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Dental treatment for patients with special needs provided by domiciliary dental services

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Abstract

Objective: To determine a profile of the types of patients treated by domiciliary dental services and the nature of treatments these patients receive.

Background data: Developed countries are faced with the challenges of ageing populations with individuals living for longer with multiple medical comorbidities. As these individuals become more functionally dependent, it is more difficult for them to access conventional health care. In order to adapt to the needs of this growing group, health care systems, including dental services, have implemented initiatives to adapt to their needs, such as domiciliary dental services, in an attempt to increase access to health care.

Materials and methods: A retrospective review was conducted of all patient appointments conducted by the domiciliary service operated by the Integrated Special Needs Department (ISND) at the Royal Dental Hospital of Melbourne for the month of August 2015.

Results: Patients treated by domiciliary dental services were generally older than those treated at dental hospital facilities and most were referred from residential aged care facilities. The most common treatments received were examinations and procedures associated with denture fabrication.

Conclusions: These results demonstrate the importance of domiciliary dental services to access of care for functionally-dependent older adults.

Keywords: dental care for disabled, domiciliary, geriatric dentistry, dental treatment

Introduction

The success of modern medicine has led to the need for health care systems to adapt to the changing needs of the population. In particular, many developed countries are faced with the challenges of ageing populations. In Australia there are a growing proportion of older adults with multiple medical comorbidities and these individuals are living for longer in the community before moving into residential aged care facilities. On a smaller scale, these same problems are being experienced in patients with special needs; many of whom will outlive their parents who act as their main carers These individuals will require transition to replacement parental caring roles in supported residential facilities. The growing functional dependence of these adults can significantly impact on the ability to access health care and, as a result, health care systems will need to adapt to these changing demands.

One way in which oral health care providers have attempted to adapt to these changing needs has been domiciliary dental services. Domiciliary dental care aims to provide dental care to individuals who may find it difficult or impossible to access normal dental services.[1] Although these services have largely catered for patients in residential aged care facilities it should not be seen as confined to this group but rather any individuals that are unable or have difficulty in attending a dental clinic. Treatment in this setting is accomplished by providing dental treatment at their place of residence, or a location convenient to the patients with suitable requirements, using portable equipment and materials.[2]

There are a growing number of public and private domiciliary dental services operating in Australia facilitating greater access to dental care for individuals that are homebound, in supported residential facilities, or unable to attend a conventional dental clinic for other reasons such as insufficient supports to enable travel to a dental clinic or complicating factors, including psychiatric, anxiety, or behavioural issues, which may make treatment more amenable away from the conventional dental setting. In Victoria, the largest public domiciliary dental service is operated by the Royal Dental Hospital of Melbourne. The service is provided by clinicians affiliated with the hospital's Integrated Special Needs Department and includes specialists in Special Needs Dentistry, post-graduate specialists-in-training in Special Needs Dentistry, general dental practitioners, and dental prosthetists. Although operated by the Dental Health Services Victoria as a public dental service, it is available to all patients. Likewise, unlike many other states, this single service coordinates and provides all public sector domiciliary dental care in the state.

Thus far little is known about the types of patients receiving their oral health care through domiciliary dental services in Australia and the treatment that they receive. The international literature is also limited in the reporting of utilisation of these services.[3] The present study aims to begin to address these deficiencies by reviewing the domiciliary dental service provided by the Royal Dental Hospital of Melbourne Integrated Special Needs Department. In particular, patient demographics and treatment details will be analysed to develop a better understanding of current service utilisation and treatment provision. It is hypothesised that patient demographics will reflect the growing needs of these services amongst functionally-dependent older adults in residential aged care facilities and that treatment will reflect the significant unmet treatment needs of these individuals.

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Material and methods

A retrospective review was conducted of all patient appointments with the domiciliary service operated by the Integrated Special Needs Department (ISND) at the Royal Dental Hospital of Melbourne between August 1, 2015 and August 30, 2015. The review of records included details of patient demographics (gender, date of birth, residential postcode), consent status, health care and pensioner card status, source of referral, reason for referral, and medical history, including medical conditions and current medications. A single researcher was responsible for the review of records and data collection.

Data were recorded on an Excel spreadsheet (Microsoft Corporation, Seattle WA, USA) using a standardised data collection sheet developed by the researchers. Medical conditions and medications were recorded using the World Health Organization International Classification of Disease 10 (ICD-10) and the Anatomical Therapeutic Chemical and Defined Daily Dose (ATC/DDD) classifications.[4,5] Residential postcode was grouped using the Australian Statistical Geography Standard (ASGS) Remoteness Areas Classification 2011.[6] SPSS Statistics Version 23 (IBM Inc, Armonk NY, USA) was used for descriptive analysis of the data. Ethics approval was obtained from the University of Melbourne Human Research Ethics Committee (Ethics ID 1544156) and Dental Health Services Victoria (DHSV) (ID 297).

Results

The domiciliary service provided 236 patient appointments during the month of August 2015 accounting for just over one third (33.8%) of all appointments with the Integrated Special Needs Department in that month. The demographics of patients treated by the domiciliary services are provided in Table 1.

Table 1 A comparison of the characteristics of patients treated by the domiciliary dental service and the Integrated Special Needs Department at the Royal Dental Hospital of Melbourne, Victoria, Australia

Patient details	Domiciliary N (%)	RDHM N (%)
Gender		
Male	106 (44.9)	226 (50.6)
Age groups[a]		
<25 years	2 (0.8)	76 (17.0)
25-34 years	3 (1.3)	60 (13.4)
35-44 years	5 (2.1)	75 (16.8)
45-54 years	25 (10.6)	84 (18.8)
55-64 years	29 (12.3)	75 (16.8)
65-74 years	37 (15.7)	39 (8.47)
>74 years	135 (57.2)	38 (8.5)
Ability to self-consent		
Yes	76 (32.2)	249 (55.7)
Remoteness of residence[b]		
Metropolitan	209 (88.6)	350 (78.3)
Regional	27 (11.4)	97 (21.7)
Eligibility for public dental care		
Not eligible	16 (6.8)	4 (0.9)
Eligible	214 (90.6)	442 (98.9)
DVA	6 (2.5)	1 (0.2)
Referral source		
Medical professional and allied health professionals	17 (7.8)	107 (23.9)
Oral health professional	23 (10.5)	200 (44.7)
Supported residential facility	111 (50.7)	41 (9.2)
Carers and family	65 (29.7)	70 (15.7)
Self-referral	3 (1.4)	9 (2.0)
Reason for referral		
Behavioural problem or intellectual disability	14 (6.4)	158 (35.3)
Psychological problems	5 (2.3)	118 (26.4)
Physical disability	1 (0.5)	16 (3.6)
Medical condition or medication	10 (4.6)	112 (25.1)
Domiciliary care	186 (84.9)	21 (4.7)
Second opinion	3 (1.4)	2 (4.5)

[a]Age categories were based on those used by the World Health Organization.[7]

[b]Residential postcodes were categorised using the Australian Statistical Geography Standard (ASGS) Remoteness Areas Classification 2011.[6]

Although gender distribution, remoteness of residence, and eligibility for public dental care were relatively comparable between patients treated at the Integrated Special Needs Department and on the domiciliary service, other patient characteristic differed quite significantly. The mean age of patients treated by the domiciliary service was 73.44 years (Range 19-99) and age distribution was skewed towards those in the oldest age group with just under three quarters of all patients (73.2%) aged 65 years and older. Only 32.2% of patients were able to self-consent for procedures, almost half the rate as treated at the Integrated Special Needs Department, with most having consent provided by a family member (61.4%) and a small percentage (0.8%) had other medical power of attorney arrangements. 2.5% of patients had no substitute decision maker and thus requiring the treating clinician to provide notification of treatment to the Office of Public Advocate.

Most referrals (84.9%) were specifically for domiciliary dental care with these being completed by nursing staff at residential facilities (50.7%), including supported residential services and residential aged care facilities. 29.7% of referrals were also from carers and family. This was in contrast to the tendency for referrals to the Integrated Special Needs Department to come from health professionals. Oral health professionals were more likely to refer patients to this service than general and allied health practitioners. Reasons for referral were similar to those for the Integrated Special Needs Department when specific referral for domiciliary dental care was excluded.

Most patients (80.1%) had only a single appointment with the domiciliary service during the review period. However, 22 patients had two appointments and 4 patients had 3 appointments. The majority of appointments were with dentists (58.9%) followed by prosthetists (29.2%), specialists-in-training (5.9%), and specialists (5.5%).

The dental treatments completed on domiciliary visits are reported in Table 2. 16.1% of all appointments were cancelled by either the patient or clinician. Most patients (43.1%) received only an examination. The remainder of appointments were equally split between receipt of dental treatment, including fillings (31.6%), cleans (21.1%), and dental extractions (47.4%), or denture fabrication procedures.

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The treatments performed by clinician type are shown in Table 3. The majority of denture work was completed by prosthetists. Specialists had the highest rate of appointment cancellations (23.1%) but were also the most likely to perform treatment during an appointment.

Table 2 Dental treatment completed on domiciliary visits conducted by the Integrated Special Needs Department, Royal Dental Hospital of Melbourne

Treatment completed	Number of appointments (%)
Examination Only	85 (36.0)
Dental treatment	56 (23.7)
Periodontal therapy	17 (7.2)
Restorative treatment	11 (4.7)
Combination of periodontal and restorative treatment	1 (0.4)
Extractions	27 (11.4)
Denture fabrication procedures	56 (23.7)
Cancelled appointments	38 (16.1)
Invalid	1 (0.4)
Total	236 (100.0)

Table 3 Treatment completed on domiciliary visits by clinician type

Clinician type	Examination	Dental treatment	Dentures	Cancellation
SND Specialist	4	6	0	3
SND Specialist-in-Training	9	5	0	0
Dentist	65	35	3	26
Dental prosthetist	8	0	52	9

Discussion

Australia, like many developed countries, is faced with the challenges of an ageing population and adapting existing health care services to the needs of the growing proportion of older individuals living with chronic medical conditions. Australians now have a life expectancy of 82.4 years; an increase of approximately three decades over the last century.[8,9] In 2014, Australians aged 65 years and older represented 15% of the overall population compared to 8% in 1964.[10] Furthermore, 270,559 of these individuals, or 7.8% of all Australians aged 65 years and older, were living in residential aged care facilities.[11]

Domiciliary dental care has been proposed as a way in which dental services may be adapted to the needs of functionally-dependent older people living in residential aged care facilities or in the community. This model of care involves providing dental treatment at the patient's permanent or temporary place of residence using portable equipment and materials.[2] As a result, these services aim to remove barriers to access of care that exist for individuals for whom it may be impossible, unreasonable, or impractical to receive conventional dental care at a dental clinic.[1]

This study aimed to review the utilisation of the domiciliary dental service provided by the Integrated Special Needs Department of the Royal Dental Hospital of Melbourne to better understand the types of patients being treated and the treatments they were receiving. Despite the growing availability of both private and public domiciliary services, there has been little published in the literature regarding specifically the provision of these services.[12,13] Likewise, poor awareness of the availability of these services has been reported in the literature.[1]

Our results reflected the fact that these services were largely aimed at the functionally-dependent older people in nursing homes. Despite the sample population having ages ranging from 19 to 99 years, the mean age of patients treated was 73.4 years and just under three quarters of the sample was aged 65 years or older with over half (57.2%) aged over 74 years. Comparing this to the demographics of patients treated at the Integrated Special Needs Department at the Royal Dental Hospital of Melbourne demonstrated the ability of these services to provide increased access to care to the frail elders. Although residence type was not recorded, 50.7% of patients with appointments were originally referred by staff at a residential facility which included supported residential care and aged care facilities.

Although this form of dental care is commonly associated with use amongst patients living in residential aged care facilities, it is most certainly not confined to this population. Domiciliary dental services may also be relevant for individuals with physical disabilities that pose difficulties with mobility or transportation, those with psychiatric problems, such as agoraphobia, or may involve provision of dental treatment at hospitals, palliative care units, or facilities for the homeless.[2] Even though the vast majority of patients in our sample were referred specifically for domiciliary care, the remaining 15.1% provided examples of individuals for whom it was deemed more appropriate or amenable for care to be provided in a domiciliary setting. Review of the original referral reasons for these patients showed 6.4% were originally referred due to behavioural problems or developmental delay, 4.6% because of concerns about medical conditions that may impact on care, 2.3% because of psychological issues, and 0.5% due to physical impairments. Domiciliary dental care can offer several advantages for this group of patients. In addition to reducing reliance on carer and transport arrangements, it has also been suggested that anxiety may be reduced as a result of treatment being completed in a more familiar environment.[1] Interestingly, although it may be expected that physical impairments would be higher in the sample of patients treated by domiciliary services due to problems with accessing conventional dental care; this did not appear to be the case in our sample. The low proportions of these individuals may reflect improved access for the individuals to many facilities as required by legislation and building regulations, particularly those dedicated to the treatment of patients with special needs.

Commonly suggested barriers to access of care for individuals that seek domiciliary services include the financial cost of treatment, transportation, and poor health that prevents individuals from seeking care in a normal dental setting.[14] In terms of financial cost, domiciliary services provided by the Royal Dental Hospital of Melbourne are available to all patients on referral to the unit. Patients that meet normal eligibility criteria for public dental care receive this treatment at no cost.[15] Eligibility is primarily income-tested and based on receipt of government-issued health care or pensioner concession cards.[15] Patients who do not meet these criteria may also access the service with a nominal fee incurred for each appointment.[15] The results of our study showed that the vast majority of patients (93.1%) met normal eligibility criteria for public dental care potentially demonstrating very low usage of this public service by private patients.

Although previous studies have identified impaired mobility and transportation issues as a major barriers to access of conventional

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dental care, our results indicated that only 11.4% that accessed these services lived in non-metropolitan areas.[14,16] Even though it would be anticipated that distance to a dental facility would be considered a significant factor influencing use of this service, the results indicate that this does not appear to be the case. This may reflect the nature of centralisation of major health services to metropolitan areas in Melbourne necessitating such individuals in regional areas who have significant medical issues to have adequate supports to be able to access this care. Alternatively, it may indicate the availability of appropriate services to meet treatment needs locally for these patients or the lack of awareness of domiciliary services as distance from the dental hospital increases. Given the potential influence of these factors have not been elucidated as part of this study it would be pertinent for them to be examined in future research.

This study also hoped to provide some insight into the medical background of patients being treated through domiciliary services but was limited by documentation of medical histories. Dental Health Services Victoria guidelines were used to guide what was considered a valid medical history in our review.[17] On reviewing the paper-based casenotes of the patients treated throughout the 236 appointments in August 2015, 195 (82.6%) had no evidence of any medical history recorded within the 12 months of the appointment. This included copies of medical summaries provided by general medical practitioners. Of these, 169 had no medical conditions documented by the clinician even though medical conditions had previously been reported in the referral information. Similarly, 61.0% (n=144) had no medications recorded by the clinician even though the patient had been taking medications at the time of referral. 13.6% (n=32) had no medication list recorded by the clinician or provided as part of the referral possibly indicating that patients were not prescribed any medications or that no historical or current record existed of medications.

These results raised concerns amongst the authors given that poor health limiting access to conventional dental services has been previously cited as a significant influencing factor in seeking dental care through domiciliary services.[14] As a result, it would be expected that these patients would be more medically-compromised that patients conventionally treated by community dental services and hospitals. In addition, it would be expected that clinicians working as part of a special needs dental unit would be acutely aware of the importance of maintaining an up-to-date and accurate medical history because of the influence these conditions and medications may have on various dental treatments.

If these medical histories were taken to be an accurate reflection of medical status, patients treated by the domiciliary services would have an average of 0.58 (SD 1.44) medical conditions and be taking 1.98 (SD 3.88) medications. These results would suggest that these patients were much less medically-complex than those treated at other special needs dental units in Australia.[18,19] Likewise, these results were not consistent with Australian studies that have reported much higher rates of medication usage in Australians. One study reported that 87.1% of Australians over the age of 50 were regularly taking one or more medications within a 24 hour period and that 43.3% of these were prescribed five or more medications during the same period of time.[20]

In addition to the changes in population demographics and the morbidities associated with increased age that have driven changes in health service provision, changing patterns of dental disease in these groups are also a significant consideration in the development of domiciliary dental services. Public health measures, such as water fluoridation, and improvements in oral health awareness and treatments have resulted in increased retention of natural teeth rather than edentulism and complete dentures which were previous commonplace within the older population.[21] Although generally viewed as an indication of the success of modern dentistry, it poses new challenges in the treatment of older adults and in particular those that are functionally dependent.

Although there have been significant declines in dental caries across the population, changes to lifetime dental caries experience and increased retention of teeth have resulted in an increased prevalence of root caries in older populations.[21] Limited Australian data indicates this is a significant problem for residents of aged care facilities.[22,23] Similarly, retention of teeth has resulted in higher rates of periodontal disease in the older population with figures as high as 44% in 55-75 year olds presenting with moderate to severe periodontitis.[21] Oral mucosal lesions, such as candidosis (thrush), are also more common in older populations.[24]

A number of risk factors associated with increased age and loss of functional dependence are linked to these conditions. Polypharmacy commonly causes dry mouth. The reduction of protective factors associated with the lack of saliva and oral clearance, and resultant changes in the commensal oral flora then play a role in the increased risk of many oral conditions.[25] Gingival recession associated with periodontal disease results in exposure of tooth root surfaces making oral hygiene more difficult. It is well recognised that rigorous oral hygiene is paramount to the prevention and stagnation of root caries and periodontal disease. Likewise, routine professional maintenance is required for the management of these conditions.[12,13] This is further complicated by the fact that less than one third of residents in aged care facilities are able to complete their own oral hygiene leaving this responsibility to be undertaken by already busy care workers who often feel like they have been inadequately trained in this area.[13]

Although levels of dental disease were not examined in our study, almost half of all appointments (47.4%) were for provision of treatment. Of this group, 47.4% were for dental extractions and 21.1% were for restorations indicating a significant burden of dental disease amongst patients accessing these services. Likewise, the remainder (31.6%) receieved periodontal treatment indicating the important role these services provide in assisting with oral hygiene amongst these patients. Service provision in our study appeared to be consistent with that reported in the literature.[3]

Previous studies have demonstrated the importance of managing levels of untreated dental disease in the ageing because of the significant impact on quality of life.[26] Likewise, in recent years, growing links between dental disease and systemic health have been reported throughout the literature indicating the importance of oral health to general health.[27,28] In particular there is growing recognition of the importance of oral hygiene to risk of aspiration pneumonia for residents of aged care facilities.[29] A recent systematic review identified poor oral hygiene as a potentially modifiable risk factor for mortality in one in ten of these deaths.[29]

Despite the growing treatment needs of functionally-dependent older adults in the population, the provision of domiciliary dental care in Australia and overseas is relatively low amongst general dental practitioners.[3,12,13] Commonly reported barriers to provision of these services include time, poor remuneration, concerns about infection control, emergency drugs, and lack of suitable equipment, and

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difficulties with transporting adequate instruments and equipment to provide the desired level of care.[3,13] Furthermore, most clinicians feel a general sense of loss of control when completing dental treatment outside of the dental surgery and these combined models of care may be required to improve levels of service availability in the community.[1,3]

In light of the growing complexity of treatment required by these compromised patients, some have advocated for the use of a 'mix and match approach' to treatment thus enabling dental treatment to be provided with a combination of surgery-based and domiciliary care.[1,3] In this manner, regular reviews and simple treatments, such as provision of scaling to assist with hygiene, may be completed in the domiciliary setting thus affording these individuals improved access to care.[1] Dental auxiliaries, such as oral health therapists, are likely to play a vital role in this area into the future. However, technically-challenging or complex procedures may still be completed at the dental surgery if well-planned and kept to a minimum. These nature of procedures completed at the surgery may be determined by availability of suitable equipment or patient safety concerns associated with the procedure (e.g. need for high volume suction due to dysphagia issues, bleeding concerns for anticoagulated patients) (1). Combined models of care such as these may assist with clinicians overcoming some of the challenges they experience in completing domiciliary dental care.

Other challenges often faced by clinicians providing domiciliary services include the reliance on carers and staff to organise referrals and appointments for these patients and issues associated with obtaining informed consent for treatment. A proportion of functionally-dependent adults may be incapable of providing consent as was confirmed for the majority (67.8%) of patients in our study. Obtaining consent from substitute decision makers can be frustrating and time consuming for clinicians. Likewise, in situations where patients do not have an appointed decision maker, such as 2.5% of patients in our sample, clinicians are required to make every effort to identify individuals who may be able to provide this consent before seeking approval for treatment through mechanisms identified in local legislation. Likewise, discussions with family can result in unrealistic expectations being placed on practitioners to complete dental treatments which may be inappropriate for this patient cohort.

Most certainly domiciliary dental care can present many challenges to dentists. In addition to those discussed, provision of care can be physically-demanding for the clinician and have significant associated initial costs to ensure suitable equipment is available to provide this care.[1] The results of this study, however, demonstrate the importance of such services in providing access to oral health care to many members of the community who are unable to access conventional services at dental clinics. Our results, and those published throughout the literature, suggest domiciliary dental care is likely to be a necessary part of how dental services adapt to the growing number of functionally-dependent adults living in the community and residential aged care facilities.

Conclusion

Domiciliary dental appointments accounted for one third of all appointments provided by the Integrated Special Needs Department of the Royal Dental Hospital of Melbourne in the month of August 2015. These services were largely provided to functionally-dependent older adults who were most commonly referred by supported residential facilities and lacked the capacity to consent for procedures. Examinations were the most commonly completed procedure at domiciliary appointments with the remainder being used to provide some form of dental treatment or facilitate fabrication of a dental prosthesis. These results demonstrate the importance of such services in assisting in the ongoing health care of functionally-dependent older adults who may be unable to access conventional dental care independently or lack the support networks to assist them to access the oral health care they need.

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