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Original article

Oral health practices and beliefs among caregivers of the dependent elderly

Garrido Urrutia Constanza[1], **Romo Ormazábal Fernando**[2], **Espinoza Santander Iris**[3] and **Medics Salvo Darinka**[4]

[1]Clínica Integral del Adulto, Facultad de Odontología, Universidad de Chile, Independencia, Santiago, Chile; [2]Departamento de Prótesis y Clínica Integral del Adulto, Facultad de Odontología, Universidad de Chile, Independencia, Santiago, Chile; [3]Departamento de Patología, Facultad de Odontología. Programa de Doctorado en Salud Pública, Universidad de Chile, Independencia, Santiago, Chile; [4]EU Departamento de Cirugía y Traumatología, Facultad de Odontología, Universidad de Chile, Independencia, Santiago, Chile

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Background: Caregivers deal with oral health care of the dependent elderly; however, this has a low priority among them, and their education in daily oral care is deficient. Therefore, studying the oral care practices as well as their oral health beliefs is important as these affect the quality of the oral care they perform.
Objective: To compare formal and informal caregivers' oral care practices and oral health beliefs when taking care of severely dependent elderly.
Material and methods: A cross-sectional study was conducted on a convenience sample of 21 formal caregivers from a long-term residence and 18 informal caregivers from a local primary health care domiciliary programme. Caregivers were surveyed using a questionnaire designed to elicit oral care practices and oral health beliefs. The nursing Dental Coping Beliefs Scale questionnaire was translated and validated in Chile.
Results: Significant differences were observed between formal and informal caregivers' performance of some oral health care practices. There were no significant differences between formal and informal caregivers' oral health beliefs.
Conclusions: Although there are some differences in formal and informal caregivers' oral health care practices, we cannot state that one caregiver's performance is better than the other, in fact, negative oral health beliefs were found in both groups.

Keywords: oral care, elderly, caregivers, dependent elderly, oral health beliefs.

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Introduction

The ageing of the population is a worldwide unprecedented phenomenon[1]. The increasing number of elderly people, especially dependent elderly, brings with itself new challenges for these patients' oral health care[2,3]. With the increase in life expectancy, more people will reach an age characterised by a higher frequency of chronic illnesses, higher drug consumption and a decrease in functionality, being incapable to perform basic daily activities and requiring a caregiver's aid for it[2,4].

Normally, frail or functionally dependent elderly either stay in long-term residences or are housebound patients[2,4]. Institutionalised patients are under formal caregivers and paid workers who provide care to the dependent elderly. Housebound patients could be under formal or informal caregivers (generally a family member who provides care). In Chile, most of the caregivers of the housebound patients are informal, and most of the formal caregivers are nurse assistants or have had some kind of training for elderly care, although there is no legal requirement whatsoever[5].

As the dependency level increases, an elderly person might become incapable of performing self-care activities such as oral hygiene[4] and therefore will require assistance. This is vital for maintaining oral health and preventing cavities, periodontal diseases and most prevalent mucosal lesions. It is

also very important owing to the implications for health in general and quality of life[46–11].

Many studies have reported poor oral hygiene in the dependent elderly[4,12]. Furthermore, many researchers state that enhancing educational and training programmes in this area is highly necessary[13–15]. This is due to the fact that it has been shown that oral care practices for dependent elderly people are inadequate, insufficient and non-systematised[13–16], even when guidelines exist for an adequate provision of oral care[12,17–19]. This alone justifies monitoring and studying the oral care practices that caregivers perform on these elderly patients. However, learning about the caregivers oral care beliefs is equally important, given that they directly influence the performance of oral health care and potentially induce positive or negative patterns of behaviour[20]. In fact, Wårdh *et al.*[21,22] have shown a low priority for oral health care among the caregivers, using the questionnaire nursing Dental Coping Beliefs Scale (nDCBS). They also suggest that this tool is useful to measure the priority that caregivers assign to oral health care of their patients, even when the instrument failed to reveal significant differences in an intervention study carried out on a nursing staff sample[22,23].

In Chile, there are no known studies on oral health care practices that caregivers perform for the severely dependent elderly, neither for the housebound nor for the institutionalised. The objective of this study is to determine whether or not there are differences between formal and informal caregivers of severely dependent elderly regarding both oral health practices and oral health beliefs.

Materials and methods

A cross-sectional study was conducted. The selection of participants was intentional and constituted formal caregivers from a long-term residence (Hogar de Cristo) and informal caregivers from a local primary health domiciliary programme (Municipalidad de Providencia) who agreed to participate in the study and signed an informed consent. The formal caregivers were interviewed in working hours by a trained interviewer; three caregivers declined to participate. The informal caregivers were contacted by telephone through the programme for domiciliary care and invited to participate, those who accepted were visited at their homes, and interviewed individually by the same trained interviewer. Four informal caregivers could not be contacted, two declined to participate and one was left out of the study because of the passing away of the elderly person under his care.

Structured questionnaires were used to evaluate caregivers' oral care practices and oral health beliefs. The nDCBS that was translated into Spanish and validated in a previous study[24] was used for oral health beliefs. The nDCBS is a questionnaire designed to elicit the priority that caregivers assign to the oral health care of the patients under their care. It is constituted by four dimensions: internal locus of control, external locus of control, self-efficacy and oral health beliefs. Each dimension comprised seven items giving a total of 28 items randomly ordered (see Table 4). Each item is endorsed in a five-point scale, where one signifies high positive beliefs and 5 denotes low negative beliefs[23]. The questionnaire used in this study also collected information about the caregiver's background in terms of previous training in oral care for dependent elderly and their own reports on the frequency of oral care practices performed on the patients under their care.

The obtained data were analysed statistically with STATA ® software, version 7.0 (StataCorp, College Station, TX, USA). The chi-square test was used to determine whether there was a significant association between type of caregiver and oral care practices. The Student's *t*-test was used to test the significance of the difference between each caregiver's means by item and dimensions in the questionnaire.

Results

The studied sample was made up of 21 formal caregivers from a long-term residence for dependent elderly people (Hogar de Cristo) and 18 informal caregivers from a local primary health care domiciliary programme (Municipalidad de Providencia). Most caregivers were women (97.4%); there was just one male caregiver. The average age of formal caregivers was 39.4 years of age (SD 10.9) and 66.6 (SD 10.9) for informal caregivers, which is a significant difference.

Table 1 shows the percentage of caregivers who claimed to have been trained in oral care for dependent elderly, most of the formal caregivers claimed they had been instructed in this area. Table 1 also shows self-reported frequency of oral care practices the caregivers performed on the patients under their care, there being a higher frequency in informal caregivers.

In most caregivers' oral care practices, no significant differences were found, except for four of them. These are related to the use of a soft toothbrush, wet gauze/cotton use, bedtime dental prosthesis removal and keeping it in a glass of water. The first two were more frequent in formal

Table 1 Oral health care training and frequency of oral care practices according to the type of caregiver.

	Formal caregivers n (%)	*Informal caregivers n (%)*	*Total n (%)*
Training in oral health care for dependent elderly[a]			
Yes	13 (61.9)	4 (22.2)	17 (43.6)
Frequency of oral care practices[a]			
I've done it at least once with the patients	4 (19.0)	1 (5.6)	5 (12.8)
Occasionally/Whenever I can do it	14 (56.7)	6 (33.3)	20 (51.3)
Once a day or more	3 (14.3)	11 (61.1)	14 (35.9)

[a]Chi-square $p < 0.05$.

Table 2 Oral care practices in severely dependent elderly according to the type of caregiver.

	Formal caregivers (n = 21) n (%)	*Informal caregivers (n = 18) n (%)*
Oral care practices		
Brushing teeth with a hard brush	5 (23.8)	8 (44.4)
Brushing teeth with a soft brush[a]	17 (81.0)	7 (38.9)
Brushing teeth with an electric brush	0 (0.0)	1 (5.6)
Use of interproximal brush	2 (9.5)	0 (0)
Use of dental floss/tape	1 (4.8)	4 (22.2)
Use of toothpaste	15 (71.4)	14 (77.8)
Cleaning the mouth with a wet gauze/ cotton[a]	20 (95.0)	9 (50.0)
Rinse with cosmetic mouthwash	5 (23.8)	6 (33.3)
Rinse with chlorhexidine mouthwash	4 (19.1)	2 (11.1)
Rinse with water	20 (95.2)	15 (83.3)
Avoid eating or drinking after nocturnal oral hygiene	9 (42.9)	12 (66.7)
Oral care practices related to denture use[b]		
Brushing dental prosthesis	19 (90.5)	13 (100)
Rinse dental prosthesis in water	19 (90.5)	13 (100)
Removal of the prosthesis during the night[a]	11 (52.3)	11 (85.0)
Keep the prosthesis in a glass of water[a]	11 (52.3)	13 (100)

[a]Chi-square $p < 0.05$.
[b]$n = 34$, because five informal caregivers were not denture users.

caregivers, while the last two were more frequent in informal caregivers (see Table 2).

No significant differences were found in the evaluation of caregivers' oral health beliefs among the mean values obtained by caregiver type in the four dimensions and on each composing item of the nDCBS questionnaire, as it can be observed in Tables 3 and 4.

Discussion

The aim of the present study was to compare formal and informal caregivers' oral care practices and oral health beliefs when taking care of severely dependent elderly people. The results showed that even when formal caregivers have been more specifically trained in oral health care of the dependent elderly, the frequency with which they perform the oral care practices tend to be lower than the informal caregivers reported and no significant difference were found in caregivers' oral health beliefs.

It must be considered that the value of the results of this study is limited because of its descriptive character and also as the caregiver sample was intentional and small. Most of the caregivers who participated in this study were women, and there was only one formal male caregiver. These results correlate with existing literature[5], in which it was

Table 3 Mean score for each dimension of the nursing Dental Coping Beliefs Scale questionnaire according to the type of caregiver.

	Formal caregivers		*Informal caregivers*	
	Mean(SD)	*Min–max*	*Mean (SD)*	*Min–max*
Dimension				
Internal Locus of Control*	11.1 (3.1)	7-16	11.0 (2.6)	7-16
External Locus of Control*	19.5 (5.6)	10-31	20.9 (4.6)	14-29
Self-efficacy*	17.1 (3.5)	11-25	15.7 (3.2)	9-21
Oral health beliefs*	18.7 (3.9)	14-30	19.6 (6.8)	11-33

*t Student $p > 0.05$.

found that mostly women take care of third parties. This study showed significant differences in caregivers' average age, the informal caregivers being a great deal older. This is due to the correspondence in this study between informal caregivers and elderly relatives, often being their spouses, while institutionalised formal caregivers were paid workers in long-term residencies[5].

The fact that less than half of the caregivers reported having received training in oral care for the elderly reveals an evident deficiency in their instruction, something that has already been pointed out by several authors and suggests that incorporating caregivers' instruction in this area is necessary[13–15]. With regard to the difference between groups, the percentage of formal caregivers who have been trained in oral care for elderly people (61.9%) exceeds by far that of the informal caregivers (22.2%). Significant differences are also found when examining the frequency of the performance of oral care; 61.1% of informal caregivers reported doing it once a day or more, while only 14.3% of formal caregivers reported doing it with this frequency. This situation may be due to the workload formal caregivers have, for there is more than one patient under their care. In fact, in this study, each formal caregiver was in charge of five or six dependent patients, compared to the informal caregiver who had only one patient under his or her care, who in addition was often a relative, meaning there was a bond that favoured care and confidence in the performance of practices.

In this study, none of the caregivers answered that they never carried out oral hygiene for the elderly patient. However, examination of the patients suggests otherwise. When analysing this type of questionnaire, the possibility of a socially complacent answer and the social desirability phenomenon[25] has to be taken into account. The 'social desirability phenomenon' is a term borrowed from sociology that makes reference to the necessity of the interviewed individual giving the most convenient or desirable answers. This might have led caregivers to answer that they do perform oral hygiene for the patients under their care, when they actually do not. To circumvent this pitfall and have an accurate assessment of this issue, alternatives to the direct question, such as the observation of the caregiver's oral care practices, could have been used.

Significant differences were found when comparing specifically performed formal and informal caregivers' oral care practices; however, we cannot assume that one caregiver's performance is better than the other. Brushing with a soft brush and wet gauze/cotton were more frequent in formal caregivers, while bedtime dental prosthesis removal and keeping it in a glass of water were the most frequent among informal caregivers. The most frequently used oral care practices by both types of caregivers were the use of dental paste and a water rinse. It is important to note that a considerably high percentage (24 and 44%, respectively) of both formal and informal caregivers reported having brushed dependent elderly people's teeth with a hard toothbrush. However, this type of care is not recommended as an oral hygiene practice[12,17,18].

When comparing formal and informal caregivers' oral health beliefs, by examining the means of each dimension of the nDCBS questionnaire, no significant differences were found. For both caregiver types, the items of the internal locus of control, that is, the belief that the results depend on their own behaviour and abilities[15], showed favourable mean scores. However, the items of the external locus of control, that is, the belief that the results depend on factors other than their individual skills or behaviour[15] and the items of the oral health beliefs dimension (with the exception of item 20), showed higher mean scores indicating unfavourable beliefs. In the items of the self-efficacy dimension, those questions related to the caregivers' perception of their own knowledge (items 3, 11, 15 and 23) showed unfavourable values; however, those related to the perceived

Table 4 Means scores for each item of the nursing Dental Coping Beliefs Scale questionnaire according to the type of caregiver.

		Mean score		
		Formal caregivers	*Informal caregivers*	*Mean score difference*
Item	*Internal locus of control*			
5	I believe teeth should last a lifetime	1.8	1.5	0.3
7	I believe cavities can be prevented	1.1	1.2	-0.1
13	I believe flossing teeth can help prevent gum disease	1.9	2.1	-0.2
19	I believe that our patients want me to offer help with oral care	1.8	1.6	0.2
25	I believe gum diseases can be prevented	1.3	1.8	-0.5
27	I believe that our patients eat better if they have a healthy, clean mouth	1.5	1.3	0.2
28	I believe brushing can prevent cavities	1.3	1.3	0
	External locus of control			
6	Only the dentist can prevent cavities and gum disease	2.7	3	-0.3
9	If both parents have had bad teeth, brushing and flossing will not help	2.2	2.1	0.1
10	I believe that prostheses don't have to be removed during the night unless the patient wants to do so	2.2	2.8	-0.6
12	It is not possible to prevent sickness and medicines destroying teeth	3.6	3.5	0.1
17	I believe tooth loss is a normal part of growing old	2.5	2.6	-0.1
18	Even if you take good care of your teeth, they are only going to fall out as you get older	3.1	3.2	-0.1
24	I believe that one method of brushing is just as effective as any other	2.9	3.5	-0.6
	Self-efficacy			
2	If I brush and floss correctly, I expect fewer dental problems.	1.9	1.7	0.2
3	I believe that I know how different oral mucosal disorders can be treated	3.4	2.9	0.5
8	If I were given oral health care training, I would be able to practice better oral health care	1.3	1.6	-0.3
11	I believe I know how to floss correctly	2.6	2.7	-0.1
15	I believe I know how to prevent oral candidiasis	3.1	3	0.1
21	If I knew the facts about dental disease, I would be able to practice better oral care	1.7	1.4	0.3
23	I believe I can successfully remove the majority of plaque to help prevent cavities and gum disease	2.8	2.1	0.7
	Oral health beliefs			
1	I believe that the patients themselves report when oral health care assistance is needed	2.3	2.8	-0.5
4	I believe that fluoride products are most suitable for children	4.0	3.5	0.5
14	Once gum disease has started, it is almost impossible to stop it	2.4	2.5	-0.1
16	If the gums bleed when you floss, this usually means that you should stop flossing	2.7	3.2	-0.5
20	I believe visiting the dentist is only necessary when experiencing pain	1.6	1.3	0.3
22	I believe dentures are less trouble than taking care of natural teeth	3.5	3.3	0.2
26	If the gums bleed when you brush, this usually means that you should stop brushing	2	2.7	-0.7

t Student $p > 0.05$.

ability of the individual to respond to educational programmes (items 2, 8 and 21) showed favourable values.

All this suggests that despite the fact that the caregivers may have believed that a certain action might have a consequence on their patient's health (internal locus of control), they were unsure about their capability or knowledge to perform this action (self-efficacy) and tended to overestimate the incidence of external factors on health (external locus of control). However, caregivers thought they could respond in a favourable way to educational programmes that could modify their unfavourable oral health beliefs (self-efficacy).

Conclusion

Even though there are some differences in oral health practices between formal and informal caregivers, we cannot assume that one caregiver's practices are better than another. In fact, inadequate oral care practices and oral health beliefs were found in both types of caregivers. Educational programmes should be displayed to promote adequate oral care practices and beliefs among the caregivers.

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Correspondence to:
Constanza Ester Garrido Urrutia, Facultad de Odontología. Universidad de Chile, Sergio Livingstone 943, Independencia, Santiago, Chile.
E-mail: cony.garrido@gmail.com