ejpmr, 2016,3(5), 596-601

SJIF Impact Factor 3.628

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

SOURCES OF INFORMATION AND IMMUNIZATION COVERAGE IN BIDA EMIRATE AREA: A RURAL-URBAN COMPARATIVE ANALYSIS

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Article Received on 18/03/2016 **Article Revised on 09/04/2016** **Article Accepted on 30/04/2016**

ABSTRACT

The WHO projected that complete vaccination coverage should reach at least 90% of children at the country level and 80% in sub-areas by the year 2010. In 2013 a national survey reported that the full immunization coverage for Nigerian children was 25%. This is quite low considering the huge financial resources committed into it and as such raises concerns to identify the factors that may be responsible. The aim of this study therefore is to identify the role of sources of information in the determination of immunization status/coverage of children aged 12 – 24 months in Bida Emirate Area (BEA) of Niger state. We used Chi Square to establish the effects of sources of information and Multiple Logistic analyses was used to determine the likelihood effects of these factors on full immunization status of children in Urban/Rural communities of BEA. The analysis revealed that household visits by officials of immunization, getting information on immunization before delivery, attendance to health education, attendance to village meetings and receiving information on immunization from mass media were all significantly associated with immunization status of the child both in rural and urban BEA. The study recommended more advocacies through the mass media, village meetings and religious centers. Also the use of Short Messaging Services (SMS) to remind mothers/care givers on immunization schedules especially those who delivered in the health facilities should be exploited.

KEYWORDS: information, Vaccination, Immunization, Coverage, Bida Emirate Area, Rural, Urban.

1.0 INTRODUCTION

Vaccine Preventable Diseases (VPDs) have remained the major Childhood killer worldwide with over 3 million deaths annually.[1,2,3,4] A greater proportion of these numbers occur in Nigeria, putting her as one of the highest in the world accounting for more than a quarter.[4,5] In 1974 the Expanded Program on Immunization (EPI) was launched by World Health Organization (WHO) and became nationalized in Nigeria's National Program on Immunization (NPI) in 1996.[4,5] These programs were directed to expand the coverage and increase the number of antigens,[6] thereby promoting the expansion of immunization so as to reduce the incidence and mortality due to VPDs.[7] Over the years, several other programs have been initiated to complement the routine immunization processes, such as Reaching Every Ward (REW), Accelerated Measles Campaign (AMC) and Immunization Plus Days (IPDs) to ensure that vaccination reached all the target children.[5] These strategies and programs have gulped very huge resources placing Nigeria as the most expensive among developing countries to have a child fully immunized.[8]

Until recently under the NPI schedule, a child is said to be fully immunized if he/she has taken 4 doses of OPV (Oral Polio Vaccines), 3 doses of DPT (Diphthera, Pertussis and Tetanus), 3 doses of HB (Heapatheitis B) 1 dose each of BCG (Bacille Calmette Guerin), Measles and Yellow Fever vaccines. In a related development, recent immunization schedule by World Health Organization (WHO), United Nations Children's Fund (UNICEF) and NPI, was adopted for Nigeria and began in Niger State in February, 2013. It stipulates that children take BCG, OPV0 and HEPB0 at birth, and are immunized with OPV1, Pentavalent 1(a combination of five vaccines-in-one that prevents diphtheria, tetanus, whooping cough, hepatitis B and haemophilus influenza) at 6weeks. These are repeated at 10weeks and at 14weeks of baby age, and at 9months, MCV (Measles Containing Vaccine) and Yellow Fever (or at 12months) are given.[3,9,10]

Recent study indicated that full immunization coverage in Bida Emirate Area is about 30% (Obasohan et al. 2015a), One of the most current national surveys conducted in Nigeria in 2013 by National Population

Commission to assess the immunization coverage for children born within five years before that survey reported that the full immunization coverage for Nigerian children is 25%.[11] Past studies that have attempted to advance reasons for many children remain unvaccinated have focused on individual, systematic and community factors.[12] Others on the demographic factors of children and their families,[1,3,7,13,14] maternal/care givers' knowledge, attitude and practice of immunization exercises.[1,4,14,15] However, the power that propels one to do a thing is a function of the amount of Knowledge you have (Knowledge they say is Power). Information is the source of knowledge, but the quality of your information is principally determined by its source(s). As it relates to immunization coverage in Bida Emirate Area (BEA), the researchers are not aware of any study already done and not on the new immunization schedule to exploit the effects of this virtue. This study therefore is designed as a comparative study of the effects of sources of information on immunization coverage for children aged 12 – 24 months in urban and rural communities of BEA, Niger State, Nigeria by a field study.

2.0 MATERIALS AND METHODS

2.1 Survey Design

The sample areas were selected using a systematic and stratified cluster sampling design on the basis of 74.5% and 25.5% of population size by rural-urban strata. Bida Emirate Area has six Local Government Areas (Bida, Gbako, Katcha, Lavun, Edati and Mokwa). Bida Local Government is purely an urban community having 4 districts: Usman Zaki, Umaru Majigi, Malik and Masaba.[3] Other districts from the other five Local Government Areas (after excluding the district hosting the administrative headquarters) were considered as the rural area. The data used in this study was a community-based cross-sectional which had been described fully in a previous descriptive surveys.[3,4].

2.2 Sample Size Determination

We used the sample size computation as contained in the WHO immunization cluster survey manual (World Health Organization, 2014). Our expected coverage for the area was 25% obtained in a national survey 2013,[11] a precision of ±4.7, a 5% level of significance and a design effect of 2 as recommended by WHO methods.[16] This gave a minimum sample size of 652. However, 682 respondents were captured with 29 rejected leaving a total of 663 actually analyzed and distributed on the basis of 489 from rural and 174 from urban.

2.3 Ethical Approval

The researcher obtained informed consent from the Administrative Heads of the localities where data were collected and from the respondents who participated in the survey. Furthermore, approval was also given by the Research and Development Committee of Niger State Polytechnic, Zungeru.

2.4 Analytical Methods

Data analysis was by appropriate statistical tests of Pearson's chi square for the relationship effects, univariate and multivariate logistic techniques for likelihood effect using Stata version 14 for academic users.[17]

3.0 RESULTS AND DISCUSSION

3.1 Background Variables

The average ages of the participants in both rural and urban communities of BEA were almost the same with 29 years for the mothers and 17months for the children. In table 1, the proportion of the respondents in terms of their educational status has an inverse trend as by their place of residence. For instance, in the rural area, the proportion of respondents decreased by increasing educational status and only about 16% had primary education and above. The converse was the case for urban area where the proportion increased by increase in educational status. The result of this finding agrees with what Onyeika and Oguijawa[18] noted in a study with girl-child enrolment (12%) in schools in rural Niger as against 83% enrolment in urban areas. This finding did not come as a surprise as there is the tendency that the more educated one is, the more likelihood he is going to leave in urban centers. This trend was not exactly observed for the partners' educational status. But, as expected there were more proportion in higher educational status in urban than in rural area.

Table 1; Showing the Percentage Frequency Distribution of Some Background Variables of Participants by Place of Residence

	Urban		Rural	
Variables	**N(174)**	**%**	**N(489)**	**%**
Age of Respondents				
15 – 24 years	27	15.5	87	18.2
25 – 34 years	119	68.4	300	63.8
34+ years	28	16.1	91	19.0
Religious Status				
Christianity	24	13.8	4	0.80
Islam	150	56.2	491	99.2
Educational Status				
No Education	34	19.5	41.4	83.6
Primary Education	36	20.7	51	10.3
Secondary Education	50	28.7	28	5.7

Higher Education	54	31.0	2	0.40
Occupational Status				
Others	51	29.3	17	3.40
Civil Servant	37	21.3	7	1.40
Farming	63	36.2	421	85.1
Not Working	23	13.2	50	10.1
Birth Order of Child				
Fourth and Above	61	35.1	204	41.2
First	62	35.6	98	19.8
Second	28	16.1	112	22.6
Third	23	13.2	81	16.4
Indigenous Status				
Non-Indigene	25	14.4	6	1.2
Indigene	149	85.6	489	98.8
Partner's Educational Status				
No Education	11	6.32	208	42.6
Primary Education	8	4.60	64	13.1
Secondary Education	48	27.6	135	27.6
Higher Education	107	61.5	83	16.9
Place of Delivery				
Home	40	23.0	263	53.1
Health Facility	134	77.0	232	46.9
Attended Ante-Natal Care				
No	21	12.1	116	23.4
Yes	154	87.9	379	76.6

Also in the urban area, the proportion of those who delivered in the health facility were more than those who delivered at home, while the opposite is the case in rural area where more mothers delivered at home than those who delivered at a health facility. The reason for this may be that because more healthcare workers and facilities are in urban areas than are in the rural areas. This agrees with the position of a study elsewhere.[19] The use of ante-natal care services were both high for the two areas.

3.2 Urban-Rural BEA Immunization Coverage

The full immunization coverage for children in urban area of BEA was found to be higher (35.6%) than in the rural area (27.8%). More children in the rural area were never immunized at all compared with their urban counterparts. Also more children in urban area (74.6%) possessed immunization card than in rural area (66.5%). The full immunization coverage observed for urban and rural BEA in this study were almost 3 times higher than what was found in a study for urban (11.85%) and rural (10%) Bayelsa state.[5]

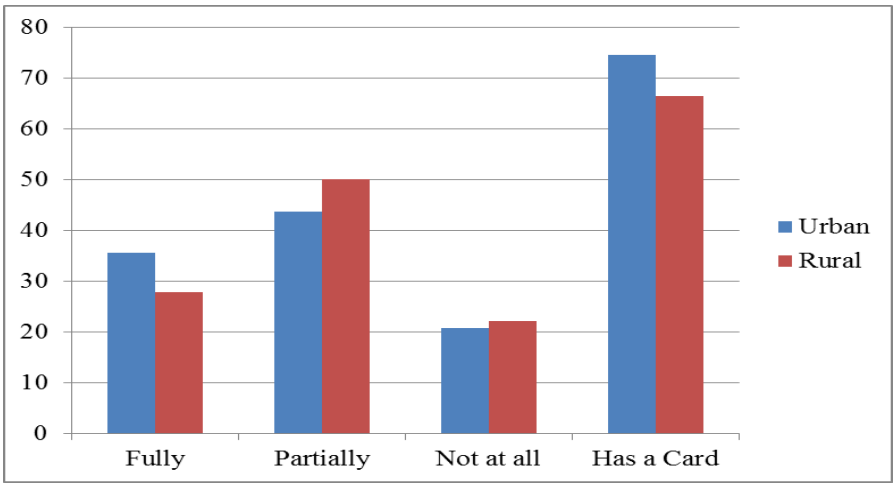

Fig: 1 Percentage Multiple Bar Chart of Immunization Coverage (Urban/Rural)

The proportions of children immunized with the various antigens were generally higher in the urban area of BEA than in the rural area. This was contrary to the findings in another study.[5] It was also observed in this study that the dropout rate of BCG to MCV or to Yellow Fever vaccination was relatively higher in urban area (33.4%)

than in rural area (26.5%). But for individual vaccination type, for instance, the dropout rate from OPV 1 to OPV 3 was higher for urban area (16.7%) than for rural area (10%) and from Pentas 1 to Pentas 3 it was more in urban area (15.3%) than in rural area (11%). This is contrary to the findings elsewhere,[5] where individual antigen's dropout rate was more in rural than in urban.

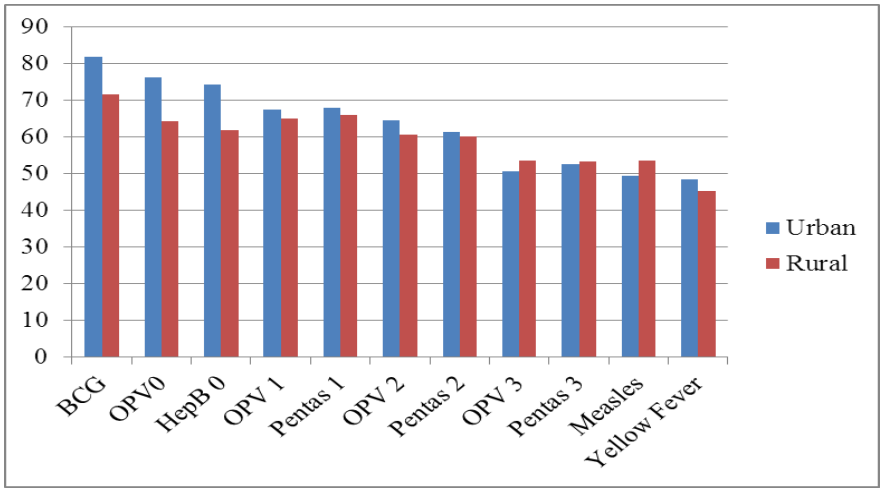

Fig 2: Percentage Multiple Bar Chart of Vaccine Coverage (Urban/Rural).

The dropouts we observed in urban were clearly above the allowable benchmark of 10%.[8] The possible reasons for these high dropouts in urban areas may not be unconnected with the fact that most mothers in urban areas are civil servants and may be too busy. This agrees with the earlier report of findings in BEA.[3]

Table 2: Relationship between Sources of Information and Immunization Status

	Urban			**Rural**		
Variables	CI (%)	ICI (%)	Chi-Sq	CI (%)	ICI (%)	Chi-Sq
Encouraged to immunize Child			19.12**			33.8**
None	3.2	29.7		5.1	27.1	
Village Head	0.00	0.90		23.5	25.7	
Hospital Staff	72.6	46.9		42.7	23.6	
Friends and Relatives	24.2	22.5		27.9	23.6	
Household Visit by Officials			12.1**			25.9**
No	16.1	42.0		13.2	36.8	
Yes	83.9	58.0		86.8	63.2	
Information before delivery			15.5**			28.8**
No	4.8	30.4		22.1	48.7	
Yes	95.2	69.6		77.9	51.3	
Attended Health Education in last 1yr			19.7**			30.9**
No	40.3	75.9		40.6	68.3	
Yes	59.7	24.1		59.4	31.7	
Attended Village Meeting in last 1yr			21.36**			30.5**
No	56.6	87.5		40.3	47.8	
Yes	43.4	12.5		59.7	32.2	
Immunization info on Mass Media			16.31**			16.28**
No	4.8	31.3		27.5	48.1	
Yes	95.2	68.7		72.5	51.9	

Note: CI = Complete Immunization, ICI=Incomplete Immunization, ** p<0.05.

From table 2, we observed that among the children who were fully immunized, hospital staff played more significant role to encourage mothers to take their children for immunization both in the rural (42.7%) and in the urban (72.6%) areas. Of those who reported that they were encouraged by the village head in urban area, none of them had their child immunized, but 23.5% in rural area were immunized. This may be so because the influence of village head is not quite visible in urban areas particularly on personal issues such as health than it is in rural areas. The proportion of those with household visitation by officials, having information on immunization before delivery, attendant to health education in the last 1 year before this survey was

conducted were significantly higher among those who were fully immunized in both areas. This agrees with the study in Lao PDR which revealed that direct household visitation contributed to higher rate of immunization.[14,20,21]

3.3 Source of Information and Immunization Status. Logistic Analysis

Table 3 displayed the results of logistic analysis of the independent effects of various sources of information on immunization status. Among those who encouraged mother to take child for immunization, the odds of immunization status were 14 times more for hospital staff than the reference group (nobody did) in the urban area and 8 times more in the rural area.

Table 3: Logistic Analysis of Source of Information on Immunization Status

	Urban	Rural
Variables		
Encouraged to immunize Child		
None	1.00	1.00
Village Head	Empty	4.23(1.8 – 9.1)**
Hospital Staff	14.3 (3.2 – 62.8)**	8.33 (3.76 – 18.5)**
Friends and Relatives	9.90 (2.1 – 47.3)**	5.46 (2.41 – 12.4)**
Household Visit by Officials		
No	1.00	1.00
Yes	3.75 (1.73 -8.15)**	3.82 (2.22 – 6.56)**
Obtained Information before delivery		
No	1.00	1.00
Yes	8.57 (2.51 – 29.3)**	3.36 (2.13 – 5.30)**
Attended Health Education in last 1yr		
No	1.00	1.00
Yes	4.66 (2.40 – 9.08)	3.15 (2.08 – 4.77)**
Attended Village Meeting in last 1yr		
No	1.00	1.00
Yes	5.40 (2.55 – 11.5)**	3.12 (2.07 4.72)**
Immunization info on Mass Media		
No	1.00	1.00
Yes	8.94 (2.62 – 30.5)**	2.44 (1.57 – 3.78)**
Respondent has access to GSM		
No	1.00	1.00
Yes	6.12 (1.38 – 27.3)**	2.55 (1.66 – 3.93)**

Those who obtained information on immunization before delivery, the odds of immunization was more than double in urban and rural areas than observed in their respective reference groups (those who did not obtain any information). This finding agrees with previous studies that showed why direct communication through household visits were clearly given a boost in improving immunization.[20,21,22]

4.0 CONCLUSION AND RECOMMENDATIONS

This study has clearly demonstrated the significant role sources of information through community mobilization play in full immunization coverage in BEA. Home visitation by health workers to encourage mothers to take their children for immunization is a very strong factor in attaining full immunization status especially in the rural areas. We recommend therefore that more advocacies should be carried out through the mass media, village meetings and religious centers. In view of this, community mobilization and participation efforts should be highly encouraged. 'Know your clients to follow up' should be the focus for health workers in a community. Greater percentage of qualified community health workers living in such communities should be trained and subsequently recruited to work in those communities.

The use of Global System for Mobile Communication (GSM) as a source of reminder to mothers should be exploited especially in the urban areas. This can be an area for further research to experiment and ascertain how effective the use of GSM could be to increase the status of immunization coverage However, the interpretation of the results reached in this study is subject to the limitations of not taken into consideration the validity of vaccines as at when they were administered to the children. Also only information on routine immunization was considered.

5.0 ACKNOWLEDGEMENT

The authors would like to thank the local communities and those that participated in the study. We recognize the contributions of all those that participated in the field word and data entry. We also like to appreciate the

Rector and the management team of Niger State Polytechnic for their efforts in ensuring the success of this project.

6.0 FUNDING

This research was funded by the TETfund Research Fund under the Institution Based Research (IBR) Grant with reference number: TETFUND/DESS/POLY/ZUNGERU/RP/VOL. II.

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