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APRECIACIÓN ESTUDIANTIL DE LA INVESTIGACIÓN MÉDICA EN PREGRADO. ESTUDIO MULTICÉNTRICO EN 19 UNIVERSIDADES

APRECIACIÓN ESTUDIANTIL DE LA INVESTIGACIÓN MÉDICA EN PREGRADO. ESTUDIO MULTICÉNTRICO EN 19 UNIVERSIDADES

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ABSTRACT

Objective: To know the appreciation of the student on the work of the Peruvian scientific research universities medical undergraduate students of faculties of medicine of the Peru, 2016-2017. **Methods:** It is a multicentric, observational, descriptive and transversal study. It featured the participation of 400 medical students belonging to 19 faculties of medicine officially recognized by the Peruvian Association of faculties of Medicine (ASPEFAM). Applied sampling was not probabilistic. A validated by a study earlier, auto-applicative, anonymous, voluntary survey was used, and which underwent a pilot test. The collection was virtual and the analysis was descriptive. **Results:** Only 7,8% concerned that its faculty of medicine Yes supported research. Around 56% concerned do not feel sufficiently trained by their University to achieve the scientific publication in biomedical journals. And most they did appreciate that their universities do not encourage the seed research, do not have scientific internships and there is support for students to execute or carry out their thesis. **Conclusions:** The perceptions of the students about the work of universities in undergraduate scientific medical research, it was classified as "deficient" by the majority of the surveyed.

Key words: Medical research; Undergraduate medical education; Medical students; Peru. (source: MeSH NLM)

RESUMEN

Objetivo: Conocer la apreciación estudiantil sobre la labor de las universidades peruanas en la investigación científico médica de pregrado en estudiantes de facultades de medicina del Perú, 2016-2017. **Métodos:** El estudio fue de tipo multicéntrico, observacional, descriptivo, transversal. Se contó con la participación de 400 estudiantes de medicina pertenecientes a 19 facultades de medicina reconocidas oficialmente por la Asociación Peruana de Facultades de Medicina (ASPEFAM). El muestreo aplicado fue no probabilístico. Se utilizó una encuesta validada por un estudio anterior, autoaplicativa, anónima, voluntaria, y que fue sometida a una prueba piloto. La recolección fue virtual y el análisis realizado fue de tipo descriptivo. **Resultados:** De la población encuestada, solo el 7,8% refirió que su facultad de medicina sí apoyaba a la investigación. Alrededor del 56% refirió no sentirse suficientemente capacitado por su universidad para lograr la publicación científica en revistas biomédicas. Y en su gran mayoría hicieron apreciar que en sus universidades no se fomentan los semilleros en investigación, no cuentan con pasantías científicas y no existe apoyo para que los estudiantes ejecuten o realicen sus tesis. **Conclusión:** La apreciación de los estudiantes entorno al trabajo que vienen haciendo las universidades y/o facultades de medicina en la investigación científico médica de pregrado, fue catalogada como "deficiente" por la mayoría de los encuestados.

Palabras clave: Investigación médica; Educación de pregrado en medicina; Estudiantes de medicina; Perú. (fuente: DeCS BIREME)

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INTRODUCTION

Scientific research can be defined as every human activity focused on obtaining new knowledge in order to solve gaps or problems in real life. This activity is inherent to human medicine, thus each student from medicine has to know about research, and therefore he or she needs to be educated[1]. It is wrong to think that undergraduate students cannot neither do research nor publish their articles in Peruvian and foreign scientific medical journals. Evidence for this are countless publications that many Peruvian and foreign[2-4] students have been accomplishing.

According to Scimago ranking in its SIR 2015 report, Peru has 72 university institutions, which all together obtained a scientific production of 4311 articles. Even best ranked Peruvian universities in terms of publications cannot be compared with the number of publications worldwide. Lowest ranked universities are in a worst situation that they even end up having no scientific production[5]. Therefore, according to the Peruvian University Law N° 30220 adopted on 2014, "One of the obligatory and key roles in Peruvian universities are scientific research, accomplished by professors, graduates and undergraduates"[6], particularly in the field of Human Medicine, as a result, it was posed as an overall objective to acknowledge student appreciation concerning Peruvian universities labor in scientific and medical undergraduate research in students from Peruvian medical schools, 2016 – 2017.

METHODS

Study type and design

Multicenter, observational, descriptive and cross – sectional study, performed from November 2016 until January 2017. In addition, it was carried out a call for the participation of medicine students from 25 recognized universities by the Peruvian Association of Medical Schools (ASPEFAM).

Population and Sampling

Population studied were every student from Peruvian Medical Schools recognized by ASPEFAM, 2016. Type of sampling was non-probabilistic by convenience.

It included all those medicine students that have taken, in their curriculum, at least one course related to research, those that are enrolled in any semester of college and those who belong to a medical school officially recognized by ASPEFAM.

It excluded all those students taking part in any university scientific society and all those that did not want to be involved in the study.

Data collection

A self – administered, anonymous and voluntary survey approved by a previous study[18] was applied. This survey was subjected to a 64-contestants pilot test, to whom it was calculated a Croanbach's coefficient alpha of 0.91, indicating a high reliability of the instrument.

This survey embraced six sections: 1) personal data and appreciation on university work on research (07 items), 2) activities and courses related to research (08 items), 3) strategies, policies and technics about promotion on research (20 items), 4) award and acknowledgement for undergraduate researchers (04 items).

To survey, at least one manager of each scientific society from Peruvian universities was approached, so he/she would approach medicine students from his/her medical schools in order to make them participate in the study.

Data collection was carried out from November 2016 until January 2017, via email, which contained the self-administered survey with its informed consent.

Variables

The variable was "university work on undergraduate scientific medical research", which was studied on the basis of: a) activities and courses related to research, b) Research accomplished by professors and university officials, c) Award and acknowledgement for undergraduate researchers.

Statistical Analysis

Variables analysis was of descriptive level. Data were registered in a designed basis for the study in Microsoft Excel 2013® statistical packages.

Ethical Considerations

This research work was approved for its carrying out by Research Ethics Board of San Juan Bautista Private University (UPSJB).

Furthermore, to ensure ethics in this study, informed consent was provided. Moreover, handling of personal data was carried out through numerical codes. As well, every data collected was in custody only by the research, who kept watch in order to ensure the most privacy possible in every research process.

RESULTS

Students from 19 out of 25 universities recognized by ASPEFAM participated in the study. Nine of them were nationals, and remaining 10 were private, with an average of 21 students per each medical school, reaching a 400 students-survey population. 57.8% belong to private universities, and only 23.3% studied at Lima universities. Concerning students' appreciation towards their universities work in undergraduate research, 78.8% rated this work like still "poor" (Table 01).

Students' majority from both national and private universities agreed their colleges carried out scientific activities such as research conferences, symposiums or scientific congresses, as well as scheduled courses related to research within the curriculum. However, 79.3% of students stated absence of extracurricular research courses at their universities.

Likewise, 56.3% of students do not feel appropriately skilled to achieve scientific publishing solely following research courses provided by the medical school.

On the other hand, a high percentage stated most projects carried out while studying only represent their courses final grade, but do not have intention to neither be part of scientific events nor to be published (Table 02).

Table 03 shows medicine students' appreciation concerning extracurricular and curricular courses provided their universities. Students' majority from both national and private universities qualified curricular courses quality as regular. Nonetheless, a small group rated these courses like poor or zero. The most frequently taken curricular course was Research Methodology. Regarding extracurricular courses, only 20.8% out of total number of students took one of these courses and they mostly qualified them as regular.

Moreover, it was also consulted if students knew their professor did some research. The majority stated only "a few" professors, that have taught them, did some research, as well as had published original researches in scientific medical journals. Similarly, 76.5% of respondents sometime tried to carry out whether a research project or a research work with counseling from their professors, being supported mostly at no cost (Table 04).

Concerning award and acknowledgement for researchers, strategies and policies for scientific research, around 48% of respondents affirmed their universities do not awarded prizes or gave recognition for those students and professor who achieved publication of research papers in Scientific Medical Journals, as well 54.7% mentioned there was no diffusion made of those publications.

Table 1. General characteristics of medicine respondent students and their appreciations on university work on undergraduate scientific research (N=400).

Type of university/ Students' characteristics	National		Private		Total	
	N°	(%)	N°	(%)	N°	(%)
General characteristics and Appreciation						
1. University Location						
Lima	19	4,8	75	18,8	94	23,6
Others	150	37,6	156	39	306	76,6
2. Age						
Mean	21,4	-	21,7	-	21,5	-
Median	21	-	21	-	21	-
Mode	19	-	21	-	21	-
[Minimum-Maximum]	[18-30]	-	[17-31]	-	[17-31]	-
3. Gender						
Male	107	26,8	94	23,6	201	50,4
Female	62	15,6	137	34,3	199	49,9
4. Year of University Studies						
First	19	4,7	19	4,7	38	9,4
Second	19	4,7	25	6,3	44	11
Third	44	10,9	25	6,3	69	17,2
Fourth	24	6	56	14,1	80	20,1
Fifth	44	10,9	75	18,8	119	29,7
Sixth	19	4,7	31	7,8	50	12,5
5. University assessment in research						
a. Very good	0	0	0	0	0	0
b. Good	4	1	2	0,5	6	1,5
c. Regular	45	11,3	31	7,8	76	19,1
d. Deficient	133	33,3	182	45,5	315	78,8
e. Very poor	1	0,3	2	0,5	3	0,8

Source: Author's own creation according survey "Student Appreciation on Peruvian universities work on undergraduate scientific medical research".

Table 2. Scientific activities about research accomplished by medical schools (N=400).

Type of university/Scientific activities	National		Private		Total	
	N°	(%)	N°	(%)	N°	(%)
About scientific activities organized by Schools						
1. Do they organize scientific activities such as research conferences, scientific symposiums or scientific congresses?						
a. Yes, they do.	93	23,2	187	46,8	280	70
b. No, they don't.	75	18,8	32	8	107	26,8
c. I know nothing about.	0	0	13	3,2	13	3,2
2. Within your medical school curriculum, do you any course related to research?						
a. Yes, I do.	170	42,4	230	57,6	400	100
3. Does your medical school organize extracurricular research courses?						
a. Yes, it does.	23	5,8	60	15	83	20,8
b. No, it doesn't.	168	42	149	37,3	317	79,3
4. Do you feel skilled to achieve scientific publishing after taking your medical school' courses?						
a. Strongly agree.	0	0	0	0	0	0
b. Agree.	6	1,5	56	14	62	15,5
c. Neither agree nor disagree.	38	9,5	75	18,8	113	28,3
d. Disagree.	88	22	67	16,8	155	38,8
e. Strongly disagree.	38	9,5	32	8	70	17,5
5. Do they organize extracurricular activities that implement research projects?						
a. Yes, they do.	43	10,8	62	15,5	105	26,3
b. No, they don't.	112	28,0	127	31,8	239	59,8
c. I know nothing about.	13	3,3	43	10,8	56	14,1
6. What happens then with research projects implemented in extracurricular activities?						
a. We present them as a course mark	25	6,3	42	10,5	67	16,8
b. They become papers with which we participate in scientific events such as scientific congresses and symposiums	13	3,3	19	4,8	32	8,1
c. They become research papers that we send for publishing in scientific journals.	0	0,0	0	0,0	0	0
d. I know nothing about.	6	1,5	0	0,0	6	1,5

Source: Author's own creation according survey "Student Appreciation on Peruvian universities work on undergraduate scientific medical research".

Table 3. Appreciation on undergraduate related-to-research courses delivered by medical schools (N=400).

Appreciation/ Courses	Very good		Good		Regular		Poor		Very poor	
	UN* (%)	UP** (%)	UN (%)	UP (%)	UN (%)	UP (%)	UN (%)	UP (%)	UN (%)	UP (%)
Curricular courses										
a. Research Methodology	0 (0,0)	38 (9,5)	44 (11,0)	50 (12,5)	69 (17,3)	93 (23,3)	50 (12,5)	25 (6,3)	0 (0,0)	6 (1,5)
b. Epidemiology	0 (0,0)	19 (4,8)	25 (6,3)	44 (11,0)	12 (3,0)	75 (18,8)	25 (6,3)	19 (4,8)	6 (1,5)	0 (0,0)
c. Statistics	12 (3,0)	31 (7,8)	6 (1,5)	38 (9,5)	38 (9,5)	82 (20,5)	56 (14,0)	50 (12,5)	6 (1,5)	0 (0,0)
d. Research Ethics	0 (0,0)	12 (3,0)	19 (4,8)	50 (12,5)	25 (6,3)	31 (7,8)	12 (3,0)	31 (7,8)	0 (0,0)	12 (3,0)
e. Thesis	0 (0,0)	0 (0,0)	12 (3,0)	19 (4,8)	19 (4,8)	31 (7,8)	19 (4,8)	12 (3,0)	6 (1,5)	6 (1,5)
Extracurricular courses										
a. Scientific Writing	0 (0,0)	0 (0,0)	0 (0,0)	10 (2,5)	0 (0,0)	30 (7,5)	0 (0,0)	0	10 (2,5)	9 (2,3)
b. Scientific Publication	0 (0,0)	9 (2,3)	0 (0,0)	0 (0,0)	0 (0,0)	9 (2,3)	0 (0,0)	15 (3,8)	9 (2,3)	9 (2,3)
c. Research Project	0 (0,0)	0 (0,0)	0 (0,0)	10 (2,5)	16 (4,0)	29 (7,3)	0 (0,0)	9 (2,3)	0 (0,0)	10 (2,5)
d. Research Methodology	0 (0,0)	9 (2,3)	0 (0,0)	9 (2,3)	0 (0,0)	29 (7,3)	9 (2,3)	9 (2,3)	0 (0,0)	9 (2,3)
e. Data Management in SPSS	0 (0,0)	10 (2,5)	0 (0,0)	0 (0,0)	0 (0,0)	30 (7,5)	0 (0,0)	9 (2,3)	0 (0,0)	10 (2,5)
f. Data Management in STATA	0 (0,0)	0 (0,0)	0 (0,0)	9 (2,3)	0 (0,0)	9 (2,3)	0 (0,0)	16 (4,0)	0 (0,0)	10 (2,5)
g. Research Ethics	0 (0,0)	9 (2,3)	9 (2,3)	15 (3,8)	0 (0,0)	23 (5,8)	0 (0,0)	9 (2,3)	0 (0,0)	0 (0,0)
h. Critical Reading of Scientific Papers	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	17 (4,3)	0 (0,0)	11 (2,8)	0 (0,0)	11 (2,8)

*NU: National University, **PU: Private University

Source: Author's own creation according survey "Student Appreciation on Peruvian universities work on undergraduate scientific medical research".

Table 4. Student appreciation on research work of professors and university officials (N=400).

Type of university/Survey items	National		Private		Total	
	N°	(%)	N°	(%)	N°	(%)
1. Professors who have taught you courses at your medical school, do they do scientific research?						
a. All professors do research	12	3,1	62	15,6	74	18,7
b. The majority	19	4,7	56	14,1	75	18,8
c. Some of them	81	20,3	88	21,9	169	42,2
d. Hardly any of them	38	9,4	12	3,1	50	12,5
e. None of them	1	0,3	6	1,6	7	1,9
f. I know nothing about	19	4,7	6	1,6	25	6,3
2. Professors who have taught you courses at your medical school, have they published original researches' papers on Scientific Medical Journals?						
a. All professors do research	12	3,1	62	15,6	74	18,7
b. The majority	25	6,3	50	12,5	75	18,8
c. Some of them	69	17,2	62	15,6	131	32,8
d. Hardly any of them	38	9,4	19	4,7	57	14,1
e. None of them	13	3,3	6	1,6	19	4,9
f. I know nothing about	13	3,3	31	7,8	44	11,1
3. Among professors who have taught you, how many of them encourage their students to do research in the course they teach?						
a. All professors do research	12	3,1	0	0	12	3,1
b. The majority	25	6,3	19	4,7	44	11
c. Some of them	94	23,4	156	39,1	250	62,5
d. Hardly any of them	12	3,1	12	3,1	24	6,2
e. None of them	13	3,3	38	9,4	51	12,7
f. I know nothing about	13	3,3	6	1,6	19	4,9
4. The university authorities, whether vice rector for research, faculty director or dean, do they have published research on Scientific Medical Journals?						
a. Yes, they have.	38	9,4	69	17,2	107	26,6
b. No, they haven't.	44	10,9	30	7,5	74	18,4
c. I know nothing about.	88	21,9	131	32,8	219	54,7
5. Have you ever tried to carry out whether a research project or research paper with counseling from your medical school professors?						
a. Yes, I have.	144	35,9	162	40,6	306	76,5
b. No, I haven't.	25	6,3	69	17,2	94	23,5
6. Were your professors ready to take part in or to advise your research project or research paper?						
a. Yes, they were.	126	31,5	133	33,3	259	64,8
b. No, they weren't.	8	2	39	9,8	47	11,8
7. Did your professors charge you in cash for the advice?						
a. No	126	31,5	133	33,3	259	64,8
8. Do your professors have outside teaching hours assigned by the school in order to give advice or do research with students?						
a. Yes, they have.	25	6,3	38	9,4	63	15,7
b. No, they haven't.	112	28,1	94	23,4	206	51,5
c. I know nothing about.	31	7,8	100	25	131	32,8

Source: Author's own creation according survey "Student Appreciation on Peruvian universities work on undergraduate scientific medical research".

DISCUSSION

Among main detected problems through students' appreciation are poor university training in terms of undergraduate research and no encouragement to students in order to do science. All this support the fact that 78.8% of students, via surveys, had rated universities work on undergraduate research like "poor".

Regarding poor training, it is mostly identified because students do not feel appropriately skilled by their university neither to achieve scientific publishing, nor to produce and sustain their thesis[17]. This is also mentioned in Molina et al[18] study, where it a was a large group of students that considered poor research-related curriculum provided by universities, and the sole way out they found was seek for extracurricular courses, not taught by universities, but by other entities, which were complete and had a better quality[19-21], according to students.

Concerning little support for undergraduate research, it is clear universities are not training human resources in research[22, 23]. Neither do they provide competitive funds, which could help battle against one of the most evident difficulties for doing undergraduate research in Peru, besides they are commonly targeted only to professors, according to Arroyo et al [24-27].

Projects, research papers and thesis are forming solely part of courses' grades, and they are frequently a further requirement for degree. But students are not being encouraged to publish this type of scientific contributions. Likewise, students who had attained achievements in scientific field. Otherwise, more students would be encouraged to do research[28,29].

On the other hand, it is clear universities do not count on environments that encourage research, given that, according to this study, labs are solely being used for academic education, but no for carrying out scientific studies of greater complexity[30].

Furthermore, there is the absence of research incubators at universities, given that it is still expected that students reach cycles where they take any research course to just start doing science. That is the reason why they are not being encouraged to do research since they begin their career, which would be clearly more helpful and would enhance research in basic science[31,32].

Among limitations of research, we have lack of work accessibility to both medical schools and their students, given that they are located in different latitudes of Peru. Besides that, it was firstly proposed to carry out a stratified probabilistic sampling per year of studying. However, there was a big difficulty when making contact with every medical school concerning permits to obtain students information in order to know the total number of students per cycle and/or year of studying. Likewise, there were many complications while surveying to make contact with the required total number of students per year of studying and Peruvian medical school. Thus, a non-probabilistic by convenience sampling was employed instead, which was maybe not the best option, but allowed embracing students from different years of career per school, and obtaining various points of view about university work on research.

On the other side, among strengths this research presents, the fact of being a multicenter study that embraced students' appreciation from 19 medical schools is highlighted. In contrast to other researches that only gather local information from their university worlds.

Moreover, this study is one of the few studies at Peru level that has investigated the reality of undergraduate scientific research, after adopting University Law N° 30220, in 2014. Before this adoption, university work on research was not well appreciated, that is the need to know if there had been a change in the short-to-medium term after adopting this law.

CONCLUSION

More than 50% of respondents rate research in their universities like poor, because it is being showed to every student a poor image and lack of concern for developing science. Thus, it is suggested to start establishing policies and strategies focused on research, specific pear each university world, and they should be already applied. Similarly, it is recommended to enhance diffusion of scientific accomplishments obtained by every university, and to reinforce research courses since the start of the career and to simultaneously encourage publishing on scientific journals.

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