

Clients' willingness to pay for immunization services in the urban and rural primary health centers of Enugu state, Nigeria

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Abstract

Our study aims at determining the pattern of willingness of clients to pay for childhood immunization services in urban and rural primary health centers of Enugu state, Nigeria. Using a cross-sectional design, 800 clients who presented with their children/wards to receive childhood immunization services were selected at the primary health center in rural and urban local government areas of the state. The mean age was 28.9±4.5 and 26.7±5.1 years in the urban and rural areas respectively. About 54.5% of clients in the urban and 55.3% in the rural area were willing to pay for immunization services. The clients willingness to pay was influenced by: non satisfaction with immunization services, (OR=0.3, 95%CI: 0.2-0.5), younger age, (OR=1.4, 95%CI: 1.0-2.0) marital status (OR=2.8, 95%CI: 1.2-6.5), proximity to health centers (OR=0.6, 95%CI: 0.4-0.8), and delivering in a private health facility (OR=0.4, 95%CI: 0.1-0.9). The study suggests that the economic value that clients give to immunization services was similar in the rural and urban areas, and this could be increased by improving the level of clients' satisfaction for the services among others.

Introduction

Immunization remains one of the pillars of global public health, and with the additional incentive that its services are free,¹ the concern on why universal coverage hasn't been reached still remains a problem. For example, in Nigeria, the immunization coverage is very low as only 23% of children aged 12-23 months are fully immunized, and 29% of the children do not receive any vaccination.² It has been noted that children are not fully immunized in Nigeria due to the non-availability of vaccines,³ place of immunization being too far,⁴ unaware of the need of immunization, fear of side effects, and mother being too busy.⁵ Some of these reasons point to compet-

ing priorities by mothers and caregivers and this could be attributed to the poor economic value attached to immunization and its services. Studies on willingness to pay are however useful in determining the economic value individuals attach to medical services. In Nigeria also, the majority of the populace reside in the rural areas, where the immunization coverage is lower, and the inhabitants are poorer.² This study was therefore conducted to determine the willingness of clients to pay for childhood immunization services and explore factors that may affect such willingness in the urban and rural primary health centers in Enugu state Nigeria.

Materials and Methods

Setting

Enugu state operates the District Health System with seven district hospitals, (namely Awgu, Udi, Enugu Ezike, Agbani, Nsukka, Isi Uzo and Enugu Metropolis), 440 primary health care facilities, 40 cottage hospitals, 2 specialist hospitals, 2 teaching hospitals and 384 mission/private hospitals and clinics.¹ All the primary health centers in Enugu state offer free immunization services.¹

Study design

A cross sectional analytical study design was used. Clients' willingness to pay for immunization services in the urban and rural primary health centers of Enugu state was compared.

Study participants

The study population consisted of clients who presented with their children/wards for immunization services at the primary health centers selected for the study.

Sample size determination

A minimum sample size of 400 clients per group was estimated to detect a 2% difference in willingness to pay for immunization among urban and rural clients at a type I error (α) of 0.05, (in a two sided test), and a power of 0.8.

Sampling technique

A three-stage sampling technique was used. In the first stage, a simple random sampling technique by balloting was used to select three local government areas each from the urban and rural areas of the state. In the second stage, three health centers each from the six local government areas were randomly selected by balloting. In the third stage, we used a systematic random sampling technique to

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select the clients as they presented in the immunization/infants welfare clinic on each day of data collection. The average of the last six months daily attendance at the health centers for immunization services was used to determine the target population size, and dividing this with the estimated sample size of 400, we obtained the sampling interval of five in the urban area, and four in the rural. The index client was selected among the first five clients in the urban, and first four clients in the rural by simple random sampling method through balloting using the health facility register of clients on each day of data collection. In-order to ensure that a client was not selected twice, there was a register for all clients that had been included in the study and this was cross checked by the research assistants before a new client was included.

Data collection

The study instrument for data collection was an adapted interviewer administered questionnaire. Apart from the socio-demographic data,

the questionnaire in addition had variables on client satisfaction with immunization services received, willingness of the clients to pay for the services and the reasons for such disposition. For those who expressed willingness to pay, data was also sought on how much they were willing to pay.

Data analysis

The analysis was done using SPSS statistical software, version 20. Frequency tables and cross-tabulations were generated, and level of significance was determined at a P value of less than 0.05. We compared the socio-demographic characteristics of the clients in the urban and rural. Clients satisfaction with immunization services, denoted as true satisfaction, was a composite index which was assessed by the proportion of clients who reported being satisfied with immunization services received on the day of data collection, and were also willing to use the health center again for immunization services, in addition to being willing to recommend the health center to others for same services. The outcome measure was the willingness of the clients to pay for the services. Comparisons of independent and the outcome variables were made between the rural and urban settings using chi-square test. Multivariate analysis using binary logistic regression was used to determine factors associated with the willingness of clients to pay. Variables that had a P<0.20 on bivariate analysis were entered into the logistic regression model to determine the predictors of the willingness of the clients to pay for immunization services. Results were reported using odds ratio, confidence interval at 95% and level of significance was set at P<0.05. Ethical approval for the study was obtained from the Research and Ethics Committee of the University of Nigeria Teaching Hospital, Ituku Ozalla, Enugu.

Results

Tables 1 and 2 show the socio-demographic characteristics of the clients. The mean age of the clients in the urban areas (28.9±4.5 years) was significantly higher than that in the rural areas (26.7±5.1 years).

Table 3, shows clients willingness to pay for immunization services in the urban and rural primary health centers. Comparable proportions of clients in the urban (54.5%) and rural (55.3%) were willing to pay for immunization services.

Tables 4 and 5 respectively show bivariate and multivariate outputs for factors that were assessed to have potential influences on client's willingness to pay for immunization services. True satisfaction with immunization services

received (P<0.001), the marital status (P<0.001), the educational status of the index child's father (P=0.011) and proximity to the health centers (P=0.022) were the main factors that affected the willingness to pay for immunization services on bivariate analysis. On the other hand, multivariate logistic regression revealed that clients who were not truly satisfied with immunization services (OR=0.28, 95%CI: 0.16-0.49), married, (OR=2.78, 95%CI: 1.20-6.46), of younger age group (<31 years), (OR=1.43, 95%CI: 1.03-1.98), close to the health centers, (OR=0.60, 95%CI: 0.43-0.83), and who delivered their children in private health facilities (OR=0.36, 95%CI: 0.13-0.96) were significant predictors of the willingness to pay for immunization services (Table 5).

Discussion

Finding of our study showed that similar

proportions of clients in the two study areas, (urban 54.5% and rural 55.3%) were willing to pay for immunization services, suggesting that economic values attached to immunization services are equal in both areas. The proportions of those willing to pay for immunization services in this study were however lower than that in a study in rural districts of Bangladesh where 86% of the respondents were willing to pay for immunization services and in another study in urban Bangladesh,⁶ where 93% of the respondents were willing to pay nominal fees for immunization services.⁷ Socio-cultural differences as well as economic considerations may explain the differences.

The majority of clients in the two study areas were disposed to paying for immunization services because they were concerned about saving the lives of their children. A minor proportion, 11.9% in the urban and 14.5% in the rural area, were willing to pay for immunization services so that the money realized could be used to purchase vaccine equipment and cards. This might be a conscious

Table 1. Socio-demographic characteristics of clients of immunization services in the urban (total: 400) and rural (total: 400) primary health centers of Enugu state, August 2013.

Variable	Urban, N. (%)	Rural, N. (%)	P-value
Age of clients			<0.001*
Mean ± SD, years	28.9±4.5	26.7±5.1	
Age of index child			0.435
Mean ± SD, months	3.9±3.3	3.7±2.9	
Relationship of client to child			0.501
Mother	390 (97.5)	392 (98.0)	
Father	5 (1.3)	6 (1.5)	
Female guardian	5 (1.3)	2 (0.5)	
Position of index child			0.219
1	109 (27.3)	103 (25.8)	
2-4	257 (64.3)	248 (62.0)	
≥5	34 (8.5)	49 (12.3)	
Marital status			0.001°
Married	390 (97.5)	371 (92.8)	
Never married	10 (2.5)	24 (6.0)	
Separated/divorced/widowed	0 (0)	5 (0.6)	
Religion			0.095
Christian	399 (99.8)	393 (98.3)	
Others [#]	1 (0.2)	7 (1.8)	
Ethnic group			0.434
Igbo	391 (97.8)	394 (98.5)	
Others [§]	9 (2.3)	6 (1.5)	
Socio-economic status			<0.001
Least poor	157 (39.3)	45 (11.3)	
The poor	121 (30.3)	84 (21.0)	
Very poor	86 (21.5)	107 (26.8)	
Poorest	36 (9.0)	164 (41.0)	
Cost of travel to reach the health center (naira)			<0.001*
Mean ± SD	86.5±57.7	69.6±31.7	
Estimated distance to health center			<0.001
<1 km from home	251 (62.8)	278 (69.5)	
1-5 km from home	108 (27.1)	118 (29.5)	
>5 km from home	41 (10.5)	4 (1.0)	

*Student t-test; °likelihood ratio; #Islam and traditional African religion; §Yoruba, Hausa and the minority tribes.

effort on the part of the clients at ensuring the sustainability of the immunization programs. The least proportion of those who were willing to pay for immunization services viewed such payments as a way of motivating the health workers. This reveals also that this minor proportion of clients do appreciate the good works of the health workers in the discharge of their duties especially in the area of immunization and its services.

The majority of the clients who were unwilling to pay for immunization services did so because they perceived such services as the responsibility of government. This is similar to the finding in the study in the rural districts of Bangladesh where such services were also regarded as the prime function of government by those who were unwilling to pay for such services.⁶ The remaining proportion of those who were unwilling to pay had a slightly different viewpoint, they were of the opinion that immunization services have always been free, aware also that it may have always been provided for, by the government. Perhaps, they were wondering also, why such important service as immunization could be made to attract charges now that they are in their reproductive age period. Our study suggests that clients who were not satisfied with immunization services received were less willing to pay for services. This is closely related to a finding from a study on community satisfaction with the quality of maternal and child health services in Southeast Nigeria in which it was found that people were willing to pay for primary health care services if there were quality improvements.⁸ This finding is in line with the viewpoints of economists, who have long pointed out that consumers of health care are in favor of high quality care even if that will attract increased charges.⁹ The World Bank has also been in support of measures that will ensure that clients of health care services are satisfied with services received as it has

encouraged developing countries to ensure that their health services are client oriented.¹⁰ Furthermore, the relevance of clients satisfaction with health care services is also buttressed by the finding that it determines adherence to treatment and also follow up measures as these will eventually lead to positive health outcomes.¹¹

The higher proportion of clients that were in their younger age group and more willing to pay for immunization services could be explained by the fact that this group may be concerned about the welfare of their children than the consideration that immunization is the responsibility of the government. Those who were married were also found to be more willing to pay for immunization services and this could be attributed to the family support from partners which may be missing from

clients who were single. The finding that clients who live far from the health centers were more willing to pay for immunization services may be that by living far, they may likely pay more as transport fares to the health centers and hence are more motivated to obtaining the service. This may be at variance with the finding that long distance walking to the health centers was one of the factors responsible for the partial immunization of children.⁴

Clients who delivered their babies at private health facilities were less willing to pay for immunization services when compared to those who delivered their babies at home. The proportions of clients that delivered at home are very low compared to those that delivered in the private health facility and this may have influenced the comparison. In addition, almost

Table 2. Socio-demographic characteristics of parents of index child brought for immunization services in the urban (total 400) and rural (total 400) primary health centers of Enugu state, August 2013.

Variable	Urban, N. (%)	Rural, N. (%)	P-value
Education of mother of index child			<0.001
No formal education	1 (0.3)	3 (0.8)	
Primary education	30 (7.5)	49 (12.3)	
Secondary education	255 (63.8)	301 (75.3)	
Post secondary education	114 (28.5)	47 (11.8)	
Occupation of mother			0.015
Self employed	211 (52.8)	238 (59.5)	
Unemployed/housewife	130 (32.5)	128 (32.0)	
Salaried employment	59 (14.8)	34 (8.5)	
Education of father of index child			<0.001
No formal education	2 (0.5)	18 (4.9)	
Primary education	31 (7.9)	47 (12.7)	
Secondary education	223 (57.2)	241 (65.0)	
Post secondary education	134 (34.4)	65 (17.5)	
Occupation of father			0.001
Self employed	269 (69.0)	298 (80.3)	
Salaried employment	116 (29.7)	69 (18.6)	
Unemployed	5 (1.3)	4 (1.1)	

Table 3. Clients willingness to pay for immunization services in the urban (total 400) and rural (total 400) primary health centers of Enugu state, August 2013.

Variable	Urban, N. (%)	Rural, N. (%)	P-value
Willing to pay for immunization services			0.831
Yes	218 (54.5)	221 (55.3)	
No	182 (45.5)	179 (44.8)	
Reason to agree to pay for immunization services			0.223
Save the child life	184 (84.4)	176 (79.6)	
Purchase vaccine equipment/card	28 (12.8)	32 (14.5)	
Motivate the health workers	6 (2.8)	13 (5.9)	
Reason not willing to pay for immunization services			<0.001
Government responsibility	149 (81.9)	109 (60.9)	
Has always been free	33 (18.1)	70 (39.1)	
Amount willing to pay on the average for each vaccination (naira)			0.002*
Mean (SD)	339.7±498.1	219.9±215.6	
Minimum	50	30	
Maximum	6000	1000	
Median	200	175	

Table 4. Bivariate analysis of factors affecting client's willingness to pay for immunization services in the study area, August 2013.

Variable	Willing to pay, N (%)	Not willing to pay, N (%)	P value
True satisfaction with immunization services			<0.001
Satisfied	417 (58.3)	298 (41.7)	
Not satisfied	22 (25.9)	63 (74.1)	
Age category			0.165
<30 years	286 (56.7)	218 (43.3)	
≥30 years	153 (51.7)	143 (48.3)	
No of living children			0.192
≤2	229 (52.8)	205 (47.2)	
≥2	210 (57.4)	156 (42.6)	
Marital status			<0.001
Married	430 (56.5)	331 (43.5)	
Single	9 (23.1)	30 (76.9)	
Ethnic group			
Igbo	437 (55.7)	348 (44.3)	
Others	2 (13.3)	13 (86.7)	
Education of mother			0.133
Primary education and below	52 (62.7)	31 (37.3)	
Secondary education and above	387 (54.0)	330 (46.0)	
Distance from home to health center (estimated)			0.022
≤1 kilometer	275 (52.0)	254 (48.0)	
>1 kilometer	164 (60.5)	107 (39.5)	
Place of delivery of child			0.096
Private health facility	207 (51.8)	193 (48.3)	
Public health facility	176 (56.1)	138 (43.9)	
Traditional birth attendant	37 (61.7)	23 (38.3)	
Home	19 (73.1)	7 (26.9)	
Relationship of client to child			0.087
Mother	429 (55.4)	345 (44.6)	
Others	10 (38.5)	16 (61.5)	

*Fisher's exact test

Table 5. Multivariate analysis of factors affecting clients' willingness to pay for immunization services in the urban and rural primary health centers of Enugu state, August 2013.

Variable	Odds ratio	P value	95%CI for OR	
			Lower	Upper
True satisfaction with immunization services				
No	0.28	<0.001	0.16	0.49
Yes	1	-	-	-
Age category				
<30 years	1.43	0.033	1.03	1.98
≥30 years	1	-	-	-
No of living children				
≤2	0.79	0.156	0.57	1.09
>2	1	-	-	-
Marital status				
Married	2.78	0.017	1.20	6.46
Single	1	-	-	-
Education of mother				
Primary education and below	1.52	0.103	0.92	2.31
Secondary education and above	1	-	-	-
Distance from home to health center (estimated)				
≤ 1 km	0.60	0.002	0.43	0.83
>1 km	1	-	-	-
Place of delivery				
Private health facility	0.36	0.042	0.13	0.96
Public health facility	0.42	0.084	0.15	1.12
Traditional birth attendant	0.56	0.312	0.19	1.72
Home	1	-	-	-
Relationship of client to child				
Mother	3.26	0.052	0.99	10.72
Others	1	-	-	-

*Fisher's exact test

equal proportions of those that delivered at the private facility were willing and not willing to pay. An earlier study observed that private health facilities do charge meager fees for immunization services as against none from the public health facilities,¹⁰ and these fees in some areas act as barriers to assessing vaccination services.¹¹ This may have influenced the clients who delivered in private health facilities to see immunization services as the responsibility of government hence not willing to pay for such services.

Conclusions

The study suggests that the economic value client attached to immunization services was similar in the rural and urban areas. Client satisfaction was one factor found that is amenable to modification by the health workers among others. Hence, the economic values attached to immunization services could be increased by improving the level of clients' satisfaction for the services.

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