Oral self-care habits of dental and healthcare providers

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Abstract: *Objectives:* To evaluate the self-care level of dental and healthcare providers regarding prevention of oral diseases. *Methods:* Healthcare providers (dental assistants and surgeons, laboratory personnel, biologists, medics, paramedics, corpsmen, nurses, pharmacists, physicians, physiotherapists, psychologists, social workers, speech therapists, X-ray technicians) and non-health care providing adults (the general population) were asked to respond to a questionnaire regarding their routine measures for maintaining oral health. *Results:* Three hundred and twenty-six healthcare providers and 95 non-healthcare providers participated in the study. Regarding toothbrushing, flossing, undergoing periodic dental examinations and professional scaling/polishing, dental practitioners have better, but not perfect, maintenance habits than other healthcare providers. Non-dental healthcare providers have better dental habits than the general population, and nurses and medical practitioners have better dental habits than medics, paramedics, corpsmen and para-medical professionals. Among non-dental healthcare providers, nurses have a relatively high frequency of toothbrushing and flossing but a low frequency of periodic examinations and scaling/polishing. Generally, females reported significantly higher frequencies of toothbrushing and flossing than males did. The toothpaste selection of the participants was primarily influenced by dentists' recommendations, the flavour of the toothpaste, and its anti-malodour effect were the most dominant factors. *Conclusions:* The compliance of health professionals, especially dental practitioners, with appropriate oral health measures is relatively high. However, the dental team cannot always assume that the dental patient, who also happens to be a healthcare provider, has meticulous oral habits. The dental hygienist and surgeon have to educate and motivate their patients, especially healthcare providers because of the influence of the latter on their own patients.

Key words: compliance; fluoride; oral health; oral hygiene; patient education; periodic examination; prevention; decision making

Introduction

Modification of patients' habits regarding oral hygiene maintenance is one of the significant challenges confronting the modern dental practitioner (1). In addition to the dental team, several types of healthcare providers including nurses and medical practitioners, family physicians and pediatricians share the responsibility for their patients' oral health and oral hygiene (2–5).

However, there are relatively few studies that have investigated the personal oral hygiene habits of healthcare providers. In a series of studies, Kawamura *et al.* investigated the level of oral health maintenance of students in healthcare professions as well as other students in several countries (6–11) using the Hiroshima University – Dental Behavioral Inventory (HU-DBI) questionnaire. The HU-DBI questionnaire consists of 20 statements regarding individual oral health and conceptions, such as: 'My gums tend to bleed when I brush my teeth', 'I worry about the colour of my teeth' and 'I put off going to the dentist until I have a toothache'. The participants received scores according to their agreement or disagreement with each of the statements.

Generally, females received higher HU-DBI scores than males did, i.e. had better oral self-care habits than males had (6–11). Japanese dental students had lower HU-DBI scores in comparison with medical and pharmacy students, and even in comparison with social sciences and education students (6). Japanese second-year hygienist students had higher HU-DBI scores than second-year nursing students. All the hygienist students reported tooth brushing three times a day, whereas most of the nursing students reported tooth brushing twice a day. Forty-six per cent of the hygienist students reported flossing at least once a week, in comparison to 9% of the nursing students (7). Most of the hygienist and nursing students as well as most of the Chinese dental students, who participated in the study, stated that they visit a dental clinic only in cases of dental pain (7, 8). Senior Israeli, Finnish and Greek dental students received higher HU-DBI scores than their junior counterparts (9, 11).

We did not find any studies that investigated oral health behaviour among healthcare providers who had graduated and were in practice, except for three studies that investigated the frequency in which dental surgeons and hygienists from the USA, Australia and New Zealand replaced their personal toothbrush (12–14).

Objectives

The aim of this study is to evaluate the self-care level of various healthcare providers regarding prevention of oral and dental diseases.

Methods

The Ethics Committee of the Israel Defense Forces Medical Corps approved the protocol of the study. Participation was voluntary.

A self-reporting questionnaire on dental habits was developed for this study. Four hundred paper copied questionnaires were distributed to the following healthcare providers in a military medical centre and governmental general hospital: dental assistants, dental surgeons, laboratory personnel, biologists, medics, paramedics and corpsmen, nurses, pharmacists, physicians, physiotherapists, psychologists, social workers, speech therapists and X-ray technicians.

One hundred questionnaires were distributed to adults who attended periodic medical examinations without acute symptoms, as a control group.

In the questionnaire, the participants were asked to note their routine frequency of tooth brushing, flossing, use of dental sticks or other special measures regarding hygiene, mouthwash, periodic dental examination and professional dental scaling and polishing. The participants were asked to note the duration of daily tooth brushing, the type and size of their toothbrush and their parameters for selecting toothpaste.

The questionnaires were filled out anonymously (except of the profession category). Data were collected and analysed by SPSS 12.0 (SPSS Inc., Chicago, IL, USA). Associations between the groups' scores were examined using a Pearson's chi-squared test. A value of $P < 0.05$ was considered statistically significant.

Results

Three hundred and twenty-six healthcare providers (response rate – 82%) and 95 non-healthcare workers (response rate – 95%) completed the questionnaire. The distribution of the participants according to their profession and age is presented in Table 1; the ages ranged from 18 to 61 years.

Figure 1 details the frequencies of toothbrushing of the various groups. Most of the participants, from all groups, reported having brushed their teeth at least twice a day. According to the reporting of the participants, most of them, who only brushed their teeth once a day, did it in the morning (85%). Among all participants, 76% of the males and 85% of the females reported of brushing their teeth at least once a day ($P < 0.05$).

A significantly higher percentage of dental assistants (78%) and dentists (75%) reported of brushing teeth for at least 2 min every time, in comparison to nurses (54%), medics,

Table 1. **Distribution of the participants according to their professions**

Profession	Subjects	Mean age, years (±SD)	Gender
Dental assistants	63	22.0 (1.2)	100% female
Dental surgeons	40	35.8 (6.6)	32% female 68% male
Medical physicians	44	39.9 (8.7)	18% female 82% male
Medics, corpsmen and paramedics	72	24.5 (3.2)	38% female 62% male
Nurses	49	28.8 (4.6)	73% female 27% male
Para-medical professions: laboratory personnel, biologists, pharmacists, physiotherapists, psychologists, social workers, speech therapists and X-ray technicians	58	29.2 (5.8)	43% female 57% male
Control group (the general population)	95	32.3 (8.7)	42% female 58% male

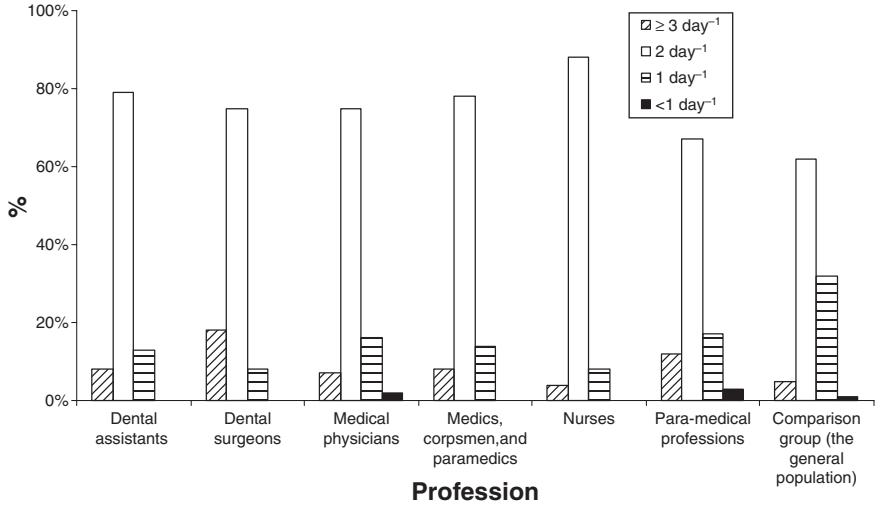

Fig. 1. Frequencies of the participants' toothbrushing in %. $P < 0.05$, total healthcare providers versus a comparison group.

paramedics and corpsmen (47%), physicians (45%), the paramedical professionals (36%), and the comparison group (32%) ($P < 0.01$). There was no correlation between gender and reported duration of brushing.

A significantly higher percentage of dentists (23%) reported of using an electrically powered toothbrush, in comparison with dental assistants (8%), the remaining healthcare providers (6%), and the comparison group (7%) ($P < 0.01$). Among the participants who used a manual toothbrush, significantly more dentists (67%) as well as dental assistants (48%) reported of using soft brushes than the rest of the healthcare providers (27%) and the comparison group (17%) ($P < 0.01$). In addition, significantly more dentists (60%) reported of using brushes with a small head than did dental assistants (25%), the remaining providers (13%) and the comparison group (10%) ($P < 0.01$).

Among the healthcare providers, the most commonly reported parameters that affected the selection of toothpaste by the participants were, from the highest to lowest (the participants were allowed to note more than one parameter): the dentist's recommendation (27%), the flavour and anti-malodour effect (22%), advertisements (16%), the price (7%), the dental hygienist's recommendation (7%), the fluoride content (2%), efficacy in treatment of periodontal disease and/or teeth sensitivity (2%), comfort in using the toothpaste tube (1%) and efficacy in teeth bleaching (1%). Two of the participants (1%) looked for toothpaste that was not tested on animals. Only 1% of the participants reported of consultation with a pharmacist regarding the selection of toothpaste. However, 19% of the participants noted that the selection of toothpaste was a coincidental process, whereas 4% noted that they had no influence on the selection of the toothpaste as other members of the family buy it.

The reported frequencies of dental flossing by the various groups are presented in Fig. 2. According to the reporting, most of the participants, who flossed daily, did so in the evening (93%). There was no correlation between the reported frequencies of toothbrushing and flossing. Among all participants, 19% of the males and 28% of the females reported of daily flossing ($P < 0.01$).

Figure 3 presents the reported frequencies of cleaning teeth by toothpick. Most of the participants, who reported of using toothpicks once a day, did so in the evening (92%). There was no correlation between gender and use of toothpicks.

Figure 4 presents the reported frequencies of using mouthwash. Among participants who reported of washing their mouth once a day, 40% did it in the morning, whereas 60% did so in the evening. There was no correlation between gender and frequency of using mouthwash.

The reported frequencies of participants undergoing routine dental examinations are detailed in Fig. 5. Most of the participants, from all groups, reported of being examined in intervals of 12 months or less. According the reporting, more than a third of the nurses' group was not periodically examined, unless there was a dental emergency. Among all participants, 29% of the males and 43% of the females reported of being examined every 6 months (or less), and 58% of the males and 70% of the females were examined at least once in 12 months (without statistical significance).

The reported frequencies that the participants underwent professional dental scaling and polishing are detailed in Fig. 6. Among all participants, 27% of the males and 47% of the females reported undergoing professional scaling/polishing at least once every 6 months ($P < 0.05$). According the reporting, among the participants who underwent professional scaling 'as

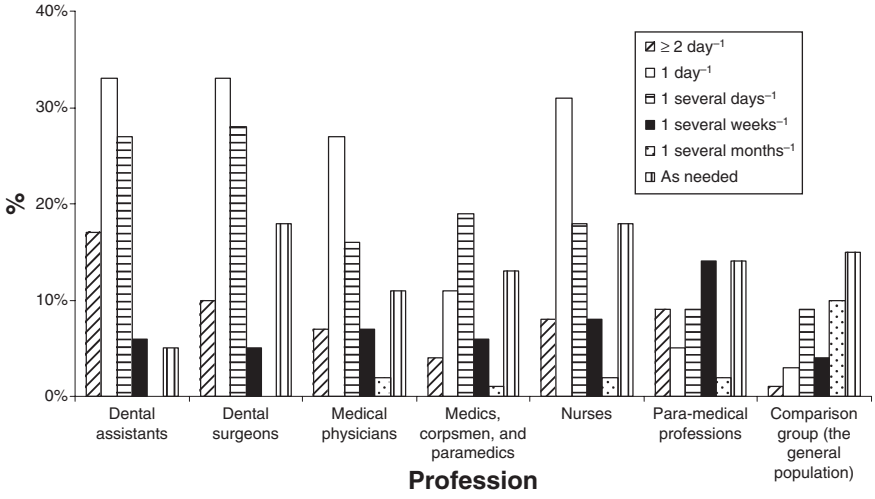

Fig. 2. Frequencies of the participants' dental flossing in %. $P < 0.01$, total healthcare providers versus a comparison group.

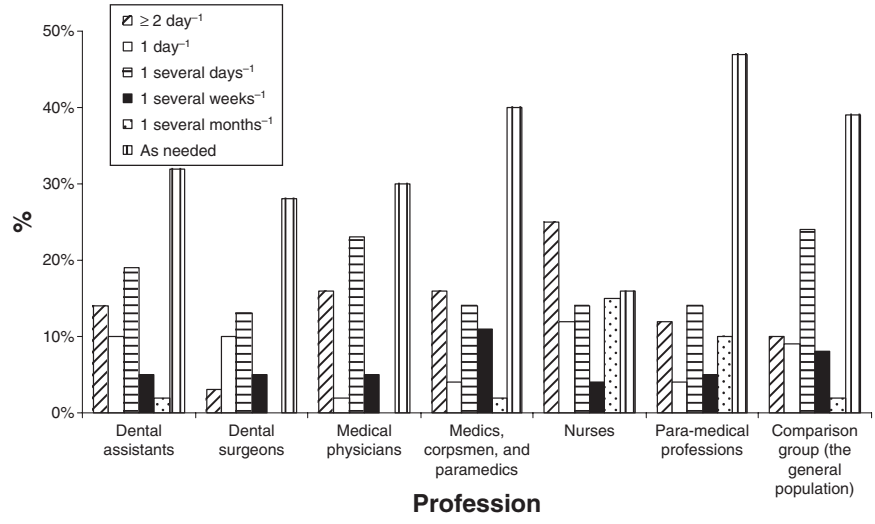

Fig. 3. Frequencies of the participants' use of toothpicks in %. $P < 0.05$, total healthcare providers versus a comparison group. $P < 0.05$, medical physicians versus dental surgeons.

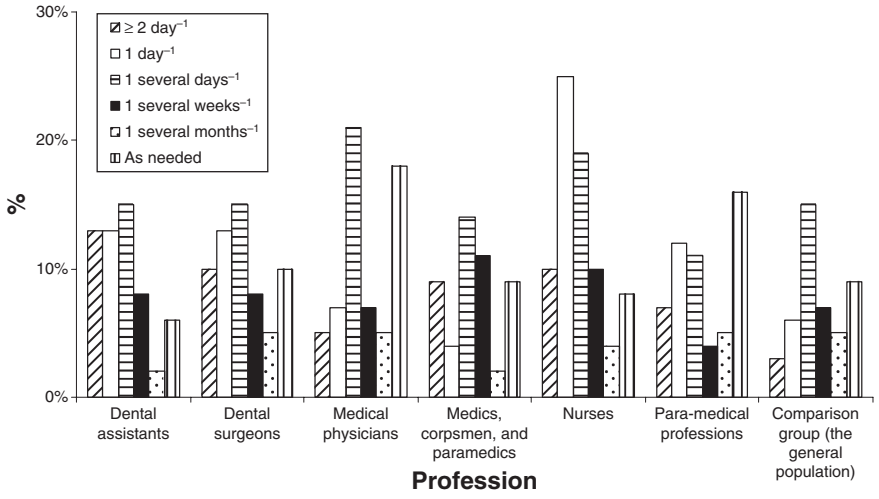

Fig. 4. Frequencies of the participants' mouth-washing in %.

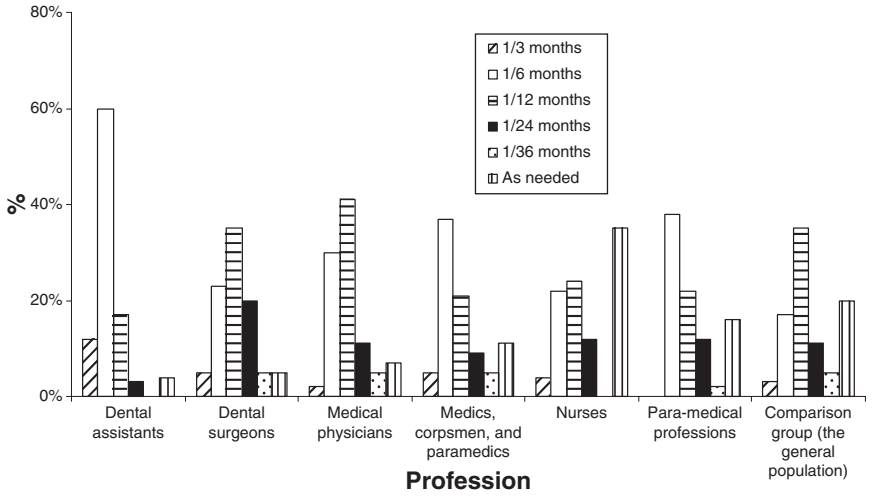

Fig. 5. Frequencies of the participants' dental examination in %. $P < 0.01$, total healthcare providers versus a comparison group. $P < 0.01$, dental surgeons versus dental assistants. $P < 0.05$, medical physicians versus nurses.

needed', 68% waited until there was a significant deposition of tartar, 19% waited until there was gingival sensitivity or pain, 6% until there was gingival bleeding and another 6% for halitosis.

Discussion

Regarding the general population, the frequency of dental visits in influenced by dental fear (15). Moreover, dentally anxious individuals assessed their dental treatment needs as higher than non-anxious individuals (16). There was no connection between regularity of dental visits and compliance with daily home dental preventive measures (17). Levin and Shenkman (18) revealed a correlation between high HU-DBI scores and relatively low rate of decayed surfaces and teeth in an Israeli military young adults group.

However, relatively few studies have investigated the personal dental habits of dental and medical practitioners. Kawamura *et al.* conducted a series of studies (6–11) that demonstrated a progressive improvement in dental preventive care among the dental and hygienist students, with the best self-care achieved in the final year of graduation. However, Kawamura *et al.* found that there was no similar improvement in dental preventive care among medical students, from their junior to senior years. Thus, the authors concluded that the professional knowledge that is learned by the dental and hygienist students over the years constitutes an important component in such difference, but more important is the acceptance of personal responsibility by the students to be a model for their patients (19).

The present results indicate that the dental team (dental surgeons and assistants) usually have better oral maintenance habits than other healthcare workers. However, the dental team did not completely fulfil the accepted recommendation for oral health maintenance, as was also demonstrated in Kawamura's studies. In most of the tested parameters, the

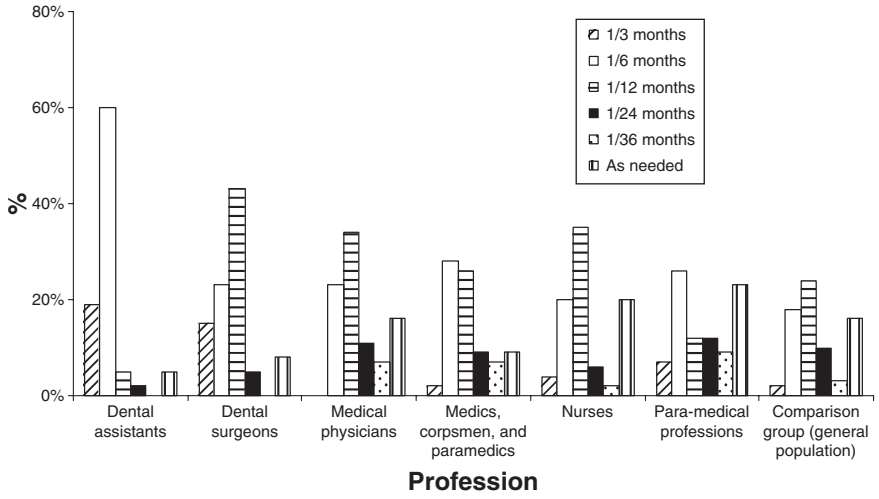

Fig. 6. Frequencies of the participants' undergoing profession scaling and polishing in %. $P < 0.01$, total healthcare providers versus comparison group. $P < 0.01$, dental surgeons versus dental assistants.

non-dental healthcare workers have better oral maintenance habits than the non-healthcare control group. Generally, within the healthcare worker group, medical practitioners and nurses have better oral habits than medics, paramedics and corpsmen, and the group of medics, paramedics and corpsmen have better oral habits than para-medical professionals.

A possible explanation for the higher frequency of periodic dental examinations and scaling/polishing among the dental team is that they have higher levels of accessibility to dental facilities than do other healthcare workers, especially the general population.

Among the non-dental health providers, the nurses' group reported relatively higher frequencies toothbrushing, flossing, use of toothpicks and mouthwash and higher durations of toothbrushing than other healthcare workers. However, the nurses' group had low frequencies of periodic dental examinations and professional scaling/polishing. This finding is in agreement with previous reports of groups who prefer to personally take responsibility for their own dental health. These individuals maintain meticulous daily oral hygiene procedures at home but seek routine profession care at a low frequency (7, 8).

The fact that females have better self-dental care than males (6–11) may provide a partial explanation for the oral health behaviours among dental assistants and nurses. The group of dental assistants consisted entirely of females, and three-quarters of the nurses' group were females, whereas in other groups, males were dominant (Table 1).

The commonly used methods for inter-dental cleansing are floss and toothpicks. Flossing is more appropriate when the gingival papilla is intact in the embrasure, whereas toothpick usage is appropriate in cases of gingival recession. However, from our experience, many people use floss or toothpicks according to their convenience and habits, and not according to professional indications. In this study, dental floss and toothpicks had similar popularity among the participants. We do not have details regarding the periodontal status of the participants; thus, we cannot determine whether those results reflected compliance with professional indications. An interesting finding is that for a third of the participants, the toothpick was the method used for occasional inter-dental cleaning as needed and not as a routine daily method for oral hygiene.

Dental surgeons reported relatively high levels of using powered toothbrushes. This finding is in agreement with the dental literature regarding the effectiveness of powered toothbrushes (20). In comparison with other methods of oral hygiene, the frequency of using mouthwash was relatively low among all groups, including the dental surgeons. This finding is also in agreement with the dental literature regarding the low effectiveness of mouthwash as a routine method for maintaining oral health among healthy populations (20).

Despite its proven role in prevention of dental caries, fluoride was not a dominant factor in selection of toothpaste. A possible explanation is that in recent years the vast majority of available toothpastes contain the recommended fluoride level (or more) thus the consumer seeks other factors. Moreover, it seems that the 'fluoride' and 'periodontal problems and/or tooth sensitivity' factors were under-estimated, because many of the dominant 'dentist recommendations' and 'dental hygienist recommendation' factors reflected periodontal diseases, tooth sensitivity, and a high-caries risk, in which a specific toothpaste may be needed (some of them with high fluoride concentrations). However, apparently healthcare providers did not consult pharmacists in selecting dental homecare devices.

Conclusions

The compliance of health professionals, especially dental practitioners, with appropriate oral health measures is relatively high. However, the dental team cannot always assume that the dental patient, who also happens to be a healthcare provider, has meticulous oral habits. The dental hygienist and surgeon have to educate and motivate their patients, especially who are healthcare providers themselves, because of the influence of the latter on their own patients.

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