Study Motives and Career Choices of Iranian Dental Students

M.R. Khami^{a, b} H. Murtomaa^a M. Jafarian^b M.M. Vehkalahti^a J.I. Virtanen^a

^aInstitute of Dentistry, University of Helsinki, Helsinki, Finland; ^bSchool of Dentistry, Shaheed Beheshti Medical University, Tehran, Iran

Key Words

Dental students · Study motives · Career choices

Abstract

Objectives: To investigate the study motives and career choices of Iranian senior dental students in relation to their background factors. **Subjects and Methods:** During the spring term 2005, a questionnaire survey was administered to 327 senior dental students in seven randomly selected state dental schools in Iran. The questionnaire requested information on age, gender, parents' employment in dentistry, previous education and employment in dental hygiene, study motives, and career choices. Statistical analyses were made using independent sample t test, factor analysis, and binary logistic regression model. **Results:** Based on the factor analysis, which explained 73% of the total variance, five motive dimensions were identified: altruism and intellectual challenges, characteristics of the profession, social status and security, other person's recommendation, and failure to be admitted to other study programmes. The mean for the 'characteristics of the profession' dimension was lower among the students with at least one parent employed in dentistry ($p = 0.03$). The 'altruism and intellectual challenges' dimension was reported to be more influential by the students with background in dental hygiene (32 students) compared to the others ($p < 0.001$). Engaging in postgraduate studies was the first career preference of 189 (70%) of the respondents. Those with a background in dental hygiene

were less inclined to enter postgraduate courses ($p < 0.001$), but more eager to be employed in either the public or the private sector ($p < 0.001$), and to enter the community oral health and research field ($p < 0.001$) than the others. **Conclusion:** Personal characteristics and motives of the students play a major role in shaping their career preferences.

Copyright © 2008 S. Karger AG, Basel

Introduction

In recent decades, great emphasis has been placed on the main responsibility of health care professionals, including dentists, to promote the health of the general public. The success of these efforts requires dentists to be committed to an ethical attitude of public service [1]. In these efforts, knowledge of dental students' expectations of their profession as well as their motives to study dentistry is of great importance. These expectations and motives make studying dentistry meaningful to dental students and society [2] and understanding these factors facilitates workforce planning in the dental sector.

Previous studies have shown that students have several motives to study dentistry: higher social status and income [1–3]; ability to be self-employed [3, 4]; ability to work with one's hands and apply theory in practice [2, 5, 6]; helping people [2, 3, 5, 7], and general interest in dentistry [5, 8]. These studies have reported differences in the students' motives related to such background factors as

Table 1. Mean ratings of the study motives of Iranian senior dental students (n = 270) to study dentistry, in different subgroups based on gender, parent employment in dentistry, and background in dental hygiene

Ranked study motives	All	Gender		p ¹	Parent employed as a dentist		p ¹	Background in dental hygiene		p ¹
		men (n = 116)	women (n = 154)		yes (n = 19)	no (n = 251)		yes ² (n = 31)	no ² (n = 85)	
Social status of being a dentist	4.0 ± 1.2	3.9	4.1	0.06	3.9	4.0	0.47	3.9	3.8	0.75
Personal interest in dentistry	3.8 ± 1.5	3.6	3.9	0.1	3.0	3.8	0.03	3.9	3.5	0.53
High-level income of practising dentistry	3.4 ± 1.5	3.6	3.3	0.05	2.8	3.5	0.08	3.3	3.7	0.67
Ability to be self-employed	3.4 ± 1.7	3.3	3.4	0.5	3.5	3.3	0.61	3.4	3.2	0.60
Interest in working with one's hands	3.4 ± 1.6	3.3	3.4	0.8	2.5	3.5	0.02	3.3	3.3	0.79
Helping people to improve their health	3.3 ± 1.4	3.1	3.4	0.1	2.8	3.3	0.23	3.9	2.8	0.00
Existence of artistic theme in dentistry	3.2 ± 1.6	3.2	3.2	0.7	2.7	3.2	0.14	3.7	3.0	0.03
Playing a role in community health promotion	2.9 ± 1.5	2.7	2.9	0.2	2.6	2.9	0.47	3.8	2.3	0.00
Parents' recommendation	2.5 ± 1.8	2.5	2.4	0.1	3.6	2.4	0.006	2.3	2.5	0.48
Friends' or relatives' recommendation	2.3 ± 1.7	2.5	2.2	0.2	2.4	2.3	0.79	2.3	2.5	0.9
Being a researcher in dentistry	2.1 ± 1.7	2.0	2.2	0.5	2.1	2.1	0.91	3.1	1.7	0.00
Failure to be admitted to other programmes	0.3 ± 0.9	0.6	0.1	0.00	0.3	0.3	0.92	1.2	0.4	0.001

¹ Independent sample t test was used to evaluate statistical differences based on gender, whether or not at least one parent was employed in dentistry and whether students had or did not have a background in dental hygiene.

² Since only 1 female student had a background in dental hygiene, figures in these two columns are for male students only.

gender, race and parents' level of education [5, 9–11]. Similar differences have also been reported in their prospective career plans [12, 13].

In Iran, those wishing to enter dentistry must sit the national university entrance examination for applied sciences. The competitive nature of this exam entails that only those achieving very high scores are admitted to study dentistry. This procedure has a profound effect on the selection of future dental professionals. The 18 dental schools in Iran recruit about 750 new undergraduate dental students annually [14].

The aim of the present study was to investigate study motives and career choices of Iranian senior dental students in relation to their background factors.

Subjects and Methods

Study Subjects and Data Collection

To obtain a representative sample of all the Iranian state dental schools (n = 15), first, two strata were defined based on the age of the schools [14]. Then, three old schools and four new schools

were selected randomly to serve as clusters. Beside the state dental schools, three private schools currently exist in Iran. Except the one selected for doing the pilot study, the other two were excluded because of problems of comparability with the state schools [15, 16]. This multi-stage sampling approach was considered adequate for the study.

During the spring term 2005, a questionnaire survey was conducted in the selected schools [17]. One of the researchers (M.R.K.) visited each of these schools and asked all (n = 327) senior dental students (those on their last two semesters of study toward the degree) to fill in a self-administered pretested anonymous questionnaire in their ordinary classroom settings. The volunteer students filled in the questionnaires and returned them immediately.

Questionnaire and Variables

All respondents indicated their gender and year of birth. In addition, the questionnaire requested information on the following four items:

Study Motives. With regard to their motives for studying dentistry the students were asked to rank on a scale of 0–5 to each of the 12 given alternatives according to the degree the alternative had influenced their decision to study dentistry. The alternatives (table 1) were extracted from previous studies [3, 9], and were subsequently modified after a pilot study with 10 voluntary senior

dental students. The mean of the scores for each alternative was calculated in order to rank the motivations and to facilitate comparisons between the subgroups.

Career Choices. The students were asked to indicate their willingness to work in each of the nine available fields in dentistry after graduation of a scale of 0–5. The alternatives were then categorized as follows: (a) private practice: to be a solo practitioner in private office, to work in a clinic as an independent contractor, to be a shareholder in an incorporated practice; (b) employment: to be employed on salary or commission in a governmental organization, to be employed on salary or commission in a private organization; (c) community oral health and research: to work as a dentist in primary health care system, to work or study in the field of oral public health, to be a researcher in dentistry; (d) higher education: entering a postgraduate programme. For each respondent, the mean scores of the four categories were calculated separately in order to produce career choice scores.

Parents' Employment in Dentistry. The students were requested to report if at least one of their parents was a dentist. Those who did so formed a separate subgroup.

Background in Dental Hygiene. The students were asked to report if they had completed a programme in dental hygiene before entering dentistry. In Iran, dental hygienists have gained admission to university studies in dentistry through an entrance exam after 6 years' employment in the primary health care system [14]. A separate subgroup was defined based on this background.

Statistical Analyses

Independent sample *t* test was used to compare means of the study motive scores in various subgroups. To identify the underlying dimensions for study motives a factor analysis with principal component method and varimax rotation was applied. Each item that loaded at 0.60 or greater on only one factor was included as an item for a given factor. Based on the factor analyses, new variables vis-à-vis each factor were formed by summing up the values of the original variables with the highest loadings in that factor. These sum variables were then standardized by dividing the sum by the number of variables included.

Using an independent sample *t* test, differences in the computed sum variables were examined. χ^2 test was used to compare career choice preferences in the subgroups. A binary logistic regression model was fitted to the data in order to explain career choice preferences after controlling for background variables and study motives and in order to calculate odds ratios (OR) and 95% confidence intervals (CI).

Results

Subjects' Characteristics

Of the 327 students, 270 (82%) with a mean age of 26 (range 21–42) years completed the questionnaire. Of these, 116 (43%) were men and at least one parent of 19 students (7%, 7 men and 12 women) was a dentist. Thirty-two (12%) of the respondents, all but 1 of whom were men, reported having a background in dental hygiene.

Study Motivations

The respondents ranked 'social status of being a dentist' and 'personal interest in dentistry' with mean scores of 4.0 (SD = 1.2) and 3.8 (SD = 1.5), respectively, as the most important motives for studying dentistry. On the other hand, 'failure to be admitted to other programmes' with a mean score of 0.3 (SD = 0.9), received the lowest ranking of the 12 motives (table 1).

Regarding the differences related to background variables, a significant gender difference was found for the motive 'failure to be admitted to other programmes' with a significantly higher mean score for men ($p < 0.001$) (table 1). Those who reported at least one parent was a dentist gave a lower rating to the motives 'personal interest in dentistry' and 'being interested in working with one's hands' than the others (151 students, $p = 0.03$ and $p = 0.02$, respectively), but significantly higher rating to 'parents' recommendation' ($p = 0.006$). Compared to the other men, the respondents with a background in dental hygiene (31 students) had higher scores on the following motives: 'helping people to improve their health' ($p < 0.001$), 'existence of artistic theme in dentistry' ($p = 0.03$), 'playing a role in community health promotion' ($p < 0.001$), 'being a researcher in dentistry' ($p < 0.001$), and 'failure to be admitted to other programmes' ($p = 0.001$).

Five factors for study motivation were obtained and identified according to the strongest loadings in the factor analysis, which explained 73% of the total variance (table 2).

According to the computed sum variables (table 3), five motive dimensions were identified: altruism and intellectual challenges, characteristics of the profession, social status and security, other person's recommendation, and failure to be admitted to other programmes. Of these, the 'social status and security' dimension was ranked highest by the students, followed by 'characteristics of the profession', 'altruism and intellectual challenges', 'other person's recommendation', and 'failure to be admitted to other programmes', respectively. The mean for the 'characteristics of the profession' dimension was lower amongst the students with a parent working in dentistry ($p = 0.03$). Moreover, the 'altruism and intellectual challenges' dimension was reported to be more influential by the students with a background in dental hygiene than by the others ($p < 0.001$).

When the sum variables were used to identify the proportion of the students who had each dimension as their highest ranked motive, it was revealed that the 'characteristics of the profession' was ranked first by 105 (39%) of the students. One third (83 students, 31%) ranked the

Table 2. Factor loadings on study motives amongst Iranian senior dental students (n = 270)

	Factor				
	1	2	3	4	5
Helping people to improve their health	0.806	0.143	0.238	0.110	0.062
Playing a role in community health promotion	0.844	0.205	0.081	0.048	0.103
Being a researcher in the field of dentistry	0.790	0.163	-0.077	0.005	-0.050
Personal interest in dentistry	0.173	0.772	0.180	-0.162	-0.034
Interest in working with one's hands	0.141	0.878	0.175	-0.028	-0.054
Existence of artistic theme in dentistry	0.205	0.827	0.059	-0.023	0.062
High-level income of practising dentistry	-0.184	0.107	0.825	0.119	-0.003
Ability to be self-employed	0.359	0.228	0.611	-0.032	0.029
Social status of being a dentist	0.175	0.111	0.804	0.119	-0.001
Parents' recommendation	0.183	0.015	0.098	0.804	0.098
Friends' or relatives' recommendation	-0.056	-0.184	0.086	0.818	-0.053
Failure to be admitted to other programmes	0.066	-0.021	0.009	0.038	0.989
Percentage of variance explained	19	19	15	12	8
Percentage of cumulative variance explained	19	38	53	65	73

Table 3. The mean of the identified dimensions in different subgroups of Iranian senior dental students (n = 270) based on gender, parent employment in dentistry, and background in dental hygiene

	All	Gender		p ¹	Parent employed as a dentist		p ¹	Background in dental hygiene		p ¹
		men (n = 116)	women (n = 154)		yes (n = 19)	no (n = 251)		yes ² (n = 31)	no ² (n = 85)	
Characteristics of the profession	3.43 ± 1.36	3.39	3.47	0.65	2.80	3.49	0.03	3.68	3.28	0.1
Social status and security	3.60 ± 1.12	3.58	3.59	0.92	3.40	3.60	0.44	3.58	3.58	0.99
Altruism and intellectual challenges	2.75 ± 1.30	2.63	2.85	0.18	2.50	2.78	0.37	3.64	2.25	0.00
Other people's recommendation	2.38 ± 1.45	2.48	2.29	0.30	2.97	2.32	0.07	2.35	2.53	0.53
Failure to be admitted to other programmes	0.3 ± 0.9	0.6	0.1	0.00	0.3	0.3	0.92	1.2	0.4	0.001

¹ Independent sample t test was used to evaluate statistical differences based on gender, whether or not at least one parent was employed in dentistry and whether students had or did not have a background in dental hygiene.

² Since only 1 female student had a background in dental hygiene, figures in these two columns are for male students only.

'social status and security' dimension highest. 'Altruism and intellectual challenges' was the top-ranked motive amongst only 46 (17%) students, while 32 (12%) and 3 (1%) of the students preferred 'other person's recommendation' and 'failure to be admitted to other programmes', respectively.

Career Choices

Based on the career choices scores, entering a postgraduate programme in dentistry was the first preference

of 189 (70%) of the respondents, while 35 (13%) of the students indicated that their first preference was to enter private practice. Lowest career first preference choice was in the public or the private sector employment: 24 (9%) students; and community oral health service or research: 21 (8%) students had the lowest rankings for first preference choice. Those with a background in dental hygiene were less inclined to enter a postgraduate programme ($p < 0.001$), but more eager to be employed either in the public or the private sector ($p < 0.001$), or to enter the commu-

nity oral health or research field ($p < 0.001$) than the others.

Logistic Regression Model

In the binary logistic regression model, willingness to enter community oral health or research discipline as the first preference was more likely amongst the students having a background in dental hygiene (OR = 4.2, 95% CI = 1.2–14.7) and those identifying the ‘altruism and intellectual challenges’ dimension as their first motive dimension (OR = 3.4, 95% CI = 1.3–8.9).

Discussion

In order to cover all the aspects of study motivations, a primary tool was created that was able to take a variety of the motives from previous studies into account. A pilot study and further discussion with 10 senior dental students resulted in the present 12-item tool, which, according to the factor analysis results, worked well. In addition, the alternatives for career choices covered all the fields available to students of dentistry in Iran upon graduation. However, because our data were obtained with a self-administered questionnaire, these results should be interpreted with some caution.

The present study is the first to consider study motives and career choices simultaneously. Moreover, while most of the previous studies used data obtained from dental school applicants and first-year dental students, our subjects were senior dental students with clearer conceptions of their future profession.

The most powerful motives for studying dentistry in this representative sample of senior dental students were those related to the characteristics of the profession and social status, as well as to independence and financial gain. These findings are similar to those of many previous studies [1, 3, 6, 18]. As found here and suggested previously [1], it seems that students of dentistry are less motivated to serve the community than fulfil their personal goals. This image of the profession amongst future dentists is not in agreement with the health care concepts agreed in Alma Ata (WHO 1978). If these guidelines are to be followed, the dental curriculum should be revised accordingly.

The finding that 189 (70%) students preferred to enter a postgraduate programme in dentistry is consistent with the results of a study of dental students in the UK [10], in which 73% of the subjects had noted that postgraduate studies would improve their career prospects. This should

be taken into account in postgraduate curricula in dentistry and in workforce planning.

No significant gender differences were found in career choices or in study motives and their underlying dimensions, except for ‘failure to be admitted to other programmes’, which was the least important motivation and dimension. This finding was in accordance with the results of the study by Hallissey et al. [3], but not with the findings of some other studies [5, 9, 11–13]. The discrepancies might be attributed to the social and cultural differences in various countries. In Iran the number of female dental students has exceeded that of men in recent years. It has been argued that women dentists are more likely to interrupt their careers more often and for longer periods than their male colleagues [10].

The students with at least one parent employed in dentistry scored significantly lower on the ‘characteristics of the profession’ dimension than the other students. It seems that they were more familiar with the profession and were aware of the difficulties of practising dentistry (such as job stress) despite its attractions (such as working with one’s hands and artistic considerations). On the other hand, their significantly higher scores on ‘parents’ recommendation’ motivation, which is consistent with a previous study [5], show that, generally, dentists in Iran are not dissatisfied with their profession.

Previous studies have emphasized the important role of dental hygienists in integrating oral health with primary health care [19, 20]. The students with this background had significantly higher scores for the ‘altruism and intellectual challenges’ dimension compared to the others. They were also more eager to enter the community oral health field after graduation. Since these students had prior training in a prevention-oriented educational programme for 2 years, it seems that their attitude towards employment in community oral health was more positive. The fact that a previous study [16] with this cohort showed that they have better oral self-care habits supports the validity of these responses.

The regression analysis model showed that entering the community oral health field as the first preference was positively associated with the motive ‘altruism and intellectual challenges’, thereby indicating that the students who were primarily interested in serving the community were also more inclined to do so after graduation. This finding supports the idea that previous attitudes and behaviours can predict the present ones [21]. It also shows the importance of recruitment criteria in building a dental workforce with requisite competencies in community oral health. However, because of the limitations in mak-

ing short-term changes in the recruitment criteria, it remains the responsibility of the dental schools to educate such a workforce.

Conclusion

The results of this study reveal that personal characteristics and motives of Iranian dental students play a more significant role in shaping their career preferences than their dental education. However, dental education

should do more to reinforce altruistic motives in its students in order to develop the commitment of future dental personnel to improving the oral health of the communities in which they live and work.

Acknowledgement

A grant to M.R.K. by the Iranian Center for Dental Research (ICDR), Shaheed Beheshti Dental School, is greatly acknowledged.

References

- 1 Crossley ML, Mubarak A: A comparative investigation of dental and medical student's motivation towards career choice. *Br Dent J* 2002;193:471–473.
- 2 Vigild M, Schwarz E: Characteristics and study motivation of Danish dental students in a longitudinal perspective. *Eur J Dent Educ* 2001;5:127–133.
- 3 Hallissey J, Hannigan A, Ray N: Reasons for choosing dentistry as a career: a survey of dental students attending a dental school in Ireland during 1998–99. *Eur J Dent Educ* 2000;4:77–81.
- 4 Weaver RG, Haden NK, Valachovic RW, American Dental Education Association: Annual ADEA survey of dental school seniors: 2001 graduating class. *J Dent Educ* 2002;66:1209–1222.
- 5 Stewart FM, Drummond JR, Carson L, Hoad Reddick G: The future of the profession: a survey of dental school applicants. *Br Dent J* 2004;197:569–573.
- 6 Jover M, Doudoux D, Deveaux E: Representations of the dental surgery profession and the motivations given by second-year French students for applying for dental surgery. *Eur J Dent Educ* 2006;10:2–9.
- 7 Brand AA, Chikte UM, Thomas CJ: Choosing dentistry as a career: a profile of entering students (1992) to the University of Sydney, Australia. *Aust Dent J* 1996;41:198–205.
- 8 Orenuga OO, da Costa OO: Characteristics and study motivations of clinical dental students in Nigerian universities. *J Dent Educ* 2006;70:996–1003.
- 9 Scarbecz M, Ross JA: Gender differences in first-year dental students' motivation to attend dental school. *J Dent Educ* 2002;66:952–961.
- 10 Stewart FM, Drummond JR, Carson L, Hoad Reddick G: A survey of dental school applicants' career intentions and the balance with family life. *Br Dent J* 2005;198:713–717.
- 11 Bernabe E, Icaza JL, Delgado-Angulo EK: Reasons for choosing dentistry as a career: a study involving male and female first-year students in Peru. *Eur J Dent Educ* 2006;10:236–241.
- 12 Butters JM, Winter PA: The effects of gender and race on practice pattern preferences of dental students. *J Am Coll Dent* 1999;66:39–46.
- 13 Winter PA, Butters JM: An investigation of dental student practice preferences. *J Dent Educ* 1998;62:565–572.
- 14 Pakshir HR: Dental education and dentistry system in Iran. *Med Princ Pract* 2003;12 (suppl 1):56–60.
- 15 Khami MR, Virtanen JI, Jafarian M, Murto-maa H: Oral health behaviour of Iranian dental school educators. *Oral Health Prev Dent* 2006;4:265–271.
- 16 Khami MR, Virtanen JI, Jafarian M, Murto-maa H: Oral health behaviour and its determinants amongst Iranian dental students. *Eur J Dent Educ* 2007;11:42–47.
- 17 Khami MR, Virtanen JI, Jafarian M, Murto-maa H: Prevention-oriented practice of Iranian senior dental students. *Eur J Dent Educ* 2007;11:48–53.
- 18 Marino RJ, Morgan MV, Winning T, Thomson WM, Marshall RI, Gotjamanos T, Evans W: Sociodemographic backgrounds and career decisions of Australian and New Zealand dental students. *J Dent Educ* 2006;70:169–178.
- 19 Monajem S: Integration of oral health into primary health care: the role of dental hygienists and the WHO stewardship. *Int J Dent Hyg* 2006;4:47–51.
- 20 Ohrn K: The role of dental hygienists in oral health prevention. *Oral Health Prev Dent* 2004;2(suppl 1):277–281.
- 21 Freeman R: The determinants of dental health attitudes and behaviour. *Br Dent J* 1999;187:15–18.