Six and Above	78	25.3
	Total	308	100
Children's Place of Birth	Government Hospital/Maternity Homes	190	61.7
	At Home	50	16.2
	Religious Centre	5	1.6
	Private Hospitals/Clinics	61	19.8
	Others	2	0.6
Total	308	100	
Years as Married Mother	1-5 years	90	29.2
	6-10 years	110	35.7
	11 years and Above	108	35.1
	Total	308	100

Source: Field Survey, 2016

Table 1 shows the demographic and socio-economic variables of the respondents. It is important to note that all of the respondents are females (married mothers). Thus, 40.6% of the respondents are between the ages of 25-34 years, 24.3% are between the ages of 35-44 years and 21.8% are between the ages of 15-24 years. This implies that majority of the respondents are mothers of reproductive age and may have insights on the study. The table shows that majority of the respondents (76.3%) are married, 12.0% are divorced and 11.7% are widowed.

Also, 26.3% of the respondents attend the secondary education while 18.5% attend no formal education, 45.1% attend tertiary education and 10.1% attend the primary education. This implies that majority of the respondents have relatively higher levels of education. The Table also indicates that majority of the respondents (47.1%) were housewife, 18.5% were students, 12.3% civil servants and 12.0% were business women. This indicates that the information given by the respondents is fairly representative of diverse opinions since it cuts across many employment statuses.

On the religion of the respondents, 58.8% are from Islamic religion and 41.2% from Christianity, respectively. Also, the table indicates that 54.9% of the respondents have 2-5 numbers of children, 25.3% have 6 and above and 19.8% have only one child. Furthermore, majority (61.7%) of the respondents were born in government hospitals/maternalities, 19.8% in private hospitals/clinics and 16.2% were born at home. The table indicates that 35.7% of the respondents have been married for 6-10 years and 35.1% have been married for 11 years and above. All the above indicate that the demographic and socio-economic characteristics of the respondents vary and may influence their responses on issues raised on the study.

Table 2: Respondents' View on Whether they know about Childhood Immunization

Responses	Frequency	Percentage
Yes	293	95.1
No	15	4.9
Total	308	100

Source: Field Survey, 2016

Table 2 shows the respondents' view on whether they know about childhood immunization. The table indicates that 95.1% of the respondents know about the childhood immunization while 4.9% are not. This implies that almost all the respondents have at least heard about childhood immunization services. A participant during the in-depth interview (IDI) said:

There is a lot of awareness among mothers on childhood killer diseases and childhood immunization and the vaccines in Bauchi Local Government. Most of the mothers deliver in government hospitals and they become exposed on childhood immunization, diseases and vaccines. There are a lot of radio jingles, posters and hospital staff which educate mothers on knowledge about childhood immunization, which is very high in Bauchi Local Government (IDI: Nurse, 2016).

Table 3: Sources of Knowledge about Childhood Immunization

Responses	Frequency	Percentage
Radio	65	21.1
Television	60	19.5
Hospital staff	144	46.8
Friends	39	12.7
Total	308	100

Source: Field Survey, 2016

Table 3 shows the sources of knowledge about the childhood immunization. It shows that 46.8% of the respondents know about the childhood immunization through the hospitals, 21.1% through the radio, 19.5% through the television and 12.7% through friends. This implies that majority of the respondents do visits the hospitals which made them to know about the childhood immunization. Traditional Birth Attendant interviewed stated that:

There are different mediums in which a mother can be educated on childhood immunization. These include seminars organized by world Health Organization (WHO), Churches and Mosque, traditional rulers and hospitals etc. (IDI: TBA, 2016).

In the same vein, another participant during the interview said: There are both formal and informal medium of educating mothers on childhood immunization. The informal medium is that people hear from others in their discourse about diseases while the formal mediums are radio jingles, television. Hospital staffs also educate them on childhood immunization. There are also posters pasted in the hospital which inform mothers them about childhood immunization. Radio jingle is far reaching while one on one with hospital staff is more educating (IDI: Nurse, 2016).

Table 4: Responses on Whether the Level of Mothers' Education Relates to their Knowledge on Childhood Immunization

Responses	Frequency	Percentage
Yes	254	82.5
No	54	17.5
Total	308	100

Source: Field Survey, 2016

Table 4 shows the responses on whether the level of mothers' education relates to their knowledge on childhood immunization. Accordingly, 82.5% of the respondents opine that the level of mothers' education relates to their knowledge about childhood immunization while 17.5% did not. This implies that education of mothers may influence their knowledge about the childhood immunization. A participant during the in-depth interview said:

It does not matter whether a mother is educated or not she can still have of knowledge on childhood immunization. But there level of knowledge will be different. The educated mother can read and write, browse from the internet to have an in-depth knowledge on a specific or general knowledge on diseases but the mother with no education can only know maybe the names of the diseases (IDI:NGO Staff, 2016).

Another participant said:

Education is a light and a mirror; it can help a person see even in a darkest place. A mother who has acquired a high level of education is supposed to have a wider knowledge on childhood immunization than a mother who has not. A mother who is educated can read and write, she can browse through the internet and see and update regarding an issue world-wide. This gives her an advantage over mother who has not attained higher level of education (IDI: Nurse, 2016).

However, a participant during the in-depth interview opined on the matter in a different way. He said:

It is not necessarily, you see there are many educated mothers who are event against this child immunization which is not supposed to be so. Some of them based on believe of either religious or whatever known them. Some based it on their determination and under study the importance even with their low level of education and understanding the importance of childhood immunization even still welcome the idea of this childhood immunization even better. However under normal circumstance, the level of education of another supposed to play vital role in childhood immunization. You know individual difference also matters alot weather educated or not (IDI: TBA, 2016).

Table 5: Whether the Respondents have Knowledge about Childhood Killer Diseases

Responses	Frequency	Percentage
Yes	207	67.2
No	101	32.8
Total	308	100

Source: Field Survey, 2016

Table 5 shows whether the respondents have knowledge about childhood killer diseases. It shows that 67.2% of the respondents have the knowledge about the childhood killer diseases while 32.8% have not. This implies that majority of the respondents have the knowledge about childhood killer diseases which may influence them to immunize their children against such diseases.

Table 6: Cross-tabulation of Education and Knowledge about Childhood Immunization

Education	Knowledge of Childhood Immunization		Total
	Yes	No	
No formal education	51 (17.4%)	6 (40.0%)	57 (18.5%)
Primary education	30 (10.2%)	1 (6.7%)	31 (10.1%)
Secondary education	80 (27.3%)	1 (6.7%)	81 (26.3%)
Tertiary education	132 (45.1%)	7 (46.7%)	139 (45.1%)
Total	293 (100%)	15 (100%)	308 (100%)

Source: Field Survey, 2016

Table 6 shows the cross-tabulation of education and knowledge about childhood immunization. The table indicates that 45.1% of the respondents who attend the tertiary education and 27.3% who attend the secondary education have knowledge about childhood immunization, respectively. This implies that the rate of the education of mothers may or may not necessary facilitate childhood immunization, as education may be a critical factor but not an all-encompassing factor influencing childhood immunization. People with low educational background could also embrace immunization against childhood killer diseases. according to a Traditional Birth Attendant during the in-depth interview, mothers in Bauchi

Local Government after delivery in either teaching hospital or specialist are told on when to come for the immunization of their new born babies either in a routine form or otherwise. However, an Imam said:

It does not matter whether a mother is educated or not she can still have knowledge of childhood immunization. But there level of knowledge will be different. The educated mother can read and write, browse from the internet to have an in-depth knowledge on a specific or general knowledge on diseases but the mother with no education can only know may be the names of the diseases (IDI: Imam, 2016).

Discussion of Major Findings

Education of Mothers Determine their Knowledge about the Immunization of their Children against Childhood Killer Diseases

The findings of the study reveal that the level of mothers' education relates to their knowledge on childhood immunization, as claimed by 82.5% of the respondents on table 4.2. This finding was supported by many of those interviewed during the in-depth interviews. They asserted that there is a lot of awareness among mothers about childhood immunization against killer diseases in Bauchi Local Government. Most of the mothers deliver in government hospitals and they become exposed on childhood immunization, diseases and vaccines. There are a lot of radio jingles, posters and hospital staff which help to pass the information about childhood immunization to mothers in Bauchi Local Government. This finding connotes Odusanya, et al. (2008) that mother's knowledge of immunization and vaccination at a privately funded health facility were significantly correlated with the rate of full immunization.

Educated mothers mostly accept childhood immunization better than less educated. They are less restricted on childhood immunization, societal and religious factors. Graduate mothers who are more incline, aware and knowledgeable about childhood immunization than do not have strict religious are mother are not. This finding is in line with Babalola and Adewuyi (2006) findings that the more educated a mother is, the higher the chances that her children to be immunized against childhood killer diseases. Becker, et al.(1993) argued that education empowers a woman to access relevant health services, interact effectively and assimilate information relating to parental care and childhood immunizations against killer diseases.

However, high level of mothers' education may not be an all-encompassing factor influencing immunization, as some educated mothers tend to accept childhood immunization which is not supposed to be so. Some of them is either based their opinion or religious beliefs or whatever known to them. While some mothers even with their low level of education, understand the importance of childhood immunization and welcome the idea of childhood immunization even better those with the high level of education. However, under normal circumstance, the level of education of mothers supposed to play vital role in childhood immunization but individual difference also matters a lot, weather educated or not. This connotes the rational choice theory which was adopted as the theoretical framework for the study that the pattern of human behavior in society reflects the choices made by individual. Child immunization is not a compulsory exercise but rather optional to mothers who have the

knowledge of childhood immunization. So, for mothers with the knowledge about childhood immunization have the opportunity to make an informed choice as to whether to immunize their children or not which has attendant benefit or consequences as the case may be.

Conclusion

It is evident from the research findings that the knowledge about immunization of children against childhood killer diseases is on the high side in the study area. Thus, knowledge about immunization is wide spread among mothers both the educated and non-educated ones, even though some educated ones may have more knowledge. Immunization is important in safe-guarding children against childhood killer diseases, which the mothers are crucial to its effectiveness. Thus, some factors, such as the knowledge of parents, which this study has specifically investigated the knowledge of mothers towards childhood immunization in Bauchi Local Government Area.

Recommendations

As a result of the objectives and the findings of this study, the following recommendations are hereby offered with the hope that if implemented will enhance the knowledge and attitude of mothers towards the immunization of their children against the childhood killer diseases in Bauchi Local Government Area of Bauchi State and in Nigeria as a whole:

1. Government should employ more health officials, such as nurses to meet the World Health Organization (WHO) health staff ratio of one nurse for four patients as the numbers is grossly inadequate.
2. The health personnel should be professionals enough and have good manners of approach not to use harsh and abusive words on mothers who take their children for immunization in hospitals/clinics.
3. The health facilities for immunization should be established and evenly distributed across wards in Bauchi Local Government Area as other Local Government Areas, as already existing ones are inadequate.
4. Government should intensify more awareness on the importance of immunization against childhood killer diseases.

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