SPATIO-SOCIAL VARIATIONS IN CHILDHOOD IMMUNIZATION IN LAGOS STATE, NIGERIA

Aigbe, Gladys Osariemen (Ph.D.)
Department of Geography and Planning
Lagos State University, Ojo, Nigeria
Tel.: +234-703-522-7765
Email: *glaigbe@yahoo.com*

Abstract

Childhood immunization is a key health intervention of the Nigerian national health care delivery system, aimed at reducing the incidence of morbidity and mortality among children. This study examines the patterns and differentials in childhood- immunization coverage using data generated from primary and secondary sources. Findings of the study revealed marked intra-urban and rural urban differences. Immunization coverage varied among the three social areas of Lagos metropolis. The explanatory factors of the variability in immunization coverage are residential status, maternal demographic characteristics of education, autonomy, past health experience and distance to health facility location. The paper recommends among others, the placement of premium on childhood immunization as a prerequisite for primary school enrolment as a way of attaining higher and even immunization coverage.

Introduction

Nigeria is the most populous country in Africa, with a population size of 140 million in the year 2006 (NPC, 2006). Women of reproductive age and children under 5 years of age make up over

40% of the nation's total population. But, deaths among these population sub groups account for about 60-70 % of all deaths in the country and are among the highest in the world. Equally, infant mortality rate (IMR) of 96 per 1,000 live births and an under-five mortality rate (U-5MR) of 186 per 1,000 children aged 1 to 5 years (UNICEF, 2008) are high. Most of these deaths and illnesses are preventable or easily cured if good medical care is sought early enough during pregnancy and in the first few years of life of the child. But, statistics indicate that health service utilization levels are low and marked by interregional disparity (FOS, 2008).

In the same vein, report on statewide childhood immunization coverage in Lagos State reported differentials in the utilization of maternal and child health (MCH). The overall patronage level was not only relatively low, but fell short of the 1990 Federal Government target of 90% (Aigbe, 2004).

The reported low coverage and variations in immunization coverage necessitate an in-depth examination of the trend and pattern of immunization among children of mothers of different socio-economic characteristics. This study set out to examine spatio-social variations in childhood immunization coverage via in-depth analysis of mothers' background and the cultural and environmental factors influencing immunization uptake. The rest of the paper is divided into the following sections: the data, spatio-social analysis of childhood immunization and conclusion of the study.

Methodology

The data for this study are part of the quantitative and qualitative data collected for Ph.D. Thesis on MCH services provision and utilization. The data were derived from primary and secondary sources. Secondary data were obtained from institutions and documented works from the Lagos State Ministry of Health, reputable journals and reference materials. The primary data were obtained from

observations, oral interviews and focus group discussions (FGDs) held at the community and household levels. A multistage sampling technique was adopted for sample selection to underscore the geographical undertone of the study. This involved the stratification of Lagos State into urban and rural areas and a further stratification of the urban areas into high, medium and low class areas on the basis of their socio-economic attributes. The stratification formed the basis of the selection of 7 Local Government Areas (LGAs) for the study from the 20 LGAs that comprise Lagos State as of March 1997, made up of 17 Urban LGAs and 3 rural areas. The study LGAs comprise 6 urban LGAs and one rural LGA.

The selected LGAs represent the stratified residential zones as follows: Eti-Osa and Ikeja for the high class, Surulere and Ojo for the medium, and Mushin and Lagos Island for the low class. In addition, out of the 3 LGAs comprising rural areas, that is, lbeju-Lekki, Epe and Badagry LGAs, lbeju-lekki, which is the most rural and riverine of them, was chosen for its distinctive geographical features. The sampling frame used for the selection of respondents in the 7 selected LGAs was the 1991 National Population Enumeration Areas (EAs). Systematic random sampling was adopted. A total of 1,337 mothers, aged 15-49 years with at least one live birth born within the reference period, constituted the primary respondents for the study.

Mothers provided information on child immunization practices for all children at least one year old, who were born during the reference period. A total of 3,473 children aged 12 to 23 months were born within the reference period and they constituted the basis for the present study. Children under age one were excluded from the sample because they had not reached the age of eligibility for some types of immunization, in contrast to children aged one and over, who are old enough to receive all the childhood immunization (Aigbe, 2004). Mothers were asked to provide the immunization

history of each eligible child and to present their children's immunization cards to verify the number of immunization vaccines received and the ages at which the respective vaccines were given. In cases of loss of immunization cards, mothers' responses on child immunization were accepted and recorded. The household survey was followed by focus group discussion exercise which was conducted among groups of respondents.

Results and Discussion

Analysis of pediatric immunization coverage proceeded with the examination of the proportion of children aged 12 to 23 months, who received the respective vaccines. Overall, the immunization coverage is low, as less than 40% of them were fully immunized. Table 3.1 shows that out of the total number of 3,473 children in the survey, just about one-third of them or 37.8% were fully immunized.

Childhood immunization coverage also varied significantly for the different antigens and over space. The BCG antigen coverage level ranged from 95.6% (Eti-Osa) to 51.1% (lbeju-Lekki). DPT I depicts about the same pattern with the highest coverage level being 94.2% (Eti-Osa) and the lowest (48.4%) for lbeju-Lekki. The relatively high coverage of BCG, Polio 0; DPT 1 and Polio 1 are attributed to the early administration of the vaccines to the infants within the first 6 weeks of age.

The pattern of Polio vaccine coverage is similar to that of DPT vaccines because they are administered simultaneously as pairs, in the following manner: BCG and Polio 0; DPT 1 and Polio 1; DPT 2 and Polio 2; and DPT 3 and Polio 3. The main reason given for the slight differences in the pair vaccines' immunization coverage is occasional lack of Polio vaccine.

Table 1: ***Childhood Immunization Coverage***

LGA	No. of children	Percentage of children who received										
		BCG	DPT							Measles	All	None
			1	2	3	0	1	2	3			
Eji-Osa	406	95.6	94.2	73.1	68.4	95.6	94.2	73.1	67.9	64.7	61.2	-
Ikeja	41.2	94.7	92.5	88.0	76.1	94.7	92.5	88.0	76.1	64.2	64.7	-
Surulere	515	90.1	85.0	70.4	64.6	90.1	70.2	70.4	62.0	53.9	50.2	25.8
Ojo	539	72.9	62	53.7	51.2	72.9	62.1	53.7	51.2	36.5	52.6	37.1
Mushin	572	70.5	68.7	57.1	52.7	70.5	68.7	57.1	52.7	65.3	23.5	20.8
Ibeju-Lekki	558	72.2	69.4	62.1	54.5	72.2	69.4	62.1	54.4	60.6	27.3	38.6
% of all children	417	51.1	8.4	47.7	41.5	50.9	48.4	47.5	41.5	22.1	16.7	36.2
All children		77.3	73.2	63.6	57.6	77.3	71.1	63.6	57.1	59.8	37.8	22.2
	3,473	2,685	2,542	2,209	2,000	2,685	2,469	2,209	1,983	2,077	1,312	772

Source: Aigbe, 2004

In all the LGAs, the coverage for DPT 3 is lowest (57.6%) compared to 73.2 and 63.6 percentage coverage for DPT1 and DPT 2. The present study recorded 57.6 %, which is very close to that of the Lagos State findings of 55.7% (Lagos State Ministry of Health, 2001). The highest DPT 3 coverage of 76.1% was recorded in lkeja while Ibeju-Lekki scored the lowest of 41.5%. In three other LGAs, the proportions are 51.2%, 52.7% and 54.5% for Ojo, Mushin and Lagos Island LGAs respectively.

The measles vaccine coverage in all the LGAs is 59.8%. However, Mushin and Eti-Osa recorded the highest measles immunization coverage level of 65.3% and 64.7% respectively, while the lowest figure is 22.1% for Ibeju-Lekki.

Furthermore, there were distinct variations in immunization coverage among the LGAs. Children in Eti-Osa and Ikeja LGAs had the highest coverage of the respective vaccines. These were 95.6%, 94.2% and 68.4% for BCG, DPT 1 and DPT 3 in Eti-Osa, as against 72.9%, 62.1% and 51.2% for the respective vaccines in Ojo, a medium status LGA. Children in lbeju-Lekki had the lowest

immunization levels. Their BCG, DPT 1 and DPT 3 coverage were 51.1%, 48.4% and 41.5% respectively.

The high immunization coverage in the high brow areas of Eti-Osa and Ikeja is reflective of the neighbourhood characteristics as well as socio-cultural attributes of the mothers. For instance, the high standard of living as reflected in the high educational and occupational groupings of respondents in Eti-Osa, coupled with the availability of 30 MCH facilities in the area, no doubt created a good measure of physical and social accessibility of the services. An added advantage is the positive disposition of the mothers to health service uptake that derives from their social standing in society.

Earlier works have shown that mothers of high social status are capable of taking independent decisions and executing same with or without the husband's consent, especially in relation to child health care (Streatfield *et al*, 1990; Joshi, 1996; FOS, 1999; Aigbe, 2004; FOS, 2008). The mothers' awareness of the benefits of preventive health intervention is enormous, acquired through several years of schooling and societal interaction. This exposure, as evidenced by their economic status, enhances their horizon and belief; all of which cumulated in the high immunization coverage in neighbourhoods, where they form sizeable majority (Aigbe, 2004).

The FGDs that were held in Eti-Osa, for example, provide useful insight into the disposition of these women. Some of the discussants brought to the fore their high level of independence in domestic matters as:

> *My husband trusts me to handle the home front properly, while he concentrates on the business. So 1 take the kids for immunization, but I keep him abreast of the immunization progress. He only remembers immunization when the kids are sick...*

> *it is mandatory to immunize my children. I don't wait for my husband because it is my duty. Besides, he is always in Abuja.*

On the other hand, the non-completion of the immunization schedule, as noted by some of the mothers, is not that the mothers did not enjoy considerable measure of autonomy at home, but that they faced a different challenge, a conflict between immunization schedule and their work schedule. For instance, a discussant in one of the FGDs carried out in a highbrow hospital in Ikeja, said:

> *My son missed the DPT 3 immunization because the timing was not just right. The DPT 3 schedule fell within my out-of-state assignment. I thought 1 would make-up on my return, but he took ill, hence he took the measles vaccine later than the scheduled time.*

Most mothers in Ikeja LGA present the same profile as those in Eti-Osa. They were in a position to decide on health care practices and could afford such with or without their husbands' support. The presence of 54 MCH facilities in this neighbourhood is an added factor for its relatively high immunization coverage level, as 64.2% of the children in the LGA had all their vaccines. It is also one of the two LGAs with no record of non immunized children.

The level of immunization coverage in the medium social areas of Surulere and Ojo, is next in hierarchy to that of the high income areas, even though there is considerable variation in the level within its respective neighbourhoods. About 50.2% of the children in Surulere had all the vaccines compared to 32.6% for Ojo. The most plausible explanation for the appreciable difference in coverage level is the difference in the ethnic composition of these areas. Surulere is a more metropolitan LGA than Ojo. Its respondents are, therefore,

expectedly more flexible in the adoption of modern technologies than those in Ojo. Further in-depth analysis of the residents of Ojo buttresses the above claim, as the Hausa people form a sizeable number in Ojo LGA, and as they provide distinguished cultural characteristics in the LGA.

The lower coverage levels of all the vaccines in Mushin (23.5%), Lagos Island (27.3%) and lbeju-Lekki (16.7%) are associated with the low social status of the LGAs. Mushin is a downtown neighbourhood characterized by poor housing conditions, high population density and communal way of life. Mothers are engaged mainly in informal sector and their standard of living is relatively lower than that for those in Eti-Osa, Ikeja and Surulere, for example.

In Ibeju-Lekki, the prospect of a child's participating in immunization exercise is as remote as the physical environment itself. lbeju-Lekki recorded the lowest coverage of 16.7% for all the vaccines. Generally, the coverage level for all the vaccines was low. Reasons for the observed pattern are related to transportation problem encountered in getting to the MCH facility location, the rurality of the LGA and the cultural practices of the mothers. Physical accessibility to MCH facility location is impeded by the difficulty in getting vehicular transport. Mothers spend considerable time waiting to get commercial vehicles. Transport fare is also another impediment. Equally of immense significance in immunization uptake are traditional beliefs and cultural practices.

Most of the mothers in lbeju-Lekki are far behind their enlightened urban counterparts in Ikoyi, Ikeja and Surulere. Mothers in Ibeju-Lekki are more dependent on their husbands even for the receipt of childhood immunization. Service uptake is mainly the decision of the husbands, who in most cases are too preoccupied with other matters as to bother about whether or not a child partakes in

immunization exercise. According to a discussant, "we do not think of such thing as childhood immunization, talk less of taking the children for immunization". Another mother adds that:

> *The nearest PHC is too far, it takes a lot of time to get there. 1 spend about 45 minutes waiting for a vehicle and another 20 minutes to get to the PHC centre. The transport fare is N30.00 to and another N30.00 back. It is expensive and I cannot spend N60.00 to give my child injection (immunization), when he is riot sick.*

This view and other practices underscore the low coverage in Ibeju-Lekki, as well as highlight cases of high, though varied levels of non-compliance with the immunization schedule, not only in Ibeju-Lekki but also in some of the other LGAs, despite the metropolitan outlook of Lagos State.

Conclusion and Recommendations

The paper shows low childhood immunization coverage and marked spatial differences in two key aspects. Firstly, intra-urban variation existed in the three social areas in the level of immunization coverage and secondly, rural urban differentials were characteristic features of the level of childhood immunization. The underlying factors of the differential coverage level are inclusive of service attributes, differences in maternal social status and environmental attributes. The study avers that the attainment of higher immunization coverage and more even coverage pattern in all parts of the state is hinged on three complementary strategies.

Foremost is the call for more MCH facility provision and the location of such facilities in already disadvantages areas. A second strategy is the advocacy for the placement of premium on childhood immunization as prerequisite for primary school enrolment in the

country. The last but equally important requirement is the introduction of rigorous public enlightenment campaign that focuses on mothers and addresses the benefit of childhood immunization. Conscientious implementations of the foregoing by all stakeholders will certainly increase immunization coverage and improve the health status of children.

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