Comparison of oral health assessments between nursing staff and patients on medical wards

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The maintenance of good oral health is essential for nutrition, recovery and well-being. This requires the involvement of the nursing staff, especially in cases where oral care and any necessary dental treatment are vital to ensure medical treatment. The aim of this study was to evaluate the validity of oral assessments performed by nursing staff using the revised oral assessment guide (ROAG), using comparisons with patients' self-assessment of oral problems. When a comparison was made of how the staff and patients assessed their oral status, a high level of agreement was found. In these assessments, with the exception of oral mucosa and teeth, the percentage agreement was >80. The kappa coefficient revealed slight to moderate agreement. When there was a disagreement, the staff assessed the oral health as being significantly poorer than the patients did.

In the present study, it was shown that few oral assessments performed by the nursing staff and patient disagreed. The ROAG may therefore be useful for the nursing staff to make the patients' oral health problems visible.

Keywords: cancer patients, nursing care, oral health, oral assessment guide, self-assessed oral health.

INTRODUCTION

Oral health is often compromised in frail patients in hospital (Andersson *et al.* 1999; Öhrn *et al.* 2001a). The maintenance of good oral health is essential for nutrition, recovery and well-being (Heimdal 1999; Öhrn *et al.* 2001b). This requires the involvement of the nursing staff, especially in cases where oral care and/or dental treatment are absolutely vital to ensure medical treatment (Andersson *et al.* 1999; Öhrn *et al.* 2001b).

Oral health is an important yet neglected area of nursing care. Several studies reveal that oral health is given low priority, even though it is regarded as an important part of nursing care (Nieweg *et al.* 1992; Wallace *et al.* 1997; Paulsson *et al.* 1999; Öhrn *et al.* 2000; Wårdh *et al.* 2000). The need to prioritise oral health has not been made sufficiently clear and it is easily ignored when other rival activities take precedence (Paulsson *et al.* 1999; Öhrn & Sjödèn 2003). Work on preventive oral health is not prioritized at all and, when oral health attracts attention, it is not until problems in the mouth are already established (MacEntee *et al.* 1999; Öhrn *et al.* 2000). Oral health care is frequently left to the patient, delegated to untrained staff or regarded as the responsibility of the dental health service (Öhrn *et al.* 2000; 2003). Furthermore, it has been reported that the documentation regarding oral health and the evaluation of measures that are implemented is unsatisfactory and, as a result, important information is lost (Graham *et al.* 1993; Ehrenberg & Ehnfors 2001; Öhrn *et al.* 2003). It is also important that the patients' perceived oral health

status is detected. However, the degree to which frail inpatients experience their oral health is unclear.

Oral assessment tools may be valuable for nursing staff and patients to detect oral health problems and to initiate adequate oral health procedures (Eilers *et al.* 1988; Andersson *et al.* 1999). Beck reported an improvement in the patient's oral status when individual oral care assessment was used in combination with necessary oral care. The oral assessment guide, OAG, was developed by Eilers *et al.* (1988) in order to evaluate status in patients undergoing bone marrow transplantation or receiving high-dose radiation and/or chemotherapy. The validity and reliability were tested and the assessment tool was found to be applicable for further studies (Eilers *et al.* 1988). Andersson *et al.* (1999) revised and evaluated the OAG in a Swedish care setting in haematological inpatients undergoing chemotherapy treatment. Thereafter, the OAG was further revised and used in elderly inpatients (Andersson *et al.* 2002). The revised oral assessment guide (ROAG) was found to be a reliable tool in evaluating oral health status and determining problems in the oral cavity (Andersson *et al.* 2002; 2004). A patient assessment tool was designed by Kosac *et al.* (1996) in order to evaluate patients' ability to assess their own oral health. This assessment tool has been translated and modified by Öhrn *et al.* (2001a) and tested among cancer patients.

Standardized oral health assessments designed to detect oral health problems facilitate appropriate oral care and may give oral health higher priority in nursing care. However, it is important not to neglect the patients' experience of their oral health.

The aim of the present study was to evaluate the validity of oral assessments performed by nursing staff using comparisons with patients' assessment of oral problems.

MATERIALS AND METHODS

Design and setting

The study was a prospective, comparative study conducted at five hospitals in Sweden. The hospitals were geographically selected due to the presence of wards designed for patients with cancer and other severe medical diagnoses. A baseline oral assessment was made (on the first day of medical care), followed by oral assessments performed by both nursing staff and patients every day until the patient was discharged.

Selection of patients

All the patients on the selected wards September 2002 and March 2004 and agreed to participate in the study were

included, a total of 398. Among these, a simultaneous assessment was made of 152 patients, 79 women and 73 men. The mean age of the patients was 67 years (SD 17.4) (26–96). A large majority of the patients (49%) had natural teeth, 33% had natural teeth combined with various forms of fixed or removable denture, 18% were edentulous, of whom 16% had total dentures and 1% fixed implants. One per cent had no teeth replacements at all. There were 87 patients who suffered from various forms of cancer and were treated with both chemotherapy and radiotherapy. The other 65 patients were treated for other severe medical diagnoses (i.e. cardiovascular disease, pulmonary disease and impaired general health).

Oral assessment tools (staff assessment)

The ROAG was used by the nursing staff to assess the oral health status. In the ROAG, the following categories are included: voice, lips, mucous membranes, tongue, gums, teeth/dentures, saliva and swallowing (see Appendix 1). Each category is described and rated (1 = healthy; 2 = moderate oral health problem; 3 = severe oral health problem). A dental hygienist trained the nursing staff to perform oral assessments using the ROAG. This training session included a lecture on oral health problems.

Patient assessment

The patients assessed their own oral health using a questionnaire. The questions concerned: pain, mouth dryness, saliva consistency, ability to speak, ability to perform oral health care, swallowing, changes in taste, lips, oral mucosa and experience of a clean mouth. A 10-point Likert scale ranging from 'no discomfort' to 'the worst conceivable discomfort' was used to measure the symptoms (see Appendix 2).

Ethics

The study was accepted by the hospital principal and senior clinician at each of the hospitals and wards included in the study. The nursing staff informed the patients about the study, both verbally and in writing, and received their written consent. The study was approved by the Ethics Committee at Lund University (LU 613-98).

Analysis

The categories in the ROAG were compared with the corresponding questions on the patient assessment tool,

as shown in Table 1. A comparison was made between assessments by both patients and nursing staff.

The ratings in the ROAG were dichotomized as follows: 1 = level 1 (healthy), 2 = levels 2 and 3 (oral health problem) (Svensson 2001; 2003). The patient assessment tool was dichotomized as follows: 1 = levels 1–5 and 2 = 6–10 (Svensson 2001; 2003).

Cohen's kappa coefficient and percentage agreement were calculated as a measurement of the agreement between the nursing staff's assessments and patients' assessments.

It should be noted that there is a problem with analysis levels in the database, as several assessments were performed for each individual (Kreft & Leeuw 2002). This creates dependence in the data, which means that standard analysis methods cannot be used as a matter of course. The solution to this problem is to aggregate the data so that the individual assessments are raised to the level of the individual patient. Standard analysis methods can then be used. The statistical software package, SPSS 13.0 with the 'aggregate' function, was used (Kreft & Leeuw 2002).

Table 1. A description of the comparisons that were made in patient and staff assessments

Questions on the patient assessment form	Categories on the staff assessment form
Q 4, can talk normally	Voice
Q 5, lips are very moist	Lips
Q 1, no mouth pain	Oral mucosa
Q 10, the gingiva feels normal	Gums
Q 7, can easily manage my own mouth care	Teeth, dentures
Q 2, adequate amount of saliva	Saliva
Q 6, can swallow easily	Swallowing

RESULTS

In all, 1471 nursing staff assessments and 1013 patient assessments were collected, of which 359 assessments were made on the same individuals and at the same time. These 359 assessments were made on 152 patients.

When comparisons were made of how the nursing staff and patients assessed the oral status, a high level of percentage agreement was found (Table 2). In these assessments, with the exception of oral mucosa and teeth, the percentage agreement was >80, with a range of 75–87. The kappa coefficient showed moderate agreement (Altman 1991), >0.40, with the exception of teeth and oral mucosa. The assessment of teeth produced the poorest kappa value (0.14) (Table 2). When there was a disagreement, the staff assessed the oral health status as being significantly poorer than the patients did (Table 2).

DISCUSSION

Method

The nursing staff used the assessment tool, the ROAG, that is rated on a 3-point scale. This tool was originally developed in the USA (Eilers *et al.* 1988) but it has been translated, modified and tested on both cancer patients and elderly patients in Sweden (Andersson *et al.* 1999, 2004) and is therefore thought to be a valid instrument. To calibrate themselves, the nursing staff were given training before the start of the study to enable them to use the ROAG. Andersson *et al.* (2002) tested the agreement between oral assessments made by registered nurses and a dental hygienist after a 3-h training session in oral assessments for the registered nurses. The results revealed that there were differences, but also that nurses could be rec-

Table 2. Comparison between the nursing staff and the patients' assessments of oral status when using percentages and Cohen's kappa coefficient

Variable	% agreement	% staff assessed worse	% staff assessed better	Kappa coefficient
Voice n = 356	81	17	2	0.42
Lips n = 357	81	13	7	0.50
Oral mucosa n = 359	75	24	1	0.26
Gums n = 358	86	10	4	0.45
Teeth n = 300	76	20	5	0.14
Dentures n = 167	84	11	4	0.41
Saliva n = 358	82	9	9	0.39
Swallowing n = 358	87	11	2	0.59

ommended to make oral assessments. The reliability of the present study is therefore regarded as satisfactory, as both the registered nurses and auxiliary nurses made oral assessments after receiving equivalent training.

The patient assessment tool, designed by Kosac *et al.* (1996) and modified and translated by Öhrn *et al.* (2001a), was used to capture patients experiences of oral problems. The reliability of the tool has been tested using Cronbach's alpha and has been found to exceed 0.60, which is regarded as the limit value (Burns & Grove 1993; Öhrn *et al.* 2001a). In the present study, the tool was further modified from a 100-mm Visual Analogue Scale (VAS) scale to a 10-point Likert scale ranging from 'No problems in the mouth' to 'The worst conceivable problems'. The modification of the patient tool had not been tested before the present study, but there is no reason to believe that the Likert scale response format including 10 different steps was less valid than the VAS.

When comparisons were made between nursing staff and patient assessments, it emerged that the percentage agreement values were far better than the kappa coefficients. One reason for this bias could be that there is a high level of agreement in the assessments in which no problems exist (Altman 1991). In this study, a mean of 72% (range 65–78) of the assessments were established as healthy by both the nursing staff and the patients. Furthermore, there were few assessments of disagreement, thereby making it worthwhile to report both the percentage agreement and the kappa coefficient.

Because of the study design, in which the nursing staff asked the patients for consent to participate, we had no control of the dropouts. The patients that did not want to participate in the present study were either in too poor a condition or regarded themselves as not relevant for assistance with oral health care, as it was reported by the nursing staff. It is not possible to compare the assessments between staff and patients who are severely ill and unable to respond to questionnaires. There is no reason to believe that there is greater disagreement between staff and patients' assessments for patients who were healthy enough to take care of their oral hygiene and refused to participate for that reason.

In this respect, the study material has been selected to comprise patients that were interested to be included in the study. The intention was that the assessments should be completed every day, but some patients found this impossible. They also thought it was difficult to understand the content of the questions in the self-rated assessment tool and needed help with the reports. The nursing staff found this time consuming, which resulted in some

dropouts. For ethical reasons, the nursing staff was not expected to persuade the patients to participate.

In this study, the patients were initially interested in making the self-assessments, but a rapid deterioration in health status meant that some patients were unable to complete their reports. This could also influence the validity of the tool, as in some cases the assistance of the nursing staff was required to perform the assessments. The patients' period of hospitalization also varied in terms of the number of days spent in hospital, which also could affect the results. Patients who spent a longer time in hospital may have been influenced when it came to their attitude to oral health when performing daily oral assessments. This could also be the situation for the nursing staff, when evaluations of their oral findings in the patients were repeated on a daily basis. There might be a risk of distorting observations in the direction of what has previously been observed.

Results

In general, there was good agreement between staff assessments and patients' reported oral health. The most obvious disagreement related to teeth and oral mucosa. This could partly depend on the difficulties involved in comparing two different instruments. Patients reported on a 10-point Likert scale whether they were able to perform oral hygiene properly and staff reported whether the teeth were clean and had no cavities. Patients could very well report that they were able to perform proper oral hygiene and yet plaque could still be present. This is one reason why it is necessary to examine the oral cavity regularly. Performing good oral hygiene could be a difficult task, especially during hospitalization and severe illness. The staff assessment of the oral mucosa was compared with the patients' experiences of pain. The mucosa could be reddish without pain worse than 5 on a scale from 1 to 10. Xerostomia was the condition that staff most often graded as better than patients and this is in agreement with Löfmark *et al.* (1999), who reported an underestimation of dry mouth from both registered nurses and nursing students. This is notable, as it is a very common and very unpleasant condition that needs to be observed and alleviated.

Good oral health care should be one of the characteristics of good nursing care, with oral health care as one of the fundamental nursing care activities. Patients who are greatly dependent on care cannot be expected to take responsibility for their oral health but need help from the nursing staff (Wårdh *et al.* 2002; Hancock *et al.* 2003). It is therefore important that, from the very first contact, nurses examine and document the patient's oral health status, risk

factors and ability to handle his or her own oral care (Ehrenberg & Ehnfors 2001). From a holistic viewpoint, there is a need for more multidisciplinary collaboration between nursing and dentistry (Nieweg *et al.* 1992; Björvell 2002). Paulsson *et al.* (1999) reported that supervisory staff nurses also requested standards for oral health care, including compulsory documentation, as a necessity for the successful administration of oral health care. This was confirmed by Epstein and Chow (1999) who recommended that national guidelines should be drawn up in order to give cancer patients good medical and oral care.

In this study, the patients described their oral health status as being better than the nursing staff observed. This result is in accordance with Vigild (1993), who reported that there was a discrepancy between assessed treatment need and perceived need by elderly people in nursing homes.

It is interesting to note that, in the present study, the patients did not say that it was offensive to have their mouths examined by the nursing staff. This has also been confirmed by Andersson *et al.* (2002) and Öhrn *et al.* (2003). Other studies have, however, reported the opposite; patients who refuse to open their mouths and healthcare staff who do not wish to violate the patient's integrity and therefore choose not to administer oral health care (Ghezzi & Ship 2000; Wårdh *et al.* 2000).

Routines need to be created to ensure that oral problems are identified before they become so extensive that effective treatment is difficult to administer. Consequently, oral examinations need to be done regularly by nursing staff, and for patients with cancer on a daily basis. In addition, findings need to be documented properly. The ROAG is a valid and reliable instrument and is in agreement with patients' experiences of oral problems and is hereby an appropriate instrument for oral assessment and documentation.

CONCLUSION

In the present study, it was shown that there was a good agreement between assessments performed by the nursing staff and patients. The ROAG is a useful instrument for the nursing staff to make the patients' oral health problems visible. In addition, it could be useful to evaluate the oral health care measures that should be implemented for various oral problems.

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REFERENCES

Altman D.G. (1991) *Practical Statistics for Medical Research*. Chapman & Hall/CRC, London, UK.

Andersson P., Hallberg I.R. & Renvert S. (2002) Inter-rater reliability of an oral assessment guide for elderly patients residing in a rehabilitation ward. *Special Care in Dentistry* **22**, 181–186.

Andersson P., Persson L., Rahm-Hallberg I. & Renvert S. (1999) Testing an oral assessment guide during chemotherapy treatment in a Swedish care setting: a pilot study. *Journal of Clinical Nursing* **8**, 150–158.

Andersson P., Renvert S., Hallberg I.R., Lorefält B. & Unosson M. (2004) Oral health problems in elderly rehabilitation patients. *International Journal of Dental Hygiene* **2**, 70–77.

Björvell C. (2002) *Nursing documentation in clinical practice. Instrument, development and evaluation of a comprehensive intervention programme*. Thesis. University of Stockholm, Stockholm, Sweden.

Burns N. & Grove S.K. (1993) *The Practice of Nursing Research: Conduct, Critique and Utilisation*. Saunders, Philadelphia, PA, USA.

Ehrenberg A. & Ehnfors M. (2001) The accuracy of patient records in Swedish nursing homes: congruence of record content and nurses' and patients' descriptions. *Scandinavian Journal of Caring Sciences* **15**, 303–310.

Eilers J., Berger A.M. & Petersen M.C. (1988) Development, testing and application of the Oral Assessment Guide. *Oncological Nursing Forum* **15**, 325–330.

Epstein J.B. & Chow A.W. (1999) Oral complications associated with immonosuppression and cancer therapies. *Oral Infection* **3**, 901–923.

Ghezzi E. & Ship J. (2000) Systematic diseases and their treatments in the elderly: impact on oral health. *Journal of Public Health Dentistry* **60**, 289–299.

Graham K.M., Pecoraro D.A. & Ventura M. (1993) Reducing the incidence of stomatitis using quality assessment and improvement approach. *Cancer Nursing* **16**, 117–122.

Hancock P.J., Epstein J.B. & Sadler G.R. (2003) Oral and dental management related to radiation therapy for head and neck cancer. *Journal of Canadian Dental Association* **69**, 585–590.

Heimdal A. (1999) Prevention and management of oral infections in cancer patients. *Support Care Cancer* **7**, 224–228.

Kosac R., Barker G., Williams K., Tira D., Braun J. & Schubert M. (1996) Dental hygienist impact on bone marrow transplant mucositis, oral self-care compliance and oral health-related quality of life. Eleventh Annual Meeting of the International Society for Oral Oncology, Stockholm, 13–15 June, p. 34.

Kreft I. & Leeuw J. (2002) *Introducing Multilevel Modelling*. SAGE publications, London, UK.

Löfmark A., Hannersjö S. & Wikblad K. (1999) A summative evaluation of clinical competence: students' and nurses 'perception of inpatients' individual physical and emotional needs. *Journal of Advanced Nursing* **29**, 942–949.

MacEntee M.I., Thorne S. & Kazanjian A. (1999) Conflicting priorities in oral health in long-term care. *Special Care in Dentistry* **19**, 164–172.

Nieweg R., van Tinteren H., Poelhuis E.K. & Abraham-Inpijn L. (1992) Nursing care for oral complications associated with chemotherapy. A survey among members of the Dutch Oncology Nursing Society. *Cancer Nursing* **15**, 313–321.

Öhrn K. & Sjödèn P.-O. (2003) Experiences of oral care in patients with haematological malignancies or head and neck cancer. *European Journal of Cancer Care* **12**, 274–282.

Öhrn K., Wahlin Y.-B. & Sjödèn P.-O. (2001a) Oral status during radiotherapy and chemotherapy: a descriptive study of patients' experiences and the occurrence of oral complications. *Support Care Cancer* **9**, 247–257.

Öhrn K., Sjödèn P.-O., Wahlin Y.-B. & Elf M. (2001b) Oral health and quality of life among patients with head and neck cancer or haematological malignancies. *Support Care Cancer* **9**, 528–538.

Öhrn K., Wahlin Y.-B. & Sjödèn P.-O. (2000) Oral care in cancer nursing. *European Journal of Cancer Care* **9**, 22–29.

Paulsson G., Nederfors T. & Fridlund B. (1999) Conceptions of oral health among nurse managers. A qualitative analysis. *Journal of Nursing Management* **7**, 299–306.

Svensson E. (2001) Guidelines to statistical evaluation of data from rating scales and questionnaires. *Journal of Rehabilitation Medicine* **33**, 47–48.

Svensson E. (2003) Statistical methods for repeated qualitative assessments on scales. *International Journal of Audiology* **42**, 13–22.

Vigild M. (1993) Benefit related assessment of treatment need among institutionalised elderly people. *Gerodontology* **10**, 10–14.

Wallace K.G., Koeppel K. & Senko A. (1997) Effect of attitudes and subjective norms on intention to provide oral care to patients receiving antineoplastic chemotherapy. *Cancer Nursing* **20**, 34–41.

Wårdh I., Berggren U., Andersson L. & Sörensen S. (2002) Assessments of oral health care in dependent older persons in nursing facilities. *Acta Odontologica Scandinavica* **60**, 330–336.

Wårdh I., Hallberg L., Berggren U., Andersson L. & Sörensen S. (2000) Oral health care – A low priority in nursing. *Scandinavian Journal of Caring Sciences* **14**, 137–142.

APPENDIX 1

Category	Method	Numerical and descriptive rating		
		1	2	3
Voice	Converse with the patient	Normal	Deep or rasping	Difficulty talking or painful
Lips	Observe	Smooth and pink	Dry or cracked, and/or angular chelitis	Ulcerated or bleeding
Mucous membranes Dentures remove	Observe Use light and mouth mirror	Pink and moist	Red, dry and/or areas with coating	Blisters or ulceration with or without bleeding
Tongue	Observe Use light and mouth mirror	Pink, moist and papillae present	Dry, red, no papillae present	Blisters or ulceration with or without bleeding
Gums	Observe Use light and mouth mirror	Pink and firm	Edematous and/or red	Bleeding spontaneously
Teeth	Observe Use light and mouth mirror	Clean, no plaque or debris	(1) Plaque or debris in local areas (2) Decayed teeth	Plaque or debris generalized
Dentures	Observe	Clean and functioning	(1) Plaque or debris (2) Function badly	Not used
Saliva	Slide a mouth mirror along the buccal mucosa	No friction between the mouth mirror and mucosa	Slightly increased friction, no tendency for the mirror to adhere to the mucosa	Significantly increase friction, the mirror adhering or tending to adhere to the mucosa
Swallow	Ask the patient to swallow Observe Ask the patient	Normal swallow	Some pain or difficulty on swallowing	Unable to swallow

Revised oral assessment guide. Modified from Eilers *et al.* (1988) with permission from Nebraska Medical Center.

APPENDIX 2

Date:_____

Please rate how your mouth feels now.

1. No mouth pain	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Worst possible mouth pain
2. Adequate amount of saliva	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	No saliva
3. Saliva feels normal	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Saliva feels very thick
4. Can talk normally	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Can not talk at all
5. Lips are very moist	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Worst possible lip dryness
6. Can swallow easily	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Can not swallow at all
7. Can easily do my own mouth care	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Impossible to do my own mouth
8. Very good taste in mouth	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	worst possible taste in mouth
9. Mouth feels very clean	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Mouth feels very dirty
10. The gingiva feels normal	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	The gingiva feels inflamed

Modified from Kosac *et al.* (1996) with permission from University of Missouri-Kansas City, 1996.