

Motivations for studying Dentistry: A cross-sectional questionnaire-based study in nine Cuban universities.

Motivaciones para estudiar Estomatología:
Un estudio transversal basado en encuestas
en nueve universidades cubanas.

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Abstract: **Introduction:** It is very important to research into the reasons why students choose a career in Dentistry; however, current Cuban studies on this topic are scarce. This study aims to characterize the motivations for studying Dentistry and to identify the associated factors in Cuban students. **Material and Methods:** A total of 1324 students from nine Cuban universities participated in this cross-sectional, analytic, observational, multicenter and questionnaire-based study. The “Dental Motivation Scale”, a validated test, was used to measure social, altruistic, economic, and prestige motivators. For statistical analysis, frequencies and percentages were described, and generalized linear models were used to establish statistical associations. **Results:** Sixty six percent of the surveyed students were female and the mean age was 21.2. The students were more motivated to major in Dentistry by their desire to study for constant progress (57%) as well as the possibility of being able to help others (50%). Those who had relatives that were dentists had a lower social/altruistic motivation (studying for constant progress; $p=0.004$). Family pressure was associated with an increase in economic/prestige motivators: economic security ($p=0.001$), stable job ($p<0.001$) and reaching high social status ($p<0.001$). **Conclusion:** Students coming from families related to Dentistry were less motivated by social/altruistic aspects. Conversely, those with family pressure had a higher economic/prestige motivation.

Keywords: career choice; cross-sectional studies; motivation; universities; dentistry; dental students.

Resumen: **Introducción:** Investigar las razones por las cuales los estudiantes seleccionan la carrera de Estomatología es muy importante; sin embargo, las investigaciones cubanas sobre el tema son escasas. El objetivo de este estudio fue caracterizar las motivaciones para estudiar Estomatología e identificar los factores asociados en estudiantes cubanos. **Material y Métodos:** 1324 estudiantes de nueve universidades cubanas participaron en este estudio observacional, analítico, transversal y multicéntrico basado en encuestas. La escala validada “Motivaciones para estudiar Estomatología” se usó para evaluar las motivaciones sociales, altruistas, económicas y de prestigio. Para el análisis

estadístico, se describieron las frecuencias y porcentajes y se utilizaron los modelos lineales generalizados para establecer asociaciones estadísticas. **Resultados:** El 66% de los estudiantes encuestados fueron femeninas y el promedio de edad fue de 21.2 años. Los estudiantes estuvieron más motivados para seleccionar la carrera con vistas a estudiar para progresar constantemente (57%) y por la posibilidad de poder ayudar a otras personas (50%). Aquellos estudiantes con familiares estomatólogos tuvieron una menor motivación social/altruista (estudiar para progresar constantemente, $p=0.004$). La presión

familiar se asoció con un incremento en las motivaciones de orden económico/prestigio: seguridad económica ($p=0.001$), trabajo estable ($p<0.001$) y adquisición de un estatus social elevado ($p<0.001$). **Conclusion:** Los estudiantes con familiares estomatólogos estuvieron menos motivados en los aspectos sociales/altruistas. Por el contrario, aquellos con presión familiar tuvieron una mayor motivación de orden económico/prestigio.

Palabras Clave: selección de profesión, estudios transversales, motivación, universidades, estomatología, estudiantes de estomatología

INTRODUCTION.

In Cuba, the people's health is a government priority, which is manifested in wide access to medical science careers according to the needs of the population.¹ In this context, Dentistry is one of the most in-demand careers, supported by its highly demanding scores on admission tests. It could be considered, *a priori*, that the selected students are the best prepared for this career, which requires high academic performance in each academic year.² However, these selection criteria do not consider if those students have vocation and possess the essential personal and social skills to establish a suitable physician-patient relationship.³

Dentistry is a profession which implies a service to society and requires an overhaul of the procedures that are carried out, as well as personalized attention to people who need dental assistance.⁴ Thus, dental students, in addition to having aptitude for assimilating theoretical and practical knowledge of their professional profile, must acquire a special capacity to listen, communicate and serve those who require assistance.⁵

The students' motivations for studying are diverse and can be classified as intrinsic (social/altruistic): the person's aptitudes, interests and personality; as well as extrinsic, related to economic and prestige aspects: the influence of the family, the social, cultural and economic environment, as well as the information they may have about their profession.^{4,5}

The motivations for studying Dentistry have

been investigated in various countries such as Saudi Arabia,^{3,6-8} Malaysia,⁵ Croatia,⁹ Egypt,¹⁰ Bulgaria,¹¹ Pakistan,¹² Romania,¹³ Kenya,¹⁴ India,¹⁵ France,¹⁶ United States,¹⁷⁻¹⁹ Brazil,²⁰ Chile,²¹⁻²³ Venezuela,²⁴ as well as in multinational investigations.^{4,25,26} There are a few reports of studies conducted in small specific populations in Cuba.^{27,28}

For this reason, it was necessary to investigate the current reasons that motivate students to choose a career in a large sample of students from different Cuban universities, since the consequences of a wrong choice are not only affective (for example, frustrations) and academic, but also economic. Repeating a course and desertion increase government spending on education.²⁴

In addition, Cuba is a socialist country, hence, motivations of social nature probably influence those of economic nature. Therefore, this study aims to characterize the motivations for studying Dentistry and to identify associated factors in Cuban students.

MATERIALS AND METHODS.

Study design

We conducted a cross-sectional, analytic, observational, multicenter and questionnaire-based study.

Setting and time

This study was conducted between January and May of 2018 in 1342 Cuban dental students. All the universities of this study select students with strict

knowledge-based tests. In Cuba, dental majors have a five-year discipline-based undergraduate curriculum that mixes lectures and active, student-centered teaching strategies.

In each of the fifteen provinces of the country there is a university of medical sciences and Dentistry is studied in all of them. The participating universities were selected by convenience. In the 2018-2019 academic years, there were a total of 4217 dental students who were enrolled in the participating universities.

We included the following universities: Universidad de Ciencias Médicas de Granma (UCMGRM), Universidad de Ciencias Médicas de Santiago de Cuba (UCMSCU), Universidad de Ciencias Médicas de Holguín (UCMHLG), Universidad de Ciencias Médicas de Las Tunas (UCMLTU), Universidad de Ciencias Médicas de Camagüey (UCMCMG), Universidad de Ciencias Médicas de Ciego de Ávila (UCMCAV), Universidad de Ciencias Médicas de Cienfuegos (UCMCFG), Universidad de Ciencias Médicas de Villa Clara (UCMVCL) and Universidad de Ciencias Médicas de La Habana (UCMLHA).

Sampling and procedures

We used convenience sampling as our fundamental objective was to find the association between the main variables of our study. Dental students at different stages of their studies were included and their participation was voluntary.

Those that did not attend classes or care practices with patients on the days of the administration of the questionnaire were excluded, as well as those who did not complete the survey or did it only partially (25% of the questions left blank). We calculated the minimum sample size, 783 people, to detect a difference of 5% (47% versus 52%), with 80% power, a confidence level of 95% and a single population (according to the cross-sectional and analytical design). Obtaining a sample size for each university was not necessary because our objective was not to extrapolate the results.

However, homogeneous proportions were taken into account according to the characteristics of each campus. A total of 1362 students were invited to participate in the study and 20 of them refused

the invitation. Out of 1342 surveyed students, 18 were excluded due to incomplete/blank answers, which gave us 1324 questionnaires. The response rate was 98.5%. The instrument was administered in the class-rooms after academic activities, where students spent approximately 10 minutes answering the questionnaires.

A member of the research team was present and explained that we were interested in understanding students' motivations for selecting dental studies and how those are related to demographic and academic variables.

Questionnaire and variables

The demographic and academic variables were age, sex, academic year and university. In addition to the evaluation of students' motivations for studying Dentistry, the following variables (yes or no) were included in the model: relatives who are dentists, influence of social media, family pressure, friendship's influence, and influence of a relative/friend's dental disease. Motivation was measured using the "Dental Motivation Scale" (MEEC-7).²⁹ This is an anonymous paper-and-pencil questionnaire, previously validated in a Cuban dental students' sample and measures the social/altruistic (intrinsic) and economic/prestige (extrinsic) aspects for choosing a dental career. The internal consistency of the questionnaire, tested using Cronbach's alpha, was good ($\alpha=0.821$).

Sampling adequacy, using the Kaiser-Meyer-Olkin (KMO) test, was adequate (KMO=0.855) and Bartlett's test of sphericity was found to be statistically significant ($p=0.000$).²⁹ The intrinsic and extrinsic aspects consisted of three and four questions respectively with five possible answers on a Likert scale (Strongly disagree, Disagree, Indifferent, Agree, and Strongly agree).³⁰

Ethical considerations

The ethics committee of the Bayamo Faculty of Medicine (Universidad de Ciencias Médicas de Granma) approved the study. All the university authorities were contacted in order to obtain approval for the study. The questionnaires were anonymous and self-administered. Participants were informed about the study and were assured about the confidentiality

of their data. Written informed consent was obtained before any data were collected. The principles of the Declaration of Helsinki for research in humans were respected.

Statistical analysis

For descriptive analysis, frequencies and percentages of the qualitative variables were calculated, as well as the median and interquartile range of the quantitative variables. For the analytical statistics, the prevalence ratio (PR) with 95% CI and *p*-values were reported. Generalized linear models, with the use of the Poisson family, log link function, robust models, were constructed and adjusted by setting: universities, as a cluster group.

In regard to multivariate analysis, we entered all the evaluated variables in the bivariate model which served as an adjustment for the main variable (considering that they are very important in the relationship between demographic and academic variables, and the variables of motivation for studying Dentistry).

The statistical analysis was elaborated with Stata version 11.1 (StataCorp LP, College Station, TX, USA), setting the alpha level at 0.05. The outcome variable is the perception of good motivation (category of interest: students who selected the options “Strongly agree” and “Agree” in each response alternative of the “Dental Motivation Scale”. Students in this category had a good perception of motivations, this category was compared to the whole sample.

This was adjusted by extrinsic motivation (similar to the category of interest previously defined, but this time applied to the questions that evaluated this specific type of motivation), by intrinsic motivation (similar to the category of interest previously defined, but applying to the questions that evaluated intrinsic motivation) and by other demographic and academic variables.

RESULTS.

A total of 885 (66.8%) students (n=1324) were female, the median age was 21.2 years (interquartile

Figure 1. Percentages of motivations for studying Dentistry in nine Cuba universities.

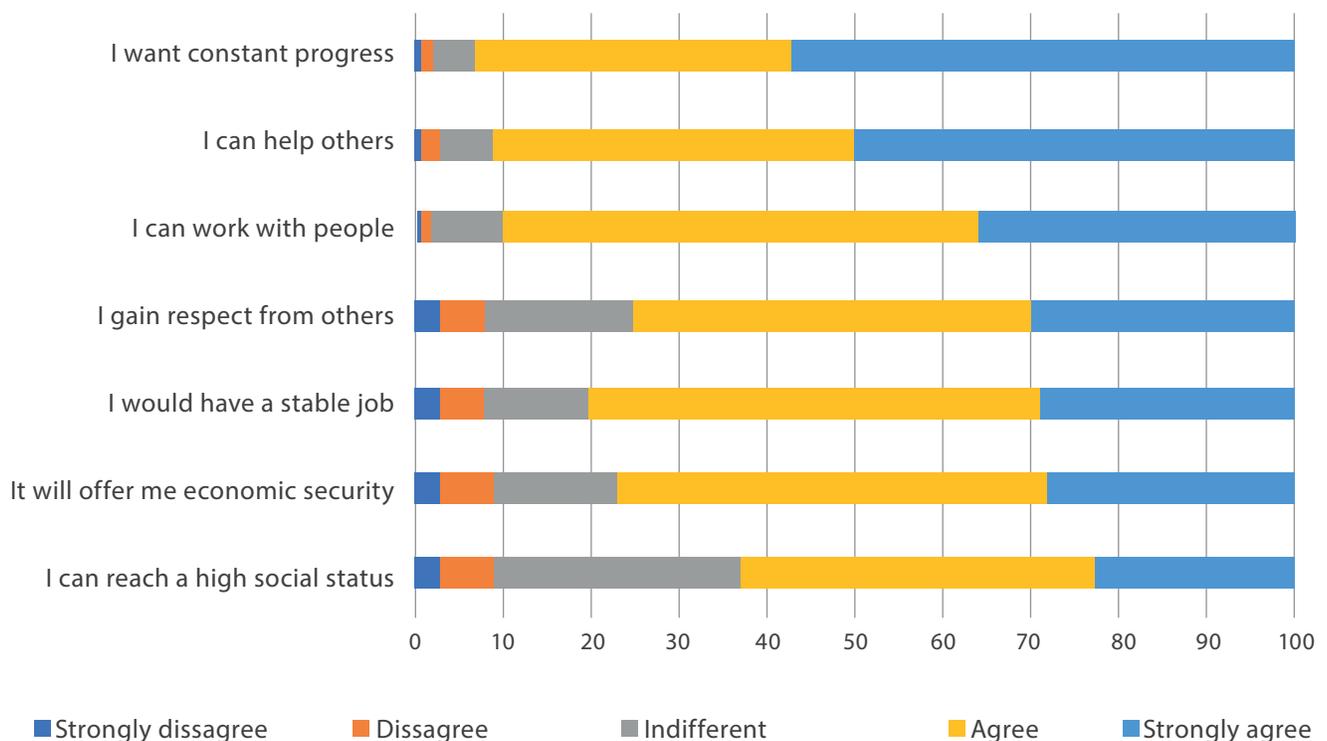


Figure 2. Accumulated percentages of being motivated (“Strongly agree” and “Agree”) according to the universities and motivations for studying Dentistry in Cuba.

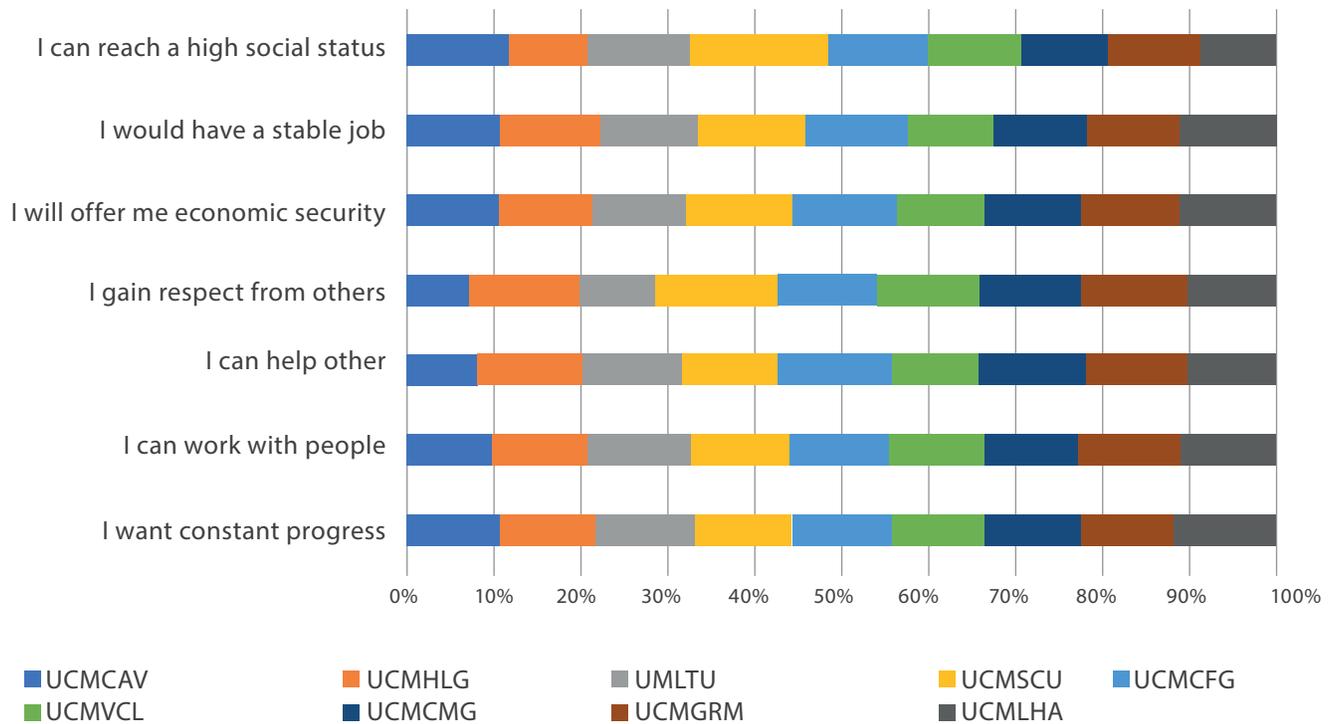


Table 1. Demographic and academic characteristics of dental students in nine Cuban Universities.

Variables		n	%
Gender	Female	885	66.8
	Male	439	33.2
Age (years)	Mean and standard deviation	21.2	1.8
	Median and interquartile range	21	20-22
University	Camagüey	267	20.1
	Granma	205	15.5
	Santiago de Cuba	200	15.1
	Villa Clara	150	11.3
	Cienfuegos	144	10.9
	Holguín	142	10.7
	Las Tunas	81	6.1
	La Habana	72	5.4
	Ciego de Ávila	63	4.8
	Academic year	First	141
Second		209	15.8
Third		306	23.1
Fourth		417	31.5
Fifth		251	19.0

Table 2. Percentages of being motivated (“Strongly agree” and “Agree”) according to academic year and motivations for studying Dentistry in Cuba.

Motivations	Academic years				
	First	Second	Third	Fourth	Fifth
Social/altruistic motivation					
I want constant progress	92	94	94	94	91
I can work with people	92	92	90	90	88
I can help others	95	96	91	91	90
Economical/prestige motivation					
I gain respect from others	71	78	73	75	79
It will offer me economic security	78	86	76	72	81
I would have a stable job	84	85	77	78	82
I reach a high social status	59	74	60	58	69

Table 3. Bivariate and multivariate analysis of factors associated with motivation for studying Dentistry in nine Cuban universities.

Strongly motivated	Influence types in Cuban dental students				
	Relatives who are dentists	Friendship's influence	Family pressure	Social media	Relative/friend's dental disease
Bivariate analysis					
Social/altruistic motivation					
I want constant progress	0.93 (0.89-0.97) 0.001	N.S.	N.S.	N.S.	N.S.
I can work with people	N.S.	N.S.	N.S.	N.S.	N.S.
I can help others	N.S.	N.S.	N.S.	N.S.	N.S.
Economic/prestige motivation					
I gain respect from others	N.S.	N.S.	1.13 (1.003-1.26) 0.045	N.S.	N.S.
It will offer me economic security	N.S.	N.S.	1.12 (1.05-1.20) 0.001	N.S.	N.S.
I would have a stable job	N.S.	N.S.	1.15 (1.09-1.12) <0.001	N.S.	N.S.
I reach a high social status	N.S.	N.S.	1.37 (1.23-1.53) <0.001	N.S.	N.S.
Multivariate analysis					
Social/altruistic motivations					
I want constant progress	0.93 (0.89-0.98) 0.004	N.S.	N.S.	N.S.	N.S.
I can work with people	N.S.	N.S.	N.S.	N.S.	N.S.
I can help others	N.S.	N.S.	N.S.	N.S.	N.S.
Economical/prestige motivations					
I gain respect from other people	N.S.	N.S.	N.S.	N.S.	N.S.
It will offer me economic security	N.S.	N.S.	1.12 (1.05-1.20) 0.001	N.S.	N.S.
I would have a stable job	N.S.	N.S.	1.17 (1.09-1.27) <0.001	N.S.	N.S.
I can reach a high social status	N.S.	N.S.	1.31 (1.19-1.44) <0.001	N.S.	N.S.

N.S.= no significant; PR, 95% CI and *p*-value obtained with generalized linear models, with Poisson family, log link function, robust models and taking into account each university, sex and age as a cluster group.

range: 20–22 years old). In addition, 20.1% of the surveyed belonged to Universidad de Ciencias Médicas de Camaguey. (Table 1)

Four hundred thirty-seven (33.0%) students had relatives who were dentists. In regard to career choice, 1130 (85.4%) students mentioned that they had been influenced by a dental disease of a family member or of a friend. Four hundred and sixty-seven (35.3%) stated that they had been influenced by television, radio, internet or other programs to study Dentistry. Moreover, 29.8% (n=394) stated that they had friends from primary or secondary school who motivated them to choose Dentistry, while 214 (16.2%) reported having felt family pressure at the time of their choice.

Figure 1 shows that, among the main studied motivations, both the desire to study for constant progress (57%), and the possibility of being able to help others (50%) were reported as “Strongly agree” and “Agree”. In contrast, students “strongly disagreed” with the statement about obtaining a high social status (3%) and economic security (3%) as main motivations that led them to choose stomatology as a career.

Figure 2 shows that, according to the cumulative percentage of students who “strongly agreed” or “agreed” with the evaluated motivations, those that scored the highest were the desire to constantly progress, followed by the possibility of being able to help others and being able to work with people.

Five out of all the evaluated motivations showed percentages that varied as the years of studies passed (there were no clear increases or decreases), (Table 2). Regarding the multivariate analysis, the presence of relatives who are dentists was associated with a low motivation for studying for constant progress ($p=0.004$). Family pressure was associated with an increase in extrinsic motivations: economic security ($p=0.001$), a stable job ($p<0.001$) and reaching a high social status ($p<0.001$), (Table 3).

DISCUSSION.

The selection of a professional career is developed in youth, where the individual faces great challenges

on a personal level, turning that decision into a milestone that marks the lifestyle that they will preserve in future years.³ The study of motivations contributes to the improvement of human resources management.² Furthermore, it has been shown that students who have chosen careers that they are passionate about have a higher percentage of success in their professional practice.³¹

We found that the main identified motivations were the possibility of studying for progress and for helping others (social/altruistic), which confirm the existence of a vocation of service in relation to personal/economic aspects. Dentistry is a vocation in the medical sciences, and the desire to treat and care for patients is a foundation principle of the profession.²⁶ These results are logical and could be conditioned by the fact that in Cuba there is no private practice of medicine and all dental professionals earn similar salaries.^{1,2}

In some countries, students visualize their careers as a business or company that can help them achieve a stable or outstanding socioeconomic status through their profession.²³ Brazilian public health services usually pay modest salaries, but they provide job stability and other benefits in addition to allowing professionals to start private practice as well.²⁰

Ferraz *et al.*,²⁰ reported that a relatively high percentage of dental students (38%) stated a preference to work entirely in a private clinic, with only 3% planning to work exclusively in public services. Humlum *et al.*,³² determined that financial incentives are necessary but not sufficient to attract talented young people to careers in high demand related to social work, particularly, vocational and social orientation about careers play a significant role.

In Croatia⁹ and India¹⁵ the students selected a career because it was highly paid and offered steady work. Research on Bulgarian dental students¹¹ showed that they shared humanistic motivations related to prestige and economic security. In the United States, students were mostly motivated by the possibility of helping others, while the least frequently identified motivations were those related to economic aspects.¹⁷

In Venezuela, career choice was related to the satisfaction of personal needs and expectations instead of social or altruistic reasons.²⁴ A study performed in thirteen countries reported the vocation of social service as the second most identified motivation.²⁶ Our results are similar to experiences reported in an investigation in medical students from ten Latin American countries, where a predominance of intrinsic motivations was reported.

A possible explanation of the decisions taken by students is that the social/altruistic motivation appears early in young people with the purpose of helping others, saving lives, and contributing to society.³³ Family pressure generated greater motivation in all economic aspects, social status and recognition, to the detriment of the motivation related to the vocation of service to society.

This coincides with a study carried out in the United States¹⁷ and differs from what was reported in Bulgaria¹¹ and in a multinational study,^{26,32} where approximately 24% of the respondents declared having had family pressure when choosing a profession. This shows that the family often motivates the student to have economic security, which is good to a certain extent, but other equally important complementary aspects should be valued, such as the encouragement towards the vocation of service to society.

Other research shows that students did not identify family pressure as a determining motivating factor to choose their future profession. This limited significance is reported in the study conducted in Chile by Troncoso *et al.*,³⁴ Although the students identified the advice especially offered by parents before applying for the careers they chose; these recommendations were not decisive in their final choice. Interestingly, the media did not have a significant influence on the different motivations for studying Dentistry.

It is interesting to analyze it in the Cuban context, where health is a right of every citizen and the government pays special attention to it in recognition of the work of health professionals, constituting a frequent message through the mass media.

Having a family member/friend with a dental disease was also not significantly associated with specific motivations. This is striking because Cuban society is characterized by its solidarity and generosity. Helping a family member or neighbor is part of the Cuban idiosyncrasy.^{1,2}

Demotivation was found among those students who had a family member who was a dentist, as they showed less desire to make constant progress. This is important because if there is not a good motivation, these vital aspects to pursue a university career can be left aside. These results are surprising because it is not uncommon to find dentists who are members of the same family like parents and children, which support social recognition of health personnel, specifically dentists, constituting a goal to be achieved for many young people interested in pursuing a university career.

From an educational point of view, more studies are needed to explore the reasons that encourage students to study Dentistry, to reorient the information provided about the career and its social relevance. It is important to highlight that the type of sampling we used constituted a limitation for the research design, since it does not allow us to extrapolate the results to all the dental students of the participating universities.

In spite of this limitation, the results are important because they represent the first report at a national level that addresses this topic. Thus, it could serve as a base study to plan research in larger samples or to use samples that allow extrapolation to the entire Cuban student population. For dental schools, this research is equally important because it permits us to obtain a current overview of the reasons that are motivating students to select Dentistry as a career, which could contribute to the selection of a more specific vocational student profile.

Recommendations

In Cuba, medical universities' admissions exams do not take into account evaluations focused on assessing students' motivations for choosing to major in health sciences (through, for example, an interview or a written essay).

In the interest of attracting altruistically motivated students to health professions, specifically to Dentistry, medical universities should consider adding those methods to their admissions criteria. We suggest conducting lectures and motivational workshops from the first year of university in order to increase the levels of intrinsic motivation.

This research only investigated the reasons that students have to major in Dentistry; however, it would be interesting to analyze the reasons that make them continue as they progress, so the university can work, support and increase student's motivation and avoid desertion.

CONCLUSION.

Family pressure was associated with an increase in extrinsic motivations: economic security, a stable job and reaching a high social status.

Having a family member who was a dentist was associated with a low motivation for studying for constant progress.

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Methodology: ICR, CRM.

Project administration: IECR, CRM.

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