Original Article

Basic assessment and prioritization of quality indicators of medical education in Iran's higher education system

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Abstract

Background: Higher education is the fundamental cornerstone for the development of society. The objective of this research was to conduct an initial assessment and ranking of quality indicators for medical education inside Iran's higher education system.

Methods: The ARDL method was used. The expected relationship between the research variables was investigated, and then, the long-term and short-term coefficients were estimated in the second stage. To test the existence of long-term relationship, Banerjee, Dolado and Master's method was used. This test was performed based on the t-statistics. Long-term coefficients were extracted from ARDL model and dynamic error correction model. The investigation of the measures of educational quality in Iran's higher education system relied on the Gulpak article model and data obtained from the Statistics Center and the Central Bank of Iran.

Results: Family cultural characteristics, parental education, parental economic status, location of residence, gender, and marital status were all independent variables that influenced the need for higher education. Additionally, there is a notable correlation between the number of children and the educational attainment of those children. Family background variables and cultural factors exhibit strong interdependence and directly influence an individual's perception of ongoing schooling. The variables of economic growth, consumer price index, and government spending in the education sector have a positive and statistically significant impact on the demand for higher education in Iran.

Conclusion: By identifying the primary markers of educational quality, one may pinpoint the barriers to academic advancement and therefore enhance the overall quality of education.

Keywords: Education, Graduate; Education, Medical, Graduate; Iran.

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Introduction

The creation and cultivation of social capital by enhancing the quality of human resources in building and industry. Education is often considered a vital aspect of higher education strategies in many nations. Educational systems can provide appropriate conditions for their presence in various public and social fields by providing high-quality education opportunities for all stakeholders.

However, different theoretical concepts of education qualification should be considered in the evaluation of this policy. Paying attention to the connection and expansion of the quality of education with the construction and production of social capital has been one of the most significant theoretical concepts affecting the quality of human resources development in recent decades (1). The comprehensive and sustainable development of any country depends on the efficiency and continuous improvement of its educational system, research structures, and technological approaches. In this regard, using all capacities and consequently achieving maximum efficiency in this field requires a model that provides excellent educational development in all aspects with a dynamic perspective (2). In the modern period of intense rivalry among societies, countries are attempting to pay attention to the role that education, particularly higher education, plays in national development and the advancement of knowledge and technology. Higher education will thus always play a part in growth. To put it another way, a university is one of a society's most precious resources (3). Most developed and emerging nations have found solutions to their challenges and fulfilled their national development objectives, thanks to universities and academics. The attitude that advanced, developed, and emerging nations have toward scientific advancement and the value they place on this essential component of growth is what has generated the biggest disparity between them. National growth will occur more quickly the more and higher-quality education is offered (4).

Education, particularly higher education, is viewed as a valuable asset from an investment perspective, thanks to the growth of human capital theory. According to this theory, education and various forms of skill and training enable individuals to develop their capabilities and capacities, ultimately resulting in increased future income (5). From the perspective of a quantitative analyst, individuals perceive higher education as a form of investment that will yield future benefits, according to the theory of human capital. Thus, some people continue their education to PhD level to improve their job status since they believe that this level is a way to get job security, earn more money, and find a suitable job in the future. Also, with the increase in the unemployment rate, unemployment is transferred from lower to higher education levels, and in this case, people apply for education at higher levels to escape from unemployment at lower education levels (6). Recent years have seen a sharp rise in the number of postgraduate programs offered as well as a quantitative expansion in higher education nationwide. But since there aren't enough qualitative markers of higher education's growth, including the right student-to-teacher ratio, the pace of laboratory and welfare facility expansion, etc., this development has been imbalanced. For society to advance in the fields of science, technology, industry, and culture, there has to be a balance struck between the amount and quality of higher education (7). Schwartzman, investigated the quality of education, income, and demand function for schools in Egypt. Clarifying the elements that define education quality and defining the income and demand functions for education in Egypt were the main goals of the aforementioned research, which aimed to give an economic analysis of the notion of education quality (8). In recent years, there has been a decline in economic growth. A few contributing factors in this respect include the poor caliber of postsecondary education and the underestimation of the demands of an educated work force on the job market. Higher education is becoming one of the most important foundations for the development of society. It has become more apparent with the change of societies and relationships with many educational issues. The purpose of the present study

was initial evaluation and prioritization of quality indicators of medical education in Iran's higher education system**.**

Methods

Research environment and population

The research used the ARDL approach to analyze the demand for higher education. The Engel-Granger approach and the Johansson-Jusilius maximum likelihood method may be used to examine the enduring and immediate connections between the desire for higher education, the dependent variable, and the other explanatory factors in the model. Alternative approaches may be used to examine the connections between variables across extended and limited time periods, according to their limitations. One such technique is the autoregressive distributed lag (ARDL) method. An advantage of using the ARDL approach is its ability to verify the presence of a cointegration connection between variables, regardless of whether the explanatory variables are at a stationary level (0) or achieve stationarity (1) via one differentiation. The ARDL technique consists of two processes for estimating long-term associations. The first step involves analyzing the enduring correlation among all the variables, while the subsequent step entails determining the coefficients for both the long-term and short-term. The second step is only executed after the long-term link between the variables is established in the first stage.

The study model of relationships

The standard representation of this Autoregressive Distributed Lag model is ARDL (p, q1, q2,..., qk), which may be written as follows (Formula 1):

This equation shows the dynamic relationship between the variables (Formula 2) and (Formula 3)**:**

where p is the number of logs used for the dependent variable (Yt), q is the number of logs used for the independent variables (Xt), α0 is the intercept, Xit is the independent variable, L is the log operator, and Wt is the set of predetermined variables that includes trend variables, dummy variables, and other exogenous variables with a fixed log. There are two steps in the ARDL model estimate process for estimating long-term coefficients. The first step was looking at whether the study variables had the long-term link that economic theory expected. In the second step, long-term and short-term coefficients were computed if a long-term association was found. The Banerjee, Dolado, and Mastre approach was used in the first step to ascertain if a long-term connection existed in the model before doing the long-term cointegration test. The t-statistic, which is connected to the coefficients with the dependent variable log, serves as the foundation for this test. In order to run this test, the first must be divided by the standard deviation of the variables listed above and subtracted from the coefficient containing the dependent variable log. The null hypothesis is rejected, and the presence of a long-term link is acknowledged if the estimated t-statistic's absolute value is greater than the crucial values given by Banerjee and others (Formula 4).

$$\alpha(L,p)Y_t = \alpha_0 + \sum_{i=1}^{k} \beta_i \ (L,q_i)X_{it} + \delta Wt + ut \quad t = 1,2,\ldots,n \qquad (1)$$

$$\alpha(L,p) = 1 - \alpha 1L - \alpha 2L2 - \ldots - \alpha pLpt = 1,2,\ldots,n \qquad (2)$$

$$\beta_i(L,q_i) = 1 - \beta i1L - \beta i2L2 - \ldots - \beta iqLq \qquad i = 1,2,\ldots,n \qquad 3)$$

Research environment

Lastly, the proportion of Iran's urban population to the country's overall population was examined, along with Azad University and the Medical Sciences.

Research population

The statistical population of this study included the students of the medical department studying in Azad and state universities of Iran.

Exclusion and inclusion criteria

One of the study's inclusion criteria was enrollment at Iran's state and Azad universities of medical sciences.

Questionnaires

Data on the study's variables were gathered using a questionnaire created by the researcher. It includes the state universities of medical sciences' average tuition as well as the employment rate and economic growth. The number of students enrolled in state and Azad universities was the variable under investigation.*Statistical analysis*

Software like SPSS-20 and Microsoft Excel were used to look at the data. Descriptive and analysis regression statistics, independent t-tests, and time series cointegration tests were also used to find out how factors were connected.

Results

The number of medical and non-medical students was considered as a dependent variable in this research. The period of 1370-1391991-2016 5 showed an upward trend so it reached 4073827 people in 2016 from 344045 people in 1991.

Figure 1 demonstrates a strong and statistically significant correlation between the number of children and the educational attainment of children in households with low socioeconomic status. This variable had the same intensity and significance in both groups. The analysis of cultural factors revealed that family background variables are highly dependent on each other and are directly associated with an individual's understanding of continuing education, which can play an encouraging and decisive role in creating motivation for academic progress. This variable showed a significant difference among medical groups.

Examining the impact of parents' educational attainment on the inclination towards pursuing higher education revealed a noteworthy correlation between the two variables, with children exhibiting a greater inclination towards pursuing higher education in households with higher educational attainment. Studying how residence location affected the desire for higher education showed that this variable was strongly connected with both groups and that children from urban families were more interested in going to college. Additionally, this factor differed significantly between the two groups.

Table 1. Descriptive statistics of samples

Row	number	Min	Max	Sum	Mean	SD
Economic Growth	26	-14.63	48.52	139.41	5.3619	11.72862
number of students	26	344045.00	4803037.00	63440549.00	2440021.1154	1525776.53406
Tuition fee	26	36992.61	92663.65	1367790.74	52607.3360	14452.10785
Employment rate	26	86.48	89.55	2302.38	88.5532	0.66156
Urban to rural ratio	26	58.48	74.05	1732.18	66.6225	5.03918
Government expenditures	26	1420.48	6606.36	74974.17	2883.6218	1512.69924
Valid N (listwise)	26					

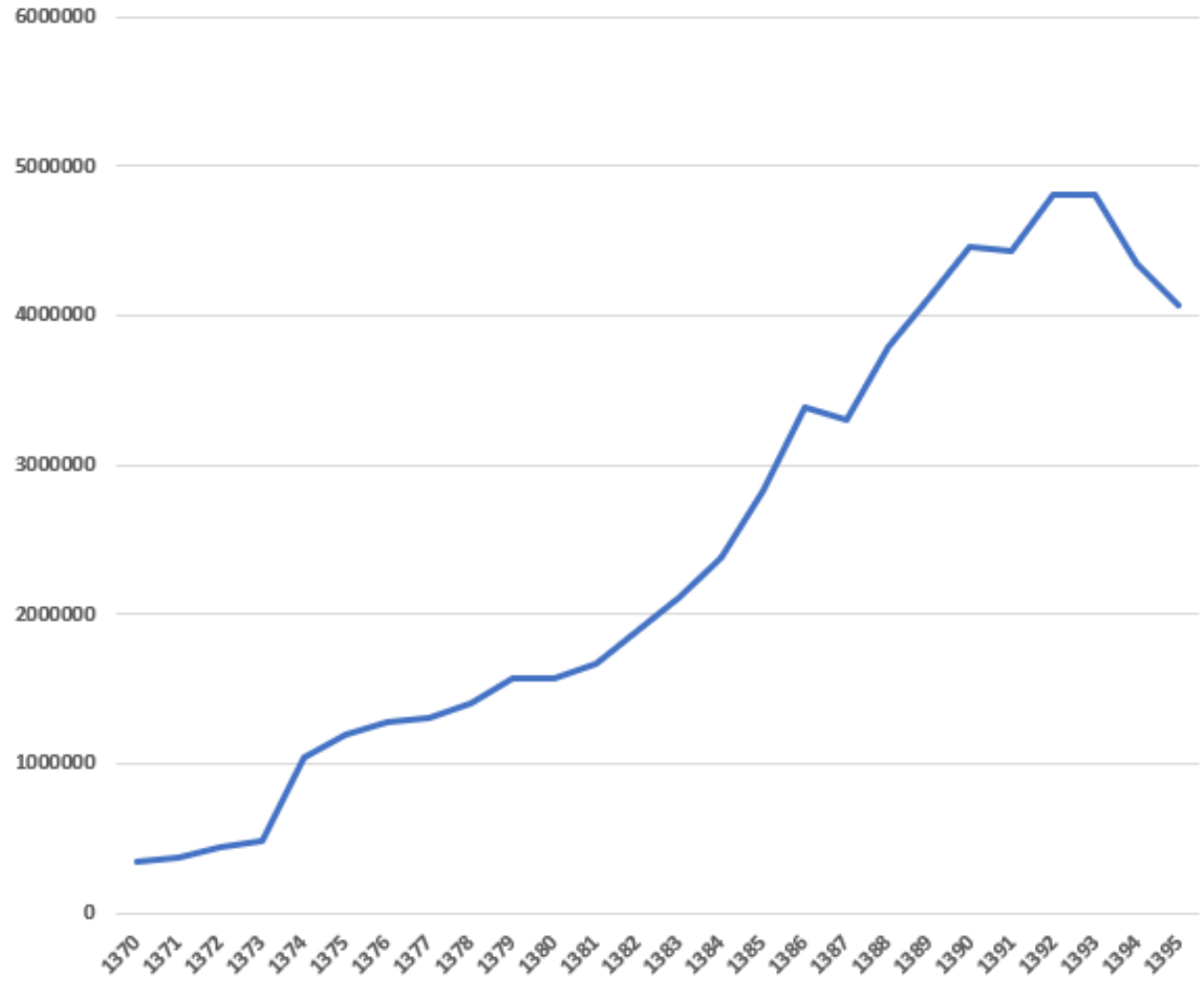

Figure 1. The number of medical and non-medical students in Iran from 1991 to 2016

Kids from lower-income homes were more likely to want to pursue higher education and to demand it, according to research on the impact of parents' financial status on their kids' demand for it. Although there were notable variations, this desire was shared by both the medical and non-medical groups.

Investigating the effect of marriage on the demand for higher education revealed that in both medical and non-medical groups, married people had less interest and desire to demand higher education than single people.

Table 1 presents the demographic pattern of the samples.

Investigating the effect of gender on the demand for higher education showed that females had a higher desire to continue their education and demand higher education. It had a significant difference between medical and non-medical groups Table 2 and Table 3.

Table 2. Multivariate regression analysis of factors affecting higher education in two groups of medical students

Influencing factors	β	SEβ	T	sig
Gender	1.97	0.547	3.64	0.001
cultural factors	0.89	0.542	2.29	0.001
economic status	2.43	0.455	5.67	0.001
Place of residence	0.93	0.211	1.44	0.001
Parents' education	1.34	1.15	2.43	0.001
Household size	-0.932	0.987	-1.32	0.067
Marital status	-0.99	1.41	2.97	0.072

Table 3. Multivariate regression analysis of factors affecting higher education in two groups of non-medical students

Influencing factors	β	SEβ	T	sig
Gender	1.97	0.527	2.98	0.001
cultural factors	0.83	0.511	2.01	0.001
economic status	1.93	0.486	4.91	0.001
Place of residence	1.21	0.351	2.11	0.001
Parents' education	2.04	1.02	2.31	0.001
Household size	-0.713	0.874	-1.32	0.067
Marital status	-0.65	1.22	2.97	0.071

Discussion

Currently, the most important production component is thought to be the function and significance of human power in the creation of human civilizations. The number of graduates from universities is one of the most important and useful measures of human capital. High profits are anticipated from educated labor, but it comes at both private and public expenses to society. Following a few years of tertiary education, every university student may contribute more to the workforce than the average individual. One of the most important foundations for the development of society nowadays is greater education. It has become more apparent with the change of societies and relationships with many educational issues. The purpose of this study was an initial evaluation and prioritization of education quality indicators in Iran's higher education.

In two groups of medical and non-medical students, the impact of family cultural elements, parents' educational and financial level, and site of residence, household size, gender, and marriage as independent variables influencing the need for higher education was assessed in this research. The majority of the factors had a significant impact on the desire for higher education, as shown by the model estimate findings for all samples in both groups. The number of children and the educational attainment of children from poor socioeconomic households were shown to positively and significantly correlate, according to the research. In all groups, this variable was equally significant and had the same intensity. As a result, it is critical to consider this matter as a predictor of children's educational prospects that may influence their desire for postsecondary study. This outcome was consistent with the Gharoon research. What is mostly addressed concerning decision-making to determine the number of children and family dimensions is merely the number of children, and the issue is independent of the quality of children (8). Paying attention to the relationship between quality and quantity of children is a significant issue in this regard. In some economic models of fertility analysis, couples make decisions in determining the number of children as if the quality of their children is not important to them (9).

The analysis of cultural factors showed revealed that family background variables are highly dependent on each other and are directly associated with an individual's understanding of continuing education, which can play an encouraging and decisive role in creating motivation for academic progress. This variable showed a significant difference among medical groups. In an attempt to find the relationship between household size and education in China, Yang & McCall, used a sample of 4299 children who were the first children in the family and were in the same age group born in 1972-1981. He found that the addition of one child significantly increases the enrollment of the first child in schools (10). They used the annual labor force survey as a data source to examine the effect of overcrowded families on children's academic performance. The researchers estimated the effect of the ratio of the number of children to the number of rooms in the house on various criteria of educational performance. The results revealed that with the increase in the number of children per room, the probability of unwillingness to

an educational level and the probability of repeating an educational level of students increases (11). Parents with a high level of literacy and a suitable social status mostly provide an easier and stress-free life for their children due to satisfaction with their job, income, and standard of living. The possibility of enjoying extracurricular training, participation in sports classes, language, computer skills, etc., helps the student to take a more correct path to discover talent and invest in its growth. Since useful information can be obtained from anywhere, such as books and the Internet, at a very low cost and for free in today's world, parents who are literate in reading and writing can also raise their level of literacy to a good level without education (12). Educated people mostly have a good social status. This good social status significantly improves the children's attitude to life, their sense of security, and self-confidence. Studies indicate that the children of people with high social status communicate better with their surroundings, and show more interest in learning, and thus, their talents are flourished more probably (13).

The parents' literacy level is a crucial factor in the development of children. The parents' literacy level is considered the success factor of people in today's societies. Societies whose parents have a high level of literacy can easily control and eliminate their problems in any area such as clothing, health, housing, and education. Parents who have received a higher level of education will have a more elevated cultural and social standing as a result of securing more advantageous and practical employment opportunities. This elevated status will impact their children's perception of them and influence their feelings of security and self-assurance. They possess the ability to interact with their surroundings, which stimulates the development and thriving of their skills. The literacy level of parents has a clear and favorable correlation with the academic advancement of kids (14). The congruity between the findings of the current research and those of several prior studies highlights significant deficiencies in the caliber of higher education. The findings demonstrated that the arrangement of instructional materials, faculty resources and infrastructure, student demographics, individual aptitude, and emerging technology had an impact on the caliber of education at the country's higher education. The findings of this study confirm the substantial influence of teaching method, organization of educational content, and students's status on the quality of education. These results align with the findings of Movahedi et al. (15), who reported that professors, students, and educational content account for 1.11% of the variations in education quality, with professors having a greater impact than the other factors. Furthermore, this outcome aligns with the findings of research conducted by Motahhari (16) in terms of the student's position, schedule, location, individual aptitude, and the resources and apparatus available at the institution.

Conclusion

Considering the importance of education in recent times and the decline in family income and inflation, it is imperative to focus on university tuition costs. Universities and higher education institutions should refrain from raising tuition fees in order to provide equitable access to education for a larger segment of the population. In addition, colleges and higher education institutions should provide improved circumstances for students to pursue their studies by offering suitable facilities. The government may mitigate the financial burden on universities and educational institutions by providing educational subsidies to these establishments. The demand for higher education in every nation is substantially influenced by economic progress. In Iran, economic development is directly correlated with a rise in the demand for

higher education. Nevertheless, there has been a decline in economic growth in recent years. One possible explanation for this is the substandard nature of higher education and the failure to evaluate the demands of the job market in relation to skilled workers. Therefore, it is advisable for the government to prioritize the quality of education and the correlation between universities and the job market, rather than focusing just on the amount of schooling.

Authors' contribution

Batool Shafiezad Abkenar and Seyed Nematullah Mousavi developed the study concept and design. Mahdi Kamali and Mohammad Mohebbi acquired the data. Batool Shafiezad Abkenar and Seyed Nematullah Mousavi analyzed and interpreted the data, and wrote the first draft of the manuscript. All authors contributed to the intellectual content, manuscript editing and read and approved the final manuscript.

Informed consent

Questionnaires were filled with the participants' satisfaction and written consent was obtained from the participants in this study.

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Conflict of interest

The authors declare that they have no conflict of interests.

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