



Reasons for Childhood Immunisation Drop-out in Rural Health Facilities in Abakaliki, Nigeria

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

Background: High rate of childhood vaccination drop-outs is a significant public health problem in rural areas of developing countries especially in Nigeria. The reasons for immunisation drop-out are poorly understood and little or no data is available to explain the phenomenon that could support the decision making. This study, therefore, determined the reasons for immunisation drop-out in the rural areas of Abakaliki, Nigeria.

Materials and Methods: Descriptive analytical cross-sectional study design was used for the survey. Data were collected using pretested, semi-structured interviewer administered questionnaire from 290 mothers/caregivers accessing childhood immunisation services in Mile Four and St. Vincent hospitals selected using systematic random sampling technique. Reasons for immunisation drop-out were gotten from caregivers when they brought their children for immunisation in subsequent immunisation dates after the drop-out interval. Analysis was done using SPSS version 22 and level of statistical significance set at $p < 0.05$ and confidence level at 95%. Ethical approval was obtained from the Research and Ethics Committee (REC) of the Federal Teaching Hospital Abakaliki (FETHA), Ebonyi State, Nigeria.

Results: The mean age of respondents in Mile Four hospital was 26.6 ± 4.9 years while 27.1 ± 4.2 years in the St. Vincent hospital. The reasons for immunisation drop-out in Mile Four were no

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money for transport (2.1%), caregiver travelled (1.4%), baby was sick (1.4%), far distance to health facility (0.7%). In St.Vincent reasons cited were- Far distance to health facility (6.2%), no money for transport (4.8%), Mother was sick (2.8%), caregiver travelled (2.1%) and baby was sick (2.1%).Far distance to health facility was a predictor of immunisation drop-out in St. Vincent group. It is 2.8 times more likely to cause immunisation drop-out than near distance to health facility.

Conclusion: High rate of immunisation drop-outs need to be addressed collectively both by individuals and government in order to achieve the targeted 95% immunisation coverage necessary for the sustained control of vaccine preventable diseases.

Keywords: Immunisation drop-out; reasons; rural infants; Abakaliki; Nigeria.

1. INTRODUCTION

Immunisation drop-out and coverage rates at primary health care (PHC) level indicate the level at which communities utilise the preventive services and thus serve as a measure of the strength of public health system. They also measure the effectiveness of the immunisation programme [1]. Immunisation drop-outs refer to infants who have used or missed immunisation services and do not return for subsequent vaccinations. When drop-outs exceed 10 percent, it indicates a problem of utilisation of services. In most settings where full immunisation coverage is low, most infants receive at least one dose of pentavalent vaccines, but the proportion that receive the needed second and third doses drops significantly [1]. However differences in the indicators of access and utilisation of immunisation services exist [2,3]. Indicators of access to health services among other factors include level of education, sex, patriarchal social arrangement, rural residence, poverty, religious and cultural beliefs about certain diseases and location of health facilities etc. Indicators of utilisation of immunisation services include quality of staff skills, protocols of treatment, availability of supplies and environment of health facilities, physical and financial accessibility of services, knowledge of what services exist, education about how to best utilise self and practitioner-provided services and cultural norms of treatment [2,3]. In previous studies most important reason given for immunisation dropout was distance to health facility [4]. However, reasons for childhood immunisation drop out are unknown in the study area, hence this study determined the reasons for dropout in rural areas of Abakaliki, Ebonyi State Nigeria.

2. MATERIALS AND METHODS

Descriptive analytical cross-sectional study design was used for the survey. Vaccines such

as BCG, OPV0 and HBV0 are given at birth, OPV1, PCV1, Penta1 are given at 6th week of life, OPV2, PCV2, Penta2 are given at 10th week of life, OPV3, PCV3, Penta3 are given at 14th week of life while Measles, Yellow fever, Meningitis vaccines are given at 9th month of life. These vaccines are given free. This minimum sample size for the study was determined using the formula for comparing two proportions [5,6]. They were selected using systematic random sampling technique. Data were collected using semi-structured interviewer administered questionnaire on the mothers/caregivers and immunisation registers of 290 infants who were brought for immunisation in Mile Four and St.Vincent hospitals in Ebonyi and Izzi local Government Areas of Ebonyi State after the drop-out interval. Reasons for immunisation drop-out were gotten from caregivers when they brought their children for immunisation in subsequent immunisation dates after the drop-out interval. The interval considered as drop-out period was 4 weeks after due date for the uptake of that vaccine. Analysis was done using SPSS version 22.0. Chi-squared test was used to determine association or differences between proportion of the variables and the level of statistical significance set at $p < 0.05$ and confidence level at 95%. Logistic regression model was used to determine predictors of immunisation drop-out. Ethical approval was obtained from the Research and Ethics Committee (REC) of the Federal Teaching Hospital Abakaliki (FETHA), Ebonyi State, Nigeria.

3. RESULTS

The mean age of respondents in Mile Four hospital was 26.6 ± 4.9 years while 27.1 ± 4.2 years in the St. Vincent hospital.

Fig. 1 showed the proportion of infants who dropped-out of immunisation in both groups. It also shows between group comparisons of

immunisation drop-outs which was found to be statistically significant ($p < 0.01$). Table 2 showed the reasons for immunisation drop-out among respondents in both groups. More caregivers (6.2%) in St. Vincent cited distance to the health facility as the major reason for immunisation drop-out compared to those in Mile Four (0.7%), a difference that was significant ($p = 0.01$). Other reasons were not significant ($p > 0.05$). In Table 3, far distance to health facility was a predictor of

immunisation drop-out in St. Vincent hospital. It was 2.8 times more likely to cause immunisation drop-out than near distance to health facility.

Immunisation drop-outs refer to infants who have used or missed immunisation services and do not return for subsequent vaccinations. Missed immunisation is when infants scheduled for immunisation did not come at that given date but returned later for uptake of the given vaccination.

Table 1. Socio-demographic characteristics of respondents in both health facilities

| Variables | Mile four (n=145) Freq. (%) | St. Vincent (n=145) Freq. (%) | χ^2 | p-value |
|--------------------------|-----------------------------------|-------------------------------------|----------|---------|
| Sex | | | | |
| Male | 5 (3.4) | 4 (2.8) | FT | 0.73 |
| Female | 140 (96.6) | 141 (97.2) | | |
| Age group (years) | | | | |
| 15-19 | 11 (7.6) | 9 (6.2) | 6.38 | 0.16 |
| 20-24 | 50 (34.5) | 37 (25.5) | | |
| 25-29 | 48 (33.1) | 68 (46.9) | | |
| 30-39 | 36 (24.8) | 31 (21.4) | | |
| Marital status | | | | |
| Married | 137 (94.5) | 134 (92.4) | 2.44 | 0.69 |
| Single | 8 (5.5) | 11 (7.5) | | |
| Education | | | | |
| Primary | 10 (6.8) | 17 (11.7) | 3.67 | 0.15 |
| Secondary | 88 (60.7) | 93 (64.1) | | |
| Tertiary | 47 (32.4) | 35 (24.1) | | |
| Employment | | | | |
| Paid employment | 25 (17.2) | 21 (14.5) | 2.75 | 0.25 |
| Self employment | 56 (38.6) | 70 (48.3) | | |
| Unemployed | 64 (44.1) | 54 (37.2) | | |
| Religion | | | | |
| Christianity | 142 (97.9) | 143 (98.6) | FT | 1.00 |
| Others | 3 (2.1) | 2 (1.4) | | |

FT= Fisher's exact test

Table 2. Respondents' reasons for immunisation drop-out in each study group

| Variables | Mile four group (n=145) Freq. (%) | St. Vincent group (n=145) Freq. (%) | χ^2 | p-value |
|---------------------------------|---|---|----------|---------------|
| Reasons for dropping-out | | | | |
| | Yes | Yes | | |
| Distance to facility | 1 (0.7) | 9 (6.2) | 6.6 | 0.01 * |
| No money for transport | 3 (2.1) | 7 (4.8) | 1.6 | 0.33 |
| Caregiver travelled | 2 (1.4) | 3 (2.1) | 0.2 | 1.00 |
| Baby was sick | 2 (1.4) | 3 (2.1) | 0.2 | 1.00 |
| Mother was sick | 0 (0.0) | 4 (2.8) | FT | 0.12 |

FT= Fisher's exact test; *statistically significant

Table 3. Predictors of immunisation drop-out at St. Vincent hospital

| Variables | Immunisation drop-out | | |
|--|-----------------------|---------------|---------|
| | AOR | 95% CI of AOR | P-value |
| Marital status | | | |
| Not married | 1 | | |
| Married | 4.31 | -0.89-10.51 | 0.09 |
| Educational status | | | |
| <Secondary | 1 | | |
| ≥Secondary | 0.79 | -0.39-1.61 | 0.59 |
| Far distance to health facility | | | |
| No | 1 | | |
| Yes | 2.78 | 1.47-6.76 | 0.05** |

**Predictor

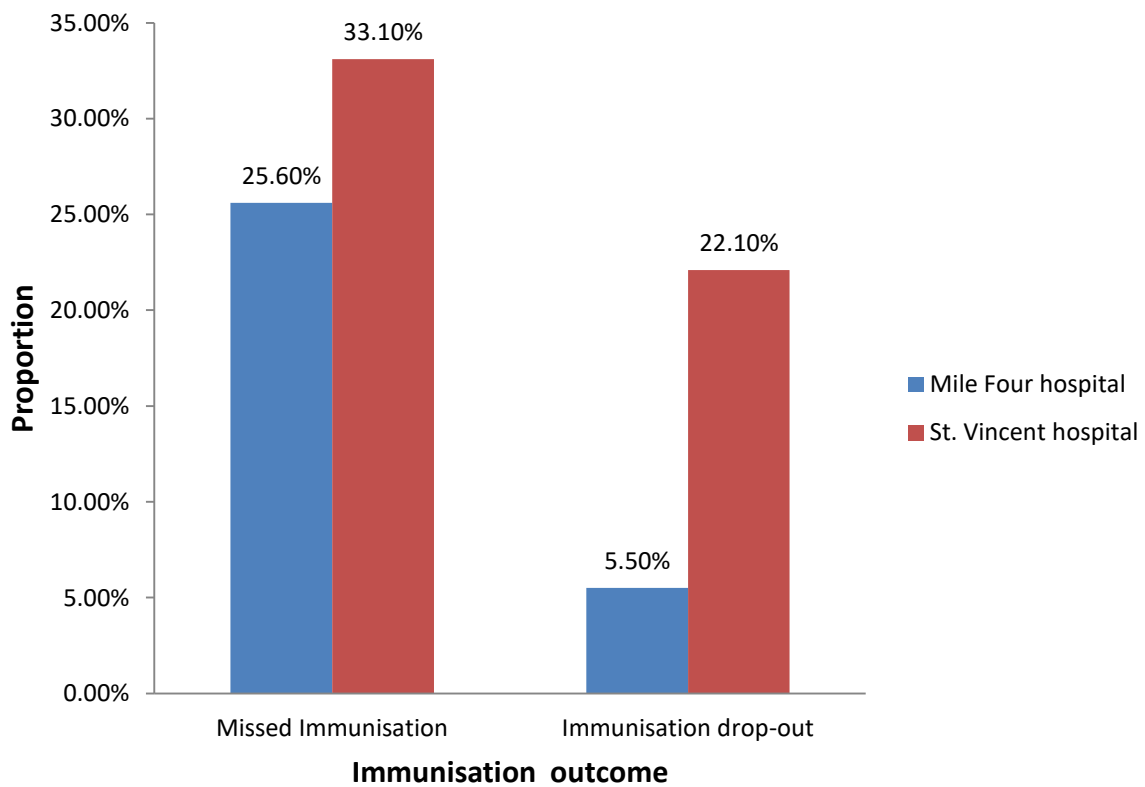


Fig. 1. Showing proportion of missed immunisation and immunisation drop-outs in both facilities

4. DISCUSSION

Reasons for immunisation drop-out in most health facilities especially in rural areas of developing countries are not well understood. However, in similar settings, reasons may also be similar. Reasons given for immunisation drop-out in Mile Four were no money for transport (2.1%), caregiver travelled (1.4%), baby was sick (1.4%), far distance to health facility (0.7%) while in St.Vincent hospital, reasons cited were far distance to health facility (6.2%), no money for transport (4.8%), mother was sick (2.8%),

caregiver travelled (2.1%) and baby was sick (2.1%). There is a significant difference in the proportion of caregivers who cited far distance to health as reason for drop-out in the intervention and control groups. There is no difference in the proportion of respondents who gave other reasons in both groups.

In this study, caregivers did not demonstrate lack of commitment to immunisation, rather they gave far distance to health facility and no money for transport as major reasons why they could not come back to study centres for further vaccines,

and they actually continued the immunisation in centers close to their residential areas. In a study by Itimi et al. [7] mothers were not returning for immunisation due to lack of motivation, poor attitude of the health workers and relocation to a new environment. However the reason in this study could be that, the first doses which were received in the study center coincided with the mother's post natal care checkup visits. When there was no longer a need for the mothers to return to the center for their own check-up, they now went to nearer centers for their children's immunisation. The fact that immunisation was continued in nearby health centers was an indication that these group of parents actually are aware of the importance of this intervention. It is also interesting to note that this study demonstrated average drop-out in both males and females infants with that of the males being marginally lower though not statistically significant. The magnitude of its public health importance cannot be over-emphasised. For every child recalled for immunisation, so much has been done to prevent disease, morbidity and mortality in that child, prevent disabilities as well as disease transmission to many others who might have gotten infected through the child and also boosting herd immunity [4].

Similar reasons found in Umuahia and Enugu, Nigeria were- because of far distance (49%) and 38% for no contact [4], health facility was far, health workers not always available, child was sick, mother was too busy, vaccination time inconvenient, caregiver not aware of another dose of vaccination among others [8]. Other factors include mothers' poor knowledge of immunisation against targeted diseases, parents' concern about immunisation safety, long waiting time at the health facility and long distance from the hospital, false contraindications like catarrh and fever in the infant [9,10], immunisation awareness [11]. In Benin, it was reported that cost of transportation and man hours lost in time spent attending the clinic were reasons for high drop-out rate [12]. These factors need to be addressed to reduce the drop-out rates. Other factors are lack of political will, poor work attitude and mal-orientation of health workers, poor health infrastructure, religious insurgency/terrorism, ignorance, cultural/religious average aversion to vaccine acceptance or use, misconceptions about safety of the vaccines and lack of awareness about availability of vaccination services, inadequate cold chain facilities and vaccine stock-outs [13-15]. In that study, marital status was found as a predictor for

immunisation completion compared to higher maternal educational status (secondary education and above) and occupation (government employees) found to be important independent predictors for immunisation completion among mothers/caregivers of infants in Enugu [8].

5. CONCLUSION

The reasons given for immunisation drop-outs in this study especially far distance to health facility and no money for transport call for more decentralised primary health care centres mostly in rural areas in order to achieve the targeted 95% immunisation coverage necessary for the sustained control of vaccine preventable diseases.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the author(s).

COMPETING INTERESTS

Author has declared that no competing interests exist.

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