

Factors Influencing Routine Vaccination of Children of Mothers Live-Stock Retailers in the Markets of Yaoundé

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Abstract

Background: The job of mothers though having a positive impact on the family could be detrimental to children's health due to her unavailability. **Methodology:** A cross-sectional study was carried out from March to August 2014. Mothers of children aged 11 - 48 months were interviewed to determine factors which could influence the vaccination of their children. **Results:** A total of 265 mothers were interviewed. Despite their occupations, they completely vaccinated all of their children. The vaccination coverage of tracer antigens (third dose of DPT/HiB/HepB) was high 97.7% as well as the proportion of children completely vaccinated (91.7%). A mastery of the vaccination calendar of the site, and resumption of activities when the children were more than 4 months old, significantly influenced the completion of vaccination. Only 6 children (2.3%) were not correctly or incompletely vaccinated. The reason given by their mothers were: the lack of time (45.0%), the adverse effects of vaccines (27.0%), forgetfulness (18%), and shortage of vaccines supplies (5.0%). **Conclusions:** Occupation was not a hindrance to the vaccination of children of live-stock retailers. The problem of absent or incomplete vaccination could be overcome by improving the strategies of social mobilisation, permitting the sensitisation of mothers hesitant to vaccinate their children. A regular supply of vaccines will reduce the missed opportunities, thus maintaining high vaccination coverage in this social group.

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Keywords

Vaccination Coverage, Factors, Complete, Occupation, Mothers, Children

1. Introduction

Cameroon has registered over several decades poor routine vaccination coverage (<40%) in children [1]. After having reached a period of better statistics (between 2008 and 2011), we note administrative fluctuations in the vaccination coverage sometimes attain considerably low performance [2]. Several factors have been evoked to explain the absence or incomplete vaccination of children, amongst which family reasons ranked top on the list [3]. In most families, the responsibility of vaccination of children is totally abandoned to the woman who, due to her subordination to the duties of the home, is not often allowed to make use of health services [4]. However, low financial status of the woman is one of the obstacles to the access of health services of children [5]-[8]. In developing countries, paid-jobs of mothers have proven to be detrimental to the health of their children [9]-[12]. Mothers' involvements in these income generating activities, coupled with the workload, inhibit them from taking care of their children's health, and from respecting vaccination schedules [8]. Far from this assertion are studies that have shown that remunerated maternity leave permitted the increase in vaccination coverage [13]. However, maternal occupation was not the only factor influencing vaccination irregularity; others included socio-demographic factors, and perception which negatively influenced children's vaccination [12]. It is therefore desirable that health personnel, instead of limiting themselves to the transmission of information, also incite parents to appreciate the necessity of vaccination [14]. Working mothers often abandoned their children at home because of their occupations. Authors demonstrated that the jobs of mothers had a harmful effect on the health of children [10]. Mothers of live-stock retail are among those of the less favourable socioeconomic class with high workload that can reduce the time allocated to the preventive actions for their children. The present study thus aimed to analyse the vaccination coverage, in children of retailers of food supplies, in order to appreciate their contribution to the weak vaccination coverage in their respective health districts.

2. Methodology

A cross sectional study was carried out between March and August 2014, on the vaccination of children of mothers who were retailers of food supplies in 6 markets. One market was chosen per Health District (HD) in the city of Yaoundé located in the Central Region of Cameroon. Selection criteria were based on the attendance, and the residence in health Districts with weak or declining vaccination coverage. The study hypothesis was that live-stock retailers often abandoned their children so as to concentrate on their business; consequences being insufficient vaccination of these children and thus decrease in the vaccination coverage in the HD.

2.1. Population and Methods

The study was carried out on children aged 11 - 48 months and their mothers who were retailers by profession. In case of twins, just one was included in the study. Mothers who lived with their children and possessed well filled vaccination cards were included. We excluded children with pathologies which contraindicated any vaccination or imposed a special vaccination program. Among them were severe immune suppression and central nervous diseases.

2.2. Materials Used for the Study

A questionnaire was used to fill information (see annex). Vaccination cards were also exploited.

2.3. Study Procedure

We carried out a semi-structured study with the mothers in two levels. We initially went to the markets to identify the various sectors of food provisions so as to classify them according to the types (tubercles, market garden product). Later on, sectors were randomly chosen and each visited from one end to the other following: the di-

reaction dictated by the tip of a pen. Mothers who fulfilled the inclusion criteria were then identified and interviewed after obtaining their verbal consent. The first contact with the mothers permitted the registration of socio-demographic information and to obtain an appointment for consultation of the children's vaccination cards. We described their vaccination status with regards to the type of antigen received, the number of doses received as well as the regularity of their administration. When a child was not sufficiently (incompletely or not at all) vaccinated, the mother was re-interviewed in order to identify the reasons. A child was considered completely vaccinated when he had received a dose of BCG, 3 doses of DPT/HepB/Hib (PENTA), 4 doses of polio and a dose of the yellow fever and measles vaccine.

Vaccines against pneumococcus and Rota-Virus weren't included in the investigations because they had been recently introduced in the national vaccination calendar of Cameroon. The analysis were on the socio-demographic characteristics of the mother (age, region of origin, religion, level of education, marital status) and of the children (age, sex) as well as their vaccination calendar.

The origins of the mothers were classified according to the main geographic zones of the country. The Grass-field consisted of the West and North-West regions, the Great South constituted of the Centre, East and the South regions. The Great North constituted the North, the Far North and Adamawa while the coastal region consisted of the Littoral and the South West. As regards the matrimonial status, mothers living alone were either single, divorced, or widows and those in couples were either married or in free union.

We then searched for factors which could hinder vaccination such as socio-demographic, distance from the site and financial (average expenditure for each vaccination session) and those linked to the Health service.

2.4. Statistical Analysis

Data was entered and analysed using the statistical software Epi-info version 3.5.4. Quantitative data was presented as means or median with inter-quartile ranges and categorical variables as percentages. Factors associated with incomplete vaccination were described using univariate analysis. This consisted mostly of estimating the Fischer kh^2 exact test. Odds ratio measured the association between maternal characteristics and lack or incomplete vaccination in children. Variables initially identified as factors influencing vaccination were analysed using logistic regression to establish a correlation with the vaccination status of the children. P values < 0.05 were considered to be statistically significant.

3. Results

3.1. Description of the Study Population

A total of 265 mother-child couples were analysed. Median age of the children was 24 months (inter-quartile range: 16 - 36 months). There were 141 (53.0%) boys and 124 (47.0%) girls, with a sex ratio of 1.14. The age group of 11 - 23 months was the most represented (48.3%).

With regards to the mothers, their age ranged from 18 - 48 years, median age being 31 years, (inter-quartile range: 28 - 36 year). Majority of mothers 169 (63.8%) were more than 30 years of age (**Table 1**). About 3/4, 196 (74.0%) had attained a maximum level of education of secondary school and about half lived in free union 137 (51.7%). Christianity was the principal religion, 245 (92.4%) and majority of the mothers were from the Grass-field region.

3.2. Vaccination Status of Children

The vaccination coverage per antigen was 98.9%, 97.7%, and 92.1% for BCG/Polio, PENTA 3/Polio3 and Yellow fever/measles vaccines (VAA/VAR) respectively (**Table 2**). Nearly 9/10 of the children 243 (91.7%) were completely and 19 (7.2%) partially vaccinated. Dropout rates were below the level of alert. They were 0.8% and 6.8% between DTP-Hep-Hib1 compared to the DTP-Hep-Hib3 and between BCG compared to anti measles vaccine (the rate of general abandonment) respectively (**Figure 1**).

3.3. Factors Associated with Complete Vaccination of Children

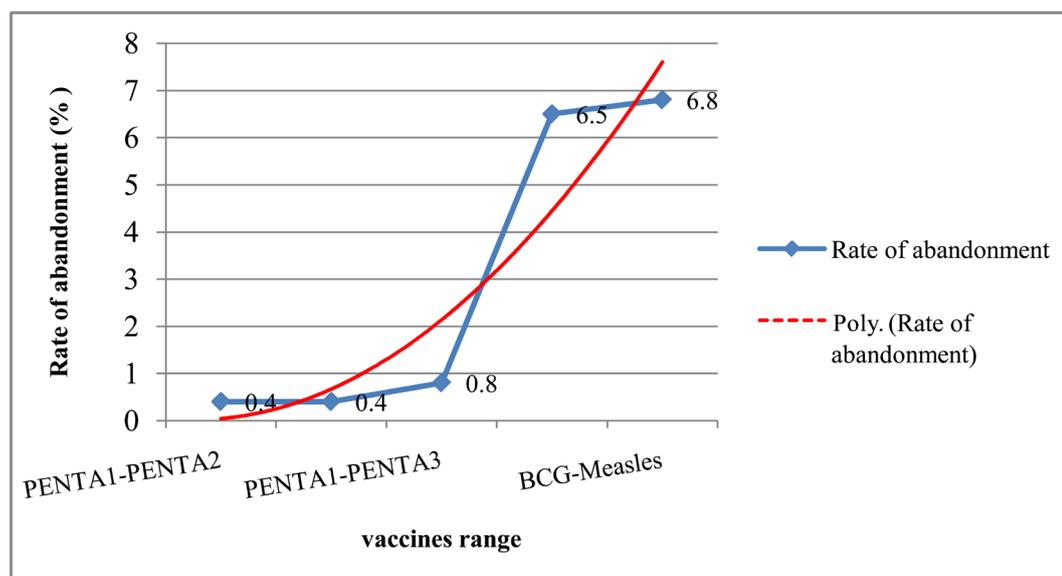
Marital status, level of education, religion, and mother's age did not have any influence on children's vaccination status (**Table 3**). However, mothers from the Grass-field Region were 3 times more likely to have their children

Table 1. Socio-demographic characteristics of mothers and children.

| | Number (N = 265) | Percentage (%) |
|--|------------------|----------------|
| Age of children (months) | | |
| 11 - 23 | 128 | 48.3 |
| 24 - 35 | 63 | 23.8 |
| 36 - 48 | 74 | 27.9 |
| Median 24 months IQE (16 - 36 months) | | |
| Characteristics of mothers | | |
| Age (years) | | |
| <30 | 96 | 36.2 |
| ≥30 | 169 | 63.8 |
| Median 31 years IQE (28 - 36 years) | | |
| Region of origin | | |
| Grass field | 149 | 56.2 |
| Great South | 111 | 41.9 |
| Others (Littoral and Great North) | 5 | 1.9 |
| Religion | | |
| Christians | 245 | 92.4 |
| Muslims | 11 | 4.2 |
| Animist | 9 | 3.4 |
| Educational Level | | |
| Primary education | 59 | 22.0 |
| Secondary education | 196 | 74.0 |
| Higher education | 5 | 2.0 |
| No education | 5 | 2.0 |
| Marital status | | |
| Single | 42 | 15.8 |
| Married | 77 | 29.1 |
| Widow/Divorced | 8 | 3.4 |
| Free union | 137 | 51.7 |

Table 2. Vaccination status and reason for incomplete or non-vaccination of children.

| | Number | Percentage (%) |
|---|--------|----------------|
| Vaccination coverage by antigens (N = 265) | | |
| BCG/ Polio 0 | 262 | 98.9 |
| Polio1/Penta1 | 261 | 98.5 |
| Polio2/Penta2 | 260 | 98.1 |
| Polio3/Penta3 | 259 | 97.7 |
| Measles/Yellow Fever vaccines | 244 | 92.1 |
| Vaccination status of children (N = 265) | | |
| Complete | 243 | 91.7 |
| Partial vaccination | 19 | 7.2 |
| No vaccination | 3 | 1.1 |
| Reasons for incomplete or non-vaccination (N = 22) | | |
| Lack of time | 10 | 45.0 |
| Forgetfulness | 4 | 18.0 |
| Post immunization adverse events | 6 | 27.0 |
| Childhood illnesses | 2 | 5.0 |
| Rupture of stock of vaccines | 2 | 5.0 |



PENTA = DPT/HepB/Hib.

Figure 1. Variation of rate of abandonment between vaccination stages.

Table 3. Effects of socio-demographic factors and child's age during return to commercial activities on children's vaccination status (Bivariate analysis).

| | Total | Completely vaccinated | | OR (IC 95%) | P |
|--|------------|-----------------------|-----------|---------------------|-------|
| | | Yes n (%) | No n (%) | | |
| Marital Status | | | | | |
| Lives alone | 51 (19.2) | 45 (88.2) | 6 (11.8) | 0.61 (0.22 - 1.63) | 0.230 |
| Lives in cohabitation | 214 (80.8) | 198 (92.5) | 16 (7.5) | | |
| Level of education | | | | | |
| Primary/No education | 64 (24.2) | 56 (87.5) | 8 (12.5) | 0.58 (0.20 - 1.31) | 0.192 |
| Secondary/Higher | 201 (75.8) | 187 (93) | 14 (7.0) | | |
| Religion | | | | | |
| Christianity | 245 (92.5) | 223 (91) | 22 (9.0) | 0.00 (0.00 - 1.75) | 0.164 |
| Muslim/Animistic | 20 (7.5) | 20 (100) | 0 (0.0) | | |
| Age (years) | | | | | |
| ≥30 | 169 (63.8) | 152 (89.9) | 17 (10.1) | 0.00 (0 - 32.070) | 0.810 |
| 21 - 29 | 94 (35.4) | 89 (94.7) | 5 (5.3) | 0.00 (0 - 68.34) | 0.898 |
| ≤20 | 2 (0.8) | 2 (100) | 0 (0.0) | | |
| Region of origin | | | | | |
| Grass field | 149 (56.2) | 143 (96) | 6 (4.0) | 3.80 (1.44 - 10.08) | 0.004 |
| Great south | 111 (41.9) | 95 (85.6) | 16 (14.4) | 0.24 (0.09 - 0.63) | 0.002 |
| Costal et | 4 (1.5) | 4 (100) | 0 (0.0) | - | 0.705 |
| Great North | 1 (0.4) | 1 (100) | 0 (0.0) | - | 0.916 |
| Post-natal age of child and return to commercial activities of mother | | | | | |
| <4 | 110 (41.5) | 96 (87.3) | 14 (12.7) | 0.33 (0.13 - 0.81) | 0.013 |
| 4 - 6 | 94 (35.5) | 90 (95.7) | 4 (4.3) | 2.64 (0.87 - 8.07) | 0.058 |
| 7 - 10 | 33 (12.5) | 29 (87.9) | 4 (12.1) | 0.61 (0.19 - 1.92) | 0.286 |
| >10 | 57 (21.5) | 55 (96.5) | 2 (3.5) | 2.92 (0.66 - 12.90) | 0.107 |

completely vaccinated (OR = 3.8; CI95% [1.44 - 10.08]; P = 0.004). Mothers of children from the Great-South were less likely to be completely vaccinated (OR = 0.24; CI 95% [0.09 - 0.63]; P = 0.002). The age of the children at the moment mothers returned to work influenced their vaccination status. Indeed, resumption of work before the child was four months old constituted a protective factor against complete vaccination of the children (OR = 0.3 IC95% [0.15 - 0.92]; P = 0.02). Moreover, mastering the vaccination calendar of the site by mothers, as well as be informed about the importance of vaccination significantly influenced the completion of vaccination (**Table 4**).

4. Discussion

Limits of the study: We limited our study to five markets of Yaoundé and only one category of working mothers. Others studies should extend to more markets and others classes of working mothers. On the other hand, having extended the age range of children up to 48 months could introduce a bias because; mothers may have forgotten some information.

This cross sectional study was carried out on a population of working class mothers. We estimated that because of their workload, they often abandoned their children at home for the market. Studies have shown harmful effects of the jobs of mothers on the health of children [10]. We would have thought that live-stock retailers are of the poor social class and therefore less likely to request preventive care. In fact it has been shown that children of working class mothers who were fairly remunerated accessed healthcare services with difficulties like those whose mothers weren't of the working class; this is the contrary of children from rich families [15]. Families with a higher social status utilized vaccination services with greater ease [16]. Our study had as goal to analyse the vaccination coverage of children of working class mothers in order to deduce the relationship of these with the

Table 4. Influence of factors linked to the health centre, geographical accessibility and finances on the vaccination status of children.

| | Total | Completely vaccinated | | OR (IC 95 %) | P |
|--|------------|-----------------------|-----------|-----------------------|-------|
| | | Yes N (%) | No N (%) | | |
| Vaccination calendar of the centre is known? | | | | | |
| Yes | 262 (98.9) | 243 (92.7) | 19 (7.3) | – | 0.001 |
| No | 3 (1.1) | 0 | 3 (100) | | |
| Mother informed about importance of vaccination after delivery? | | | | | |
| Yes | 256 (96.6) | 240 (93.8) | 16 (6.3) | 30.00 [6.86 - 131.18] | 0.000 |
| No | 9 (3.4) | 3 (33.3) | 6 (66.7) | | |
| Sessions missed at the level of the health centre | | | | | |
| Yes | 64 (24.2) | 62 (96.9) | 2 (3.1) | 3.42 (0.77 - 15.07) | 0.063 |
| No | 201 (75.8) | 181 (90) | 20 (10.0) | | |
| Site of vaccination | | | | | |
| Public | 143 (54) | 132 (92.3) | 11 (7.7) | 1.19 (0.49 - 2.84) | 0.432 |
| Private | 122 (46) | 111 (91.0) | 11 (9.0) | | |
| Distance | | | | | |
| >2 taxis | 3 (1.1) | 2 (66.7) | 1 (33.3) | 0.21 (0.01 - 2.64) | 0.287 |
| 2 taxis | 19 (7.2) | 18 (94.7) | 1 (5.3) | 1.90 (0.22 - 16.54) | 0.477 |
| 1 taxi | 170 (64.2) | 157 (92.4) | 13 (7.6) | 1.28 (0.48 - 3.35) | 0.391 |
| 1/2 hour walking | 73 (27.5) | 66 (90.4) | 7 (9.6) | | |
| Expenses during each vaccination (FCFA) | | | | | |
| None | 30 (11.3) | 25 (83.3) | 5 (16.7) | 0.3 (0.13 - 1.14) | 0.08 |
| 100 - 200 | 176 (66.4) | 164 (93.2) | 12 (6.8) | 1.7 (0.71 - 4.17) | 0.15 |
| 300 - 500 | 45 (17.0) | 41 (91.1) | 4 (8.9) | 0.9 (0.29 - 2.83) | 0.53 |
| 600 - 1000 | 11 (4.2) | 10 (90.9) | 1 (9.1) | 0.9(0.11 - 7.38) | 0.62 |
| >1000 | 3 (1.1) | 3 (100) | 0 (0.0) | – | 0.77 |

poor vaccination coverage in the belonging health district. Contrary to expectations, our study shows that, despite their busy schedule, live-stock retailers rarely contributed to the weak vaccination coverage registered among children in their zone.

4.1. Socio-Demographic Characteristics of Mothers

Like our results, studies have shown that the majority of mothers with low vaccination coverage were young [17]. Meanwhile, we didn't find a significant relationship between age and vaccination status of children. This was not the case in other studies where the children of mothers of young age were less vaccinated [18] [19]. It has been shown that the children of mothers living alone, either because they are single, divorced, or widows had less chances of being completely vaccinated [20] [21]. In our study, just 19.2% of mothers lived alone, and no relationship was found between matrimonial status and complete vaccination of children. We found that mothers mostly lived in couples and this may have facilitated the care of children.

4.2. Vaccination Status of Children

The vaccination coverage of children of live-stock retailers in Yaoundé was very high. It was largely above the administrative rate of vaccination registered in 2012 in the Centre region (80.3%, 80.6%, and 72.5%) for BCG/Polio0, DPT/HepB/Hib3 and the measles vaccine respectively [22]. Our results though carried out in a particular group, are similar to the findings in Nigeria and Gabon [17] [18]. Despite the fact that vaccines were free, the indirect cost involved, constituted an obstacle for some families [23]. This could not be the case in our study where only 5.3% of mother spent more than 1US \$ in each session of child vaccination (Table 3). Mothers' occupation will negatively influence the wellbeing of children in the sense that the mother wouldn't find time to request the preventive and promotional services for children [24]. Assistance given to the mothers would help them to benefit from these services even though their eventual return to work will make their situation similar to the former [17] [25]. In fact, return to work 12 weeks following maternity leave has an impact on child vaccination and feeding [26]. The situation is worse in those who after child birth return earlier to work [19]. In our context as well as others, occupation of mothers on its own didn't justify the poor vaccination status of children. The low level of education and absence of counselling were influencing factors as described in literature [15]. One could be tempted to think that live-stock retailers were of a lesser level of education compared to mothers of other professions. It however was not the case in our study, where about 3/4 (74.0%) attained a secondary level of education. Moreover the level of education had no significant influence on the vaccination status of children. In fact those with a primary level of education vaccinated their children just as well as those with secondary and tertiary level of education. Some parents have doubts in vaccination because of its adverse events, and others because of the ill health of their children [27] [28]. On the other hand, there may exist disparities of counselling related to health services because of the difference in their utilisation by the population [29]. The reinforcement of the counselling, the doctor-patient relationship and the application of the legislation for vaccination are methods which can be used when parents oppose to a child's vaccination [30]. The latter is not vigorously applied in the Cameroonian context.

4.3. Determinants Related to the Health Care Services, Geographical, and Financial Barriers

Generally, vaccines are not administered daily in our context. The postponement of vaccination sessions is frequent. Some vaccines are only administered when there are a good number of children to be vaccinated with the aim of limiting loss of vaccines. This situation enhances missed opportunities of vaccines as shown during the analysis of reasons of incomplete vaccination [31]. Linked to these are organisational problems, especially the permanence of services, the functioning of health personnel, rupture of vaccines supply, and false contraindications of vaccination given by health care providers [31]. Parents also make reserves as regards to the health services assistance or delivery [7]. Knowledge of the respective programs of health centres would have reduced missed opportunities of vaccination.

4.4. Influence of the Time of Return to Routine Activities of Mothers on Children's Vaccination Program

Our results show that majority of the mothers (41.5%) restarted their activities when their children were less than 4 months old (Table 3). There was a significant influence of the time of return to commercial activities and the

vaccination status of children, especially when these children were less than 4 months and between 4 - 6 months ($P = 0.02$ and $P = 0.05$ respectively). Mothers who delayed their return to activities for more than 4 months were two times more likely to completely vaccinate their children. This could be explained by the fact that in delaying return to work, mothers took more time to correctly cater for their children. In fact, very early return to work by working class mothers was often associated with a poor follow-up of children's health, particularly nutritional status [11] [32] and certainly vaccination status too [19] [26]. These reasons could not explain the partial or non-vaccination of children, forgetfulness of the date; lack of time and loss of vaccination card were the main reason of abandoning vaccination [33]. Other reasons were linked to the mastery of the calendar for vaccination of a particular site [34].

5. Conclusion

The goal of our study was to describe the influence of mothers' occupation on the vaccination status of children. Ours results were encouraging; however, it will be important that other studies be carried out on the vaccination of children of mothers in other occupations. More efforts of sensitization will enhance and keep up the level of vaccination in this group of population.

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I. Annexe: Questionnaire

Factors influencing routine vaccination of children of mothers live-stock retailers in the markets of Yaoundé

Questionnaire №: _____ **Date:** ____/____/____/ **Parents' address:** _____

Name of the market: Mokolo ; Mendong ; Mfoundi ; Acacia ; Ekounou

Identification of the child

Name of the child: _____ **Birth date:** ____/____/____/ **Sex:** M ; F

II. Vaccine Received by the Child

| Vaccines | Tick off if Yes | Date of vaccination | Vaccines | Tick off if Yes | Date of vaccination |
|----------|--------------------------|---------------------|--------------|--------------------------|---------------------|
| BCG | <input type="checkbox"/> | | DPT-HepB-Hib | <input type="checkbox"/> | |
| Polio 0 | <input type="checkbox"/> | | DPT-HepB-Hib | <input type="checkbox"/> | |
| PCV1 | <input type="checkbox"/> | | DPT-HepB-Hib | <input type="checkbox"/> | |
| PCV2 | <input type="checkbox"/> | | Measles | <input type="checkbox"/> | |
| PCV3 | <input type="checkbox"/> | | Yellow fever | <input type="checkbox"/> | |
| Polio1 | <input type="checkbox"/> | | | | |
| Polio2 | <input type="checkbox"/> | | | | |
| Polio3 | <input type="checkbox"/> | | | | |

III. Socio-Economic and Demographic Factors

Mothers' name: _____ **Age:** _____ **Residence:** _____

Region of origin: West ; Centre ; Littoral ; North ; North-West ; South ; South-West ; Far-north ; Adamaoua ; East

Religion: Christian ; Muslim ; Animist

Level of education: Primary ; Secondary ; Higher School ; No education

Marital statute: Married ; Single ; Divorcee ; Free union ; widow

IV. Miss Opportunity of Vaccination and the Reasons of the Absence of Vaccination

Q1) have you ever missed a vaccination session? Yes ; No

Q2) If yes, give the reasons: Forgetting ; travel ; Awaiting too long ; lack of time ; bad quality of reception ; mothers' illness ; absence of the health workers ; child's illness

Q3) Are your activities preventing you from vaccinating your child? Yes ; No

V. Vaccination Services and the Information Given to the Parents

Q1) Is the mother informed about the importance of vaccination? Yes ; No

Q2) Is the mother informed by the health workers about the post immunization adverse events? Yes ; No

Q3) If yes, did they advised the mother about it? Yes ; No

Q4) Do they regularly inform you when to come for the next vaccination session? Yes ; No

Q5) by what mean was the mothers informed about the vaccination?

Radio ; Television ; Family member ; Health worker

Q6) Does the mother perceive the awaiting time for vaccination sessions too long? Yes ; No

VI. Organization of the Vaccination Services

Q1) Do you know the vaccination calendar of the site? Yes ; No

Q2) Is the vaccination calendar of the site adequate for you? Yes ; No

Q3) If not how do you manage for the child vaccination? You do not vaccinate the child ; you dropped your activity on the day of vaccination ; You assign the task to a third

Q4) Have you ever bring your child to the center for immunization and return without doing it? Yes ; No

Q5) If yes give the reasons: vaccine stock shortage ; absence of the health worker ; childhood illness (diarrhea, fever, rhinitis, caught)

Q6) Do such situation discourage you to vaccinate your child? yes ; No

Q7) On which occasion do you vaccinate your children: mass immunization campaign ; routine immunization at the health center ; national immunization days

VII. Geographic Barriers

Q1) Distance from the vaccination site to the house : <1/2 hour walking ; 1 taxi ; 2 taxis ; >2 taxis

Q2) Is distance a problem to bring your child to vaccination: yes ; No

Q3) How much do you spend on average each time you go to your child vaccinated: Nothing ; <200 ; 200 - 500 ; 500 - 1000 ; >1000

Q4) Is this prevents you from bringing your child for immunization: Yes ; No

VIII. Others

Q1) what was the age of the child when the mother return to her commercial activities?

3 months ; 4 months ; 5 months ; 6 months ; 7 months ; 8 months ; 9 months ; 10 months ; 11 months ; 12 months ; >12 months

Q2) Site of vaccination: Public Hospital ; private clinic

Q3) Infant completely vaccinated? Yes ; No

Q4) Infant correctly vaccinated? Yes ; N