

## Level of Nursing Staff Education Related to Oral Care of Individuals in Home Care and Nursing Homes: an Integrative Review

*Nível de Formação do Pessoal de Enfermagem Relacionado com os Cuidados Bucais de Indivíduos em Cuidados Domiciliares e Lares de Idosos: uma Revisão Integrativa*

*Nivel de Formación del Personal de Enfermería Relacionado con los Cuidados Bucodentales de las Personas en Atención Domiciliaria y Residencias de Ancianos: una Revisión Integradora*

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### Abstract

**Background:** The everyday practice of oral health care enables the process of understanding individuals' oral problems for health promotion and prevention in deshospitalized older people. The nursing staff could they act as valuable and productive partner in oral health, helping patients with home care. The dentist can assist in maintaining this dental hygiene by emphasizing thorough and continuous follow-up care. **Objective:** The objective of this review was to search for scientific evidence on the level of education and knowledge of the nursing staff working in home care and/or in nursing homes in oral health care of individuals under long-stay care. **Methods:** The PRISMA-ScR recommendations were followed in conducting this integrative review. The research question was applied in the electronic databases PubMed, LILACS, Embase, and Web of Science using the necessary keywords and Medical Subject Heading terms. The studies were allocated to the reference management software EndNote Web, in which five published articles were selected for the narrative synthesis of data. **Results:** The final sample included 5 selected articles with a total of 392 nursing staff responded to the pre-set questionnaires about their level of education and knowledge about the oral health care of individuals. Dental hygienists were the specialists in charge of supervising dental care and teaching the nursing personnel. As a means of educating the oral care team, health education programs were developed. **Conclusion:** Dentists must be an integral part of the multidisciplinary team responsible for the patient and play a key role in guiding the nursing team.

**Descriptors:** Attitude of Health Personnel; Oral Health; Nursing Staff; Home Care Services.

### Resumo

**Introdução:** A prática diária dos cuidados de saúde bucal permite compreender os problemas bucais dos indivíduos para a promoção da saúde e a prevenção em idosos deshospitalizados. A equipe de enfermagem pode atuar como um parceiro valioso e produtivo na saúde bucal, auxiliando os pacientes com cuidados domiciliares. O cirurgião-dentista pode ajudar a manter essa higiene bucal, enfatizando o acompanhamento completo e contínuo. **Objetivo:** O objetivo desta revisão foi buscar evidências científicas sobre o nível de educação e conhecimento da equipe de enfermagem que trabalha em cuidados domiciliares e/ou em casas de repouso na área de saúde bucal de indivíduos em cuidados de longa duração. **Métodos:** As recomendações do PRISMA-ScR foram seguidas na realização desta revisão integrativa. A questão de pesquisa foi aplicada nas bases de dados eletrônicas PubMed, LILACS, Embase e Web of Science, utilizando as palavras-chave necessárias e os termos Medical Subject Heading. Os estudos foram alocados no software de gerenciamento de referências EndNote Web, no qual cinco artigos publicados foram selecionados para a síntese narrativa dos dados. **Resultados:** A amostra final incluiu 5 artigos selecionados, com um total de 392 profissionais de enfermagem que responderam aos questionários pré-definidos sobre seu nível de educação e conhecimento sobre cuidados de saúde bucal dos indivíduos. Higienistas dentários foram os especialistas encarregados de supervisionar os cuidados dentários e ensinar a equipe de enfermagem. Como forma de educar a equipe de cuidados bucais, foram desenvolvidos programas de educação em saúde. **Conclusão:** Os cirurgiões-dentistas devem ser parte integrante da equipe multidisciplinar responsável pelo paciente e desempenhar um papel fundamental na orientação da equipe de enfermagem.

**Descritores:** Atitude dos Profissionais de Saúde; Saúde Bucal; Equipe de Enfermagem; Serviços de Atendimento Domiciliar.

### Resumen

**Antecedentes:** La práctica diaria del cuidado de la salud bucodental permite el proceso de comprensión de los problemas bucodentales de los individuos para la promoción y prevención de la salud en personas mayores deshospitalizadas. El personal de enfermería podría actuar como socio valioso y productivo en la salud oral, ayudando a los pacientes con la atención domiciliaria. El dentista puede ayudar a mantener esta higiene dental haciendo hincapié en un seguimiento exhaustivo y continuo. **Objetivo:** El objetivo de esta revisión fue buscar evidencia científica sobre el nivel de formación y conocimiento del personal de enfermería que trabaja en atención domiciliaria y/o en residencias de ancianos en el cuidado de la salud bucodental de individuos bajo cuidados de larga estancia. **Métodos:** Para la realización de esta revisión integradora se siguieron las recomendaciones PRISMA-ScR. La pregunta de investigación se aplicó en las bases de datos electrónicas PubMed, LILACS, Embase y Web of Science utilizando las palabras clave y los términos Medical Subject Heading necesarios. Los estudios se asignaron al software de gestión de referencias EndNote Web, en el que se seleccionaron cinco artículos publicados para la síntesis narrativa de los datos. **Resultados:** La muestra final incluyó 5 artículos seleccionados con un total de 392 profesionales de enfermería que respondieron a los cuestionarios preestablecidos sobre su nivel de formación y conocimientos acerca del cuidado de la salud bucodental de las personas. Los higienistas dentales eran los especialistas encargados de supervisar la atención odontológica y enseñar al personal de enfermería. Como medio para educar al equipo de atención bucodental, se elaboraron programas de educación sanitaria. **Conclusiones:** Los odontólogos deben ser parte integrante del equipo multidisciplinario responsable del paciente y desempeñar un papel clave en la orientación del equipo de enfermería.

**Descriptores:** Actitud del Personal Sanitario; Salud Bucodental; Personal de Enfermería; Servicios de Atención Domiciliaria.

### INTRODUCTION

Oral health care represents a daily construction that implies a dynamic and continuous

process of knowledge of the physiological and pathological oral conditions, in addition to being involved in decision-making for health promotion

and prevention<sup>1</sup>. This allows a person to eat, talk, or socialize without an active illness, discomfort, or embarrassment, which improves his or her overall well-being and quality of life<sup>2</sup>.

Dishospitalized older people individuals requiring care in home care or in nursing homes are prone to experiencing various oral problems<sup>3</sup>. Literature reports the occurrence of xerostomia, hyposalivation, increased risk of caries, advanced tooth wear, periodontal disease, opportunistic infections, loss of natural teeth, compromised dentures and poor levels of oral hygiene<sup>4,5</sup>. It is also reported the difficulties of traveling to dental offices<sup>6</sup>, since, because they have teeth with complex fixed structures, they require rigorous daily intraoral cleaning, which ends up being impaired with advancing age<sup>7</sup>.

To help older people and their caregivers with home care, the nursing staff must be furnished with the knowledge and skills required. By displaying proper oral hygiene and infection control techniques, nursing staff could they act as valuable and productive partner in oral health<sup>8</sup>. Studies have shown that the nursing staff's lack of knowledge and skill in oral care is indicative of suboptimal care<sup>9-11</sup>, which may lead to a worsening in the quality of life of these individuals.

The nursing staff might therefore think about the importance of everyday oral hygiene with the dentist's assistance<sup>12</sup>. Therefore, it would be essential for nurses who work with home care to have access to continuing education, with theoretical and practical training in oral health in order to understand the importance of oral health and which techniques exist to perform it properly<sup>13-16</sup>.

The level of education and knowledge of oral health is still limited by the nursing staff that provides care to individuals under long-term care, resulting in poor oral conditions<sup>12,17</sup>. Thus, this integrative review aims to analyze the evidence available on the level of education and knowledge of the nursing staff working in home care and/or nursing homes related to oral health care in patients under long-stay care.

## **MATERIAL AND METHOD**

This integrative review was conducted in accordance with the PRISMA-ScR guidelines (Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews)<sup>18</sup>.

The guiding question for conducting this integrative review was, "What is the level of education and knowledge of the nursing staff working in home care and/or nursing homes in the oral health care of individuals under long-term care?" The question was designed using the PICO (Population, Intervention, Comparison and Outcome) strategy<sup>19</sup>, in which P: Older people

under long-stay care; I: Education and knowledge of the nursing staff working in home care and/or nursing homes; C: Oral health care, and O: Nursing staff education in oral care, follow-up, and effectiveness.

According to the appropriate keywords and Medical Subject Heading (MeSH) terms, the descriptors "*Attitude of health personnel*", "*Oral health*", "*Nursing staff*", and "*Home care services*" were selected and combined with the use of Boolean operators (AND, OR, NOT). The search strategy was adapted for each database individually and applied to the electronic databases PubMed, LILACS, Embase and Web of Science (Chart 1). The search strategy was carried up to June 2021. The articles were allocated to EndNote Web reference management software (<http://www.myendnoteweb.com>), used to collect and save records, and have been remove any duplicate articles.

Inclusion criteria were defined primary studies, available online, published in an undetermined period, in Portuguese, English, and Spanish, randomized clinical trials, cross-sectional, cohort, retrospective, case-control and pilot studies, with older people under long-stay care, who are no longer receiving treatment in a hospital and receive in home care, who need oral health care, and studies that reported the education/knowledge of the nursing team in the oral care of these individuals. Exclusion criteria included review articles, case reports and/or series, letters to the editor, book chapters, theses, and dissertations, and those not available online and/or in full. The selection of studies was performed by two reviewers independently, starting with reading titles and abstracts of the studies collected by the search strategy in the different databases. All studies that did not meet the inclusion criteria were excluded. Subsequently, full-text reading was performed, and potentially eligible studies were reviewed by the same reviewers. Possible disagreements were resolved by a third reviewer in both phases.

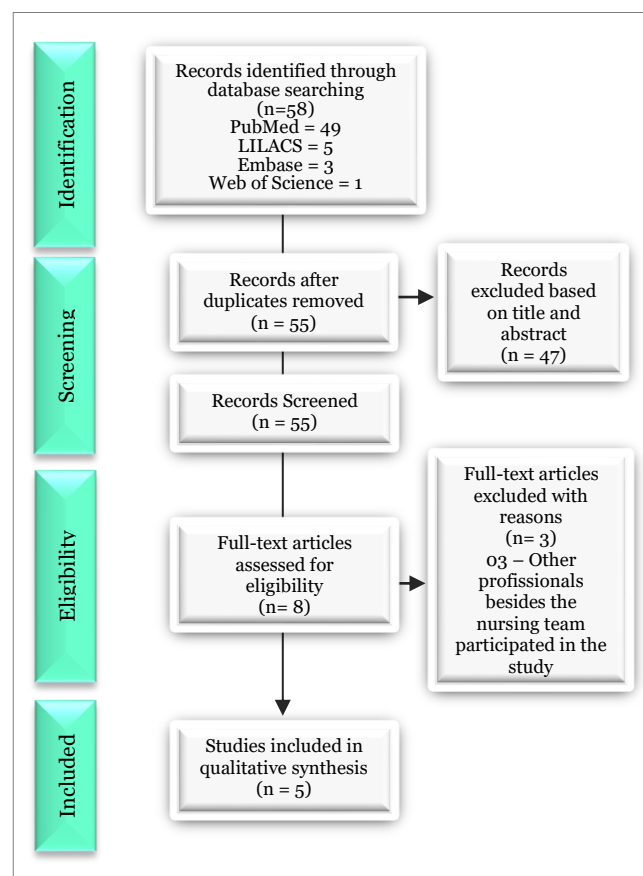
The qualitative and quantitative data extracted from the present study were author (year), country, study design, number of staff responsible for oral care, staff responsible for oral care, professional responsible for education the team in the management of oral care, questionnaire applied to evaluate nursing staff education and knowledge, answers to the questionnaires applied and educational method used to instruct the nursing staff. Subsequently, they were organized into a table in descriptive chronological order, recording the characteristics of each primary study included in the integrative review, and a narrative synthesis of the studies' data was performed.

## RESULTS

Fifty-eight studies were found in the electronic databases selected for this review, three duplicate records were removed, and five articles were selected for the final sample, being two pilot studies<sup>12,20,21</sup>, two cross-sectional studies<sup>21,22</sup>, and one randomized clinical trial<sup>23</sup> (Figure 1). The final sample included 5 selected articles with a total of 392 nursing staff responded to the pre-set questionnaires about their level of education and knowledge about the oral health care of individuals<sup>12,20,21-23</sup>, of these, only two studies used registered dental hygienists to teach nursing staff on managing oral care<sup>12,23</sup> (Table 1).

The questionnaires applied to evaluate nursing staff education and knowledge differed between studies, including self-applied questionnaires<sup>12,22</sup>, Oral Care Survey (OCS) and Analogic visual scale (AVE)<sup>21</sup>, pilot<sup>12</sup>, Dental Coping Belief Scale (DCBS)<sup>22,23</sup>, and oral health knowledge questionnaires<sup>23</sup>. Only three studies employed educational method to instruct the nursing staff<sup>12,22,23</sup> (Table 2).

Tables 1 and 2 indicate the characteristics of the included studies and the answers to the questionnaires applied on the level of education and knowledge of the nursing staff related to oral health care.



**Figure 1:** Flowchart of the studies found in PubMed, LILACS, Embase and Web of Science databases. Adapted from PRISMA on the topic.

**Table 1 -** Characteristics of the included studies.

<b>Thean et al.<sup>20</sup> (2007) Singapore</b>	
Study design	Pilot Study
Number of staff responsible for oral care	53 individuals
Staff responsible for oral care	Nurses
Professional responsible for education the team in the management of oral care	N/R
<b>Jablonski et al.<sup>21</sup> (2009) Pennsylvania</b>	
Study design	Cross-sectional study
Number of staff responsible for oral care	106 individuals
Staff responsible for oral care	Nursing assistants
Professional responsible for education the team in the management of oral care	N/R
<b>Forsell et al.<sup>12</sup> (2010) Sweden</b>	
Study design	Pilot Study
Number of staff responsible for oral care	42 individuals
Staff responsible for oral care	Nurses and nursing assistants
Professional responsible for education the team in the management of oral care	Registered Dental Hygienists
<b>Pihlajamäki et al.<sup>22</sup> (2016) Finland</b>	
Study design	Cross-sectional study
Number of staff responsible for oral care	141 individuals
Staff responsible for oral care	Nurses and nursing assistants
Professional responsible for education the team in the management of oral care	NA
<b>Girestam-Croonquist et al.<sup>23</sup> (2020) Sweden</b>	
Study design	Randomized clinical trial
Number of staff responsible for oral care	50 individuals IG = 35 individuals CG = 15 individuals
Staff responsible for oral care	Nurses and nursing assistants
Professional responsible for education the team in the management of oral care	Registered Dental Hygienists

Legend: N/R (not reported); IG (intervention group); CG (control group).

## DISCUSSION

The initiative of home care, linked to hospitals for the care of individuals after long-term hospitalization, has expanded worldwide in recent decades. The worldwide trend toward home care is a strategy that has been implemented in hospital units through the deshospitalization process. This type of assistance includes consistent financial and clinical benefits. It reduces the risk of infections, saves hospitalization costs and patient's readmissions, rationalizes the demand for hospital beds, reduces the healthcare costs of assistance and resource utilization, and provides greater comfort for the patient and his family, making the care more humanized and comprehensive<sup>24,25</sup>.

The nursing staff is responsible for most of the oral care in home care and/or in nursing homes. Oral hygiene can improve gingival bleeding, dental carious lesions, and opportunistic infections caused by respiratory pathogens<sup>23,26</sup>. Home oral health programs should involve individual instruction with hands-on oral hygiene training as well as education for the professionals who perform oral hygiene on older individuals. Three included studies<sup>12,21,23</sup> used oral health education program provided by dental hygienists. They had good results in nursing staff

knowledge<sup>12,23</sup> and satisfaction with the results of the oral hygiene provided<sup>12</sup>.

A recent study<sup>26</sup> concluded that professional oral hygiene performed by a specialized team, such as a dental nurse, in individuals who need home care and/or nursing homes maintained and improved their oral health. Forsell et al.<sup>12</sup> and Girestam Croonquist et al.<sup>23</sup>, also found similar results. However, there are still few studies in the literature where dental care is directed solely by dentists and carried out by the nursing staff that properly looks after older patients with debilitating illnesses after deshospitalization, in-home care, or nursing homes<sup>23</sup>. Knowing the importance of the training the nursing team by dental professionals, can expect a joint and multiprofessional work to improve the quality of life and well-being of the patient. According to Hsieh et al.<sup>27</sup>, there is an association of improving quality homecare services and patients' well-being, which includes areas of health, family life and friendships.

Two of the studies<sup>22,23</sup> used the Dental Coping Beliefs Scale (DCBS) questionnaire, which enables nursing professionals to set their priorities in oral health care and attendance<sup>28</sup>. The Nursing DCBS is based on three main models of cognitive-behavioral psychology: locus of control, self-efficacy, and self-instruction. In addition to the three main models, it is subdivided into four dimensions that are based on: internal locus of control (assessment of self-control and beliefs experienced by individuals regarding life events), external locus of control (assessment and beliefs influenced by environmental factors outside of individuals' control), self-efficacy (individuals' assessment and beliefs about their ability to affect a specific situation), and oral health care beliefs assessment of erroneous and irrational beliefs about dental disease<sup>23,28</sup>. In both studies<sup>22,23</sup>, using the questionnaires for measuring staff education and knowledge was paramount, as improved knowledge among nursing staff contributes to improved oral hygiene among dishospitalized individual's dependent on individualized care.

The knowledge of the health care providers in home care and/or in nursing homes before and after a 6-month follow-up period of oral hygiene education by dental hygienists showed that there was an improvement in the knowledge of the intervention group ( $p=0.05$ ) compared with to the control group. However, the level of education and knowledge of the nursing staff was not disclosed in the findings of the applicable questionnaires. Relevance was determined solely by the fact that nurses were taught how to sanitize following the dental hygienists' cleanliness program ( $P<0.05$ )<sup>23</sup>. However, prior to commencing any intervention in the family context, it is well understood how important this oral health education is.

**Table 2** - Answers to the questionnaires applied on the level of education and knowledge of the nursing team related to oral health care.

<b>Thean et al.<sup>20</sup> (2007) Singapore</b>	
Questionnaire applied to evaluate nursing staff education and knowledge	Self-Applied
Answers to the questionnaires applied	- 92.5% of the staff believed that dental caries could be caused by poor hygiene and 45.3% by frequent intake of sugary foods and drinks; - Periodontal disease could be caused by bacteria in dental plaque (88.7%) and/or sugary foods and drinks (37.7%); - Prostheses should be cleaned after meals (96.2%).
Educational method used to instruct the nursing staff	N/R
<b>Jablonski et al.<sup>21</sup> (2009) Pennsylvania</b>	
Questionnaire applied to evaluate nursing staff education and knowledge	OCS and AVE
Answers to the questionnaires applied	- 93.3% of the staff believed that daily brushing and flossing could prevent gum disease; - The health of the mouth is related to the health of the body (87.9%); - As people age, they naturally lose their teeth (60.6%); - Dentures should be removed at night (93%).
Educational method used to instruct the nursing staff	Education program based on the need-driven behavior model
<b>Forsell et al.<sup>12</sup> (2010) Sweden</b>	
Questionnaire applied to evaluate nursing staff education and knowledge	Pilot
Answers to the questionnaires applied	- 93% of the team indicated sufficient knowledge prior to oral hygiene education, 50% indicated satisfaction with the results of the oral hygiene provided, 93% indicated that they had sufficient time for daily oral hygiene tasks, and 57% responded that they did not prefer other nursing tasks to oral hygiene tasks; - Prior to the education program, staff found oral hygiene tasks unpleasant, 67% indicating residents' perceived unwillingness as the main reason for displeasure; - 88% of the staff noted residents' resistance to oral hygiene tasks and 77% had to force some residents to engage in this activity.
Educational method used to instruct the nursing staff	Oral health education program provided by RDH
<b>Pihlajamäki et al.<sup>22</sup> (2016) Finland</b>	
Questionnaire applied to evaluate nursing staff education and knowledge	Self-administered and DCBS
Answers to the questionnaires applied	- 95% of the staff was aware that dental cavitation and gum disease were preventable and tooth brushing could be preventive; - 79 of the nurses scored highest on the factor "Knowledge about prevention of gum disease", 66 on "Dental diseases are preventable", 78 on "Retention of teeth from age" and 26 on "How to prevent dental diseases"; - Nurses with previous further education scored lower on the factor "Knowledge about gum disease prevention"; - Nurses aged 31-49 scored lower on the factor "Retention of teeth as of age," and higher on the factor "How to prevent dental diseases" than those $\leq 30$ years old; - Staff working in places other than elderly housing scored higher on the factor "Knowledge about preventing gum disease" than those working in elderly housing; - Nurses with only nursing training had higher mean scores on the factor "Confidence in the need for dental knowledge" than those with previous complementary training.
Educational method used to instruct the nursing staff	N/A
<b>Girestam-Croonquist, et al. (2020) Sweden</b>	
Questionnaire applied to evaluate nursing staff education and knowledge	DCBS and oral health knowledge
Answers to the questionnaires applied	- IG showed statistically significant improvement compared to CG in the "oral health care beliefs" dimension ( $p=0.03$ ) and "external locus of control" dimension ( $p=0.0017$ ). In the IG, there was a statistically significant difference in the "internal locus of control" dimension ( $p=0.03$ ); - For the knowledge-based questionnaire, an improvement ( $p=0.05$ ) was found between GI and CG from baseline to six-month follow-up.
Educational method used to instruct the nursing staff	Oral health education program provided by RDH

N/R (not reported); RDH (registered dental hygienist); OCS (Oral Care Survey); AVE (Analogic visual scale); DCBS (Dental Coping Belief Scale); IG (intervention group); CG (control group)

Many nursing staff feels confident and comfortable providing oral care, especially in challenging situations<sup>12</sup>. However, the inclusion of a specialist training, such as that of a dentist, in identifying oral problems and diseases, implementation of oral environment suitability, and training of the nursing team would result in care in an appropriate and individualized manner. Theoretical and practical lectures on oral hygiene in nursing curricula and continuing professional education may change and enhance staff members' attitudes and perceptions regarding oral hygiene<sup>12,21,23</sup>.

One study<sup>21</sup> (Jablonski et al., 2009) used the Oral Care Survey (OCS) questionnaire to measure the knowledge, beliefs and practices of the team providing oral care. However, two types of nursing homes/home care, being one public and one private were evaluated in this study, bringing two different parameters about the demographic characteristics, working time, and training of nurses<sup>21</sup>. Girestam Croonquist et al.<sup>23</sup>, did not make comparisons between nursing homes/home care managed by private and/or municipal companies.

The Analogic visual scale (AVE) was concurrently used with the OCS questionnaire<sup>21</sup>. Despite the great parameter in the study, the questions associated with the AVE are not always easy to answer, potentially leading to distortion of the results. In contrast to previous studies<sup>21,23</sup>, two of the studies used non-standardized questionnaires, one self-administered<sup>20</sup> and one pilot<sup>12</sup>, with questions that leave room for interpretation of the answers, causing difficulties in the evaluation parameters in relation to perceptions, level of education and knowledge of the oral care team.

As limitations of this integrative review, we can cite the scarce literature on oral care provided by the nursing team in home care and/or in nursing homes and instructed by a dental professional or part of the dental team, such as a dental hygienist. However, similar, and more thorough studies could be conducted in home care and/or in nursing homes to analyze how oral health education among nurses can improve their oral health related knowledge and especially their actual oral health practices during home visits, using pre-established questionnaires. However, staff participation in questionnaire-based studies is challenging due to low response rates. Thus, face-to-face visits to collect the answers to the established questionnaires could be an alternative and suggestion for future research.

In addition, although some of the studies<sup>20,21,23</sup> present the descriptive data on the level of education and knowledge of the nursing staff regarding oral health care, they do not

present the actual results on the level of education and knowledge of the nursing staff. Additionally, because the majority of the studies reviewed in this analysis were not longitudinal<sup>12,20-22</sup>, follow-up was not done, and the length of follow-up for the level of education and knowledge of nursing staff was not disclosed. This demonstrates the necessity for additional studies to measure the level of education and knowledge in oral health care nursing staff and also to better understand how long this knowledge persists and how often oral care education should be realized.

## CONCLUSION

Maintaining oral health is a primordial task in the self-care needs of individuals under long-stay care. The questionnaires applied in the studies, and the oral hygiene programs created for assistance and guidance served as support for the instruction of the team providing oral care. The active participation of dentist is essential both for the definition of diagnoses and conducts and for the orientation of the nursing team, aiming at better oral health and quality of life of the individuals.

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## CONFLICT OF INTERESTS

The authors declare no conflict of interest.

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