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PATTERNS ON THE UTILIZATION OF ORAL HEALTHCARE FOR CHILDREN WITH HIV/AIDS BY FEMALE CAREGIVERS IN NAIROBI CITY COUNTY, KENYA

M.A. Masiga and S. Wandibba

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ABSTRACT

Background: Notwithstanding the high prevalence of dental caries and other oral manifestations among children with HIV/AIDS, this population continues to face limited utilization of oral healthcare.

Objective: To determine the patterns of oral healthcare utilization for children with HIV/AIDS by female caregivers in Nairobi City County (NCC), Kenya.

Design: A hospital-based mixed methods cross-sectional study.

Setting: The out-patient HIV-care clinics at Gertrude Children's hospital (GCH), Kenyatta National Hospital (KNH), and Mbagathi County and Referral Hospital (MCRH), in NCC.

Subjects: Two hundred and twenty-one female caregivers of children with HIV/AIDS.

Results: Almost three-quarters (71%) of children with HIV/AIDS attending the HIV-care clinics at the time of the study had never visited the dentist. More than two-thirds (66.3%) of caregivers whose child experienced dental pain and/or swelling sought treatment from the dental professional, 16.3% of them bought medicine from the chemist whilst 15.2% of caregivers utilized home remedy. However, only 11% of caregivers sought treatment in a timely manner, within 1-2 days of the child's pain onset. Tooth extraction was the foremost treatment (62%) carried out among the children. Ninety-three percent (93%) of the caregivers did not have a usual source of oral healthcare for their children.

Conclusion: Children with HIV/AIDS in NCC consume oral healthcare very poorly in terms of proportion, rate, and timeliness with which they utilize care. Additionally, the children do not have a usual source of oral healthcare. The most frequently cited constraint to health-seeking for oral healthcare among the respondents is high user-cost of oral health services.

INTRODUCTION

Treatment modalities for HIV/AIDS have consistently improved the life expectancy of children with perinatally-acquired infection and delayed the onset of debilitating illnesses. It is now common for these children to survive into adolescence and adulthood. However, having HIV/AIDS increases one's risk of oral health problems (1). Indeed, oral lesions are often the first manifestations of HIV-infection and they may be used to predict progression of the condition (2). Despite this preponderance of oral diseases, and reports that these children suffer pain (3), studies show that the utilization of oral healthcare among children with HIV/AIDS is generally poor, and there is clear indication of unmet needs among the children (4). In Kenya, for example, the prevalence of dental caries among children and adolescents with HIV/AIDS is high, ranging from 65-84.4 % (5, 6) with dental decay making up the highest component of the dental caries index in both studies, thus, reflecting unmet dental needs among the children. The study by Masiga & Machoki (6), in particular, reported that 81% of the children with HIV/AIDS had not received any form of oral healthcare; this, despite a positive association existing between prevalence of dental caries and reduced quality of life among the children (8). More recently, it is reported that the prevalence of gingivitis among a cohort of children living with HIV/AIDS is 86.5% (7).

The Kenya AIDS Indicator Survey (9) reveals that an overall of 0.9% children aged 18 months to 14 years were infected with HIV in 2012. This corresponds to 104,000 children infected with the HIV virus nationwide, in that year. As the survival rate of these children increases and their early years become less filled with calamitous illnesses

because of improved treatment modalities, they are increasingly likely to mirror their societal counterparts in their everyday lives. However, with regard to oral health, they are likely to have more decay in their dentition than their unaffected siblings (10), and an increased oral health burden. It is then clear that oral healthcare should be a critical component of comprehensive care for children with HIV/AIDS. The present study formed part of a larger study that looked at individual and societal determinants of the utilization of oral healthcare among female caregivers of children with HIV/AIDS in NCC. This paper describes patterns on the utilization of oral healthcare for children with HIV/AIDS and examines the constraining effects of socio-demographic factors among their female caregivers.

MATERIALS AND METHODS

Study Area: The study was carried out in Nairobi City, located within the Greater Nairobi Metropolitan Region. The estimated population of NCC is 3,138,396 (2009 National Census), making it the most populous county in the country. The specific research sites were the outpatient HIV-care clinics at three hospitals in NCC, namely Gertrude Children's Hospital (GCH), Kenyatta National Hospital (KNH), and Mbagathi County and Referral Hospital (MCRH).

Study population: The study population comprised of 221 female caregivers of children with HIV/AIDS, who attended the HIV-care clinics during the period between November 2015 and April, 2016. The inclusion criteria were; female caregiver, 18 years and above, biological or foster parent of children with HIV/AIDS, and who are enrolled at the HIV-care clinics in the three hospitals. The

caregivers formed the unit of analysis for the study.

Study Design and Data Collection

Methods: This was a hospital-based study, both cross-sectional and exploratory in design, utilizing a mixed methods approach. A purposive sampling method was employed to select the respondents of the study, and proportionate stratification utilized to assign respondent numbers for each hospital category according to the population of children enrolled and active in care. The study was carried out in two phases. In phase one, a survey was conducted whose purpose was to collect socio-demographic variables among the selected respondents, and other quantitative data relevant to the research objectives. The survey was conducted by the PI in face-to-face interviews with the respondents, using a pre-tested survey instrument consisting of open and closed-ended questions. In phase two, qualitative data was collected through focus group discussions (FGDs) with supplementary randomly selected caregivers who also met the inclusion criteria, the purpose of which was to revisit emerging issues from the survey without going back to the same respondents. A total of six FGDs were carried out, two at each HIV-care facility. Subsequently, key informant interviews (KIIs) were undertaken among health workers involving nine key informants; three at each hospital, and comprising a mix of doctors, clinical officers, nurses, counselors and social workers. The key informants (KIs) were purposively selected for their professional expertise, and perceived likelihood to provide additional information relevant to the study objectives owing to their close interaction with the caregivers in matters of health-seeking.

The study utilized Andersen's model of health services utilization (11), which presupposes that an individual's health services utilization is a function of three components, predisposing, enabling and need factors which, collectively, result in the use of formal health services. Approval of the study was by the Kenyatta National Hospital-University of Nairobi Ethics and Research Committee (P631/10/2014), while permission to carry out the study was granted by the administrators of the respective institutions.

Statistical analysis: Data collected from the survey were coded and entered into a computer using MS Access, and analyzed using the Statistical Package for the Social Sciences (SPSS) Version 19.0. Where it was deemed necessary cross-tabulation of variables was undertaken and tests of significance carried out using the Kruskal-Wallis statistical test. Qualitative data were labeled and keyed in using codes assigned to open-ended questions. All data were entered into a computer using ATLAS.ti for Windows software to assist in categorization, content analysis and annotation of important insights which were subsequently organized into common concepts and themes to elucidate the caregiver's information on the study objectives.

RESULTS

Distribution of respondents by hospital categories: A total of 221 respondents were recruited into the survey. Of these, 45% were drawn from KNH, 28% from GCH and 27% from MCRH.

The distribution of respondents across the hospital categories was done proportionately to correlate with the number of children enrolled and active-in-care at the respective hospitals.

Ages of children attending the HIV-care clinics: There was a wide range in ages of children attending the HIV-care clinics, average age being 9.64 years (\pm 6.46); however, the children at MCRH were found to be significantly older than those at KNH and GCH ($p=0.00$). The overall male to female ratio was 1:1.2 without significant difference in sex distribution of the children at the three hospital categories ($p=0.93$). Figure 1 presents findings on the ages of the children in the three hospitals categories who attended the clinics during the study period.

Socio-demographic characteristics of the caregivers: The respondents were placed in various age categories; very young, young, middle-age and old age. The study findings indicate that most respondents were in the young and middle age categories, the highest percentage (41%) being aged between 34-41 years, followed by those aged between 26-33 years (27%), and those aged between 42-49 years who were 17%. The youngest age category, between 18-25 years was fewest (4%), and at the extreme end were caregivers aged 50 years and above who were 7%.

The highest percentage (76%) of respondents were biological mothers of the children; others, being closely related to the child, were grandmothers (17%), and aunts (5%) whilst the remaining 2% were unrelated to the child and were drawn from foster homes. The respondents were mostly (59%), in stable marriages; others 14% were widowed, 12%, were separated or divorced while 15% were single mothers. The tests of differences in age and marital status of the respondents at the three hospital categories were not significant ($p=0.52$ and $p=0.54$ respectively).

Findings on education level revealed that the highest percentage (43%) of respondents had only attained primary-level education,

followed by 33% who had attained secondary-level education. Those who had attained tertiary education or other post-secondary school training were much fewer (18%), whilst 5% of the respondents had not attended school at all. Nearly half (49%) of respondents were engaged in informal activities for their occupation. Those that were in formal employment were 28% where they mostly held low-level jobs such as cleaners, security guards and clerks in government offices and/or in private companies, although a small number of these had managerial and lecturer's position; 6% caregivers were engaged in casual labour, while 17% were unemployed and were housewives who stayed at home. About two-fifths, 41.9%, of respondents reported earning average monthly incomes of less than, or equal to KES 10,000; others, 19.4% reported incomes of between KES 11,000-20,000, 9.9% between KES 21,000-30,000, and 7.2% between KES 31,000-40,000. Only a small percentage (14.4%) of respondents had incomes of KES 40,000 and above. It was not always very clear whether the monthly earnings were inclusive of spouses' income among the caregivers who were married. The socio-demographic variables of the respondents are summarized in Table 1. There was no significant difference in household income between caregivers at the three hospital categories ($p=0.58$), hence, the subsequent data on utilization of oral healthcare was analyzed collectively.

The utilization of oral healthcare by children with HIV/AIDS: According to the study findings, there was very poor utilization of oral healthcare for children with HIV/AIDS, with almost three-quarters (71%) of the children reported to having never visited a dentist or other oral health provider for oral healthcare and/or preventive care. Conversely, just over a quarter (28%) of the

children had received some form of formal oral healthcare. Chi-square tests revealed that there was no association between caregivers' level of education with utilization of oral healthcare ($p > 0.05$), and income with utilization of oral healthcare ($p > 0.05$). However, it is noted that this negative correlation may have arisen because of the homogeneity in the education levels and income levels variables among the respondents as most were on the lower ends of the scales for both, therefore, this may not be the true representation of the influence of these variables.

Reasons for children's visit to the dentist:

The respondents reported that pain was the biggest cue to action in seeking oral healthcare for their child. Among the children who visited the dentist, 70% did so because they had experienced pain, whilst others (22%) visited because of swelling or ulcers in the mouth. A small number of children (8%) visited the dentist for check-up, which was recommended from school.

Measures taken when child experienced toothache: From the study results, over two-thirds (66.3%) of the respondents whose child experienced dental pain or swelling sought treatment from the dental professional. Another 16.3% of the respondents bought medicine from the chemist, whilst 15.2 % treated their child's toothache with home remedy. There were a small number of respondents (2.2%) who utilized the alternative services of traditional healers. The decision on when and where to seek oral healthcare for an ill child was mainly taken by the mother of the child. There was a strong opinion among the caregivers of what a mother's role is, in healthcare-seeking for a child who falls ill in the family as illustrated in the statement by the discussants in one of the FGDs:

Mtoto ni wa mama. Akiwa mgonjwa, wewe kama mama lazima utafute juu na chini mpaka umpeleke akatibiwe. Mama ndiye anayejua uchungu ya mtoto (A child belongs to the mother. When they fall ill, you, their mother, must do all that they can to ensure that the child is attended to. A mother knows best the needs of her child) (FGD, GCH).

Timeliness in seeking oral healthcare:

According to the study findings, only 11 % of respondents sought timely treatment for their child, that is, within the first 1-2 days of pain onset, 23 % of the respondents waited between 3 and 4 days, 30 % waited between 5 and 6 days, whilst another 29 % sought treatment for their child more than one week after the onset of pain. The remaining (6%) of the respondents could not recall the time of seeking treatment. In the opinion of one key informant at KNH, caregivers may often fail to fully appreciate the extent of a child's pain since they are proxies for the child, hence the delay in promptly seeking treatment. "You have to understand that it is not the mother herself who is suffering, sometimes, they may not fully appreciate the extent of pain until the child is unable to sleep, and only then will they rush to take the child for treatment" (Nurse, MCRH).

Period of visit to the dentist prior to the study:

Almost two-thirds (62%) of the caregivers reported that their child had visited the dentist within 12 months of the study period, 25% of the caregivers reported visits between 12 and 24 months, and 7.0 % between 24 and 60 months prior to the study. A small number of the children (3%), had visited the dentist over 60 months prior to the study, while another 3% of the respondents could not recall. These findings suggest that the utilization of oral healthcare services

among the children, while not regular and/or absolute, it had improved considerably over the years leading to the period of the study.

Treatment carried out at the child's dental visit: Tooth extraction was the foremost treatment carried out among the children who visited the dentist. Almost two-thirds (62%) of the children who attended received this treatment, while very few (10%) had dental fillings carried out. The other forms of treatment carried out were dental check-ups (11%), cleaning (7%), and medicines (8%). The high rate of tooth extractions carried out among the children may have been influenced by delay in seeking oral healthcare, or, it was the preferred choice of treatment by their caregivers who themselves reported to mainly have tooth extraction carried out whenever they experienced pain.

Usual source of care: Majority (93%) of the caregivers did not have a usual source of oral healthcare for their children. Instead, visits to the dentist for the child was undertaken in an ad hoc manner, usually for symptomatic reasons such as a painful tooth, and from any oral health provider that was conveniently located to the caregiver. For these reasons, the children may be categorized as "emergency patients" who only attend for oral healthcare when they have pain. The findings on the patterns of oral healthcare utilization for children with HIV/AIDS are summarized in Table 2.

Factors that constrain dental visits among the caregivers: The most frequently cited constraint (43.2%), to health-seeking for oral healthcare among the respondents was the perceived high cost of oral health services (Table 3). The other reasons cited were that; it was not necessary (18.0%); there was no pain (21.2%); we have no knowledge (18.9%); there are few dentists available (5.9%); we don't have time (13.1%); and dental treatment is

painful (7.2%). These responses were corroborated during the focus group discussions with caregivers who stated the following:

Dental services are very expensive. Sometimes the doctor tells us that it will cost KES 500 to pull out your child's tooth and the child may have 2-3 teeth that require treatment. Many times we don't have that money ready; therefore, we have to wait until the money is available. 'Wajua, hii kazi yetu ni ya kubahatisha' (our livelihood depends on luck) (FGD, KNH).

According to one key informant, the financial constraints experienced by the caregivers may be further occasioned by the additional responsibilities of caring for orphaned children who have lost their parents from ravages of the disease. "The financial burden of extended families that we see here is a reality. Some of the caregivers are forced to cater for all of the adopted child's physical and educational needs and, sometimes, seeking dental services is not a priority unless the child has severe toothache" (Nurse, MCRH).

The respondents also appear to have inadequate dental awareness and knowledge on oral health, which causes them to utilize oral healthcare for their children only when the child experiences dental pain. To them, oral healthcare is limited to the relief of pain from an offending tooth, with no reference to the use of preventive services and/or interceptive measures. Participants in the focus group discussions were in agreement that, lack of knowledge and information on oral health causes them to utilize oral healthcare only when their children have toothache. This is how the participants in one focus group discussion stated it:

"We are not well-informed that we can take our children to the dentist for a mere check-up. Why

should we attend when the child is not having pain? The health workers whom we visit here don't tell us much about dental health. Sometimes we don't know where to go for treatment so we tell the doctors to prescribe medicine to help relieve the pain (FGD, MCRH)."

The health workers averred to having insufficient oral health information to dissipate to their patients. *"As health workers, we lack sufficient information on oral health and healthcare utilization to give our patients. It is not possible to make recommendations that we, ourselves don't practice"* (Counselor, KNH). It was also the opinion of one social worker at KNH that caregivers frequently view dental illness as a cosmetic rather than a serious illness vis a vis their medical condition. This causes them to give low priority to utilizing oral healthcare.

DISCUSSION

This study employed a mixed methods approach, with integration of both quantitative and qualitative results. While the quantitative method provided numerical data sets and statistical relationships on variables among the respondents, the qualitative method allowed exploration and contextual understanding of the meanings that female caregivers ascribe to societal circumstances that determine the utilization of oral healthcare for their children. This method gave a broader perspective to the study, whilst the use of both approaches provided additional evidence and support of the findings.

Socio-economic status is conceptualized as the societal standing of an individual or group, and is commonly measured as a combination of education, income and occupation. The results on the socio-demographic factors among the caregivers

exhibited middle-low to low socioeconomic attributes, with correlates of low educational levels and household incomes. About two-fifths of the respondents had not attained education levels beyond primary school; further, the caregivers were mostly in informal employment running unskilled businesses. A large number of them live on monthly household incomes of between KES 0-10,000, which is a drastic shortfall from the recommended minimum wages for urban dwellers in Kenya of between KES 13,592 and 17,199 (Business Daily, 13th July, 2016). This suggests that the caregivers are most likely facing the challenges of the economically weak which commonly includes disparities in access to healthcare.

According to the study findings, children with HIV/AIDS in NCC consume oral healthcare very poorly in terms of proportion, rate, and the timeliness with which they utilize dental services. With almost three-quarters (71%) of children having never visited a dentist or other oral health provider, this result represents a proportion of child non-attendance for oral healthcare that is much higher than the national average which is 46.7% (12). This is of major concern because of the existing evidence that HIV/AIDS is closely associated with oral manifestations and the probability that these children experience a heavier oral health burden and, therefore, the need for oral healthcare is greater than that of the general population; conversely, poor oral health is likely to be a contributing factor to opportunistic infection among the children.

The pattern of utilizing oral healthcare indicates that children with HIV/AIDS visit the dentist only for pain relief, with minimal attendance for preventive care and/or early intervention of oral diseases. In addition, there is, frequently, delay in seeking

treatment for the child, sometimes extending to between five and six days after the onset of pain. From the caregivers' reports, almost all the children (93%) do not have a usual source of oral healthcare, with the outcome being an indiscriminate pattern of utilization that is often unplanned, and sourced at the convenience to the caregivers. This does not tally well with the recommended best practices in oral healthcare for a child that embraces the concept of regular, comprehensive, continually accessible oral healthcare in a family-oriented manner, popularly referred to 'dental homes' (13). It is argued that, having a usual source of oral healthcare facilitates increased contact of a child with an oral healthcare provider and, in particular, it provides a locus of entry into the healthcare system when specialized types of care are needed (14). It is highly probable that the oral health problems that children in this study presented with might have been prevented if they had attended more regularly and received preventive care. Notwithstanding, the study findings indicate that the utilization of oral healthcare has gained some footing in recent years, whence two-thirds of the children utilized care in the period within 12 months of the study period.

The monetary costs of healthcare make household income an important determinant of healthcare utilization and its dispersion. Oftentimes, healthcare may be needed but is delayed or not obtained as a result of lack of financial resources. A body of evidence supports strong positive relationship between living standards and the utilization of healthcare (15, 16, 17, 18), therefore, it can be fairly assumed that the socioeconomic status among the caregivers in this study influenced the pattern of utilization of oral healthcare for the children. From their perception of high user-costs of oral health services, the

caregivers have preference for dental extractions of an offending tooth, this being the cheapest form of dental treatment that is seemingly affordable to them. In a market setting, a positive impact of income on consumption is expected where those with greater purchasing power may find that prices are less of a barrier to the utilization of healthcare. Conversely, a low-income individual with competing interests is likely to choose to have additional consumption (of other household commodities), than additional healthcare. This sort of dilemma is highlighted by Ha et al.(19) who report that, in Vietnam, expenditure on healthcare could at times account for up to 80% of total household per annum, thus exerting unplanned financial burden on individual families. For the caregivers in the current study who additionally suffer from a chronic medical condition, there is bound to be preferential allocation of household resources to medical care at the expense of non-urgent oral health problems. Interestingly, the women emerged as the main decision-makers in matters of care-seeking and the utilization of oral healthcare for their child, indicating that they have some accessibility to household finances. There is evidence to support that utilization of healthcares increases with the control that a woman exercises over household finances (20).

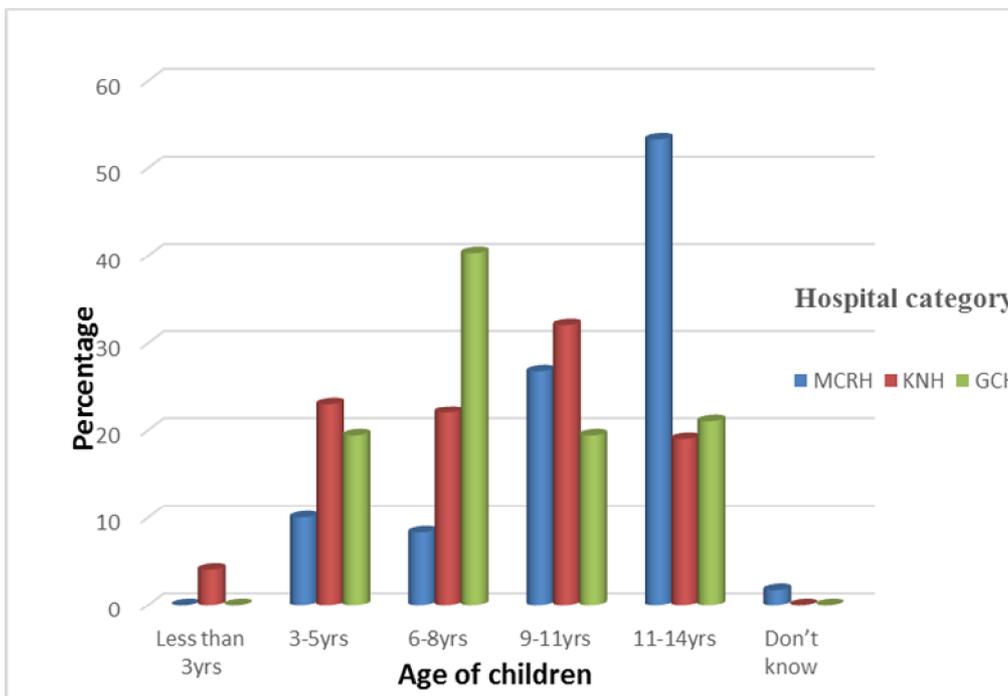
The fact that prices (charges for healthcare) in this study, played an important role in determining the utilization of oral healthcare for children with HIV/AIDS reverberates with the proposition that the poor are more price-sensitive than the better-offs (21, 22). The result of increases in user-charges likely raises the share of healthcare consumed by the better-offs, unless effective mechanisms are implemented to shield the poor from these charges. It is speculative then, that caregivers

of children with HIV/AIDS require some form of health coverage to act as a safety net that facilitates access to oral health services without suffering financial risk. However, taking up health insurance is largely tied to having a regular source of income and it is noted that this was an extenuating factor among the women in the study who report low, irregular earnings. A subsequent paper based on the same study reports on the health insurance status of the caregivers and its effect on the utilization of oral healthcare for children with HIV/AIDS in NCC (in press).

In conclusion, the study reports poor patterns of oral healthcare utilization by children with HIV/AIDS in NCC and elucidates the constraining factors related to low household incomes and low educational levels among their female caregivers. In addition to perceptions of high user-costs for oral healthcare services, the caregivers have low oral health literacy which provides an unmet need and lack of opportunity to adequately utilize oral healthcare for children with HIV/AIDS.

FIGURES AND TABLES

Figure 1
Age of the children at the three hospital categories



* (Source: Survey data, 2016)

Table 1
Socio-demographic characteristics of caregivers of children with HIV/AIDS

Variables	Category	Frequency	Percentage (%)
Age (years)	18-25	9	4
	26-33	60	27
	34-41	91	41
	42-29	38	17
	>50	15	7
	Don't Know	8	4
Relationship with child	Biological mother	168	76
	Grandmother	38	17
	Aunt	11	5
	Unrelated	4	2
Marital Status	Married	130	59
	Widowed	31	14
	Separated/Divorced	27	12
	Single mother	33	15
Highest education level	No formal schooling	12	5
	Primary level	95	43
	Secondary level	73	33
	Tertiary level	40	18
	Don't know	1	1
Employment status	Informal	108	49
	Formal	62	28
	Casual (menial)	13	6
	Unemployed	38	17
Household income (KES)	<10,000	93	42
	11,000 – 20,000	42	19
	21,000 – 30,000	22	10
	31,000 – 40,000	15	7
	41,000 – 50,000	11	5
	>51,000	20	9
	Don't know	18	8

*Source: Survey data, 2016

Table 2
Patterns of the utilization of oral healthcare by children with HIV/AIDS

Variables	Category	Frequency	Percentage (%)
Utilisation of oral healthcare by child	Yes	61	28
	No	157	71
	Don't know	4	1
Measures taken when child experienced toothache*	Visited dental professional	61	66
	Bought medicine from a chemist	15	16
	Treated with home remedy	14	15
	Visited traditional healer	2	2
Reason for child's visit to the dentist	Pain	43	70
	Swelling/ulcers	13	22
	Check-up/other	5	8
Periods of last dental visit prior to the study	Within 12 months	38	62
	Between 12 & 24 months	15	25
	Between 24 & 60 months	4	7
	>60 months	2	3
	Don't know	2	3
Treatment carried out at child's dental visit**	Check-up	7	11
	Tooth extraction	38	62
	Dental filling	6	10
	Cleaning	4	7
	Medicine	5	8
	Don't know/other	1	2
Timeliness in care seeking	Within 1 and 2 days	10	11
	Between 3 and 4 days	22	23
	Between 5 and 6 days	28	30
	After one week	27	29
	Don't know	5	6
Usual source of care for child	Yes	206	93
	No	11	5
	Don't know	4	2

*92 children experienced toothache

** children visited the dental professional

Source: Survey data, 2016

Table 3
Factors that constrain dental visits

Constraining Factor	Frequency	Percentage (%)
It is too expensive	96	43.2
It is not necessary	40	18.0
I have no pain	47	21.2
I have no knowledge	42	18.9
There are a few dentists	13	5.9
I have no time	29	13.1
Dental treatment is painful	16	7.2
I don't know	15	6.8
Others	11	5.0

* Sum is more than 100% as there were multiple responses

Source: Survey data, 2016

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