Nurses’ knowledge of the provision of oral care for patients with dysphagia

Yuwrjaj Durgude, Naomi Cocks

Yuwrjaj Durgude is a Speech & Language Therapist and Qualified Nurse, Whittington Health, Islington REACH Intermediate Care Team, London; Dr Naomi Cocks is a Senior Lecturer, School of Health Sciences, City University, London

Email: naomi.cocks.1@city.ac.uk

ABSTRACT

There has been little research on the provision and adaptation of oral care for patients with dysphagia in nursing homes. This study collected data via a questionnaire specifically on the knowledge of oral hygiene and the current oral care practices for patients with dysphagia. Fifty-three registered nurses (RNs) completed the questionnaires. The results of the questionnaire indicated that although RNs gave more oral care daily to their patients with dysphagia than to their patients without dysphagia, they had limited knowledge of drugs that affect oral care and of medical conditions associated with poor oral hygiene. Of particular concern was the limited knowledge of the link between dysphagia, oral hygiene and pneumonia and that some of the current oral care practices may be putting patients who have dysphagia at increased risk of developing pneumonia. These results are discussed in light of previous research on the topic and recommendations are made with regards to oral care training.

KEY WORDS

Registered nurses • Oral care • Dysphagia (swallowing difficulties) • Nursing homes • Pneumonia

Oral care is important for both wellbeing and quality of life (Chalmers and Pearson, 2005). Poor oral health can result in pain, difficulties in chewing, difficulties in swallowing and reduced quality of life (Papas et al, 1998). Furthermore, a healthy mouth has effective antibacterial functions that contribute to the body’s defence against infection (Sheiham et al, 2002). Poor oral functioning, hygiene or chronic oral problems can lead to systemic illness that can be life-threatening (Paju and Scannapieco, 2007); for example, poor oral care has been linked to pneumonia (Mari and Kaplan, 2003). This issue is especially important for patients in nursing and care homes, or vulnerable individuals in the community, who are often dependent on others for oral care (Langmore et al, 2002).

Several studies have identified links between the general oral health of older adults and the severity of systemic diseases (Desvarieux et al, 2005). Links between diabetes and periodontal disease have been established, especially with patients in residential care (Tsai et al, 2002). Oral infection, particularly gum disease, is also associated with increased risk of stroke (Grau et al, 1997). Conditions such as renal failure, malnutrition, dehydration and receiving oxygen therapy can increase an individual’s risk of oral complications. Such patients, who are often cared for in nursing and care homes, require more attention to their oral care (Yoneyama et al, 2002).

O

Oral care and dysphagia

Poor oral care has been linked to community-acquired pneumonia (Terpenning et al, 2001; Shay, 2002; El-Sohl et al, 2004). Two modifiable risk factors that could lead to the development of community-acquired pneumonia are patients’ oral care and swallowing difficulties (dysphagia) (Langmore et al, 2002). By managing oral care and dysphagia (either individually or concurrently depending on the individual patient’s needs), the risk of developing pneumonia can be decreased (Langmore et al, 2002).

Risk factors that predispose patients with dysphagia to poor oral care in nursing and care homes include:

• Dependence on others for oral care
• Having limited hand dexterity, or cognitive impairment
• Having multiple medical comorbidities
• Being immune-suppressed
• Receiving non-oral feeding (Griffiths et al, 2000).

It is therefore crucial for registered nurses (RNs) to have up-to-date knowledge of the risks associated with dysphagia and oral hygiene.

Registered nurses’ knowledge and practice

There has been limited research into what constitutes best practice for provision of oral care (British Society of Gerodontology, 2010). However, Addy et al (1992) have shown that many preventative oral care strategies are effective for the removal of plaque and in the prevention of periodontal diseases. The most obvious are using a simple toothbrush and denture care. It has been suggested that foam swabs are effective for cleaning the soft tissues but ineffective for removing plaque (Pearson and Hutton, 2002).

Two publications, by Griffiths et al (2000) and the British Society of Gerodontology (2010), provide an evidence base for oral care, and are best practice guidelines for managing oral hygiene in patients with dysphagia. The guidelines cover the appropriate use of oral hygiene material, care for patients with teeth and without, and denture care (Griffiths et al, 2000). These guidelines mainly focus
on patients with stroke (British Society of Gerodontology, 2010) and are not specific enough for all patients with dysphagia in the community who may have other diagnoses, e.g. dementia. There have been no studies that have investigated whether the use of mouthwash for patients with dysphagia results in an increase risk of aspiration pneumonia. However, because mouthwash is a thin fluid, and patients with dysphagia often are at increased risk of aspirating thin fluids, the use of mouthwash with patients with dysphagia is likely to place them at a higher risk of developing aspiration pneumonia (Logemann et al, 2008).

Nursing literature indicates that nurses’ knowledge of oral hygiene is limited (Fitzpatrick, 2000). Poor knowledge has the potential to compromise the quality of patient care and result in unsafe practice (Carter, 2009). Rak and Warren (1990) conducted a 40-item questionnaire survey of nurses’ knowledge of oral care using a self-selected sample of 26 RNs. They reported gaps in knowledge regarding gingivitis and periodontal disease, as well as the effects of systemic problems and medications on oral health. Similarly, Adams’ (1996) questionnaire study revealed that RNs’ (n=34) oral health knowledge was inadequate. In the Adams (1996) study, specific gaps in knowledge were found in relation to the frequency of oral care, the type of drugs that affect oral health and the effectiveness of strategies used to improve oral hygiene. However, it is important to note that both the Rak and Warren (1990) and the Adams (1996) study took place in hospitals; it is possible that RNs who work in other settings have a better knowledge of oral care. Currently, there are no published studies which have investigated oral care knowledge of RNs in other settings, for example in nursing homes. Furthermore, there are no published studies that have specifically investigated RNs’ knowledge and practice with regards to oral care for patients with dysphagia.

The current study

The current study investigated RNs’ knowledge of oral hygiene and reported practice of oral care for patients with dysphagia in six nursing homes in a single London borough. It used a questionnaire, which focused on RNs’ knowledge and understanding of oral care, their current oral care practice and to a lesser extent on their knowledge of the role of the speech and language therapist (SALT) in supporting nurses in this crucial work. Based on the findings of previous research investigating RNs’ knowledge in hospital settings (Rak and Warren, 1990; Adams, 1996), the hypothesis was that RNs in nursing homes would lack the knowledge required to provide adequate oral care to patients with dysphagia.

This study overcame the limitations of previous research by first investigating the extent of the limitations in RNs’ knowledge of oral care with regard specifically to patients with dysphagia. Secondly, sample sizes in existing research have tended to be small (fewer than 35 participants). This research collected data from more participants (53) so better reflected the opinions of the target population; however, it is important to note that the sample size remains relatively small. Thirdly, while all of the above research was based in hospitals, the current study was conducted in nursing home settings, allowing for a more comprehensive understanding of RNs’ knowledge in a range of settings. Lastly, RNs’ understanding of the role of the speech and language therapist (SALT) in mouth care has not previously been examined. SALTs often attempt to minimize the risk factors of mouth care and swallowing and collaborate with RNs in giving oral care, as part of the SALT’s treatment of speech and dysphagia (Royal College of Speech and Language Therapists (RCSLT), 2005). It is not known to what extent RNs are aware of this. This study aimed to determine what RNs’ understanding of the SALT’s role is in relation to oral care.

Method

Data was collected from 53 RNs by means of a modified version of a questionnaire developed by Adams (1996). A 20-item questionnaire was used. Modifications were made so that questions specifically covered RNs’ understanding of oral care with patients with dysphagia, adaptations of mouth care with these patients, consequences of poor oral care on associated medical conditions, and the role of the SALT in mouth care. None of these areas were included in Adams’ questionnaire. These modifications meant that the focus of this study was on patients with dysphagia in nursing homes, where there has been very little research.

Face and content validity of the questionnaire were assessed by two senior RNs and two SALTs, who examined the questionnaires and made amendments. Respective managers handed questionnaires to 60 RNs and 53 completed the questionnaires (88.3% return rate). To enable RNs working a range of shifts to participate, the main study took place over seven days. Confidentiality and anonymity were assured and the researcher collected the questionnaires from drop boxes on the final day.

Questionnaires and analyses

The questionnaire consisted of open questions, closed questions and questions which required responses using a 7-point Likert scale. Questions 1 to 3 asked for personal data, which included oral care training and length of time working in nursing homes. Questions 4 to 20 asked for information about knowledge relating to oral care current practices and the role of SALT. Descriptive analyses were carried out for Q1 to Q15 and qualitative data were analysed by identifying recurring topics and themes for Q16 to Q20.

Ethics

This study was approved by the City University School of Community and Health Sciences Ethics Committee.

Results

On average the participants who took part in this study had 5.9 years of nursing experience (range: 2 months–30...
years), and 5.8 years of experience working in nursing homes (range: 2 months–30 years).

Of the 53 participants, 75.5% (n=40) had been qualified for over six years and the majority of participants (85%, n=45) had worked in a nursing home for more than two years (see Figure 1 and 2). In addition, 66% (n=35) of the participants had undergone a post-registration update on oral care. This suggested that a high proportion of RNs working in these nursing homes were very experienced and had received oral care training.

Figure 1. Distribution according to the number of years the participants had worked as a qualified nurse

![Figure 1](image)

Figure 2. Distribution according to the length of time the participants had worked in nursing homes

![Figure 2](image)

Participants’ knowledge of oral health

Knowledge of oral health was measured by eight questions (Q10–12; Q15–17; Q19–20). A range of questions were used to enable a wider and more comprehensive range of responses (Pring, 2005). Three of those eight questions used the 7-point Likert scale. For these questions, RNs were asked to indicate their level of agreement with a statement/question in relation to oral care. Where Likert scales were used, higher numbers (6–7) were associated with agreement, lower numbers (1–2) with disagreement.

Generally, RNs believed that brushing and flossing prevented gum disease, that dentures should be removed at night and that as people age they naturally lose their teeth. Over 75.5% (n=40) agreed strongly with the question on gum disease (Q10) and dentures (Q11), which is in line with current literature. In contrast, 50.9% (n=27) strongly agreed with the statement on ageing and loss of teeth, which is incorrect. Tooth loss is not an issue of age but rather of gum diseases and dental caries (Shay, 2002). This showed that more than half of the RNs surveyed had incorrect information about dentition and ageing.

In a ‘yes’ and ‘no’ question on effects of drugs, 56.6% (n=30) of RNs reported an awareness of adverse drug effects while 43.4% (n=23) were unaware. In an open question, RNs were asked to list the drugs that adversely affected oral health. All of the RNs who stated that they were aware of drugs affecting oral health were able to identify at least one drug. The most frequent type of drugs identified were iron tablets (17% of participants) and antibiotics (13.2% of participants). Other generic types of drugs (epileptic drugs and antidepressants) were identified by 3.8% of participants and 1.9% of participants respectively. Specific drugs named were hyoscinc (3.8% of participants), phenytoin (3.8% of participants), and tetracycline (3.8% of participants).

The number of drugs identified by each RN was very limited. One nurse (1.9%) identified three drugs; two nurses (3.8%) identified two drugs; 32 nurses (60.4%) did not answer this question, and in one nursing home all the nurses (n=9) did not answer this question. This may indicate a general lack of knowledge on drugs that adversely affect oral health.

Participants were asked to list medical conditions that poor oral hygiene was a risk factor for. The main findings were that: 11.3 % (n=6) associated poor oral hygiene as a risk factor for gingivitis, heart complications and thrush. Only 3.8% (n=2) associated poor oral hygiene as a risk factor for pneumonia (see Figure 3). Responses were equally poor for the remaining risk factors, with 37.7% (n=20) of RNs having the correct knowledge based on the literature relating to medical conditions secondary to poor oral hygiene. However, participants identified rotten teeth, halitosis and inflamed gums as medical conditions, which is incorrect because those are symptoms (Yoneyama et al, 2002). In summary, this implies that these RNs have limited knowledge of medical conditions secondary to poor oral care. This data could also indicate they did not
understand what the terms ‘risk factor’ and ‘medical conditions’ meant, or that the wording of the question was difficult to understand.

**Registered nurses’ self-reported practices**

RN's self-reported practices were measured by six questions (Q4 to Q9). About half of the RNs reported that they were confident to perform oral care for their patients; 62% of the RNs agreed that all residents in their units required assistance with mouth care; 90% of the RNs regarded oral care as a priority. However, over 90.6% (n=48) of RNs disagreed with the statement that sufficient time is available in their daily routine for them to perform oral care. The data suggests that the RNs regard oral care as a priority but are not given sufficient time to perform it.

With regards to oral care, 68% (n=36) of RNs reported that they performed oral care twice or more daily for patients without dysphagia, in contrast to 83% (n=44) RNs who reported that they performed oral care twice or more daily for their patients with dysphagia (see Figure 4).

However, while 62.3% (n=33) of RNs performed oral care three times or more daily for their patients with dysphagia, only 9.4% (n=5) of RNs performed oral care three times or more daily for their patients without dysphagia. In other words, RNs in this study gave more oral care daily to their patients with dysphagia than to their patients without dysphagia.

Results in relation to strategies of oral care used are summarised in Figure 5. Overall, RNs reported that they used the full range of strategies for both patients with dysphagia and patients without dysphagia. ‘Cleaning dentures’ was the most popular strategy in both patients with dysphagia (49.1%, n=26) and those without (70%, n=37). ‘Brushing gums’ (41.5%; n=22) and ‘brushing tongue’ (35.3%; n=19) were the least popular strategies for patients with and without dysphagia.

When comparing what RNs reported for frequency of use of oral care materials for patients with and without dysphagia, differences were found in the frequency of use of foam swabs, adult toothbrushes and mouthwash. For patients with dysphagia, foam swabs were ‘always’ used by 49.1% (n=26) of participants and this was the most popular strategy. However, for patients without dysphagia, foam swabs were ‘always’ used by only 41.5% (n=22) of participants and this was the third most popular strategy. For patients with dysphagia, adult toothbrush was ‘always’ used by 28.3% (n=15) of participants and this was the second most popular strategy. However, for patients without dysphagia, adult toothbrush was ‘always’ used by 54.7% (n=29) of participants and this was also the second most popular strategy. For patients with dysphagia, mouthwash was ‘always’ used by only 39.6% (n=21) of the participants. Figure 6 depicts the frequency of use of oral care strategies for patients with dysphagia.

RNs were asked to list their preferred materials for oral care (see Figure 7). RNs could list one or more materials. The responses showed that toothbrush/pastes, mouthwash and foam swabs were the most preferred items, of which toothbrush/pastes was favoured by 27 RNs and mouthwash was favoured by 25 RNs. Foam swabs (n=11) were
found in this study than in the study by Adams (1996). In
in RNs’ knowledge of drugs that affect oral health were
identified drugs that adversely affect oral health. Wider gaps
These findings will be discussed in more detail below.
ally targeted. This is what has been reported in previous
the least preferred items. It is worth noting that 12 RNs
did not answer the question, which may suggest that RNs
did not understand the question, have no preference with
regard to materials for oral care, or felt that the question
was too general.

Discussion
The purpose of this study was to examine RNs’ knowledge
of oral hygiene and the provision of oral care in nursing
homes. The study differed to previous research on the topic
that, in addition to obtaining information about oral
hygiene and care generally, more specific information was
collected about the awareness of the importance of oral
care in patients with dysphagia and the need to adapt oral
care programmes for this population. The study found that
RNs had gaps in their oral hygiene knowledge, particularly
in relation to medical conditions and medications associ-
ated with poor oral hygiene. Of particular concern was
the limited awareness of the importance of oral care for
patients with dysphagia in reducing the risk of pneumonia.
However, despite this gap in knowledge, RNs reported that
they gave mouth care to patients with dysphagia more
frequently. They also reported that they used different materi-
als for oral care for patients with and without dysphagia.
These findings will be discussed in more detail below.

In the current study, very few participants appropriately
identified drugs that adversely affect oral health. Wider gaps
in RNs’ knowledge of drugs that affect oral health were
found in this study than in the study by Adams (1996). In
particular, only 17% of RNs in the current study identified
antibiotics (either generically or by specific type), as com-
pared with 64.7% in Adams (1996). Only 1.9% of RNs
in this study correctly identified more than three drugs,
compared to 23.5% of RNs in Adams (1996). In addition,
60.4% of RNs did not answer this question in the current
study, compared to 13.2% with Adams (1996). This suggests
that RNs in this study had more gaps in their knowledge
in relation to the drug effects than those in Adans (1996).
One reason for these discrepancies could be that Adams’
study took place in local district general hospitals as opposed
to nursing homes. Another could be differences in
nurse training since 1996 or differences in nurse experience
in the two contexts. Future research should explore why
there were differences between the two groups of nurses
with regards to their knowledge of the impact of medica-
tion on oral health.

There were also significant gaps in the participants’
knowledge of medical conditions associated with poor oral
hygiene. Of particular concern was the finding that only
3.8% (n=2) of the participants associated poor oral hygiene
with pneumonia, despite evidence to suggest this is the case
(Terpenning et al, 2001; Shay, 2002; El-Sohl et al, 2004).
This data indicates an acute lack of awareness of this issue,
which is potentially dangerous for patients with dysphagia,
placing them at increased risk of developing pneumonia
(Langmore et al, 2002).

The finding that the participants in the current study had
gaps in their knowledge in relation to oral hygiene was sur-
prising given their profiles. Many of the participants were
experienced nurses and had undergone oral care training.
Furthermore, nearly all of the participants in the current
study reported that oral care was a priority. So why did
they have gaps?

The current study did not ask RNs how recently they
had been trained in oral care. It is possible that they had
received oral care training a long time ago. Furthermore,
this research did not investigate the topics that were cov-
ered in RNs’ oral care training or how much training they
had been given. It could be that these areas are not specifi-
cally targeted. This is what has been reported in previous
research on the topic. Longhurst (1998) found that oral care
training in many nurse training establishments (NTEs) was
inadequate, and highlighted that 79% of 85 NTEs in the
UK received no input from dentists and received no up-to-
date information on mouth care instruction.

Similarly, the results from the current study suggest that
the RNs may not have received training from SALTs in
relation to dysphagia and mouth care. In particular, there
was limited evidence that the participants were aware that
patients with dysphagia and poor mouth care are at signifi-
cant risk of developing pneumonia. Regular joint SALT/
RN training specific to oral care has also been suggested by
Pace and McCullough (2010). The majority of participants
appropriately identified swallowing issues as the role of the
SALT in their units. However, SALTs also often attempt to
minimize the risk of a patient developing pneumonia by
collaborating with RNs in setting up oral care programmes (RCSLT, 2005). Of the 78% of RNs who identified swallowing issues as part of the SALT role, only three RNs mentioned mouth care.

However, despite the RNs not being aware of the importance of regular mouth care for patients with dysphagia, their practice did not completely reflect this. Interestingly, the RNs in this study reported that they gave mouth care more frequently to their patients with dysphagia than to their patients without dysphagia. Reassuringly, more than half of the participants reported that they performed mouth care three times or more daily for their patients with dysphagia in contrast to only a very small number of participants who performed mouth care three times or more daily for their patients without dysphagia. This mismatch between knowledge and practice suggests that the RNs may have been instructed to provide frequent oral care to patients with dysphagia but they were not aware of why they were doing this.

Some differences were also found in the materials used for oral care by RNs for patients with and without dysphagia. In particular, there were concerning findings that suggested that instead of reducing risk of pneumonia, some of the current oral care practice by RNs may be putting patients with dysphagia at an increased risk of developing pneumonia. Of particular concern was that more than half of the participants in the study reported always or sometimes using mouthwash with patients with dysphagia. Patients with dysphagia are at risk of aspirating mouthwash, as it is a thin liquid (Logemann et al, 2008). This may therefore place these patients at increased risk of developing aspiration pneumonia.

There were, however, some more comforting findings with regards to the use of oral care equipment. While previous studies by Rak and Warren (1990) and Adams (1996) have indicated that RNs' preferred strategy was foam swabs, in this study ‘foam swabs’ was not as popular as using toothbrushes. The difference between the current study and the previous research on this topic may be due to recent research which indicated that foam swabs were inadequate in removing plaque and debris (Pearson and Hutton, 2002). Alternatively, it may be due to the difference in settings in which this research was carried out. Both the Rak and Warren (1990) and the Adams (1996) studies were carried out in acute hospital settings, where patients may have been more unwell. Interestingly however, the current study clearly shows that RNs are still using foam swabs for both patients with and without dysphagia, despite it not being the preferred strategy. Of particular concern was that the RNs in this study reported using foam swabs with patients with dysphagia more often than with patients without dysphagia. Several explanations are possible for the popularity of foam swabs. Literature suggests that foam swabs are easier and quicker to use (Trenter-Roth and Creason, 1986). In addition, these findings may suggest a lack of RN knowledge of the ineffectiveness of using foam swabs and of the
importance of using toothbrush with patients generally and in particular with patients with dysphagia.

Reassurprisingly, the majority of participants reported using ‘adult toothbrushes’ most frequently with patients with and without dysphagia. Toothbrushes are the most effective strategy for removing plaque and reducing gum disease (Pearson and Hutton, 2002). This finding was consistent with the literature, which reports that toothbrushes are frequently used with patients (Barnett, 1991).

Summary
The findings of the current study suggest that the RNs may have significant gaps in their knowledge of oral hygiene and care, in particular in relation to patients with dysphagia. Of particular concern was the lack of knowledge of the relationship between oral hygiene, dysphagia and pneumonia, and the self-reported practices that may be placing patients with dysphagia at increased risk. This is alarming, given the important role that many community nurses have with regard to supporting nursing home and care home staff to ensure evidence-based care is delivered regarding oral hygiene. However, this study only investigated nursing homes in one borough. Further research is needed in a range of community settings and in other nursing homes in order to gain a more comprehensive picture of RNs’ knowledge of oral hygiene and oral care practice.

While further research is needed, this study has led to some recommendations. These include:

1. RNs need more training or more effective training which includes information about medical conditions associated with poor oral hygiene, oral health, drugs that impact upon oral health and the dangers of using mouthwash with patients with dysphagia. A high level of training for RNs regarding oral care is required, especially in relation to patients with dysphagia

2. RN training needs to be evaluated to ensure a consistency between knowledge and practice, thus ensuring an increase in safer patient care. Future research should investigate how much and what type of training leads to best practice

3. Speech and language therapists, in collaboration with RNs, should ensure that high-risk patients receive adequate, consistent oral care to minimize medical complications. In particular, speech and language therapists need to work with RNs and carers to adapt oral care for patients with dysphagia to minimize aspiration

4. Teams should develop a detailed oral care protocol in their setting which is evidence-based (British Society of Gerodontology, 2010).

LEARNING POINTS

- Most RNs regarded oral care as a priority and agreed that all patients in their units require assistance with mouth care. RNs gave more mouth care daily to patients with dysphagia than to their patients without dysphagia

- A significant proportion of RNs used mouthwash with patients with dysphagia, which is potentially dangerous, and continue to use foam swabs which have been proven to be ineffective

- Many RNs who took part in this study had gaps in their knowledge in relation to the effects of drugs on oral health

- A very small proportion of RNs associated poor oral hygiene with pneumonia, which has serious implications for the care of patients with dysphagia
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