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Intra- and interobserver reliability of nurses and dentists in the assessment and screening of oral conditions of institutionalized older adults

Confiabilidade intra e interobservador de enfermeiro e cirurgião-dentista na avaliação e triagem das condições bucais de idosos institucionalizados

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Resumo

Introdução: idosos em Instituições de Longa Permanência (ILPIs) possuem comprometimento da capacidade funcional e maior prevalência de agravos bucais. Destaca-se o papel do profissional enfermeiro na avaliação integral do idoso inclusive com instrumentos para identificação e encaminhamento para tratamento odontológico. **Objetivo:** descrever a confiabilidade intra e interobservador, na avaliação da saúde bucal de idosos em ILPIs por vídeo. **Material e método:** estudo metodológico, em três ILPIs da Grande Florianópolis, Sul do Brasil. Foi utilizado o instrumento Avaliação da Saúde Bucal para Triagem Odontológica (ASBTO), que possui oito categorias ("lábios", "língua", "gengivas/tecidos", "saliva", "dentes naturais", "dentadura", "higiene" e "dor de dente"), segundo escores 0=saudável, 1=presença de alterações (podendo haver necessidade de atendimento), 2=não saudável (necessidade de atendimento) e escore final de 0 a 16. Um Enfermeiro, em cada ILPI, avaliou as condições bucais presencialmente e realizou vídeo com *smartphone* de cada idoso. Um cirurgião-dentista avaliou as condições bucais à partir desses vídeos. Foi estimado o teste de Kappa, p<0,05. **Resultado:** amostra de 34 idosos, 71% do sexo feminino. Confiabilidade interobservador entre os enfermeiros 1 e 2 e cirurgião-dentista para "lábios" e "dentes naturais" foi classificada como fraca e excelente/muito boa para dor de dente e condição das dentaduras segundo dois enfermeiros. Confiabilidade intraobservador dos enfermeiros foi classificada como fraca para avaliação dos "dentes naturais". **Conclusão:** o ASBTO mostrou-se confiável na avaliação das condições de prótese e dor, entretanto sugere-se maior capacitação dos Enfermeiros para o reconhecimento de condições bucais que requerem atendimento odontológico, assim como, a gestão deste processo pelo cirurgião-dentista e ILPIs.

Descritores: Saúde bucal; teleodontologia; assistência de longa duração.

Abstract

Introduction: older persons in Long-Term Care (LTC) facilities have functional impairments and a higher disease prevalence. Nurses' comprehensive assessment of older persons' health is highlighted, including using tools for screening dental treatment needs. **Objective:** to report the intra- and inter-observer reliability of older adults' oral health assessment in LTC facilities by video. **Material and method:** descriptive study, in three LTC facilities, in the Florianópolis region, Southern Brazil. Data were collected according to Oral Health Assessment Tool (OHAT), which presents 8 categories ("lips, tongue, gums/tissues, saliva, natural teeth, dentures, dental hygiene, and toothache"), and the scores 0=healthy, 1=presence of changes (could be a need for care), 2=unhealthy (need for dental service); final score from 0 to 16. In each LTC facility, a Nurse assessed oral conditions and made a video of each older adult using a smartphone. The dentist performed the oral health assessment through the videos. Estimated Kappa test, p<0.05. **Result:** the sample was 34 older adults, 71% were female. Interobserver reliability between Nurses 1 and 2 and Dentist for "lips" and "natural teeth" was classified as poor and excellent/very good for toothache and denture conditions. The nurse's intraobserver reliability was classified as weak for the "natural teeth" assessment.

Conclusion: the OHAT showed reliability for assessing denture conditions and pain. However, nurses' training for recognizing oral conditions that require dental care is suggested, as well as the management of this action by the dentist and LTC facilities.

Descriptors: Oral health; teledentistry; long term assistance.

INTRODUCTION

Population aging presents a prevalent demographic reality and is currently considered one of the greatest public health challenges[1]. Besides the changes due to the physiological changes resulting from the time lived, there is a higher prevalence and incidence of chronic-degenerative diseases, which cause gradual, physical, and cognitive losses[2]. Depending on the degree of impairment of general health and impacts on functional capacity, a certain portion of the older population requires continued management, which in turn can become unfeasible and unsafe if performed at home. Thus, some older people start to demand care in specific environments, such as long-term care facilities (LTCF) for older people[3,4].

Several studies reveal the high prevalence of diseases and oral health problems in residents of LTCF[5,6] and institutionalized older adults with more precarious oral conditions compared to those living in the community[7,8]. Furthermore, the literature indicates that oral problems are under-detected and under-treated in older people living in LTCF[9].

Oral health care is often attributed to nursing professionals. In LTCF, many residents depend on these professionals to perform oral hygiene[10,11]. Also, in order to equip nursing professionals for oral health care, the Oral Health Assessment Tool (OHAT)[12] was developed to guide the assessment of the oral conditions of older people, focusing on the main oral health needs and the consequent referral to dental treatment. The tool, in the Brazilian version entitled Instrumento de Avaliação da Saúde Bucal para Triagem Odontológica (ASBTO)[13,14], presented good reproducibility and reliability.

The literature reinforces the importance of communication between the dentist and the professionals who work in the LTCF, especially nurses[15]. For this reason, Information and Communication Technologies (ICT) has been pointed out to overcome barriers to access services and communication between professionals[15]. In particular, Teledentistry tools can assist in places where access to oral health care is absent or limited due to geographic barriers, socioeconomic issues, or shortages of dental labor[16]. For older adults in LTCF, Teledentistry can be a tool to approach the oral health care of older people, both in the diagnosis, in promoting oral hygiene, in facilitating access to care and referrals in cases of urgency, as well as in the monitoring after the dental intervention, presenting good cost-benefit ratio[17].

Nevertheless, review studies on the potential use of Teledentistry point to few studies with older people, especially those aimed at diagnosing oral diseases[18]. No studies were found on the use of Teledentistry tools to screen older adults and subsequent referral to dental care, conducted with the direct support of nursing professionals.

Given the above, this study aimed to describe the intra- and interobserver reliability between nurses and one dentist in assessing the oral health of institutionalized older adults by video. It is justified by the relevance of conducting oral health assessments of older people living in LTCF by nursing professionals in person and the assessment performed by dentists, using Teledentistry as a resource to identify treatment needs and referrals.

MATERIAL AND METHOD

The research was approved by the Ethics Committee for Research with Human Beings under opinion 4,403,321. This is an exploratory, methodological, quantitative descriptive study developed in three LTCF in the municipalities of São José, Palhoça, and Florianópolis in southern Brazil.

Older adults who are residents of the three LTCF aged from 60 years assessed between December and March 2021 were selected intentionally and non-probabilistically. In each LTCF, an invitation to the responsible nurses was made. Thus, the study had three nurses, one from each LTCF. The dentist from the primary healthcare service of one of the LTCF was invited to participate. The study included the older adults of the LTCF who, according to the Health Team of the LTCF, had the physical and cognitive conditions to participate in the study.

The Oral Health Assessment Tool for Dental Screening (OHAT)[13] was used, which has eight independent assessment categories, among them: "lips", "tongue", "gums and tissues", "saliva", "presence of natural teeth", "presence of dentures", "oral hygiene", and "toothache". According to the OHAT, the scores should be 0 for the "healthy" condition, 1 when there are "changes" and 2 for "unhealthy", always considering the score of the worst oral condition observed. The OHAT final score for each older adult consists of the sum of the scores of the eight categories, and from this sum, a scale ranging from 0 (very healthy) to 16 (very sick). If the older adults received, in any of the categories, a score of 2, it was classified as an immediate need for dental care. The variables sex, age, and groups of medications (anxiolytics, antihypertensives, antidiabetics, and diuretics) were also surveyed.

Interobserver reliability was estimated through the assessment of nurses and a single dentist, in which variations were observed between the two assessments. For this, a previous training was conducted by the researchers with all professionals for the knowledge of the OHAT tool. This training took place online, with all professionals on a date and time previously scheduled. In PowerPoint, an exhibition was carefully prepared, with all the characteristics requested by the OHAT tool, including photos exemplifying each condition. A Youtube® link was generated and made available to professionals if there was a need to review.

To assess the in-person oral health condition by nurses, they were asked to record the oral condition of the older adults through video images on a *smartphone* mobile device. The mobile devices had a minimum resolution of 720p (1280 pixels wide and 720 pixels high), which at first ensured minimal visualization of the dentist. The nurses filled out the assessment form with the OHAT score. They were also instructed on the correct use of personal protective equipment (PPE) and on image capture, which could only contain the oral cavity of older adults.

Furthermore, they received the following verbal and written instructions so that the videos were taken in a standardized way: use the smartphone of the previous training and artificial lighting (flash or flashlight) with attention to the quality of the focus and framing from nose to chin; the older person should be in a comfortable position, sitting or lying down; it would not be necessary to sanitize or do any type of mouth cleaning procedure, and if the older person used prostheses, they should be removed and placed on a flat surface on a paper towel, which should be included in the video; when starting the filming, they should mention the name of the older person to identify the video, besides filming for approximately 10 seconds the lips at rest, the smile, the mouth open, the mouth open with the tongue out, the mouth open considering the teeth of the upper arch and the teeth of the lower arch, in addition to the dental prostheses (internal and external). If necessary, a wooden spatula should be used to move tissues apart. Finally, throughout the process, the older adults should be asked: "Are you feeling any discomfort? Can we continue?", in addition to recording in the video if the older person reported pain in any tooth. The dentist, through the videos, assessed the oral conditions of each older adult, filled out the form with the OHAT score, and reported the difficulty of viewing the video (yes/no).

The intraobserver reliability consisted of a first assessment and another after 10 days, with five older adults in each institution and who remained stable in their health conditions. The nurses underwent a new assessment and sent a new video to the dentist. Considering that each score (assessed condition) of the OHAT received a value according to a scale of 0 for the "healthy" condition, 1 when there is "presence of changes" and 2 for "unhealthy", weighted Kappa was estimated for each OHAT score, for both reliabilities. The test interpretation: weak 0 to 0.20; mild

0.21 to 0.40; fair 0.41 to 0.60; good 0.61 to 0.80; very good 0.81 to 0.92; and excellent 0.93 to0 1.0[19]. Stata® software version 13 was used, with a significance level of 5%.

RESULTS

Thirty-four older adults were assessed. Most of them were female (71%), aged between 70 and 79 years (41%). Considering the medications, there was a higher prevalence of the use of anxiolytics (76%), followed by antihypertensives (65%), diuretics (24%), and antidiabetics (21%). Moreover, 62% of the older adults used at least two groups of medications.

Table 1. Interobserver agreement between nurses and dentist according to the categories of the OHAT. Greater Florianópolis, 2021. (n=34)

Category	% Agreement	Kappa value	Agreement interpretation	*p*-value
Nurse 1 and dentist				
Lips	56.3	0.14	weak	0.185
Tongue	75.0	0.50	fair	0.025
Gums and tissues	81.3	0.67	good	0.004
Saliva	87.5	0.69	good	0.000
Natural teeth	40.0	0.12	weak	0.288
Dentures	91.7	0.85	very good	0.000
Dental hygiene	68.8	0.42	fair	0.018
Toothache	100	1.00	excellent	0.000
OHAT Final score	50.0	0.35	mild	0.000
Nurse 2 and dentist				
Lips	28.6	0.06	weak	0.241
Tongue	78.6	0.50	fair	0.003
Gums and tissues	57.1	0.30	mild	0.060
Saliva	92.9	0.63	good	0.005
Natural teeth	50.0	0.12	weak	0.248
Dentures	100	1.00	excellent	0.001
Dental hygiene	64.3	0.34	mild	0.048
Toothache	100	1.00	excellent	0.002
OHAT Final score	21.4	0.13	mild	0.062
Nurse 3 and dentist				
Lips	75.0	0.56	fair	0.041
Tongue	100	1.00	excellent	0.002
Gums and tissues	25.0	0.00	weak	0.876
Saliva	50.0	0.12	weak	0.248
Natural teeth	66.7	0.50	fair	0.067
Dentures	50.0	0.12	weak	0.288
Dental hygiene	25.0	0.15	weak	0.124
Toothache	100	1.00	excellent	0.041
OHAT Final score	6.25	0.02	weak	0.748

The interobserver agreement between nurses 1 and 2 and dentist, according to the assessment of the lips and natural teeth, was interpreted as weak. The tongue was fair, while saliva was classified as good and excellent toothache. Dentures were very good for nurse 1. For nurse 3, dentures (weak), lips (fair), tongue (excellent), natural teeth (fair), and toothache (excellent). The OHAT final score for nurses 1 and 2 was classified as mild and for nurse 3 agreement was weak (Table 1).

Table 2. Intraobserver agreement of nurses and dentist, according to the OHAT categories. Greater Florianópolis, 2021. (n=10)

Category	% Agreement	Kappa value*	Agreement interpretation	*p*-value
Nurse 1				
Lips	75.0	0.54	fair	0.086
Tongue	80.0	0.55	fair	0.086
Gums and tissues	50.0	0.11	weak	0.312
Saliva	80.0	0.65	good	0.000
Natural teeth	50.0	0.11	weak	0.500
Dentures	100.0	1.00	excellent	0.013
Dental hygiene	70.0	0.50	fair	0.500
Toothache	100	1.00	excellent	0.000
Nurse 3				
Lips	25.0	0.20	weak	0.728
Tongue	100.0	1.00	excellent	0.000
Gums and tissues	75.0	0.43	fair	0.023
Saliva	50.0	0.20	weak	0.273
Natural teeth	0.00	-	absent	0.807
Dentures	50.0	0.12	weak	0.200
Dental hygiene	50.0	0.12	weak	0.253
Toothache	100	1.00	excellent	0.042
Dentist				
Lips	86.67	0.7458	good	0.0003
Tongue	100.00	1.000	excellent	0.0000
Gums and tissues	80.00	0.5714	fair	0.0014
Saliva	86.67	0.5946	fair	0.0059
Natural teeth	40.00	0.2500	mild	0.0385
Dentures	81.82	0.7215	good	0.0004
Dental hygiene	86.67	0.7656	good	0.0000
Toothache	100.00	1.0000	excellent	0.0127

*Nurse 2 was unable to perform the second data collection.

The intraobserver agreement of nurses resulted in weak, for both, in the natural teeth category and mild for the dentist. For the assessment of dentures, nurse 1 obtained excellent interpretation while nurse 3, weak. The toothache agreement was interpreted as excellent for all professionals (Table 2).

Considering the use of a digital tool, in this case, videos from a smartphone camera, in 12% (n=4) of the cases, the dentist declared difficulty in viewing due to the video position.

DISCUSSION

When considering the interobserver agreement of nurses and dentist, the assessment of "lips", and "natural teeth" was considered weak. The same results can be found in Mello et al.[14] regarding the conditions of "tongue" (good) and "dentures" (very good).

In this study, the reliability between nurses and dentist in the assessment of tissues and gums and natural teeth was weak. The challenge of exchanging information among professionals is recognized, especially related to the lack of expertise in assessing diseases and conditions, which may reflect gaps in technical training for diagnosis[20,21].

In this regard, it is known that institutionalized older people are fully assisted by nurses and require complex medical care for treating systemic and chronic diseases, where the conduct of oral health care cannot always be prioritized by nurses[22]. On the other hand, the interpretation

of the interobserver agreement was excellent for "saliva" and "toothache" and very good for "dentures", which can be inferred that they are characteristics with greater ease of assessment. In particular, "toothache", which is self-reported by the older person.

It is known that intraobserver agreement presupposes the degree of agreement in two moments by the same observer and is a measure in which no significant differences are expected between two moments[23]. For some oral conditions, the intraobserver agreement of nurses ranged from absent ("natural teeth"), weak ("gums and tissues"), and mild ("lips"). Still, for the dentist, it was mild ("natural teeth") and fair ("gums and tissues"). The application of this test is essential in an assessment tool as it is possible to ascertain the stability and reproducibility obtained in the assessment by the same observer on two different occasions[24].

Thus, when considering the various oral conditions that nurses assessed, the theoretical knowledge about the theme, the organization of time for collection, and availability may have negatively influenced the new collection. Nevertheless, the scientific knowledge of nurses, in LTCF, for oral health is indispensable given the care of the oral conditions of older people because, without any support, the older people can accumulate sequelae of diseases and develop disabilities, resulting in a worse quality of life[23,24]. For the dentist, the degree of safety in the responses during the research may also have contributed to the differences between the two periods.

We highlight the need for further studies in order to optimize the process, generate protocols and standards in care that will provide more safety and assertiveness for the performance of dentists. Moreover, for LTCF, it is recognized that due to the excessive demand for nursing professionals, action plans between dentists and LTCF, compatible with the needs and demands of institutionalized older adults should be made possible to address such deficiencies[25].

It should be noted that, in a few videos, the dentist stated difficulty in viewing and was more related to the position of the mobile phone, showing that the video was effective in assessing the referral needs, reaffirming the importance of using digital tools, such as using videos. Teledentistry is a new way of organizing services, promoted by technological resources, which focuses on bringing professionals closer together with the exchange of information and knowledge between them, in a collaborative way, in a network, qualifying care[16].

Kirshner[25] analyzed the role of ICT and observed that teleconsultations allowed greater resolvability of clinical cases among professionals since the discussion on the diagnosis, treatment plan, and proservation was made between professionals from different specialties. However, even characterized by general support for the oral health of the older person, it is recognized that Teledentistry does not replace nor should the traditional approach in the case of suspected more serious diseases that require deeper diagnoses.

Some limitations are considered; due to the COVID-19 pandemic conditions, the training of nurses and dentists occurred remotely, which may justify the difficulty in understanding some oral conditions of the OHAT and assessment via video.

CONCLUSION

The reliability of the nurses' assessment was significant and classified as excellent for "prosthesis conditions" and "dental pain" and mild for "lips", "gums", and "natural teeth" conditions. The OHAT tool can be considered a viable alternative in assessing oral health by the nurses responsible for older adults in LTCF. Nevertheless, preparing and training them in theory and practice is necessary.

The video captured by smartphone was presented as a possible alternative for screening the conditions of older adults in LTCF. Although the objective of the study was to assess the reliability of the OHAT tool, it is suggested that further studies assessing Teledentistry strategies are

conducted from an interdisciplinary work perspective and, as a complementary means, it can be recommended for oral assessment and referral of treatment needs in institutionalized older adults, contributing to an improvement in access and qualification of oral health care.

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CONFLICTS OF INTERESTS

The authors declare no conflicts of interest.

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