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Oral hygiene experience, knowledge of oral health and oral diseases and attitudes about oral health care

- A questionnaire study among students of nursing in Zambia

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Munhygienvanor, kunskaper om oral hälsa och orala sjukdomar samt attityder angående munhälsovård

– En enkätstudie bland sjuksköterskestuderande i Zambia.

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Empirisk studie

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Sammanfattning

Syftet med studien var att undersöka sjuksköterskestudenters munhygienvanor, deras kunskaper om oral hälsa och orala sjukdomar samt attityder till munhälsovård. Ett frågeformulär med 29 frågor delades ut till 119 andra- och tredje års studenter på sjuksköterskeskolan i Livingstone, Zambia. Respondenterna var både kvinnor och män mellan 20 och 43 år. Resultatet visade att flertalet studenter borstade sina tänder dagligen. Däremot var det ovanligt med täta tandvårdsbesök och den vanligaste orsaken till besök var smärta. Majoriteten av studenterna hade goda kunskaper om HIV-relaterade orala lesioner och det vanligaste svaret de uppgav var oral candida. De generella kunskaperna om HIV/AIDS-relaterade orala lesioner var väldigt goda och majoriteten av respondenterna var intresserade av mer information i ämnet. Generellt hade respondenterna goda kunskaper om oral hälsa, orala sjukdomar och majoriteten hade en positiv attityd till munhälsovård. Flertalet ansåg att ett samarbete mellan tand- och sjukvård var betydelsefullt. Trots den höga kunskapsnivån om oral hälsa visar resultatet att respondenterna inte besöker tandvården regelbundet.

Nyckelord: Oral hälsa, kunskaper, attityder, vårdgivare, HIV/AIDS

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Abstract

The aim of the study was to investigate oral hygiene experience, knowledge of oral health and oral diseases and attitudes about oral health care among students of nursing at the School of Nursing in Livingstone, Zambia. The respondents were women and men in the ages between 20 and 43. A questionnaire consisting of 29 questions was handed out to 119 students. The results showed that the majority of the students brushed their teeth every day. Visits to dental clinics, however, were few. The most common reason for dental visits was pain. Most of the respondents knew about one or more HIV-related oral diseases, and the most common answer was oral candidosis. The overall knowledge of HIV/AIDS-related oral lesions was very high, and the majority of the respondents were interested to receive more information about the subject. The respondents had good knowledge in oral health and oral diseases, and the majority had a positive attitude concerning oral health care providers. The majority also considered collaboration between dental care and regular health care as essential. Although the knowledge about oral health was good, the result showed infrequent dental visits among the respondents.

Key words: Oral health, knowledge, attitudes, caregivers, HIV/AIDS

TABLE OF CONTENTS

Sammanfattning	1
Abstract	2
INTRODUCTION	4
Oral diseases and prevalence	4
<i>Periodontitis</i>	4
<i>Dental caries</i>	4
<i>Mucosal lesions</i>	5
<i>HIV/AIDS and HIV-related oral diseases</i>	5
Preventive work and oral health improvements	5
<i>Developed countries</i>	5
<i>Developing countries</i>	5
Oral health and oral health care	6
AIM	7
MATERIAL AND METHODS	7
ETHICAL CONSIDERATIONS	8
RESULT	8
General information	8
Personal experience of dental care	9
Personal habits of dental care	10
Oral health care in education	11
Knowledge about oral health and diseases	11
Knowledge about HIV-related oral lesions	12
Personal attitudes concerning oral health care	12
DISCUSSION	13
Material and methods	13
Result	14
CONCLUSIONS	15
ACKNOWLEDGEMENT	15
REFERENCES	17
APPENDIX	
Questionnaire	Appendix 1

INTRODUCTION

Oral health means more than healthy teeth. The World Health Organization, WHO, has a definition of good oral health: “Oral health means being free of chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects such as cleft lip and palate, periodontal (gum) disease, tooth decay and tooth loss, and other diseases and disorders that affect the mouth and oral cavity” (WHO, 2009, p. 1). Oral health is essential to the general health and well-being of all children and adults. The majority of dental diseases can be prevented but oral care resources are not available in many parts of the world (Petersen, 2006; Petersen, 2008).

Oral diseases and prevalence

Oral diseases are significant health problems around the world (Petersen, 2006; Petersen, 2008). The diseases include periodontal disease, dental caries, oral mucosal lesions and several HIV/AIDS related oral diseases (Petersen, 2006; Petersen, 2008). These diseases particularly occur in poor populations both in developed and developing countries (Petersen, 2008).

Periodontitis

Severe periodontitis is reported in 5-20 % of most adult population worldwide (Petersen et al., 2005). In the developing countries in Africa, periodontal diseases are one of the most common oral diseases (Ranganathan & Hemalatha, 2006). Taiwo et al., (2004) reported that more than 90 % of the old people in their study had a high rate of bleeding gum, calculus, periodontal pockets and tooth mobility. Gingivitis is widespread in Africa (Reddy, 2007) and is common in young children. Overall, shallow periodontal pockets are common in African adults, but deep pockets that causes tooth loss are on the other hand rarely seen (Enwonwu et al., 2004). In the Zambian population periodontal diseases is moderately high (MoH, 2010).

Dental caries

Dental caries affects almost 100 % of the population worldwide (Petersen et al., 2005). In the developing countries in Africa dental caries is a common oral disease (Ranganathan & Hemalatha, 2006). Dental caries is increasing, especially in urban communities (Enwonwu et al., 2004).

Mucosal lesions

Oral mucosal lesions are common in children (Majorana et al., 2010). In Africa, it is common with salivary gland diseases and xerostomia (Ranganathan & Hemalatha, 2006; Taiwo et al., 2006). The most common oral mucosal lesion in Africa including Zambia is oral candidosis (Ranganathan & Hemalatha, 2006; Hodgson, 1997; Kamiru & Naidoo, 2002).

HIV/AIDS and HIV-related oral diseases

Worldwide, there are 33.4 million people who are infected by HIV/AIDS, and with 22,4 million of them in Sub-Saharan Africa (UNAIDS, 2009). In Zambia, it is estimated that nearly one million people are infected by HIV or have AIDS (Kandala et al., 2008). Among HIV-infected people, oral manifestations such as oral candidosis are common (Bhayat, 2010; Kamiru & Naidoo, 2002). Unusual forms of gingivitis, exaggerated periodontitis, necrotizing diseases (Reddy, 2007), hairy leukoplakia and Kaposi's sarcoma are also common. Kaposi's sarcoma is more spread in Africa than in other developing countries around the world (Ranganathan & Hemalatha, 2006; Taiwo et al., 2006).

Preventive work and oral health improvements

Developed countries

In western industrialized countries significant improvements in oral health status have occurred as a result of effective work on oral hygiene, frequent use of fluorides, together with changing living conditions and lifestyles (Varenne et al., 2006). The introduction of fluoride preventive programmes in schools, and the active use of oral health services have also contributed to the improvements in oral health status (Varenne et al., 2006). For example, a longitudinal study in Sweden showed that caries prevalence declined among young children and adolescents (Hugoson et al., 2008). The number of decayed and filled surfaces on deciduous teeth (dfs), and the number of decayed, missing, and filled surfaces on permanent teeth (DMFS) (Youravong et al., 2006) had decreased by 50-80 % (Hugoson et al., 2008).

Developing countries

The improvements have not been the same in developing countries (Varenne et al., 2006). Factors like stress, alcohol consumption, smoking, and poverty are linked to a high prevalence of oral diseases. Limited access to oral health services is another factor that may contribute to the high prevalence. Treatment of oral diseases is costly and in most low income and middle

income countries in Africa it is not possible (Petersen, 2008). Approximately 80 % of African countries are not materially equipped and privileged according to accessibility to oral health services (Thorpe, 2003). The WHO Regional Office of Africa has created regional oral health strategies to reach larger communities of people and to bring quality in oral health care (Thorpe, 2003). Improvements about oral health are still required in developing counties, which includes collaboration with professionals in health care services in the preventive work (Petersen, 2009).

Oral health and oral health care

Several studies in both developed and developing countries have shown that oral health care is being neglected and that oral health care in HIV/AIDS-infected patients is deficient (Coogan et al., 2005; Relf et al., 2009; Wårdh et al., 2000; Blignaut, 2007). Relf et al., (2009) reported that not all nursing students were willing to treat patients with HIV because of fear of contamination (Relf et al., 2009). One study in Sweden has showed that oral health care in nursing homes is insufficient and constitutes a low order of priority (Wårdh et al., 2000). Hospitalized HIV-positive orphans and abandoned children in South Africa is another group that has reported to not get a proper oral care. The children suffered from different oral preventable diseases, such as caries, candidiasis and ulceration of the mucosa. The diseases are easy to detect but caregivers do not seem to have the knowledge how to provide the children with adequate oral hygiene (Blignaut, 2007).

Explanations to why oral health is a low priority in health care facilities depend on several factors. One study in Sweden shows that a reason is lacking routines for assisting oral health care (Wårdh et al., 2000). Another study shows that it depends on the lack of training, time limit linked to workload, and poor understanding of how dental diseases develop (Weeks & Fiske, 2006).

To improve health care providers' knowledge and attitudes, oral health care must be clearly defined (Wårdh et al., 2000). Collaboration between regular health care and oral health care has to be included in health care education (Relf et al., 2009; Naidoo & Myburgh, 2007). A formal training of attending nurse students in the recognition and safe management of oral

lesions in patients is fundamental to detect if a patient is a carrier of the HIV virus, but also to ensure the best management of each patient (Coogan et al., 2005; Tirwomwe et al., 2007).

Oral care is important to the general health and well-being of all human being (Petersen, 2009). The consequences of poor oral hygiene may cause dental caries, periodontitis, bleeding gum and different mucosal lesions. These lesions and HIV-related oral conditions may cause difficulties to eat and drink and thereby lead to malnutrition (Quand, 2009; Ranganathan & Hemalatha, 2006; Tirwomwe et al., 2007; Petersen, 2006; Petersen, 2008). Oral manifestations are early and most important indicators of infection with HIV, and such oral lesions can provide a good prediction about the progression of HIV disease to AIDS. It is therefore important that health care workers receive education on the importance of oral health, and the use of oral manifestations as alternate markers in HIV infection (Coogan et al., 2005).

AIM

The aim of the study was to investigate oral hygiene experience, knowledge of oral health and oral diseases and attitudes about oral health care among students of nursing in Livingstone, Zambia.

MATERIAL AND METHOD

An empirical study with a descriptive quantitative design was performed at the School of Nursing in Livingstone, Zambia, during January and February 2010. The study was supervised by Dr. Robin Mwewa, Dental Surgeon in Livingstone. Dr Mwewa checked the questionnaire to investigate if the question's were understandable and that all details were included. He also introduced the authors' to the organisation of the school and gave them the permission to conduct the study. The study was also supervised by Mr Filbert Macha, senior lecturer at the School of Nursing. The data collection was performed using a questionnaire including 29 questions that was divided in five parts: general information, personal experience and habits of dental care, knowledge about oral health and diseases, knowledge about HIV-related oral diseases and personal attitudes concerning oral health care. Some of the questions had been used in a previous study by Hagberg & Sjö Dahl (2007), and other questions were composed by the authors. The questionnaire was handed out by the authors to 51 second grade students and 68 third grade students at the ages between 20 and 43 years. In total, 23 men and 96 women participated in the study. The first grade students were excluded because

oral health education is not included in the curriculum during the first year of the nursing school curriculum.

In order to eliminate misunderstandings in the questionnaire and to ensure that important details would not be missed, a pilot study was conducted including five second grade nursing students who were randomly selected by the local supervisor and teacher (F.M). The participants were asked to discuss their opinions with the authors concerning each question separately. This resulted in that one question was excluded, and another question was revised. These students did not participate in the main study.

Analyses of the data have been compiled by a descriptive method, and the statistical analysis has been performed by the computer program SPSS (Statistical Package for Social Sciences, version 17.0).

ETHICAL CONSIDERATIONS

To respect the participants' autonomous choices and integrity, they were informed verbally that the study was voluntary, and if somebody changed his or her mind before or while answering the questionnaire he/she was allowed to discontinue the participation at any time. The students were also informed that the answers in the questionnaire were confidential and would not be read by anyone else but the authors. The answered questionnaire would be destroyed when the study results have been compiled and passed examination (Olsson & Sörensen, 2007).

RESULT

General information

In total, 119 students participated in the study. The majority of the respondents were females. The median age was 23, range 20-43. The question about age had eight drop outs. Gender, age and level are demonstrated in figure 1.

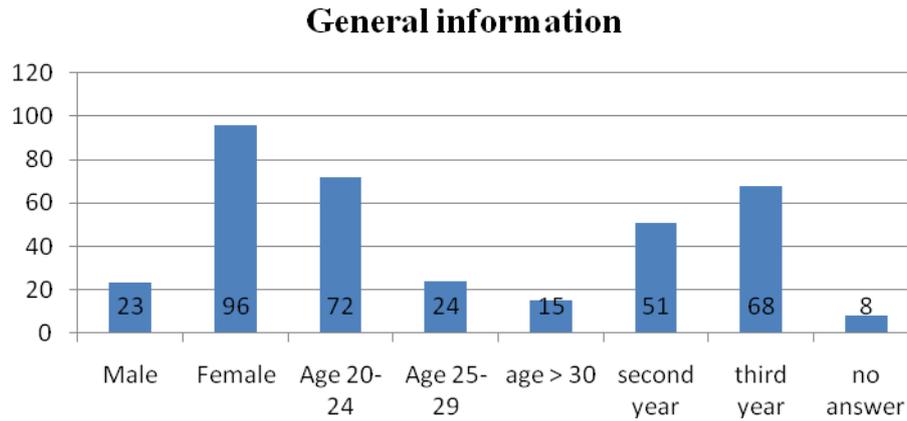


Figure 1. Distribution according to gender, age and level of studies among nursing students (n=119).

All students answered to the question about their mothers educational degree and 118 about their fathers education. The parents' general level of education was high (Table 1).

Table 1. Frequency of the nursing students parents level of educational degree (n=119)

Alternative in question	Mothers education	Fathers education
	(n=119)	(n=118)
No education	1	-
Primary school	14	2
Secondary School	34	20
Higher education	70	96

Personal experience of dental care

Figure 2 show that 46 of 119 respondents had visited a dentist one to two times and nine had been to a dentist more than five times, during their life. The reasons for dental visits are described in figure 3. In total, 92 respondents answered the question and of these, eleven gave more than one answer.

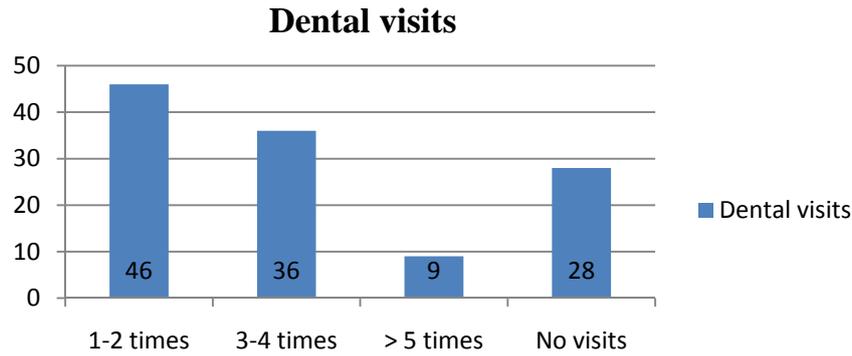


Figure 2. Number of dental visits among the nursing students (n=119).

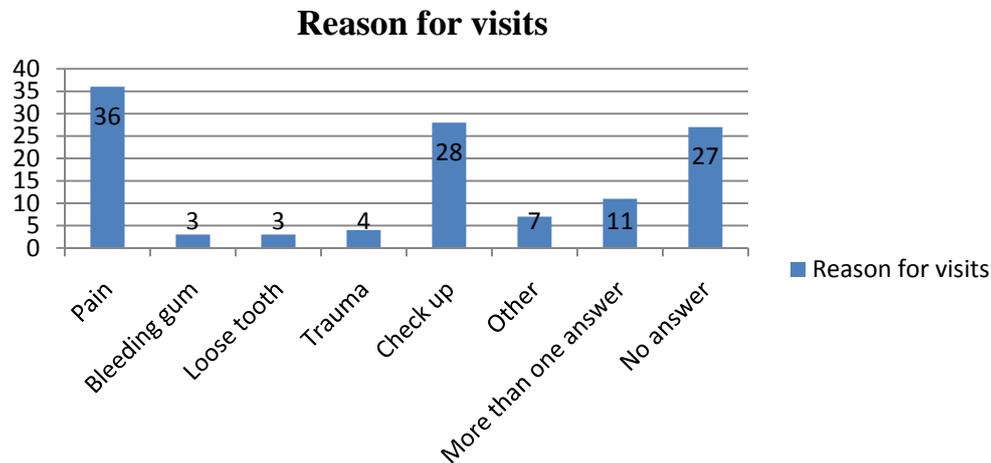


Figure 3. The respondents' reason for visiting a dentist. Ninety two respondents answered the question and of these, eleven students gave more than one alternative (n=119).

Personal habits of dental care

The result showed that 115 respondents brushed their teeth daily and one answered never. The remaining two respondents stated that they brushed their teeth every week (n=118). The most frequently used aid for cleaning the teeth was toothpaste (n= 112). Other mentioned aids for cleaning the teeth were salt and roots of the murula tree. More than one alternative on the question could be given and two respondents answered the use of both salt and toothpaste, and one answered the use of salt, toothpaste and chewing-stick. Fifty respondents answered that they never cleaning between the teeth, 34 answered daily use, 20 weekly use and finally six respondents answered that they used an aid for cleaning between the teeth monthly (n=110).

Oral health care in education

The respondents most common answer about what subjects included in their education about oral health care was oral hygiene (n=101) followed by oral diseases (n=84), oral cavity (n=75) and eating habits (n=74). Among the respondents, 72 gave more than one alternative (n=118). The respondents also had the opportunity to answer freely concerning subjects in their education. Four answered treatment of oral diseases and two answered dental check-ups (n=6).

One hundred and twelve out of 118 respondents were interested in having more training in oral health care.

Knowledge about oral health and diseases

The overall knowledge about oral health and diseases was high concerning caries and gingivitis. Within the study group, 101 answered that dental caries is tooth decay and 107 answered that sugar and bacteria causes caries. The knowledge about periodontitis appeared to be low. The numbers of correct answers from the respondents are shown in figure 4.

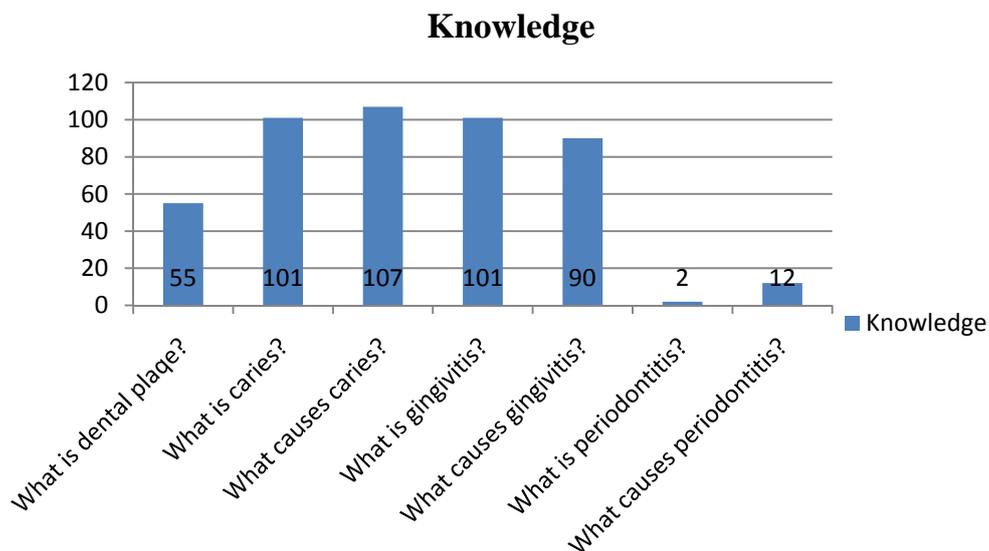


Figure 4. The numbers of correct answers about oral health and oral diseases (n=119).

One hundred and eight answered that the reason for brushing the teeth was to remove bacteria and plaque, seven answered that the reason was to whitening the teeth, two respondents to massage the gum, and one did not know the reason (n=118).

One hundred and six answered that the purpose of fluoride was to strengthen teeth and prevent caries, five answered that the reason was to remove stains from the teeth, two answered to prevent calculus, and two respondents did not know. One respondent did not give an answer. Answers by 3 respondents were excluded while they had given more than one alternative.

Knowledge about HIV-related oral lesions

One hundred respondents answered that in their nursing education, they had received information about HIV/AIDS-related oral diseases. Ninety of the respondents had knowledge of HIV/AIDS-related oral diseases and were asked to write down one or more alternative in the following question. Eighty two out of the 90 answered the question and the most common answer was oral thrush/oral candidosis. Eight out of these eighty two respondents answered more than one alternative (Table 2).

One hundred and sixteen respondents wanted more information about HIV/AIDS-related oral diseases

Table 2. Frequency of the respondents' knowledge of HIV/AIDS-related oral diseases. More than one answer could be given (n=82).

HIV-related oral diseases	Number (n)
Stomatitis	4
Oral thrush/Oral candidiasis	70
Gingivitis	6
Toothache	1
Steven Johnson syndrome	3
Lip sores	2
Herpes zoster	1
Herpes	3
Candida Albicans	2

Attitudes concerning oral health care

One hundred and twelve respondents considered that oral health care should be given a high priority, and 114 answered that treatment of the oral cavity equally important as in other parts

of the body, 116 considered that regular visits to the dentist are necessary, two answered it was not necessary and one did not know. One hundred and eighteen of the respondents considered collaboration between regular health care and dental care as essential.

DISCUSSION

Material and method

The respondents that participated in the pilot study were randomly selected by the local supervisor and teacher (F.M) at the School of Nursing in Livingstone. Through the pilot study two questions were discussed; one was changed and the other one was excluded. The atmosphere during the conversations was relaxed. Due to the organization's reasons, enough time was not given to prepare the questionnaire together with the students who were involved in the pilot study. It is believed that if more time had been given it could have enabled a better understanding of both the questions and the participants' opinions. It could also have made it possible to formulate some of the questions differently. However, the understanding of the questions seemed to be clear.

Some difficulties occurred when performing the main study. The study had a written plan for its performance. It was supposed that the supervisor and teacher (F.M) should have given his point of view to the questionnaire and its performance before the main study began, but no feedback was given. A clarification could have avoided some misunderstandings about how to answer the questionnaire. Discussion with everyone concerned should have been a priority before the main study began. When information was provided about the aim of the study, how to respond and the ethical principles of the study there was a loud noise in the class room. Therefore, it is believed that the information did not reach all students. The assignment took place during the participants' break and they had to use their free time to answer the questionnaire. This was necessary while no time during the ordinary lecture time provided by the school. Difficulties that appeared during the assignment could have been avoided if it had been arranged during the students ordinary lecture time.

The questionnaire design with already written options may have given the participants a chance to guess the correct answer. To address the students' attitudes regarding oral health care it would probably have been better with open questions in the questionnaire. This is

believed to have increased the accuracy of the study and could have captured the participants' feelings and opinions at a higher level of quality. Using a method with open questions among 119 students would have led to a bigger collected material and it would not have been possible to manage because of the time limit (Ejlertsson, 2005).

All of the 119 distributed questionnaires were answered. Eleven respondents did not give an answer to some separate questions. This internal reduction may depend on the fact that the questions were not distinctly designed (Ejlertsson, 2005). It is possible that open ended questions and questions with more than one alternative could have reduced the numbers of internal drop outs. The result should therefore be interpreted with caution as there was no possibility to influence the assignment.

Result

The results showed that the majority of the respondents brushed their teeth daily. The most frequently used aid for cleaning the teeth was toothpaste and more than one third of the respondents cleaned between their teeth daily. Good oral health habits among adults are also shown in a Danish study (Christensen et al., 2003).

The overall knowledge about caries, gingivitis and their cause were good among the respondents. There are some studies that show similar results (Mani et al., 2010; Wyne et al., 2002) but in contrast with other researchers, Al-Hussaini et al. (2003) show a lack of knowledge about the causes and the prevention of dental caries among students in Kuwait. The knowledge about periodontitis was insufficient. This could be explained by the fact that the students do not study periodontology in their education. According to Ranganathan & Hemalatha (2006), periodontitis is one of the most common oral diseases in Africa, so the students' knowledge about the disease should have been higher even as though they do not study periodontology. The same lack in knowledge about periodontitis is shown in the present study (Al-Hussaini et al., 2003).

The respondents had a low attendance to dental services. This could be explained by many reasons, such as access to oral health services, socioeconomic factors and attitudes for oral

health (Adeleke & Danfillo, 2005). Irregularity in dental visits has also been reported by another study performed in Jordan in schoolchildren (Al-Omiri et al., 2006). Although, the respondents showed a positive attitude concerning oral health care, so irregular dental visits may be explained by limited access to oral health services. The number of oral health services in Zambia is not sufficient in relation to the numbers of residents in the country and most of the dental clinics are not adequately equipped (MoH, 2009; Thorpe, 2003). This could also be due to the fact that dental treatments are expensive in some oral health care facilities and some people cannot afford this dental care (Petersen, 2008). Oral health services may also be seen as luxury and dental attendance might have a low priority among people living in developing countries.

The majority gave one or more alternatives to HIV/AIDS-related oral diseases. This result may be expected since Zambia is involved in a programme to reduce the prevalence of HIV/AIDS. The results concerning the knowledge and the willingness to have more training about oral health care were widespread among the students. They had also positive attitudes concerning oral health care. The students considered oral health care as a high priority, and as an important matter. The results also showed that the nursing students considered regular dental visits necessary, and that collaboration between dental care and regular health care practices is needed. Positive attitudes concerning oral health care have also been shown in other studies. Wårdh et al (2008) have reported in a Swedish study that the attitudes are more positive among registered nurses compared to other nursing groups.

Good knowledge and positive attitudes about oral health and oral health care in nursing students could make it possible to improve oral health and bring quality of life for their patients (Quandt, 2009; Ranganathan & Hemalatha, 2006). Although the knowledge about oral health was good, the data showed irregularity in dental visits in the respondents.

CONCLUSION

The respondents had a good knowledge of oral health and oral diseases. The majority had a positive attitude concerning oral health care. Although the respondents had good knowledge about dental caries and its cause, they did not visit a dentist that often. However, education in periodontology in their curriculum seems to be needed. The overall knowledge of HIV/AIDS-related oral lesions was good. The majority of the respondents wanted, however to receive more information about this subject. The knowledge about oral health was good, although the result showed irregularity in dental visits among the respondents.

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APPENDIX

Questionnaire about oral health.

Definition of oral health:

With oral health means everything that concerns the mouth area; the teeth, the gums, the tongue, the cheeks etc. Oral health also means oral hygiene, oral diseases and eating habits.

Mark one alternative per question if no other instruction is given and please fill in every question.

General information

1. Gender

Male Female

2. Age _____ years

3. How far have you come in your education?

Second year Third year

4. Mother`s education

No education Primary school
 Secondary school Higher education

5. Father`s education

No education Primary school
 Secondary school Higher education

Personal experience and habits of dental care

6. How many times have you been to a dentist?

1-2 times 3-4 times \geq 5 times
 No visit

If you answered "No" to this question please go to question 8

7. What was the reason to your dentist visit? (You can mark more than one alternative)

Pain Bleeding gum Loose tooth
 Trauma Check up Other

8. How often do you brush your teeth?

Never Daily Weekly Monthly

If you answered "Never" to this question please go to question 10

9. What do you use for cleaning your teeth?

Salt Toothpaste Chewing-stick
 Other means: _____

10. Do you use anything regularly to clean in between your teeth (for example dental floss?)

Never Yes, Daily Yes, Weekly
 Yes, Monthly

Knowledge about oral health and diseases

11. You study oral health care as part of your education, what is included? (You can mark more than one alternative)

Oral disease Oral hygiene
 The oral cavity Eating habits
 Other _____

12. Would you like to have more training in oral health care in your education?

Yes No

13. What is dental plaque?

Bacteria covering Calculus
 Stains on the teeth I don't know

14. What is caries?

Tooth decay Tooth loos
 Discoloration of the teeth
 I don't know

15. What causes caries?

Sugar and bacteria Smoking and alcohol
 Fluoride I don't know

16. What is gingivitis?

Tooth loss Pain in the teeth
 Gum inflammation I don't know

17. What causes gingivitis?

Plaque Smoking Teeth grinding
 I don't know

18. What is periodontitis?

- Pain in the teeth Stains on the teeth
 Tooth loss I don't know

19. What causes periodontitis?

- Plaque Dental caries High fluoride concentration I don't know

20. What is the reason for brushing the teeth?

- To massage the gums To remove bacteria and plaque To whiten the teeth
 I don't know

21. What is the purpose of fluorides?

- To strengthen teeth and prevent caries
 To remove stains from the teeth
 To prevent calculus I don't know

Knowledge about HIV-related oral diseases

22. Do you get any information in HIV/AIDS-related oral diseases as part of your education?

- Yes No

23. Do you know of any oral diseases related to HIV/AIDS?

- Yes No

24. If you answered "Yes" to question no. 23 please write one or more diseases you have heard of on the line below

25. Would you like to have more information about HIV/AIDS-related oral diseases in your education?

- Yes No

Personal attitudes concerning oral health care

26. Do you see oral health care as a high priority?

- Yes No I don't know

27. Do you consider treatment in the oral cavity as much important as treatment in other parts of the body?

- Yes No I don't know

28. Are regular visit to the dentist necessary?

- Yes No I don't know

29. Do you think that collaboration is needed between regular health care and dental care?

- Yes No I don't know

Thank you for participating