

# Oral health behaviour of children and adults in urban and rural areas of Burkina Faso, Africa

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**Objectives:** To assess the level of dental knowledge and attitudes among 12 year-old children and 35-44 year-olds in Burkina Faso; to evaluate the pattern of oral health behaviour among these cohorts in relation to location, gender and social characteristics and; to evaluate the relative effect of social-behavioural risk factors on caries experience.

**Design:** A cross sectional study including urban and rural subgroups of population. **Sample and methods:** Multistage cluster sampling of households in urban areas; in rural areas random samples of participants were based on the recent population census. The final study population covered two age groups: 12 years (n = 505) and 35-44 years (n = 493).

**Results:** For both children and adults, levels of oral health knowledge, attitudes and self-care were low; 36% of 12-year-olds and 57% of 35-44-year-olds carried out toothcleaning on a daily basis. Pain and discomfort from teeth were common while dental visits were infrequent. Tooth cleaning was mostly performed by use of chewsticks. Use of toothpaste was rare, particularly fluoridated toothpaste was seldom; 9% of 12-year-olds and 18% of 35-44-year-olds reported use of fluoride toothpaste. Significant differences were found in oral health knowledge, attitudes and practices according to location and gender. At age 12, important factors of high caries experience were location (urban), and consumption of soft drinks and fresh fruits. In 35-44-year-olds, gender (female), high education level, dental visit and occupation (government employee) were the significant factors of high dental caries experience whereas adults using traditional chewing sticks had lower DMFT.

**Conclusions:** Health authorities should strengthen the implementation of oral disease prevention and health promotion programmes rather than traditional curative care. Community-oriented essential care and affordable fluoride toothpaste should be encouraged.

*Key words: Oral health behaviour, self-care, risk factors to dental caries, health promotion*

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During the past decades rapid changes have occurred in the distribution of oral diseases worldwide. Traditionally, the prevalence of dental caries was high in most industrialised countries while low caries levels have been observed in developing countries<sup>1</sup>. For both children and adults of western industrialised countries significant improvements in oral health status are now noted, with factors to be considered such as changing patterns of sugar consumption, improved oral hygiene, effective use

of fluorides, changing lifestyles and standards of living, establishment of school based preventive programmes, and effective use of oral health services<sup>1,2</sup>. In developing countries, changing living conditions due to urbanisation and adoption of western lifestyles are often considered potential risk factors for the incidence of dental caries and recent population data show that the prevalence of dental caries is related to socioeconomic factors in developing countries as for developed countries<sup>3,4</sup>.

In Africa, the oral disease burden has been documented in several surveys<sup>5-12</sup>. According to a meta-analysis of the reports available on the child population of the continent<sup>8</sup>, declines as well as increases in prevalence rates of caries have occurred depending on which parts of Africa are considered. However, most of the studies indicate that women and urban populations are affected more severely than men and rural people<sup>5-12</sup>. The data available at the World Health Organisation (WHO) Global Oral Health Data Bank suggest that the prevalence and severity of periodontal diseases do not differ markedly across developed and developing countries<sup>1,13</sup>. Nevertheless, gingival bleeding and calculus are common conditions in Africa<sup>1</sup>.

A few local<sup>14</sup> and regional<sup>11,15,16</sup> oral health surveys have been conducted in Burkina Faso, previously known as Upper Volta. The most recent epidemiological data<sup>11</sup> showed that 38% of children aged 6 years were affected by dental caries; the mean DMFT score was 0.7 at age 12, 1.9 in 18-year-olds and 6.3 among 35-44-year-olds. For all age groups, about half of the individuals had gingival bleeding and calculus (CPI scores 1+2). Except from one local study of urban schoolchildren<sup>16</sup> no information is available on oral health behaviour of the population in the country.

As with other countries of the African region, Burkina Faso is in the process developing a national oral health system and the health authorities have given priority to health promotion and oral disease prevention. In order to organise community-oriented oral health promotion programmes systematic analysis of the oral health situation would be needed, including information on oral health knowledge, attitudes and oral health practices. An analysis of the oral health situation has been carried out in one region of the country and the epidemiological findings were reported separately<sup>11</sup>. This second paper deals with the results of the sociological part of the study. Thus, the objectives of the present report are to:

- Describe the level of dental knowledge and attitudes among 12 year-old children and 35-44 year-olds in Burkina Faso
- Analyse the pattern of oral health behaviour among children and adults in relation to location, gender and social characteristics
- Evaluate the relative effect of socio-behavioural risk factors on dental caries experience.

### Study population and methods

Burkina Faso, located in sub-Saharan Africa, is among the poorest countries of the world, ranked number 169 out of 173 countries in 2002 by the UNDP. The population of Burkina Faso is estimated at 12.6 million people. Public oral health care is provided by a limited number of dentists (1 per 200,000 inhabitants) and dental nurses (1 per 100,000), either from hospitals or

health care centres located in the major urban centres; the service mainly includes emergency care in terms of tooth extraction. Since the late 1990s, the health authorities have strengthened the development of a National Oral Health Programme oriented towards health promotion and preventive oral care. Unfortunately, due to the lack of resources, programme implementation has been difficult in most regions of the country and highly depends on collaboration with external partners. The present project is based on collaboration between the Ministry of Health of Burkina Faso and Aide Odontologique Internationale (French NGO), programme development and scientific evaluation being supported by the WHO Collaborating Centre for Community Oral Health Programmes and Research, the University of Copenhagen, Denmark.

The actual survey took place in the southwest region of Burkina Faso; the region counts five provinces with a total of 1.5 million inhabitants and the survey covered urban and rural areas. The sampling of the study population and the data collection methods used are detailed in a previous publication<sup>11</sup>. In brief, urban households in Bobo-Dioulasso and Banfora, the main cities of the study area, were randomly selected by cluster sampling as applied by the WHO Expanded Programme on Immunisation<sup>17</sup>. Six urban focal points were identified and thereby participants of different socio-economic backgrounds were included. In rural areas, one site was randomly selected from each of the five provinces based on the list of villages. Within each site, a random sample of people of the two age groups was then drawn from the recent population census provided by the administration authorities or by the district medical workers. A total of 50 individuals were selected from each site and age group. The final study population thereby comprised 505 children aged 12 years and 493 persons 35-44-years of age.

Personal interviews were performed by trained Burkinabé teams consisting of six dentists and dental nurses and a response rate of 92% was obtained. Structured questionnaires were used and included questions about living conditions, oral health knowledge, attitudes to oral disease prevention, sources of oral health information, and oral health practices. The validity and the reliability of the questions were tested in previous methodological studies<sup>18,19</sup>. The questionnaires were formulated in French and administrated in local languages.

Participants were clinically examined for dental caries<sup>11</sup>; registration was carried out according to WHO criteria, i.e. caries recorded at cavity level. The sociological data and clinical data were merged in order to provide for statistical analysis. The data were processed and analysed by use of the Statistical Package for the Social Sciences (SPSS-PC+) for Windows. Statistical evaluation of the bivariate frequency distributions was performed by use of the Chi-square test. Multivariate

analyses comprised multiple linear regression analysis and logistic regression analysis<sup>20</sup>. These analyses were carried out for the assessment of the effect of socio-behavioural factors on dental caries experience and a number of dummy-variables were inserted into the model. In the present logistic model, the dependent variable was represented by the dichotomous presence or absence of caries and thereby the regression coefficient measures the odds ratio of caries. For the statistical evaluation of regression coefficients, the *t*-test was used in the linear regression whereas the Chi square test was used in the logistic regression.

## Results

### Oral health knowledge and attitudes

Table 1 presents the distribution of 12-year-olds by their answers to statements on knowledge and attitudes towards oral health. The differences in responses given by girls and boys were only minor. The majority of children in urban areas reported that toothcleaning and regular dental visits may prevent oral disease whereas these answers were less frequent among rural children. In rural areas, 57% of the children were not aware whether consumption of sugary products may cause tooth decay while nearly one quarter of the children stated that consumption of sweet items may be harmful to teeth. In all, the caries preventive effect of fluoride was not realised by a substantial proportion of the children. The sources of dental health information among children are given in Table 2; relatively many children living in urban areas received information from their parents and schoolteachers.

At adult age, three quarters of the respondents were positive towards the effect of tooth brushing whereas one quarter agreed to the statement concerning the preventive effect of fluoride. Further, 85% of all adults considered that a dental visit would solve their dental problems. Among the adults, significant differences in oral health knowledge and attitudes were observed according to location (Table 3). Statistically different answers were also noted in relation to gender as regards the questions on effect of toothbrushing and use of fluoride; 18% of women but 9% of men did not agree on a positive effect of tooth brushing ( $P < 0.01$ ) and 28% of women against 17% of men doubted the positive impact of fluoride ( $P < 0.001$ ).

### Oral health practices

The frequency of tooth cleaning among participants is highlighted in Table 4; 58% of children and 35% of adults claimed that they never clean their teeth. Tooth cleaning habits were more often reported by urban participants than rural participants and some difference in oral hygiene practice was observed according to gender.

The majority of children reported that they make use of toothbrushes for cleaning their teeth; in addition 64% of the children declared using traditional chewing sticks. Chewsticks were widely used by adults for tooth cleaning and toothbrushes were used by 57% (Table 5). Certain differences in use of toothbrushes and chewsticks were found in relation to location and gender and Table 5 illustrates this pattern among 35-44 year-olds.

Table 6 summarises the answers given to the question on use of toothpaste. In all, 48% of children and 34% of adults declared not using toothpaste. One tenth of individuals aged 12 years and one fifth of 35-44-year-olds reported using fluoridated toothpastes. Statistically significant differences in the use of toothpaste were found in relation to location and gender.

Tables 7 and 8 indicate the frequencies of consumption of sugary foods and drinks and statistically significant differences by location appeared for most of the answers. Fresh fruits were often consumed by respondents of both age groups and particularly in rural areas. Among children, the consumption of sweets was relatively higher for urban areas whereas for adults no differences were found by location. For adult participants some variation in sugar behaviour was reported in relation to gender since men more often than women claimed consuming certain items on a daily/weekly basis, especially as regards tea/coffee with sugar (M: 62% vs. F: 38%,  $P < 0.001$ ), sweets (M: 17% vs. F: 9%,  $P < 0.01$ ), and milk with sugar (M: 24% vs. F: 14%,  $P < 0.01$ ).

### Perceived dental health status and dental visits

Among 12-year-olds, 63% stated that their teeth were excellent, 29% answered that their teeth were fair whereas 8% claimed to have poor teeth. In all, 9% of the children experienced problems with teeth during the previous 12 months, 8% reported that they avoided smiling because of unattractive teeth and 15% were dissatisfied by their teeth. At age 12, 93% of children reported that they had never visited a dentist during their lifetime, 7% had seen a dentist once and 4% within the previous year because of pain or discomfort. All children having seen a dentist resided in urban areas.

Among 35-44-year-olds, 22% of participants reported having poor teeth, 26% were dissatisfied by their teeth, 12% often avoided smiling because of unattractive teeth while 9% often avoided talking. In all, 61% had experienced pain or discomfort from teeth over the previous year. Among adults, 10% paid a dental visit within the previous year, 4% answered that they saw a dentist 1-2 years previously, while 25% stated that they had dental visit more than 2 years ago; 61% of the adults had never seen a dentist. Dental visiting habits were different for urban and rural participants; 57% of urban residents against 23% of rural residents

**Table 1** The distribution (%) of 12-year-old children according to their answers to statements on dental diseases and prevention in relation to location

		Agree	Disagree	Don't know
Tooth decay can make me look bad	Urban**	84	8	8
	Rural	72	10	18
	<i>Total</i>	79	9	12
Keeping natural teeth is not that important	Urban***	22	60	18
	Rural	10	39	51
	<i>Total</i>	17	51	32
Regular visits to the dentist keep away dental problems	Urban***	67	16	17
	Rural	42	7	51
	<i>Total</i>	57	12	31
Brushing my teeth can prevent tooth decay	Urban***	81	8	11
	Rural	42	6	52
	<i>Total</i>	65	7	28
Brushing my teeth will keep me from having gum troubles	Urban***	67	12	21
	Rural	32	10	58
	<i>Total</i>	52	11	37
Eating and drinking sweet things does not cause tooth decay	Urban***	46	39	15
	Rural	26	17	57
	<i>Total</i>	38	30	33
Using fluoride is a good way of preventing tooth decay	Urban***	9	10	81
	Rural	1	0	99
	<i>Total</i>	6	6	89

\*\* P &lt; 0.01 \*\*\* P &lt; 0.001

**Table 2** The percentages of 12-year-old children who reported having received dental health information from specific sources in relation to location

	Urban (n = 293)	Rural (n = 212)	Total (n = 505)
Parents	48***	14	34
Schoolteachers	41***	19	32
Friends	18***	8	14
Radio / Television	19***	3	12
Medical doctor / nurses	4	7	5
Newspapers / magazines	7	2	5
Relatives	7	1	4
Dentists	4	-	2
Cinema	1	-	1
Others	4	20	11

\*\*\*P &lt; 0.001

**Table 3** The distribution (%) of 35-44-year-olds according to their answers to statements on dental diseases and prevention in relation to location

		Agree	Disagree	Don't know
Toothbrushing prevents tooth decay	Urban**	81	11	9
	Rural	72	9	19
	<i>Total</i>	<i>76</i>	<i>10</i>	<i>14</i>
Toothbrushing prevents bleeding from gums	Urban***	80	8	12
	Rural	67	6	27
	<i>Total</i>	<i>74</i>	<i>7</i>	<i>19</i>
Tobacco is harmful to mouth and teeth	Urban***	84	2	14
	Rural	65	4	31
	<i>Total</i>	<i>75</i>	<i>3</i>	<i>23</i>
Sweet things are harmful to mouth and teeth	Urban***	86	2	11
	Rural	46	7	47
	<i>Total</i>	<i>66</i>	<i>5</i>	<i>29</i>
Fluoride protects the teeth against decay	Urban***	38	3	60
	Rural	7	0	93
	<i>Total</i>	<i>23</i>	<i>1</i>	<i>76</i>
Dental visit will solve my problems by teeth	Urban*	89	3	8
	Rural	82	3	16
	<i>Total</i>	<i>85</i>	<i>3</i>	<i>12</i>

\* P < 0.05    \*\* P < 0.01    \*\*\* P < 0.001

**Table 4** The percentages of 12 year-olds and 35- 44-year-olds who claimed certain tooth cleaning practices in relation to location and gender

		Frequency of toothcleaning		
		At least once a day	Weekly or seldom	Never
12 years	Urban***	53	10	38
	Rural	12	1	87
	Male	31	6	63
	Female	41	6	54
	<i>Total</i>	<i>36</i>	<i>6</i>	<i>58</i>
35-44 years	Urban***	82	7	11
	Rural	32	8	60
	Male**	60	11	28
	Female	55	4	41
	<i>Total</i>	<i>57</i>	<i>7</i>	<i>35</i>

\*\* P < 0.01    \*\*\* P < 0.001

**Table 5** Percentages of 35-44-year-olds who reported using various aids for oral hygiene in relation to location and to gender

	Location		Gender		Total
	Urban	Rural	Male	Female	
Brush	81 <sup>***</sup>	33	64 <sup>**</sup>	50	57
Chewstick	69	83 <sup>***</sup>	69	82 <sup>***</sup>	76
Soap	7	6	6	7	7
Charcoal	10	3	6	7	7
Dental floss	-	2	1	1	1
Other	11	10	11	10	11

\*\* P &lt; 0.01 \*\*\* P &lt; 0.001

**Table 6** Percentages of 12 year-olds and 35-44-year-olds who reported use of toothpaste in relation to location and to gender

			Use of toothpaste			
			No use of toothpaste	With fluoride	Without fluoride	Don't know if toothpaste is fluoridated
12 years	Urban <sup>***</sup>	(n = 292)	28	15	21	36
	Rural	(n = 211)	75	1	13	11
	Male <sup>**</sup>	(n = 267)	55	6	16	23
	Female	(n = 236)	39	12	20	29
	<i>Total</i>	<i>(n = 503)</i>	<i>48</i>	<i>9</i>	<i>18</i>	<i>26</i>
35-44 years	Urban <sup>***</sup>	(n = 245)	16	30	23	31
	Rural	(n = 244)	53	7	17	23
	Male <sup>*</sup>	(n = 233)	30	23	20	27
	Female	(n = 256)	39	14	20	27
	<i>Total</i>	<i>(n = 489)</i>	<i>34</i>	<i>18</i>	<i>20</i>	<i>27</i>

\* P &lt; 0.05 \*\* P &lt; 0.01 \*\*\* P &lt; 0.001

**Table 7** Distribution (%) of 12-year-olds according to how often they consume sugary foods in relation to location

			Once a day or more often	Once or several times a week	Seldom / Never
Fresh fruits	Urban		31	41	28
	Rural <sup>**</sup>		42	41	17
	<i>Total</i>		<i>36</i>	<i>41</i>	<i>23</i>
Soft drinks	Urban <sup>***</sup>		17	14	69
	Rural		2	13	85
	<i>Total</i>		<i>11</i>	<i>14</i>	<i>76</i>
Sweets	Urban <sup>***</sup>		11	26	64
	Rural		6	13	81
	<i>Total</i>		<i>9</i>	<i>21</i>	<i>71</i>
Tea or coffee with sugar	Urban		10	9	81
	Rural		7	9	84
	<i>Total</i>		<i>9</i>	<i>9</i>	<i>83</i>
Milk with sugar	Urban <sup>***</sup>		16	10	74
	Rural		1	9	90
	<i>Total</i>		<i>10</i>	<i>10</i>	<i>81</i>

\*\* P &lt; 0.01 \*\*\* P &lt; 0.001

**Table 8** Distribution (%) of 35-44-year-olds according to how often they consume sugary foods in relation to location

		Once a day or more often	Once or several times a week	Seldom / Never
Fresh fruits	Urban	39	37	24
	Rural**	55	26	19
	<i>Total</i>	47	31	22
Soft drinks	Urban***	13	19	68
	Rural	5	10	85
	<i>Total</i>	9	15	77
Sweets	Urban	4	9	87
	Rural	5	8	87
	<i>Total</i>	4	8	87
Tea or coffee with sugar	Urban***	39	9	53
	Rural	31	21	48
	<i>Total</i>	35	15	50
Milk with sugar	Urban*	14	11	76
	Rural	6	8	86
	<i>Total</i>	10	9	81

\* P < 0.05 \*\* P < 0.01 \*\*\* P < 0.001

had paid a dental visit at least once during their lifetime ( $P < 0.01$ ). No difference in frequency of dental visits was found according to gender.

### Multivariate analyses

Tables 9 and 10 present the results of the multivariate analyses of dental caries experience; only variables with statistically significant effects are included. At age 12, other factors being equal, relatively high DMFT scores were observed for children living in urban areas, for children consuming soft drinks 'once or more often a day' or 'once or more often a week' whereas children consuming fresh fruits 'once or more often a day' had lower DMFT. In addition, children living in urban areas and children consuming soft drinks had high odds of caries (OR) while children consuming fresh fruits 'once or more often a day' had lower caries risk.

For 35-44-year-olds, the multiple linear regression analysis revealed that the risk of dental caries was high being a woman, having a high level of education, being a government employee, and having seen a dentist, but low for adults using traditional chewing sticks and having a Bobo ethnic background.

### Discussion

In Burkina Faso, socio-epidemiological data on oral disease are scarce and only one local report is available on oral health behaviour of children<sup>16</sup>. The present study was undertaken in order to provide such infor-

mation as regards urban and rural populations and the results would thereby aid the planning and evaluation of national oral health programmes. The country has adopted the primary health care approach and the data are particularly useful for organisation of essential oral health care, disease prevention and development of health promotion activities at community level.

The cluster sampling applied for the identification of participants is a technique designed for inclusion of the most important population subgroups likely to have different disease levels. The technique is widely employed in developing countries and the use of a household-to-household approach provides for a representative sample. The distributions of participants by gender, ethnicity and occupation indicate that a highly acceptable sample was obtained as compared with the characteristics of the 1996 national population census of the study area<sup>11</sup>. It is worth noting, however, that because of practical difficulties people in rural areas tended to be somewhat under-represented.

The data on oral health behaviour were collected by means of structured questionnaires and a very high response rate was obtained due to the community approach applied. Meanwhile, the data collection method chosen may have certain limitations. With regard to dental knowledge and oral hygiene habits over-reporting has to be assumed, whereas the consumption of sugary foods and drinks has probably been under-reported.

In Burkina Faso, substantial proportions of both children and adults do not perform regular oral hygiene; in particular, oral hygiene practices were infrequent in rural areas as one tenth of 12-year-olds and one third

**Table 9** Multiple linear regression analysis of caries experience (DMFT) and logistic regression analysis of odds for dental caries (Odds Ratio OR) by socio-behavioural variables among 12-year-olds

Independent variable		DMFT (b)	OR
Location	Urban	0.45*	2.62**
	Rural	-	-
Consumption of fresh fruits	Once or more often a day	-0.57**	0.40**
	Once or more often a week	-0.25	0.77
	Seldom / never	-	-
Consumption of soft drinks	Once or more often a day	0.59*	3.70**
	Once or more often a week	0.50*	2.06*
	Seldom / never	-	-

\* P &lt; 0.05 \*\* P &lt; 0.01

**Table 10** Multiple linear regression analysis of caries experience (DMFT) and logistic regression analysis of odds for dental caries (Odds Ratio OR) by socio-behavioural variables among 35-44-year-olds

Independent variable		DMFT (b)	OR
Gender	Female	3.04***	2.43*
	Male	-	-
Ethnic group	Bobo	-0.07	0.43*
	Mossi	-0.50	0.85
	Sénoufo	-1.18	0.71
	Others	-0.39	1.28
	Mandé	-	-
Occupation	Shopkeeper	-1.19	0.75
	Government employee	0.25	5.26**
	Smallholder / craftsman	-0.47	2.55
	Housewife	-1.19	0.99
	Farmer / breeder	-	-
Education	High	2.85*	2.99*
	Moderate	-0.27	1.20
	Low	-	-
Dental visit	Been to a dentist	3.44***	5.35***
	Never been to a dentist	-	-
Use of chewstick	Yes	-1.45*	0.76
	No	-	-
Consumption of fresh fruits	Once or more often a day	0.60	1.59
	Once or more often a week	1.41	2.35*
	Seldom / never	-	-

\* P &lt; 0.05 \*\* P &lt; 0.01 \*\*\* P &lt; 0.001

of 35-44-year-olds had tooth cleaning on a daily basis. Only very few children and adults reported the use of toothpaste, and fluoridated toothpaste was especially uncommon in rural areas where toothpaste in general is less accessible. Toothpaste was also used less often by males than females. The majority of respondents were not aware of the benefits of fluorides for prevention of dental caries while positive attitudes towards the importance of tooth brushing were widespread.

Significant numbers of children and adults claimed having poor teeth, limited function and reduced quality of life because of teeth. One tenth of the children and 60% of adults claimed to have suffered from dental

pain or discomfort over the previous year. Meanwhile, because of the low access to oral health care only a few participants had actually seen a dentist. Thus, there is an urgent need for establishing primary oral health services in the country in order to meet the basic dental care needs of people living in rural as well as urban communities.

The levels of oral health knowledge and attitudes were remarkably low in Burkina Faso. Worldwide, sociological studies of both children and adults have highlighted differences in oral health knowledge, attitudes and practices between urban and rural subgroups and between privileged and underprivileged people<sup>21</sup>. The

present study confirms that positive dental attitudes and high knowledge about prevention of oral disease are found more often among urban than rural populations. The higher level of education of parents, active schoolteachers and easier access to information through the media in cities may explain these differences. Urban centres facilitate access to toothbrushes and toothpaste and the use of these hygiene measures are considered a sign of modern life style. Nevertheless, chewing sticks remain the most frequent tool for oral hygiene by the majority of people and the widespread use of chewing sticks also seems to be linked to traditional practices related to aesthetic and religious values.

Currently, dietary practices and nutrition are undergoing transition in most developing countries of Africa, particularly consumption of sugars is growing rapidly<sup>22</sup>. The answers to the questionnaires indicate that consumption of sugary foods is more frequent in urban areas compared to rural. Among children no difference in sugars consumption was found in relation to gender, while at adult age men, due to higher income, appeared to consume sugary products more often than did women.

For the 12 year-old children, the multivariate analysis showed that high DMFT scores are strongly associated with living in urban areas and consumption of soft drinks. The results concerning the consumption of fresh fruits are somewhat difficult to interpret. For the children, such dietary practice was associated with a lower caries experience, whereas, for the adults, the association was reversed. As regards the adults, high dental caries experience was linked with high education level, being a woman, a government employee and the Bobo ethnic group. This study confirms research carried out in other African countries which also revealed that gender, level of education, income and urbanisation<sup>22-28</sup> are major risk factors in caries and their effects are mediated through unhealthy lifestyles. For both age groups studied, the amount of dental caries experience and the risk of dental caries were high for participants who sought a dentist over the previous year. This reflects the fact that dental visits are mostly sought for symptomatic reasons and extraction of teeth is often the service rendered for pain relief. Such a pattern is shown in other studies conducted in African countries<sup>12,24</sup>.

In the multivariate analysis of dental caries experience in adults, use of chewing sticks was associated with a low level of DMFT score. This finding supports previous observations in developing countries that traditional hygiene practices with use of chewsticks can be equally effective in dental plaque control as the use of manufactured toothbrushes<sup>29-32</sup>. Though this is important, it does not resolve the challenges related to the effective use of quality fluoridated toothpaste. Affordable fluoridated toothpaste remains one essential public health measure for prevention of tooth decay in Africa<sup>1</sup>.

## Conclusion

Burkina Faso is one of the poorest countries of Africa. The present survey showed that the levels of oral health knowledge and attitudes were rather low, particularly in rural areas. In parallel, substantial proportions of children had no tradition of performing regular oral health care. Among adults, the use of chewsticks was often practised for oral hygiene in urban as well as rural areas; tooth brushing with use of toothpaste was also common in urban areas. Meanwhile, knowledge about the benefits of fluorides and the use of fluoridated toothpaste were very low and varied significantly by location and gender. Relatively few people were aware of the harmful effect of sugars consumption; currently the consumption of free sugars in the country is somewhat low but it appears to be higher in urban than rural areas.

Poor quality of life in terms of experience of pain and discomfort from teeth was common in both age groups interviewed, however, due to limited access to dental care most people remained underserved. Dental visits were infrequent and mostly carried out for emergency care and tooth extraction. The multivariate analyses of dental caries experience revealed the existence of socio-behavioural determinants of oral health; dental caries is currently somewhat higher among the privileged population groups and those residing in urban areas.

As parents and schoolteachers are important informants in oral health their involvement should be considered in planning oral health education for children. The school may serve an effective platform for promotion of oral health in relation to children as well as families. In addition, in order to prevent oral disease and promote oral health the national health authorities should give priority to community-oriented oral health care and essential care should be offered according to the primary health care concept.

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