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Referral Patterns of Special Needs Patients at the Royal Dental Hospital of Melbourne, Victoria, Australia.

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Abstract

Background: Special Needs Dentistry (SND) has been recognised as a dental specialty in Australia since 2003 but no studies addressing the profile of patients for specialist care. The purpose of this study is to identify, via referrals received, the profile of patients and quality of referrals at the largest public SND Unit in Victoria, Australia.

Methods: All referrals received over a six months period (January 1 - June 30, 2013) by the Integrated SND Unit (ISNU) were reviewed prior to allocation to the outpatient clinic (OP), domiciliary (DOM) or general anaesthetic (GA) services.

Results: Six-hundred and eighty-eight referrals were received with the majority for the OP clinic (68.3%), followed by DOM (22.4%) and GA services (9.3%) ($\chi^2=360.2$, $P<0.001$). A referral may have specified more than one special needs condition with the most common category being those who were medically compromised (81.7%). The reasons for referral included lack of compliance (27.2%), further management due to multiple medical conditions or GA services required (9.9%), or for multiple other reasons (62.9%).

Conclusion: A diverse pattern of SND patients was referred to the ISNU with a majority of referrals having no specific referral reason cited, suggesting poor quality of referrals.

Keywords: consultations, referral, special needs, specialist, dentistry.

Introduction

Special needs dentistry (SND) is the branch of dentistry concerned with the oral health of people adversely affected by disability (intellectual and physical), medical, or psychiatric conditions (1). One characteristic that sets this specialty apart from most other branches of dentistry is that it involves patients with varying degrees of difficulty in dental management arising from levels of dependency, cooperation, communication, cognitive capacity, health conditions, and social support requirements (2). SND specialists have particular expertise in providing appropriate and expert dental care plans that best address a patient's need based on a comprehensive analysis of their health conditions and other underlying factors (3).

Historically, the provision of dental care for special needs patients has been conducted on an ad hoc basis by general dental practitioners (4), paediatric dentists (5) and to a variable degree by oral and maxillofacial surgeons and oral medicine specialists. Since the establishment of SND as a dental specialty in Australia almost 12 years ago, fifteen specialists across four Australian states [Victoria (n=7), South Australia (n=4), New South Wales (n=2), and Queensland (n=2)] have registered with the Australian Health Practitioner

Regulation Agency (AHPRA) (2,6,7). In Victoria, the Royal Dental Hospital of Melbourne (RDHM) is the largest public dental facility that strives to improve accessibility for people with special needs under the auspices of the Dental Health Services Victoria (DHSV) and employs 4 SND specialists (8). Dental treatment for patients with special needs is carried out in the integrated SND Unit (ISNU) either directly within the hospital itself or via domiciliary (DOM) services. Special needs patients in the hospital are treated in the ISNU clinic or day surgery unit (DSU) where treatment is conducted under general anesthesia (GA).

Evidence has shown not all dentists are able to identify different special needs groups, which may indicate poor understanding about this recent discipline (9). Dental and other health professionals are uncertain as to the profile of patients that should be referred to the specialist in a dental clinic that provides dental services for this cohort. Furthermore, practitioners may not be aware of the services provided by an ISNU or the referral criteria involved. A vital communication link between two health professionals is through referral, which can be defined as “the act of directing someone to a different place or person for information, help, or action, often to a person or group with more knowledge or power (10). An audit of SND referrals will provide a preliminary account of referral patterns and quality of referrals within a major public SND Unit facility in Victoria, Australia by reviewing the profile of patients including demographic background, health information, and the distributions of patients to the different services under this unit.

Methods

Study design

This is a cross-sectional, descriptive study reviewing all screened referrals and applications to the ISNU of the RDHM over six months (January 1- June 30, 2013) prior to allocation to outpatient clinic (OP), DOM and GA services. Referrals to the ISNU were made on a Specialist Referral Form, available online and could be downloaded from the DHSV website. [The form that was used during the period of data collection was the previous version of the](#)

referral form, which was accessible from this website: <https://www.dhsv.org.au/public-dental-services/referrals/integrated-special-needs>.

Inclusion and exclusion criteria

All referral forms and supporting documents received by the ISNU that had undergone screening by a group of well-experienced assessors, consisting of a senior dentist and four SND specialists in RDHM within the allotted study period, were included. There were no exclusion criteria.

Data collection

Data obtained included the socio-demographic profile (suburb, age, gender, type of public oral healthcare eligibility), consent details, source(s) of referral, reason(s) for referral, list of medical problem(s) and current list of medication(s).

Patients' medical problems were collected from the patients' full histories in the specialist referral forms and then regrouped into five different special needs conditions including intellectual, physical, behavioural, psychological and medical conditions. One patient might be categorised in more than one special needs condition depending on the medical information provided. For example, autism, Down's syndrome and neurodevelopmental delay problems were categorised in intellectual disability group. Schizophrenia, bipolar disorders, dementia and other psychiatric disorders were grouped in psychological condition group. Patients reported with sensory impairment, on wheelchair or bedridden and cerebral palsy were grouped in physical disability category. Patients who were reported with behavioural issues or not able to cooperate were categorised with behavioural problems, whilst patients that were reported with medical problems such as diabetes mellitus, hypertension, congenial heart problems, bleeding disorders and etc. were grouped in the medical condition group.

Statistical analysis

All data was analysed using SPSS Version 20 (IBM Inc., Armonk, NY, USA). Chi-squared regression analysis was used to measure associations for nominal and ordinal variable with significance set as $P < 0.05$.

Ethics

Ethics approval was obtained from the Melbourne Dental School Human Ethics Advisory Group (ID: 1238409) and the Dental Health Service of Victoria (DHSV) Human Research Ethics Committee (No. 257).

Results

A total of 688 referrals received between 1 January and 30 June, 2013, by the ISNU of the RDHM were collated and analysed. Twenty-one referrals (3.1%) had incomplete medication histories and one (0.1%) an incomplete medical and medication history. The assessors (a senior dentist/ one of the four SND specialists) rejected none of those incomplete forms because they were returned to the referring personnel for completion. This is standard protocol within the hospital. After completing those referrals with the required information, the referrals were returned to ISNU by the referring personnel and later included in this study.

A) Demographic, public health status, referral personnel, and ability to consent

The majority (91.1%) of the referrals were from the Melbourne metropolitan area and surrounding suburbs, 8.1% from regional areas within Victoria, 0.6% from States outside of Victoria and 0.2% from homeless individuals with no identifiable place of residence. The mean patient age was 52.7 years ($SD = 23.7$; range 15 to 108 years). There were more referrals for female (54.9%) compared to male (45.1%) counterparts ($\chi^2 = 23.453$, $P = 0.003$). The majority of referrals were from individuals who held government concession cards (99.1%) ($\chi^2 = 26.66$, $P = 0.045$), followed by veteran's affairs concession cards (0.4%) and health care cards (0.4%).

Referrals sources included medical practitioners (n=417, 60.6%), dental practitioners (n=255, 37.1%), dental students (n=7, 1%) and others (n=9, 1.3%), such as family members and aged care facility personnel. Those referrals from non-registered or non-health care providers such as family members were returned for completion by a registered health care provider and later included for analysis after receiving the completed referral forms. There were significantly more referrals from medical compared to dental practitioners ($\chi^2 = 50.75$, $P < 0.001$).

Details on the ability to consent and the person responsible in circumstances where the patient was incapable of self-consent (55%), were specified in the referrals. Just over half of patients referred were not able to consent for treatment (n=379, 55.1% versus n=309, 44.9%). Only a small percentages of the referrals required consent from the Office of the Public Advocate (OPA) (3.1%), or others (2.2%), including consent from a non-family member identified as partner, guardian, support worker, doctor, or the patient's co-ordinator.

B) The profile of the SND referral

The majority of referrals received by the ISNU were for the Special Needs Clinic (68.3%), followed by domiciliary (22.4%) and GA services (9.3%) ($\chi^2 = 360.2$, $P < 0.001$).

The reason for referral to ISNU was divided into three main categories, including lack of compliance (27.2%), further management of medical conditions or requirement for GA services (9.9%), and other reasons (62.9%). Those referrals categorised into "other reasons" included general dental check-up, emergency care, or complete dental treatment (60.9%), lack of facilities (1.5%), and issues related to local anaesthetic allergies, case too complex for dental students, hospital in-patient or patient part of a private dental scheme (0.6%). Only four referrals (4 out of 288 referrals) were recorded with urgent request due to toothache or swelling.

Of the 27.2% of referrals citing compliance issues, the majority were due to behavioural or intellectual problems (16.1%), followed by psychological problems (6.1%), and phobia or anxiety towards dental treatment (5%). A total of 9.9% of referrals requesting further management were from those individuals who had bisphosphonate therapy (4.9%), had multiple medical conditions (2.8%), required treatments under GA (1.3%), had a history of cancer (0.4%), and others (0.5%) including chronic fatigue syndrome, multiple sclerosis or on warfarin therapy. The cited reasons for requesting GA services (1.3%) related to impacted wisdom teeth removal, multiple dental extractions and restorative treatment, or issues pertaining to dental phobias.

The most common type of special needs condition was in the category of medically compromised conditions (81.7%), followed by psychological problems (46%), physical disability (34.2%), intellectual disability (26%), and behavioural problems (14%) (table 1). There was a significant association between the age cohort and three types of special needs conditions namely behavioral issues ($\chi^2=80.97$, $P<0.001$), physical disability ($\chi^2=129.78$, $P<0.001$) and medically compromised conditions ($\chi^2=140.9$, $P<0.001$). The condition of “medically compromised” involves modification in dental management according to the patient’s health condition. Most common medical conditions reported in this study were hypertension (24.6%), followed by epilepsy (23.1%), gastro-oesophageal reflux disease (19.9%), cardiovascular problems (14.4%), and osteoporosis (13.4%). Less common medical problems that were reported include dementia (12.2%), followed by coronary artery disease (11.2%), arthritis (10.9%), stroke (6.6%), thyroid disease (5.7%), dysphagia (5.1%), congenital heart disease (3.2%), renal disease (2.9%), chronic obstructive airway disease (2.3%), liver disease (2.3%), multiple sclerosis (1.3%), acquired brain injury (1.5%), malignancy (6.7%), and pneumonia (1.8%). Intellectual disability ($\chi^2=2.47$, $P=0.963$) and psychological problems ($\chi^2=6.66$, $P=0.574$) were not significant across age cohorts. Three most common psychological problems reported were depression (15.8%), schizophrenia (5.8%), and bipolar disorder (1.9%). Other psychological problems reported in this study were psychosis, obsessive-compulsive disorder, and post-traumatic stress disorder.

The majority of referrals (n=666; 96.8%) included a complete list of medications. The remaining 22 referrals (3.2%) did not provide any information regarding medication status, and thus were excluded from the statistical analysis. Five types of medical prescriptions that were mostly reported in this study were health supplements (36.9%), anti-hypertensive (27.6%), anti-depressants (26.9%) anti-convulsants (25.4%) and anti-psychotics (24.5%). Health supplement were most frequent in individuals aged between 80-89 years ($\chi^2 = 101.337$; $P < 0.001$), as were anti-hypertensive medications ($\chi^2 = 185.995$, $P < 0.001$) and anti-depressants ($\chi^2 = 19.605$; $P = 0.012$).

Discussion

The ISNU at the RDHM caters for a range of individuals with special needs in Victoria, Australia. Since the establishment of SND as a specialty discipline in dentistry, there has been little data as to the patterns of referral for this cohort in the public sector. As such, the information detailed in this study serves as a record of the demographic profiles and insight into the patterns and quality of referral to a tertiary public dental hospital facility (RDHM) for those with special needs.

In Australia, patients with special needs are eligible for public dental services if they hold a government concession card (11), which was reflected in the present study. Other developed countries including the United Kingdom (12) and New Zealand (13) report similar national public dental support, unlike the United States, whereby people with special needs are supported by social health Medicare and Medicaid services (14). The Australian dental health system is complex and spread across federal, state and territory governments together with the private sector. Supported public dental services are predominantly centralised to the major cities (15). The current study demonstrated that a small percentage of referrals originated from states outside of Victoria, regional areas of Victoria, or from homeless people, which is consistent with the metropolitan centralisation of health

services. As there is no available dental literature assessing referral patterns of patients with special needs in Australia, a direct comparison with this finding was not possible. In addition, all specialists in SND have identified as localised to metropolitan regions (6). This lack of availability of SND dentists in non-metropolitan locations may also affect the accessibility of dental services for this cohort (16) or result in referral to metropolitan centres such as DHSV.

More than half of the referrals to the ISNU were from general or specialist medical practitioners, which differs in another study that the most common source of referral to a public dental hospital with a special unit treating people with a disability was mainly from dental personnel (17). This difference could in part be attributed to the fact that the ISNU requires all SND referrals to be accompanied by a medical questionnaire which could in turn result in greater numbers of referrals from medical practitioners. However, it does also suggest that medical input is important, as part of a multidisciplinary health care for special needs patients.

Consent for dental treatment is a dento-legal requirement in Australia (18) as it is internationally (19). "Informed consent" means the adult patient (or the parent/care) agrees to refuse, or accede to a proposed dental treatment or procedure after which the outcome, benefits and potential risks and complications of the proposed treatment has been explained by the healthcare practitioner (18). Consent is even more significant in the special needs population where there is the potential to have significantly more individuals who are unable to self-consent (19). When the patient is believed to be "not capable" of providing self-consent, by law, the treating practitioner should seek consent from the appointed guardian, their spouse, carers or their closest friend or relative (20,21). In circumstances whereby there is no person responsible to provide consent for the patient, the clinician must submit a Section 42K Notice to the Victorian Office of the Public Advocate (OPA) to inform the details of treatment, in which it is proposed for the patient's best interest (20). The referrals assessed in the current study demonstrated that more than half of individuals referred were unable to self-consent for treatment with a relatively small

number requiring the OPA to be contacted prior to dental treatment being undertaken. Majority of the individuals in this study had family support in getting dental treatment and were not reliant on the OPA.

A key feature of the referrals reviewed in the present study related to difference in treatment options being requested such as outpatient services through the ISNU (68.3%), GA (9.3%) or DOM services (22.4%). Treatment under GA is considered safe and effective for some patients with mild to moderate disabilities that exhibit difficult behaviour, unsuccessful treatment and limited cooperation in the outpatient clinic (22). Treatment under sedation and GA in a hospital setting provides a valuable alternative when other behavioural management techniques have failed, high caries activity exists, or where there is a need for comprehensive treatment to be completed in a single session or difficult surgical procedures are required (23). However, those patients with severe disabilities will have co-morbidities that render the provision of GA a potentially significant risk to patients. Example of patients include class III and IV according to the American Society of Anaesthesiologists (ASA) Physical Status Classification System (class III = patients with severe systemic disease e.g. poorly controlled diabetes mellitus or hypertension, chronic obstructive pulmonary disease; class IV = patients with severe systemic disease that is constant threat to life e.g. severe valve dysfunction, ongoing cardiac ischemia, recent myocardial infarction (less than 3 months)) and Mallampati class 3 (the Mallampati score is used to predict ease of intubation – class 3 or 4 is associated with more difficult intubation). In the current study, approximately one fifth of all referrals requested possible intervention using GA and a small number of those referrals cited reasons such as removal of impacted wisdom teeth, multiple dental extractions and dental phobia issues, which were in line with other studies (24,25).

A large number of all referrals to the ISNU at the RDHM were for DOM service (22.4%). DOM care amongst individuals with special needs is intended to provide dental services at the individuals' place of residence or institutional facility whereby, their physical or psychological circumstances preclude them from attending a routine dental clinic (26).

Whilst the service helps to improve the overall quality of life and oral health, such a service provides multiple challenges and barriers amongst dentists with inadequate training and skills to manage difficult patients with complex medical and cognitive impairments outside of traditional dental settings (27). The provision of DOM service demands high cost, time, and mobile dental equipment (27). These barriers also encourage referrals of patients to facilities that provide the service, mostly for the extremely older age groups such as in the eighth decade or older as reported by the current and previous studies particularly where issues of dementia may be present (28,29).

Another key feature of this study was related to the use of a standardised hospital referral form, which was mandatory within this public sector facility. It has been reported that a standardised referral form is likely to provide good quality and more detailed referrals compared to a simple referral letter (30), however this was not the case in the present study. Rejection of referrals has been reported to be attributed to insufficient information provided regarding the patient's conditions pertaining to the need for specialist's dental intervention, resulting in rejection of those referrals (17). Although there were no referrals rejected from this study, data on medication history was found to be the most common information missing from the referrals, suggesting poor quality of those referrals. The current protocol for the RDHM would require such information to be sought by the treating clinician either prior to or at the first clinical consultation.

The main issue with over half of the referrals in the present study, was that there was no specific reason cited for referral to ISNU, which could lead to inappropriateness and poor quality of referrals. The ISNU caters for patients with higher degree of disabilities and medically compromised. Those special needs patients with medically compromised will be accepted if there is a significant risk of a medical emergency or the proposed treatment adversely impacting the patient's health, which cannot be appropriately managed in a general dental clinic. Patients with severe physical, hearing and visual impairment, profound intellectual disability, and mild to moderate impairments with a combination of other disabilities and medical condition are to be considered for referral to the ISNU. The lack of

clear reasons in referring patients may also relate to the lack of understanding of the role of such a specialist clinic and more so, the role of SND by general medical and dental practitioners (31). As such, there is a need to impart SND education in the undergraduate curriculum and continuous professional development amongst dentists and also medical professionals to improve their understanding about SND, which will indirectly improve referrals.

Some of the issues described above can be overcome by providing referral guidelines and protocols. A policy and procedure of referral for RDHM Specialist Services is currently available from the hospital website, however, despite such policy being present, the referrals received in this study were incomplete in many instances. This could be overcome by informing the general medical and dental practitioners that such policies exist. Additionally, a validation process for ISNU referral forms is unclear and no training programs centred on the use of these forms are currently available. Thus, future research should explore referral form validity and recommended details in SND referrals to ensure smooth referral pathways of patients with special needs in a tertiary public dental hospital.

The results from this study should be considered in light of the study's limitations. The current study was conducted within a small window period between the time of acceptance of new referral forms to the placement of referrals to the respective clinics. In order not to interfere and delay the placement of referrals by the clerical staff at RDHM, the data were collected as soon as the referrals had undergone screening by one of the SND specialist or senior dentist. The researcher (the first author) was only involved in collecting the information from the referral forms after the screening process was completed. The researchers would have liked to have had the opportunity to assess all referrals prior to screening however the hospital felt that this would delay the return of inappropriate referrals and hence delay those patients being seen by other relevant clinicians in other hospital departments. Therefore, there was no cross-checking of referrals between two assessors to determine appropriateness of referral to ISNU. Future studies to include a blinded cross-checking of referrals by the SND specialists for the acceptance or rejection of

each referrals based on “patient specific factors” as per the British Dental Association case mix model (32) is recommended. The “patient specific factors” are factors that could increase the time and cost of dental treatment for each patient such as ability to cooperate, communicate, medical status, oral risk factors, access to oral care and legal and ethical barriers to oral care.

Conclusion

In conclusion, the referral patterns of patient with special needs in a major public dental facility are diverse to encompass a wide-range of individual profiles and mostly were inappropriately referred. It was found that patients referred into the ISNU had an average age of 53 years and were mostly females; held a government concession card and resided in a metropolitan area. It was also found that the majority of the referrals came from medical practitioners. There was often an indication that the patient could not give informed consent and the treatment requested frequently involved the utilisation of special needs clinic, followed by DOM and GA services. Inconsistencies in referral patterns were evident due to the lack of compulsory information and unspecified reasons of referral, which could imply inappropriateness and poor quality of the referrals, lack of understanding of this specialty, validation of referral forms and the need for further training required in use of referral forms.

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AGE COHORT	TYPE OF CONDITIONS					TOTAL NUMBER OF PATIENTS (n)*
	Behaviour n (%)	Physical n (%)	Intellectual n (%)	Psychological n (%)	Medical n (%)	
15-19	17 (41.5)	26 (63.4)	18 (19.5)	18 (43.9)	22 (53.7)	41
20-29	35 (33)	51 (48.1)	20 (18.9)	53 (50)	60 (56.6)	106
30-39	13 (15.1)	36 (41.9)	18 (20.9)	41 (47.7)	65 (75.6)	86
40-49	9 (8.7)	53 (51.5)	25 (24.3)	43 (41.7)	76 (73.8)	103
50-59	9 (9.3)	46 (47.4)	23 (23.7)	45 (46.4)	91 (93.8)	97
60-69	6 (10.5)	15 (26.3)	13 (22.8)	33 (57.9)	53 (93)	57
70 and	7	8	37	83	195	198

above	(3.5)	(4)	(18.7)	(41.9)	(98.5)		Table 1
Total	96	235	144	316	562	688	Characteris
	(14)	(34.2)	(21)	(46)	(81.7)		tic of
X²	80.97	129.78	2.47	6.66	140.9		disabilities
P-value	<0.001	<0.001	0.963	0.574	<0.001		among
							different

age cohort.

*Total percentage exceeds 100% due to multiple conditions in some patients.

Bold figures are statistically significant with $P < 0.001$.