Nursing Continuing Professional Development

Introducing Standardized Assessment and Management of Oral Cares in a Rehabilitation Unit: Patient Outcomes and Experiences

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Abstract

Purpose: The aim of this study was to improve patient oral hygiene outcomes in a rehabilitation unit by implementing a nursing education package and oral hygiene assessment tool.

Design: A case-control design with 50 rehabilitation patients was performed.

Methods: Nursing staff received education and training in applying the Modified Oral Health Assessment Tool. Clinician assessment of patient oral hygiene occurred on admission and at days 5–7. Each patient reported their perceptions of oral hygiene and comfort prior to hospitalization, while in the hospital, and after transfer to the rehabilitation unit.

Findings: Oral hygiene rating scores improved significantly from admission to the rehabilitation unit to days 5-7 (p = .00). The mean score of patient perceived cleanliness improved from hospital admission to admission to the rehabilitation unit.

Conclusion: Oral hygiene was improved following admission to a rehabilitation unit with a consistent and individualized approach to oral hygiene.

Clinical Relevance: The introduction of a consistent and individualized approach to oral hygiene demonstrates positive patient outcomes and high patient acceptance.

Keywords: Dysphagia; oral cares; rehabilitation.

Introduction

Oral cares are a vital component of nursing care in the rehabilitation setting, preventing oral hygiene-related complications (Andersson et al., 2004; Shiraishi et al., 2020, 2017; Wårdh et al., 1997, 2000). During hospitalization, assessment and management of oral hygiene become particularly important as evidence suggests that oral hygiene may deteriorate during admission because of limited access to oral care equipment and difficulty accessing assistance to complete oral cares (Danckert et al., 2016). For example, in

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Schwarz, M., Kwiecien, I., Hamlet, B., Coccetti, A., Monsiegneur, U., Tickle, B., & Cardell, E. (2021). Introducing standardized assessment and management of oral cares in a rehabilitation unit: Patient outcomes and experiences. *Rehabilitation Nursing*, 46(5), 262–269. doi: 10.1097/rnj.00000000000301 an Australian study of 575 older patients admitted to a hospital, 76% had oral cleanliness scores in the "not healthy" range, with no improvement in oral hygiene over a 7-day period of hospitalization (Gibney et al., 2017).

Poor oral hygiene in the inpatient setting is a significant risk, as poor oral hygiene may result in adverse outcomes and complications. Aspiration of oropharyngeal contents colonized with bacteria from the oral cavity, for instance, may result in aspiration pneumonia (Kikutani et al., 2015; Scannapieco, 2006; Scannapieco & Genco, 1999; Scannapieco & Shay, 2014). Furthermore, in a study of over 3,000 older adults living in the community, higher oral plaque values increased the clinical risk of developing pneumonia (Juthani-Mehta et al., 2013). Several studies have also demonstrated a potential link between atherosclerotic lesions and periodontal disease in patients with cardiovascular disease (Flores et al., 2014; Kebschull et al., 2010; Teeuw et al., 2014; Teles & Wang, 2011). Therefore, oral hygiene regimes, which utilize oral decontamination and mechanical cleaning, are crucial to prevent pneumonia and associated complications (Marik & Kaplan, 2003; Scannapieco, 2006; Tada & Miura, 2012; van der Maarel-Wierink et al., 2013).

Although oral cares and maintenance of oral hygiene have a key role in preventing complications, evidence suggests that oral cares may not be perceived as a priority by nursing staff (Talbot et al., 2005; Wårdh et al., 1997, 2000). A recent large-scale survey involving 806 nursing staff in Malaysia indicated that only 63% of staff reported performing some form of oral care for stroke patients (Ab Malik et al., 2018). A survey of 131 nursing staff identified that patient behaviors, lack of time, staff shortages, and patients' physical capabilities limited their ability to complete oral cares within the acute hospital setting (Gibney et al., 2015). Limited access to standardized training and care protocols may also contribute to this deprioritization of oral cares in the clinical setting (Preston et al., 2000; Talbot et al., 2005; Wårdh et al., 2000). For example, a survey of 98 registered nurses identified that, although 95% of respondents reported oral health was important and 79% felt responsible for the delivery of oral cares, 52% of respondents reported that their nursing education did not prepare them for delivery of oral cares (Pettit et al., 2012). Provision of oral cares by nursing staff working with patients poststroke was also noted to be significantly associated with nurse-reported oral health knowledge scores (Malik et al., 2018).

Barriers related to staff training and access to resources may be readily overcome by introducing better education and standardization of procedures in relation to oral cares into clinical nursing practice. For example, Kim et al. (2017) demonstrated that the introduction of a twice-weekly oral hygiene care program (including tooth brushing education and professional tooth cleaning) to 71 patients in an intervention group during inpatient rehabilitation improved oral hygiene for patients admitted to a stroke rehabilitation unit (Kim et al., 2017). Similarly, an earlier study of 273 intensive care unit nurses identified that greater knowledge and understanding of oral cares increased frequency and quality of oral care practices (Lin et al., 2011). In a nursing home setting, the introduction of an in-service style education conducted by a dementia specialist/dental hygienist, in conjunction with regular visits to provide nursing staff with guidance regarding oral care techniques, resulted in improvements in oral hygiene for residents (Weintraub et al., 2018). Furthermore, in a study of critical care nurses, the simple addition of recommendations about oral care frequency was associated with an increase in oral hygiene assessment and oral swab care (Kiyoshi-Teo & Blegen, 2015). Therefore, there is emerging evidence that the provision of targeted training and care protocols translates to improved oral hygiene practices (Kim et al., 2017; Kiyoshi-Teo & Blegen, 2015; Lin et al., 2011); this, in turn, is hoped to improve patient outcomes. To add to this growing evidence base, the current study aimed to evaluate the operational

and clinical outcomes (patient oral hygiene outcomes) from introducing nurse training and a standardized, individualized approach to assessment and management of oral hygiene in the rehabilitation setting.

Method

Development of Assessment Tool and Care Regime

The starting point for developing a simple-to-use tool as the basis of the training package was the Oral Health Assessment Tool (OHAT), which is a valid and reliable method of assessing oral health in the clinical setting (Chalmers et al., 2004, 2005; Chalmers & Pearson, 2005). The OHAT consists of a subjective rating scale of 0-2, with 0 being healthy, 1 being changes observed, and 2 being unhealthy. A number is assigned to the categories of lips, tongue, gums and tissues, saliva, teeth, oral cleanliness, and dental pain (Chalmers et al., 2004, 2005; Chalmers & Pearson, 2005). The OHAT can be conducted by any healthcare professional; however, given the integral role of nursing staff in assessment and management of oral cares, nursing staff are primarily responsible for using the tool in clinical practice. However, the tool does not provide guidance regarding oral hygiene intervention.

This project was developed for implementation in a rehabilitation unit of a 435-bed secondary metropolitan hospital in Queensland, Australia. To inform the scope and needs for the project, comprehensive stakeholder engagement and input occurred. Medical management, nursing management, nursing staff, and the hospital education teams provided suggestions and recommendations regarding assessment and care provision processes, necessary equipment, documentation templates, regimes, and education. Following this extensive engagement process, the Modified Oral Health Assessment Tool (mOHAT) was designed. The mOHAT included the addition of a standardized oral hygiene regime to the validated OHAT tool (Chalmers et al., 2004, 2005; Chalmers & Pearson, 2005). The mOHAT was individualized based on the oral hygiene deficit identified from OHAT scoring. Each category of the mOHAT was given a score of 0, 1, or 2. These category scores were then added together to finalize a total score, and the corresponding mouth care regimen was begun. The minimum score was 0 (no oral cavity issues), whereas the maximum score was 16 (significant oral cavity issues). Care categories in the mOHAT were developed and labeled "Usual Care" (score of 0), "Low Risk" (score of 1-2), "Medium Care" (score of 3–8), and "High Risk" (score of 9–16) based on the patient's care needs identified by nursing staff on assessment. An increase in severity score on the OHAT (Chalmers et al., 2004, 2005; Chalmers & Pearson, 2005) therefore resulted in increased frequency and intensity of oral care. Recommendations regarding frequency, type, and intensity of oral cares were summarized in a standardized oral hygiene regime, available for easy access on the mOHAT form. To align with best practice, it was recommended that the mOHAT be completed on admission to the rehabilitation unit and reviewed on a weekly basis. Adequate oral hygiene was defined as results fitting into the "Usual Care" or "Low Risk" category (constituting a score of 0–2 on the mOHAT).

Nurse Training

For the purposes of this study, the "education package" developed for nursing staff was defined as the standardized assessment and management tool (mOHAT), in combination with a face-to-face training session, followed by ward-based auditing of completion accuracy and opportunities to access "at elbow" support from the nurse educator regarding the mOHAT. The mOHAT was introduced in the rehabilitation unit with a strong focus on education and training to ensure consistency in implementation. Prior to implementation, the speech pathologist provided face-to-face 30-minute education sessions to 21 nursing staff in the rehabilitation unit, coordinated by nursing education services, until confirmation was received that all staff had completed the training. The in-service covered a number of topics, including literature and evidence to support the importance of oral cares, local guidelines and work instructions related to oral care delivery, an overview of the OHAT (Chalmers et al., 2004, 2005; Chalmers & Pearson, 2005) including pictorial representations of each change category on the OHAT rating scale, and an overview of how to complete oral assessment in response to each care category ("Usual Care," "Low Risk," "Medium Care," and "High Risk"). During the training, nursing staff were also provided with written handouts related to best practice teeth brushing and denture management. To ensure accurate completion of the mOHAT tool, the nursing education team conducted ad hoc clinical documentation audits of the mOHAT in the clinical record to ensure documentation accuracy. In addition, the nurse educator conducted a series of side-by-side assessments with trained nursing staff to ensure accuracy of assessment and that any questions from nursing staff could be raised and discussed.

Process and Procedure

A case–control study was undertaken to identify the clinical impact of the nurse education and training package. A convenience sample of patients admitted to the rehabilitation unit who had a mOHAT completed on admission to the rehabilitation unit and after 5–7 days of rehabilitation admission was identified. Exclusion criteria included patients who were unable to provide informed consent, declined to participate in the study, or were admitted to the rehabilitation unit on a day when a speech pathologist or speech pathology student was not available to complete the data collection.

Although nursing staff had undergone training and were completing the mOHAT on all patients admitted to the rehabilitation unit, to evaluate the outcomes from introducing this change to oral hygiene practices, additional data were collected by the speech pathology department. This data collection related specifically to patient oral health outcomes and did not aim to assess accuracy of nurse completed scores. Specifically, a mOHAT-trained speech pathologist or mOHAT-trained student speech pathologist completed the mOHAT on admission and at 5-7 days of rehabilitation stay. Furthermore, each patient completed a survey that used a 5-point Likert scale to rate their perceptions about oral comfort, cleanliness, and their oral hygiene status at three points, namely, prior to hospitalization, while in the hospital, and after transfer to the rehabilitation unit. Prehospital scores were collected to establish a patient baseline, whereas scores during hospitalization were designed to act as a comparator (as the acute inpatient area did not have a standardized approach to oral care delivery at the time of project).

Analysis

Data were collected and transcribed into a Microsoft Excel spreadsheet and analyzed using SPSS V23 (IBM Corporation, 2016). Demographic patient information and overview of mOHAT scores were analyzed using simple descriptive statistics (mean, range, standard deviation). Preand post rehabilitation admission mOHAT scores from the speech pathologist/speech pathology student were analyzed using a paired sample t test to determine changes in oral hygiene status. Frequency of oral cares pre and during hospital admission and following transfer to the rehabilitation unit was reported as frequencies and percentages. Responses to Likert-scale patient perception questionnaires regarding cleanliness prior to, during hospital admission, and following transfer to the rehabilitation unit were assigned numerical values (6 = excellent, 5 = very good, 4 = good, 3 = average, 2 = poor, 1 = very poor) and analyzed comparatively using a paired sample t test. Perceptions regarding completion of oral cares were also converted to a numerical value from a 5-point Likert scale (5 = very much true, 4 = quite a bit true, 3 = somewhat true, 2 = hardly ever, 1 = not at all true).These measures were collected to provide further information on patient perceived oral health outcomes and to determine possible frequency increases/decreases between home and acute setting (without the standardized oral care package) and rehabilitation unit (with the standardized oral care package).

Results

A total of 50 patients agreed to participate in the study. The mean age of patients was 72.14 (34–93, *SD* = 14.32), 70% (n = 35) were female and 30% (n = 15) were male. The most common reason for admission was postsurgery (24%, n = 12; Table 1).

mOHAT Completion and Outcomes

All 50 patients had mOHAT scores documented on admission by the speech pathologist/speech pathology student; however, only 44 patients (88%) had speech pathologist-recorded values for the mOHAT documented at 5–7 days of the rehabilitation unit stay. The mean mOHAT score on initial assessment was 4 (range: 0–10, SD = 2.28), compared to a mean score of 2.82 (range: 0–9, SD = 2.05) at days 5–7 of admission. This demonstrates a significant improvement in mOHAT score (t = 4.083, p = .00) from admission to days 5–7 of rehabilitation stay following a period of standardized oral care delivery.

Patient Perception

Frequency of Oral Cares

Information regarding frequency of oral cares can be found in Figure 1. Prior to admission to the hospital, just over half of the patients (56%, n = 28) reported cleaning their teeth 2 times or more per day, with 26% (n = 13) reporting once-daily cleaning, 8% (n = 4) reporting cleaning their teeth 2–6 times per week, 4% (n = 2) reporting never cleaning their teeth, and 2% (n = 1) reporting cleaning their teeth 2–3 times per month. After admission to the hospital, only 20% (n = 10) reported cleaning their teeth twice per day, with the majority (i.e., 60%, n = 30) reporting once-daily cleaning. After admission to the rehabilitation unit, the

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Reason for Admission	%	п
Post-surgical admission	24	12
General medical admission	18	9
Stroke	16	8
Fall	12	6
Neurological impairment	8	4
Fracture	4	2
Functional neurological disorder	4	2
Respiratory condition	4	2
Functional decline	2	1
Motor vehicle accident	2	1

Note. Six percent (n = 3) of missing data as reason for admission.

number of patients reporting twice-daily teeth cleaning increased to 42% (n = 21), with 28% (n = 14) reporting once-daily cleaning.

Cleanliness

Patients' self-rating scores of cleanliness did not demonstrate a significant difference between pre-hospital admission and postadmission to the rehabilitation unit scores (t = 0.870, p = .389). However, a significant improvement in perceived cleanliness was identified in the self-rated mean score of cleanliness from admission to the hospital to admission in the rehabilitation unit (t = -2.265, p = .029). The mean rating of oral cleanliness preadmission was 4.33 (range: 1–6, SD = 1.209), with 1 = being very poor and 6 = excellent. Postadmission to the hospital, the mean rating of cleanliness decreased to 3.61 (range: 1–6, SD = 1.256); however, this improved after admission to the rehabilitation unit with a mean of 4.29 (range: 2–6, SD = 1.132).

Perception of Oral Care Delivery

The mean scores in response to perceptions of oral care delivery are in Table 2. Being asked about oral cleanliness resulted in some level of embarrassment in 8% (n = 5) of patients, whereas 10% (n = 7) of patients reported some level of discomfort or awkwardness around someone assessing the cleanliness of their oral cavity. A total of 28% (n = 14) reported they appreciated having someone offering to help them clean their mouth "very much."

Discussion

The completion of oral cares is vital in preventing complications and maintaining patient comfort (Chalmers et al., 2004; Danckert et al., 2016; Juthani-Mehta et al., 2013; Marik & Kaplan, 2003; Scannapieco, 2006; Scannapieco & Genco, 1999; Tada & Miura, 2012; Talbot et al., 2005). However, evidence from nursing studies suggest that nurses feel ill-prepared and lack capacity for the completion of oral hygiene assessment and management strategies (Gibney et al., 2015; Pettit et al., 2012). This study implemented nurse education and training around the adoption of a simple tool to facilitate a structured and individualized approach to assessing and managing oral hygiene in a rehabilitation unit. The results suggest that this approach was successful, as improvements were found in frequency of oral hygiene completion and in overall oral hygiene rating, as well as in patients' perception of oral cleanliness (from inpatient hospital to rehabilitation unit), without resulting in a negative perception of care delivery. This change was identified as an improvement from inpatient hospital admission (where no standard approach to oral cares was currently in place) to arrival in the rehabilitation unit (with a standardized oral care procedure in place).



Figure 1. Frequency of oral care completion.

The training framework delivered to nurses in the current study also closely aligned to previously published examples of successful oral care implementation projects. Similar to a study published by Dyck et al. (2012), the current implementation of the standardized approach to oral care delivery included the development of a policy, an education strategy that included train-the-trainer sessions, and the provision of easy-to-access oral care kits to ensure required equipment and resources were within easy reach for nursing staff. Similarly, the current study involved side-by-side assessment and support from the rehabilitation team's nurse educator, which is similar to the hands-on skill training provided by dental hygienists in other studies (Gammack & Pulisetty, 2009). These forms of training have been found in a systematic review to change staff's knowledge and attitudes toward oral care delivery (Brady et al., 2006).

The positive patient outcomes found by this study may also be attributable to the standardized approach involved in introducing a simple modification to an existing oral care assessment tool, the OHAT (Chalmers et al., 2004, 2005; Chalmers & Pearson, 2005). This modification alerts staff to a proposed oral care management plan dependent on the severity of OHAT scores, thus increasing awareness for nursing staff of outstanding care tasks. In a study of critical care nurses from 18 intensive care units, results indicated that scores for adherence, awareness, and prioritization were significantly higher at facilities with nursing policies and information bulletins (Kiyoshi-Teo & Blegen, 2015). Nursing policies in this study were documents that were labeled as "standard care," "protocol," or "procedure manual" (Kiyoshi-Teo & Blegen, 2015), thus being comparable to the tool used in the current study to provide a structured approach to increasing nursing awareness of oral hygiene tasks. Similar to findings in the current study, Lin et al. (2011) found a significant correlation between oral care knowledge and oral care practice patterns among intensive care nurses. This highlights the value of awareness raising education tasks, which were undertaken during the implementation phase of this study, including the use of in-service presentations and clinical educator facilitated side-by-side assessments.

Tab	le	2 Per	ceptions	of	Oral	Care	Delivery ((Mean	Response	Score)	I
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Statement	Mean F Score	Range, Standard Deviation	Percentage of Patients Reporting "Very Much True (5)"
It was embarrassing for me to be asked about my mouth.	1.23	1-4, 0.684	0
l understand why it is important to keep my mouth and teeth clean.	4.6	2–5, 0.821	66
I found someone assessing my mouth cleanliness uncomfortable, awkward, or offensive.	1.35	1–4, 0.870	0
I found someone asking me if I cleaned my teeth uncomfortable, awkward, or offensive.	1.39	1–5, 0.945	2
l appreciated someone offering to help me clean my mouth.	2.98	1–5, 1.761	28

Note. Higher scores indicate greater agreement with listed statement.

Key Practice Points

- Oral hygiene is vital for patients in the rehabilitation setting to maximize patient comfort and minimize risk of adverse outcomes such as aspiration pneumonia.
- The completion of oral cares to support and improve oral hygiene is a core component of the nursing role in the rehabilitation unit; however, this care may be overlooked at times of high demand for staff.
- The introduction of a consistent and individualized approach to the assessment and management of oral cares in the rehabilitation unit may support nursing staff to complete this vital clinical task and improve patient outcomes.

In addition to increasing nursing staff awareness of the importance of oral cares and providing a "protocol" and training to guide oral care decision-making, the current study also focused on maximizing nursing staff engagement and maintaining positive attitudes and behaviors to the performance of effective oral cares. This approach is highlighted by a study in which a dental training team provided targeted nursing training, which not only provided the knowledge and skills to perform oral cares but also focused on a positive attitude toward the behavior of completing oral cares (Charteris & Kinsella, 2008). The literature suggests that nursing staff may perceive the completion of oral cares in a negative light. For instance, a study of 87 nurses working in residential aged care facilities identified that 87% of responders considered oral cares to be unpleasant, with patient unwillingness being the main contributor to this perception (Forsell et al., 2011). Patient resistance or unwillingness did not appear to be a barrier to oral care delivery within the current setting, with only 10% of patients reporting assistance with oral cares was "uncomfortable" or "awkward." Although this variation may be dependent on setting (i.e., rehabilitation unit vs. residential aged care facility), the current results suggest that it is important to educate nursing staff not only about the benefits of oral care delivery but about patient perceptions of this highly personal task and appropriate strategies to manage these. This finding should encourage future education and training programs to focus on the positive outcomes and patient- centered care achieved with a standardized oral care management strategy.

Although the current study provides evidence for positive benefits to a standardized oral care assessment and management protocol within a rehabilitation unit, the study is limited by a number of factors, including a relatively small sample size. Furthermore, although patient overall oral hygiene score and patient-perceived cleanliness were reported, this was conducted at a single time point, which may reduce the accuracy of reported perceptions in relation to pre-hospital admission and during hospital admission oral hygiene practices. Also, collection of data related to complication incidences (e.g., frequency of aspiration pneumonia) were not recorded in the current study. The impact of oral care on healthcare-related complications is also limited in the current cohort of patients as those with co-occurring dysphagia or high levels of dependency because of serious infarct or injury were largely excluded given inability to provide informed consent. Further research should investigate the application of standardized oral cares with high-risk populations in rehabilitation, including a larger sample size.

Conclusion

This study has provided new evidence to support the introduction of a standardized oral care assessment and management protocol in an inpatient rehabilitation unit that has the potential to improve patient oral hygiene delivery and outcomes and increase patient satisfaction and perceptions of their own oral cleanliness. The benefits of targeted and individualized training and assessment for nurses to change practice cannot be underestimated.

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Conflicts of Interests

The authors declare no conflicts of interest.

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