

## Factors Associated with Polio Immunization Resistivity in Kano State, Nigeria

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**Abstract:** This study attempted to identify the factors and reasons responsible for immunization rejection on the part of parent and the entire community and at the same time studying and investigating the factors that influence compliance and resistivity of community engagement towards polio immunization programs. This may range from individual to social context which include perception, education, religion and social culture. The methodology of this research is quantitative and statistically descriptive survey design approach. The entire population was divided into different subgroups or strata and then the respondents were randomly selected as the final subjects proportionally from the different strata, using a structured questionnaire administered within the sampled population of 384 households, with at least one child less than five years in their houses. The questionnaire involved questions to either father or mother in every family. The analysis was done at two levels: (a) univariate analysis, (b) bivariate analysis. The univariate analysis consists of frequency distributions and the use of Pearson correlation to examine relationships between the total scores outcome of socio economic status, education, health and information, perception and sociocultural beliefs, government roles, with community participation in polio immunization variable. Using the parameter of mean indicator, perception and sociocultural economic is the highest social factor, with a positive correlation to community participation in polio immunization program with Pearson coefficient  $r(372) = 0.708$ , at significant level  $P = 0.000$ , negative but significant association between socioeconomic and participation in polio immunization as  $r(372) = -0.316$ . The study concludes that sociocultural beliefs and parental attitudes do not necessarily affect child immunization, but educational status and socio economic influence are the intruding factors that affect the total immunization and polio eradication coverage within rural communities.

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**Key words:** Polio • Resistivity • Immunization • Sociocultural • Mass Immunization Program

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### INTRODUCTION

Community participation in any society will be used to assess some factors for or against efficient polio immunization. The research will trace the social and environmental factors in relation to community participation in polio immunization; these include illiteracy level of parents, poverty, political propaganda, religious and sociocultural beliefs, as well as health organization that employed temporary personnel [1]. The government policy from Federal, State, Local government level to sponsor and monitor the immunization programs

are not given the due priorities, because of the political influences. An immunization is one of the major public health interventions to prevent childhood morbidity and death. The Expanded Program on Immunization has gathered momentum worldwide since 1974. The range of vaccines in the program is being expanded in the years to come. All across the globe, a high level of vaccination coverage has been reached and now needs to be sustained. In part, the coverage has been made possible by the broad acceptance of vaccinations, although there are variations resulting in different configurations of fully, partially and non-immunized children [2]. Using the results

of studies carried out by the Social Science and Immunization Project in Bangladesh, Ethiopia, India, Malawi, the Netherlands and the Philippines, shows patterns of vaccination acceptance and non-acceptance. Among the factors and reasons that contribute to the difficulties in eradicating polio in northern Nigeria is the distrust claim about the safety of the western biomedicine, which also tended to attribute resistance to the polio campaign in Nigeria to Muslims leaders [3]. Recent analyses of the polio campaign in Northern Nigeria have discussed the problems of these interventions in a broader sociocultural and political context [3]. The research will show how context affects acceptance of vaccinations and analyses the underlying reasons behind refusal and resistance and also to develops conceptual tools for the analysis of acceptance and non-acceptance and discusses explanatory theoretical perspectives. Poliovirus is a member of the enterovirus subgroup, family Picornaviridae. Enteroviruses are short-lived inhabitants of the gastrointestinal tract and are stable at acid pH, which has affinity to the nervous system. The poliovirus is rapidly inactivated by heat, formaldehyde, chlorine and ultraviolet light. The transmission system of the virus is primary mouthhand multiplication of the virus occurs at the site of implantation in the pharynx and gastrointestinal tract. The virus is usually present in the throat and in the stool before the onset of illness. Patients do not experience sensory losses or changes in cognition [4]. Maternal and child health outcomes in Nigeria are among the worst in the world. This is due to short of health facilities, poor transportation to health institutions, socioeconomic instabilities that will be used to pay for health services and resistance of some population to adopt modern medicines and these are considered as the main factors behind child mortality and morbidity [5]. Communities contributes immensely on any health intervention prefer and retain ownership of health related activities. Effective interventions are achieved when community supports the identified health needs (problems), priorities, capacity and any barriers to action. Community participation relies on good understanding of the communities, groups and individuals to collaborate with the ideas, analyses and identified problems, drafts the possible solution through resources derivation to implementation and evaluation, therefore the study will also review the poverty attributes, political propaganda and polio vaccination conspiracies theories, religious and sociocultural beliefs, attached to polio immunization programs, not to forget that regional disparities exists in health services delivery and resources availability [5].

## MATERIALS AND METHODS

This study was a cross-sectional survey and the participants 378 were members from the different households within different rural settings in some selected local governments in Kano State, Nigeria. The instrument used for the data collection was a designed structured questionnaire. The research objectives are to identify the factors that contributes to community participation in polio immunizations in Kano state, Nigeria, to examine the relationship between perception- beliefs and community participation in polio immunization programs in Kano state, Nigeria and to examine the significant role of government towards community participation in polio immunization programs in Kano state, Nigeria.

## RESULTS AND DISCUSSION

**Demographic Information:** In the Table below the frequency distribution indicates that majority of the respondents (79.60%) were males while the rest are females with total population of 378.

Table 2 below shows the distribution of the respondent range of ages, were the average ages fall between 36-45, frequencies of 175 with (46.3%) of the whole sample of population 378.

The Table 3 below is frequency and percentages categories of respondents with different marital status ranging from 308 (81.5%) married, 24(6.3%) divorced and 46 (12.2%) widowed out of the total sample population.

Table 4 below shows that, out of the total sample population 242 (64%) are Hausa by tribe 132 (34.9%) and 4 (1.1%) mostly the minorities and Hausa were the majority among the tribes, which has an influential effect on community participation in polio immunization.

Table 5 shows the significant majority of the respondents were found to be generally Muslims, as the land was dominated with Hausa/Fulani tribes and absolute zero Christians out of 378.

Table 6 reveals that 292 (77.20%) of the parents possessed children within the ranges 0 - 4 children per households and 86 parents has 5 – above children eligible for polio immunization that account to (22.80%) of the total sample.

**Factors That Contribute to Community Participation in Polio Immunization, Kano State Nigeria:** The following tables provide statistical analysis of five variables to be correlated with dependent variable community

Table 1: Distribution of Respondents by Sex

Sex	No. of Respondents	% of Respondents
Male	301	79.60 %
Female	77	24.40 %
Total	378	100 %

Table 2: Distribution of Respondents by Age

Age	No. of Respondents	% of Respondents
25-35	128	33.9
36-45	175	46.3
46-above	75	19.8
Total	378	100%

Table 3: Distribution of Respondents by Marital Status

Marital Status	No. of Respondents	% of Respondents
Married	308	81.5%
Divorced	24	6.3%
Widow	46	12.2%
Total	378	100%

Table 4: Distribution of respondents by ethnicity

Ethnic	No. of Respondents	% of Respondents
Hausa	242	64%
Fulani	132	34.9%
Others	4	1.1%
Total	378	100%

Table 5: Distribution of Respondents by Religion

Religion	No of Respondents	% of Respondents
Islam	378	100%
Christianity	-	0%
Others	-	0%
Total	378	100%

Table 6: Distribution of Respondents by Number of Respondents' Children

No. of Child	No. of Respondents	% of Respondents
0-4	292	77.20%
5-Above	86	22.80%
Total	378	100%

Number of children eligible for polio immunization

participation in polio immunization program in some selected local government in Kano state of Nigeria. The results of the data synthesis were presented according to the research questions and objectives and the research findings also provides a broad synthesis of outcomes associated with community participation in polio immunization in rural areas. The information is displayed in matrix form, but was transformed to suitable tables for easy comprehension.

Based on the questionnaire scale distribution, the above factors were justified using the scale of High and Moderate. The values assign to each factor were derived from the statistical descriptive analysis of computing and

summation of the individual score of the respondents on every question, in order to find the average mean of the categorical data variable. From the above computation, perception and sociocultural economic is the highest social factor, based on the respondents opinion, with an average mean of 2.7102. Role of government is also a high factor based on the community opinion, with an average mean value of 2.5781. Health information and communication is among the moderate factors with considerable average mean of 2.3379. Socio-economic factor is within the moderates' factor with a total average mean of 1.7497. The last and the lowest is the educational factor that exhibits an average mean of 1.4072.

Table 7 provides descriptive statistics of the identified factors involved and related to community participation in polio immunization (number of sample population, minimum statistics, maximum statistics, mean statistics and lastly standard deviation). Maximum mean scores and mean statistics of the five variables were computed and are used for correlation analysis, excluding the dependent variable, community participation in polio immunization (CPPI).

Table 8 presents high and significant statistical association between perceptions and sociocultural beliefs and community participation in polio immunization in a computed correlation. The Pearson coefficient is  $r(372)=0.708$ , the significant level  $P=0.000$ , with total number of  $N=372$ , maximum mean score of 41, statistical mean 28.09, mean standard error 0.339 and the standard deviation of 6.533. It can also be deduced that perception and sociocultural beliefs has a highly direct positive correlation with community participation in polio immunization, which means that people with high perception and sociocultural attachments were tend to positively inclined to polio-immunization programs for the purpose immunizing their children against poliomyelitis disease.

Furthermore, the study showed that perception and parental belief towards immunisation is the major reason for incomplete immunisations among Nigerian children, according to the research analysis and findings 23.8% of parents strongly agreed, 32.3% agreed, that polio is halal and beneficial, 11.1% disagree. 48.7% of the respondents agreed that polio keeps children healthy and should be made compulsory, despite the facts that 55% of the respondents believed polio vaccine has side effects, but 39.2 disagree that religious and cultural reasons deter people from accepting polio immunization. There are so many findings that reports the barriers of completion of child immunization include poor knowledge, sociocultural

Table 7: Factors involved on community participation in polio

Average Mean.	Number	Minimum	Maximum	Mean	Standard Deviation
Perception & Culture	378	1.64	3.64	2.7102	0.52019
Role of Government	378	1.38	3.75	2.5781	0.67013
Health information	378	1.50	3.00	2.3379	0.24636
Socioeconomic Status	378	1.13	2.25	1.7497	0.27698
Educational Status	378	1.00	1.82	1.4072	0.20582

Table 8: Relationship between Perception and Sociocultural Beliefs with Community Participation in Polio Immunization in Kano State

Sample	Correlations	Pearson coefficient	P. Value	Mean score	Sig. value
372	Perceptual beliefs & participation	r = 0.708	0.000	28.09	0.01
				12.88	

Table 9: The Role of government Influence towards Community Participation in Polio Immunization

Sample	Correlation	Pearson coefficient	P. Value	Mean score	Sig. value
339	Government & participation	r = - 0.370	0.000	19.17	0.01
				12.88	

Table 10: Correlation between Health Information Communication and Community Participation in Polio Immunization

Sample	Correlation	Pearson coefficient	P. Value	Mean score	Sig. value
338	Health Information & participation	r= 0.481	0.000	14.36	0.01
				13.15	

attitude and perception of health facility support [6]. Attitudes and beliefs are synonyms to one another and often influence the behaviour of human being towards a decision making. Attitudes of people is the most influential factor that determine the success of innovation adoption like polio immunization. Nurses reported that sociocultural believes are the major constraints to acute flaccid paralysis. In African countries alot of people still believed in superanatural causation of diseases attributitng them to evil forces. Nature of attitudes (positive or negative) and religious/traditional beliefsindicates the degree of participation (respondents) in polio immunization develops specific attitudes towards acceptances or rejection of polio immunization programs in Nigeria. Some studies found that the respondents found to have a positive attitudes towards children polio immunization [7] and those parent’s revealed that their work, religious beliefs and cost did not affect their positive compliance towards community participation in polio immunization. While in another study revealed that majority of the women indicated that cultural attitudes of wife beating is never acceptable and has correlation with more likely to have their child fully immunized than those who believed wife beating is acceptable [9]. Mothers and generally parents beliefs towards polio immunization was quite encouraging, in a surveys studies carried out indicate that 98.7% of the mothers have favorable disposition to immunization, 80.9% of the respondent mothers will continue to immunized their children despite

the adverse effects [9]. [7] revealed in his studies that 59% of the mothers agreed that paralytic poliomyelitis child should be accepted as normal child in the society and immunization is the solution to this problem for the generation, (new born/neonates), parent’s believed that they can advise their fellow women to receive immunization for their children [10], others were convinced that immunization is necessary for their children [10] and majority of the respondents mothers rejects the view of spiritual witches or evils attack about the nature of paralytic poliomyelitis [7] some surveys also reported that parental religious beliefs did not affects their decision for child immunization and even some mothers disagreed with the notion that mothers occupation constitutes obstacles to their participation and compliance to child immunization [8] strongly agreed that seeking medical help is the best treatment option for children with paralytic poliomyelitis not spiritual and witches [7]. But some studies reported some respondent whom thought polio vaccine/ immunization caused HIV/AIDS [10]. Mothers attitudes towards polio immunization program and children who suffered from polio attack resulting to partial or total paralysis does not believed the physical deformity is result of spiritual witches or evil [7]. Religious and cultural beliefs had shown that health seeking behavior is in line with the Islamic and Christian jurisprudence. It is also encouraging to state that adverse effects reaction does not be regarded as illness worth than poliomyelitis, as stated some

mothers to continue taking their children for vaccination even if the side effects persist [9]. A majority of the nursing mothers were greatly convinced that immunization is necessary to children from 0-5years olds [10]. Apart from this there is sociocultural discrimination in some societies that male children have more chances to be immunized than the female children [11, 12].

This is a statistical relationship between role of government and community participation in polio immunization using a Pearson correlation coefficient with two tailed significance levels. The Pearson coefficient is  $r(339) = -0.370$ , with significance value  $P = 0.000$ , in a sample of 339, maximum score of 16, mean standard error of 0.114 and mean of 19.17, standard deviation 2.095, which is medium effect size and low, negative and significant. This entails that there is low but negative significant association between the roles of government towards community sensitization, orientation on community participation in polio immunization.

High density of corruption within the government civil servants and officials and across the community, health workers and traditional/community leaders and politicians contribute to high resistivity of polio immunization in northern Nigeria. The government does not recognize and acknowledge the risks and negative effects involved in epidemic nature of poliomyelitis disease, Acute Flaccid Paralysis (AFP) and these negligence raises doubt about the position, honesty, benevolence and integrity of government to implement and make polio immunization compulsory to its citizens, although there is vaccine that is safe and perfectly potent, without risk or administering error [13]. These findings show that there is low level of political commitment to the NPI by the policy and decision makers the local government level. There is need for good collaboration between health workers and non-health workers, community leaders, women's, groups, youth groups, NGO, education and information sectors should be involved. This is in consistent with studies that revealed the obstacle of under supply of vaccines and used for repeated visits often lead to incomplete immunization of children in Nigeria. The unavailability of vaccines was as expected more of problem in our rural community and shows the greatest logistics problem faced in supplies to reach communities for overall immunization coverage [14]. There is also a problem of staff loading or under loading because density of health workers increases immunization coverage [15], government should have to make hospitals and clinics available to reduce human stress of covering long distances to access health delivery services, as

accessibility to the nearest clinics lead to immunization coverage [10]. There are so many factors that hinder the smoothness of polio immunization coverage in Nigeria; these include salaries and wages, allowances and adequate facilities. Some studies found that the greater is the extent of non-payment of salaries, the higher is the likelihood that facility staff in fact behave as private providers-with more services provided outside the facility through home visits [15]. We found some evidence that active community participation in health service delivery may make staff more responsive to community health needs and increase overall productivity of facilities, communities were particularly active in participating in health service delivery, whose population largely lives in rural areas and depends heavily on public institutions of service delivery. This is also inconsistent with survey evidence which showed that the incentives of frontline service providers, that are the health staff, are typically blunt, in that there is no apparent local judgment to reward good performance [14].

The mean standard error is 0.76,  $r(338) = 0.481$ ,  $P < 0.000$ , with total score of 19 and statistical mean of 14.36, signifying a positive relationship between health information communications and community participation on polio immunization in accordance with Cohen's (1988) guide lines. It also means that health information and communication helps in shaping the negative ideology of resisting and rejecting modern medicines for disease immunization especially poliomyelitis vaccine, mean while encouraging the parents to submit their children for oral polio immunization.

In parental decision making, there are some determinants that weigh the level and degree of autonomy in decision making, these include contradictory information, lack of reliable information and lack of access to a medical practitioners and suspicion of fear of adverse reaction. The communication strategies used for the campaign shows that the coalition between education and information parastatals and health for the child survival was beneficial [16]. According to study findings from various researchers concerning the motive role of human awareness, information and communication on any innovation. Information play a key role in adoption of innovation especially issues related to health promotion and health seeking behaviour. Polio immunization program had under gone through so many challenges socially, politically, religiously and to the cultural perception. Levels of awareness in a community tend to determine the level of health status, development and productivity. So many studies was conducted and proved evidently

Table 11: Correlation between Socioeconomic Status and Community Participation in Polio Immunization

Sample	Correlation	Pearson coefficient	P. Value	Mean score	Sig. value
337	Socioeconomic & participation	r= - 0.388	0.000	12.88	0.01
				22.48	

Table 12: Correlation between Educational Status and Community Participation in Polio Immunization

Sample	Correlation	Pearson coefficient	P. Value	Mean score	Sig. value
378	Educational status & participation	r= 0.578	0.000	3.93	0.01
				12.88	

that majority of the mothers 80% [9] knew and are aware about the reasons why children are immunized. In another study most mothers 89.8% knew that the major content of the vaccines substances could help prevent the killer disease [9] also another study indicate that 81.1% of the parents acknowledge that children who did not obtain or had a incomplete immunization are at risk of poliomyelitis, [7], 100% of the respondents mothers are aware about the benefit of immunization, [17]. Similar findings had also indicates that 100% of the respondents were conscious of where to get immunization., 93.8% [10] are aware of the immunization and 98.1% said immunization could prevent disease, 77.8% [17] of the mothers are aware and recognised the benefit of immunization as prevention of disease. Similarly one study found that 81.2% [18] of the respondents had know the reasons of immunisation. Another study report 72, 7% [11] of the mothers are aware of the polio information through health workers. Some other studies varified that 82.5% [7] of the respondents parents knew that paralytic poliomyelitis mainly affects children under 5years of age. Of note, 79.6% [17] of the nursing mothers are aware of BCG, similar result also supported mothers awareness of 82.5% [10] of the respondents mothers knew that immunization could administered as an injectable and mouth drop, in contrast with this study, 12.8% of the mothers knew BCG is being given at birth. Generally however 77% of the women in the selected rural communities have heard about the National Program of Immunization NPI in one way or the other [19].

There is statistical sample  $N=337-2=335df$ , maximum score of 18, mean score of 14.29, mean standard error of 0.114, with standard deviation of 2.087, Pearson coefficient  $r(337)=-0.388$ , and  $P<0.000$ . This indicates that there is a significantly negative relationship between socioeconomic status of parent and community participation in polio immunization. The direction of the correlation is positive which shows a medium effect size by considering Cohen's 1988 guidelines.

Table 11 is a statistical analysis of the socioeconomic status in relation to community participation in polio immunization within the sample  $N=337-2=335df$ , maximum

score of 18, mean score of 14.29, mean standard error of 0.114, with standard deviation of 2.087, Pearson coefficient  $r(337) = -0.388$  and  $P<0.000$ , indicates that there is a significant negative relationship between socioeconomic status of parent and community participation in polio immunization. The direction of the correlation is negative which shows a medium effect size by considering Cohen's 1988 guidelines. Several aspects of community living situations of any family, contributes possibly to the spreads of infectious diseases that are prone to environmental challenges. House congestion, houses constructed with mud and old fashion design, inadequate/poor ventilation system, inappropriate and unhygienic sewage or drainage system contributes heavily to the spread of child to child diseases especially poliomyelitis which is contagious in nature mostly faeco-oral [2]. House constructed with cheaper and local construction materials are normally associated with poor immunization coverage of polio immunization. This results also displayed that majority of the participants used fit latrine toilet system, or others to include defecating in the bush, gutter, or back yard farm that may result to possible faeco-oral disease transmission among the family, which is in conformity with. High human immunity is highly associated with socioeconomic status of a family, because polio antibody seropositivity studies conducted during seroprevalence was found to be significantly associated with high socioeconomic status and immunization have been found to be a single most important determinant of seroprevalence and seropositivity to poliomyelitis virus serotypes and this could be linked to high or low socioeconomic, sociocultural and religious beliefs to fear of the immunization health consequence [20]. Nigeria has the highest number of polio cases to about 1143 case and the political situation increases the persistent cases of poliomyelitis due to some invariables factors that underlying political, religious, social and economic problems dwindling and sabotaging the global polio campaign initiatives. One of the socio demographic characteristics of the respondents, monthly family income was found to be an indicator of completion of child

immunization, which is similar to a research conducted by Renstein showed that income had consistently affected receipts of immunization [21]. Family income is also associated with immunization coverage levels, a low family income is also a risk factor for low immunization [11], because parent's with low households income are more likely to experience barriers during polio immunization especially transportation. This result also indicates that parents who reported lower household income were more likely to have children with incomplete immunization status than parents reporting higher household income. Children whose parent's held good jobs were more advantageous to be immunized compared to those in agricultural occupation and other labor works [22], immunization coverage is lowest among poor families and rural areas with poor dilapidated roads and these families are more likely to have many immunization dropout rates children with parents of high socioeconomic status were more prone to be fully immunized [23]. [24] had also revealed and conclude that educational level and occupational role of a child parent's is highly associated with full polio immunization coverage due to high level of awareness and knowledge about the importance of polio immunization consequently highly educated parent are more likely to give much emphasis on their children immunization and even make more efforts for the completion of their children vaccines dosage. This can be concluded that income has previously been associated with immunization coverage levels and low family income is also a risk factor for low immunization. Parents with lower household incomes are more likely to experience barriers, such as transportation or access to health care services that make staying up-to-date on immunizations difficult. The low income parents in this study that had incomplete immunization for their children may have done so because of similar barriers. Other socio-demographic variables were not associated with defaulting.

The direction of this was positive because  $r(378) = 0.578, P < 0.000$ , with the maximum statistical score of 6 and statistical mean score of 3.39, standard mean error of 0.70 and standard deviation of 1.354 and  $N\ 378-2=376$ , which means that children with educated mothers tend to received full polio vaccination and vice versa.

This signifies a significant association between educational status of parent and community participation of polio immunization, because level of education is also significantly related with level of adoption [1], which means that children with educated mothers tend to received full polio vaccination and vice versa. The findings of this study have showed significant positive

relationship between parent's education and full immunization status of their children. For instance, parent's with higher education was more likely to have fully immunized their children compared with parents without any formal education. A careful observation of the relationship between parent's educational status and community participation in polio immunization program to their children revealed the significant importance of parent's education concerning the health status and general well-being of their children. Women with exposure to little education (primary and secondary education) do have a positive attitude concerning full immunization of their children. The relationship was significant at both univariate and bivariate levels of analysis. [25], has the opinion that what is in mothers education which predisposes her to have children immunized, this is in line with the nature of her content of education, affiliation with modernity and social mobility. Conscious efforts and great commitment of educated mothers to fully immunize their children are one of those factors why scholars argued in the literature that women's education reduces child mortality because better-educated women tend to seek better prenatal and postnatal care, thus improving the survival rate of their children [26]. Maternal education is a good proxy for socioeconomic level of a family and it appears to be a great prediction of total children immunized within the family [27]. [25] revealed that the issue of polio and other disease immunization across the third world, mothers education had significantly exposes her to immunized her children, other factors may include affiliation with modernity, social mobility and the experience at which her education does or does not give her leverage/influence and power. It is the illiterate women whom are the most majority who bears largest amount of children and loses the most, fails to comprehend simple concept such as the meaning of the growth of chart, who cannot bring her child for immunization even when the services are made available, affordable and accessible [28]. This significant impact of maternal education on knowledge, perception and practice of immunization, mothers with formal education were more likely to be aware of childhood immunization compared to those who had no formal education. It could then be inferred that the more educated a population is the more it is likely to immunize her children thus resulting in higher immunization coverage [18]. A significant relationship was observed between level of education and awareness of community participation in polio immunization [10]. This is in line with some researches of other researchers like [29, 19]. Also this maternal education and knowledge

is important determinants towards vaccination coverage among children, fathers education is also vital, [30] and Caldwell stated that rural and urban differentials are of small importance once parental education has been controlled.

## CONCLUSION

Poliomyelitis is a vaccine-preventable disease that causes several medically attended illness, hospitalizations and death each year in Nigeria. Despite the effort and free distribution of polio vaccine to children, but the polio vaccine uptake is still faced with so many challenges and boycotts from social-economic, cultural, religious and political perspectives leading to total resistivity of accepting polio immunization among several communities that lead to high rates of child morbidity and mortality, as such much efforts need to be made. For this reasons, community mobilization program that relate to community participation in polio immunization has to be inaugurate in the various poliomyelitis endemic societies. Socioeconomic, sociocultural attitudes and beliefs, education and health awareness are strategic indices to be put in considerations and are vital in future polio immunization campaigns in Nigeria and Kano State in particular. Health seeking information and communication are also among the determinants for compliance with polio immunization and leveled among the greatest social challenges to eradicate poliomyelitis in Nigeria.

Many factors influence low polio immunization coverage, this study revealed that socio-demographic characteristics motivates parents to participate in children's polio immunization through indigenous parental beliefs, which, determine the attitudes and autonomic perception of control over their children's immunization. These indicate that parental education is a great reason for complete or incomplete polio immunization. Beliefs about ensuring immunity through immunization contribute strongly to favorable attitudes toward immunization acceptance. Beliefs in natural immunity and, to a smaller degree, concerns about the safety of vaccines contribute to unfavorable attitudes toward immunization and eventually to lower immunization rates [31].

There are several limitations in this study that include information on paternal and maternal education was not sufficient to evaluate the relationship between paternal-maternal education and community participation in polio immunization status. Household occupational status is based on the employment as skilled, semi-skilled, or unskilled worker who is a single individual rather than

a group or nuclear household pattern, which are normally based on the roles and contribution of adult household members.

Government and the community should focus and emphasize more on mother education, by educating mothers is directly helping to succeed in polio immunization coverage, which also lead to improvement of socio economic standard of the whole nation and drastic decrease of in the morbidity (deformity) and mortality rates of the future leaders. Community sensitization will sustain public awareness and exposure to the inevitable effects of poliomyelitis. Parental decision making should also be change by reducing the gap of communication and information dissemination to the community. Health seeking behavior should be encourage and implant in the mind of mothers through immense orientation and mobilization programs every time. Most parents are losing confidence and public trust is very important in promoting and improving public health. It is evident from this research that there is need for adequate community involvement towards community sensitization and mobilization on the effects and disastrous nature of Acute Flaccid Paralysis (AFP) victims and inculcation of mother's minds about the significant value and impacts of polio vaccines to the greatest immunity of their infants' children. Moreover emphasis should be placed on educating the community and in cooperating association, organization, social clubs, traditional leaders, occupational leaders in to the polio immunization activities. In addition future surveys should focus on assessing the opinion and behaviors of parents with respects to socio-economic characteristics in direct proportional relation to high rate of paralytic poliomyelitis victims in the society. Implementing adult education programs in the rural areas to wipe and reduce the rate of illiteracy, misguidance, unawareness and conservatives attitudes from different communities in Nigeria. The government at all levels should review the curriculum in education and include professional social and psychological knowledge that will help health workers to effectively deliver modern services and practices to the patients. In the community context health seeking education, health living education is to be encouraged so as to improve the individual and community health status.

In conclusion, there is need for advocacy, sensitization and full strength of awareness campaign through incorporation of traditional leaders, religious scholars and various youth associations in the planning and implementation to evaluation stage of polio immunization program especially in the third world

countries like Nigeria. Extra efforts has to be induce to raise the maternal education level in urban and rural areas through formal or non-formal educational settings, so as to improve the positive and rational thinking of the nursing mothers towards the effects of the paralytic poliomyelitis among their children and this will reduce the morbidity and mortality rate of children across the nation. Community participation irrespective of gender can improve the level of polio immunization participation and total compliance and this can only be achieved through immense mobilization and total participation in the execution of immunization activities. Maternal and paternal education and good knowledge, positive attitudes and reasonable beliefs by both parents and nursing mothers will be change about the nature, causes and severity of paralytic poliomyelitis among community children. Most experts also suggested involving religious, community and political leaders in to the polio eradication program is highly essential. The majority of experts believed that more work has to be done in changing religious leaders and conservative families' minds, through conducting effective and quality campaigns.

The overall findings in this research should have to be considered in the light of the following limitations. First some factors which have not been discussed or overlooked in the present study may likely to be among the several and important factors associated with polio immunization resistance. Second, community relationship (heterogeneous or homogeneous) may likely to affect the likelihood of a full immunization within localities, that may include variables not measured or not measurable like quality of immunization services, efficient service delivery, availability of professional health workers, interracial marital relationship, vicinity of health centers to the rural settlements, accommodative behavior of health workers and integrity. The strength are worthy of discussion because the novelty of this study is beyond the previous research on the interrelationship of socioeconomic, sociocultural factors of polio immunization and community participation and some variable were only defined across the rural settings of the selected areas, so the results are therefore comparable across the state and nation.

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