J Oral Res
oral and craniofacial sciences

Article

Socio-educational factors associated to perception of research among stomatology students in a Cuban university.

Factores socioeducativos asociados a la percepción de la investigación entre estudiantes de estomatología en una universidad cubana.

Ibraín Enrique Corrales-Reyes.[1]
Yasmany Fornaris-Cedeño.[2]
Leonardo Valdés-Gamboa.[1]
Alberto Juan Dorta-Contreras.[3]
Christian R. Mejia.[4]

Affiliations: [1]Universidad de Ciencias Médicas de Granma. Clínica Estomatológica de Esps. 'Manuel de Jesús Cedeño Infante'. Bayamo, Cuba. [2]Universidad de Ciencias Médicas de La Habana. Facultad de Ciencias Médicas 'Manuel Fajardo', La Habana, Cuba.[3]Universidad de Ciencias Médicas de La Habana. Facultad de Ciencias Médicas 'Dr. Miguel Enríquez'. Central Laboratory of Cerebrospinal Fluid (LABCEL). La Habana, Cuba.[4]Universidad Continental. Huancayo, Perú.

Corresponding author: Ibraín Enrique Corrales-Reyes. Ignacio Pérez # 12A e/Avda 26 de Julio y Donato Mármol. Jiguaní-Granma, Cuba. Phone: (53) 54776584. E-mail: iecorralesr@infomed.sld.cu

Receipt: 07/31/2018 **Revised:** 09/12/2018
Acceptance: 11/27/2018 **Online:** 02/11/2019

Abstract: Introduction: Conducting research at the undergraduate level is essential to prepare future professionals for the process of properly channeling their scientific interest and provision of care. However, the factors influencing the degree of participation of students in research are unknown. Aim: To determine the socio-educational factors associated with the perception of research among stomatology students in a Cuban university. Materials and Methods: Cross-sectional analytical study conducted on 166 stomatology students. Participants received an anonymous, validated and self-administered questionnaire designed to collect information on the perception of scientific research within the educational spectrum, which included elements related to writing, participation, scientific publication and the interest of pursuing a career in research. Using associative statistics, those who had an overall positive perception of research were considered interested and were assessed according to socio-educational variables. Results: Students showed a positive perception of scientific research; however, when asked if they wanted to pursue a career in research, only 61.4% responded affirmatively. This positive perception increases with the progression of academic years (p<0.04), is higher in males (p=0.030) and in students who perform assistantships in core courses (p=0.001). Conclusions: There is a positive perception of scientific research, which tends to be intensified by academic progression and other factors. This must be considered by educational institutions in order to generate strategies as a response.

Keywords: Research; students; oral medicine; stomatology; Cuba.

Resumen: Introducción: La investigación en el pregrado constituye una forma importante de preparar a los futuros profesionales para encauzar sus inquietudes científicas y la labor asistencial. Sin embargo, se desconocen los factores que influyen en la participación de los estudiantes en investigación. Objetivo: Determinar los factores socioeducativos asociados a la percepción de la investigación en estudiantes de estomatología de una universidad cubana. Materiales y Métodos: Estudio transversal-analítico, realizado en 166 estudiantes de estomatología. Los participantes recibieron un cuestionario anónimo, validado y autoadministrado para recoger información sobre la percepción de la investigación científica, que incluyó elementos relacionados con la redacción, la participación, la publicación científica y el interés de hacer una carrera de investigación en el futuro. A los que tuvieron una mejor percepción de la investigación se les consideró como interesados, y se les cruzó según sus variables socioeducativas, con estadísticos de asociación. Resultados: Los estudiantes mostraron una percepción positiva de la investigación científica; sin embargo, cuando se les preguntó si querían hacer una carrera de investigación en el futuro solo el 61,4% respondió afirmativamente. La percepción aumenta según progresan los años académicos (p<0,04), es mayor en los hombres (p=0,030) y en los estudiantes que realizan ayudantía en las cátedras de la carrera (p=0,001). Conclusiones: Existe una percepción positiva con respecto a la investigación científica, la cual aumentan conforme lo hacen los años académicos y otros factores; esto debe tomarse en cuenta para generar estrategias por parte de las instituciones educativas.

Palabras Clave: *investigación; estudiantes; medicina oral; estomatología; Cuba.*

Cite as:
Corrales-Reyes IE, Fornaris-Cedeño Y, Valdés-Gamboa L, Dorta-Contreras AJ & Mejia CR. Socio-educational factors associated to perception of research among stomatology students in a Cuban university. J Oral Res 2019; 8(1):13-21. doi:10.17126/joralres.2019.001

INTRODUCTION.

Scientific research is a topic of interest within undergra-duate students of medical sciences. However, conducting research at this educational stage is difficult due to limitations such as a lack of counseling, proper time management, inadequate curriculum and the inflexibility of some courses, among others.[1-3] Despite the relevance of teaching and practice of research within the undergraduate level, both currently face serious difficulties in terms of quantity and quality.[4,5] The number of graduates that pursue a career in research have decreased in Latin America and globally.[6] In the United States, for example, in 1983 the number of physicians was 479,439 and 18,535 of them were physician-researchers (3.9% of the total). Fifteen years later, the total number of physicians had increased to 707,032, while the number of physician-researchers had decreased to 14,479 (2.0%).[7] Given that physician-researchers are essential for the training of new researchers, this decline poses a serious threat to the development of clinical research and to the advancement of the medical sciences.[5]

In this context, several authors have addressed the status of research in the medical undergraduate program; however, in Latin America, there is still a lack of studies related to the perception of research and the interest in developing a professional career linked to it.[4,8-13] Regarding stomatology, studies carried out in a Peruvian university reported low scientific productivity at undergraduate level,[14] although participating students considered research important for the pursuit of knowledge.[15] The situation is similar in Cuba, where a study conducted on stomatology students regarding the perception of research training revealed that all the participating students considered scientific research important to foster further developments in the field.[16] The previously stated facts highlight the need to continue with studies that evaluate the perception of research and the interest to pursue it professionally (as well as elements associated to it). This is not only applicable to stomatology students, but to all students in the medical sciences. In this context, the aim of the present study was to determine the socio-educational factors associated with the perception of research among oral medicine students in a Cuban university.

MATERIALS AND METHODS.

Type of study, population and inclusion/exclusion criteria

A cross-sectional analytical study was carried out. The target population consisted of clinical stomatology students enrolled in the 2016-2017 course (n=213, according to data provided by the academic secretariat) of the *School of Medical Sciences "Dr. Efraín Benítez Popa"* located in the district of Bayamo, under the administration of *Universidad de Ciencias Médicas de Granma, Cuba*. Participating students belonged to the following care units, where they were performing their pre-professional internships: the Stomatology Clinic of Specialties "Manuel Jesús Cedeño Infante" (CEE), the "Jimmy Hirzel" Polyclinic (PJH-Type III), the "René Vallejo" Polyclinic (PRV), and the "Bayamo Oeste" Polyclinic (PBO), under the administration of the Bayamo municipality; as well as the "Edor de los Reyes Martínez Áreas" Polyclinic (PER) of Jiguaní, and the "Guillermo González" Polyclinic (PGG) in the district of Guisa. Any student who wanted to participate was included in this study, regardless of their previous experience in scientific research. Exclusion criteria included students who did not want to participate, as well as surveys with more than 20% (≥2) of unanswered questions.

Variables

The perception of research, measured through the employed evaluation instrument, was considered as a dependent variable. The following socio-educational factors were considered as independent variables: gender, academic year, assistantship status, and care unit. The study included third, fourth and fifth (final) year students, according to the Cuban national curriculum in force at the time of this study.

Evaluation instrument

An anonymous and self-administered questionnaire, designed by Alarco, *et al.,*[13] in Lima, Peru and adapted by the authors of the present study, was employed. The survey consisted of 14 questions, four of which were oriented to gather general information about the students (gender, academic year, assistantship and care unit) and 10 questions that focused on interest in research (2 items), the relevance of writing scientific

ISSN Online 0719-2479 - www.joralres.com © 2019

articles (3 items), participation in scientific events (2 items), publishing of scientific papers (2 items), and one item related to the respondent's future career as a researcher.

Questions were multiple-choice with five Likert scale response alternatives ranging from "strongly disagree" to "strongly agree"; and scores ranging from 1 to 5, respectively. The instrument has been previously validated by Alarco *et al.*,[13] The statistical analysis included a summation of the responses. Students who had total scores in the upper tertile were considered as interested in research. These participants were compared with students with scores near the mean and within the lower tertile.

In addition, to measure the reliability of the instrument, Cronbach's Alpha coefficient was calculated, with a resulting value of 0.93. The value of this coefficient ranges from 0 to 1, and helps to determine if the instrument employed is reliable and collects stable, consistent measurements; or, otherwise, if it collects faulty information.[17]

Procedures

The instrument was applied during class time, after a previous explanation of its objective and with authorization of the professor in charge. Interviewers only answered queries related to the type and form of the questionnaire and therefore abstained themselves from biasing results with opinions. The average time students required to answer the questionnaire was 10 minutes.

Statistical analysis

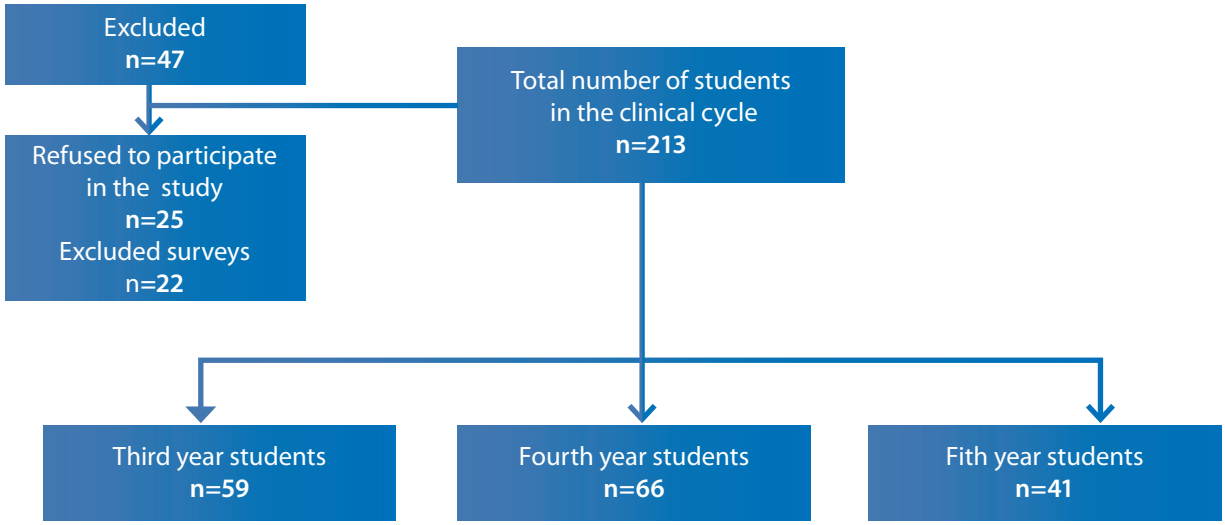
A database was created using Microsoft Excel (2013 version for Windows). For descriptive statistics, frequencies and percentages of all the variables were obtained. For analytical statistics, generalized linear models were used for assessing the links of the main variable (upper third of the perception of research, considered as positive perception) and the other measured variables. The Poisson distribution was used (as this was a cross-sectional analytical study), as well as the log and robust regression models.

As a result, prevalence ratios (PR) were obtained, along with the 95% confidence intervals and the *p*-values in each linking, for which the bivariate statistics were first performed and, according to the statistical significance, the multivariate model was then employed. These two steps were necessary as it was observed that not all the variables in the bivariate model that resulted in an association were indeed statistically significant in the multivariate model, such as the case of the gender variable; *p*-values lower than 0.05 were considered statistically significant. The statistical software Stata version 11.1 (StataCorp LP, College Station, TX, USA) was used.

Ethical aspects

Prior to the administration of the questionnaires,

Figure 1. Participation flowchart of stomatology students in a Cuban university.



students were informed about the study and their verbal consent was obtained. The confidentiality with which the data provided would be treated was formally stated to the participants. The questionnaires were anonymous and self-administered, and the principles of Helsinki for human research were respected.

Figure 2. Perception of research among stomatology students in a Cuban university.

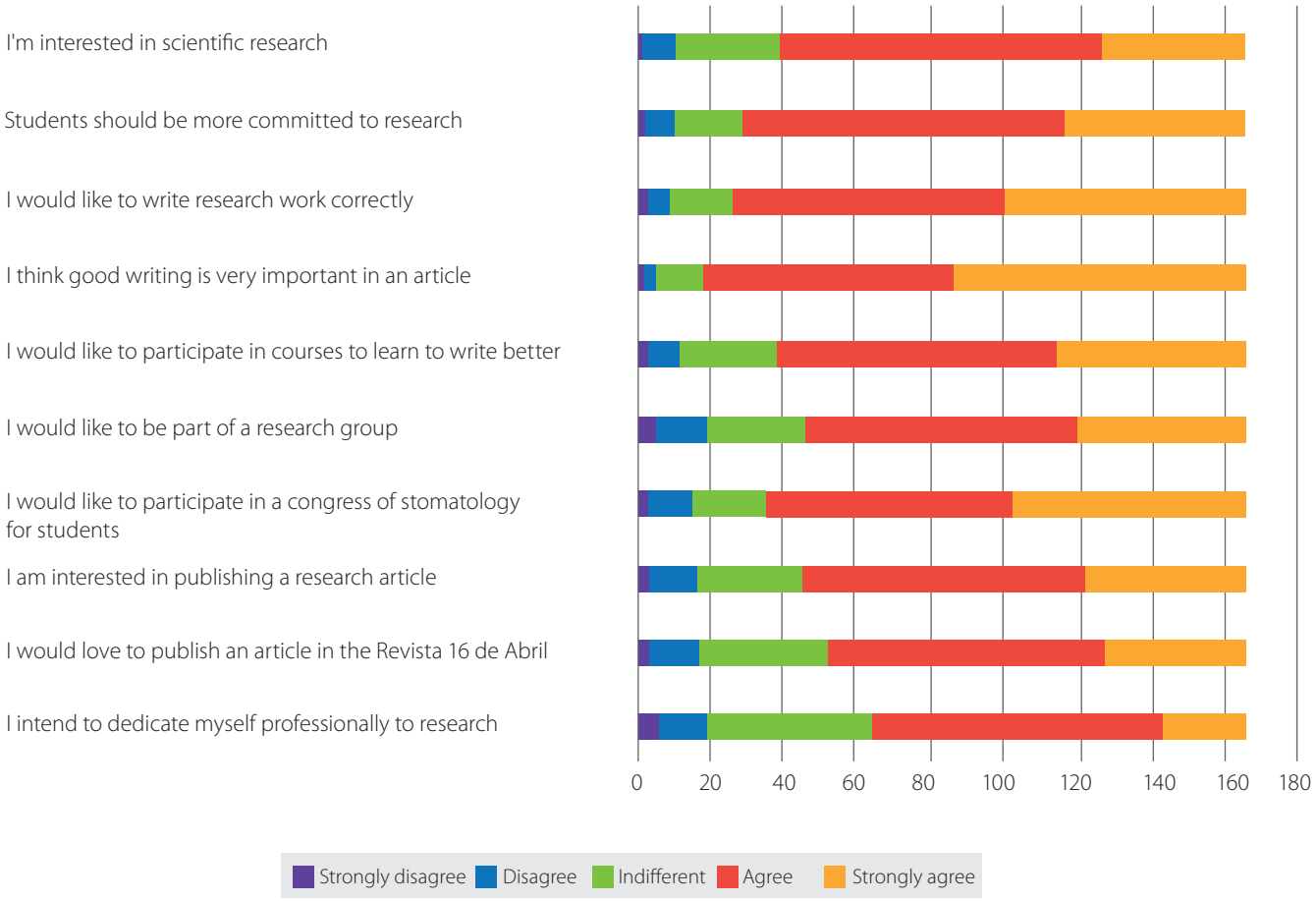


Table 1. Socio-educational characteristics of stomatology students in a Cuban university.

Variable		n	%
Gender	Female	118	71.1
	Male	48	28.9
Academic year	Third	59	35.5
	Fourth	66	39.8
	Fifth	41	24.7
Assistantship	Yes	87	52.4
	No	79	47.6
Care unit	Stomatology Clinic of Specialties	81	48.8
	Edor de los Reyes polyclinic	22	13.3
	Jimmy Hirzel polyclinic	20	12.0
	René Vallejo polyclinic	16	9.6
	Bayamo Oeste polyclinic	10	6.0
	13 de Marzo polyclinic	9	5.4
	Guillermo González polyclinic	8	4.8

ISSN Online 0719-2479 - www.joralres.com © 2019

Table 2. Bivariate analysis of socio-educational factors associated with positive perception of research in a Cuban university.

Variable		Perception of research upper [1/3]	Bivariate Analysis lower [2/3]	PR (CI95%)	*p*-value
Gender	Female	34 (28.8)	84 (71.2)	Comparison category	
	Male	22 (45.8)	26 (54.2)	1.59 (1.05-2.42)	0.030
Academic year	Third	11 (18.6)	48 (81.4)	Comparison category	
	Fourth	24 (36.4)	42 (63.6)	1.95 (1.05-3.63)	0.036
	Fifth	21 (51.2)	20 (48.8)	2.74 (1.49-5.07)	0.001
Assistantship	Yes	40 (46.0)	47 (54.0)	2.27 (1.38-3.72)	0.001
	No	16 (20.3)	63 (79.7)	Comparison category	
Care unit	Stomatology Clinic of Specialties	42 (51.8)	39 (48.2)	3.15 (1.86-5.32)	<0.001
	Others policlinics	14 (16.5)	71 (83.5)	Comparison category	

PR (prevalence ratio), 95% CI (95% confidence interval) and *p*-values were obtained with generalized linear models, Poisson regression, and log link function and robust models.

Table 3. Multivariate analysis of socio-educational factors associated with the perception of research.

Variable		Multivariate analysis	
		PR (CI 95%)	*p*-value
Gender	Female	Comparison category	
	Male	1.35 (0.92-1.99)	0.127
Academic year	Third	Comparison category	
	Fourth	2.01 (1.17-3.47)	0.012
	Fifth	1.90 (1.08-3.35)	0.025
Assistantship	Yes	1.78 (1.11-2.85)	0.016
	No	Comparison category	
Care unit	Stomatology Clinic of Specialties	2.38 (1.37-4.15)	0.002
	Other polyclinics	Comparison category	

PR (prevalence ratio), 95% CI (95% confidence interval) and *p*-values were obtained with generalized linear models, Poisson regression, and log link function and robust models.

RESULTS.

From a total of 213 students undertaking the clinical cycle, 25 declined to participate in the study (11.74%) and 22 surveys were excluded because they had more than 20% (≥2) of questions unanswered, leaving a final sample of 166 students. (Figure 1) Regarding these, 71.1% (118) were female, 39.8% (66) were coursing their fourth academic year and 52.4% (87) were doing assistantships. The CEE was the unit where most students were performing their pre-professional internships (48.8%). (Table 1)

Figure 2 shows that the topics considered most important within the survey are related to writing (48% strongly agree), that is, the student would like to be able to correctly write a scientific article, and they would like to participate in scientific research at a stomatology congress (both receiving strong agreement at 39%). On the other hand, the item that had the most negative response was the intention of dedicating oneself professionally to a career linked to research (14% strongly agreed). (Figure 2)

The bivariate analysis showed it was possible to determine that a better perception of research was associated with males (45.8% *versus* 28.8% of females,

p-value=0.030), higher study years (18.6% coursing third year, 36.4% in fourth year and 51.2% in the fifth year, *p*-values<0.04), performing assistantships (46.0% versus 20.3% of those who did not perform assistantships; *p*-value=0.001) and the undertaking of internships at the Stomatology Clinic of Specialties (51.8% of those who had performed professional practices versus 16.5% of those who had not, *p*-value<0.001). (Table 2)

The multivariate analysis showed that a positive perception of research was associated with academic progression (PR: 2.01, 95% CI: 1.17-3.47, *p*-value=0.012 for the fourth year and PR: 1.90, 95% CI: 1.08-3.35, *p*-value=0.025 for the fifth year), performing assistantships (PR: 1.78, 95% CI: 1.11-2.85; *p*-value=0.016) and carrying out pre-professional practices at the Stomatology Clinic of Specialties (PR: 2.38, 95% CI: 1.37-4.15, *p*-value=0.002); adjusted by the respondent's gender. (Table 3)

DISCUSSION.

Given the data collected it was possible to establish that there is a prevalent positive perception of scientific research within the participating students, in all aspects evaluated (general interest, attendance of scientific events or activities, and taking part in the writing and publication of scientific articles). These results are in agreement with other studies.[12,13,16,18,25] This is of utmost importance, as it indicates that students consider scientific research as an activity of great relevance in their careers. Consequently, higher education institutions should design or intensify training programs on this subject.

An important highlight of this study is that scientific writing was the most appreciated aspect, evidencing that students recognize its relevance. With the publication of an article, results of a research process can accurately reach their intended destination: the reader. However, medical language in general is prone to numerous linguistic vices,[26] and many times the proper dissemination of knowledge is affected by the lack of adequate wording, resulting in the delivery of unclear messages.

With the purpose of increasing the number of successful writers and authors on health sciences, it would be advisable to implement strategies for training in scientific writing within the undergraduate curriculum of biomedical disciplines, as well as to develop continuous education courses on this subject, aimed at professionals.[27,28] Another influential factor could be bad counseling from teachers, resulting in discouraged students and articles left unpublished.[28,29]

The present study suggests that perception of research increases positively with academic progression, differing from what was reported by Alarco *et al.,*[13] and coinciding with Giri *et al.,*[30] A possible explanation would be that current students in the clinical cycle must face increasingly complex situations during their pre-professional internships compared to their colleagues from previous years. As such, students may feel the need to conduct research that is up to date with scientific advancements in the field in order to solve prevalent dental care problems. This problem-solving is driven by the motivation of achieving a set goal; students recognize the benefits of research and perceive it more positively.

Performing assistantships was also associated with a better perception of research. This conclusion seems logical, since this group consists of overachieving students with faster learning rates, and skills better suited for the curriculum, for teaching courses and conducting scientific research. Students in this category aim to strengthen the quality of the delivered health care, by having a future professional practice as a fundamental objective and component of their training.[31]

Performing pre-professional practices at the Stomatology Clinic of Specialties was associated with a better perception of research. A possible explanation for this could be that, from the total number of students carrying out assistantships, 64.4% were currently interns at this institution.

A student that is not being stimulated by a research environment does not feel the need to be involved in this activity because "guiding by example" is a decisive factor in Cuba, where private practice is non-existent and there is a lack of incentives for achieving a better quality of life through research. Pre-college academic performance may have an influence in this train of

ISSN Online 0719-2479 - www.joralres.com © 2019

thought, but this is yet unproven.

Interest to participate in scientific events and activities was high, in agreement with studies carried out by Alarco *et al.,*[13]

It is often beneficial to disseminate study results, and opportunities for this include attending scientific congresses, as well as publishing articles. In Cuba, undergraduate stomatology students can participate in a variety of events. It is important that students are encouraged to publish their results after these experiences, given that studies conducted on medicine and stomatology students show that not all research results are published after being presented.[32,33]

Despite the existence of instances for the dissemination of scientific knowledge, few students tend to participate,[34] which suggests a lack of emphasis given to the importance of research within the teaching context.

Many students attend scientific events just to socialize, as they can visit new places in Cuba and gain recognition by their colleagues. The essential issue is that there is no collective perception that the publication of research studies is the final reward for their efforts. Regardless of scientific seminars representing a form of diffusion, they do not possess the characteristics of a true research output, these being the probability of being consulted by third parties at any given time and providing positive and permanent results that endure the passage of time. This can only be accomplished via printed or electronic publication.

It was found that males were associated with a better perception of research, which contradicts what was reported by Alarco *et al.,*[13] this is an alarming sign because most articles related to gender differences in research show a lack of female presence in the production of articles, fulfillment of academic positions, and financing of research projects and salaries.[35,36] Determining the causes for this gender bias warrants further research, since there are social conditions that, even within the Cuban reality, discourage significant female presence in this type of activity, even though most of the students surveyed in this study were female.

Although a positive perception of research was found among most participating subjects, when confronted with the idea of professionally involving themselves in research, this positivity decreased (61.4%), being slightly higher than what was reported by Alarco *et al.,*[13] (54.3%). On the other hand, measurements were similar to what was reported by Bovijn *et al.,*[23] in South Africa (59.4%), and akin also to the results of the annual survey of medical graduates (13,909 graduates in its 2015 version) in the United States, where the outcome was a 63% intention to conduct research during their medical careers.[37]

In contrast to the Cuban reality, students in developed countries consider research as a promising career option, resulting in an active presence in research activities at the undergraduate level.[13] Many of the students who produce scientific knowledge of their own will continue this path in their postgraduate courses, meaning they are a valuable source of future scientists. Scientific research skills are an essential requirement when undertaking doctorate studies.

These can be nurtured from an undergraduate level onwards, so that upon reaching a later stage of professional development, students should be in ideal conditions to further their education.[14] Otherwise, future professionals will not be able to make a positive contribution to knowledge since they will not have scientific publications to their name, despite having a Master or PhD degrees.[38]

With the purpose of reverting this situation, a possible solution for the core issue at hand would be to redefine the university curricula so that research becomes the focus of a student's education.[39] However, proper training of future researchers is not only achieved by providing courses on research methodology.

Academic training in this field requires insight about the personal characteristics of target students, their skills and specific interests. Nevertheless, this information by itself is not enough. Personalized counseling is required, being only achievable by having a researcher as a mentor, someone possessing the will and disposition to dedicate a significant amount of time to this customized training.[28]

The main limitation of the present study is the impossibility to generalize the reported results, being only applicable to the population studied. However, the

literature review on this subject showed that this is the first study to be conducted at this particular university. Additionally, it was useful to determine which socio-educational factors are related to the perception of research among students, to understand what positively influences them and consequently encourages them.

The necessity for a broader study is important to point out, one that could include a larger number of students from other universities in the country, and could provide interesting new information on the subject.

CONCLUSION.

A positive perception of scientific research was found among stomatology students; however, only slightly more then half of them plan to dedicate themselves professionally to research in the future. This increases with academic progression, is stronger in males and in students who perform assistantships.

Conflict of interests: The authors declare no conflicts of interest.

Ethics approval: Ethical approval granted by the Research Ethics Committee of the School of Medical Sciences "Dr. Efraín Benítez Popa", Cuba.

Funding: Study funded by the authors.

Authors' contributions: Corrales-Reyes: proposed the research, designed the study, performed bibliographic search, and applied the surveys, statistical analysis, interpreted the results, and drafted/approved the final manuscript. Fornaris-Cedeño: performed bibliographic search, interpreted the results and wrote/approved the final manuscript. Valdés-Gamboa: performed bibliographical search, applied the surveys and wrote/ approved the final manuscript. Dorta-Contreras: interpreted the results, and drafted/approved the final manuscript. Mejia: performed statistical analysis, interpreted the results and wrote/ approved the final manuscript.

Acknowledgements: None.

REFERENCES.

1. Sánchez-Duque JA, Gómez-González JF, Rodríguez-Morales J. Publicación desde el pregrado en Latinoamérica: dificultades y factores asociados en estudiantes de Medicina. Inv Ed Med. 2017;6(22):104–8.
2. Jiménez-Peña D, Serrano FT, Pulido-Medina C. Publicación en revistas científicas estudiantiles. ¿La respuesta a la problemática de dónde publicar en el pregrado? Rev Méd Chile . 2017;145(6):816–20.
3. Corrales-Reyes IE, García MJR, Pérez JJR, Raga MG. Limitantes de la producción científica estudiantil. Educ Med. 2017;18(3):199–202.
4. Taype-Rondán A, Lajo-Aurazo Y, Gutiérrez-Brown R, Zamalloa-Masías N, Saldaña-Gonzales M. Aporte de las sociedades estudiantiles en la publicación científica en SCIelo-Perú, 2009–2010. Rev Peru Med Exp Salud Publica. 2011;28(4):688–99.
5. Carrillo-Larco RM, Carnero AM. Autoevaluación de habilidades investigativas e intención de dedicarse a la investigación en estudiantes de primer año de medicina de una universidad privada en Lima, Perú Rev Med Hered. 2013;24(1):17–25.
6. Salas SP, Rigotti A. Médicos-Centíficos en Chile: ¿Una especie en extinción? Rev Méd Chile. 2005;133(1):121–8.
7. Zemlo TR, Garrison HH, Partridge NC, Ley TJ. The physician-scientist: career issues and challenges at the year 2000. FASEB J. 2000;14(2):221–30.
8. Siemens DR, Punnen S, Wong J, Kanji N. A survey on the attitudes towards research in medical school. BMC Med Educ. 2010;10:4.
9. Balbeito N, Santana D, Martínez Y, Roque Y. Dificultades en el desarrollo de las habilidades investigativas en los estudiantes de Medicina. EDUMECENTRO. 2014;6(1):98–113.
10. Cabrera-Enríquez JA, Cruzado-Mendoza C, Purizaca-Rosillo N, López-Samanamú RO, Lajo-Aurazo Y, Peña-Sánchez ER, Apolaya-Segura M, Díaz-Vélez C. Factores asociados con el nivel de conocimientos y la actitud hacia la investigación en estudiantes de medicina en Perú, 2011. Rev Panam Salud Publica. 2013;33(3):166–8.
11. Noorelahi MM, Soubhanneyaz AA, Kasim KA. Perceptions, barriers, and practices of medical research among students at Taibah College of Medicine, Madinah, Saudi Arabia. Adv Med Educ Pract. 2015;6:479–85.
12. Isaza A, Suárez H, González D, Ospina L, Velasco M, Ocampo M. Interés de los estudiantes de medicina por la investigación. CIMEL. 2010;15(1):9–13.
13. Alarco J, Changllio-Calle G, Cahuana-Salazar M. Investigación en pregrado: interés según sexo y ciclo académico. Educ Méd. 2017;18(1):67–73.
14. Castro-Rodríguez Y. Factores que contribuyen en la producción científica estudiantil. El caso de Odontología en la Universidad Nacional Mayor de San Marcos, Perú Educ Med. 2018:[In Press].
15. Castro-Rodríguez Y, Sihuay-Torres K, Perez-Jiménez V. Producción científica y percepción de la investigación por estudiantes de odontología. Educ Méd. 2018;19(1):19–22.
16. Rosales SÁ, Alfonso N, Prieto VM, Lorenzo Y. La formación investigativa en la carrera de Estomatología desde la perspectiva de los estudiantes. Rev Cubana Estomatol. 2009;46(4):99–107.
17. Ledesma R, Ibañez G, Mora P. Análisis de consistencia interna mediante Alfa de Cronbach: un programa basado en gráficos dinámicos. Psico-USF. 2002;7(2):143–52.
18. Quispe GB, Horta SH, Saravia CEM, León PA. Apreciación sobre capacitación en investigación y publicación científica

en estudiantes universitarios . Inv Ed Med. 2015;4(13):50–1.
19. Nel D, Burman RJ, Hoffman R, Randera-Rees S. The attitudes of medical students to research. S Afr Med J. 2014;104(1):33–6.
20. Criollo M, Romero M, Fontaines-Ruiz T. Autoeficacia para el aprendizaje de la investigación en estudiantes universitarios. Psicología Educ . 2017;23(1):63–72.
21. Cunha A, dos Santos B, Dias ÁM, Carmagnani AM, Lafer B, Busatto GF. Success in publication by graduate students in psychiatry in Brazil: an empirical evaluation of the relative influence of English proficiency and advisor expertise. BMC Med Educ. 2014;14:238.
22. Brown AM, Chipps TM, Gebretsadik T, Ware LB, Islam JY, Finck LR, Barnett J, Hartert TV. Training the next generation of physician researchers - Vanderbilt Medical Scholars Program. BMC Med Educ. 2018;18(1):5.
23. Bovijn J, Kajee N, Esterhuizen TM, Van Schalkwyk SC. Research involvement among undergraduate health sciences students: a cross-sectional study. BMC Med Educ. 2017;17(1):186.
24. Bonilla-Escobar FJ, Bonilla-Velez J, Tobón-García D, Ángel-Isaza AM. Medical student researchers in Colombia and associated factors with publication: a cross-sectional study. BMC Medical Education. 2017;17:254.
25. Basco Fuentes EL, Barbon Perez OG, Solis Cartas U, Poalasin Narvaez LA, Pailiacho Yucta H. Diagnóstico de la actividad científica estudiantil en la carrera de Medicina de la Universidad Nacional de Chimborazo. Educ Med. 2017;18(3):154–9.
26. González Aguilar H. La relevancia de la redacción científica. Educ Med. 2018;19(2):228.
27. Eslava-Schmalbach J, Gómez-Duarte OG. La escritura científica, un aspecto olvidado de la formación profesional. Rev Colomb Anestesiol. 2013;41(2):79–81.
28. Corrales-Reyes IE, Dorta-Contreras AJ. Students' scientific production: a proposal to encourage it. Medwave. 2018;18(1):e7166.
29. Mejia CR, Cáceres OJ, Vera CA, Inga-Berrospi F, Mayta-Tristán P. Percepción y factores asociados a insatisfacción que los médicos recién graduados tienen de sus asesores de tesis, Lima-Perú Educ Med Super. 2016;30(4):340–8.
30. Giri PA, Bangal VB, Phalke DB. Knowledge, Attitude and Practices towards Medical Research amongst the Postgraduate Students of Pravara Institute of Medical Sciences University of Central India. J Family Med Prim Care. 2014;3(1):22–4.
31. Hernández-Negrín H, Jurajuria AN, Bermúdez YC, Fernández JZ, Neira XM. Movimiento de alumnos ayudantes: experiencia de una institución cubana. Educ Médica. 2018;19(2):115–9.
32. Valladares-Garrido MJ, Flores-Pérez I, Failoc-Rojas VE, Mariñas-Miranda W, Valladares-Garrido D, Mejia CR. Publicación de trabajos presentados a congresos científicos internacionales de estudiantes de medicina de Latinoamérica, 2011-2014. Educ Médica. 2017;18(3):167–73.
33. Corrales-Reyes IE, Fornaris-Cedeño Y, Dorta-Contreras AJ, Mejia CR. Baja publicación de los trabajos presentados en el IV Encuentro Iberolatinoamericano de Estudiantes de Odontología. Rev Cuba Inf Cienc. 2018;29(3):1–14.
34. Corrales-Reyes IE, Reyes-Pérez JJ, Fornaris-Cedeño Y. Análisis bibliométrico del IV Encuentro Iberolatinoamericano de Estudiantes de Odontología. Investigación en Educ Médica. 2017;6(2):153–9.
35. García-Calvente MM, Ruiz-Cantero MT, Río-Lozano M, Borrelld C, López-Sancho P. Desigualdades de género en la investigación en salud pública y epidemiología en España (2007-2014) Gac Sanit. 2015;29(6):404–11.
36. Filardo G, da Graca B, Sass DM, Pollock BD, Smith EB, Martinez MAM. Trends and comparison of female first authorship in high impact medical journals: observational study (1994-2014) BMJ. 2016;352:i847.
37. the AAMC Graduation Questionnaire. Medical School Graduation Questionnaire. 2015 All Schools Summary Report. Washington, DC: AAMC; 2015.
38. Mejia CR, Valladares-Garrido MJ, Valladares-Garrido D. Baja publicación en revistas científicas de médicos peruanos con doctorado o maestría: Frecuencia y características asociadas. Ed Méd. 2018;19(2):135–41.
39. Corrales-Reyes IE, Castro-Rodríguez Y. Scientific output in Dentistry: a look toward the undergraduate in Latin America. J Oral Res . 2018;7(5):168–9.