



Study Of Indices Militating on Under-Five Immunization Services in Kontagora Local Government Area, Niger State Nigeria

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ABSTRACT

Immunization in Nigeria stands among the leading vital unrestricted health support and an economic approach to curtail both the rate of diseases and deaths related to childhood contagious diseases. Immunization services depend not solely on the rendering of these services but on diverse aspects which include perception, knowledge and compliance of caregivers. The study aims to examine the status of children immunization coverage, determine parents/caregivers' knowledge /awareness, perception influence and assess compliance. This was a cross-sectional study of under-five children aged 0-11 months of six selected wards in Kontagora LGA for five years. A structured questionnaire was used to collect information on socio-demography, immunization services, parents' Knowledge/awareness, perception, and compliance from the respondents. The results from 400 hundred respondents indicated that majority of children are not immunized. Pentavalent vaccine administered recorded the highest 365 (91.2%) of under-five children aged 0-11 not-fully immunized and BCG vaccine recorded the highest 165 (49.0%) of under-five children aged 0-11 months fully immunized. The majority 215 (54%) have knowledge of immunization services through the media, 198 (49.5%) perceived vaccine side effects on immunization and 140 (35.0%) non-compliance which caused a decline in childhood immunization status. The result of the hypothesis also shows non-statistical significance compliance on immunization schedule (P-value = 0.122, 0.202, 0.106 and 0.401). The study concluded that a large proportion of under-five children were not fully immunized for immunization. Mothers/caregivers' non-compliance on immunization schedule against the six killer diseases are the reasons acknowledged. The study recommended that continuous and intensive community advocacy through LGAs and PHCs should be embarked upon to improve routine immunization mobilization.

Keywords: Socio-cultural, Immunization Services, Under-five Children

INTRODUCTION

Immunization in Nigeria stands among the leading vital unrestricted health support and an economic approach to curtail both the rate of diseases and deaths related to childhood contagious diseases. Globally, it is reported that over two million deaths of infants and children below five years of age are averted through immunization every year (Tilottama and Madhulekha, 2017). Regardless of this, evidence from researches from other parts of Africa showed that vaccine-preventable diseases continue to be the notable basis of childhood mortality estimated at three million deaths every year (Ibnouf, Van den Borne and Maarse, 2017). Vaccines Uptake services depend not solely on the rendering of these services however on diverse aspects which include perception, knowledge and mentality of caregivers, the number of personnel, ease of access to vaccination centres and obtainability of

harmless vaccination kits (Barreto and Mensah, 2016). Also, vaccination uptake in low-income areas may be refused or delayed by some aspects including issues of side effect, self-confidence, self-satisfaction and convenience (Koskei *et al.*, 2018).

The work of Holly *et al.* (2017) demonstrated that children whose vaccination is delayed are probably poor, live in remote regions, and be from racial and ethnic minority people. Besides, other famous risk factors linked to little National averages on immunization which comprise fewer caregivers' education, lack of ability to get adequate transport services, single-mother

Received 18 September, 2021

Accepted 22 October, 2021

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family, absence of caregivers' consideration and delay on the immunization cycles (Wilsona, Patersona, Jarrett and Larsona, 2016).

There are various reasons for caregivers' refusal of children under five year's immunizations, which include inaccurate views regarding contra-signs, not ready to release children to apparent risks of immunization, and not ready to deliberately expose hale and hearty children to diseases (Tinashe, 2018).

Other studies revealed that some parents/caregivers especially 'mothers' are in dispute with conventional medical practices. Some from this group believed in "natural healing" and have the conviction that it is normal for children to get infected with diseases and be treated naturally (Tinashe, 2018; Brown, Oluwatosin and Ogundeji, 2019). Also, Tinashe (2018) reiterated that others declined vaccination based on religious beliefs. Some groups of parents consider compulsory vaccination as an undesirable act undermining individual rights (Brown, Oluwatosin and Ogundeji, 2019). This is due to poor understanding and provision of immunization services (Regmi, 2017).

Immunization services are services to protect the individual, community and particularly under-five children from vaccine-preventable diseases through the provision of funds, vaccines, public education and technical support for immunization programmes by governments globally (Aigbe, 2018). This is a global mission but rarely achieved (Garba, Musa, Sakajiki and Edem, 2018). It is reported that over ten million children under five years die globally every year, of which forty-one percent of these deaths happen in sub-Saharan Africa, Nigeria inclusive (United Nations Children's Fund, 2017). Nigeria is reported amongst the nations with poor immunization services and coverage less than fifty percent and is also one of those with less childhood immunization coverage rates around the world (Aigbe, 2018). It is among the poorest globally in terms of immunization services and reporting rates (United Nations Children's Fund, 2017). In 2018, the Nigeria Demographic Health Survey (NDHS) report revealed very low coverage as verbal data sometimes have to be obtained from mothers/caregivers. The poor rates recorded are due to some factors mentioned in some studies. The study of Kabir and Ahamadu (2016) found that numerous factors

like inadequate knowledge/Awareness of vaccination, vaccine side effect and non-compliance slowed down smooth acknowledgment of the goals of immunization packages. In a related investigation led by Rasheed (2017) remarked that socio-cultural aspects like non-compliance and vaccine side effect also hindered and caused variations in the utilization of immunization services.

The utilization of immunization services is seen as the act of making practical and effective use of vaccines on children under-five years. However, this is never achieved due to some factors. In a study led by Oku *et al.* (2017) socio-demography factors like mother's age, child gender, marital and educational position of the mother were considered as factors influencing immunization utilization services. These influencers include compliance, perception and Knowledge/awareness which cut across all states and are mostly found in the northern region of the country (Rasheed, 2017).

In Niger State, immunization is said to be very low in coverage too. The report from State Emergency Routine Immunization Centre (STERIC, 2018) shows that the coverage is about forty-two percent recently and this is a result of emergency declared by the federal government in eighteen priority states including the state. Additionally, cultural factors seriously hampering its utilization as reported by the State Ministry of Health. Cultural factors were not considered at the beginning of the immunization campaign in northern Nigeria (Ahmed, 2016 and Endurance *et al.*, 2017) predominantly Muslim states including Niger state is and in particular Kontagora Local Government Area.

Hence, the need for this present study which seeks to analyze the socio-cultural factors influencing the utilization of immunization services in the Kontagora Local Government Area of Niger State. Given this, the current study intends to assess the following objectives: to examine the immunization status among children aged 0-11 months in Kontagora LGA; to determine mothers/caregivers' Knowledge/Awareness influence on childhood immunization services in Kontagora LGA; to examine vaccine perception on childhood immunization services in Kontagora LGA; and to assess mothers/caregivers' compliance on

childhood immunization schedule in Kontagora LGA.

The study only hypothesis is stated as H_0 : There is no significant mothers/caregivers' compliance on childhood immunization schedule in Kontagora LGA.

1.2 Conceptual Framework of the Study

The research work adopted and modified the logical model of socio-cultural factors affecting the utilization of vaccine which was advanced by Regmi (2017) and which takes a glance at four types of determinants namely general

perceptions, gender, religion & ethnicity, and lifestyle & socio-economic status. However, this study used socio-cultural factors influencing the utilization of immunization services. The rationale for using the framework was that it shows how utilization of immunization services is affected by four fundamental factors namely; Knowledge, Perception and compliance which provide relevant insight on the effectiveness of immunization services. Thus figure 1 below shows the conceptual framework of the utilization of immunization services of the study.

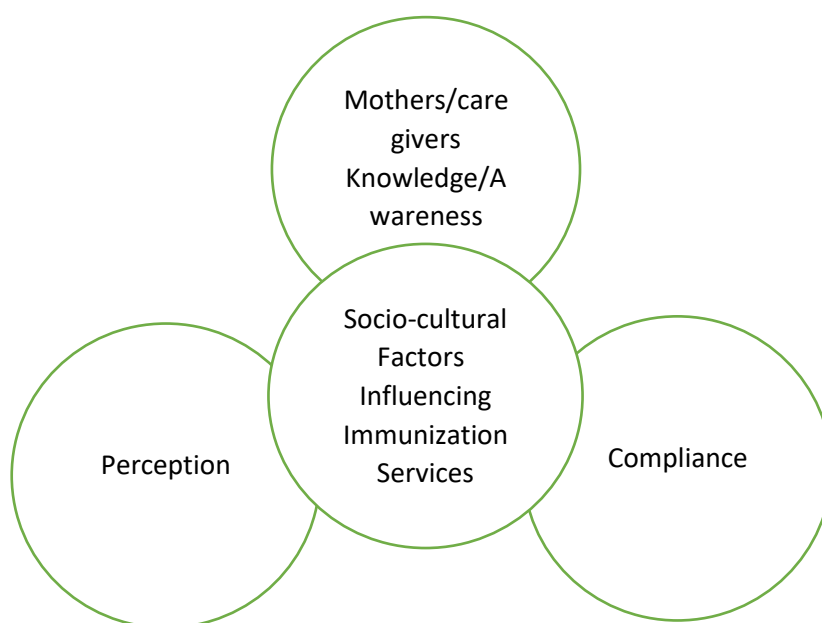


Figure 1: Conceptual Framework of Utilization of Immunization Services of Children under- Five Years of Age in Kontagora Local Government.

Source: Adapted from Regmi, 2017.

Study Area

Kontagora LGA is located between longitude $10^{\circ} 24'01''$ N and $5^{\circ} 28'11''$ N, and latitude $10^{\circ}40'00''$ and $5^{\circ}47'00''$. Kontagora LGA lies at about 335m above mean sea level and covers an area of 2,081 km². The local government area is surrounded to the north and east by Mariga LGA to the south by Mashegu LGA and the west by Magama LGA. It has a landmass of 2,081 km², making it one of the largest towns in Niger State. (NSG 2018.) See (Figure 2). The major ethnic groups are house and Kambari made of Muslims and Christians. Agriculture is the main occupation of the area. Other occupations in the area are trading and craft industries.

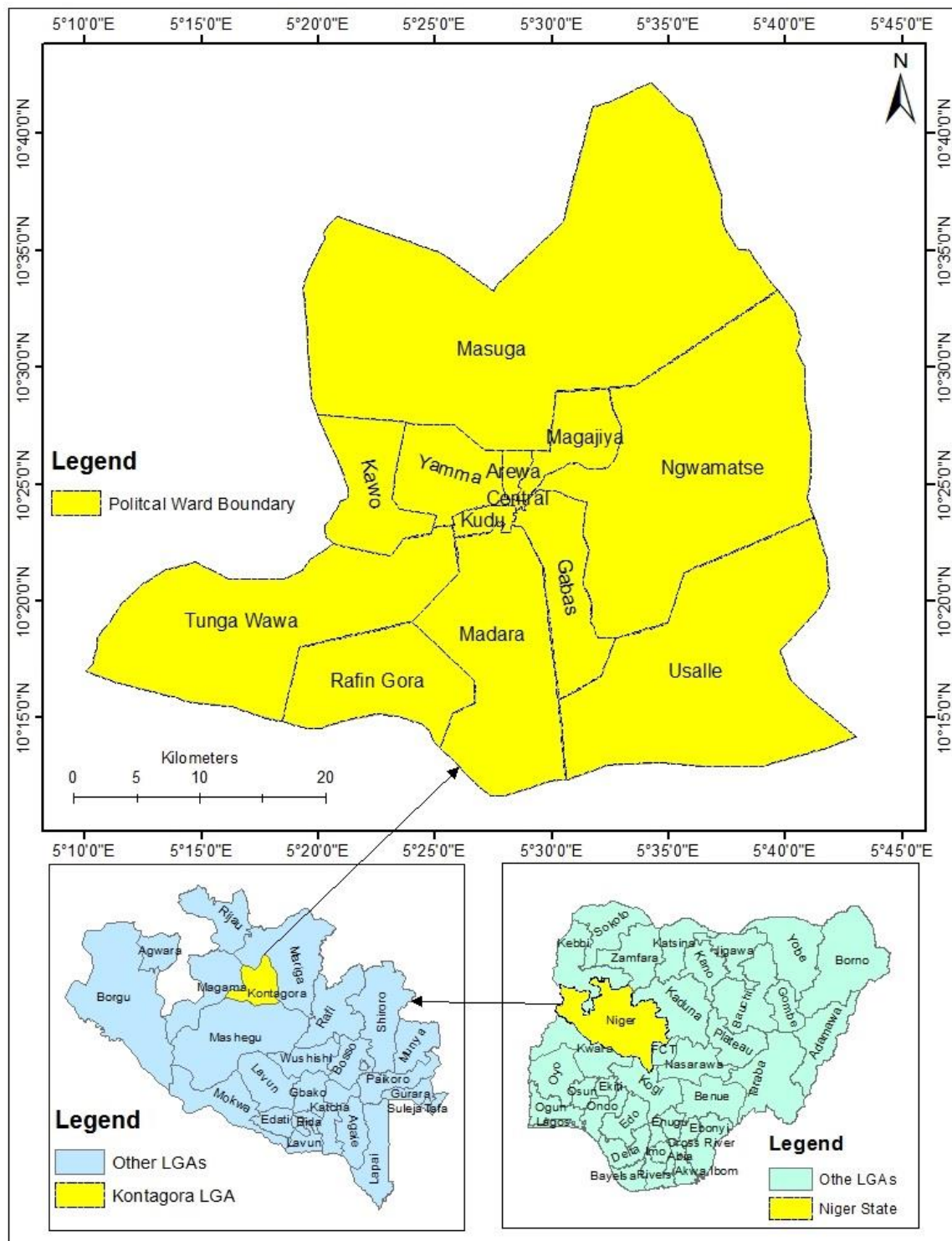


Figure 2. Kontagora LGA showing its over-laying settlements/communities **Source:** Adopted from the Administrative Map of Kontagora Local Government Area

METHODOLOGY

Data Collection

Ethical clearance was obtained from the Local Disease Control Division to use the data from Kontagora demographic Immunization Survey of 2018.

A Reconnaissance survey was carried out to have an ample understanding of the study area. The researcher gain from the survey of the locations of the immunization centres which include the main centre in the general hospital and Primary Health Centres (PHCs) across the 6

selected of the 13 wards of Kontagora Local Government Area. The main instrument for data collection was through the use of a well-structured questionnaire. Both open and closed-ended questions were used to illicit for information on socio-demographic data, used to examine the level of immunization coverage of under-five children aged 12-59 months in Kontagora LGA, and used to determine the impact of the socioeconomic position of the families and educational levels of parents on the utilization of immunization services.

Sampling Design and Questionnaire Administration

The study population is made up of 45,390 (STERIC, 2018) caregivers and guardians of children under five years from 15,130 household collected from the State Emergency Routine Immunization Control (STERIC, 2018) database. The sample size of 400 caregivers was drawn using Yemane (1967) sample size determination formula.

The survey covered under-five children caregivers who have lived for at least five years in the targeted communities. A multi-stage sampling technique was adopted in selecting the respondents for the study. The first stage involved the purposive sampling in the selection of six (6) out of the thirteen (13) wards in the area based on high, moderate and low immunization coverage as identified and categorized by the Preventable-Disease Control Division of the LGA.

In the second stage, eighteen (18) communities were randomly selected, three (3) from each of the six selected wards. While in the third stage, a systematic sampling of every 3rd household was used to select caregivers from the survey sample frame of the communities.

A total of 400 questionnaire copies were administered to mothers/caregivers of the under-five children. The questionnaires were administered and collected promptly in total. The exercise lasted for four months with the help of research assistance recruited. They were trained PHCs staff of concerned PHCs centres and administrators of immunization services. To ensure that data collected were correct, information on each respondent immunization card was cross-checked with corresponding PHCs available records obtained.

Steps were taken to guarantee the legitimacy and reliability of the instruments for data collection. To start with, the instruments were interpreted in Hausa, the predominant language. Second, the instruments were pre-tested for two weeks among mothers/caregivers of children in both rural and metropolis communities of Kontagora Local Government Area. Utilizing 10% of the determined sample size i.e. the questionnaires were then administered to 40 respondents. This is to make a chance to determine its fittingness to field circumstances after adjustments were made on the instruments.

Method of Data Analysis

The raw data generated from this investigation were analyzed utilizing both descriptive and inferential statistics. The descriptive method involves the use of frequencies, percentages, and charts; while the inferential analytical method employed the use of regression analysis to analyse hypothesis (P- Value ≤ 0.05) using Social Package for Social Sciences (SPSS) Version 20.0.

The dependent variables were constructed as follows: (a) fully immunized: equals 1 if a child received the six doses against vaccine-preventable diseases and zero otherwise, (b) BCG: 1 if a child received BCG and zero otherwise, (c) OPV: 1 if a child received the three doses of OPV and zero otherwise; (d) HBV: 1 if a child received the three doses of HBV vaccine and zero otherwise,

(d) DPT: 1 if a child received the three doses of DPT vaccine and zero otherwise, (e) Measles: 1 if a child was immunized against measles and zero otherwise. (f) Measles: 1 if a child was immunized against yellow fever and zero otherwise.

The study controlled for a number of independent variables guided by the previous literature. Caregivers' compliance on immunization was categorized into four outcomes as follows: 1= Compliance even when coincided with any marked day, 2= Non-compliance as schedule coincide with festival days, 3= Non-compliance as schedule coincide with market days, and 4= Non-compliance as schedule coincide with harvest days.

RESULTS AND DISCUSSION

Socio-demographic Characteristics of the Study Respondents

Table 2 shows the socio-demographic characteristics of the respondents with the majority of respondents (49.8%) fall within 15-30 years and the least (4.5%) were 55 years and above. The high percentage of the respondents between the ages of 15- 30 years could be because ages fall within women's reproductive age of young ones and most do what it takes to prevent them against killer diseases. Also, the table reveals that majority of the respondents (61.0%) mothers from urban areas while the least (39.0%) where mothers from rural areas. The table also shows that the Male child scored 56.8% as the highest percentage against Female child 43.2% reported from the respondents. This indicates that male children are held esteem by their parents as against their female counterparts.

The Table furthers reveals that 76.0% were married and only 0.8% were single. This is not unconnected with the fact that married mothers are in a better position to take the utmost care of their infants to adults. Moreover, the highest percentage of the respondents (78.2%) are Muslims as against Christian minorities (21.8%) which indicates that the area of study is predominantly Muslim settlement. Also, table 2 reveals that more than half of the respondents are Hausa speaking people followed by other minorities (26.0%) other than the remaining major speaking languages Yoruba and Igbo. From the respondents' distribution tables 2 also, 45.4% majorly farmers and 23.8% gainfully employed. While 19.0% and 11.8% are housewives and mothers/caregivers with other jobs. This is not unrelated to the fact that most people living in rural areas are predominantly farmers and those living in urban centres are housewives in this part of the country.

Table 1. Socio-Demographic Characteristics of Under-five Children

Variable	Frequency	Percentages (%)
Caregiver Age (Years)		
15-30	198	49.4
31-55	107	26.8
56 & above	95	23.8
Area		
Rural	156	39.0
Urban	244	61.0
Child Sex		
Male	227	56.8
Female	173	43.2
Marital Status		
Single	3	0.8
Married	304	76.0
Divorced	36	9.0
Others	57	14.2
Level of Education		
None	108	27.0
Primary Education	126	31.5
Secondary Education	92	23.0
Tertiary Education	74	18.5
Religion		
Muslim	313	78.2
Christianity	87	21.8
Ethnic Groups		
Hausa	214	53.5
Yoruba	53	13.3
Igbo	29	7.2
Minority (Kambari, Dakarkari, Nupe etc.)	104	26.0

Occupation

Farming	182	45.4
Formal Employment	95	23.8
Housewife	76	19.0
Others	47	11.8
TOTAL	400	100.0

Source: *Field Survey (2020)*

Immunization Status among Children Aged 0-11 Months of the Six Selected Wards

Table 2 noticeably reveals that majority of under-five children aged 0-11 months not-fully immunized. It also shows that pentavalent vaccine administered recorded the highest (91.2%) of under-five children aged 0-11 not-fully immunized and BCG vaccine recorded the highest (49.0%) of under-five children aged 0-11 months fully immunized. It further reveals that BCG (49.0%) and OPV (45.0%) are the major proportion of fully immunized vaccines administered/received by children aged 0-11 months. The implication is that both are the first

and concurrent vaccines administered immediately after birth in all or most health facilities. Also, it reveals the dropout period between BCG and Pentavalent of children aged 0-11 months observed to be 15.7%, indicating most mothers/caregivers decline their children from taking the Pentavalent vaccine due to the severe pain it inflicts on the children after its administration. However, measles and yellow fever vaccine records 24.5% and 15.7.0% fully immunized respectively. This proportion is achieved due to outreached campaigns. This is similar to Rasheed's (2017) findings. Similar also in Kenya, in the study of Tinashe (2018).

Table 2. Immunization Status among Children Aged 0-11 Months

Vaccines	Fully Immunized		Not-Fully Immunized		Total (N=400)	
	(n)	(%)	(n)	(%)	(n)	(%)
BCG	196	(49.0)	204	(51.0)	400	(100)
HBV	180	(45.0)	220	(55.0)	400	(100)
OPV	93	(23.3)	307	(77.0)	400	(100)
Pentavalent	35	(8.8)	365	(91.2)	400	(100)
DPT	38	(9.5)	362	(90.5)	400	(100)
PCV	55	(14.0)	345	(86.0)	400	(100)
Measles	98	(24.5)	302	(75.5)	400	(100)
Yellow Fever	63	(15.7)	337	(84.3)	400	(100)

Bacillus Calmette-Guérin (BCG), Hepatitis B Virus (HBV), Oral Polio Vaccine (OPV), Diphtheria, Pertussis, and Tetanus (DPT) and Pneumococcal Conjugate Vaccine (PCV)

Source: *Field Survey (2020)*

Determination of Mothers/caregivers Awareness on Immunization Services

Table 3 shows that media outlets have the highest proportion of 54% of mothers/caregivers' awareness of immunization services. This indicates the modern trends people get knowledge/awareness of healthcare deliveries. The study of Brown, Oluwatosin and

Ogundeji (2019) finding is in agreement with the current expression. The table further shows health centre staff, family members/neighbour, and immunization cards as other channels/means of getting reasonable knowledge/awareness on immunization services in the study area. Aigbe (2018) similarly found the same to be complementary.

Table 3. Mothers/caregivers Knowledge/Awareness on Immunization Services

Factors	Frequency	Percentages
Media (radio, television, newspapers and social media)	215	54.0
Health centre Staff	75	19.0
Members of Family/Neighbour	38	10.0
Health Volunteer in the Village	19	5.0
Immunization Cards	28	7.0
Religious/Worship Centres	15	4.0
Total	400	100

Source: *Field Survey (2020)*

Mothers/caregivers Perception on Immunization Services

Table 4 reveals that the majority (49.5%) of mothers/caregivers believes that benefit from immunization administration to children majorly influenced them to get their children immunized. This is due to an increase in awareness about immunization and immunization schedule as information access is greatly achieved. Besides, perceived vaccine side effect (24.25%), perceived susceptibility (18.75%) and threats (7.5%) scared caregivers away from inoculating their children. Similar findings in Endurance *et al.* (2017) study; Regmi (2017) identifies vaccine side effects as a major factor that account for caregivers' fears to inoculate their children.

Table 4 Mothers/caregivers Perception on Immunization Services

Factors	Frequency	Percentages
Perceived side effect	97	24.25
Perceived susceptibility	75	18.75
Perceived threat	30	7.50
Perceived benefit	198	49.50
Total	400	100

Source: *Field Survey (2020)*

Mothers/Caregivers Compliance on Immunization Schedule

Table 5 present the compliance and non-compliance on immunization schedules. It shows that 12.5% of mothers/caregivers complied with the immunization schedule. While 28.5%, 24.5% and of mothers/caregivers do not complied with immunization schedule when it coincide with festive and market days respectively. Majorly, 30.5% of mothers/caregivers do not complied with immunization schedule when it coincided with harvest days. This indicates that most mothers/caregivers are predominantly farmers. Kabir and Ahmad (2016) found that parents both living in rural and cities who are farmers rarely decline harvest day for any other engagement.

Table 5. Mothers/Caregivers Compliance on Immunization Schedule

Variable	Frequency	(%)
Compliance even when coincided with any marked day	50	12.5
Non-compliance as schedule coincide with festival days	112	28.5
Non-compliance as schedule coincide with market days	98	24.5
Non-compliance as schedule coincide with harvest days	140	35.0

Source: *Field Survey (2020)*

Regression Analysis on Mothers/Caregivers Compliance on Immunization Schedule

The Regression analysis shows that there is no significant mother/caregiver compliance on immunization schedule and as the P-value equals (0.122, 0.202, 0.106 and 0.401 respectively). Thus, the null hypothesis is

accepted. Therefore, there is non-compliance on immunization schedule. Others have found a similar result, in Sudan and Zimbabwe as demonstrated in the study of Regmi, 2017. However, Koskei *et al.* (2018) found a significant compliance on immunization schedule.

Table 5 Chi-square Results on Mothers/Caregivers Compliance on Immunization Schedule

Variable	Frequency (%)	P values< (0.05)
Compliance coincided with any marked day	50 (12.5)	0.122
Schedule coincide with festival days	122 (28.5)	0.202
Schedule coincide with market days	98 (24.5)	0.106
Schedule coincide with harvest days	140 (35.0)	0.401

Source: *Field Survey (2020)*

Conclusion and Recommendations

In conclusion, the findings of the study revealed that knowledge/awareness about immunization services in Kontagora LGA is found to be high amongst mothers/caregivers. Mothers/caregivers perception of vaccine side effects, susceptibility and threat found to be highly influencing the utilization of immunization services as information access plays a vital role but didn't translate into full compliance with immunization schedules, thus, affecting the immunization status of children in Kontagora LGA.

An unabated awareness campaign should be step-up to include information to help mothers/caregivers as the necessity of following through with immunization programs to curtail the nonchalant attitude of some parents/caregivers. Misconceptions by some parents/caregivers regarding vaccine side effects, susceptibility and threats borders on non-awareness of the nature of these killer diseases. Hence, social mobilization activity should be aimed at removing these misconceptions. Messages should be designed to provide mothers/caregivers. Interactive sessions should be organized to address the fear and concerns of mothers/caregivers. The programme providers should conduct advocacy to the local authorities to give greater attention to routine immunization services which are the part of PHC that is the direct responsibility of the LGAs to carry out community routine immunization mobilization.

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