

Home based Oral Health Care Strategies in Elderly Medically Compromised Patients- A Comparative Research

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ABSTRACT

Aim

This trial studied the consequences of interventions on the oral cleanliness of the long-term home based elderly.

Methodology

This is a longitudinal study with interventions. After a baseline clinical examination, the patient wards were divided into three groups (A, B and C) and therefore the sort of intervention was randomly assigned. In group A, dental hygienists executed oral hygiene procedures for the subjects once every 3 weeks. In group B, the nursing staff first acknowledged hands-on instructions after which they undertook the charge in case for the subjects' daily oral hygiene. Group C served as a control. Denture hygiene and dental hygiene were recorded at baseline and in the end of 1-year study period. In total, 30 subjects completed the interventions; their mean age was 69.9 years.

Results

The finest result in both denture and dental hygiene was reported when nursing staff at the wards took care of hygiene (group B).The increase in the proportion of those with good denture hygiene was the most prominent in group B (from 11% to 56%). The proportion of subjects with poor overall dental hygiene decreased from 61% at baseline to 57% in the end, for group B from 80% to 48%.

Conclusion

Methodical dental as well as oral care knowledge is essential in case of the nursing staff as they can effectively take of these elderly individuals better with personal attention.

Keywords elderly, institutionalised hospital care, oral cleanliness, intervention.

INTRODUCTION

Oral health is gaining global attention because it's closely linked to general health and therefore the quality of life.¹ because the global population ages, healthcare services for elderly people have been additional enhancing in improving their health and quality of life.^{2,3} Amongst adults above the age of 65 years, missing teeth and chronic dental diseases, like dental caries, periodontal diseases, oral infections oral mucosal lesions and temporomandibular disorders, are common.⁴ Older people often suffer from chronic illnesses that daily medications are needed. One common oral side effect of medicines is hyposalivation. Caries or mucosal infections dramatically increase with the impairment of the saliva function, giving rise to varied oral health complications.^{5,6} These problems make the fulfilment of basic daily needs (e.g., mastication and communication) more problematic, leading to significant physical health problems, such as nutritional deficiency as well as psychosocial suffering (e.g., low self-confidence and social inadequacy). The institutionalized elderly population may be a vulnerable subpopulation and is usually care-dependent with poor oral health.^{7,8} Oral health is closely linked to the OHRQoL, which has become a significant patient-centered parameter for evaluating oral health outcomes.⁹ Self-perceived poor oral health predicts poor self-rated general health, self-esteem and life fulfilment, indicating the conscious and psychological connection between oral health, general health and psychological welfare.¹⁰ The OHRQoL tools assess the welfare of the measured elderly in terms of physical and psychosocial functioning in reference to orofacial concerns.¹¹ Validated and commonly used OHRQoL instruments targeting the elderly include the overall or Geriatric Oral Health Assessment Index (GOHAI),¹² Oral Health Impacts Profile (OHIP)¹³ and Oral Impact on Daily Performance (OIDP).¹⁴ Based on the measurements from these OHRQoL instruments, previous studies have reported a comparatively poor OHRQoL within the institutionalized elderly population thanks to their generally poor oral health. Oral health are often determined by various factors among the elderly, including those that are institutionalized, especially those that have limited functional or self-care ability. As the corresponding awareness among healthcare providers attending institutionalized elderly populations increases, it's important for everybody involved to know and comprehend the oral health challenges this specific vulnerable population faces. The risk factors related to their poor oral health must be identified and appropriately intercepted. Proper oral health among the institutionalized elderly population round the world isn't yet secured. Various studies have provided findings regarding the prevalence, effects then on of common oral health problems of this at-risk group. The knowledge so far remains fragmented.^{15,16} Several oral conditions, like tooth loss, denture wearing, dental decay, and xerostomia, are highly prevalent in older adult populations and have the potential to compromise oral health-related quality of life. As the subjective awareness of dry mouth, xerostomia can occur as a result of reduced salivary flow or be present even when salivary function appears to be normal. While it is a symptom of systemic disease, the most common cause is the use of prescribed medications. Several attempts have been made to create a feasible method to improve the oral health of those elderly living in institutions and long-term facilities.¹⁷⁻¹⁹ A common suggestion underlines the importance of education for nursing staff in dental hygiene as well as the need for dental hygienists to promote oral care. Based on research and clinical experience, experts have developed recommendations and manuals for dental personnel and nursing staff at such institutions.²⁰⁻²²

AIM OF THE STUDY

In the present study, the effect of interventions on the oral cleanliness of the long-term home based elderly was investigated.

METHODOLOGY

This study was carried out in a large unit for the chronically-ill medically-compromised elderly who were being taken care in their homes. Each patient in this unit had a primary nurse taking care of his or her well-being and each primary nurse was responsible for four to six patients. Regarding dental care, these long-term patients received necessary dental treatment on an emergency basis only. Dental professionals provided no dental hygiene measures, but nurses in the wards could provide such services upon request.

Permission to be enrolled in the study was granted by the subjects or their relatives. One investigator performed oral baseline and end examinations of the patients. Following these examinations, all the patients received the necessary oral treatment. After baseline oral examinations, the 10 patient wards were divided into three groups (A, B and C) and the type of intervention for each group was randomly assigned.

Group A: A dental hygienist visited them for approximately 4 hours at 3-week intervals during the 1-year intervention period to provide oral hygiene measures for the subjects. They cleaned the dentures as well as carried out oral prophylaxis with the help of toothbrushes.

Group B: An experienced dental hygienist trained the nursing staff, instructing them in the proper use of toothbrushes and the cleaning of dentures. After training, the nursing staff assumed responsibility for subjects' oral hygiene.

The examinations included assessment of the number of functioning teeth, edentulousness, and the hygiene of dentures and teeth. A tooth was recorded as functioning if its clinical crown was present and could be used in mastication or for prosthetic retention. The subject was considered edentulous if no teeth or tooth remnants were visible in the mouth. Denture hygiene was assessed by examining the mucosal surface of the upper denture, if present; otherwise, the lower denture was inspected. Dental hygiene was determined by means of a modified Visible Plaque Index and evaluated on buccal surfaces of the teeth.²³ Statistical evaluation included the chi-squared test for differences in frequencies, and the t-test for the comparison of means in various subgroups.

RESULTS

Around 30 elderly patients were selected for the present study with some of them under 24-hour observation. (Table 1) Mostly routine toothbrushing was carried out for oral hygiene maintenance apart from interdental brushes, electric toothbrushes. (Table 2) The proportion of subjects with poor denture hygiene decreased from 30% at baseline to 18% in the end. We observed that in case of group B, had moderate amount of dental hygiene. The proportion of those subjects with good denture hygiene increased in all groups, but the change was most prominent in group B (from 11% to 56%). By subject, denture hygiene improved for 39% of all denture wearers: 35% for those in group A, 56% for group B and 27% for group C; and denture hygiene deteriorated for 13% of all denture wearers: 26% for group A, 0% for group B and 7% for group C ($p=0.03$). (Table 3)

DISCUSSION

In our study, the best outcome concerning a subject's oral cleanliness occurred where the nursing staff maintained oral hygiene, although, the oral hygiene in group B cannot be considered to be adequate in all respects. However, it was possible to demonstrate that the nursing staff could assume responsibility for their patients' daily oral hygiene if so trained, this being a major step forward. Our finding is in line with a Swedish study in which patients' oral hygiene had significantly enhanced after the nurses were involved in these oral hygiene measures application amongst elderly medically compromised individuals.¹⁸ In our study, a

dental hygienist provided hands on instructions to nursing staff on the maintenance of patients' oral hygiene, after which short visits were made to the wards at 3-week intervals to motivate the nursing staff. In general, oral care is a low priority in nursing.²⁴ Recent studies suggest that issues such as lack of time and staff, patients' cognitive and physical problems and patients' lack of co-operation when nurses provide oral hygiene strongly affect the level of oral care in long-term facilities.²² In Belgium, variations in the level of oral hygiene between long-term facilities could partly result from caregivers' low level of knowledge on oral hygiene, the age of the residents and managerial behaviour in the institution.²⁵ In 13 Swiss nursing homes, the majority of caregivers had received no oral hygiene training and resisted accepting responsibility for patients' oral hygiene care.²⁶ Oral cleanliness is crucial for maintaining proper oral health and thus threaten one's wellbeing and general health if neglected.²⁷ It is a well-known fact that dental plaque is the pioneer as when there is deposition of uncleaned dental plaque, it will lead to development of various dental diseases, therefore affecting eating, communication as well as being presentable of the individuals.²⁸ Furthermore, dental plaque has been shown to act as a reservoir for the pathogens of pneumonia.²⁹ Recent studies indicate that proper oral hygiene is associated with a reduction in the prevalence of fever and fatal pneumonia among the elderly in nursing homes.³⁰ Our study suggests that oral cleanliness can be improved with the use of simple methods.

CONCLUSION

To meet the needs of the long-term bed ridden elderly, the best outcome for oral cleanliness occurred when nursing staff took charge of their patients' oral hygiene. Moreover, incorporating the cleaning of the oral cavity into daily nursing routines is perhaps the most cost-effective.

REFERENCES

1. World Health Organization (WHO). Oral Health. Available online: www.euro.who.int/en/health-topics/disease-prevention/oral-health#
2. De Oliveira, T.C.; da Silva, D.A.; Leite de Freitas, Y.N.; da Silva, R.L.; Pegado, C.P.; de Lima, K.C. Socio demographic factors and oral health conditions in the elderly: A population based study. *Arch. Gerontol. Geriatr.* 2013, 57, 389–397.
3. Tsakos, G. Inequalities in oral health of the elderly: Rising to the public health challenge? *J. Dent. Res.* 2011, 90, 689–690.
4. Chalmers, J.; Pearson, A. Oral hygiene care for residents with dementia: A literature review. *J. Adv. Nurs.* 2005, 52, 410–419.
5. Handelman, S.L.; Baric, J.M.; Espeland, M.A.; Berglund, K.L. Prevalence of drugs causing hyposalivation in an institutionalized geriatric population. *Oral Surg. Oral Med. Oral Pathol.* 1986, 62, 26–31.
6. Jakanovic, N.; Tan, E.C.K.; Dooley, M.J.; Kirkpatrick, C.M.; Bell, J.S. Prevalence and factors associated with polypharmacy in long-term care facilities: A systematic review. *J. Am. Med. Dir. Assoc.* 2015, 16.
7. Bekiroglu, N.; Cifti, A.; Bayraktar, K.; Yavuz, A.; Kargül, B. Oral complaints of denture-wearing elderly people living in two nursing homes in Istanbul, Turkey. *Oral Health Dent. Manag.* 2012, 11, 107–115.
8. Razak, P.A.; Richard, K.M.; Thankachan, R.P.; Hafiz, K.A.; Kumar, K.N.; Sameer, K.M. Geriatric oral health: A review article. *J. Int. Oral. Health* 2014, 6, 110–116.
9. Sischo, L.; Broder, H.L. Oral health-related quality of life: What, why how and future implications. *J. Dent. Res.* 2011, 90, 1264–1271.

10. Benyamini, Y.; Leventhal, H.; Leventhal, E.A. Self-rated oral health as an independent predictor of self-rated general health, self-esteem and life satisfaction. *Soc. Sci. Med.* 2004, 59, 1109–1116.
11. Inglehart, M.R.; Bagramian, R.A. *Oral Health Related Quality of Life*; Quintessence publishing: Chicago, IL, USA, 2002; pp. 1–6. ISBN 978-0-86715-421-4.
12. Atchison, K.A.; Dolan, T.A. Development of the geriatric oral health assessment index. *J. Dent. Educ.* 1990, 54, 680–687.
13. Slade, G.D.; Spencer, A.J. Development and evaluation of the oral health impact profile. *Community Dental Health* 1994, 11, 3–11.
14. Adulyanon, S.; Vourapukjaru, J.; Sheiham, A. Oral impacts affecting daily performance in a low dental disease Thai population. *Community Dent. Oral Epidemiol.* 1996, 24, 385–389.
15. John, M.T.; Hujoel, P.; Miglioretti, D.L.; Le Resche, L.; Koepsell, T.D.; Micheelis, W. Dimensions of oral-health-related quality of life. *J. Dent. Res.* 2004, 83, 956–960.
16. Khosrozadeh, H.; Alavi, N.M.; Gilasi, H.; Izadi, M. Oral health-related quality of life in older people in Kashan/Iran 2015. *Nurs. Midwifery Stud.* 2017, 6, 182–188.
17. de Baat C, Kalk W, Schuil GR. The effectiveness of oral hygiene programmes for elderly people – a review. *Gerodontology* 1993; 10: 109–113.
18. Isaksson R, Paulsson G, Frilund B et al. Evaluation of an oral health program for nursing personnel in special housing facilities for the elderly. Part II: clinical aspects. *Spec Care Dentist* 2000; 20:109–113.
19. Vigild M. A model for oral health care for elderly persons in nursing homes with an estimate of the resources needed. *Acta Odontol Scand* 1989; 47: 199–204.
20. Fiske J, Griffiths J, Jamieson R et al. Guidelines for oral health care for long-stay patients and residents. *Gerodontology* 2000; 16: 55–64.
21. Gottschalck T, Dassen T, Zimmer S. Recommendations or evidence based oral hygiene of clients in health and care institutions. *Pflege* 2004; 17: 78–91.
22. Chalmers JM. Behavior management and communication strategies for dental professionals when caring for patients with dementia. *Spec Care Dentist* 2000; 20: 147–154.
23. Silness J, Løe H. Periodontal disease in pregnancy. II. Correlation between oral hygiene and periodontal conditions. *Acta Odontol Scand* 1964; 22: 121–135.
24. Wardh I, Hallberg LR, Berggren U et al. Oral health care – a low priority in nursing. In-depth interviews with nursing staff. *Scand J Caring Sci* 2000; 14: 137–142.
25. Vanobbergen JN, De Visschere LM. Factors contributing to the variation in oral hygiene practices and facilities in long-term care institutions for the elderly. *Community Dent Health* 2005; 22: 260–265.
26. Chung JP, Mojon P, Budtz-Jorgensen E. Dental care of elderly in nursing homes: perceptions of managers, nurses, and physicians. *Spec Care Dentist* 2000; 20: 12–17.
27. Shay K. Infectious complications of dental and periodontal diseases in the elderly population. *Clin Infect Dis* 2002; 34: 1215–1223.
28. Peltola P, Vehkalahti MM, Simoila R. Oral health-related well-being of the long-term hospitalised elderly. *Gerodontology* 2005; 22: 17–23.
29. Scannapieco FA. Role of oral bacteria in respiratory infection. *J Periodontol* 1999; 70: 793–802.
30. Adachi M, Ishihara K, Abe S et al. Effect of professional oral health care on the elderly living in nursing homes. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2002; 94: 191–195.

TABLES

Table 1- Demographic characteristics of the present study

Demographic characteristics	Group A	Group B	Group C
No. of patients in each ward	10	10	10
Gender	Male=5, female =5	Male =6, female=4	Male =3, female=7
Age	1	-	1
50-60 years	6	5	7
60-70 years	3	5	2
70- 80 years			
Require 24-hour medical care	3	2	2

Table 2- Oral hygiene measures undertaken in various groups

Oral hygiene measures	Group A (Mean±SD)	Group B (Mean±SD)	Group C (Mean±SD)
Routine cleaning with toothbrush	1.36±1.02	1.12±0.87	1.89±1.34
Use of interdental brush	1.88±1.22	1.26±0.99	2.22±1.98
Use of electric toothbrush	2.43±1.98	2.45±1.97	2.68±2.01

Table 3- Oral hygiene status measurement in various groups

Measurement	Group A	Group B	Group C
t-test	2.67	1.45	3.89
P value	0.231	0.03	1.21

**p significant if <0.05*