

Factors affecting oral health status in an elderly military veteran population in New Zealand

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Abstract

Background: Oral health care provision for aged-care facility residents remains problematic worldwide, with both institutional and professional barriers preventing regular provision of this service.

Purpose: To identify factors affecting the oral health status of elderly war veterans which are different from those reported for non-veteran aged-care facility residents.

Methods and Materials: A small pilot study of 30 aged-care facility residents was performed at a dedicated rest home and hospital for war veterans in Dunedin, New Zealand. The study included data collection and a clinically-based head, neck and oral examination for each of the participating residents to establish a base-line. Oral health data were then integrated with the general medical notes and recommendations for each resident were given in terms of oral health maintenance with appropriate referrals for treatment needs. A literature review was performed using web-based on-line search engines to compare the oral health needs of these veterans with other non-veteran aged-care facility residents.

Results: The oral health status and needs of elderly war veterans are no different to other aged-care facility residents in terms of oral hygiene needs, edentulism, dental caries and periodontal disease. Common medical conditions and medications affect both veteran and non-veteran aged-care facility residents in a similar manner. However, poor oral health status was strongly associated with significant mental illness which may be more prevalent in a veteran population and include depression, anxiety disorder, post-traumatic stress disorder (PTSD) and alcohol abuse.

Conclusion: The oral health care needs of a veteran population do not differ greatly from the needs of other non-veteran aged-care facility residents but greater consideration should be given during assessment for possible service-related oral conditions and mental illness issues including PTSD and alcohol abuse.

Conflict of interest

The authors declare no conflict of interest and have not received any material or monetary gain in the preparation of this article.

Introduction

The provision of oral health care in aged-care facilities remains problematic world-wide. Inadequate staff training, limited resources (both financial and staffing levels), patient compliance issues and a fundamental lack of appreciation for oral health appear to be common barriers in providing even the most basic oral health care to these individuals¹⁻⁴. The poor provision of routine oral health care in this population is not limited by institutional barriers alone; the dental profession itself also contributes to this ongoing problem. Antoun et al. reported that general dental

practitioners are reluctant to engage in older people's oral health, citing the inconvenience of leaving their practices to visit long term care facilities and poor financial remuneration as the main reasons⁵.

Numerous studies have identified that residents in aged-care facilities require regular dental maintenance due to decreasing rates of total edentulism with more residents requiring prosthetic rehabilitation, periodontal treatment and caries control for their remaining dentition^{3,5-9}. In addition to this background picture, subsets of these residents may require even greater dental input such as individuals who are totally dependent on others for routine care (hospital level care residents) and elderly patients with significant psychiatric disorders^{6,10}. Another subset also warrants greater consideration – that of elderly military veterans who not only deal with the same

issues as other aged-care residents but also may have other issues affecting oral health that may be related to military service. Montecillo War Veterans Rest Home and Hospital (Montecillo) in Dunedin is one of four facilities in New Zealand dedicated to the care of war veterans or their dependents. Like all aged-care facilities, criteria must be met before an individual is accepted into Montecillo; however the nature of a facility for war veterans imbues a special character and ethos that is unique. The goals of this pilot study were to identify factors affecting the oral health care status among a small population of war veterans in New Zealand; to compare their oral health needs against those reported for the greater population of non-veteran residents in other aged care facilities by way of literature review; to provide clinical oral and head and neck examinations for participating residents and to integrate an oral health care plan into the existing general medical records (under a separate section with regular reviews). This information may be used as a basis for future longitudinal studies of veterans' oral health needs both regionally and nationally and the development of a potential template for an integrated oral health care plan for aged care facility residents.

Methods

Residents of Montecillo were asked for their voluntary participation in this study. An information sheet and a written consent form were provided to the residents and their families. The families were asked or power of attorney sought for those residents unable to consent for themselves in order to provide written consent on their behalf should they wish to participate in the study. Ethical approval was obtained prior to this study from the University of Otago Ethics Committee and general consent from the Board of Trustees of Montecillo.

Once identified and consented, each participating resident received an interview to reiterate the purpose of the study, their pertinent medical and dental history was reviewed and a clinical head, neck and oral examination was performed. The service history of the resident was also recorded with details of overseas operational deployment noted in particular. No periodontal or dental probing was performed and no radiographs were taken. The intraoral examination was performed using a dental mirror with a head mounted LED light used for illumination. A standard charting system from the School of Dentistry, University of Otago was used to record the remaining dentition, restorations and clinically visible pathology. The data was recorded and the medical history (including medication list) and service history cross-referenced with the resident's existing medical records. Any pathology or dental needs were

identified and recommendations noted in the records, which included the appropriate referrals for follow up care. No invasive procedures or provision of treatment was performed as part of this initial study. For the purposes of a comparative literature review, web-based on-line search engines (PubMed, Medline, Ovid, and e-medicine) were used to identify the relevant publications with key words including oral health, aged care facilities, gerontology and veterans.

Results

The reporting period for this study was 6 months (March to August 2009) and conducted exclusively at Montecillo War Veterans Rest Home and Hospital. Of the forty-four residents living at Montecillo at the time, thirty residents consented for participation in this study (68%). In this study group, twenty seven were male (90%) and three were female (10%). The average age was 85 years and ranged from 65 to 95 years. Two thirds of the study group were assessed as needing rest home level care and the remainder hospital level care with more intensive nursing supervision.

Over three quarters of the study group had either regular force or reserve force service backgrounds (77%) with the majority of these individuals having served in the army (60%). Half of the veterans had overseas operational deployment experience with almost 90% of those having served in the Second World War and the remainder having served in Malaya or Indonesia (including one former Royal Netherlands Army soldier). Of the Second World War veterans, eleven individuals served in the Middle East and/or European Theatres of Operation and three served in the Pacific. Table 1 summarises this data.

Males	27 (90%)
Females	3 (10%)
Total sample	30 (100%)
Average age of participant (age range 65-95 years)	85 years
Previous military service background	23 (77%)
Army	18 (60%)
Air Force	4 (13%)
Navy	1 (<1%)
Operational service overseas	16 (53%)
Operational service (WW2)	14/16 (87.5%)
Middle East/ European theatre of operations	11/14 (79%)
Pacific theatre of operations	3/14 (21%)

Table 1. Summary of demographic data

Medical Diagnosis	Number of residents with condition*
Ischaemic Heart Disease (IHD)	15 (50%)
Diabetes mellitus	15 (50%)
Mental illnesses	15 (50%)
Cerebrovascular disease/stroke	10 (33%)
Gout	9 (30%)
Essential Hypertension	8 (27%)
Osteoarthritis	8 (27%)
Chronic Obstructive Pulmonary Disease	7 (23%)
Prostate disease (benign and malignant)	7 (23%)

* percentages do not total 100% as each resident had more than one medical co-morbidity

Table 2. Most common medical conditions among study participants

The most common medical problems among the study participants included ischaemic heart disease (IHD), diabetes mellitus, gout, chronic obstructive pulmonary disease (COPD), cerebro-vascular disease, and mental illnesses requiring medication (Table 2). An average of nine medications (range 3 to 18 medications) were taken regularly per individual in the study group with the most common classes of medication being antiplatelet agents, oral hypoglycaemics, nitrates, diuretics, beta-blockers, calcium channel blockers, tricyclic antidepressants and selective serotonin re-uptake inhibitors.

From a dental perspective, two thirds of the study group veterans were totally edentulous (20/30 veterans) and one quarter was partially dentate in both maxilla and mandible (8/30 veterans). Two veterans did not wear a lower denture by choice. Of the twenty veterans with dentures, seven had poor denture hygiene with calculus and heavy staining evident on examination (35%). One patient wore a dental implant-borne overdenture and was a patient of a university study at the School of Dentistry. All of the partially dentate patients had oral hygiene issues with two veterans having significant levels of calculus around their remaining dentition. Clinically evident dry mouth was noted in four veterans and one veteran suffered from intraoral mucositis secondary from chemotherapy.

Active dental treatment (restorative needs) were identified in two veterans and seven veterans were recommended to have a reline or a new set of dentures made. Only two of the study group complained of ill fitting or loose dentures. Of the thirty participating residents of Montecillo, only three veterans had regular access to a dental professional either through private practice or through the University of Otago School of Dentistry.

In the six months following the study period, nine of the thirty veterans have since died (30%).

Discussion

New Zealand has a relatively short but proud overseas military history from the deployment of mounted riflemen to South Africa in 1899-1902 and through to the first and Second World Wars where, similar to our Australian counterparts, New Zealand's military forces earned a reputation for being first class fighting men. There are no surviving First World War veterans in New Zealand but significant numbers of veterans who fought in the Second World War still live in the community and often are residents of aged-care facilities, but these numbers too are dwindling. The next significant cohort of ageing veterans consist of those who served in Korea, Borneo, Malaya and Vietnam during the 1950's to 1970's.

The results of this pilot study give small insights into some of the unique issues that may have particular relevance in providing oral health care among such a veteran population. The strengths of this pilot study include the easy access to military veterans in a single aged-care facility that is dedicated to war veterans and the ability to review a complete residential medical file which includes a summary of their service record. Furthermore, this study has raised the profile of oral health at Montecillo and it has received unreserved support for its continuation. The weaknesses of the study however include the small numbers involved in the study population, and the limitations of a clinical examination in such a setting, which limits diagnosis to visual examination without radiographic interpretation. For denture wearers the treatment planning was more straight forward but for partially dentate individuals requiring restorative dentistry, a definitive treatment plan could not be established without further radiographic work up. From a longitudinal standpoint, the majority of the population may not be able to be followed for a long period of time due to advanced age and significant medical co-morbidities.

The residents of Montecillo appear to have similar oral health needs as other aged-care facility residents and share similar risk factors affecting oral and dental health. In our study two thirds of the residents were edentulous and the remaining one third retaining some or most of their natural dentition. This is consistent with findings from another New Zealand based study of 210 non-military veteran aged-care facility residents and may represent the high rate of edentulism that was commonly found in New Zealand adults during and after the Second World War. In contrast, only one third of institutionalised elderly patients were found to be edentulous in a study based in Montpellier, France³.

The majority of the residents at Montecillo did not have regular access to dental care and similar to aged-care facility residents world-wide, generally exhibited a poor level of oral health care in terms of prevention and maintenance. The obvious issues affecting oral health care provision are three-fold: limited ability to perform oral hygiene self-cares by the residents themselves, medical co-morbidities and inadequate training of aged-care facility staff. Aged-care residents commonly have decreased motor skills either due to neurologic problems or arthritic/joint problems limiting manual dexterity. This may be compounded by decreased cognitive function, deteriorating eyesight or progressive dementia; all leading towards a decreased ability to perform oral cares by the resident themselves. In conjunction with physical degeneration are the multiple medical issues that are encountered in this population and the polypharmacy used to manage their conditions.

In the Montecillo study group common medical problems that may affect the ability to perform self-cares for oral hygiene include cerebro-vascular disease and stroke, arthritis and mental illnesses such as depression, post-traumatic stress disorder (PTSD) and alcoholism. Increased periodontal disease and dental caries are associated with diabetes mellitus and dry mouth, the latter being a result of degenerative salivary gland disorders or a common side effect of medications that may be taken on a daily or regular basis. Among the more common medications that produce dry mouth symptoms are tricyclic antidepressants, selective serotonin reuptake inhibitors, bowel or urinary bladder antispasmodics, cardiovascular medications (including diuretics, ACE-inhibitors, calcium channel blockers and beta-blockers) and histamine-2 receptor antagonists (for example ranitidine)^{11,12}. A number of these medications were represented in this cohort of patients.

One study of 257 institutionalised elderly residents (mean age 83.7 years) found that of all the medical conditions examined in the study group, only psychiatric disorders were significantly related to poor oral health status¹⁰. The authors also found that low socio-economic status and the duration of institutionalisation were also closely related to poor oral health among their study population.

The lack of dedicated dental professional input into aged-care facilities places greater burden and onus on medical and nursing staff in those facilities. Medical practitioners may be able to screen for gross oral health problems and in conjunction with a dental health professional may help modify medications to decrease such side effects as dry mouth, but essentially the dental needs of these patients must ultimately be managed by dental professionals. Simple measures

such as in-service training or courses for nursing staff, clear oral hygiene protocols, clearly named dentures and denture hygiene instructions have been proposed to improve the provision of oral health by non-dental health care workers^{13,14}. Similar to cardiovascular health issues, the fundamental starting points for oral health in this vulnerable population is prevention. In order to facilitate this however, a higher degree of oral health promotion and cooperation between dental, medical and nursing staff must be encouraged with clear individualised plans for each resident and regular assessment of dental needs and oral cancer screening. Formal educational programmes have also been advocated to raise awareness of oral health needs for both staff and residents alike¹⁵.

We have highlighted the generic problems encountered in providing oral health care in aged-care facility residents, but what specifically are the issues affecting war veterans? The issues already highlighted above affect all institutionalised elderly residents irrespective of war veteran status; however two areas should be given greater consideration, namely mental illness (including alcoholism) and service-related oral health conditions. Psychiatric disorders have been identified as having a negative impact on oral health status which may be related to motivation issues or medication effects such as dry mouth and psychomotor impairment. The lifetime prevalence of depression (major depressive disorder according to Diagnostic and Statistical Manual (DSM) –IV criteria, 1994) varies from 5-12% in men and 10-25% in women¹⁶. It has been reported that the overall prevalence of mood disorders does not vary according to race or ethnic group but according to the SHARE study (Survey of Health, Ageing and Retirement in Europe) conducted in ten European countries, depression is more common in France, Italy and Spain compared to non-Latin ethno-lingual countries such as Germany, Sweden and Greece¹⁷. One French study of 1873 non-institutionalised elderly individuals reported a lifetime prevalence of major depression at 26.5% and 30% for anxiety disorders, which emphasises mental illness as a significant problem among the elderly population¹⁸.

Post Traumatic Stress Disorder (PTSD) among war veterans is common and is increasingly an issue observed among recent United States war veterans from OPERATION IRAQI FREEDOM and ENDURING FREEDOM (Iraq and Afghanistan respectively) accessing their Veterans Administration hospital system^{19,20}. One study of United States Second World War veterans who were prisoners of war (POWs) reported that 16.6% of their study group met criteria for PTSD with those serving in the Pacific having a three fold PTSD rate compared to their European theatre of war counterparts²¹. Furthermore, a study of 240 Balkans

Conflict (Bosnia) veterans reported a higher degree of aggression among war veterans with PTSD who also had co-morbid alcoholism when compared to veterans with PTSD who did not have alcohol issues²².

In our pilot study group of thirty residents, fifteen residents had mental illness diagnoses (50%) including eleven residents with depression (11/15 or 73%) and three with dementia.

Four individuals were also considered as high risk for alcohol abuse. Only one resident in the study group of thirty had a formal diagnosis of PTSD (3%) which is similar to the 3.4% reported in a German based study of PTSD among a general population of 60 years and older²³. With regard to service-related oral conditions, each country will have different criteria and levels of compensation related to war pension benefits. This is an obvious difference between military veterans and other elderly individuals who do not have this source of funding opportunity for oral health care. However, the examining health professional must be able to link oral health status and the period of military service during which oral health was affected. This may range from obvious interventions as removing all the dentition to render a soldier “dentally fit” (as was commonly done for New Zealand soldiers prior to deployment during the First World War) to linking periodontal disease from long periods of poor oral hygiene (such as soldiers in South East Asia on lengthy jungle patrols). The awareness that service conditions may have contributed to oral health issues is another important facet in providing oral health care for a veteran population and may be overlooked during a dental assessment.

Conclusion

The oral health care needs of a veteran population do not differ greatly from the needs of other non-veteran aged-care facility residents but greater consideration should be given during assessment for possible service-related oral conditions and mental illness issues including PTSD and alcohol abuse.

This pilot study has highlighted a greater need for dental input in this population group and for educational opportunities for nursing staff caring for these individuals. Further longitudinal data from Montecillo and potentially other war veteran rest homes in New Zealand should be collected for future comparison in order to emphasise the importance of oral health care as part of an integrated and holistic health management plan for these individuals.

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