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# A Limited Number Of Theses Address Health Research Priorities In A Medical School In Peru

*Samak Kapoor Singh*

*University of Marília (Unimar). Brazil.*

**ABSTRACT**

The purpose of the study was to determine the proportion of undergraduate theses written in a medical school which were framed within the national health research priorities (HRP) agenda or dealt with priorities of the Arequipa region. A cross-sectional study was conducted of 624 undergraduate theses written in a Peruvian university from 2011 to 2017. Of the theses written from 2011 to 2015, 23.4% (110) had to do with the national 2011-2014 HRPs, whereas 36% ( 55) of those written in 2016 and 2017 responded to the national 2015-2021 HRPs. Of the theses written from 2011 to 2015, 9.6 % (4) had to do with the 2011-2014 HRPs for the Arequipa region, whereas 36.6 % (56) of those written in 2016 and 2017 were framed in the 2015-2021 HRPs for the Arequipa region. It was concluded that a low proportion of the theses studied address health research priorities.

**Keywords**: academic thesis; health priorities agenda; undergraduate medical education

## INTRODUCTION

Well-directed, quality research at the local level is essential to improve population health and accelerate socioeconomic development in low- and middle-income countries. [1] In Peru, the National Institute of Health developed research agendas in

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priority areas, known as Health Research Priorities (PIS), in order to optimize the use of limited research resources, with a view to improving the health system, health indicators and policy development. [2,3] The first list of PIS was made for the period 2010-2014 - the same one that was updated for the period 2015-2021 - based on the previous period. [4] It is necessary to mention that in the preliminary phase of preparing the national PIS, the PIS were also established for each of the regions of the country. [2] On the other hand, the research carried out in Peruvian universities should respond to the needs of the national reality. [5] Consequently, research done in universities should mostly align with national and regional PIS to generate greater local social impact. This should be reflected in the theses produced in Peruvian universities, given that theses represent the majority of scientific production in this context.

Theses are documents that present the results achieved after completing a research work; They reflect the scientific contribution made and the direction of research of many universities. This is especially important in those where the presentation of a thesis is mandatory to obtain the degree or professional title, which is why it represents the culmination of the undergraduate degree. [6,7] The analysis of scientific production allows us to know the dynamics of knowledge production (trends), which is why it is important for the management of the scientific and academic policy of universities. The analysis of theses provides a more complete understanding of scientific production than the analysis of scientific articles in universities where the publication of articles in indexed journals is low. In the health area, there are few studies that evaluated the scientific production of theses through bibliometric analysis 6 , 7 or their publication in indexed

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journals. [8] , [9] , [10] , [11] ) Only three publications showed the relationship between theses and PIS. [7] , [12] , [13] ) It is known that, in general, Peruvian universities have contributed little to the national PIS. [14] However, it is unknown how much of the research carried out in provincial universities focuses on the PIS in their region.

Thus, it is important to know scientific production through undergraduate theses and see its contribution to the PIS, especially in regions where universities are the only institutions that carry out research; that is, the only ones with the potential to generate evidence for better decision-making at the local level. The objective of this work was to determine the proportion of undergraduate theses from a medical school that were framed within the national or Arequipa region's Health Research Priorities (PIS) agenda.

## METHODS

The Faculty of Medicine of the National University of San Agustín (UNSA) is located in the city of Arequipa, Peru. At this university, the only way to obtain a professional degree is to support a thesis. A descriptive observational study was carried out during the months of March and April 2018.

We studied the undergraduate theses supported and approved at the Faculty of Medicine of the UNSA during the period 2011 to 2017. The undergraduate theses that were approved in the period 2011-2017, registered in the database of the library of the UNSA, were included. university. Theses that were not available in the physical library or in the digital repository were excluded. No sampling or sample size calculation was carried out, since it was census-based.

The PIS of Peru and the Arequipa Region considered as an evaluation reference were those established for the period 2010-2014 and 2015-2021, respectively. [2, 3, 4]

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**Health Research Priorities in Peru established for the period 2010-2014 and for 2015-2021**

**National research priorities 2010-2014**

1. Research to understand human resources problems.
2. Research to better understand the problems of mental health.
3. Evaluation of the impact of state and non-state social programs on the reduction of child malnutrition.
4. Impact evaluations of current strategies and interventions on maternal mortality.
5. Operational research in communicable diseases.
6. Impact evaluations of current interventions in communicable diseases.
7. Impact evaluations of new interventions in communicable diseases.

1. National research priorities 2016-2021
2. Maternal, perinatal and neonatal mortality.
3. Cancer.
4. Malnutrition and anemia.
5. Mental health.
6. High blood pressure, dyslipidemia, cardiovascular diseases.
7. Health policies and management.
8. Mellitus diabetes.
9. Tuberculosis.
10. Human Resources.
11. Respiratory infections and pneumonia.
12. Traffic accidents.

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1. Research priorities 2010-2014 in the Arequipa Region
2. Impact evaluation of the implementation of neonatal obstetric functions to reduce maternal and perinatal morbidity and mortality.
3. Research to understand the prevalence, risk factors and economic and sociocultural conditions of malnutrition and anemia in children under 5 years of age.
4. Operational study of the processes developed in the prevention of vertical transmission of HIV.
5. Research that evaluates the impact of training and various forms of training on job performance in access to health services.
6. Research to determine the characteristics (physical, chemical and biological) of indoor drinking water in Arequipa.

**Research priorities 2016-2021. Arequipa Region**

1. Non-communicable diseases: cancer, diabetes mellitus, high blood pressure.
2. Malnutrition: obesity, anemia, malnutrition.
3. Maternal, perinatal and neonatal mortality.
4. Communicable diseases: respiratory infections, tuberculosis, sexually transmitted diseases, HIV/AIDS, acute diarrheal diseases.
5. Traffic accidents.
6. Human Resources.
7. Mental health.
8. Oral health.
9. Health Policies.

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The theses supported and registered between the years 2011 and 2015 were evaluated with the PIS 2010-2014, and the theses from the years 2016 and 2017 with the PIS 2015-2021, since the PIS 2015-2021 were published at the end of 2015. Other characteristics of the theses were also studied: research area, study design, place of execution of the study, sample size and approval by an ethics committee.

In relation to the theses that were reviewed in the following sequence, the title and objectives were evaluated, then the methodology and then the conclusions of each of them. *An ad-hoc* data collection form was used , which took into account previous studies. [6 , 7 , 12 , 13 ] Then, a preliminary analysis was carried out to control data quality: search for missing values and recover them from the data collection sheets. Furthermore, if there were inconsistent results, they were verified according to the information on the data collection sheets.

A descriptive analysis was carried out for the variables described through the calculation of frequencies. The quantitative variables were described as mean and standard deviation or median and interquartile range, according to the distribution of the data, which was evaluated with the Shapiro-Wilk test. The data were organized and analyzed in the *Microsoft Excel 2016*® program .

This study was carried out guided by the principles of scientific integrity. [15 ] The approval of an ethics committee was not necessary, since the data used (thesis reports) are freely accessible.

## RESULTS

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The UNSA library recorded 634 undergraduate theses from the medical school; Ten of the theses were not located, so we worked with 624 theses (98.4%). All of these (100%) had a single author or principal investigator. Thesis production per year had a mean of 89.1 (standard deviation 19.7). The year 2015 was the year with the highest production, but the number of theses that aligned with the national PIS and the Arequipa region did not increase in relation to the total theses, as can be seen in the figure .

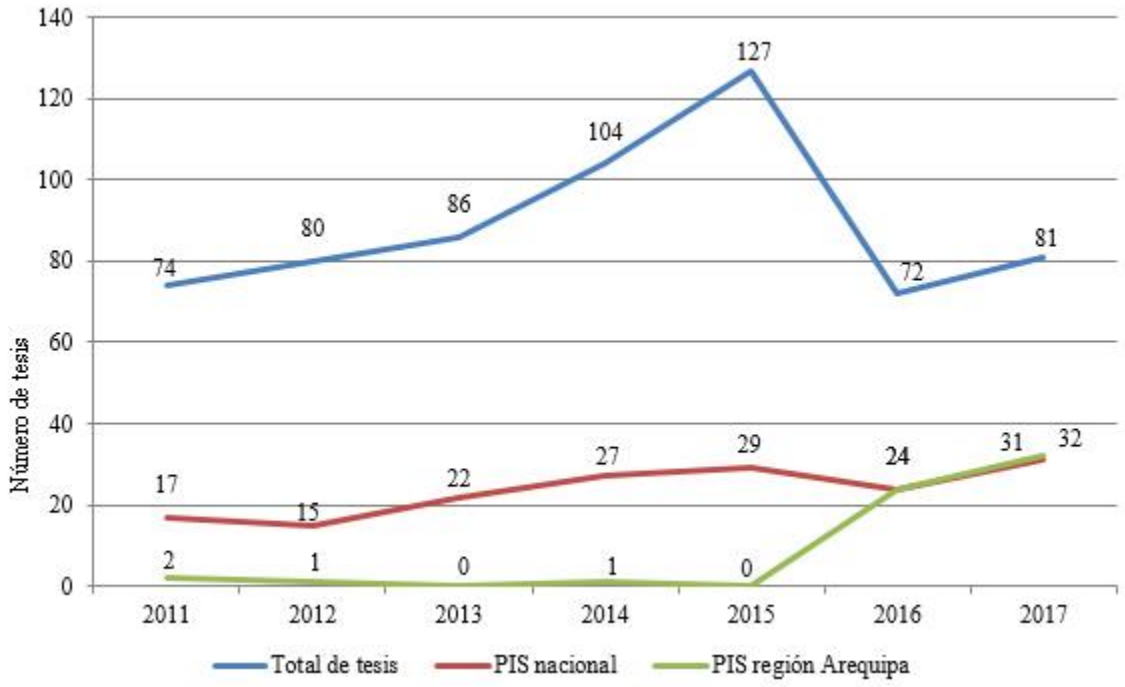


**Fig** Thesis of the Faculty of Medicine of the National University of San Agustín. Period 2011-2017

Table 1 shows the proportion of the number of theses framed in health research priorities over the years.

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**Table 1** Undergraduate theses from the Faculty of Medicine of the National University of San Agustín framed in health research priorities, in the period 2011-2017

| Year | Theses that address a national PIS | | Theses that address a PIS of the Arequipa region | | thesis number | |
|---|---|---|---|---|---|---|
| | n = 165 | % | n = 60 | % | n = 624 | % |
| 2011 | 17 | 10.3 | 2 | 3.3 | 74 | 11.9 |
| 2012 | fifteen | 9.1 | 1 | 1.7 | 80 | 12.8 |
| 2013 | 22 | 13.3 | 0 | 0 | 86 | 13.8 |
| 2014 | 27 | 16.4 | 1 | 1.7 | 104 | 16.7 |
| 2015 | 29 | 17.6 | 0 | 0 | 127 | 20.4 |
| 2016 | 24 | 14.5 | 24 | 40 | 72 | 11.5 |
| 2017 | 31 | 18.8 | 32 | 53.3 | 81 | 13 |

PIS: Health research priority.

Table 2 and Table 3 show the proportion of theses that addressed a national PIS and a research priority of the Arequipa region, respectively.

**Table 2** Theses from the Faculty of Medicine of the National University of San Agustín framed in a national health research priority

| Thesis | n | % |
|---|---|---|
| Theses framed in a national PIS | 165 | 26.4 |
| Theses framed in the national PIS 2011-2014 * | 110 | 23.4 |
| Research to better understand mental health problems | 96 | 20.4 |
| Research to understand human resources problems | 7 | 1.5 |

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| Thesis | n | % |
|---|---|---|
| Impact evaluations of current interventions in communicable diseases | 6 | 1.3 |
| Impact evaluations of new interventions in communicable diseases | 1 | 0.2 |
| Theses framed in the national PIS 2015-2021 ** | 55 | 36 |
| Mental health | twenty-one | 13.7 |
| Mellitus diabetes | 9 | 5.9 |
| Malnutrition and anemia | 7 | 4.6 |
| High blood pressure, dyslipidemia, cardiovascular diseases | 6 | 3.9 |
| Cancer | 4 | 2.6 |
| Human Resources | 4 | 2.6 |
| Respiratory infections and pneumonia | 2 | 1.3 |
| Maternal, perinatal and neonatal mortality | 1 | 0.7 |
| Tuberculosis | 1 | 0.7 |

* Calculated for thesis from 2011-2015. ** Calculated for thesis of 2016 and 2017. PIS: Health research priority.

**Table 3** Theses from the Faculty of Medicine of the National University of San Agustín that were framed in a health research priority of the Arequipa region

| Thesis | n | % |
|---|---|---|
| Theses framed in a PIS of the Arequipa region | 60 | 9.6 |
| Theses framed in the regional PIS 2011-2014 * | 4 | 0.9 |
| Research that evaluates the impact of training and various forms of | 3 | 0.6 |

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| Thesis | n | % |
|---|---|---|
| training on job performance in access to Health services. | | |
| Impact evaluation of the implementation of neonatal obstetric functions to reduce maternal and perinatal morbidity and mortality. | 1 | 0.2 |
| Theses framed in the regional PIS 2015-2021 ** | 56 | 36.6 |
| Non-communicable diseases: cancer, diabetes mellitus, high blood pressure. | twenty | 13.1 |
| Mental health. | 19 | 12.4 |
| Malnutrition: obesity, anemia, malnutrition. | 7 | 4.6 |
| Communicable diseases: respiratory infections, tuberculosis, sexually transmitted diseases, HIV/AIDS, acute diarrheal diseases. | 5 | 3.3 |
| Human Resources. | 4 | 2.6 |
| Maternal, perinatal and neonatal mortality. | 1 | 0.7 |

*Calculated for thesis from 2011-2015. *Calculated for thesis of 2016 and 2017.

PIS: Health research priority.

There is little development of research in basic sciences as well as in medical education. The cross-sectional study design was the most used; No cohort, ecological, community or field trial studies were found. Only a small number of theses were approved by an ethics committee ( table 4 ).

**Table 4** Focus of the theses of the Faculty of Medicine of the National University of San Agustín, in the period 2011-2017

| Thesis | n | % |
|---|---|---|
| Investigation area | - | - |

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| **Thesis** | **n** | **%** |
|---|---|---|
| Clinic | 424 | 68 |
| Public health | 169 | 27.1 |
| Basic sciences | 18 | 2.9 |
| Medical Education | 13 | 2.1 |
| Study design | - | - |
| Cross-sectional studies | 518 | 83 |
| *analytical cross-sectional* | 349 | 55.9 |
| *descriptive cross-sectional* | 169 | 27.1 |
| Cases and controls | 48 | 7.7 |
| Concordance studies | twenty | 3.2 |
| Preclinical study (animal, cellular, genetic) | fifteen | 2.4 |
| Diagnostic tests | 10 | 1.6 |
| Clinical trial | 9 | 1.4 |
| Longitudinal studies (monitoring and surveillance) | 4 | 0.6 |
| Study execution location | | |
| Hospital | 496 | 79.5 |
| School | 32 | 5.1 |
| Pre-university academy | 28 | 4.5 |
| Sample size** | 101 | 58 - 200 |
| Ethics committee approval | | |
| Yeah | 18 | 2.9 |
| No | 606 | 97.1 |

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## DISCUSSION

A constant thesis production was found. It is one of those that produced the highest number of theses per year (89.1) compared to what was reported in other medical schools in the country: National University of Trujillo (88.5 theses per year), 16 ) Universidad Peruana Cayetano Heredia ( 64 theses per year), 10 ) others (less than 35 theses per year). 6 , 7 , 9 , 11 , 13 This would respond to the different number of students that graduate from each medical faculty or school, as well as the alternative degree modalities to thesis support (specific to each institution).

Regarding the national PIS, only 110 - which represents 23.4% of the total theses from the period from 2011 to 2015 - were adjusted to the 2011-2014 national PIS. Slightly lower than what was found at the Pedro Ruiz Gallo National University of Chiclayo (27.1%), 7 and at the San Antonio de Abad National University of Cusco (27.3%). 12 But higher than what was reported at the National University of Piura (10%). 13 ) This situation observed in universities coincides with Peruvian scientific production developed in accordance with national research agendas, where it represented 24.4%. 14 ) The most studied national PIS was mental health, as in Piura. 13 but different from what was reported in Chiclayo and Cusco, where maternal mortality and human resources in health led respectively. It is observed that in none of these universities did the 2011-2014 national PIS study set the thematic direction of the theses. This would be explained by the lack of knowledge of undergraduate students about the PIS, when choosing a thesis topic, and even the lack of knowledge on the part of their advisors, which would happen as a consequence of the lack of a coordinated process of multisectoral implementation and socialization. of prioritized research, 14 ) so the PIS would not

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have expected results in local and national scientific production. [14] ) This fact was taken into account for the current process of the national PIS 2015-2021, which incorporates an implementation, monitoring and evaluation plan. [4]

A significant increase is observed in the proportion of theses framed in the national PIS 2015-2021: from 23.4 to 35.9% (calculated for the last two years). This would be explained by the current list of PIS, which is more diversified and perhaps more in line with reality, considering that PIS have not been actively promoted institutionally. The most studied PIS continues to be mental health, although to a lesser extent. However, this increase in theses focused on PIS is still insufficient, considering that there are unstudied priorities.

In relation to the PIS of the Arequipa region 2011-2014, a minimum contribution was found, as was found in Piura (0.7%). [13] There is also a striking increase in the proportion of theses that address the PIS of the Arequipa region 2015-2021: from 0.9 to 36%. This would be explained, once again, by the new parameter (PIS 2015-2021), considering that there was no institutional drive to address the PIS. Assuming that part of the theses are formulated based on the local problems observed, then how much can health problems change in a region in a few years? Could it be that the PIS of the Arequipa region 2011-2014 were not well formulated. If not, is the university so indifferent to the needs of the community? There are no more reports on the contribution of provincial universities to the PIS of their respective regions, but it is likely that it is also scarce, equal to the contribution they make to the national PIS. [7 , 12 - 14 ]

The theses framed within the PIS 2015-2021 (national and regional), despite showing an increase, continue to be a minority. So how involved are universities in

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the process of implementing the PIS 2015-2021 in the Arequipa region? All of the above poses an important challenge for prioritized research to achieve its objective, in such a way that the errors of non-implementation are not repeated in this new period, a challenge that all institutions must assume, especially universities since it is possibly the only alternative solution to the problems of their region.

On the other hand, most of the theses had a cross-sectional design, a finding similar to previous studies. 6 , 7 Probably because it is a design that requires little time, is less expensive and less complex. The hospital environment was the most frequent place of execution, as was previously found, 7 ) which would respond to the ease of obtaining data, since they spend most of their last year (medical internship) in hospitals. It would also reflect the little interest in researching and working on issues related to primary health care (developable in health centers and in the community). In relation to the sample size, it could be due to the fact that the studies are carried out in local populations (monocentric) or to the premeditated reduction in the sample size as a result of the urgency with which data is intended to be collected. This possibly responds to the fact that students begin their thesis project by finishing the year of internship, which - added to their desire to immediately obtain a position in the Rural and Urban Marginal Health Service - would generate a rush to support their thesis and obtain the degree. 17 ) Therefore, alternatives must be sought so that the theses are not developed in a short time, and prevent this from affecting their methodological characteristics and even their quality.

The study had the limitation of being limited to a faculty of only one university, so its external reproducibility is debatable. However, it is one of the few approaches

that examines the approach to PIS within the scientific production of gray literature (thesis) in Peru. In addition, it is the first to observe scientific activity in relation to the PIS 2015-2021. We recommend more studies that delve into the problem of the scientific contribution of social impact by the theses done in Peruvian and Latin American universities. We also recommend that research be encouraged in priority and impact areas from the undergraduate level. 18

In conclusion, the number of theses per year produced in the Faculty of Medicine studied is one of the highest among the medical schools in Peru; However, only one in four was addressed in a national health research priority and one in ten theses was framed in a priority of the Arequipa region. That is, a low proportion of the theses studied address health research priorities.

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