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Clients' satisfaction with immunisation services in the urban and rural primary health centres of a South-Eastern State in Nigeria

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Abstract Objectives: To determine clients' satisfaction with immunisation services in the urban and rural primary health centres of a South-eastern state in Nigeria

Methods: A three-stage sampling method was used to select 800 clients who presented with their children/wards to 18 of the 440 primary health centres. Exit interviews were conducted using an adapted, semi-structured questionnaire. A composite index of satisfaction with immunisation services, denoted as true satisfaction, was assessed as the proportion of clients who reported being satisfied with the immunisation services received on the day of data collection, who were ready to use the health centre again for immunisation services, and who were willing to recommend the health centre to others for the same services.

Findings: The mean age of the clients was 28.9 ± 4.5 and 26.7 ± 5.1 years old in the urban and rural areas, respectively. The main reasons why the clients chose the primary health centres for immunisation services were because of their proximity to the health centres in the urban area (34.3%)

and the availability of vaccines in the rural area (35.3%). The majority of clients in the urban (84.5%) and rural areas (94.3%) were truly satisfied with the immunisation services. A long waiting time and uncomfortable waiting areas were the major sources of dissatisfaction among the clients. Factors that were associated with the clients' true satisfaction with immunisation services included being a client in an urban area (adjusted odds ratio (AOR)=0.2, 95% confidence interval (CI): 0.1-0.4), being married, (AOR=33.5, 95% CI: 12.7-88.1), being of the Igbo ethnic nationality (AOR=14.9, 95% CI: 3.9-57.4), being a Christian (AOR=21.1, 95% CI: 2.9-154.6), and being in close proximity to the health centres (AOR=2.6, 95% CI: 1.5-4.4).

Conclusion: The waiting time needs to be reduced and the physical conditions of the waiting area need to be improved to reduce the clients' dissatisfaction with the services, particularly in urban areas.

Keywords: Clients' satisfaction, immunisation, primary health centres, urban and rural, Enugu State.

Introduction

Immunisation saves more lives than any other public health intervention, except possibly improvements in sanitation and a safe water supply¹⁻⁶. However, the level of immunisation coverage in Nigeria is very low, as only 23% of children between the ages of 12-23 months are fully immunised and 29% of children do not receive any vaccinations⁷. High dropouts from poor functioning health centres and poor attitudes of service providers are factors that may be responsible for this low immunisation rate^{5,6}. Clients' satisfaction with the received care

has been shown to determine adherence to treatment and, thus, follow-up measures, and good adherence likely leads to positive health outcomes⁸. It has been established that vaccine coverage is always high in areas where the primary health centres function adequately⁶. Furthermore, it has been identified that promoting client-oriented health services should be based on identified determinants of client satisfaction in various cultures⁹. Additionally, economists believe that health care consumers are in favour of high-quality care, even if such care results in increased costs^{10,11}.

In south-east Nigeria, the level of immunisation coverage is 43%, which is the highest coverage among the geo-political zones in the country; however, a child in south-east Nigeria is more likely to have received no vaccinations compared with another child in other geo-political zones because of the fear of side effects⁷. Good interaction between parents and health care providers will help allay these fears and, thus, improve the immunisation coverage in south-east Nigeria and in Nigeria as a whole. In addition, a child in an urban area in Nigeria is more than twice as likely to be fully immunised as a child in the rural area⁷. Therefore, this study was conducted to determine clients' satisfaction with immunisation services in the urban and rural primary health centres of a south-eastern state in Nigeria.

Methods

Setting

The study area is Enugu State, which is in the south-east geo-political zone of Nigeria. It is composed of 17 local government areas (5 of which are designated as urban and 12 of which are designated as rural) and 291 political wards, with a population of 4,881,500 people within a total area of 7,618 sq. km¹². Its capital, Enugu, was the headquarters of the former East-Central State and the defunct Eastern Region. The major occupations are trading and formal employment in the urban areas and primarily subsistence farming and animal pasturing in the rural areas. The inhabitants are mostly Igbo with a mixture of other tribes and are predominantly Christians.

Enugu State operates the District Health System, which consists of seven district hospitals (Awgu, Udi, Enugu Ezike, Agbani, Nsukka, Isi Uzo, and Enugu Metropolis), 440 primary health care facilities, 40 cottage hospitals, two specialist hospitals, two teaching hospitals, and 384 mission/private hospitals and clinics.¹³ All of the primary health centres in Enugu State offer free immunisation services.¹⁴

Study Design

The study employed a cross-sectional, analytical design and compared clients' satisfaction with the immunisation services in the urban and rural primary health centres of Enugu State.

Study Participants

The study population consisted of clients who presented with their children/wards to receive immunisation services at the primary health centres selected for the study in August 2013. Immunisation/infant welfare clinics of the selected health centres were the client recruitment locations. A minimum of two immunisation visits qualified the client for inclusion in the study.

Sample Size Determination

The minimum sample size for the study was determined by the formula used to compare two independent proportions.¹⁵ From a study in India, 93.9% of the respondents were truly satisfied with the immunisation services in an urban area, which was the average proportion of the fully and partially immunised clients who were satisfied,¹⁶ while 95.9% of the respondents in a community-based study in Nigeria were satisfied with immunisation services in a rural area.¹¹ A total of 400 clients were estimated for each group based on a type 1 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 in each of the urban and rural areas of the state. In the second stage, three health centres in each of six local government areas were randomly selected by balloting. In the third stage, we used the systematic random sampling technique to select the clients as they presented to the immunisation/infants' welfare clinic on each day of data collection. We used the average attendance at the health centres for immunisation services of the last six months as the population in the sampling frame (2000 in the urban area and 1600 in the rural area), and by dividing this population by the sample size of 400 in each group, we sampled one out of every five individuals in the urban area and one out of every four individuals in the rural area. The index client was selected among the first five clients in the urban area and the first four clients in the rural area by a simple random sampling method through balloting using the health facility register of clients on each day of data collection. To ensure that a client was not selected twice, there was a register for all of the clients who had been included in the study, and this register was cross-checked by the research assistants before a new client was included.

Study Instrument

The study instrument was a validated, semi-structured questionnaire. The questionnaire was adapted from the protocol of the Addis Ababa University KABP Study on Immunisation: Exit Interview Questionnaire,^{17,18} with slight modifications to suit some unique aspects of the study area.

Data Collection Method

The validated, semi-structured questionnaire was administered to the clients by trained research assistants. Respondents were assured that all of the information provided in the questionnaire was confidential. Additionally, we did not obtain any identifying information from the participants. Participation in the study was voluntary, and participants were assured that there would be no victimisation of clients who refused to participate or who decided to withdraw from the study after providing

consent. Ethical approval for the study was obtained from the Research and Ethics Committee of the University of Nigeria Teaching Hospital, Ituku Ozalla, Enugu. Clients were required to sign or provide a thumbprint on the written informed consent form before the interview, and the nature of the study, its relevance, and the level of their participation were thoroughly explained to them.

Outcome Measure

The outcome measure of the study was the satisfaction index, corresponding to the clients' true satisfaction with immunisation services. It was assessed as the proportion of clients who were satisfied with the vaccination services received at the primary health centres on the day of data collection, who were willing to use the health centres again for vaccination services, and who were willing to recommend the health centres to others for the same services.

Data Analysis

The analysis was performed using SPSS statistical software, version 15 (SPSS Inc., Chicago, IL). Frequency tables and cross-tabulations were generated, and significance was indicated by a p-value of less than 0.05. We compared the socio-demographic characteristics of the clients, their sources of information on immunisation, the place of delivery of the children who presented to the centres for immunisation, and the reasons why the primary health centres were chosen for vaccination services. We also compared the true satisfaction of the clients with immunisation services in the urban and rural primary health centres. Multivariate analysis using binary logistic regression was used to determine the factors predictive of the true satisfaction of the clients with immunisation services. Variables that had a p-value of less than 0.2 in the bivariate analysis were entered into the logistic regression model to determine the predictors of the clients' true satisfaction with immunisation services. A logistic regression model was fitted for both the urban and rural areas. The results are reported using adjusted odds ratios (AOR) and 95% confidence intervals (CI).

Results

Table 1 shows the socio-demographic characteristics of the clients who received immunisation services. The mean ages of the clients in the urban and rural areas were 28.9±4.5 and 26.7±5.1 years, respectively. The majority of the mothers of the children who visited the urban (63.8%) and rural (75.3%) primary health centres for immunisation services had secondary education.

Table 2 shows the sources of information regarding the immunisation activities of the clients. Most participants in the urban (91.3%) and rural (92.8%) areas reported health workers as their source of information. Regarding the question of which family member makes the

decision to immunise their child, a significantly higher proportion of clients in the rural (55.8%) compared with the urban (49.5%) areas reported that both parents were involved in the decision. The main reason for utilising the primary health centres for immunisation services by clients in the urban area was proximity (34.3%), while in the rural area, the main reason was the availability of the vaccines (35.3%).

Table 1: Socio-demographic characteristics of clients of immunisation services in the urban and rural primary health centers of Enugu State, August 2013.

Variable	Urban {n=400 N (%)	Rural {n=400 N (%)	χ^2	p value
<i>Age of clients</i>				
Mean ±SD (years)	28.9±4.5	26.7±5.1	6.447 ^a	<0.001
<i>Age groups in years</i>				
<20	7 (1.8)	32 (8.0)	48.073	<0.001
20 – 24	58 (14.5)	111 (27.8)		
25 – 29	163 (40.8)	133 (33.3)		
30– 34	110 (27.5)	94 (23.5)		
≥ 35	62 (15.5)	30 (7.5)		
<i>Age of index child</i>				
Mean ± SD (months)	3.9±3.3	3.7±2.9	0.782 ^a	0.435
<i>Age group in months</i>				
≤ 12	391 (97.8)	395 (98.8)	1.163	0.281
>12	9 (2.3)	5 (1.3)		
<i>Relationship of client to child</i>				
Mother	390(97.5)	392 (98.0)	1.382	0.501
Father	5 (1.3)	6 (1.5)		
Female guardian	5 (1.3)	2 (0.5)		
<i>Position of index child</i>				
1	109 (27.3)	103 (25.8)	3.041	0.219
2 – 4	257 (64.3)	248 (62.0)		
≥ 5	34 (8.5)	49 (12.3)		
<i>Marital status</i>				
Married, currently living with spouse.	390(97.5)	371 (92.8)	13.346 ^b	0.001
Married, not living with spouse	0 (0)	5 (0.6)		
Never married	10 (2.5)	24 (6.0)		
<i>Religion</i>				
Christian	399 (99.8)	393 (98.3)	4.712	0.095
Others ^c	1 (0.2)	7 (1.8)		
<i>Ethnic group</i>				
Igbo	391 (97.8)	394 (98.5)	0.611	0.434
Others ^d	9 (2.3)	6 (1.5)		
<i>Education of mother of index child</i>				
No formal education	1 (0.3)	3 (0.8)	37.257	<0.001
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)		
<i>Occupation of mother</i>				
Self employed	211 (52.8)	238 (59.5)	8.360	0.015
Unemployed/housewife	130 (32.5)	128 (32.0)		
Salaried employment	59 (14.8)	34 (8.5)		
	n= 390	N (%)	n= 371	N (%)
<i>Education of father of index child</i>				
No formal education	2 (0.5)	18 (4.9)	40.256	<0.001
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)		
<i>Occupation of father</i>				
Self employed	269 (69.0)	298 (80.3)	13.069	0.001
Salaried employment	116 (29.7)	69 (18.6)		
Unemployed	5 (1.3)	4 (1.1)		
<i>Socio-economic status</i>				
	n=400	N (%)	n=400	N (%)
Least poor	157 (39.3)	45 (11.3)	152.982	<0.001
The poor	121 (30.3)	84 (21.0)		
Very poor	86 (21.5)	107 (26.8)		
Poorest	36 (9.0)	164 (41.0)		

^astudent t test

^bLikelihood ratio

^cIslam and traditional African religion

^dYoruba, Hausa and the minority tribes

Table 2: Sources of information and decision about child immunisation, by clients in the urban and rural primary health centers of Enugu State, August 2013

Variable	Urban (n=400) N (%)	Rural (n=400) N (%)	χ^2	p value
<i>Obtaining information about immunisation</i>				
Health workers	365 (91.3)	371 (92.8)	0.611	0.434
Friend	298 (74.5)	275 (68.8)	3.254	0.071
Neighbour	248 (62.0)	262 (65.5)	1.060	0.303
Radio	236 (59.0)	180 (45.0)	15.705	<0.001
Television	213 (53.3)	139 (34.8)	27.780	<0.001
Church leaders	195 (48.8)	169 (42.3)	3.408	0.065
Newspaper	76 (19.0)	42 (10.5)	11.492	0.001
Community leaders	47 (11.8)	72 (18.0)	6.170	0.013
Traditional birth attendants	38 (9.5)	68 (17.0)	9.787	0.002
Political leaders	31 (7.8)	37 (9.3)	0.579	0.447
<i>Decision about child immunization</i>				
Both parents	198 (49.5)	223 (55.8)	14.510	0.001
Mother alone	184 (46.0)	175 (43.8)		
Father alone	18 (4.5)	2 (0.5)		
<i>Weight of baby checked</i>				
Yes	238 (59.5)	263 (65.8)	3.338	0.069
No	162 (40.5)	137 (34.3)		
<i>Estimated distance of client residence to health center</i>				
< 1 kilometer from home	251 (62.8)	278 (69.5)	32.243	<0.001
1- 5 kilometer from home	108 (27.1)	118 (29.5)		
>5 kilometer from home	41 (10.5)	4 (1.0)		
<i>Reason for choosing the health center for immunisation</i>				
Proximity	137 (34.3)	110 (27.5)	5.448	0.142
Availability of vaccine	119 (29.8)	141 (35.3)		
Health worker related factors	115 (28.8)	124 (31.0)		
Service is free	29 (7.3)	25 (6.3)		

^a Multiple responses

Table 3 shows the clients' satisfaction with the immunisation services in the urban and rural primary health centres. The majority of the clients using the immunisation services in the urban and rural health centres reported satisfaction with the services that they received (87.0% and 95.0%, respectively), and the difference in the proportion was found to be statistically significant ($p < 0.001$). The major reason for dissatisfaction among the urban respondents who reported dissatisfaction was the long waiting time (39/52, 75.0%), while the major reason for the rural respondents was that the waiting area was uncomfortable (13/20, 65.0%). A slightly higher proportion of the rural (99.5%) than the urban (98.8%) respondents responded that they would be willing to utilise the health centres again for immunisation services. This result was not found to be statistically significant ($p = 0.451$). A higher proportion of the rural (99.8%) than the urban (97.3%) respondents stated that they would recommend the health centres to friends, neighbours, and relatives for immunisation services, and this difference was found to be statistically significant ($p = 0.004$). Comparable proportions of the clients in the two groups (88.8% in urban vs. 92.3% in rural) experienced no difficulty in the use of the primary health centres for immunisation services. In the urban health centres, the major difficulty experienced by the clients was that the waiting area was uncomfortable, while in the rural area, the major complaint was that the waiting time was too long. This difference in the proportion of complaints between the two groups was also not found to be

statistically significant ($p = 0.420$). The major reason for the clients' intention to use the primary health centres again for immunisation services and to recommend the health centres to others in the two study areas was related to the health workers; specifically, the health workers were reported to be well trained, friendly, and offered good services. A significantly higher proportion of the respondents who utilised the rural health centres (94.3%) were truly satisfied with the immunisation services received compared with those in the urban health centres (84.5%).

Table 3: Clients' satisfaction with immunisation services in the urban and rural primary health centers of Enugu State, August 2013

Variable	Urban (n=400) N (%)	Rural (n=400) N (%)	χ^2	p value
<i>Satisfied with vaccination services</i>				
Yes	348 (87.0)	380 (95.0)	15.629	<0.001
No	52 (13.0)	20 (5.0)		
<i>Reason for not being satisfied^a</i>				
Waiting time too long	39 (75.0)	11 (55.0)	6.102	0.014
Waiting area uncomfortable	22 (42.3)	13 (65.0)	1.861	0.173
Vaccination area unclean	24 (46.1)	4 (20.0)	5.565	0.018
Vaccine provider unfriendly	13 (25.0)	5 (25.0)	0.051	0.822
Injection equipment not clean	1 (1.9)	3 (15.0)	FT	0.076
<i>Will use health center again for vaccination</i>				
Yes	395 (98.8)	398 (99.5)	FT	0.451
No	5 (1.3)	2 (0.5)		
<i>Reason to use health center again</i>				
Health worker related factors	171 (43.3)	164 (41.2)	0.569	0.904
Proximity	117 (29.6)	125 (31.4)		
Availability of vaccines	76 (19.2)	80 (20.1)		
Service is free	31 (7.8)	29 (7.3)		
<i>Will recommend the health center to others</i>				
Yes	389 (97.3)	399 (99.8)	8.460	0.004
No	11 (2.8)	1 (0.3)		
<i>Reason to recommend the health center to others</i>				
Health worker related factor	185 (47.6)	185 (46.4)	2.036	0.565
Availability of vaccines	107 (27.5)	103 (25.8)		
Proximity	68 (17.5)	70 (17.5)		
Service is free	29 (7.5)	41 (10.3)		
<i>Difficulties in use of HC for vaccination</i>				
No difficulty	355 (88.8)	369 (92.3)	2.850	0.091
Difficulty	45 (11.3)	31 (7.8)		
<i>Difficulties encountered</i>				
Waiting area uncomfortable	26 (57.8)	15 (48.4)	0.652	0.420
Waiting time long	19 (42.2)	16 (51.6)		
<i>Overall "True satisfaction with Immunisation" services</i>				
Yes	338 (84.5)	377 (94.3)	20.021	<0.001
No	62 (15.5)	23 (5.8)		

^amultiple responses encouraged FT Fishers exact test

Table 4 shows the factors that affect the true satisfaction of the clients who utilised immunisation services. Among all of the clients who used the immunisation services in the study area, the location, marital status, ethnic group, religion, occupation of the index child's mother, socio-economic status, and estimated distance from the clients' homes to the health centres showed a statistically significant association with the clients' true satisfaction with immunisation services.

Table 4: Factors affecting clients true satisfaction with immunisation services in the study area, August 2013

Variable	True satisfaction with immunisation services N (%)	Not satisfied N (%)	p-value on bivariate analysis	Adjusted Odds Ratio (95% confidence interval) on multivariate analysis
<i>Location</i>				
Urban	338 (84.5)	62 (15.5)	<0.001	0.2(0.1-0.4)
Rural	377 (94.3)	23 (5.8)		1
<i>Age category</i>				
< 30 years	444 (88.1)	60 (11.9)	0.154	0.8(0.4-1.5)
≥ 30 years	271 (91.6)	25 (8.4)		
<i>No of living children</i>				
≤ 2	382 (88.0)	52 (12.0)	0.275	NA
≥ 2	333 (91.0)	33 (9.0)		
<i>Marital status</i>				
Married, currently living with spouse	696 (91.5)	65 (8.5)	<0.001	33.5(12.7-88.1)
Married, not living with spouse/Never married.	19 (48.7)	20 (51.3)		1
<i>Ethnic group</i>				
Igbo	710 (90.4)	75 (9.6)	<0.001	14.9(3.9-57.4)
Others ^a	5 (33.3)	10 (66.7)		1
<i>Religion</i>				
Christianity	711 (89.8)	81 (10.2)	<0.001	21.2(2.9-154.6)
Others ^b	4 (50.0)	4 (50.0)		1
<i>Education of mother</i>				
Primary education and below	76 (91.6)	7 (8.4)	0.494	NA
Secondary education and above	639 (89.1)	78 (10.9)		
<i>Occupation of mother</i>				
Unemployed/ housewife	228 (88.4)	30 (11.6)	0.043	1.6(0.7-3.5)
Self employed	410 (91.3)	39 (8.7)		1.9(0.9-3.8)
Salaried employment	77 (82.8)	16 (10.6)		1
<i>Socio economic status</i>				
High socio-economic status	353 (86.7)	54 (13.3)	0.014	0.6(0.3-1.1)
Low socio-economic status	362 (92.1)	31 (7.9)		1
<i>Education of father</i>				
Primary education and below	92 (93.9)	6 (6.1)	0.357	NA
Secondary education and above	604 (91.1)	(8.9)		
<i>Occupation of father</i>				
Self employed	522 (92.1)	45 (7.9)	0.313	NA
Salaried employment	165 (89.2)	20 (10.8)		
Unemployed	9 (100.0)	0 (0.0)		
<i>Decision on immunisation</i>				
Both parents	375 (89.1)	46 (10.9)	0.771	NA
Either parent	340 (89.7)	39 (10.3)		
<i>Distance from home to health center (estimated)</i>				
≤ 1 kilometer	489 (92.4)	40 (7.6)	<0.001	2.6(1.5-4.4)
>1 kilometer	226 (83.4)	45 (16.6)		1
<i>Place of delivery of child</i>				
Private health facility	354 (88.5)	46 (11.5)	0.862	NA
Public health facility	284 (90.4)	30 (9.6)		
Traditional birth attendant	54 (90.0)	6 (10.0)		
Home	23 (88.5)	3 (11.5)		
<i>Relationship of client to child</i>				
Mother	701 (89.6)	81 (10.4)	0.106	0.6(0.2-2.4)
Others ^c	14 (77.8)	4 (22.2)		1

^aYoruba, Hausa, minority tribes^bIslam, traditional religion^cFather, guardian

Discussion

The health workers were the main source of information regarding immunisation for the clients in the urban

(91.3%) and rural (92.8%) health centres. This result was expected, as the health workers are the individuals most involved in the national immunisation programme. This result is similar to the finding in a study in Al-Beida City, Libya, that focused on the knowledge, attitudes, and practices of mothers regarding the immunisation of infants and pre-school children, as this study showed that the majority of the respondents received information concerning immunisation from paramedical workers¹⁹. In a qualitative study on the knowledge, attitudes, and perceptions of the respondents regarding immunisation and diarrhoea performed in six districts in Malawi, it was also observed that the health workers were the main source of information for clients concerning immunisation,^{20,21} and in a community-based study on the patronage of the national programme on immunisation in selected local government areas of Oyo State, Nigeria, the health workers were noted as the greatest source of information on immunisation activities²². It is also somewhat interesting that immunisation services have attracted the attention of the clergy, as 48.8% of the clients in the urban and 42.3% in the rural areas received information on immunisation from the church leaders.

Regarding the question of which family member makes the decision about immunising the child, a higher proportion of the clients in the urban and rural health centres perceived that it is a joint decision of both the father and mother. This result is, however, in contrast to the findings from a community-based study on the maternal determinants of complete child immunisation among children between the ages of 12-23 months in a southern district of Nigeria, in which the major decision regarding immunisation was made by the mothers alone, closely followed by the fathers²³. This result reveals that in the present study, the entire family is involved in issues pertaining to immunisation, as demonstrated by the proportion of mothers who brought their children to the immunisation centres. One cannot detach this family interest in immunisation from the increased awareness of the importance of immunisation, particularly during the polio eradication campaigns that made it possible for vaccinators to visit homes, schools, and churches to immunise children. The massive media campaigns and the gory pictures of the paralysing effects of the disease may have perhaps facilitated the involvement of both parents in matters concerning immunisation. The involvement of the family, particularly fathers, may have helped to make immunisation services a top family priority in the study area. It is hoped that the involvement of the family and the community in other sensitive health issues, such as child health in Nigeria, through increased awareness will help improve the high under-five mortality rate in Nigeria. Similarly, in a study on the maternal determinants of complete child immunisation among children between the ages of 12-23 months in a district in southern Nigeria, it was found that the decision regarding immunisation by both parents was a significant factor that affected the completion of the immunisation schedule by the children²⁴⁻³⁰.

The high proportions of clients who were truly satisfied are relevant, as client satisfaction with immunisation services is directly related to the completion of the children's immunisation schedule,³¹⁻³⁵ which in turn greatly contributes to the reduction of vaccine-preventable diseases.³⁶ Regarding the reason for not being satisfied, the majority of the dissatisfied clients in the urban primary health centres believed that the waiting time was too long, while in the rural area, the major reason was that the waiting area was uncomfortable. In a study performed in Kansas City, a lack of information from the vaccine providers was identified as the major reason for dissatisfaction³³. This difference in the reason for being dissatisfied with immunisation services provided in the two study areas may be attributed to cultural differences, the perception of childhood immunisation, and the clients' rights in the two regions. The fact that clients rely on the primary health centres for the provision of immunisation services and that the country's administrative structure also favours the use of primary health centres for immunisation services may be responsible for the proportion of the respondents who were willing to use the health centres again for immunisation and who were also willing to recommend the health centres to their friends, relatives, and neighbours for the same purpose. Health worker-related factors, including the fact that they were well trained and friendly and offered good services, were the major reasons why the clients were willing to use the health centres again and also recommend the health centres to others for immunisation services in the urban and rural primary health centres. These results may indicate a good client-provider interaction associated with immunisation services in the study area, and the results are very significant, as the attitude of the health workers and their relationships with the mothers have been found to play prominent roles in the demand and acceptance of vaccinations³⁴.

Our study suggests that being a client in a rural area increases the probability of being satisfied with immunisation services. This may be as a result of fulfilled expectations on the part of the clients in rural areas, as the primary health centres are the predominant health facilities and the country's administrative structure supports the provision of immunisation services at primary health centres. Additionally, the majority of the clients in the rural area prefer the primary health centres for immunisation services based on the fact that vaccines are always available, which may have influenced their satisfaction with the services. The clients who were married were found to be more satisfied based on logistic regression analysis, which could be a result of the support from their spouses and family stability. Clients who lived closer to the health centres were also found to have a higher probability of being satisfied with immunisation services, which could be attributed to the fact that they view such closeness as a form of welfare service from the government because primary health centres are

public health facilities. Close proximity of the health centres may also support the immunisation programme, thus enhancing the satisfaction of clients with services. Ethnicity and religious affiliations also increase the probability of client satisfaction with immunisation services. Two variables, namely, occupation of the mother and socio-economic status of the clients, were significant in the bivariate analysis but not in the binary logistic regression. It may be assumed that these variables were confounders to the significant variables identified by the multivariate analysis.

An important limitation of this study was that there was no qualitative assessment of the views and expectations of the clients of the immunisation services regarding the factors that best determine their satisfaction with the immunisation services in the primary health centres. However, while qualitative methods would have permitted the clients to fully disclose their feelings in greater depth than the quantitative data collection method, it also has low external validity compared with the quantitative method, which would limit the application of the findings to the population from which the sample was drawn. A well-defined sampling process and the use of extensive interviews by trained research assistants, as were performed in this study, provided results that could be generalised to clients of immunisation services in the primary health centres with a significant degree of confidence. It is also noteworthy that the presence of interviewers in the primary health centres on the day of vaccination could have introduced bias into the study. Although adequate measures were taken to explain the relevance of the study to the clients, this effort may not have prevented the clients from perceiving the interviews to be an audit process by any of the various government agencies, and as a result, they may have responded in favour of the health facilities out of fear of indicting the health workers. This possibility is very significant, as the focus of this study was immunisation services, and the study indicated that the clients prefer the use of primary health centres for such services.

Conclusion

Most clients were satisfied with the immunisation services in urban and rural primary health centres, which could be attributed to good client-provider relationships. However, the waiting time needs to be reduced, and the physical conditions of the waiting area in the health centres also need to be improved to reduce client dissatisfaction with the services.

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