Knowledge and attitude of oral health among caregivers in nursing homes for elderly in Ga-Rankuwa, South Africa

–A Cross-sectional study

Main Area: Oral Health Science
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Abstract

**Background:** Elderly today have an increased life expectancy and retaining their teeth longer than before, it is important that healthcare-professionals have knowledge about oral health and how to prevent oral diseases. **Objective:** To study knowledge and attitude of oral health among caregivers at nursing homes in Ga-Rankuwa, Pretoria, South Africa. **Method:** The study was a quantitative cross-sectional study. Data was collected by a questionnaire representing four dimensions; Internal Locus of Control, External Locus of Control, Self-Efficacy and Oral Health Care Beliefs (OHCB), consisting questions about oral health and oral hygiene. The population consisted of 130 caregivers. **Result:** A total of 50 out of 61 caregivers participated in the study, out of which 43 were females and 7 were males. The age-interval was between 20-75 years. Generally, no statistical significant differences in knowledge and attitudes between the two nursing homes and between the caregivers´ professional statuses was noticed. T-test showed a statistical significant difference (P=0.011) between the caregivers for OHCB-dimension, and (P=0.044) between nursing home “A” and “B” for OHCB dimension. **Conclusion:** The general level of knowledge and attitude among the caregivers was satisfactory but low. Monitored health intervention studies should be given to promote oral health care knowledge and beliefs.

**Keywords:** Caregivers, Elderly Care, Healthcare Providers, Nursing home Oral Health Care Beliefs
Sammanfattning

Kunskap och attityd om oral hälsa bland vårdgivare på äldreboenden för äldre i Ga-Rankuwa, Sydafrika.

**Bakgrund:** Äldre har idag en ökad livslängd och allt fler behåller sina tänder längre än tidigare. För att vårdpersonalen ska kunna förebygga orala sjukdomar hos dessa individer är det viktigt att dem har kunskap om oral hälsa samt hur man förebygger orala sjukdomar. **Syfte:** Att studera kunskap och attityder om oral hälsa bland personal på äldreboenden i Ga-Rankuwa, Pretoria, Sydafrika. **Metod:** Studien var en kvantitativ tvärnittsstudie där datainsamlingen skedde genom ett frågeformulär som innehöll frågor om oral hälsa och munhygien. Populationen bestod av 130 vårdgivare. **Resultat:** Totalt deltog 50 av 61 vårdgivare i studien, varav 43 var kvinnor och 7 män. Åldersintervallen var 20–75 år. Generellt fanns det inga statistiskt signifikanta skillnader avseende kunskaper och attityder mellan dem två äldreboenden och mellan vårdpersonalens yrke. En tillfredsställande men låg kunskapsnivå och attityd uppmärksamades mellan äldreboenden och vårdgivarnas yrkesstatus. T-testen visade en statistisk signifikant skillnad (P = 0,011) mellan vårdpersonalen för OHCB-dimensionen och (P = 0,044) mellan äldreboenden "A" och "B" för OHCB-dimensionen. **Slutsats:** Generellt var deltagarnas attityd och kunskapsnivån tillfredsställande men låg. Interventionsstudier med uppföljning bör göras för att bättra kunskap och attityd om oral hälsa.

**Nyckelord:** Oral health, Care beliefs, Vårdpersonal, Vårdgivare, Äldreboende
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Introduction

Globally people are getting older while retaining their own teeth longer than before. The number of people in the world over the age of 75 will double by the year 2040 [1, 2]. World Health Organization defines oral health as “...a state being free from facial and oral pain, diseases and other oral pathology or abnormalities.” A good oral health is essential and important for an individual’s overall health and quality of life, in all ages [3]. Africa is the world’s second largest continent with a population of approximately 1,2 billion people. Despite the fact that Africa has national and regional effort, Africa suffer from the highest amount of diseases. Regarding oral health, Africa has a lack of oral care professionals and cannot satisfy the population’s needs. This affects some groups more than other, especially the elderly population who may keep their teeth thru their whole life [4].

Background

South Africa

South Africa is a republic country in Africa, located in the far south on the African continent. The country is very rich in minerals and has a well-developed industry and infrastructure. It plays a significant political and economic role in the African continent [5, 6]. Although apartheid is no longer applicable in practical politics, the legacy of the regime is extremely visible. There are still social disparities between black and white and unemployment is one of the biggest political challenges. Twenty-five percent of the population has no job [6]. South Africa is a middle-income country with an abundance of natural resources, well-developed economy, law, communication sector, energy and transport sectors, and the infrastructure is modern. Nevertheless, economic growth has not been strong enough to reduce high unemployment and major economic problems remaining from the apartheid era, particularly widespread poverty and income inequality [6].

The South African republic has a population of approximately 55 million people. The country has nine provinces and three capital cities. Pretoria [administrative capital city], Cape Town [legislative capital] and Bloemfontein
[judicial capital]. It has eleven official languages which are Afrikaans, English, Zulu, Xhosa, Ndebele, Pedi, Sotho, Swazi, Tsonga, Tswana, Venda [5, 7, 8].

**Pretoria & Ga-Rankuwa**

Pretoria or Tshwane as it is also called, is the administrative capital city of South Africa. It is located in the province of Gauteng which is the smallest and densest of all the nine provinces in South Africa. The population of Pretoria is approximately 3 million people of which approximately 5 percent is at the age of 65 or older. The population consists predominantly of black Africans and then white Africans. The rest of the population consists of Asians and others. Because of the multicultural population, several languages, in addition to Afrikaans and English also Hindi, Urdu and Gujrati are spoken here. It is estimated that about 24 percent of the population lives in poverty today. Despite this, over the past years an urbanization rate of 1,6 percent was experienced by the city with around 90 percent of inhabitants living in urban areas. The rest are living in the peri-urban areas and rural areas [9].

Ga-Rankuwa has a population of about 90 000 people. The majority of the populations (99%) is black Africans and the rest are white Africans, Indians, colored Asians and others. Despite being close to Pretoria; the living conditions are poorer in Ga-Rankuwa in comparison to Pretoria. Only 16.1 percent of the population has a higher education and 16.9 percent has no income. The majority of the population speaks Setswana but English is also a common language [10].

**General & Oral health in South Africa**

South Africa's adult population has the world's highest incidence of HIV/AIDS. Efforts to distribute medicines are sluggish and many people have not access to medical treatment yet. Treatment Action Campaign [TAC] is one of the key players in the fight against HIV/AIDS and has changed its policy in this area [6].

According to Singh et. al. currently, the public-sector services do not have enough oral health professionals to meet the oral health needs of the people. In the Gauteng province for instance, the ratio is 6 217 individuals per one oral health professional (dentists, dental therapists, oral hygienists) [11].
Oral Health in elderly
Oral health diseases and other problems such as periodontal disease, oral cancer, xerostomia, edentulism, root surface and coronal caries and denture stomatitis are common among elderly [12]. A study has shown that these conditions have negative impacts on the general health and oral health related quality of life of the elderly [13]. It can cause embarrassment, pain and impair their chewing performance and in turn lower their self-esteem and wellbeing [2].

Health care Services in South Africa
Regarding the health care service in South Africa, the health care and oral health care system consists of a public and a private sector. The wealthier population uses the private sector services, which is about 16 percent of the population, while the rest of the population is dependent of the public health services [14].

In South Africa, oral health is provided at four different levels of care; primary, secondary, tertiary and quaternary. The primary health care level provides approximately 90 percent of the care and all services are free of charge for the citizens in both community health care centers and clinics. The service providers are dentists, dental therapists and oral hygienists and services include restorations, sepsis-treatment, extractions and emergency pain relief. Patients with more sophisticated oral conditions are referred to the hospitals nearby [15]. The secondary health care level provides only 8 percent of the oral health services while, tertiary and quaternary health care levels provides the remaining 2 percent of oral health care [16].

Elderly in South Africa
The elderly in South Africa defines, in this study, as people with the age of 60 years or older. Approximately 8.1 percent of the population is above the age of 60 years and the ageing population is increasing. The estimated life expectancy is 59 years for men and 66 years for women [17]. Due to the increasing of elderly population, a good health is difficult to maintain throughout the life. When it comes to oral health, which is important to an individual’s quality of life and general health, it is commonly ignored and neglected due to the prioritization of promoting general health [1, 2].

The findings of a study investigating oral health needs and barriers to accessing oral health care amongst 308 elderly in Johannesburg, showed that the
inability to afford dental treatment followed by the lack of transportation was the most common barriers to accessing care among the elderly. Only 26.5 percent of the participants had utilized the oral health services in the past year (2013) before the study was done (in 2014) [18].

To use oral health services, individuals need to seek professional help outside their homes. Therefore, the oral health care system’s organization and resources are important factors affecting individual’s behavior towards their oral health [19, 20].

**Caregivers**

All nurses that are trained in community nursing should, according to the South African Nursing Council [SANC], be able to provide basic self-care, which also includes oral health care, to the care recipient [21]. Although oral health care is included in all categories of nursing staff theoretically, it is not always applied practically. They are responsible to assist care recipient with their oral health care [22]. The caregivers working with the elderly has different professions and have different levels of knowledge. Usually the caregivers are either professional nurses (or registered nurses, RN), enrolled nurses or auxiliaries. Registered nurses have a three-year long academic education and have a bachelor’s degree. They usually work at hospitals assisting doctors and taking care of patients but they also work at nursing homes where they take care of the different kind of patients. Enrolled nurses are nurses who have completed a two-year long academic course which consists of 2000 hours of clinical practice. Auxiliary nurse is, according to oxford dictionary “An assistant nurse with a lower level of training than a (registered) nurse, typically providing basic patient care.” An auxiliary nurse usually works with patients under the guidance of a higher educated health professional, such as a professional nurse [23].

**Attitudes/knowledge**

Attitude is “a relatively enduring organization of beliefs, feelings, and behavioral tendencies towards socially significant objects, groups, events or symbols” [24]. It is an acquired characteristic of a person towards something. People have different kind of attitudes towards oral health and the oral health care, which has to do with their
personal experiences, beliefs and cultural backgrounds. These attitudes can in turn have a big influence on their behaviors towards their own oral health but also people around them, e.g. families and friends [25].

Knowledge, according to oxford’s dictionary, is defined as “Facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject”. However, the traditional view or definition of knowledge has been that the person "A" knows "P" if and only if (1) "P" is true, (2) "A" is convinced that "P" is true and (3) "A" has good, satisfactory or compelling reasons to believe that "P" is true. These are, therefore, three essential requirements for everything we call knowledge. Usually it is shortened and said that knowledge is "true righteous faith". The definition was first given by Plato [26].

When it comes to health promotion and dissemination of preventive information, caregivers play a crucial role. Of that reason, it is of great importance that caregivers have an adequate knowledge of oral health and positive attitude towards it to be able to provide a good service to their patients. It will increase the chances to improve oral health and increase the quality of life of the elderly [27].

A study done among nursing school students regarding their oral health knowledge, attitude and behavior, showed that the students’ attitudes towards oral health was lower than expected, although they had satisfactory knowledge about oral health [28].

One way to measure the knowledge and attitude of caregivers towards oral health and behavior, is by using some models of behavioral psychology. Models like; model of locus of control, model of self-efficacy and cognitive behavior model has been used to design questionnaire with these dimensions related to oral health behavior [29]. Locus of control is where the “control” in a situation is perceived to be located in a person. It can be divided into internal locus of control [IL] and external locus of control [EL]. IL means that the outcomes of a situation is controlled by the individual and EL means that the outcomes of a situation is controlled by other people and the environment thus, it is beyond the control of the individual [30]. Oral health care beliefs [OHCB] is a person’s belief or disbelief in preventive oral health behavior. Self-efficacy [SE] is a person’s belief in his or her ability to succeed in a particular situation [31].
Elderly Outreach Project
Sefako Makghato Health Science University [SMU] is located in Ga-Rankuwa in the northern Pretoria in Gauteng Province. SMU is an institute of higher academic educations. The SMU have an outreach project to reach out to the elderly in need of oral health care. This project is important because the elderly otherwise is not always received oral health care due to the lack of transportation and other barriers mentioned earlier. No documentation about the project has been found, but information has been received by a conversation with a lecturer from the SMU (Malaka G, oral communication, 17th April).

The intention of the study
Sharing information about oral health prevention through interdisciplinary collaboration with other professionals in health care, such as caregivers at elderly care, is necessary for an efficient health care and public health [32, 33]. This is especially important in countries like South Africa where there is a lack of oral healthcare professionals and where the inability to afford dental treatment followed by lack of transportation are common barriers for the elderly [18]. Since elderly today have an increased life expectancy and retaining their teeth longer than before, it is very important that healthcare professionals have knowledge about oral health and how to prevent oral diseases. To provide the elderly the best care, there is a need to study healthcare-professional´s and caregivers´ knowledge and attitudes of oral health in nursing homes.

Objective
The aim is to study knowledge and attitudes of oral health among caregivers at nursing homes in Ga-Rankuwa, Pretoria, South Africa.

Issues
- Are there any differences in knowledge and attitudes related to caregivers´ professional level based on an oral health believe model?

- Based on the oral health believe model, are there any differences in knowledge and attitudes in caregivers related to nursing homes?
**Material & method**

**Design**

The study was a quantitative cross-sectional study among caregivers at nursing homes in Ga-Rankuwa, where the data was collected by a questionnaire consisting questions regarding oral health and oral hygiene.

**Population**

The total amount of registered nursing homes is 8, although there are unknown amount of nursing homes which are not registered, hence, excluded from the population since they could not be counted. Since all the registered nursing homes were not visited and no information regarding the total number of caregivers were found, the population had to be estimated. Each nursing home was estimated to have between 11-16 caregivers. The total population of caregivers in Ga-Rankuwa was estimated to approximately 130 due to the lack of information.

**Nursing homes**

Two nursing homes were strategically selected and included in the study. The two homes were located 10km and 17km as measured from SMU. These two homes are included in SMU outreach project but have not been visited by the School of Oral Hygiene earlier, why they were selected. Each nursing home has 84 respectively 53 elderlies living there. A total of 137 elderlies are living at both nursing homes and there are a total of about 50 caregivers working there. All staff, from both nursing homes, were invited to participate in the study.

The inclusion criteria for this study were all the caregivers (professional nurses, enrolled nurses and auxiliaries) and nursing students at both nursing homes who could read and understand English so that they could answer the questionnaire. Exclusion criteria were all the stuff members other than caregivers and nursing students or could not read nor understand English.

**Data collection**

The questionnaires were distributed by the authors together with an information letter about the study to the participants and the persons in charge (Appendix 1 & 2). To conduct the research project, a permission request was signed by the persons in charge at both nursing homes (Appendix 3). Several visits were done in order to
collect data from as many participants as possible on each home. The data collection continued until 50 questionnaires were collected to make a good description and analysis.

**Questionnaire**

To measure oral health beliefs, the questionnaire included the Dental Coping Beliefs Scale [DCBS] (Appendix 2). It was originally developed in USA to measure the effect of individual oral health care instructions to male veterans [34]. The DCBS originally consisted of 24 items but was later modified and validated for nursing staff by Wårdh et. al. and consists now of 28 items about oral health knowledge and attitudes representing four dimensions [Internal Locus of Control, External Locus of Control, Self-Efficacy and Oral Health Care Beliefs], each dimension consisting seven questions. The questionnaire also includes eight background questions, such as sex, age, professional level, place of work, work experience in elderly care, work experience in elderly care in current work place and received education about oral health during their nursing training or volunteer work. The respondents answered by rating each item on a five-point scale, where 1 = “strongly agree” and 5 = “strongly disagree” [29, 35].

To clearly answer the issues, the four dimensions were used to categorize the collected data before analyzing it. A description of the participants’ knowledge and attitude related to oral health was presented based on this oral health believe model.

**Data analysis**

In order to make the analysis more clear, the participants who answered student, auxiliary, enrolled nurse or professional nurse as their professional status were merged into one group. Those who answered “Other” were classified as Unlicensed Assistive Personnels (UAP) and merged into another group. Hence, the professional category was divided into “Professionals” and “Other” with 25 participants in each. Students were put into “Professionals” because most of them were final year nursing students and therefore most suitable for the group.

Median values ≥ 3 shows a low level of or lack of knowledge and attitudes. The results was presented in tables where strongly/partly agree and strongly/partly disagree shows the answer frequencies and percentages for each question. Options for each question were
ranged in *Strongly Agree (1), Partly Agree (2), Do Not Know (3), Partly Disagree (4) Strongly Disagree (5).*

The collected data was processed in International Business Machines Corporation [IBM] Statistical Package for the Social Sciences [SPSS®] version 21.0. The results of the study were presented using descriptive statistics showing medians, mode, means, standard deviations (SD), and percentages. To determine whether the answers show high level of or satisfactory knowledge and attitudes, the median ought to be low – below “3” [29]. The range of some questions in the questionnaire (Q1-Q7 & Q22-Q28) was originally in the opposite direction (then the rest of the questions), where the value “5” was the “best”. Hence, the direction of these questions had to be turned (where value “1” = best) before the statistical analysis could take place [29]. An independent T-test with a significance level presented as P <0.05 was performed, using the four dimensions, in order to compare the knowledge and attitudes between professionals (professional nurses, enrolled nurses, auxiliaries, students) and non-professionals (others in the questionnaire) and the two nursing homes.

**Ethical aspects**

The selection of participants in this study was done according to the principle of justice, where all the staff at both nursing homes was offered to participate in the study. To fulfil the information requirements, all the participants was informed about the study and its purpose. They were also informed about the voluntariness to participate in the study to follow the principle of autonomy. The authors did not exert pressure upon participants, which fulfilled the consent requirement. The study did not include any personal information about the participants, apart from age taking account of confidentiality [36]. The information from the questionnaire was treated confidentially and each participant had a code which was used when the data-collection was analyzed on a computer. The collected data was only used for research purposes. An ethical review was done together with supervisor in Sweden and with representatives from Sefako Makghato Health Science University in Pretoria, South Africa.

By the end of the study, SMU and the nursing homes will take part of the of the
study’s result. By taking part of the result, they can develop their work with the elderly and the outreach project.

Result

Participants
A total of 50 out of 61 caregivers (including nursing students at both nursing homes) participated in the study, out of which 86% (n=43) were females and 14% (n=7) were males. The participants age-interval was between 20-75 years with a mean age of 34.7 years (SD=31.1). The mean age for females were 34.4 years and 36.9 years for males. Fifty percent (n=25) of the participants answered “other” as their professional status and most of them specified their profession as caregiver, while others did not specify at all. These 50% were therefore classified as UAPs. The study had no internal lapses.

Table 1. Number and percentage of participants by profession for the total sample and the two nursing homes (N=50).

<table>
<thead>
<tr>
<th>Professional Level</th>
<th>N (%)</th>
<th>Nursing Home A n(%)</th>
<th>Nursing Home B n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>11 (22.0)</td>
<td>6(12)</td>
<td>5(10)</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>5 (10.0)</td>
<td>5(10)</td>
<td>0(0)</td>
</tr>
<tr>
<td>Professional nurse</td>
<td>7 (14.0)</td>
<td>7(14)</td>
<td>0(0)</td>
</tr>
<tr>
<td>Enrolled nurse</td>
<td>2 (4.0)</td>
<td>2(4)</td>
<td>0(0)</td>
</tr>
<tr>
<td>Other</td>
<td>25 (50.0)</td>
<td>14(28)</td>
<td>11(22)</td>
</tr>
<tr>
<td>Total</td>
<td>50 (100.0)</td>
<td>34(68)</td>
<td>16(32)</td>
</tr>
</tbody>
</table>

Of the participants, 14% (n=7) were professional nurses, 10% (n=5) were auxiliaries and 4% (n=2) were enrolled nurses, while 50% (n=25) answered “other” as their professional level. The majority of these 50% were Unlicensed Assistive Personnel (UAP) and did not specify what they meant by “other” (Table 1). Out of the participants, 38% (n=19) answered they were volunteering, 36% (n=18) answered they were employees and 18% (n=9) answered they were working both as volunteer and employee. Four participants (8%) answered “other” and specified they were students instead of selecting the “student” option (Figure 1). The number of
caregivers per place of work were 34 (nursing home “A”) and 16 (nursing home “B”). The mean total working experience in elderly care was approximately 3.2 years (SD=3.2) and the mean working experience in elderly care at their current work place was approximately 2.4 years (SD=2.5).

Oral health education
The proportion of participants that received education about oral health during their nursing training or volunteer work, were 56% (n=28), while 44% (n=22) answered they did not. Of the participants 26% (n=13) received an education during their volunteer work whereas, 74% (n=37) did not. Twenty-four percent (n=12) answered they received it somewhere else. In total, 26% (n=13) answered they did not receive any kind of education regarding oral health.

Figure 1. Distribution of employment status, (N=50).
Oral Health Beliefs

According to table 2, 46% (n=23) of the participants strongly or partly agreed that once gum disease has started, it is almost impossible to stop it, whereas 40% (n=20) strongly or partly disagreed with the statement. The median for the question was “3” which shows a lack of knowledge on this question. The study showed that 44% (n=22) strongly or partly agreed that bleeding gums while flossing usually means that one should stop flossing, while 36% (n=18) strongly or partly disagreed with the statement. (Table 2). One in every five persons (20%) answered they do not know.

Table 2. Compilation of OHCB-questions with related values for median and answer frequencies (n) and percentage (%) for strongly/party agree and strongly/party disagree. N=50

<table>
<thead>
<tr>
<th>Questions – OHCB</th>
<th>Median</th>
<th>Strongly/partly Agree N (%)</th>
<th>Strongly/partly Disagree N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe that the patients themselves report when oral health care assistance is needed</td>
<td>4,00</td>
<td>20 (40)</td>
<td>29 (58)</td>
</tr>
<tr>
<td>I believe that fluoride products are most suitable for children</td>
<td>4,00</td>
<td>11 (22)</td>
<td>32 (64)</td>
</tr>
<tr>
<td>Once gum disease has started, it is almost impossible to stop it</td>
<td>3,00</td>
<td>23 (46)</td>
<td>20 (40)</td>
</tr>
<tr>
<td>If the gums bleed when you floss, this usually means that you should stop flossing</td>
<td>3,00</td>
<td>22 (44)</td>
<td>18 (36)</td>
</tr>
<tr>
<td>I believe visiting the dentist is only necessary when experiencing pain</td>
<td>2,00</td>
<td>27 (54)</td>
<td>20 (40)</td>
</tr>
<tr>
<td>I believe dentures are less trouble than taking care of natural teeth</td>
<td>3,00</td>
<td>23 (46)</td>
<td>21 (42)</td>
</tr>
<tr>
<td>If the gums bleed when you brush, this usually means that you should stop brushing</td>
<td>2,00</td>
<td>28 (56)</td>
<td>16 (32)</td>
</tr>
</tbody>
</table>

Self-Efficacy

Of the participants, 68% (n=34) strongly or partly agreed to expect fewer dental problems if brushing and flossing is done correctly. Sixteen percent (n=8) strongly or partly disagreed. The majority, 80% (n=40) strongly or partly believed if they were given oral health care training, they would be able to practice better oral health care, whereas, 12% (n=6) strongly or partly disagreed. Fifty-four percent (n=27) strongly or partly believed they know how to floss correctly, while, 16% (n=8) strongly or partly disagreed. Thirty percent (n=15) answered they do not know (Table 3).
Table 3. Compilation of questions about self-efficacy with related values for median and answer frequencies (n) and percentage (%) for strongly/partly agree and strongly/partly disagree. N=50.

<table>
<thead>
<tr>
<th>Questions – Self-Efficacy</th>
<th>Median</th>
<th>Strongly/partly Agree N (%)</th>
<th>Strongly/partly Disagree N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>If I brush and floss correctly, I expect fewer dental problems</td>
<td>1,50</td>
<td>34 (68)</td>
<td>8 (16)</td>
</tr>
<tr>
<td>I believe that I know how different oral mucosal disorders can be treated</td>
<td>2,00</td>
<td>28 (56)</td>
<td>8 (16)</td>
</tr>
<tr>
<td>If I were given oral health care training, I would be able to practice better oral health care</td>
<td>1,00</td>
<td>40 (80)</td>
<td>6 (12)</td>
</tr>
<tr>
<td>I believe I know how to floss correctly</td>
<td>2,00</td>
<td>27 (54)</td>
<td>8 (16)</td>
</tr>
<tr>
<td>I believe I know how to prevent oral candidiasis</td>
<td>2,00</td>
<td>30 (60)</td>
<td>7 (14)</td>
</tr>
<tr>
<td>If I knew the facts about dental disease, I would be able to practice better oral care</td>
<td>1,00</td>
<td>43 (86)</td>
<td>4 (8)</td>
</tr>
<tr>
<td>I believe I can successfully remove the majority of plaque to help prevent cavities and gum disease</td>
<td>1,00</td>
<td>41 (82)</td>
<td>5 (10)</td>
</tr>
</tbody>
</table>

**Locus of control (IL & EL)**

More than half of the participants, 88% (n=44) strongly or partly believed gum diseases can be prevented, while, 8% (n=4) strongly or partly disagreed. The median was “1” showing a high level of knowledge and attitude, and a positive internal locus of control. The study further showed 32% (n=16) strongly or partly believed tooth loss is a normal part of growing old. Fifty-four percent (n=27) strongly or partly disagreed. The median was “4” showing a low level of knowledge and attitude. The participants have higher external locus of control believes. Further, 78% (n=39) strongly or partly also believed that their patients want them to offer help with oral care, whereas, 14% (n=7) strongly or partly disagreed. The median was “1”. More than half of the participants, 88% (n=44) strongly or partly believed gum diseases can be prevented, while, 8% (n=4) strongly or partly disagreed giving the median “1”. Eighty-six percent (n=43) strongly or partly believed that their patients eat better if they have a
healthy and clean mouth, while 8% (n=4) strongly or partly disagreed, also giving “1” as median. A percentage of 84% (n=42) strongly or partly believed brushing can prevent cavities, whereas, 8% (n=4) strongly or partly disagreed and the median here was also “1” (Table 4). Out of the participants, 38% (n=19), strongly or partly believed that the teeth are going to fall out as you get older, even if you take good care of it. Fifty-four percent (n=27) strongly or partly disagreed (Table 4).

Table 4. Compilation of questions about internal and external locus of control with related values for median and answer frequencies (n) and percentage (%) for strongly/partly agree and strongly/partly disagree. N=50

<table>
<thead>
<tr>
<th>Questions – Locus of Control (IL &amp; EL)</th>
<th>Median</th>
<th>Strongly/partly Agree N (%)</th>
<th>Strongly/partly Disagree N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe teeth should last a lifetime</td>
<td>2,00</td>
<td>29 (58)</td>
<td>13 (26)</td>
</tr>
<tr>
<td>I believe cavities can be prevented</td>
<td>1,00</td>
<td>40 (80)</td>
<td>5 (10)</td>
</tr>
<tr>
<td>I believe flossing teeth can help prevent gum disease</td>
<td>2,50</td>
<td>25 (50)</td>
<td>8 (16)</td>
</tr>
<tr>
<td>I believe that our patients want me to offer help with oral care</td>
<td>1,00</td>
<td>39 (78)</td>
<td>7 (14)</td>
</tr>
<tr>
<td>I believe gum diseases can be prevented</td>
<td>1,00</td>
<td>44 (88)</td>
<td>4 (8)</td>
</tr>
<tr>
<td>I believe that our patients eat better if they have a healthy, clean mouth</td>
<td>1,00</td>
<td>43 (86)</td>
<td>4 (8)</td>
</tr>
<tr>
<td>I believe brushing can prevent cavities</td>
<td>1,00</td>
<td>42 (84)</td>
<td>4 (8)</td>
</tr>
<tr>
<td>Only the dentist can prevent cavities and gum disease</td>
<td>2,00</td>
<td>27 (54)</td>
<td>14 (28)</td>
</tr>
<tr>
<td>If both parents have had bad teeth, brushing and flossing will not help</td>
<td>3,00</td>
<td>18 (36)</td>
<td>13 (26)</td>
</tr>
<tr>
<td>I believe that prostheses don’t have to be removed during the night unless the patient wants to do so</td>
<td>3,00</td>
<td>13 (26)</td>
<td>20 (40)</td>
</tr>
<tr>
<td>It is not possible to prevent sickness and medicines destroying teeth</td>
<td>3,00</td>
<td>20 (40)</td>
<td>20 (40)</td>
</tr>
<tr>
<td>I believe tooth loss is a normal part of growing old</td>
<td>4,00</td>
<td>16 (32)</td>
<td>27 (54)</td>
</tr>
<tr>
<td>Even if you take good care of your teeth, they are only going to fall out as you get older</td>
<td>4,00</td>
<td>19 (38)</td>
<td>27 (54)</td>
</tr>
<tr>
<td>I believe that one method of brushing is just as effective as any other</td>
<td>3,00</td>
<td>20 (40)</td>
<td>20 (40)</td>
</tr>
</tbody>
</table>
Knowledge and attitudes related to caregivers’ professional status

Concerning the knowledge and attitudes among the caregivers’ professional status, based on the four dimensions, no general statistically significant differences were found. However, a statistical significant difference between the caregivers was noticed in one of the four dimensions – oral health care belief [OHCB]. According to Table 4, there was a statistical significant difference in OHCB (P=0.011). The caregivers with a high professional level (professional nurse, enrolled nurse etc.) showed a positive knowledge and attitude concerning OHCB, then caregivers who were unlicensed assistive personnel [UAP]. For the OHCB dimension, caregivers with a high professional level had a mean value of 2.7 (SD=0.76), whereas, the others [UAP] had a mean value of 3.3 (SD=0.84). The confidence interval was 95%.

Generally, the mean values for each dimension were closer to “3” than “1” for both groups. Hence, the level of knowledge and attitude were satisfactory but low for both groups, especially for UAP. For self-efficacy dimension, the professionals had a mean value of 2.3 (SD=0.83) and UAPs had a mean value of 1.9 (SD=0.66). Concerning the internal locus of control dimension, professionals had a mean value of 1.8 (SD=0.80), whereas, UAPs had 1.9 (SD=0.83). The external locus of control dimension showed a mean value of 2.9 (SD=0.47) for the professionals and 3.22 (SD=0.85) for the UAPs. In total, the professionals had a mean value of 2.4 (SD=0.35) and the UAPs had a mean value of 2.6 (SD=0.39) in all four dimensions together (Table 6).

Table 6. T-test for professional level. Shows the statistical significance (P≤0.05) and mean differences for each dimension for professionals and UAPs.

<table>
<thead>
<tr>
<th></th>
<th>T-test</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Professional level*</td>
<td>Mean</td>
<td>Std. Deviation</td>
<td>P-Value</td>
</tr>
<tr>
<td>Oral Health Care Belief</td>
<td>Other</td>
<td>3.3143</td>
<td>.84011</td>
<td>.011</td>
</tr>
<tr>
<td></td>
<td>Professionals</td>
<td>2.7143</td>
<td>.76153</td>
<td></td>
</tr>
<tr>
<td>Self–Efficacy</td>
<td>Other</td>
<td>1.8571</td>
<td>.65725</td>
<td>.069</td>
</tr>
<tr>
<td></td>
<td>Professionals</td>
<td>2.2514</td>
<td>.82919</td>
<td></td>
</tr>
<tr>
<td>Internal Locus of Control</td>
<td>Other</td>
<td>1.9429</td>
<td>.83299</td>
<td>.508</td>
</tr>
<tr>
<td></td>
<td>Professionals</td>
<td>1.7886</td>
<td>.80297</td>
<td></td>
</tr>
<tr>
<td>External Locus of Control</td>
<td>Other</td>
<td>3.2286</td>
<td>.84616</td>
<td>.120</td>
</tr>
<tr>
<td></td>
<td>Professionals</td>
<td>2.9200</td>
<td>.47395</td>
<td></td>
</tr>
<tr>
<td>Total score DCBS</td>
<td>Other</td>
<td>2.5857</td>
<td>.38768</td>
<td>.116</td>
</tr>
<tr>
<td></td>
<td>Professionals</td>
<td>2.4186</td>
<td>.34970</td>
<td></td>
</tr>
</tbody>
</table>

*Others = Unlicensed Assistive Personnel (UAP)
Knowledge and attitudes in caregivers related to nursing homes

The study showed no general statistical significant differences concerning knowledge and attitudes between the two nursing homes – except from OHCB dimension. A statistical significant difference was noticed between nursing home “A” and “B” for OHCB dimension (P=0.044) (see table 5). Caregivers at nursing home “B” seemed to have better knowledge and attitude concerning OHCB then caregivers at nursing home “A”. For the OHCB dimension, caregivers at nursing home “A” had a mean value of 3.2 (SD=0.83), while, the caregivers at nursing home “B” had a mean value of 2.7 (SD=0.81). The confidence interval was 95%.

Overall, both nursing homes showed a satisfactory but low level of knowledge and attitude. The self-efficacy dimension showed a mean value of 2.0 (SD=0.80) for nursing home “A”, whereas, the same value for nursing home “B” was 2.2 (SD=0.71). Internal locus of control dimension for nursing home “A” showed a mean value of 1.9 (SD=0.94), while the same value for nursing home “B” was 1.8 (SD=0.50). For external locus of control dimension, the mean value was 3.1 (SD=0.60) for nursing home “A” and 3.1 (SD=0.90) for nursing home “B”. In total, nursing home “A” had a mean value of 2.5 (SD=0.40) whereas, nursing home “B” had a mean value of 2.4 (SD=0.34) in all four dimensions together (Table 7).

Table 7. T-test for place of work. Shows the statistical significance (P≤0.05) and mean differences for each dimension for nursing home “A” & “B”.

<table>
<thead>
<tr>
<th>T-test</th>
<th>Place of Work</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Health Care Belief</td>
<td>A</td>
<td>3.1807</td>
<td>.82726</td>
<td>.044</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>2.6607</td>
<td>.80959</td>
<td></td>
</tr>
<tr>
<td>Self–Efficacy</td>
<td>A</td>
<td>1.9832</td>
<td>.79327</td>
<td>.327</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>2.2054</td>
<td>.70753</td>
<td></td>
</tr>
<tr>
<td>Internal Locus of Control</td>
<td>A</td>
<td>1.9034</td>
<td>.93956</td>
<td>.554</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>1.7857</td>
<td>.45774</td>
<td></td>
</tr>
<tr>
<td>External Locus of Control</td>
<td>A</td>
<td>3.0546</td>
<td>.59478</td>
<td>.805</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>3.1161</td>
<td>.89628</td>
<td></td>
</tr>
<tr>
<td>Total score DCBS</td>
<td>A</td>
<td>2.5305</td>
<td>.39035</td>
<td>.423</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>2.4420</td>
<td>.34426</td>
<td></td>
</tr>
</tbody>
</table>

Discussion

Generally, the study’s result indicates that caregivers have a satisfactory but low level
of knowledge and attitude towards oral health and behavior. Caregivers with a higher professional status showed a higher level of knowledge and attitude concerning oral health care beliefs [OHCB] in comparison with caregivers with a lower professional status like UAP. Between the two nursing homes, nursing home “B” had higher knowledge and attitude in comparison with nursing home “A”.

**Method discussion**
Considering the study’s aim, the most suitable study design was a quantitative cross-sectional study, which is an observational type of study where the data collected from a population is analyzed. A cross-sectional study is done on one occasion and studies the connection between several variables or factors [37]. The DCBS was earlier used by Wårdh et. al. and was modified and validated for nursing staff. Since the questionnaire was proven and used earlier, it gives a higher validity to the study [37].

There are several advantages and disadvantages with this kind of study design. The main advantages are cost effectiveness and time saving. The study had minimal costs and was easy to implement. Other advantages are that it captures a certain situation in a specific point in time, which makes such studies easier to compare to other similar studies done in a different time. Findings and other outcomes from such studies can also be helpful to formulate or establish new theories. The data from this study can also be reused in other studies and researches. However, there are also some disadvantages with a cross-sectional study. For instance, such studies cannot study the participants’ attitude and behavior over time since it is time specific. The effects and causes of the outcomes are also difficult to determine since the study does not focus on the cause but rather in the situation itself. However, it shows that co-variation or association exists [37].

The participants gave their consent by continuing to answer the questionnaire after the information about the study was given. It was noticed that some of the participants were answering the questionnaires without reading or understanding it properly and did not take it seriously. This may have affected the results of the study and may be a source of error.

To determine whether the answers in the questionnaires show high level of or satisfactory knowledge and attitudes, the median ought to be as low as possible – below “3”. Three was chosen because “3” represents “Do Not Know” and “3” as a median means a lack of knowledge and attitude since it represents “Do not know”. Median values above “3” shows low level of knowledge and attitude because,
according to Wårdh et. al., high level of or satisfactory knowledge and attitudes are shown through low median values, which in this case has to be below “3”.

**Result discussion**

Studying the participants’ beliefs based on the median values showed that the majority had a lack of or low level of knowledge and attitude towards oral health and behavior. The study showed higher median values on questions related to *oral health beliefs* and external locus of control. This shows a surprisingly low level of knowledge and attitudes and beliefs that are unfavorable. Same results have also appeared in other studies [38]. Many of the participants believed, for instance, that the patients themselves will report if they need oral health care assistance and that fluoride products are most suitable for children. This is a serious issue since some of the patients might not be able to communicate and ask for assistance and thus will not receive the assistance they may need or the fluoride they need because of the caregivers’ ignorance. Many participants also did not know whether it is possible or not to prevent sickness and medicines destroying teeth, and believed that the teeth are going to fall out as one gets older even if one takes good care of it. This indicates a need for monitored intervention studies where training and education, related to oral health care for the elderly, is provided to caregivers. Questions related to internal locus of control had generally low median values showing favorable beliefs. Furthermore, favorable median values were also noticed on questions in self-efficacy dimension, which were related to the participants’ understanding of their own knowledge.

When comparing knowledge and attitudes related to caregivers’ professional status, a statistically significant difference (P=0.011) for *professionals* was shown in the oral heath belief dimension. This was unexpected since, according to the South African Nursing Council [SANC], all nurses that are trained in community nursing should have the knowledge and be able to provide basic self-care, which also includes oral health care [9] [10]. However, in all four dimensions in total, professionals had a slighter higher mean value (2.4 (SD=0.35)) than UAPs (2.6 (SD=0.39)). These values were closer to “3” than “1”, showing a low but satisfactory knowledge and attitude.

When knowledge and attitudes in caregivers related to the two nursing homes were compared, a statistically significant difference (P=0.044) for nursing home “B” was shown in the oral health belief dimension. This can be explained by the
fact that there were more volunteers at nursing home “A” than nursing home “B”. Most of the volunteers were UAPs and probably had less knowledge towards oral health in comparison with the employees. This may be the reason behind the outcome. In all four dimensions together, the difference in median value between nursing home “A” (2.5 (SD=0.40)) and nursing home “B” (2.4 (SD=0.34)) was 0.1, thus there is no major differences in knowledge and attitude between the two homes. Again, the values were closer to “3” then “1” consequently, both homes showing low but satisfactory knowledge and attitude towards oral health.

The whole of the study shows that, although the caregivers seem to be aware that certain behaviors towards oral health might have an impact on their care recipient´s oral health (IL), they seem to be uncertain about their ability and knowledge to implement such behaviors (SE). Further, the presence of external factors on oral health (EL) is also seemed to be overvalued by the caregivers, i.e. EL was given more importance then it should.

The results of this study can be used as basis for different purposes. For clinical implications, it can be used as basis by the dental professionals (specifically oral hygienists) for sharing information about oral health practice though interdisciplinary collaboration and educate caregivers at different nursing homes for elderly to encourage and promote knowledge, beliefs and attitudes regarding oral health care.

The study can also be used as basis for further research where health interventions, that is, to promote good and prevent bad oral health behavior, is used by giving education to health professionals about oral health beliefs which are monitored and are related to the elderly’s oral health. This is necessary and very important for the increasing and aging elderly population group. According to present global demographic trends, fertility rates are decreasing and life expectancy is increasing which results in an increase of the elderly population [1, 2]. Furthermore, worldwide life expectancy has extended due to the improvements made in healthcare and achievements of the public health interventions [13]. Data from 2009 presented by United Nation shows that the population of people over the age of 60 years has increased by 1.9 percent and it has been estimated that half of the worlds’ population will consist of people over the age 60 by the year 2050 [39, 40].

These elderly, especially those living in poor areas or at nursing homes where there is lack of transports and the elderlies are unable to afford dental treatment are dependent on the caregivers. The caregivers, or the health
professionals in general, need adequate knowledge and attitude towards oral health and oral health beliefs to be able to perform better oral health practice. Increased and adequate knowledge of oral health beliefs in healthcare professionals will lead to better oral health practice and thus giving better oral health to the elderly.

**Conclusion**

The general level of knowledge and attitude among the caregivers related to their professional status and the two nursing homes was satisfactory but low. However, minor differences in oral health beliefs were found in caregivers’ professional status and the two nursing homes. This indicates a need for monitored intervention studies where training and education, related to oral health care for the elderly, is provided to caregivers in order to increase their knowledge and attitude towards oral health.

**Acknowledgement**

We would like to thank the School of Health and Welfare at Jönköping University and Sefako Makgatho Health Science University for making this study possible. We would also like to thank Mr. Malaka, Mrs. Motsepe and Dr. Motloba for the support and help with this study. We would also like to specially thank our supervisor Malin Stenson, Senior Lecturer, for all the support and guidance in the process of this bachelor thesis.
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Appendix 1 Information letter

Information

We are two Swedish exchange students, who are studying oral health at Sefako Makgatho School of Oral Health Sciences, Ga-Rankuwa. It is our last semester on the Oral Hygienist programme and we are currently working on our Bachelor's thesis.

The aim of our thesis is to examine knowledge of oral health among caregivers in nursing homes in Pretoria, South Africa. As you are working in a nursing home we invite you as a participant. Data will be collected by a questionnaire with 28 questions regarding oral health and oral hygiene.

The participation is voluntary and data will be handled with confidentiality. The collected data will only be used and processed by the authors. The result will be presented at a group level and cannot be connected to individuals. By answering the questionnaire, you will give your consent to participate.

Thank you in advance

Sincerely
/Morid Safi & Rowaid Nasrallah

Contact:
Morid Safi
+46724230519
samo1494@student.ju.se

Rowaid Nasrallah
Appendix 2 Questionnaire

Male: ☐ Female: ☐ Age: ☐

Profession level
Student: ☐ Auxiliary: ☐ Professional nurse: ☐ Enrolled nurse: ☐ Other: _____________

Place of work
Noma’s Old Care Center: ☐ Tumelo Old Care Center: ☐
Volunteering: ☐ Employee: ☐ Both: ☐ Other: ________________

Work Experience in elderly care in years______________________________

Work Experience in elderly care in years in current work place______________

Have you recieved any education about oral health during:
your nursing training? No: ☐ Yes: ☐
your volunteer work? No: ☐ Yes: ☐
Other? If yes, where? Specify… No: ☐ Yes: ____________________
<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Partly Agree</th>
<th>Do Not Know</th>
<th>Partly Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I believe that the patients themselves report when oral health care assistance is needed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I believe that fluoride products are most suitable for children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Once gum disease has started, it is almost impossible to stop it</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>If the gums bleed when you floss, this usually means that you should stop flossing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I believe visiting the dentist is only necessary when experiencing pain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I believe dentures are less trouble than taking care of natural teeth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>If the gums bleed when you brush, this usually means that you should stop brushing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>If I brush and floss correctly, I expect fewer dental problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I believe that I know how different oral mucosal disorders can be treated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>If I were given oral health care training, I would be able to practise better oral health care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>I believe I know how to floss correctly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>I believe I know how to prevent oral candidiasis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>If I knew the facts about dental disease, I would be able to practise better oral care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I believe I can successfully remove the majority of plaque to help prevent cavities and gum disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Statement</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>15</td>
<td>I believe teeth should last a lifetime</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I believe cavities can be prevented</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>I believe flossing teeth can help prevent gum disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>I believe that our patients want me to offer help with oral care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>I believe gum diseases can be prevented</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>I believe that our patients eat better if they have a healthy, clean mouth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>I believe brushing can prevent cavities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Only the dentist can prevent cavities and gum disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>If both parents have had bad teeth, brushing and flossing will not help</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>I believe that prostheses don’t have to be removed during the night unless the patient wants to do so</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>It is not possible to prevent sickness and medicines destroying teeth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>I believe tooth loss is a normal part of growing old</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Even if you take good care of your teeth, they are only going to fall out as you get older</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>28</td>
<td>I believe that one method of brushing is just as effective as any other</td>
<td></td>
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</tbody>
</table>
ANNETURE B: PERMISSION REQUEST

TUMELO OLD AGE CENTRE

Statement concerning Research project

Name of the Project

Knowledge of oral health among caregivers in nursing homes in Pretoria, South Africa

We hereby request permission to conduct a research project at Tumelo old age centre. The aims and objectives of the project is to study the knowledge and attitudes of oral health among caregivers in nursing homes in North of Pretoria, South Africa.

We are intending to give questionnaire about oral health knowledge and attitude to care givers in nursing homes.

The research project will be sent for approval by the Sefako Makgatho Health Sciences University Research Ethics Committees.

I hereby grant/ not grant approval to the execution of the project

Name of the Institution Manager

Signature

Place

Date

Statement by the researcher

We agree to answer any future questions concerning the project as best as we are able.

We will adhere to the approved protocol
ANNEXURE B: PERMISSION REQUEST

NOMA OLD AGE CENTRE

Statement concerning Research project

Name of the Project

Knowledge of oral health among caregivers in nursing homes in Pretoria, South Africa

We hereby request permission to conduct a research project at Noma old age centre. The aims and objectives of the project is to study the knowledge and attitudes of oral health among caregivers in nursing homes in North of Pretoria, South Africa.

We are intending to give questionnaire about oral health knowledge and attitude to caregivers in nursing homes.

The research project will be sent for approval by the Sefako Makgatho Health Sciences University Research Ethics Committees.

I hereby grant/ not grant approval to the execution of the project.

Name of the Institution Manager

Signature

Place

Statement by the researcher

We agree to answer any future questions concerning the project as best as we are able.

We will adhere to the approved protocol

Name of the researcher

Signature

Date

Place