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# Profile of oral health students over a ten year period and their practice intentions after graduation

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## Abstract

**Objective:** Limited research has been published on oral health therapists, particularly Australian cohorts of Bachelor of Oral Health (BOH) students who will graduate as oral health therapists. Aside from selection criteria and sample characteristics of students from some institutions, little is known about factors influencing career choice and career aspirations and workplace intentions after graduation. This study describes the characteristics, career choice factors and career aspirations of first year students enrolled at the University of Adelaide between 2005 and 2014.

**Methods:** All first year cohorts (2005-2014) completed a self-report questionnaire as part of coursework. Demographic data, socio-economic status, career choice influences and graduate aspirations were collected and analysed. Kruskal –Wallis Tests were conducted on each variable with the cohort years.

**Results:** Completed questionnaires suitable for analyses were received from 269 students (response rate 86%). Most students were under 21 years, in their preferred program and attended non-government schools. Males entering the profession increased. Career choice factors reflected those of other studies. The desire to work in the public sector declined after the first year of graduation with most reporting the private sector the workplace of choice after five and ten years. The stated intention of pursuing an academic career did not change and most reported the possibility of undertaking future postgraduate study.

**Conclusion:** Working conditions and lifestyle factors have become increasing important and a growing number of males are entering the profession. Monitoring profile variations between BOH student cohorts overtime is important for program selection, recruitment and labourforce planning. If the trend continues for BOH students wanting to ultimately work in the private sector, access to care could be affected for particular population groups.

## Introduction

The Bachelor of Oral Health program (BOH) commenced at the University of Adelaide in 2002. The degree was formed from the combination of the former Diploma in Dental Therapy and the Advanced Diploma of Dental Hygiene and graduates from this program are known as oral health therapists (OHTs). There has been limited research published about the profile of Australian OHT students since the inception of OHT programs. Selection criteria and sample characteristics of BOH students at the University of Adelaide [1], the profiles of Newcastle undergraduates [2], and sociodemographic detail and career decisions of Australian and New Zealand BOH students [3,4] have recently been reported. Marino *et al.* [4] reported a growing number of males entering the profession, a greater proportion with a dental assisting background and a greater proportion being self-directed in their career motivation 'to care for and help other people'. Other information is gathering about the profession such as the acceptance and utilisation of OHTs in the workforce [5-7] flexible delivery of care [8], employment pathways and work preparedness [9]. It has been suggested that underutilisation of the full scope of practice by OHTs may relate to lack of knowledge by the community and the wider dental profession [3] and that the skill sets they apply are those necessary to meet the demands of the settings in which they practice, and the supervision agreement associated with their conditions of employment [6]. It has also been reported that the attitude of dentists towards auxiliaries has a positive effect on patients' acceptance [10]. The NZ study found that graduates desired more clinical and placement experience prior to graduation and felt

that dentistry students should be better informed about the scope of practice of BOH graduates [9]. Having autonomy in the workplace with fewer restrictions on the provision of clinical services, and a greater understanding by dentists of their capabilities, have been associated with higher levels of satisfaction amongst dental therapists [11,12]. Increasing the understanding of career motivation and career aspirations of this group of professionals will assist in informing planners about workforce recruitment and retention; the marketing of the program; and informing curricula in how best to equip students to make meaningful and satisfying workplace choices as graduates. For these reasons, it is timely to build on what is already known about the profile of students in this growing profession [6,13], their future career aspirations, and to observe any trends that may have been apparent over a ten year period. This study reports on the demographic profile of 10 cohorts of first year BOH students enrolled at the University of Adelaide, influencing factors associated with their career decision and their stated practice intentions after graduation.

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## Methods

### Sample

A self-report questionnaire was completed by first year BOH students as part of Professional Studies coursework. Ten cohorts of BOH students (2005 to 2014) were included in the study.

### Questionnaire

The questionnaires were administered and coordinated by dental school staff toward the end of the first semester for each cohort. The survey comprised thirty-two questions. It included sociodemographic detail such as age, sex, country of birth, schooling, family's academic background and occupation, tertiary career preferences and perceived workplaces after graduation. The variables were based on those included in previous studies of dentists and BOH student's career choices over a long period [4,14-17]. School type variables relating to where students completed their secondary schooling were; South Australian, Other Australian, or overseas State school; and South Australian, Other Australian and Overseas Private School. Location of school options included the eight Australian states and territories, and Overseas. Family level of education was whether their father, mother or siblings had university degrees.

Motivation towards career choice was captured by a choice of ten statements which were; 'your desire to help people', 'the status of dentistry', 'anticipated income', 'good working hours', 'security of the job', 'opportunity to be self-employed', 'work would be interesting', 'work fits in with family commitments', 'work is important', and 'the pleasant working surroundings'. The respondents could answer 'Yes' or 'No' to more than one statement.

Respondents were also asked to indicate who influenced their decision to choose oral health as a career. The nine options given were 'father', 'mother', 'another relative', 'family friend', 'dentist', 'another dental employee', 'career counsellor', 'teacher at school', and 'school friends'.

Workplace intentions were collected by asking students where they were likely to be working one, five and ten years after graduating. Their options were 'Academic dentistry', 'Dental research', 'School Dental Service', 'Defence forces', 'Dental hospital or Public clinic', 'Private practice'.

Other data collected related to age, sex, country of birth, school type and location, tertiary preference, parents' occupation, family's level of education, and postgraduate study intentions.

### Data analysis

Incomplete questionnaires were removed for the analyses. Statistical Package for the Social Sciences (SPSS 23) was used to analyse and manage the data. The data were cleaned and missing values identified.

Age was dichotomized into less than 21 years and 21 years or more to allow for comparisons with previous research [18]. Country of birth was dichotomised into 'Australia' and 'overseas'.

In reference to the location of the secondary school attended the variable dichotomised into 'South Australia' and 'Other', and the type of school attended was regrouped into two categories; attending either a 'State' school (or public) or a 'Private, Independent or Catholic' school.

First tertiary preference was grouped as 'BOH', 'BDS' (Bachelor

of Dental Surgery) and 'Other'. The family level of education was determined by whether either parent or sibling was a university graduate. Parents' occupations were reclassified into three groups. The first, 'Upper white collar' included professional and paraprofessional occupations, managers and/or administrators; the second category, 'Lower White Collar' grouped occupations such as tradespersons and related workers, intermediate and advanced clerical, service production and intermediate transport workers; and the third, 'Blue Collar' included unskilled labourers and related workers, and elementary clerical sales and service workers [19].

Postgraduate studies, for the analyses in this report, included an honours degree in addition to masters and doctorates as this is how it was explained and subsequently promoted to the BOH students. The timing of when students decided on a career in oral health was categorised into four; 'during their matriculation year', 'before their matriculation year', 'after tertiary study' and 'after working or having a post matriculation break'. Future career aspirations variables grouped into three categories Academic/research, Public (School Dental Service/Hospital/Defence) and Private. Study intentions were collapsed into three groupings, 'Yes/probably', 'possibly' and 'no'.

Frequencies of the variables age, sex, year of entry, country of birth, educational background, parents occupation and education background and career intentions the first, fifth, tenth year after graduation were calculated for each year level. Additionally, frequency distributions for the variables relating to the students motivation and influencing factors in their decision to choose oral health as a career were calculated. 'Father' and 'Mother' were combined and relabelled 'Parent' for the analysis referring to one or both as having an influence over career choice.

Kruskal-Wallis tests were performed on each variable, with the cohort year as the independent variable, to assess the strength of variation over time. A five per cent level of significance was used for all tests.

### Ethical considerations

The study was conducted and complied with the Human Research Ethics Committee (HREC) standards of the University of Adelaide. The research was deemed negligible risk, data was de-identified and entry carried out by an independent research officer.

## Results

### Response rate

Comparable data sets were collected from first-year BOH undergraduate students from 2005 to 2014 inclusive. Completed questionnaires were received from 271 students out of a possible 317 which was a response rate of 86%. The response rate ranged from 66% in 2008 to 100% in 2010.

### Sample characteristics

Sample characteristics of the cohorts are presented in Table 1. Over half of the students were under 21 years of age (57.2%). The cohorts between 2007 and 2013 were predominately younger than 21 years ( $p < 0.01$ ). In 2005, less than a third were in the younger age group (30.3%), while in 2009 and 2012, 80% were younger than 21 years of age. Overall, the mean age of respondents was 21.3 (SD=4.1).

Most students were female (85.5%) and overall, sex was significantly associated with year of cohorts ( $\chi^2(9) = 19.76, p < 0.05$ ). Cohorts in 2011

**Table 1.** Percentage characteristics of ten cohorts of first year oral health students.

Year of enrolment	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
<b>n</b>	33	28	27	19	25	28	29	25	31	24	269
<b>Mean Age (SD)</b>	24.3(5.3)	22.0(4.8)	21.5(4.5)	20.3(3.3)	19.6(3.2)	20.0(3.1)	21.7(4.3)	19.5(1.6)	21.0(3.3)	22.1(3.9)	21.3(4.1)
<b>Age**</b>											
<21yrs	10(30.3)	13(46.4)	15(55.6)	12(63.2)	20(80.0)	21(75.0)	16(55.2)	20(80.0)	16(51.6)	11(45.8)	154(57.2)
21 & over	23(69.7)	15(53.6)	12(44.4)	7(36.8)	5(20.0)	7(25.0)	13(44.8)	5(20.0)	15(48.4)	13(54.2)	115(42.8)
<b>Sex*</b>											
Female	29(87.9)	19(67.9)	23(85.2)	17(89.5)	17(68.0)	24(85.7)	28(96.6)	22(88.0)	30(96.8)	21(87.5)	230(85.5)
Male	4(12.1)	9(32.1)	4(14.8)	2(10.5)	8(32.0)	4(14.3)	1(3.4)	3(12.0)	1(3.2)	3(12.5)	39(14.5)
<b>Country of Birth* (267)</b>											
Australia	28(87.9)	27(96.4)	20(74.1)	18(94.7)	21(84.0)	26(96.4)	22(75.9)	25(100.0)	27(87.1)	19(87.3)	233(87.3)
Other	4(12.1)	1(3.6)	7(25.9)	1(5.3)	4(16.0)	1(3.6)	7(24.1)	0(0.0)	4(12.9)	5(12.7)	34(12.7)
<b>Secondary School Location (n=267)</b>											
South Australia	22(68.8)	23(82.1)	23(88.5)	17(89.5)	23(92.0)	25(89.3)	21(72.4)	20(80.0)	26(83.9)	20(83.3)	220(82.4)
Other	10(31.3)	5(17.9)	3(11.5)	2(10.5)	2(8.0)	3(10.7)	8(27.6)	5(20.0)	5(16.1)	4(16.7)	47(17.6)
<b>Secondary School Type (n=276)</b>											
State	18(56.3)	17(60.7)	14(53.8)	8(42.1)	11(44.0)	12(42.9)	12(41.4)	10(40.0)	10(32.3)	10(41.7)	122(45.7)
Private/Independent/Catholic	14(43.8)	11(39.3)	12(46.2)	11(57.9)	14(56.0)	16(57.1)	17(58.6)	15(60.0)	21(67.7)	14(58.3)	145(54.3)
<b>1<sup>st</sup> Tertiary Preference (n=253)</b>											
Oral Health	17(58.6)	12(48.0)	13(50.0)	9(56.2)	10(41.7)	11(40.7)	22(75.9)	20(80.0)	19(65.5)	17(73.9)	150(59.3)
Dentistry	9(31.0)	11(44.0)	9(34.6)	7(43.8)	11(45.8)	13(48.1)	3(10.3)	4(16.0)	7(24.1)	5(21.7)	79(31.2)
Other	3(10.3)	2(8.0)	4(15.4)	0(0.0)	3(12.5)	3(11.1)	4(13.8)	1(4.0)	3(10.3)	1(4.3)	24(9.5)
<b>Family Education (n=264)</b>											
Father Unigraduate Yes	10(30.3)	6(21.4)	8(30.8)	5(26.3)	8(32.0)	10(37)	10(34.5)	10(40.0)	10(32.3)	7(30.4)	84(31.6)
Mother Unigraduate Yes	6(18.2)	6(21.4)	8(29.6)	4(21.1)	7(28.0)	9(32.1)	9(31.0)	11(44.0)	11(35.5)	12(54.5)	83(31.1)
Sibling Unigraduate Yes	15(45.5)	9(32.1)	8(30.8)	7(38.9)	10(40.0)	14(50.0)	8(27.6)	7(28.0)	9(29.0)	10(43.5)	97(36.5)
<b>Father's Occupation (n=244)</b>											
Upper white collar	20(62.5)	15(57.7)	11(50.0)	11(57.9)	11(55.0)	15(55.6)	14(51.9)	14(56.0)	11(42.3)	12(60.0)	134(54.9)
Lower white collar	10(31.3)	9(34.6)	9(40.9)	6(31.6)	6(30.0)	9(33.3)	10(37.0)	10(40.0)	9(34.6)	4(20.0)	82(33.6)
Blue collar	2(6.3)	2(7.7)	2(9.1)	2(10.5)	3(15.0)	3(11.1)	3(11.1)	1(4.0)	6(23.1)	4(20.0)	28(11.5)
<b>Mother's Occupation (n=231)</b>											
Upper white collar	13(40.6)	12(50.0)	9(40.9)	8(44.4)	10(52.6)	11(52.4)	14(56.0)	14(58.3)	11(39.3)	9(50.0)	111(48.1)
Lower white collar	13(40.6)	10(41.7)	12(54.5)	8(44.4)	9(47.4)	5(23.8)	8(32.0)	8(33.3)	7(25.0)	6(33.3)	86(37.2)
Blue collar	6(18.8)	2(8.3)	1(4.5)	2(11.1)	0(0.0)	5(23.8)	3(12.0)	2(8.3)	10(35.7)	3(16.7)	34(14.7)

Kruskal-Wallis H Test \*p&lt;0.05; \*\*p&lt;0.01; SD =Standard Deviation.

and 2013 saw 96% of females in the respective cohorts. In 2006 and 2009, around a third (32%) of the students were male. Enrolees were mostly born in Australia ranging from 74% in 2007 to 100% in 2012 which showed a significant result in relation to the cohorts ( $\chi^2(9) = 17.91, p < 0.05$ ). Most students attended secondary school in South Australia (82.4%) which ranged from 68.8% in 2005 to 92% in 2009. Over half the students attended a private, independent or catholic school for their secondary education (54.3%), and the remainder attended a state or public high school (45.7%). Almost 60% nominated BOH as their first tertiary preference; the range was between 41.7% in 2009 and 80% in 2012. Under a third (31.2%), nominated Dentistry as their first preference. When asked about the education levels of their parents, around a third of the parents were university graduates. Specifically, for fathers, the proportions ranged from 21.4% in 2006 to 40.0% in 2012 and for mothers, the range was from 18.2% in 2005 to 54.5% in 2014.

### Timing of career decision

Overall, a third of the students decided to pursue a career in oral health after having a post matriculation break or after working (Table 2). Around half of the earlier cohorts, namely 2005 and 2006, decided to study BOH after having a break from school. This became less apparent in the most recent cohorts when less than a third made their decision at that time.

### Motivating and influencing factors towards career decision

The two most reported reasons to study BOH were 'to help people' (92.0%) and 'interesting job' (91.3%) followed closely by 'job security' (77.8%). The least reported reasons were 'status' (40.9%) and the opportunity to be 'self-employed' (40.1%) (Table 3). There was a significant association between year of cohorts and being motivated by the 'job security' ( $p = 0.001$ ) and the 'important work' ( $p < 0.05$ ) and the 'opportunity to be self-employed' ( $p < 0.01$ ). Just over half (53.6%) in 2013 compared with almost all (96%) in 2010 and 2012 cohorts nominated 'job security' as an important motivator. In 2009, less than half (41.7%) nominated the 'important work' as a motivator compared with all other cohorts who rated it much higher (ranging from 63.6% in 2005 to 84% in 2008 and 2012). 'Opportunity to be self-employed' ranged from 18.2% for the 2005 cohort to 63.2% for the 2008 and 60.9% for the 2014 cohort as a career motivator for BOH. People or persons having the most influence over career decisions were a dentist (47.1%) or other dental worker (39.1%) with their school teacher having the least (6.9%). Friends, relatives and career advisors were all similar in that they had low influence, (ranging between 11 and 18%), on the students decision to pursue a career in oral health. Dentists and other dental workers played an important role in influencing the BOH students to choose a career in oral health. There was a significant association between dentists influence and the cohorts ( $p = 0.001$ ). Nearly three

**Table 2.** Percentages of career decision timing of ten cohorts of first year oral health students.

Year of enrolment	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
<b>n</b>	32	26	26	17	25	28	28	25	31	24	262
<b>Decision to study BOH<sup>ns</sup></b>											
During matriculation year	21.2	35.7	29.6	31.6	40	46.4	24.1	24	16.1	16.7	28.6
Before matriculation year	12.1	7.1	18.5	26.3	28	17.9	24.1	44	25.8	25	22.3
After tertiary study	15.2	7.1	22.2	10.5	16	7.1	13.8	4	29	25	15.2
After working/post matriculation break	51.5	50	29.6	31.6	12	28.5	37.9	28	29.1	33.3	33.8

ns= Kruskal-Wallis H Test  $p > 0.05$ .

**Table 3.** Percentages of career choice motivators and influences of ten cohorts of first year oral health students.

Year of enrolment	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
<b>n</b>	33	28	27	19	25	28	29	25	31	24	269
<b>†Motivation</b>											
To help people	90.9	96.3	92.6	94.7	83.3	82.1	100	100	86.2	95.7	92
Interesting job	87.9	89.3	88.9	94.7	91.7	89.3	93.1	100	86.2	95.7	91.3
Job security**	69.7	82.1	66.7	89.5	83.3	96.4	81.5	96	53.6	63.6	77.8
Important work*	63.6	71.4	81.5	84.2	41.7	75	81.5	84	75	78.3	73.3
Good work hours	63.6	57.1	77.8	73.7	66.7	71.4	79.3	84	75.9	69.6	71.7
Perceived income	57.6	67.9	59.3	52.6	70.8	53.6	58.6	68	42.9	54.5	58.6
Pleasant surrounds	54.5	57.1	66.7	52.6	52.2	46.4	71.4	60	75	87	62.2
Fits with family	54.5	39.3	63	52.6	33.3	32.1	50	68	57.1	47.8	49.8
Status	24.2	51.9	51.9	42.1	45.8	42.9	33.3	48	32.1	42.9	40.9
Self-employed**	18.2	28.6	22.2	63.2	41.7	35.7	44.4	48	53.6	60.9	40.1
<b>†Influences</b>											
Dentist**	27.3	57.1	63	52.9	47.8	35.7	19.2	72	43.3	62.5	47.1
Other dental	39.4	39.3	37	41.2	34.8	32.1	30.8	56	40	41.7	39.1
Parent	24.2	32.1	29.6	29.4	39.1	40.7	34.6	36	26.9	27.3	31.9
Family friend	12.5	3.6	14.8	11.8	21.7	28.6	30.8	28	13.3	16.7	18.1
Relative	9.1	10.7	14.8	17.6	26.1	10.7	19.2	28	13.3	16.7	16.1
School friend	12.1	10.7	7.4	22.2	16.7	14.3	23.1	8	6.7	4.2	12.2
Careers advisor	12.1	7.1	7.4	29.4	13	7.1	19.2	8	6.7	8.3	11.1
Teacher	6.1	10.7	3.7	23.5	4.3	3.6	7.7	4	3.3	8.3	6.9

Kruskal-Wallis H Test \* $p < 0.05$ ; \*\* $p < 0.01$ ; †Respondents were able to nominate more than one response

quarters (72%) of the 2013 cohort were influenced by a dentist but only 19.2% in 2011 (Table 3). Around a third (31.9%) was influenced by a parent. In 2009 and 2010 around 40% nominated a parent as playing an influencing role although this was not significant (Table 3).

The distribution of responses about what type of practice they believe they will be in one, five and ten years after graduation are presented in Table 4. Over half (55.6%) perceived or expected that they be working in the public system on graduation, ( $\chi^2(9) = 23.10$ ,  $p < 0.01$ ). After five years, this reduced to less than a third (30.7%) ( $\chi^2(9) = 17.42$ ,  $p < 0.05$ ), and ten years after graduating, the greater proportion expected to be working in a private practice (80.3%) ( $\chi^2(9) = 17.48$ ,  $p < 0.05$ ). Around four percent indicated that they would prefer an academic career or would be undertaking research first year after graduation. This proportion did not change when asked of their intention at the three time periods. When asked about their intention to do postgraduate studies, around a third responded 'Yes/probably' (33.8%) and 'Possibly' (38.3%) and most (61%) ( $\chi^2(9) = 18.22$ ,  $p < 0.05$ ), indicated that they would study fulltime.

## Discussion

This study set out to report the characteristics of the BOH student cohorts over a ten year period and to report on the first year students' perceptions of their likely workplace in the year after graduation, five years after graduation and ten years after graduation. The study

also aimed to capture the likelihood of students participating in postgraduate studies in the future.

Firstly, the mean age (21.3, SD 4.1) of student participants in this survey was similar to previous reports of BOH students at the same institution [4] however, it was noted that more younger students entered the course after 2005. The proportion of younger students (< 21 years) ranged from 30% in 2005 to 80% in 2009 and 2012. This age distribution is in contrast to a wider population of OHT students surveyed from nine different institutions in Australian and New Zealand where the mean age was 23.7 (SD 6.3).

There were slightly more males (14.5%) entering the BOH at the University of Adelaide compared to the proportions reported in other BOH programs combined [4]. Australian dental workforce data collected in 2012, reported 15% of registered male OHTs [20]. This change from a traditionally female profession appears to be quite rapid. By means of comparison, male nurses for example, made up 10% of the national average nurses workforce in 2011, although a greater proportion worked in mental health (33%) and in areas of developmental disability (28%) [21]. It is possible that providing oral care to specific disadvantaged groups may be an area suited to male BOH graduates in the future, and a way of addressing workforce shortages and improving access for disadvantaged groups [8,22]. Dental therapists were originally introduced into Australia and New Zealand as a 'low cost auxiliary' to work primarily in the public sector providing restorative and preventive services for children [22].

**Table 4.** Frequencies of students work intentions first, fifth, tenth year after graduation, and study likelihood, by year of enrolment.

Year of enrolment	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
<b>n (returned surveys)</b>	33	28	27	19	25	28	29	25	31	24	269
<b>1<sup>st</sup> yr after Graduation**</b>											
Academic/research	0(0.0)	0(0.0)	2(7.4)	0(0.0)	5(20.0)	0(0.0)	0(0.0)	0(0.0)	3(9.7)	2(8.3)	12(4.5)
Public (SDS/Hosp/Defence)	13(39.4)	16(57.1)	16(59.3)	11(61.1)	12(48.0)	17(60.7)	17(58.6)	10(40.0)	19(61.3)	18(75.0)	149(55.6)
Private	20(60.6)	12(42.9)	9(33.3)	7(38.9)	8(32.0)	11(39.3)	12(41.4)	15(60.0)	9(29.0)	4(16.7)	107(39.9)
<b>5<sup>th</sup> yr after Graduation*</b>											
Academic/research	1(3.0)	2(7.1)	1(3.8)	1(5.6)	4(16.7)	2(7.1)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	11(4.2)
Public (SDS/Hosp/Defence)	7(21.2)	10(35.7)	13(50.0)	4(22.2)	8(33.3)	6(21.4)	5(17.2)	6(24.0)	14(46.6)	8(34.8)	81(30.7)
Private	25(75.8)	16(57.1)	12(46.2)	13(72.2)	12(50.0)	20(71.4)	24(82.8)	19(76.0)	16(53.3)	15(65.2)	172(65.2)
<b>10<sup>th</sup> yr after Graduation*</b>											
Academic/research	3(9.1)	1(3.6)	1(3.8)	1(5.6)	2(8.3)	0(0.0)	0(0.0)	1(4.0)	3(10.0)	0(0.0)	12(4.5)
Public (SDS/Hosp/Defence)	3(9.1)	3(10.8)	5(19.2)	1(5.6)	5(20.9)	3(10.7)	3(10.3)	2(8.0)	10(33.3)	5(21.7)	40(15.2)
Private	27(81.8)	24(85.7)	20(76.9)	16(88.9)	17(70.8)	25(89.3)	26(89.7)	22(88.0)	17(56.7)	18(78.3)	212(80.3)
<b>Intend to do PG Studies</b>											
Yes/probably	12(36.4)	11(39.3)	11(40.7)	4(21.1)	11(44.0)	7(25.0)	10(34.5)	7(28.0)	12(38.7)	6(25.0)	91(33.8)
Possibly	7(21.2)	12(42.9)	10(37.0)	13(68.4)	11(44.0)	12(42.9)	9(31.0)	10(40.0)	9(29.0)	10(41.7)	103(38.3)
No	14(42.4)	5(17.9)	6(22.2)	2(10.5)	3(12.0)	9(32.1)	10(34.5)	8(32.0)	10(32.3)	8(33.3)	75(27.9)
<b>†Would study full time*</b>											
Yes	9(42.9)	14(58.3)	14(66.7)	6(37.5)	17(73.9)	13(65.0)	13(65.0)	11(61.1)	20(76.9)	9(52.9)	126(61.2)
No	12(57.1)	10(41.7)	7(33.3)	10(62.5)	6(26.1)	7(35.0)	7(35.0)	7(38.9)	6(23.1)	8(47.1)	80(38.8)

Kruskal-Wallis H Test \* $p < 0.05$ ; \*\* $p < 0.01$ ; †Only those who indicated they would study are included in 'would you study full time' variable.

Note: Not all columns add up to 100% due to rounding up.

Country of birth was reported as Australia for most participants (87%). The remainder were from 19 countries in the following regions; the Middle East, South East Asia, Europe, South America and New Zealand. Marino *et al.* [4] broader study of BOH students showed a greater diversity of students' ethnicities. In this study, there was significant variation between Australian born students and cohort years for reasons that are not clearly evident.

Less than half the students attended public schools in this Adelaide study compared with over two thirds (69.2%) in the wider comparison of BOH students [4] which may indicate a tendency that students are from privileged backgrounds as has been reported for dental students at the same institution [17,23]. It may be that this institution is more attractive to students from privileged backgrounds irrespective of the programs it offers. Although not presented, the majority of fathers (54%) were in professional, technical or related employment and most mothers (48%) were in similar employment, thus reaffirming that students in this study were from higher SES backgrounds [21]

The fact that many students indicated that BOH was not their first preference could be interpreted in difference ways. Potentially, being in a non-preferred course could affect student performance, although other studies have indicated to the contrary [1,24]. It is not unusual for students to miss out on being offered a place in their preferred course or program of study because of limited places available and competitive selection criteria. Dental students, for example, have often place medicine as their preferred career option [1,16].

Most students in this study decided on a career in oral health once they had left school. This could be explained by many having a background in dental assisting as did a significant proportion of BOH graduates in a recent study [4]. Twelve percent also had undertaken other tertiary study. Fewer students had made their decision during or before their matriculation break. This reinforces the very little impact that school teachers and career counsellors have in students' career decision making in this Adelaide survey; similar to the results reported by others [1,4,15,25] and similarly, applicable for dental students [15,17]. The overall minimal impact could be that counsellors

themselves lacked accurate information about the profession, or that relevant program material had not been made available to school students.

When investigating the preferred career preference from students from other health professions, (e.g., medicine, nursing, other allied health), Schofield and colleagues found that preference for practice location depended on ethnicity, age, sex, and discipline amongst other things [26]. In this current study, 12% of students were born outside Australia which was much less than the proportion reported by dental students at the University of Adelaide (38% between 1997-2005) [17]. Although not reported, 16.9% of students in this study spoke a language other than English which is close to the 18% reported in the 2011 census [27]. This suggests that for BOH students, any preference of practice location or workplace preference based on ethnicity, could be negated.

The results of this survey indicate a strong shift in emphasis from previous studies where the opportunity to be self-employed as a main motivator has been overshadowed by working conditions such as flexibility of hours, job security and family or lifestyle related factors. This trend toward lifestyle and income as motivating factors has also become increasingly important of late to medical students' career choice [28-30] therefore it was not surprising to see it reflected in this study of BOH students.

Further research is necessary to track the differences between first year students stated intentions and how these may alter over the course of the program and after graduation. This study revealed that four out of five first year students had the intention of working in private practice 10 years after graduation. The proportion doubled from only two in ten students indicating their intention to work in private practice one year after graduation. It would be interesting to explore the reason for this shift in preference. Primary concerns raised by stakeholders in relation to the OHT workforce were funding restraints (hence most employed in the private sector) and lack of clarity associated with scope of practice (potentially a reason for practitioners not hiring OHTs) [13].

It could be that students perceive government or public sector practice to be a 'safe' option in the first instance, or it may reflect that remuneration is greater once practitioners become more established in their careers and hence the preference toward private practice after ten years. In 2012, 364(55%) of employed registered OHTs were working in private practice, 11(1.6%) were employed as teachers/educators and 5(0.7%) were primarily engaged in research [20]. A considerable proportion of OHTs work in two and three or more locations (29.3% and 9.8% respectively) compared with around five percent of the wider workforce working in multiple locations [6]. A recent NZ study reported that graduates had a desire for clinical variety, where they were able to use their full range of scope of practice skills, and that this opportunity was less likely to occur in the public sector or in 'not for profit' positions in oral health [9]. The less than one percent engaged in research appears to be a very small proportion of the OHT workforce despite 72% in this study indicating that they would 'probably' or 'possibly' undertake postgraduate studies when asked as first year students. Perhaps BOH students are not thinking of a traditional research career but rather the traditional practitioner's role of seeking 'viable' employment as has been reported in other studies [31,32]. It is possible too, that career aspirations may be associated with the generation of students in this study.

Most of the students in this study were representative of the Generation Y's, or Millennials, as they are sometimes known (born 1982-2000) [33]. Not a lot is understood about the career aspirations of Generation Y's other than they are generally accepting of authority, well watched over, have a fascination with new technology, likely to set high standards, and will 'focus on the needs of the community more than the individual' [33]. They have been described as 'self-confident, goal-oriented, well-socialized, compliant and drawn to collective action' and place emphasis on family and friends first when it comes to choices and are very often driven by independence, stability and loyalty [34]. Generation Y's in this study rated helping people, the importance of the work, and job security as being of high importance which is consistent with previous findings of this generation of students [4]. Generation X'ers by comparison (born 1963-1981), are typically characterized as individualists, comfortable with change, more independent and self-sufficient than previous generations, and who are likely to seek out more than one job and open to more challenging employment options offering higher salaries or improved benefits. This could explain why income and status did not rate high as important motivators for the students in this study.

### Implication for practice

Having a better understanding of the intentions of BOH graduates career plans immediately following graduation may better inform those responsible for workforce planning and projections [9]. The BOH is a relatively new program and it is important that undergraduates are supported in their preparedness for career opportunities, not only in their clinical settings, but also for those wanting academic careers in teaching and/or research. Building a greater body of evidence around oral health practitioners and their career intentions supports growth in research, education, and practice [35]. By Fostering a climate of research amongst undergraduates, could be important for recruiting BOH graduates as academics and encouraging more to consider enrolling in honours programs or other postgraduate study. The majority of students in this study indicated that they would prefer to undertake post graduate studies as a fulltime load, therefore it is important that funding opportunities be available for those wishing

to do so. For example, cost and concerns about personal funding have been reported as key perceived barriers for dental hygienists to undertake graduate education and finding time to combine study and work [35]. It is also possible that at the time students in this study completed the survey, many were still anticipating being offered a place in a dentistry program at a later stage. The growing number of males entering the oral health workforce, and having the opportunity now to 'upskill' (e.g. providing restorative services to adults of all ages), may lead to more OHTs setting up private practices, and working according to the Scope of Practice Standards. This model may help in providing alternative access to dental services for low income earners, and children, for example. More males entering the profession may see a shift in workplace preferences in the future, resulting in more OHTs working in areas of special needs (e.g. in prisons, or with patients with psychological, cognitive and physical disabilities); as is occurring in the nursing profession [21]

In order to assist BOH graduates in their desire to undertake further study, it is important that dental schools foster a climate where future career aspirations can become a reality for those who desire it [36]. By ensuring that new graduates are well equipped with the confidence to upgrade skills necessary for research and by seeking role models within the profession, the likelihood of broadening the scope of professional opportunities for OHTs may increase.

This study was strengthened by the high participation rate which allowed meaningful conclusions being drawn from this sample. Whilst the reliability of self-reported questionnaires for data collection has its limitations, this survey was carried out at the same time in the academic program for each cohort and the wording of the questions remained unchanged.

Further research is necessary such as repeating the survey for second and third year students to monitor whether stated career intentions changed over the three years of the program.

### Conclusions

This study adds to the body of knowledge of the profile of BOH undergraduates and shows an increase in the number of males entering the profession over the ten year period. Job security, self-employment opportunities and the important nature of the work were key motivators for their career decision as well as being greatly influenced by a dentist. There appeared to be a general tendency for graduates to initially want to work in the public sector and then in the private sector five years after graduation. The proportion of those wanting an academic or research career remained unchanged over this time. It is important to continue to monitor these perceptions of how students, in the early stages of the BOH program, view themselves as graduates because any potential disproportion of public and private sector practitioners could affect oral health outcomes of the populations they intend to serve.

### Conflict of interest

The authors declare that they have no competing interests associated with this study.

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