

# FINANCING IN THE TRAINING OF HEALTH PROFESSIONALS FROM THE PERSPECTIVE OF THE PUBLIC SECTOR, 2016-2018

FINANCIAMIENTO EN LA CAPACITACIÓN DE LOS PROFESIONALES EN SALUD BAJO LA PERSPECTIVA DEL SECTOR PÚBLICO, 2016-2018

Alfonso Gutiérrez-Aguado<sup>1,a</sup>, Seimer Escobedo-Palza<sup>2,a</sup>, Mariuccia Angeles-Donayre<sup>1,b</sup>, Martha Gutiérrez-Aguado<sup>3</sup>

## ABSTRACT

**Objective:** To estimate the funding and unit cost in the long-term training of health professionals in Peru. **Methods:** A partial economic evaluation (cost analysis) was carried out from the perspective of the public financier. For financing, reports are shown by budget categories and budget programs of the health sector. Data was obtained through the Integrated System of Financial Administration of the Ministry of Economy and Finance (SIAF-MEF) between the years 2016 - 2018. In relation to the analysis The cost was estimated using the absorption costing methodology. The data was obtained from the Integrated System of Administrative Management (SIGA) - logistic module to obtain the prices of the inputs, the Computer Application of Human Resources of Public Servants (AIRHSP) for salaries of human resources. **Results:** Financing made by the country in relation to training is estimated at 27 million soles for 2016, and it is reduced to 20 million soles by 2018. The per capita cost for graduates was S / . 12 661 (USD 3 836) and for the specialization it was S / . 23 356 (USD 7 077). **Conclusion:** Financing in the formation of human resources in health is vital for the achievement of health objectives in Peru. However, there is a decrease in the budget allocated to training activities in the last 3 years.

**Key words:** Training support; Public sector; Professional training. (source: MeSH NLM)

## RESUMEN

**Objetivo:** Estimar el financiamiento y costo unitario en la capacitación a largo plazo de los profesionales de salud en el Perú. **Métodos:** Se realizó una evaluación económica parcial (análisis de costos) desde la perspectiva del financiador público. Para el financiamiento se muestra reportes por categorías presupuestales y programas presupuestales del sector salud, los datos se obtuvieron a través del Sistema Integrado de Administración Financiera del Ministerio de Economía y finanzas (SIAF-MEF) entre los años 2016 – 2018. En relación al análisis de costo se estimó con la metodología de costeo por absorción. Los datos se obtuvieron del Sistema Integrado de gestión Administrativa (SIGA)- modulo logístico para obtener los precios de los insumos y del aplicativo Informático de Recursos Humanos de Servidores Públicos (AIRHSP) para los sueldos de los recursos humanos. **Resultados:** Financiamiento que hace el país en relación a capacitación se estima en 27 millones de soles para el año 2016, y se reduce a 20 millones de soles para el año 2018. El costo per cápita para diplomados fue de S/.12 661 (USD 3 836) y para la especialización fue de S/. 23 356 (USD 7 077). **Conclusión:** el financiamiento en la formación del recurso humano en salud es vital para el logro de los objetivos sanitarios en el Perú. Sin embargo existe una disminución del presupuesto destinado a actividades de capacitación en los últimos 3 años.

**Palabras clave:** Financiación de la formación profesional; Sector público; Capacitación profesional. (fuente: DeCS BIREME)

<sup>1</sup> Continental University, Lima-Peru.

<sup>2</sup> Peruvian Society of Health Administration, Lima-Peru.

<sup>3</sup> National Institute of Health, Lima-Peru.

<sup>a</sup> Master in Public Health.

<sup>b</sup> Doctor in Psychology.

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## INTRODUCTION

The training of health professionals is fundamental to the function of a health system because through them the objectives related to guarantee and improve continuously the health care and the quality of health services are achieved, as well as expanding the coverage of affiliation and provision of health insurance<sup>1</sup>. The context of the training of health professionals from undergraduate to graduate and their entry into the labor market in health is subject to rapid changes related to epidemiological, social, economic, political and technological processes.

The interventions and attention to national health priorities are organized in "budgetary programs" that have been added to date 9 by the Ministry of Health (MINSA). The allocation and budget increase has been considerable in recent years, to 2018 represents S/.8,670,159.93.00, however, there are still large gaps to be addressed, which requires evaluation. The training of health professionals on this topic is relevant in the health management of the country<sup>2</sup>.

MINSA has defined the educational modalities considering the levels and types of training within them. Table N°1 lists these modalities. Training is the process that seeks to improve the performance of public servants, through closing gaps or developing skills or knowledge. It must be aligned to the profile of the public servant position and/or the strategic objectives of the entity. Moreover, the types of training are job and vocational training<sup>3</sup>.

Training of health professionals is the first stage of training provided by universities or institutes which are characterized by a curriculum programming in a specific discipline allowing those who obtain the exercise of a particular profession or work. It is the basis for achieving higher educational standards. On the other side, perfection is the training of the worker to assume other functions linked to greater depth of knowledge, on the basic discipline of training or on research and teaching of the same, this type of training is intended for professionals<sup>3</sup>.

The financing of the training is done through resources of the entity where the public servant works. These must be registered in the People's Development Plan. The funding is according to the budgetary availability of the entity and the order of priorities of the institution. The training processes aim to improve

the performance of civil servants to provide quality services to citizens. That's why, the importance of knowing the economic impact of training on health professionals<sup>1,3-5</sup>.

The objective of this study is to estimate the funding and unit cost in the long-term training of health professionals in Peru.

## METHODS

### Design

A partial economic evaluation (cost analysis) was carried out from the perspective of the financier.

### Financing processes

The source of information for establishing the financing of training activities is the public budget as recorded in the computer applications administered by the Ministry of Economy and Finance (MEF).

Information on the health sector is collected at National and Regional government levels. In other words, this implies the Ministry of Health as the central headquarters, including its implementing units (Health Directorates - DISA - and hospitals of Lima Metropolitan area) and its Decentralized Public Agencies (OPD: National Institute of Health, National Superintendence of Health, Comprehensive Health Insurance (SIS) and the National Institute of Neoplastic Diseases) in the case of Regional Governments, the Regional Government of Lima is included which at the same time includes all provinces of Lima except Lima Metropolitan area.

For the purposes of the analysis to be carried out, the disaggregated content in each of the activities of the budget categories (Budget programs, APNOP and Central Actions) was followed. Within these categories the budget is organized into a set of items that follow a useful taxonomy for the functions of the Ministry of Economy and Finance (MEF). Among these categories are registered: Functions, Functional Division, Functional Group, Purpose, Generic Heading, Sub-Generic, Specific Heading Level 1 and Specific Heading Level 2.

Within this classification, each of the categories has been reviewed in detail, looking for those linked to training activities. Finally, the following items have been identified:

Specific Heading Level 1 of expenditure	Sub-Specific Heading Level 2 of expenditure
2.3. 27. 3 - Training and Development Service	2.3. 27.3 1- Carried out by legal persons 2.3. 27.3 2- Performed by natural persons
2.3.27.10 - Service for Attentions and Celebrations	2.3.27.10 1- Seminars, workshops and the like organized by the institution

In this sense, the diagnosis of funding was made based on economic information contained in the 3 sub-specific items identified in all activities of the three budget categories that make up the entire public budget.

### Cost processes

Each training scheme was estimated using the absorptive costing method<sup>5</sup>. Data were obtained from the following databases: Integrated Administrative Management System (SIGA) logistics module to obtain input prices, the Public Servants Human Resources Computer Application (AIRHSP) to obtain salaries for human resources and the list of goods and services in the framework of health sector budget programs.

For the estimation of unit costs, two types of training were taken into account: diploma course and specialization, so for each of the training activities selected, it was necessary to define the cost structure that incorporates all the factors and variables involved in its development.

The development of training activities is considered the result of productive processes that occur in academic organizations in which a set of resources (factors of production) and variables intervene, which are different types and their participation, behavior and as a result their costs are also differentiated depending on the activity that is being produced. The resources and variables considered are the following: production factors: Human resources, Inputs, Academic Services, Administrative Services, Educational Rights, Administrative expenses and Overhead

The economic valuation of each of the factors involved in each training activity is made on the basis of economic criteria (costs, market prices) currently in force. The valuation established for each factor is interrelated with the respective variables, which is expressed in a mathematical formula that integrates all these considerations and gives as final result the total unit cost for each training activity. These costs are especially useful for budget planning and management.

### Statistical analysis

The data were entered into a database in Microsoft Excel and in the statistical program STATA version 11.0.

The exchange rate at December 31, 2018 was one U.S. dollar for three soles thirty centimes (1 USD =3.30 PEN).

Because the study was based on an analysis of operational data, it was not reviewed by ethics committees.

## RESULTS

### Financing for training of health professionals

The country's financing for training is estimated at 27 million soles by 2016, and is reduced to 20 million soles by 2018. The same reduction occurs in all three budget categories.

As shown in Table 2, there has been a decrease in the budget for training activities over the last 3 years. The largest budgetary allocation is found in the budgetary programmes (Table 3), mainly in the articulated nutritional programme (by 2018 it was S/. 3,918,483) and maternal and neonatal health (by 2018 it was S/. 1,568,026). Likewise, the central administration of MINSA and the National Institute of Child Health are entities that allocate a considerable budget on training issues being S/. 1,476,350 y S/. 848,651 respectively. The budget program with the lowest allocation of resources in training was PP 0129 prevention and management of secondary health conditions of people with disabilities with only S/. 104,907 by 2018. However, reports also show that in all cases executed budgets are lower than budgeted at the beginning of the fiscal year.

### Costs of training health professionals

Regarding the cost of specialization, the following results were obtained for expenses related to human resources, inputs, academic services and administrative services represent S/. 718,631, plus 10% administrative expenses and overhead were estimated in total S/. 934,220, the per capita cost being S/. 23,356.

Regarding the cost of the diploma course, the following results were obtained for expenses related to human resources, inputs, academic services and administrative services represent S/. 389,560, plus 10% administrative expenses and overhead were estimated in total S/. 506,429, the per capita cost being S/. 12,661.

**Table 1.** Modalities and types of training by MINSA.

Training levels		
Long-term training	Training	Diploma course Specialization Second Specialization Master Doctorate
	Perfection	
Short-term training	Reinforcement	In-service training (Practice) Internship Seminar
	Update	Workshop Conference Congress Course Forum Round Table Panel Symposium

Source: Ministry of Health

**Table 2.** Financing in health training activities according to budget categories, 2016-2018.

Budget categories	Training activities	PIM 2016	Eje2016	PIM 2017	Eje2017	PIM 2018	Eje2018
Core actions	Training and Improvement Service carried out by legal persons	5 797 406	4 969 125	6 140 904	4 989 137	5 632 189	5 209 633
	Training and Improvement Service carried out by natural persons	508 708	491 974	1 138 515	701 752	594 564	451 128
	Seminars, workshops and the like organized by the institution	2 459 324	2 270 412	1 774 096	1 612 155	1 653 797	1 376 029
APNOP	Training and Improvement Service carried out by legal persons	518 015	284 623	237 699	195 143	318 946	294 487
	Training and Improvement Service carried out by natural persons	119 910	91 968	151 100	124 448	102 747	53 765
	Workshops similar organized by the institution	4 480 192	3 583 172	3 168 723	2 713 538	2 832 317	2 414 561
Budgetary Programs	Training and Improvement Service carried out by legal persons	469 558	252 695	572 173	474 905	393 716	374 137
	Training and Improvement Service carried out by natural persons	918 562	877 264	722 982	696 107	966 356	924 813
	Seminars, workshops and the like organized by the institution	12 207 538	11 336 835	11 538 708	9 850 294	8 375 685	7 436 856
Total		27 479 213	24 158 068	25 444 900	21 357 479	20 870 317	18 535 409

Source: SIAF- MEF Report.

PIM: Amended institutional budget; EJE: Budget execution.

**Table 3.** Funding for health training activities according to budgetary programs, 2016-2018.

Program Budget	PIM2016	Eje2016	PIM2017	Eje2017	PIM2018	Eje2018
0001 Articulated nutritional program	4 710 544	4 372 086	5 141 670	4 132 554	3 918 483	3 299 481
0002 Maternal and neonatal health	2 751 544	2 484 881	2 624 327	2 039 259	1 568 026	1 346 712
0016 TB-HIV / AIDS	1 572 314	1 666 574	1 418 061	1 385 464	1 371 258	1 335 916
0017 Metaxenic diseases and zoonoses	913 061	843 494	850 942	826 391	664 725	651 046
0018 Non-transmissible diseases	994 734	945 981	788 713	771 107	552 843	527 365
0024 Prevention and control of cancer	778 040	610 483	557 155	520 242	368 190	355 622
0051 Prevention and treatment of drug use	126 872	126 072	133 941	133 423	128 086	113 515
0068 Vulnerability reduction and emergency response to disasters	880 922	715 047	811 060	751 355	511 710	488 988
0104 Reduction of mortality due to emergencies and medical emergencies	335 222	288 012	206 993	179 561	237 307	231 105
0129 Prevention and management of secondary health conditions in people with disabilities	118 900	90 101	92 867	87 289	104 907	102 828
0131 Control and prevention in mental health	412 005	323 708	199 853	191 505	294 222	267 228
Total	13 594 158	12 466 439	12 825 582	11 018 150	9 719 757	8 719 806

**Source:** SIAF-MEF Report .

**PIM:** Amended institutional budget; EJE: Budget execution.

**Table 4.** Characteristics, criteria and data to estimate the cost of graduates for health professionals.

Characteristics	Criteria	Data
Academic credits		24
Total academic hours	16	384
Classroom training	50%	192
National teachers		176
International teachers		16
Academical meetings		2
Not classroom training	50%	192
National tutors		192
International tutors		
Face-to-face days		24
Total participants		40
From Lima		10
From Regions - terrestrial		10
From Regions - flight		10
From Regions - mixed		10
Number of international teachers (South America)		1
N ° days of staying international teacher		2
Total academic credits		960

**Table 5.** Cost structure of diploma course aimed at health professionals.

Factor	Unit of measure	Quantity	Unit Cost	Total
Human resources				75 151
Academic coordinator	unit	18%	Teachers and tutors	10 962
National teachers	hour	176	150	26 400
International teachers	day	2	2 850	5 700
Tutors	hour	192	150	28 800
Administrative assistant	unit	30%	Coordinator	3 289
Inputs	kit	40	43	1 731
Academic services				43 120
Registration	unit	40	150	6 000
Tuition	unit	40	340	13 600
Certification	unit	40	480	19 200
Equipped classroom	day	24	180	4 320
Administrative Services				269 559
Land tickets (i/v)	ticket	10	180	1 800
National air tickets (i/v)	ticket	10	570	5 700
National and land air tickets (i/v)	ticket	10	750	7 500
International tickets (i/v)	ticket	1	2 850	2 850
National travel expenses	per diem	720	320	230 400
International travel expenses	per diem	2	1 055	2 109
Breaks	unit	1 920	10	19 200
Educational rights			Not applicable	
Subtotal Operating expenses				389 560
Administrative expenses		10%	Operating expenses	38 956
Overhead		20%	Operating expenses	77 912
Total				506 429
			Per capita cost	12 661

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**Table 6.** Characteristics, criteria and data to estimate the cost of the Specialization Course for health professionals.

Characteristics	Criteria	Data
Academic credits		48
Total academic hours	16	768
Classroom training	50%	384
National teachers		352
International teachers		32
Academic days		4
Not classroom training	50%	384
National tutors		384
International tutors		
Face-to-face days		48
Total participants		40
From Lima		10
From Regions - terrestrial		10
From Regions - flight		10
From Regions - mixed		10
Number of international teachers (South America)		1
N° days of staying international teacher		2
Total academic credits		1 920

**Table 7.** Specialization course cost structure for health professionals.

Factor	Unit of measure	Quantity	Unit cost	Total
Human resources				150 301
Academic coordinator	unit	18%	Teachers and tutors	21 924
National teachers	hour	352	150	52 800
International teachers	day	4	2,850	11 400
Tutors	hour	384	150	57 600
Administrative assistant	unit	30%	Coordinator	6 577
Inputs	kit	40	43	1 731
Academic services				47 440
Registration	unit	40	150	6 000
Tuition	unit	40	340	13 600
Certification	unit	40	480	19 200
Equipped Classroom	day	48	180	8 640
Administrative Services				519 159
Land tickets (i/v)	tickets	10	180	1 800
National air tickets (i/v)	tickets	10	570	5 700
National and land air tickets (i/v)	tickets	10	750	7 500
International tickets (i/v)	tickets	1	2 850	2 850
National travel expenses	per diem	1 440	320	460 800
International travel expenses	per diem	2	1 055	2 109
Breaks	unit	3 840	10	38 400
Educational rights			Not applicable	
Subtotal Operating expenses				718 631
Administrative expenses		10%	Operating expenses	71 863
Overhead		20%	Operating expenses	143 726
Total				934 220
			Per capita cost	23 356

ARTÍCULO ORIGINAL

## DISCUSSION

In order to train a professional in a public or private university, the economic aspect is very important, because in one way or another, it requires financial means to deal with the costs of materials, books and others, as well as to pay the costs of pensions/tuition for study in universities. According to INEI<sup>6</sup> reports, the most important aspect of the financing of university studies for graduates has been the financing of their families. However, it is estimated that 38.4% of graduates who have completed their studies in public universities have financed their studies by working, with a lower percentage of women<sup>7</sup>. It should be

noted that a large part of this financing is provided by the state. Financing for health professional training is mainly based on ordinary resources (source of financing that the Ministry of Economy and Finance uses to allocate resources).

The labor demand, the permanent changes in the world and the need to improve the attention in the health facilities, require that the professionals maintain their validity, being permanently trained to guarantee their employability, competitiveness in the work environment and efficiency in the performance of their functions<sup>3,8</sup>.

The country's financing for training is estimated at an

average of 24 million soles (7.2 million dollars). The sources of financing for training vary greatly from country to country. In Guatemala, Ecuador and El Salvador, the main source of financing is companies. In Colombia and Paraguay, by contrast, financing is primarily personal or family. Public financing for training is low in countries such as Guatemala and Ecuador (5% or less), and just over 20% in Colombia (21%), El Salvador (22%) and Paraguay (27%)<sup>9,10,11</sup> in contrast to financing from Australia, the United States or Canada<sup>12,13</sup>.

The financing for training of health professionals is given mainly in interventions related to malnutrition /anemia an average of 4.3 million soles (1.3 million dollars), as well as interventions in relation to maternal and neonatal health (family planning, prenatal control and childbirth care) which estimated an average of 2.1 million soles (654 thousand dollars). According to the studies developed by Garcés et al<sup>14</sup>, they identify similar results. However, there is very little financing for training in interventions of prevention and control of cancer, non-communicable diseases, TB-HIV/AIDS, Mental Health which are also relevant interventions<sup>15-18</sup>.

The per capita cost for graduates was S/. 12,661 (USD 3,836) and for specialization was S/. 23,356 (US \$7,077), similar to studies conducted by the IHPA in Australia<sup>19</sup>, Mandeville et al.<sup>20</sup>, Stammen<sup>21</sup> and Eva<sup>22</sup>. The result of this cost analysis would allow us to estimate the economic impact on the training of health professionals in Peru and make appropriate decisions in the management of human resources training.

It is recommended to make the same economic analysis in relation to professional health education at undergraduate and graduate levels<sup>23,24</sup>. As well as measuring the results achieved by the health professionals who attended the training<sup>25,26</sup>, in order to show how much of what is learned is applied in the performance of the health professional<sup>27</sup> and the cost-effectiveness of the training.

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*Correspondence:* Alfonso Gutiérrez Aguado

*Address:* Calle Junín 355, Miraflores, Lima 15046, Perú

*Telephone:* (01) 988493448

*E-mail:* agutierrez@continental.edu.pe

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