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Maternal satisfaction with childhood immunization services in primary health care centres in Edo State, Nigeria

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Abstract

Maternal satisfaction is one of the most important factors determining the utilization of childhood routine immunization services. Dissatisfaction with immunization services results in a decline in routine immunization uptake/coverage, increased household food insecurity, worsening community wellbeing and loss of manpower hours as parents look after their sick child. The objective of the study was to assess maternal satisfactions with immunization services. A descriptive cross-sectional study was conducted. A semi structured interviewer administered questionnaire with open and closed ended questions was used to collect information on factors which determine satisfaction with immunization services. It was analysed using the Statistical Package for Social Sciences (IBM SPSS) version 22.0 software The questionnaire was structured to obtain information from 640 mothers attending 35 immunization clinics. One hundred and twenty-four (19.4%) of the mothers were satisfied with the immunization services, 514 (80.3%) were undecided while 2 (0.3%) were dissatisfied with the immunization services received. Majority were indifferent about immunization services received. *(Afr J Reprod Health 2021; 25[2]: 86-93).*

Keywords: Childhood, mothers, primary healthcare centre, routine, satisfaction, utilization

Résumé

La satisfaction maternelle est l'un des facteurs les plus importants qui déterminent l'utilisation des services de vaccination systématique des enfants. Le mécontentement vis-à-vis des services de vaccination se traduit par une baisse du taux de vaccination systématique / couverture, une augmentation de l'insécurité alimentaire des ménages, une aggravation du bien-être de la communauté et une perte d'heures de main-d'œuvre pendant que les parents s'occupent de leur enfant malade. L'objectif de l'étude était d'évaluer les satisfactions maternelles à l'égard des services de vaccination. Une étude transversale descriptive a été menée. Un questionnaire semi-structuré administré par un intervieweur avec des questions ouvertes et fermées a été utilisé pour recueillir des informations sur les facteurs qui déterminent la satisfaction à l'égard des services de vaccination. Il a été analysé à l'aide du logiciel Statistical Package for Social Sciences (IBM SPSS) version 22.0. Le questionnaire a été structuré pour obtenir des informations auprès de 640 mères fréquentant 35 cliniques de vaccination. Cent vingt-quatre (19,4%) des mères étaient satisfaites des services de vaccination, 514 (80,3%) étaient indécises tandis que 2 (0,3%) étaient insatisfaites des services de vaccination reçus. La majorité était indifférente aux services de vaccination reçus. *(Afr J Reprod Health 2021; 25[2]: 86-93).*

Mots-clés: Enfance, mères, centre de soins primaires, routine, satisfaction, utilisation

Introduction

Routine immunization is an integral part of child survival strategies, its utilization is influenced by client satisfaction, which is an important component of health service delivery[1]. In developing countries in Africa, like Nigeria and Egypt, maternal satisfaction has being shown to be the most important factor determining the utilization of childhood routine immunization services[2,3]. The effectiveness and utilization of health care services is determined by consumer's satisfaction with quality of services provided, health care provider's behaviour especially with respect to politeness, availability of vaccines, child health services, and the staff strength (capacity) of the health facilities[4-6]. The degree to which health consumers are satisfied with care received is also strongly related to waiting experience at the health facilities. The Institute of Medicine (IOM) recommends that at least 90% of patients be seen within 30minutes of their scheduled appointment

time. However, several studies have shown longer average waiting time[7,8].

Dissatisfaction with routine immunization services at the primary health care centres, may lead mothers to seek higher level hospitals for routine immunization services[2.] which could lead to household finances being spent on Vaccine Preventable Diseases (VPD) despite the worsening economy situation. It may also cause a decline in RI uptake/coverage, increased household food insecurity, worsening community wellbeing and loss of manpower hours as parents look after their sick child[2].

Amongst interventions outlined for child survival strategies across the world, childhood routine immunization is the most appropriate and effective strategy utilized in combating VPDs. It is thus important that improvement in routine immunization services offered in PHCs be periodically assessed. This should include the immunization chain at the core levels (PHCs) to maintain efficiency and good RI coverage[9]. Determination of the degree of client satisfaction will provide evidence as to whether or not the right immunization services are being provided at the right time, in the right place, in the right way and by the right personnel[10].

This will provide baseline data for assessment of quality improvement strategies which will culminate in an increase in immunization coverage in the Nigeria.

Methods

Setting

This study was carried out in 35 Primary Health Care centres across the three Local Government Areas in Benin City, Edo State, Nigeria.

Sample size determination for mothers/ caregivers utilizing the health facility

The minimum sample size for this study was determined by using the formula for studying single proportion[11.]

$n = (Z)^2pq\ (deff)/\ d^2$

Where n = the minimum sample size when population is greater than 10,000

Z = Z-score = standard normal deviate set at 1.96 corresponding to 95% confidence interval.

p = prevalence in the target population estimated to have a particular characteristic.

$q = 1.0 - p$

deff = design effect; which is 1 for simple random sampling, between 1 and 2 for systematic and stratified sampling and 2 for cluster and multistage sampling techniques[12,13.]

d = error margin or degree of precision which is set at 5%.

Therefore, using, p = 51.0%, which is the proportion of mothers not satisfied with reception given by healthcare providers during immunization, gotten from a descriptive cross-sectional study conducted in 2010 to assess mother's satisfaction with childhood immunization services in Calabar, Nigeria[10]

p = 0.51

$q = 1- 0.80 = 0.49$

deff = 1.5 (for systhematic sampling technique)

$d^2 = (0.05)^2 = 0.0025$

$$n = \frac{(1.96)^2 \times 0.51 \times 0.49 \times 1.5}{(0.05 \times 0.05)^2}$$

n = 576

Adjustment for 10% non-response will be done utilising the formula for non-response adjustment: n/ (1 - nrr) [11.]

Where; n is calculated sample size,

nnr is non-response rate,

n is 576

nnr is 10% non-response rate = 0.1

Minimum sample size determined for health facilities inclusive of 10% non-response was:

n = 576/ (1 – 0.1)

Therefore, n = 640

It was done among 640 mothers who attended the clinic for immunization services and other infant well baby services such as growth monitoring and food demonstration sessions.

Data collection

Mothers/caregiver's satisfaction of immunization services was assessed with a client satisfaction questionnaire adapted, modified (CSQ-8)[14] and designed to measure client satisfaction with services rendered at the PHCs.

Data analysis

The questionnaires were screened for completeness by the researcher, coded and entered the Statistical Package for Social Sciences (IBM SPSS) version

22.0 software. The categorical variables were presented as frequencies and percentages while numerical variables that were normal in distribution were expressed as mean (standard deviation). Statistical tests such as independent t test was carried out to compare difference in means of numerical data (such as age in years of the respondents). The Chi-squared test of association was used to test statistical association between socio-demographic variables of the respondents and the knowledge and satisfaction of immunization services. The Fisher's exact test was used in instances where the total expected cell frequencies less than five is more than 20%. The binary logistic regression was modelled to explore and identify significant predictors of satisfaction of routine immunization services at the Primary Health Facilities in the Local Government Area (LGAs). The level of significance was set at $p< 0.05$.

Scoring system for mother's satisfaction with immunization services

Scores were assigned using a 5-point Likert scale which enquired mother's level of satisfaction/dissatisfaction with the services received.

The 5-point Likert scale ranged from very dissatisfied =1 to very satisfied= 5. This gave a minimum and maximum score of 7 and 35; it was converted to percentage and classified as:
Dissatisfied: less than 40%, Undecided: 41-79.9%, Satisfied: 80% and above.

Results

Respondents who participated in the study were 640. Sociodemographic characteristics of respondents are as follows: 239 (37.3%) of the caregivers were less than 30 years old, 332 (51.9%) were in the age bracket 30 – 39 while 59 (9.2%) were 40 – 49 years. Six hundred and twenty-nine (98.3 %) were mothers of the index child, 9 (1.4%) were grandparents while 2 (0.3%) were aunts. 615 (96.1%) of the caregivers were married while 17 (2.6%) were single. Two hundred and sixty-four (41.3%) of the caregivers were from households with sizes of 4 and below, followed by 357 (55.8%) caregivers who were from household sizes ranging from 5 – 8, while 19 (3.0%) had household size of 9 or more. Four hundred and nine (63.9%) of the caregivers had secondary education, 180 (28.1%) had primary level of education while 6 (0.9%) had no formal education. Five hundred and fifty-five (86.7%) were employed, and of these, 366 (66.0%) had unskilled occupations while 166 (29.9%) had middle class occupations. All caregivers reported vaccinating the index child. Six hundred and twenty-five (97.7%) presented with their vaccination cards while 15 (2.3%) had immunization cards but presented without them. Six hundred and thirty (98.4) of the children received BCG, all received the first doses of OPV, PENTA and PCV while 118 (72.4%) and 119 (73.0%) received measles and yellow fever vaccines respectively. Five hundred and forty-five (85.2%) children were completely immunized for age while 95 (14.8%) were not completely immunized for age. Five hundred and fifty-six (86.9%) of the caregivers were satisfied with the reception they received at the health facility, 587 (91.7%) were satisfied with cleanliness while 241 (37.7%) were undecided with the attitude of the health staff. Two hundred and eighty-nine (45.2%) were satisfied with the waiting time at the

Table 1: Socio-demographic characteristics of mothers

Variable	Frequency (%)
Age (years)	
< 30	239 (37.3)
30 – 39	332 (51.9)
40 – 49	59 (9.2)
≥ 50	10 (1.6)
Relationship with child	
Mother	629 (98.3)
Grand parent	9 (1.4)
Uncle/aunt	2 (0.3)
Marital status	
Single	17 (2.6)
Married	615 (96.1)
Cohabiting	1 (0.2)
Separated/ divorced	4 (0.6)
Widowed	3 (0.5)
Household size	
≤ 4	264 (41.2)
5 – 8	357 (55.8)
≥ 9	19 (3.0)
Level of education	
No formal education	6 (0.9)
Primary	180 (28.2)
Secondary	409 (63.9)
Tertiary	45 (7.0)
Employment status	
Employed	555 (86.7)
Unemployed	85 (13.3)
Unskilled	212 (33.5)

Mean age = 32.1±7.1 years
**Included information of partners of single caregivers who contributed financially to the upkeep of the index child*

Table 2: Vaccination coverage per antigen for the index child

Variable	Frequency (%) (n=640)
Vaccination coverage due for age*	
BCG (n = 640)	630 (98.4)
OPV1 (n = 640)	640 (100)
OPV2 (n = 520)	520 (100)
OPV3 (n = 399)	398 (99.7)
PENTA1 (n = 640)	640 (100)
PENTA2 (n = 520)	520 (100)
PENTA3 (n = 399)	359 (90)
PCV1 (n = 640)	640 (100)
PCV2 (n = 520)	505 (97.1)
PCV3 (n = 399)	338 (84.7)
Measles (n = 163)	118 (72.4)
Yellow fever (n = 163)	119 (73)

Dropout rate (BCG/Measles) = 26.0%; Dropout rate (PENTA1/Measles) = 19.5%
*Dropout rate (PENTA1/PENTA3) = 10.0% *multiple response*

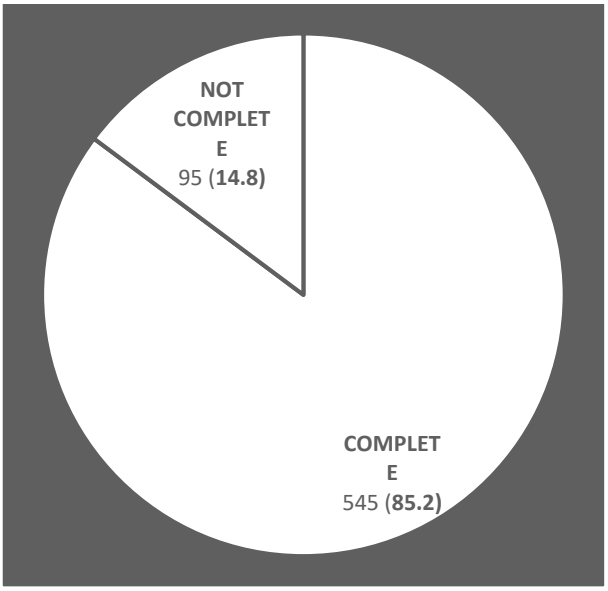

Figure 1: Immunization status of the children

health facility but 110 (17.2%) were very dissatisfied with the waiting area.

More than three quarters, 498 (77.8%) were satisfied with the content of the health education given before the immunization session while 516 (80.6%) were satisfied with the immunization given to the children. Most, 553 (86.4%) gave an overall rating of satisfaction with immunization services. 124 (19.4%) of the caregivers were satisfied with the immunization services, 514 (80.3%) were undecided while 2 (0.3%) were dissatisfied with the immunization services received. Thirty-two (24.4%) of the caregivers of children aged 6 – 11 months were

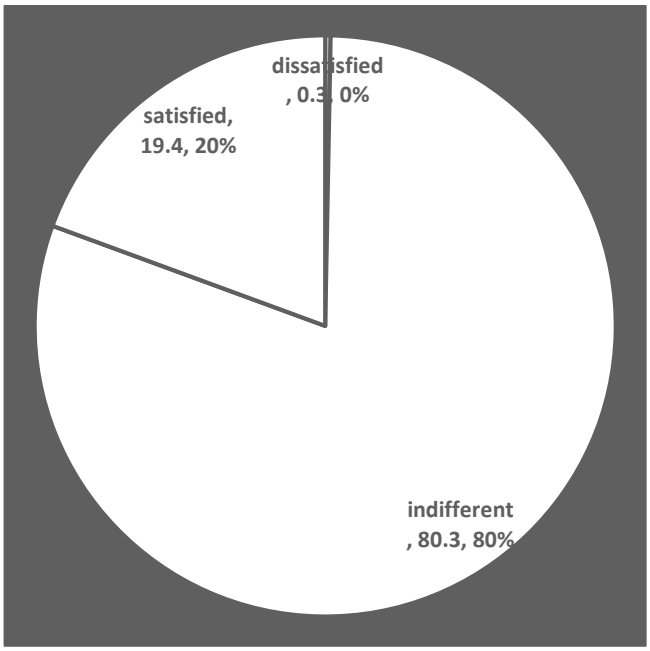

Figure 2: Composite score of mother's satisfaction with immunization services

satisfied with the immunization service received compared to 1out of 5 (20.0%) of the mothers with index children aged 18 – 23 months. The association between the children's age and the caregiver's satisfaction with immunization services was not statistically significant (p = 0.726). There was no statistically significant association between the sex of the index child and the mother's satisfaction with the immunization service received (p = 0.659). Similarly, there was no statistically significant association between the place of delivery of the index child and the caregivers' satisfaction with the immunization service received (p = 0.665).

Seventeen (28.8%) of the mothers aged 40 – 49 years were satisfied with the immunization service received compared to 1 (14.3%) of those aged 60 years and above. This association was also not statistically significant (p = 0.440). Five (29.4%) of the respondents who were single were satisfied with the immunization service received compared to 115 (18.7%) of the married counterparts. Significant relationship therefore existed between marital status and mother's satisfaction with immunization (p = 0.008).

Caregivers whose children were born in hospitals were 1.727 times more likely to be

Table 3: Mother's satisfaction with immunization services

VARIABLE	Very dissatisfied n (%)	Dissatisfied n (%)	Undecided n (%)	Satisfied n (%)	Very satisfied n (%)
Reception received*	0 (0.0)	31 (4.8)	31 (4.8)	556 (86.9)	22 (3.4)
Cleanliness	17 (2.7)	14 (2.2)	22 (3.4)	587 (91.7)	0 (0.0)
Waiting area	110 (17.2)	44 (6.9)	274 (42.8)	164 (25.6)	48 (7.5)
Waiting time	89 (13.9)	17 (2.7)	214 (33.4)	289 (45.2)	31 (4.8)
Content of Health education	36 (5.6)	15 (2.3)	84 (13.1)	498 (77.8)	7 (1.1)
Staff attitude	89 (13.9)	66 (10.3)	241 (37.7)	196 (30.6)	48 (7.5)

*Multiple responses**

Table 4: Association between socio-demographic characteristics and mother's satisfaction with Immunization services

Variable	Satisfaction with services		Chi square	p value
	Satisfied n (%)	Dissatisfied n (%)		
Child age (months)				
0 – 5	85 (17.8)	392 (82.2)	3.021	0.388
6 – 11	32 (24.4)	99 (75.6)		
12 – 17	6 (22.2)	21 (77.8)		
18 – 23	1 (20.0)	4 (80.0)		
Sex of index child				
Male	59 (17.8)	272 (82.2)	1.053	0.305
Female	65 (21.0)	244 (79.0)		
Place of delivery				
Hospital	98 (19.7)	399 (80.3)	1.747	0.418
Home	24 (20.0)	96 (80.0)		
Traditional Birth Attendant (TBA)	2 (8.7)	21 (91.3)		
Age (years)				
18 – 29	41 (17.2)	198 (82.8)	4.690	0.196
30 – 39	65 (19.6)	267 (80.4)		
40 – 49	17 (28.8)	42 (71.2)		
≥ 50	1 (10.0)	9 (90.0)		
Marital status				
Ever married	119 (19.1)	503 (80.9)	0.836	0.361
Never married	5 (27.8)	13 (72.2)		
Household size				
≤ 4	49 (18.6)	215 (81.4)	0.206	0.902
5 – 8	71 (19.9)	286 (79.6)		
≥ 9	4 (21.1)	15 (78.9)		
Level of education				
No formal	20 (23.5)	65 (76.5)	3.403	0.334
Primary	74 (20.2)	292 (79.5)		
Secondary	24 (14.8)	138 (84.6)		
Tertiary	6 (22.2)	21 (77.8)		
Socioeconomic status				
Class I	2 (100.0)	0 (0.0)	FE=11.176	**0.025**
Class II	2 (9.1)	20 (90.9)		
Class III	21 (16.2)	109 (83.8)		
Class IV	68 (20.9)	257 (79.1)		
Class V	31 (19.3)	130 (80.7)		

Significant Fishers exact (FE)

satisfied with the immunization service compared to those delivered outside hospitals.

This was also statistically significant (p = 0.019). For a one-year increase in age of the child, respondents were more likely to be satisfied with the immunization services with an odd of 1.206. The association between age and satisfaction of immunization services was not statistically significant (p=0.560) (CI=0.643-2.259).

Discussion

Attitude of health care workers towards mothers has been shown to be a barrier to accessing immunization services in Nigeria[15]. In this study a

Table 5: Bivariate regression analyses of the predictors of satisfaction with immunization services

Predictors	B (regression coefficient)	p-value	Odd Ratio	95% c.i. for Odd ratio Lower	Upper
Child age (months)					
≤3 months*					
≥4 months	0.148	0.494	1.160	0.758	1.774
Delivery place					
Hospitals*					
Others	0.547	**0.019**	1.727	1.095	2.724
Caregivers age (years)					
< 40*					
≥ 40	0.187	0.560	1.206	0.643	2.259
Marital status					
Ever married	0.846	0.105	2.329	0.838	6.473
Never married*					
Household size					
≤ 4	0.082	0.697	1.085	0.719	1.639
> 4*					
Level of education					
Primary or less	0.282	0.380	1.325	0.707	2.486
Secondary/tertiary*					
Employment					
Yes*					
No	0.035	0.910	1.036	0.564	1.902
Socioeconomic status					
Classes I – III*					
Classes IV and V	0.399	0.252	1.491	0.753	2.950
Constant	-2.175	**0.000**	0.114		

*Reference category; Coefficient of determination (R^2) = 1.4% – 2.3%; Significant; ci = confidence interval

quarter of the mothers/caregivers were dissatisfied with the attitude of the health care workers at the primary healthcare facilities even though they were satisfied with the reception and cleanliness in such health facilities. This finding is at variance with the observations in a study done in 2010 in Calabar, Nigeria[10] where respondents were not satisfied with the cleanliness and reception received at the health facilities and in Ismailia urban Governorate, Egypt in 2014, were maternal satisfaction for staff attitude was more profound in health facilities[2]. In such situations, mothers may perceive healthcare workers as unfriendly and unsupportive and would anticipate further maltreatment by healthcare workers when they lose vaccination cards or miss vaccination appointment. In such setting they would rather avoid the healthcare workers than consult them or seek their support. Mothers in such circumstances could miss out on opportunities to get help and advice regarding how their children could make up for missed opportunities. The relationship between caregiver's perception of healthcare workers, and completion immunization has been reported from developing countries such as Nigeria[16,17,18] and Ethiopia[19].These problems of interpersonal relationship could be compounded by factors such as long waiting time and vaccines/supplies stock-outs in the health facilities[16-18.] This situation may be worsened by poor or absence of comfort measures such as absence or failure of power supply for fans, attitude and inadequate seats for the clients in the waiting room. The poor attitude among healthcare workers may be attributable to pressure of work on the few staff available. This notwithstanding there is the need for healthcare workers to treat mothers and their children with decorum so that they would willingly approach health facilities subsequently for immunization.

Dissatisfaction with the waiting time and waiting areas in the health facilities were significant with an average waiting time of greater than 30 minutes observed in most of the primary health centers, Long waiting time is a known major impediment to clients' satisfaction[16].This observation is in tandem with findings from a study in Calabar, Nigeria where most clients spent longer time waiting for services, while spending brief moments with the health care providers. In another study the reasons for dissatisfaction with immunization services, were long waiting time and uncomfortable waiting areas. long waiting times

can discourage patronage of health facilities for immunization, particularly among people whose income are time dependent[10.] This may lead to loss of income as the respondent may not be able appreciate the long-term benefits of a program when her daily wage is at stake. Long waiting time may also lead to loss of manpower hours and reduced productivity and drop in Gross Domestic Product (GDP). In a depressed economy like Nigeria's, mothers are likely to become impatient if they must wait for long before they access health care service, as such delays take them away from their economic pursuit. Therefore, the importance of timeliness in service delivery cannot be overemphasized.

Most of the mothers/caregivers gave an overall high rating of satisfaction for the service received. Less than one fifth were satisfied while high proportions were indifferent with the immunization services. Previous studies in Nigeria carried out in Jos,[17]Ibadan [18]and in Egypt[2] had also documented similarly high satisfaction figures. Satisfaction may be associated with such factors as being happy with the hospital staff and the work environment of the hospital, staff attitude, cost, and waiting time[20,21].

Ethics consideration

Ethical approval for the research was obtained from ethics and research committee of the university of Benin Teaching Hospital and informed consent from the respondents.

Conclusion

Almost all the mothers were indifferent regarding satisfaction with routine immunization services in Primary Health Care centers (PHCs). Efforts should be to train the healthcare workers to have a good attitude at the work place as this can encourage mothers to access health care and also provision of equipment and furniture for Primary Health Care facilities to promote the delivery of routine immunization services.

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Contribution of authors

Dr. Uwaibi conceived, designed, collected the data, and analysed the data for the study. Both authors wrote and approved the manuscript.

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