

Cost analysis of educational courses of medical students in Iran

Shima Nikjoo^{1,*}, Aziz Rezapour¹, Torandokht Baluchnejad Mojarad², Reza Jahangiri¹, Asma Rashki Kemak¹, Sajad Vahedi³, Hiro Farabi¹

¹Health Management and Economics Research Center, School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran, Iran

²Department of Physiology, Faculty of Medicine, Iran University of Medical Science, Tehran, Iran

³Department of Health Services Management, School of Health, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Abstract

Estimating the cost of graduate courses can play an important role in deciding on the allocation of required resources. This study aimed to determine the cost of educational activities of graduate students in hospitals of medical universities in Iran. This study was performed in eight autonomous educational medical centers of Iran University of Medical Sciences, Tehran, Iran. After identifying the cost topics, the required information was collected through a semi-structured interview with the officials and students. Then, the amount of use of the graduate students from the cost headings was determined. The results identified that Doctor of Philosophy (PhD) students of microbiology with more than 950 United States dollar (USD) and PhD students of medical education with about 7 USD have created the highest and lowest costs, respectively. This study, for the first time, examined the educational costs of Iranian postgraduate students in the hospital. In conclusion, the results of this study indicated that the amount of the costs of different fields of graduate education in medical sciences is very different and it should be considered in the allocation of the resources.

Keywords: Medical course, Economics of education, Postgraduate student

1. Introduction

To plan and achieve the educational goals, organizations must have information about the cost of each educational course. Analysis of this type of information causes policy makers to make more appropriate decisions and move towards achieving the goals, increasing the efficiency and excellence of the organization [1]. Identifying the actual cost of various courses can help to better allocate of scarce resources [2]. Calculating the student's per capita cost can also help to determine the ratio of different educational departments in the total cost of education [3]. In addition, knowledge of financial information and the

cost of training can play an important role in the appropriate decision of educational managers and increase the economic efficiency of the educational systems [1]. This study aimed to estimate the educational costs of graduate students of medical sciences in autonomous hospitals of the Iran University of Medical Sciences, Tehran, Iran.

2. Materials and Methods

The cross-sectional was performed on all graduate departments of Iran University of Medical Sciences in 2018 who had educational activities in autonomous

*Corresponding author:

Shima Nikjoo, Ph.D
Health Management and Economics Research Center,
School of Health Management and Information Sciences,
Iran University of Medical Sciences, Tehran, Iran
Tel/Fax: +98 21 88794301
Email: shimanikjoo@gmail.com
<https://orcid.org/0000-0001-6048-691X>

© The Author(s) 2022



Received: May, 22, 2021
Accepted: July, 12, 2021

educational hospitals of Iran University of Medical Sciences, Tehran, Iran.

The calculation of direct costs of educational services provided to graduate students of medical schools in independent educational centers by academic years was examined as follows: In the first stage, the cost headings of postgraduate medical students in the hospital were identified. This step was performed qualitatively using a semi-structured interview. In order to identify cost topics, interview with the vice chancellor of the faculty, heads of departments, educational assistants of independent medical centers, heads of clinical and financial departments, and the professors and students (n=20).

After identifying the cost headings, in the next step, the amount of educational activities and services, as well as the general and specific requirements used for training in educational and medical centers were measured. Since the activities and services performed in educational environments are not completely consistent with the topics and it is possible to use different and diverse educational processes, so the basis for identifying the activities in this study was the real educational services that took place in educational centers. This was done through observation and interviews with the internship officials of the students in the hospital, the heads of the departments and the resident professors in the hospitals. In the third stage, the cost of resources used to educate students were calculated. In the last step, the cost of education of each student in each course was calculated. The costs calculated in this study were a combination of direct and indirect training costs in medical training centers. Direct educational costs included the costs of the hospital's resources for education and the costs of general and specific necessities for education in medical centers. Indirect educational expenses also included the cost of renting classrooms and other educational spaces, maintenance of office and educational equipment related to education, and the cost of welfare services (e.g. accommodation, food, and transportation). Finally, from the total direct and indirect costs, the student per capita was calculated.

3. Results

In total, 24 graduate courses (Master of Science; MSc and Doctor of Philosophy; PhD) of the post-graduate departments in the medical school of Iran

University of Medical Sciences in the academic year of 2018-2019 were included.

Among the available courses, 7 internship courses are spent in the affiliated hospitals of the university, and the students of other courses study their practical units in the laboratories located in the medical school. The total current cost spent on graduate education services in the medical school was 1173 United States dollar (USD). The cost of consumables was the largest cost category accounted for 63% of the total cost.

In terms of the cost of training of graduate students of the medical school was reported in, all costs incurred in educating students in educational and medical centers were calculated. The PhD in Microbiology had the highest per capita cost. PhD students in microbiology with more than 950 USD and PhD students in medical education with about 7 USD had the highest and lowest costs, respectively.

4. Discussion

The purpose of this study was to obtain the costs incurred for educational activities of post-graduate students of medical school in independent hospitals of Iran University of Medical Sciences. Internship is a tool for turning theory into practice [4]. Postgraduate education costs of medical school students in the academic year of 2017-2018 in the educational hospitals of Iran University of Medical Sciences showed that some of these courses do not incur significant costs for the university in the process of doing their internship. These students carry out their practical units in a rotating manner in the teaching-medical hospitals under the supervision of the relevant educational instructors. In most studies conducted in Iran, the activity-based costing method has been used to calculate the student cost [5-9]. Due to the low overhead costs which do not support all related costs and considering that the present study was conducted to identify and estimate the costs of internships of students in hospitals, a semi-qualitative method of assessment and timing was used to estimate the cost.

The great difference between the findings of the previous studies and the present study is that all of these studies have included the total cost of student education, including the costs of educational research, internship, support, etc., while this study only focused on the cost of internship. A large part of the cost of educating students is educational expenses. On the other hand, in post-graduate courses, including MSc

and PhD degrees, a significant part of the costs is allocated to research costs.

The most important limitations of this study were the inefficiency of systems for reporting, failure to record a lot of cost information in hospitals, and failure to measure cost headings related to post-graduate students in the wards. Also, this study was hospital-based and some cost topics such as human resources salaries, doctoral students' tuition fees, transportation costs and building depreciation were not included in the calculations because they were related to the university.

This study, for the first time, examined the educational costs of students in the hospital during the internship. The results of this study showed that postgraduate students do not incur significant costs for the university in their internship process. According to the results of this study, it seems that the major costs allocated to the education of this groups of students are related to theoretical and practical training courses within the university. It is also suggested that overhead costs be calculated in addition to direct and obvious costs in order to accurately estimate of training costs. Also, training needs should be collected from different departments and the existing differences should be considered in budgeting.

Authors' contributions

ShN conducted the study. ShN, AR, TBM, RJ, ARK, SV, and HF collaborated in designing the study, analyzing the data, and writing the article. All authors read and approved the final version of article.

Conflict of interests

There is no conflict of interest.

Ethical declarations

The paper does not contain clinical studies or patient data. The project was confirmed by Research Ethics Committees of Iran University of Medical Sciences and was found to be in accordance to the ethical principles and the national norms and standards for conducting Medical Research in Iran (Ethical Code: IR.IUMS.REC.1397.923).

Financial support

This study was part of a research project that is supported by the health management and economics

research center affiliated to Iran University of Medical Sciences (Grant No. 12865).

References

1. Ghaffari S, Mohamadzadeh A, Akbari S, Salem Safi P, Yousefi M. Costing in hospital services: economists and accountants' approaches. *J Hospital*. 2013; 11(4):75-84.
2. Franzini L, Low MD, Proll MA. Using a cost-construction model to assess the cost of educating undergraduate medical students at the University of Texas--Houston Medical School. *Acad Med*. 1997; 72(3):228-37.
3. Moradi S, Hedayatzadeh-Omran A, Janbabaei G, Alizadeh-Navaei R, Panbehchi M, Geraili B, et al. Activity Based Costing of Educational Services in Faculty of Medicine in Mazandaran University of Medical Sciences, Iran, 2015. *J Mazandaran Univ Med Sci*. 2018; 28(163):86-92.
4. Daugherty SR, Baldwin DC, Jr., Rowley BD. Learning, satisfaction, and mistreatment during medical internship: a national survey of working conditions. *JAMA*. 1998; 279(15):1194-9.
5. Ebadi Azar F, A.Gorj H, Hadian M, M.Ahari A. Unit cost calculation of student training at different levels through Activity Base Costing method (ABC) at the School of Management and Medical Information, Iran University of Medical Science: academic year, 2006-2007. *J Health Adm*. 2006; 9(24):23-8.
6. Rahimniya R, Ram M, Siavashi E, Ghasempour S, Baruni M, KHakian M, et al. Calculating the Cost of Student Services Through Activity Based Costing Method (ABC) at the Department of Student and Cultural Affairs of Tehran University of Medical Sciences in 2011. *Interdiscip J Virtual Learn Med Sci*. 2014; 5(2):8-15.
7. Haghdoost A-A, Amirimoghadam M, Loloie M, Baneshi M-R, Sabbah F, Mehrolhassani M-H. Cost analysis of the education of students in School of Public Health Kerman University of Medical Sciences Iran using activitybased costing model. *Stride Dev Med Educ*. 2014; 11(1):13-22.
8. Ghasempour S, Rahimniya R, Rajabnezhad Z, Dargahi H. Calculating the Final Cost of Student Training by Activity Based Costing in School of Allied Medicine, Tehran University of Medical Sciences. *Payavard Salamat*. 2016; 10(1):104-18.
9. Gharun M. Application of Activity Based Costing for Estimation of Per-student Cost in Iran. *Q J Res Plan High Educ*. 2007; 13(2):79-107.