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Educational program in oral health for caregivers on the oral hygiene of dependent elders

Programa educacional em saúde bucal para cuidadores sobre a higiene oral de idosos dependentes

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Resumo

Objetivo: Devido ao aumento do número de idosos que vivem em instituições de longa permanência são essenciais projetos de ações para melhorar a saúde bucal. Assim, o objetivo deste estudo foi avaliar o impacto de um programa educacional para os cuidadores de idosos institucionalizados por meio da avaliação da higiene bucal. **Material e método:** O programa de educação consistiu em palestras para cuidadores sobre saúde bucal que foram realizadas uma vez por mês. Foram avaliados 40 idosos institucionalizados dependentes funcionalmente e 14 cuidadores. Os hábitos de higiene, o índice de placa e o revestimento/descoloração da língua dos idosos foram avaliados antes do programa educacional (T0) e após 6 (T1), 12 (T2), 18 (T3) e 24 meses (T4). Os cuidadores responderam perguntas sobre seus conhecimentos, suas dúvidas e sobre a implementação de cuidados bucais (T0 a T4). **Resultado:** Após análise dos dados (Friedman, Qui-quadrado e Spearman, $\alpha = 0,05$), observou-se melhora gradual na higiene oral dos idosos, com maior freqüência de escovação ($p = 0,0005$), alteração do tipo de escova ($p = 0,0065$) e redução do índice de placa ($p < 0,05$) e revestimento da língua ($p < 0,05$). Os cuidadores mostraram uma melhoria acentuada no seu conhecimento sobre saúde bucal. **Conclusão:** Concluiu-se que o programa educacional para cuidadores teve um impacto positivo na saúde bucal dos idosos institucionalizados observado pelo aumento na eficácia dos parâmetros de higiene bucal, como índice de placa e revestimento da língua, contribuindo para o ganho de conhecimento em higiene pelos cuidadores.

Descritores: Cuidadores; assistência odontológica para idosos; educação; instituição de longa permanência para idosos; assistência à idosos.

Abstract

Objective: Due increased number of elders living in long-term care institutions, actions designs to improve their oral health are essential. Thus, the aim of this study was to evaluate the impact of an educational program for the caregivers through the assessment of the oral hygiene of institutionalized elders. **Material and method:** The education program consisted in lectures to caregivers about oral health that were performed once a month. The subjects were 40 functionally dependent institutionalized elders and 14 caregivers. Hygiene habits, plaque index, and tongue coating/discoloration of the elders were measured before the educational program (baseline- T0) and after 6 (T1), 12 (T2), 18 (T3) and 24 months (T4). Caregivers answered questions about their knowledge, doubts and implementation of dental care (T0 to T4). **Result:** After analyzing the data (Friedman, Chi-square and Spearman $\alpha = 0.05$), a gradual improvement in the oral hygiene of the subjects was observed, with an increased frequency of brushing ($p=0.0005$), a change in the brush type ($p=0.0065$) and a reduction in the plaque index ($p<0.05$) and tongue coating ($p<0.05$). Caregivers showed a marked improvement in their dental care knowledge. **Conclusion:** It was concluded that the educational program for caregivers had a positive impact in the oral health of institutionalized elderly observed by the increased in the effectiveness of oral hygiene parameters such as plaque index and tongue coating, contributing to the knowledge gain in hygiene by caregivers.

Descriptors: Caregivers; dental care for aged; education; homes for the aged; old age assistance.

INTRODUCTION

The number of elders living in long-term care institutions (LTCI) has been increasing in many countries[1]. Elders with poorer systemic health and more cognitive defects require regular professional support[2], which is an increasing challenge for health care providers[3]; such elders often have chronic diseases that lead to functional and cognitive disabilities, generating a greater degree

of dependence in daily activities and requiring a multidisciplinary treatment, with contributions from nurses, caregivers and other health professionals[4], associated to the impact in the financial system[5]. Moreover, factors such as cognitive decline[6], sarcopenia[7] and lack of mobility in elders due to either physical disabilities or tissue and organ impairments resulting from aging or degenerative diseases also contribute significantly to poor oral health[8].

Simons et al.[9] have shown that the institutionalized elders have a higher incidence of oral diseases than those living with their families. There is a failure between the high need for dental care and the limited services offered to the institutionalized elders[10]; thus, there is a need to educate caregivers about oral health to be potential care educators. There are some barriers[10-12] to achieving adequate oral health for the residents of LTCIs; these barriers include high costs, restricted mobility, a low level of awareness about the needs of elders, the perceived need for dental care among the institutionalized elders, the number of teeth, the functional and clinical status of the elders, financial restrictions, resistance to care and fear and lack of caregiver knowledge about oral health[10]; knowing that the health education of caregivers contributes to the improvement of the oral health of the elderly[6,13,14].

Wårdh et al. [3] reported that oral care assistance is viewed as a more disagreeable task than most other nursing activities and as low-skilled caregivers experienced more disgust towards cleaning the oral cavity of the elders. Studies done on education of caregivers are mostly conducted during times not exceeding 12 months[11,15]. Studies such as Paulsson et al.[16] and Samson et al.[17] were conducted in longer periods of time, the former found after three years of study the effectiveness of a program composed of 4 lessons of one hour each that were sent to caregivers and the second one evaluated caregivers and elders after 3 months and 6 years, however with different methodologies and without the same intervals between lectures. Regardless the study time, no matter the kind of change introduced to working conditions, the result will be an increased in productivity which itself is a good achievement[18], with a positive effect on care home nurses' oral healthcare knowledge and attitude.

Thus, the aim of this study was to evaluate the impact of an educational program for caregivers through the assessment of the oral hygiene of institutionalized elders, using indicators such as tongue coating and plaque index, as well as the gain of knowledge of caregivers on specific questions about oral health, degree of interest for their own oral health and frequency of hygiene implemented in the LTCI in elderly with partially functional dependency after educational program. Thereby, the following hypotheses were tested: H0-The caregiver educational program will not affect the oral hygiene quality of dependents elderly; H1- The caregiver educational program will affect the oral hygiene quality of dependents elderly.

MATERIAL AND METHOD

Ethical Principles

After the approval of the Araraquara Dental School Ethics Committee (CAAE 0055.0.199.000-11), caregivers and elders at the St. Francis of Assisi Home of Araraquara, Sao Paulo, Brazil, were invited to participate in the study. All caregivers gave informed consent and had their anonymity preserved, and the elderly had their consents signed by themselves or by a family responsible.

Study Population and Inclusion Criteria

The inclusion criteria were: the elder should consent in participate, have a minimum age of 60 years, be classified as partially functional dependent by Barthel index[19], as well as have impairment according to Mini Mental State Examination score[20].

Barthel's index, originally proposed by Mahoney, Barthel[19] was used to assess the degree of functional dependence of the individual on daily activities that are composed basically of personal care, mobility, locomotion and eliminations, having a maximum score of 100 for fully independent patients. Scores 61 to 90 were considered for selection of moderately dependent patients[21], who were selected for this study.

The cognitive status of the patients was determined with the Mental State Examination (MMSE)[20], a widely-used instrument for this proposal, considered objective and easy to apply. The instrument is composed of questions subdivided into six items: temporo-spatial orientation, recent memory, evocation, calculation, constructional ability and language (aphasia, agnosia and apraxia). The maximum score is 30 and a score of 23 or less indicated cognitive impairment.

The inclusion criteria for caregivers were: be an employee of the institution (formal caregiver) and attend all lectures meetings; caregivers that failed to attend all lectures were excluded from the study.

This research was held during the activities performed by the staff of the Extension Project entitled "Sorriso Solidário" of the Araraquara Dental School which consists in the development and implementation of an educational program in oral health targeted for caregivers, contributing to the insertion of the knowledge of buccal hygiene of dependents elderly in the routine of daily care provided by caregivers.

Pilot Study and Researcher's Calibration

To perform the clinical evaluations, all authors participated in a training that consisted of theoretical classes (total of 12 hours of duration) in a period of three weeks (4 hours a week) about oral hygiene, factors related to plaque index and characteristics of the buccal mucosa, emphasizing the tongue coating and tongue discoloration. After this procedure, a pilot study was carried out. It consisted of a clinical examination in 10 elderly who did not compose the sample of the present study. They were evaluated by three researchers, two randomly selected from those who participated in the theoretical classes, besides the one responsible for the subsequent accomplishment of the methodology. These evaluations were performed on three different occasions (15-day interval between each evaluation) using as variables plaque index, tongue coating and tongue discoloration. Inter-examiner Kendal coefficient was equal to 0.928 and intra-examiner Kendal coefficient was equal to 0.994.

Initial Collection of Study Variables (T0)

At baseline (T0) the same researcher that conducted the lectures collected the sociodemographic data of all caregivers, additionally applying a questionnaire with basic questions regarding oral health based in concepts stablished in the literature[14, 22] and about the caregiver's interest in oral health.

Regarding the elderly, socio-demographic data were collected from the LTCI records to characterize the elderly population and information about oral hygiene habits (frequency of brush, toothbrush type, use of mouthwash, use of dental floss) and the use of prostheses in elderly residents were collected at five times (T0, T1, T2, T3 and T4) along with a clinical examination to assess the number of remaining teeth, prostheses use, plaque index (PI)[23], tongue coating and mucosal discoloration[24].

The global PI (GPI)[23] corresponds to the sum of all obtained scores, divided by the number of examined surfaces. The scores received number according the presence and quantity of biofilm: 0-no plaque, 1- separate plaque particles at the cervical margin; 2 - thin and continuous strip of plate at the cervical margin; 3 - plate strip wider than 1 mm, but covering less than 1/3 of the crown; 4 - plate covering at least 1/3, but less than 2/3 of the crown; and 5 - plate covering 2/3 or more of the crown.

The tongue coating and tongue discoloration were evaluated according to an index described by Winkel et al.[24]. For tongue coating the scores varied from 0 to 2, being 0 the score determined for the absence of tongue coating, 1 for little tongue coating and 2 for severe tongue coating. The tongue was divided into six parts and the sum of the scores divided by six determined the score for the patient. The discoloration score followed the same principle with scores varying from 0 to 2: 0 for non-discoloration, 1 for mild discoloration and 2 for severe discoloration.

Educational Program

The educational program addressed oral hygiene techniques and the importance of oral health. It was carried out by the principal researcher who was trained to use a simple and objective language and comprised monthly lectures (once a month) and distribution of flyers. Each lecture had about two hours and exposed different themes related to oral health, allowing the interaction with caregivers in formulating questions. The lectures were conducted in the LTCI in an appropriated room with projectors to PowerPoint presentations and with caregivers outside their working hours.

The topics addressed were: Aging and oral changes (2 hours); Main oral lesions present in the elderly and myths of tooth loss (2 hours); Mouth cancer - epidemiology and etiology (2 hours); Etiology and evolution of the main oral diseases: caries and periodontal disease (4 hours); Main chronic diseases and their effects on oral cavity (4 hours); Auxiliary devices of oral hygiene (2 hours); Types of dental prostheses and importance of hygiene (2 hours); Chemical control of biofilm (2 hours); Importance of elderly patients stimulus through cleaning and morbidity concepts (2 hours); Hygiene routine in bed and alternative devices (2 hours). The lectures were complemented by the distribution of flyers with figures for home reading. After the lectures, it was exhibited devices of buccal hygiene with practical demonstrations according to each subject of the lecture. The institution also received hygiene devices suitable for use in each elderly, which should incorporate learned principles in daily routine care, such as the use of 0.12% chlorhexidine digluconate, mucosal swabs, dental and prosthesis brushes, tongue scraper and dental floss.

Additionally, to achieve the program goals, the main points that were objectively charged of caregivers were: compulsory oral hygiene at least three times a day during the elderly's daily routine and training on directly supervises the hygienic procedure, including the oral mucosa.

Reapplication of Questionnaires

The questionnaire was re-administered six months (T1), twelve months (T2) eighteen months (T3) and twenty-four months (T4) after the baseline, as well as the collection of clinical variables of elderly health and their attitudes and habits of buccal hygiene applied.

Statistical Analysis

The data were organized into a database in Excel 2010 and analyzed statistically using the BioEstat 5.0 program. Habits and clinical variables of oral hygiene from T0 to T4 were compared using the Friedman test; Spearman test was used to correlate daily hygiene habits and clinical variables at T0, T2 and T4. Chi-square was used to analyze the elders' satisfaction with the prostheses. A significance level of 5% was adopted.

RESULT

Of the 150 elders living in the assessed LTCI, 56 were eligible to participate at baseline; however, only 40 could be evaluated through the end of the program (T4) as several died or moved to different institutions. The mean age of the LTCI residents was 82.3 years (60-97 years), and the population was predominantly female (n = 21; 52.5%) and Caucasian (n = 34; 85.0%). All elderly were classified as having some kind of dependency and cognitive impairment observed through the scores of Barthel index (with average of 40) and Mini Mental State Examination (average of 20) respectively. This strategy (dependent and cognitive impairment elders) was used to guarantee that only the caregiver participation in the hygiene process was known, considering that the diet also has not changed during the study period.

Twenty elders were fully edentulous, eight had both maxillary and mandibular teeth, one had only maxillary teeth and 11 had only mandibular teeth. There were 45 remaining maxillary teeth and 99 remaining mandibular teeth in the residents assessed. Concerning the wear of prostheses, 29 subjects used some type of prosthesis and 11 did not use any type of prosthesis. Among prostheses wearers, 12 had both maxillary and mandibular complete dentures (CDs), 14 only a maxillary CD, 2 used a maxillary CD and mandibular removable partial denture (RPD), and one had only a maxillary RPD, totaling 43 prostheses.

Table 1 shows the oral hygiene habits from baseline to T4. The clinical examinations identified a statistically significant

progressive reduction in the GPI (Table 1) starting as early as T2 ($p < 0.0001$). A similar pattern of improvement was observed for the tongue coating (Table 1). Although the number of subjects with tongue discoloration (Table 1) increased in T4, it was still lower than in T0; there was also a concomitant increase in the number of elders without tongue discoloration ($p < 0.0005$). Table 2 shows the correlation between oral hygiene and the clinical variables assessed at T0, T2 and T4.

Of the 21 caregivers that were recruited at baseline, only 14 attended all lectures (inclusion criteria). All caregivers began the education program, however, over the 24 months, a reduction in the initial sample number (about 67%) was observed due to staff changes. Few of the caregivers originally trained were still working in the LTCI after two years of evaluation. The new employees have been invited to participate, however they were not included at the database. The mean caregiver age was 38.8 years (29-49 years), and 13 of the caregivers were women (92.9%). The average working time in the LTCI was three years. Most caregivers (64.3%) were only educated through elementary school, and 8 attended the appropriate programming courses; however, only two caregivers had completed Certified Nursing Assistant training. Concerning the time spent in the elderly care, 12 subjects were part-time workers and 2 were full-time workers, with an average workload of 38 hours per week. The factors that led to working as caregivers in the LTCI were related as financial need (35.7%), experience in the field (35.7%) and personal enjoyment (28.6%). All caregivers reported interest in obtaining information about oral health, with oral cancer as the topic of greatest interest. The results concerning the caregivers' knowledge of oral health are shown in Table 3.

Table 1. Habits and clinical variables of oral hygiene of elderly from T0 to T4. Absolute numbers and p values refer to comparisons made using the Friedman test

Variables	T0	T1	T2	T3	T4	P
Tooth brushing frequency	a	a	ab	b	b	
Never	0	0	0	0	0	
Once a day	9	9	2	0	0	0.0005
Twice a day	19	19	21	17	14	
Three or more times	12	12	17	23	26	
Brush type	a	ab	ab	ab	b	
Soft	20	23	26	29	33	
Medium	9	8	9	10	7	0.0065
Hard	11	9	5	1	0	
Mouthwash						
Once a day	2	2	4	6	12	
More than once a day	1	0	3	3	3	0.13
Do not use	37	38	33	31	25	
Others	0	0	0	0	0	
Dental floss						
Once a day	1	1	3	5	7	
Twice a day	1	0	1	1	1	
Three or more times	0	0	0	0	0	0.39
Do not use	18	19	16	14	12	
Eventually	0	0	0	0	0	
GPI	2.79 [a]	2.51 [ab]	1.86 [bc]	1.50 [cd]	1.38 [d]	< 0.0001
Tongue coating	2.93 [a]	2.30 [b]	1.70 [bc]	1.35 [c]	1.28 [c]	< 0.0001
Tongue discoloration	a	ab	b	b	b	
No discoloration	0	0	8	13	17	
Light discoloration	22	35	29	19	13	< 0.0005
Severe discoloration	18	5	3	8	10	

The variables that presented statistically significant differences have letters indicating where the differences are.

Table 2. Values of ρ and p referring to correlations between the daily hygiene habits and clinical variables at T0, T2 and T4

	Period	GPI	Tongue coating	Tongue discoloration
Frequency of tooth brushing	T0	ρ = -0.0953 p = 0.56	ρ = -0.1284 p = 0.43	ρ = -0.1648 p = 0.31
	T2	ρ = -0.0953 p = 0.56	ρ = 0.0482 p = 0.77	ρ = -0.0396 p = 0.81
	T4	ρ = -0.0684 p = 0.67	ρ = -0.3789 p = 0.02*	ρ = -0.0971 p = 0.55
Type of toothbrush	T0	ρ = -0.0414 p = 0.80	ρ = -0.0075 p = 0.96	ρ = -0.0664 p = 0.68
	T2	ρ = -0.0832 p =0.61	ρ = 0.1452 p = 0.37	ρ = 0.0550 p = 0.74
	T4	ρ = 0.0267 p = 0.87	ρ = -0.0680 p = 0.68	ρ = -0.0061 p = 0.97
Use of mouthwash	T0	ρ = -0.1939 p = 0.23	ρ = 0.0956 p = 0.56	ρ = 0.0620 p = 0.70
	T2	ρ = -0.4127 p =0.008*	ρ = -0.1768 p = 0.27	ρ = 0.0576 p = 0.72
	T4	ρ = -0.2954 p = 0.06	ρ = 0.1703 p = 0.29	ρ = 0.0275 p = 0.87
Use of dental floss	T0	ρ = -0.2557 p = 0.11	ρ = -0.0319 p = 0.84	ρ = -0.0173 p = 0.91
	T2	ρ = -0.2431 p =0.13	ρ = -0.2908 p = 0.07	ρ = -0.0762 p = 0.64
	T4	ρ = -0.0250 p = 0.88	ρ = 0.0749 p = 0.65	ρ = -0.0030 p = 0.98

DISCUSSION

This study evaluated the impact of a long-term educational program for caregivers on the oral hygiene quality of institutionalized partially dependent elders by assessing factors related to daily oral habits, GPI and tongue coating/discoloration. The null hypothesis of our study was rejected because the educational program had an impact on oral hygiene of the studied elders, although Weening-Verbree et al.[12] state that all strategies have a positive and statistically significant effect on the knowledge and health beliefs of caregivers and that this effect was not associate with improvements in the oral health of the elderly.

Several studies have been conducted with the aim of improving the oral and systemic health of the institutionalized elderly population through different types of interventions[2,8,12,13,25]. The caregiver educational program used in this study was comprised of monthly lectures with two hours each and was found to be effective, as determined by improvements in the frequency of tooth brushing (p = 0.0005), the toothbrush type (p = 0.0065) and in the clinical variables evaluated (GPI, tongue discoloration and tongue coating). These findings are consistent with other research[25] showing that, regardless of the measured variables, better oral health could be achieved for institutionalized elders after their caregivers improved their knowledge through lectures. The educational program staff in the LTCI also likely played a role in the improved oral hygiene, as they reinforced the importance of oral health and the methods of cleaning the oral cavity.

Despite the descriptive results, Table 3 indicates that the caregivers already had prior knowledge and interest in factors related to oral health at baseline, highlighting the significant increase from 7.1% to 78.6% of caregivers who reported routinely examining the mouths of the institutionalized elders. Our findings agree with the results of Delgado et al.[14] who showed that professional caregivers would like more training in oral health, especially in brushing and flossing. Thus, the presence of a trained dental staff and the maintenance of an educational program can help caregivers overcome difficulties in providing appropriate oral health care to LTCI residents, although Wårdh et al.[3] and Unfer et al.[11] emphasizes the divergence between the knowledge and the performance of oral care by caregivers, nurses and nursing assistants. Most of the caregivers who composed the sample had only elementary school (64.3%), being common in under-resourced countries the use of non-oral health workers in the promotion of oral health, and this situation, although not ideal, can contribute to improve oral health in LTCI[22]. In this sense, the staff, with higher knowledge, can feel more safety and decisive, with a positive effect on their attitudes with elderly.

An important observation of this study was an increase of elders' own initiative to the oral hygiene. At baseline, one of the daily tasks of the caregivers was brushing the teeth and prostheses of the subjects during the morning bath; any other brushings were

Table 3. Frequency of responses of caregivers related to knowledge in oral health (n = 14)

Questions	*T0*	*T4*
	N(%)	
Are dental caries a disease?		
Yes	14 (100)	14 (100)
No	0	0
Do you know what periodontal disease is?		
Yes	4 (28.6)	12 (85.7)
No	10 (71.4)	2 (14.3)
Can periodontal disease cause tooth loss?		
Yes	4 (28.6)	6 (42.9)
No	0	0
I do not know	10 (71.4)	8 (57.1)
Have you lost any teeth?		
Yes	14 (100)	14 (100)
No	0	0
Do you think it is possible maintain healthy teeth for your whole life?		
Yes	13 (92.9)	14 (100)
No	1 (7.1)	0
Do you brush/clean the mouths of your elderly patients?		
Yes	14 (100)	14 (100)
No	0	0
Have you ever had the experience of having to perform oral hygiene for an elderly person?		
Yes	13 (92.9)	14 (100)
No	1 (7.1)	0
Do you routinely examine "look at" the mouths of the elderly residents?		
Yes	1 (7.1)	11 (78.6)
No	13 (92.9)	3 (21.4)
Can oral disease be indicative that something is not right in the body?		
Yes	1 (7.2)	5 (75.7)
No	3 (21.4)	0
I do not know	10 (71.4)	9 (64.3)
Should the elderly sleep without their prosthesis (at night)?		
Yes	14 (100)	14 (100)
No	0	0
Are the prostheses of the elderly clean?		
Yes	14 (100)	14 (100)
No	0	0
Can the dentures, when stored together, transmit diseases?		
Yes	4 (28.6)	9 (64.3)
No	1 (7.1)	0
I do not know	9 (64.3)	5 (35.7)

performed without supervision. With the educational program, caregivers began to clean the mouth and prostheses twice a day and the elderly also began to make their own hygiene more frequently which may have been influenced by the knowledge and behavior change of caregivers. In addition, considering the elderly's skills, the caregivers guided and supervised the elderly in their routine cleaning of oral mucosa with gauze soaked in 0.12% chlorhexidine digluconate or with brush and mouthwash, given the importance of this procedure for oral health.

A statistically significant progressive decrease was observed between the baseline and the end of the educational program for the clinical variables assessed (GPI, tongue coating and tongue discoloration). Similarly, Simons et al.[9] showed an equal reduction in the plaque index, denture stomatitis and periodontal disease following an oral health educational program for caregivers.

This study had some limitations. It focused exclusively on the population of one Brazilian LTCI, had a reduced sample of caregivers due to caregiver turnover, and it only used three clinical variables (GPI, tongue discoloration and tongue coating), which do not represent all aspects of oral health. However, even given these limitations, this study stands out by the joint assessment of caregivers' knowledge and quality of oral health of institutionalized elderly by relatively long follow-up which is not usual in the literature[12], emphasizing the study of Simons et al.[15] with assessments conducted in shortest period. According McCarney et al.[18] reviews in short time can cause Hawthorne effect, which consists is a positive change in the behavior of a group when they are evaluated, not necessarily reflecting a real change over time. It is important to draw attention to the fact that the applied strategy of mensal lectures was confirmed after three years of living experienced at "Sorriso Solidário" Extension Project with various caregivers that identify settings and barriers to improve oral health in elders. The participation of undergraduate students in the mentioned project has brought to them fundamental contribution in their scientific and humanistic formation, as MacEntee[13] draws attention.

Although it is known that the resource is scarce[5] and that the education and training are not suitable due to be based only on scientific issues, associated to the necessity of a more comprehensive and humanistic health professional formation in the elderly care[13], this study clearly showed the need and the effectiveness of the development of educational program for caregivers, prioritizing the oral hygiene in daily routine care by the LTCI staff. Thus, integrating or even relocating government-employed dentists to conduct lectures and activities in LTCI can motivate both the caregivers and their patients, reducing the negligence observed in the oral health care of the institutionalized elders.

This study suggests that the use of an educational program for caregivers is effective in improve the elderly's health and hygiene indicators, as previously reported by Wang et al.[6], suggesting that such programs should be installed as routine in LTCI contributing to better health conditions.

CONCLUSION

Considering the limitations of this study the results showed that the educational program for caregivers had a positive impact in the oral health of institutionalized elderly observed by the increased in the effectiveness of oral hygiene parameters such as plaque index and tongue coating, contributing to the knowledge gain in hygiene by caregivers.

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CONFLICTS OF INTERESTS

The authors declare no conflicts of interest.

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