



Predictors of Poor Childhood Immunization Coverage among Women in Bayelsa State

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ABSTRACT

The design of the research in this study is a correlation design. The study was conducted in the Bayelsa State. The study population comprises solely of women with child(ren) between the ages of 0 and 5 years in Bayelsa State which is estimated to be 1, 116, 200.9. (National Population Commission and National Bureau of Statistics, 2016; National Bureau of Statistics, 2018). According to the WHO, women of reproductive age account for 22% of the overall population, which stands at 501, 502. A simple random selection technique was employed to select 50% of the wards in each Local Government Area, totaling 55 wards. From the selected wards, 50% of the communities within each ward were also randomly selected, yielding a total of 53 communities; from each of the 53 communities, 20 women with at least one child under the age of five were conveniently selected to participate in the study, yielding a sample size of 1100. A self-structured questionnaire entitled “Predictors of Childhood Immunization Coverage Questionnaire (PCICQ)” with polychotomous response option based on the modified 4 point Likert scale using Very High Extent (VHE), High Extent (HE), Low Extent (LE), and Very Low Extent (VLE) which was responded to by women who have at least a child between 0 – 5 years and have resided in Bayelsa for at least six months. Cronbach alpha was used to determine the inter-item and inter-scale reliability of the questionnaire, with a co-efficient reliability index of 0.811. One thousand one hundred copies of the questionnaire were sent to the women to fill out the questionnaire, but 1078 were correctly completed and returned. Mean and standard deviation were used for research questions simple regression was used to test hypotheses at 0.05 alpha level using SPSS version 25. The findings revealed that adverse events following immunization, attitude of health workers and care givers occupation are significantly contributing to poor childhood immunization coverage. It is recommended that there is need to train and retrain health workers on how to manage adverse events and further train mothers to have knowledge of managing mild reactions in the absence of health workers.

Keywords: Childhood Immunization, Adverse events following immunization, attitude of health workers and care givers occupation

INTRODUCTION

Immunization is the process of developing resistance to infectious disease through the administration of an attenuated vaccine that stimulates the production of antibodies against the disease antigen. It provides protection against these diseases and aids in the development of an individual's immune system, which may be passive or active. According to the WHO (2019), vaccination coverage refers to the number of doses administered to a specified population during a specified time period. Immunization coverage is a metric used to determine the total number of people immunized against a specific antigen from the targeted or estimated population to be immunized. Nigeria has a high rate of child mortality, and Bayelsa State is no exception. The vast majority of these deaths are the result of vaccine-preventable diseases. To substantiate this, the Office of Bayelsa State Disease Surveillance and Notification reported that over 40 children died in the Angalabiri community in 2014 as a result of a measles outbreak, making measles the most prevalent epidemic disease in 2017. WHO and UNICEF have rated Bayelsa's vaccination coverage as inadequate across all rounds of routine vaccination and campaigns, and the state is experiencing a high rate of morbidity and mortality due to vaccine-preventable diseases.

According to Ophori et al. (2014), routine immunization of children in Nigeria's National Immunization Program is carried out using the following vaccines: BCG (Bacilli Calmette Guerin) - at birth or as soon as possible after birth, OPV (Oral Polio Vaccine) - at birth and at 6, 10, and 14 weeks of age, DPT (Diphtheria, pertusis, tetanus) - at 6, After receiving a BCG vaccination against tuberculosis; three doses of DPT to prevent diphtheria, pertussis (whooping cough), and tetanus; at least three doses of polio vaccine; and one dose of measles vaccine, a child is considered fully immunized. All of these vaccinations should be administered during the first year of life, over a five-visit period, including the doses delivered at birth. Children aged 12–23 months would have completed their immunizations and would be fully immunized under this schedule. Program monitors and international agencies consistently report that Bayelsa is underserved by immunization programs and is falling short of target coverage. It is possible that the low coverage of immunization programs is as a result of Adverse Events. Following Immunization (AEFI), health workers' and caregivers' attitudes toward their jobs may contribute to the health challenges that people face due to vaccine-preventable diseases.

Akwataghibe et al. (2019) asserted that AEFI is the best indicator of immunization completion. The majority of mothers whose children have had AEFI either refuse to attend immunization sessions with that child or are discouraged from immunizing other children, citing a need to pay more attention to the vaccination reaction. As a result, AEFI may be a factor in low vaccination coverage. Additionally, some mothers believe that vaccines are poisonous and that vaccinations kill children. Mothers are frequently uneasy with the attitudes of health care providers and are hesitant to allow such officers to attend to their children; such attitudes may have been displayed by the health worker in the community or during the mother's previous visit to the health facility, according to Akwataghibe et al. (2019). Such reactions from health care providers are not acceptable while immunization services are being rendered. A health worker's lack of rapport with mothers or community members may contribute to low vaccination coverage.

Bayelsa State is primarily a civil servant state, though other occupations such as trading, fishing, and agriculture exist. Their duty periods frequently overlap with their children's immunization sessions, and mothers who work these jobs to earn a living will prioritize their jobs over their children's immunization. According to Legesse and Dechasa (2015), the occupation of parents has a significant impact on vaccination coverage. Settlements in the interior are frequently denied information, making it more difficult for residents to obtain immunization information. However, families living in fishing camps without telephone connections do receive information whenever they visit the communities or come out on market days. Typically, health workers make arrangements in advance to send messages on market days preceding the immunization day (s).

According to Njeru et al. (2017), mothers refused to take their children for immunization due to fear of adverse reactions such as death or permanent disability following vaccination; additional reasons given by mothers include fear of fever and impotence following vaccination, and that immunization can result in

fever, death, disability, or impotence. This finding corroborated Oyo-ita et al. (2012), who stated that a major reason mothers do not immunize their children is fear of adverse reactions such as fever and convulsions following vaccinations: some mothers in Nigeria's Niger Delta communities reported refusing to take their children for immunization due to fear of adverse reactions such as fever and convulsions following vaccination. Amin et al. (2013) reported that Timor-immunization Leste's coverage is among the lowest in Asia, that the 2009/2010 demographic and health survey found that complete vaccination coverage in urban areas was 47.7 percent, compared to 54.15 percent in rural areas, due to caregiver knowledge, attitude, and perceptions; as well as barriers at immunization sites, health workers' attitudes, and insufficient understanding of their clients' needs. Numerous studies have established a correlation between this and vaccination coverage, though Larson et al. (2014) and Favin et al. (2014) discovered no correlation between caregivers/mothers' occupation and vaccination status. To this end, the study examined the predictors of inadequate childhood immunization coverage among Bayelsa State women.

Statement of the Problem

The immunization programmes are meant to reduce or eliminate these occurrences and it is observed that in every immunization programme, both routine and national immunization rounds, the health workers of different categories are fully participating and these problems (detection of vaccine preventable diseases, out breaks of measles and other vaccine preventable diseases, increased maternal and child mortality) are still experienced. Programme monitors and international agencies always report Bayelsa to be poorly covered in the immunization programmes and not meeting the desired targets. It could be that the poor coverage of the immunization programmes is responsible for the health challenges faced by the people due to vaccine preventable diseases. Then what could be responsible for the poor coverage?, If the factors responsible for low coverage are known and handled, coverage of immunization is expected to be better and there will be reduction outbreaks of vaccine preventable diseases including maternal and infant deaths. The researcher investigated the determinants of childhood immunization coverage among women in Bayelsa State.

Aim and Objectives of the Study

The aim of the study is to examine the predictors of poor childhood immunization coverage in Bayelsa State. The objectives of the study are as follows:

1. To determine the extent of Adverse Events Following Immunization (AEFI) as a predictor of poor childhood immunization coverage among women in Bayelsa State.
2. To ascertain the extent of attitude of health workers as a predictor of poor childhood immunization coverage of coverage among women in Bayelsa State.
3. To determine the extent of caregivers' occupation as a predictor of poor childhood immunization coverage among women with children under 5 years of age in Bayelsa State.

Research Questions

The following research questions guided the study:

1. To what extent are adverse events following immunization (AEFI) predictor of poor childhood immunization coverage among women in Bayelsa State?
2. To what extent are the attitudes of health workers predictor of poor childhood immunization coverage among women in Bayelsa State?
3. To what extent is caregivers' occupation a predictor of poor childhood immunization coverage among women in Bayelsa state?

Hypotheses

The following hypotheses were tested at 0.05 significance level

1. There is no significant relationship between Adverse Events Following Immunization and childhood immunization coverage in Bayelsa State.
2. There is no significant relationship between health workers attitude and childhood immunization coverage in Bayelsa State.
3. There is no significant relationship between caregivers' occupation and childhood immunization coverage in Bayelsa State.

METHODOLOGY

The design of the research in this study is a correlation design. The study was conducted in the Bayelsa State. The study population is The study population comprises solely of women with child(ren) between the ages of 0 and 5 years in Bayelsa State which is estimated to be 1, 116, 200.9. (National Population Commission and National Bureau of Statistics, 2016; National Bureau of Statistics, 2018). According to the WHO, women of reproductive age account for 22% of the overall population, which stands at 501, 502. A simple random selection technique was

employed to select 50% of the wards in each Local Government Area, totaling 55 wards. From the selected wards, 50% of the communities within each ward were also randomly selected, yielding a total of 53 communities; from each of the 53 communities, 20 women with at least one child under the age of five were conveniently selected to participate in the study, yielding a sample size of 1100. A self-structured questionnaire entitled “Predictors of Childhood Immunization Coverage Questionnaire (PCICQ)” with polychotomous response option based on the modified 4 point Likert scale using Very High Extent (VHE), High Extent (HE), Low Extent (LE), and Very Low Extent (VLE) which was responded to by women who have at least a child between 0 – 5 years and have resided in Bayelsa for at least six months. Cronbach alpha was used to determine the inter-item and inter-scale reliability of the questionnaire, with a co-efficient reliability index of 0.811. One thousand one hundred copies of the questionnaire were sent to the women to fill out the questionnaire, but 1078 were correctly completed and returned. Mean and standard deviation were used for research questions simple regression was used to test hypotheses at 0.05 alpha level using SPSS version 25.

RESULTS

Research Question 1: *To what extent do adverse events following immunization (AEFI) a predictor of poor childhood immunization coverage in Bayelsa State?*

Table 1: Mean and standard deviation analysis on Extent of adverse events following immunization (AEFI) a predictor of poor childhood immunization coverage in Bayelsa State

S/N	Items	RESPONSE				Mean (\bar{x})	Std Dev.	Decision
		VHE	HE	LE	VLE			
N = 1078								
1.	Fear for side reactions discourages immunization attendance.	327	304	230	217	2.69	1.11	Averagely High
2.	The abscess after vaccination discourages mothers attendance of immunization sessions	321	369	270	118	2.83	0.98	Averagely High
3.	Mothers are discouraged vaccinating their children because children are having unclear vision after vaccination	210	221	376	271	2.34	1.06	Low
4.	Mothers are discouraged vaccinating their children because children are having rashes after vaccination	420	263	259	136	2.90	1.06	Averagely High
5.	Mothers are discouraged vaccinating their children because children do vomit after vaccination	277	282	302	217	2.57	1.08	Averagely High
6.	Mothers are discouraged vaccinating their children because children are having unclear vision after vaccination	407	320	215	136	2.93	1.04	Averagely High
7.	Mothers are discouraged vaccinating their children because of fear of paralysis after vaccination	256	276	278	268	2.48	1.11	Low
8.	Mothers are discouraged vaccinating their children because fear of child going into coma after vaccination	256	268	269	285	2.46	1.12	Low
9.	Mothers are discouraged vaccinating their children because fear of child going into shock after vaccination	210	221	376	271	2.34	1.06	Low
10.	Mothers are discouraged vaccinating their children because fear of death of child after vaccination	423	260	259	136	2.90	1.06	Averagely High
11.	Children falling sick after vaccination discourages mothers from attending	357	364	286	71	2.93	0.93	Averagely High
Grand Mean						2.67	1.08	Averagely High

Table 1 shows that most of the items have positive response rates, since their weighted mean are greater than the criterion mean of 2.50 except item 3, 7-9. This result implies that for item 1,2,4-6,8-11 with mean 2.69, 2.83, 2.90, 2.57, 2.93 and 2.90, respondents agreed that fear for side reactions discourages immunization attendance. The abscess after vaccination discourages mothers' attendance of immunization sessions; mothers are discouraged vaccinating their children because children are having rashes after vaccination. Also, mothers are discouraged vaccinating their children because children do vomit after vaccination and mothers are discouraged vaccinating their children because children are having unclear vision after vaccination. On the contrary, the following in item 3, 7-9 were not the reasons mothers do not vaccinate their children, as most of the respondents disagreed since their weighted mean are less than the criterion mean of 2.50. That is, mothers are discouraged vaccinating their children because children are having unclear vision after vaccination; mothers are discouraged vaccinating their children because of fear of paralysis after vaccination; mothers are discouraged vaccinating their children because fear of child going into coma after vaccination and mothers are discouraged vaccinating their children because fear of child going into shock after vaccination. Nevertheless, the grand mean 2.67 affirm that to an averagely high extent adverse events following immunization (AEFI) is a determinant of poor childhood immunization coverage in Bayelsa State.

Research Question 2: *To what extent is attitude of health workers a determinant of poor childhood immunization coverage in Bayelsa State?*

Table 2: Mean and standard deviation analysis on Extent of attitude of health workers a determinant of poor childhood immunization coverage in Bayelsa State

S/N	Items	RESPONSE				Mean (\bar{x})	Std Dev.	Decision
		VHE	HE	LE	VLE			
N = 1078								
1.	Mothers are discouraged from attending immunization sessions because health workers are not keeping the facility ready	368	375	217	118	2.92	0.99	Averagely High
2.	Mothers get discouraged because of the delay in attending to them during immunization session	330	272	241	235	2.65	1.13	Averagely High
3.	Mothers get discouraged because of the manner in which health workers talk to them during immunization sessions	309	324	229	216	2.67	1.09	Averagely High
4.	Mothers get discouraged because health workers come late to immunization sessions	375	368	220	115	2.93	0.99	Averagely High
5.	Mothers get discouraged because of health workers are biased in attending to children during immunization.	289	255	316	218	2.57	1.09	Averagely High
6.	Mothers get discouraged because health workers do not attend to children during immunization	138	215	405	320	2.16	0.99	Low
Grand Mean						2.65	1.08	Averagely High

Table 1 revealed that respondents agreed that they are discouraged from attending immunization sessions because health workers are not keeping the facility ready; others get discouraged because of the delay in attending to them during immunization session; mothers get discouraged because of the manner in which health workers talk to them during immunization sessions. Mothers get discouraged because health

workers come late to immunization sessions and mothers get discouraged because of health workers are biased in attending to children during immunization with mean scores of 2.92, 2.65, 2.67, 2.93 and 2.57. However, the grand mean 2.65 shows that to an averagely high extent, attitude of health workers a determinant of poor childhood immunization coverage in Bayelsa State.

Research Question 3: *To what extent is caregivers' occupation a determinant of poor childhood immunization coverage in Bayelsa state?*

Table 3: Mean and standard deviation analysis on Extent of caregivers' occupation a determinant of poor childhood immunization coverage in Bayelsa state

S/N	Items	RESPONSE				Mean (\bar{x})	Std Dev.	Decisio n
		VHE	HE	LE	VLE			
N = 1078								
1.	Mothers' job does not permit attendance of immunization	347	307	216	208	2.74	1.11	Averagely High
2.	Mothers work and period of immunization always clash	328	284	231	235	2.65	1.13	Averagely High
3.	Immunization session closes before mother most mothers return from their work	308	319	216	235	2.65	1.11	Averagely High
4.	Mothers go to work early before immunization commences	215	248	349	266	2.38	1.06	Low
5.	Mothers don't compromise work for child's immunization	237	276	318	247	2.47	1.07	Low
6.	Most bosses do not spare time for mothers to go for child immunization	178	197	398	305	2.23	1.04	Low
7.	Mothers want to be present when their child is being immunized	322	280	241	235	2.64	1.12	Averagely High
Grand Mean						2.54	1.10	High

Table 3 indicated that the mean score of 2.74, 2.65 and 2.65 for item 1 – 3 agreed that mothers' job does permit attendance of immunization; mothers work and period of immunization always clash and immunization session closes before mother most mothers return from their work. While the respondents disagreed that mothers go to work early before immunization commences; they don't compromise work for child's immunization and most bosses do not spare time for mothers to go for child immunization with mean scores less than the criterion mean of 2.50. Hence, the grand mean of 2.54 shows that to an averagely high extent caregivers' occupation a determinant of poor childhood immunization coverage in Bayelsa state.

Hypothesis 1: There is no significant relationship between Adverse Events Following Immunization and childhood immunization coverage in Bayelsa State.

Table 1: Simple regression summary of relationship between Adverse Events Following Immunization and childhood immunization coverage in Bayelsa State

		Coefficients ^a			t	Sig.
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta		
1	(Constant)	1.693	.016		108.510	.000
	ADVERSE EVENTS OF IMMUNIZATION	.436	.005	.938	88.979	.000

a. Dependent Variable: CHILD IMMUNIZATION COVERAGE $Y = 1.693 + 0.436X$

Table 1 show that the standardized beta coefficient is 0.938 (it indicates the prediction of 93.8% of child immunization coverage). The regression equation on the table indicates that Adverse Events Following Immunization contributes up to 0.436 units to child immunization. The t-statistical value of 88.979 associated with simple regression is significant at 0.000 when subjected to the alpha level of significance of 0.05. This reveals that Adverse Events Following Immunization is a significant determinants of childhood immunization coverage in Bayelsa State.

Hypothesis 2: There is no significant relationship between health workers attitude and childhood immunization coverage in Bayelsa State.

Table 2: Simple regression summary of relationship between health workers attitude and childhood immunization coverage in Bayelsa State

		Coefficients				
Model		Unstandardized Coefficients	Standardized Coefficients	t	Sig.	
		B	Std. Error	Beta		
1	(Constant)	1.404	.204		6.899	.000
	ATTITUDE	.532	.065	.243	8.215	.000

a. Dependent Variable: CHILD IMMUNIZATION COVERAGE $Y = 1.404 + 0.532$

Table 2 show that the standardized beta coefficient is 0.243 (it indicates the prediction of 24.3% of child immunization coverage). The regression equation on the table indicates that health workers attitude contributes up to 0.532 units to child immunization. The t-statistical value of 8.215 associated with simple regression is significant at 0.000 when subjected to the alpha level of significance of 0.05. This reveals that health workers attitude is a significant determinants of childhood immunization coverage in Bayelsa State.

Hypothesis 3: There is no significant relationship between caregivers' occupation and childhood immunization coverage in Bayelsa State.

Table 3: Simple regression summary of relationship between caregivers' occupation and childhood immunization coverage in Bayelsa State

		Coefficients ^a				
Model		Unstandardized Coefficients	Standardized Coefficients	T	Sig.	
		B	Std. Error	Beta		
1	(Constant)	1.876	.019		98.399	.000
	CAREGIVERSOCCUP	.377	.006	.888	63.268	.000

a. Dependent Variable: CHILD IMMUNIZATION COVERAGE $Y = 1.876 + 0.377$

Table 3 show that the standardized beta coefficient is 0.888 (it indicates the prediction of 88.8% of child immunization coverage). The regression equation on the table indicates that health workers attitude contributes up to 0.377 units to child immunization. The t-statistical value of 63.268 associated with simple regression is significant at 0.000 when subjected to the alpha level of significance of 0.05. This reveals that caregivers' occupation is a significant determinants of childhood immunization coverage in Bayelsa State.

DISCUSSION OF FINDINGS

The research question which sought to determine the extent of AEFI as a determinant of poor childhood immunization coverage in Bayelsa state revealed that AEFI is to an averagely high extent a determinant of poor childhood immunization in Bayelsa state; Fear of side effects discourages mothers to attend immunization, reaction to vaccines, fear of paralysis after vaccination and child falling sick discourage mothers from attending immunization sessions. This findings is similar to Akwatahibe (2019) which states that adverse events following immunization is a very significant cause of vaccines resistance. Also supporting Tagbo et al (2013) where mothers believed that immunization is harmful and would not want to immunize their children after experiencing AEFI. The finding also corroborates Utazi et al (2019) which say immunization coverage was poor due to vaccine refusal but contrary to Tagbo et al (2013) which says despite the adverse events following immunization, most mothers still want their children immunized. This finding is an agreement with Malande et al (2019) which says health workers not properly handling AEFI cases contributed to the poor immunization attendance. This finding supports Abubakar (2013) which said AEFI was a very significant cause of vaccine resistance which led to boycotts of immunization attendance.

The research question which sought to determine the extent of health workers attitude as a determinant of poor childhood immunization in Bayelsa state revealed that health workers' attitude to an averagely high extent is a determinant of poor childhood immunization. Mothers were discouraged from attending immunization sessions due to health workers not keeping the facility ready, mothers get discouraged for keeping them waiting and not attending to them, he manner at which health workers talk to them discourages them, health workers coming late to attend to caregivers discourages them, mothers get discouraged because health workers are biased during immunization sessions . This finding is contrary to Montasser et al (2014) where caregivers had good relationship with health care providers. The study is in disagreement with Malande et al (2019) which says that health workers are committed, have good communication with mothers and willing to carry out immunization programs.

The research question which sought to determine the extent of care givers' occupation as a determinant of poor childhood immunization coverage in Bayelsa state revealed that to an averagely high extent care givers' occupation is a determinant of poor childhood immunization coverage in Bayelsa state where mothers' jobs do not permit them to attend immunization sessions, mothers work and period of immunization always clash, immunization session closes before mothers return from work and most mothers want to be present while their children are being immunized but their jobs do not permit. The finding is in support of Awoh and Plugge (2016) that says migrants are less likely to have complete immunization. The occupation of mothers make them to move from one place to another in search of greener pastures making them to miss immunization sessions.

CONCLUSION

Conclusively, childhood immunization coverage is seen to be low in Bayelsa State considering the selected determinants in this study. Adverse events following immunization, attitude of health workers and care givers occupation significantly contributing to poor childhood immunization coverage.

RECOMMENDATIONS

Based on the findings the following recommendations were made:

1. There is need to train and retrain health workers on how to manage adverse events and further train mothers to have mild reaction the absence of health workers.
2. Training and retraining of health workers is required for proficiency in the delivery of immunization and other health care services. Developing skills of health workers and immunization service providers in the area of behaviour change communication to enable them acquire more skills and competence in making community members adopt practices that are beneficial to them especially to their health.

3. Proper preparation of environment for immunization is required in order not to abuse the minds of mothers for subsequent visits.

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