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Evaluation of Requirements of Social Accountability in the Curriculum of General Practitioners Based on Structural Equation Models

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Abstract

Background & Objectives: Social accountability in medical education is interpreted as the willingness and ability to adapt to the needs of patients and the healthcare system both nationally and globally. The speed of changes in the health system and the community's needs has necessitated the training of physicians who are ready to face the problems of the 21st century. Therefore, this study aimed to evaluate the requirements of social accountability in the curriculum of general practitioners.

Materials and Methods: This was an applied (in terms of goal) and descriptive and correlational (regarding data collection technique) research. The statistical population included experts of Mashhad University of Medical Sciences, professors of the school of medicine, and physicians working in the healthcare system. Subjects were selected through non-random purposive sampling. In addition, data were collected applying a researcher-made questionnaire, the validity of which was confirmed by content validity and factor analysis methods. Moreover, its reliability was estimated at Cronbach's alpha of 0.85. Furthermore, data analysis was performed in SPSS and AMOS.

Results: In this study, there was a relationship between the clinical and research components. In addition, an association was found between educational and clinical components, as well as between advocacy and educational components. On the other hand, while a relationship existed between the advocacy and clinical components, there was no significant association between educational and research components, as well as between advocacy and research components. In the end, a significant relationship was observed between social accountability and educational, clinical, and research fields.

Conclusion: According to the results of this study, it is vital to focus on social accountability in the curriculum of general practitioners based on CARE model as a guide tool for the implementation of the accountability program.

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Introduction

The social accountability strategy attempts to enhance organizational performance by supporting citizen participation and policy-makers' accountability in the public and private sectors. In practice, the concept of social accountability includes a wide range of innovations and creativity (1). The history of social accountability to social issues that affect human health dates back to the time of Hippocrates (2). This long history is not surprising at all since the social accountability to social issues affecting human health is at the heart of the medical profession and has also been emphasized in all schools, including the Iranian-Islamic school (3).

Since their establishment in the world, medical schools have always attempted to train physicians who are able to meet the needs of the people and reduce their sufferings. Graduates of these schools spare no efforts to resolve the problems of the human community and significantly affect the health of people. Nonetheless, the epidemiologic transition of diseases and the presence of poor and rich social classes in a country and between different countries and increased professionalization and higher costs of medical services worldwide must be considered in creating programs that could adapt to these changes properly (4). Conducting these reviews in advanced and developing societies (under consideration and implementation) has led to the formation of a new concept entitled "socially accountable medical schools" (5, 6).

Experts consider social accountability as a new medical paradigm and a type of cultural change that needs to be addressed in order to be evaluated and comprehended as much as possible. On the other hand, social accountability is recognized as one of the four main goals of medical universities. In all countries, one of the problems of medical education is the inadequacy of medical graduates. Lack of physician skills has been pointed out in several studies performed on newly graduated physicians in the UK. Some defects in social accountability of the curriculum include the lack of knowledge, attitude, and skills of physicians based on the society's needs. However, it has been observed that the lack of attention to social accountability in the training of physicians creates a sense of disability to serve the community, which in turn reduces the self-confidence and increases the anxiety of these individuals in the early years of practice (7).

On the other hand, new developments in medical education inevitably move forward and motivates medical schools to re-examine

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their curricula to ensure the quality of graduates and their compliance with defined standards. Social accountability is an important fact of a credible global education program, and global credibility is now an important goal for many medical schools (8). The ministry of health and medical education is responsible for providing and maintaining community health, which is carried out by training the necessary human resources in medical universities. Physicians are a group of these human resources, who are trained in general and specialized levels in medical schools. The ultimate goal of educating physicians is to improve the physical, psychological and social conditions of the people in the community. Therefore, they must be proficient at the end of their training in order to understand the needs of the community, help people solve their personal and social problems, be able to adapt to meet the changing demands of society and make progress in medical sciences.

Social accountability in medical education means seeking and being able to adapt to patient needs and patient care systems both nationally and globally. The pace of changes in the health system and the society's needs has made the revision of medical education a necessity so that competent physicians who are ready to confront the problems of the 21st century could be trained. The importance and sensitivity of the need-assessment process increases when we consider the limited budgets allocated to the medical education and health education process in most countries. In such situations, the issue of priorities and necessities arises, and policy-makers and educational planners must choose among various and unlimited demands since the existing facilities cannot respond to all needs. Therefore, education professionals and experts must design a set of criteria that enable them to identify and resolve critical issues (13).

In Iran, the reform of medical education programs has been on the agenda for some time now, and measures have been taken in this regard. However, the actions performed are more appropriate for holding sectional examinations, such as pre-internship and resident admission exams, instead of having an applied aspect (9). Determining the degree of conformity of the syllabuses taught with the types of diseases and problems of patients referred to general practitioners can help decide on the revision and modification of the contents of the curriculum of general practitioners based on responding to the needs of the community. Today, accreditation organizations

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significantly help the accountability of educational organizations through designing evaluation indicators and performing external assessments. By establishing appropriate indicators in the field of social responsiveness, these institutions can be a good incentive for the attention of educational institutions to this category. In accreditation of educational organizations, the global consensus for social accountability of medical schools (GCSA) clearly pays attention to social responsiveness. In Iran, the 9th accreditation standard for medical education and development centers has emphasized the design of compiled programs to develop accountable education in medical universities (11-10). While the general principles of social accountability have been more developed for more than a decade, it has been achieved in medical schools at a slow pace (12).

According to the World Health Organization, social accountability is guidance, education, research and services in line with meeting the health needs and priorities of a community, region or nation committed to serving it (11). In the curriculum, social accountability is directing all medical education activities to the training of physicians, who are able to meet the health needs of the target community (14). It is notable that no comprehensive and complete definition of an accountable physician has been suggested in the evaluation of social responsiveness concept (15). However, there are three main concepts of responsibility, responsiveness and accountability in this regard, which express the levels of attention to the concept of accountability and are used by some researchers in place of each other. Responsibility reflects the necessity of training physicians capable of meeting the needs of the community by medical education planners. This level more focuses on the awareness of managers and planners of the responsibilities to the community. It is notable that this requirement is mostly theoretical, and its assessment demands the evaluation of the mission and vision of educational institutions in order to determine their level of attention to their responsibility of training capable physicians to meet the society's need.

At the level of responsiveness, schools direct their educational, research and service activities toward meeting the needs of the community. They design their curricula and clinical education methods in a way that students face the health challenges of the society in an early and continuous manner and can gain the ability to cope with health problems. At this level, accountable physicians are trained, and at the accountability level,

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educational institutions collect evidence that shows the ability of graduates to meet community health needs. In collaboration with organizations involved in community health monitoring, certification provision agencies, accreditation organizations, and schools provide evidence on the effectiveness of their educational, research and service programs based on four core values of social responsiveness (quality, equality, communication and effectiveness) to relevant authorities and institutions.

Responsive medical education must move from the lowest level (responsibility) to the highest level (accountability), meaning that schools guide educational, research and service activities toward meeting health needs as a priority of the community. They design their curricula and clinical education methods in a way that students face the health challenges in the community in an early and continuous manner and gain the necessary skills to solve health-related problems. This level of accountability overlaps with the concept of professionalism, in which the physician is committed to the community, medical profession, and patients (11). As the concept of social responsiveness is widely used, it is a multiple narratives for social justice and a good inevitable and unquestionable event. At the same time, since its meaning is progressively vague, reflective measures are required to clarify the multiple meaning of social accountability (16).

In this research, educational activities for social accountability are determined in the education curriculum of general practitioners, who play an important role in the formation of culture of social responsiveness in schools, using the CARE model consisting of four major areas, including clinical activities, support programs, and research and educational activities. Views of different groups on the activities required in these four areas, which can affect social responsiveness, were collected in three stages.

Studies conducted in this area have revealed a lack of research on educational needs assessment in the field of social responsiveness based on the CARE model in Iran. With regard to the topics discussed, we aimed to determine whether there is a relationship between the curriculum needs of general practitioners and social responsiveness according to the CARE model in medical schools of Mashhad.

Materials and Methods

This was an applied research in terms of goal and correlational regarding information and data collection. Research population

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included 140 physicians (graduated last year), education experts (education expert of the department and education deputy of departments), and EDC experts (center for medical education development). Required data related to the subjects were collected through complete counting. Since the standard error of the structural equation modeling program is calculated on the basis of the assumption of large samples, sample groups with larger volumes are required when the distribution of data is not normal or inclined. In addition, smaller samples can cause a lack of convergence, achieving inadequate answers or low accuracy of parameters, especially standard errors.

Containing several stages, the research included qualitative and quantitative data collection methods to develop a researcher-made questionnaire. In the first stage, a thorough study of the theoretical foundations and the history of related research was carried out to accurately recognize the social accountability and its components through explaining and summarizing the opinions of experts and researchers of this field. In addition, the semi-structured interview method was used to complete the studies in this field and more precisely identify the components and indicators of social accountability measurement. To this end, researchers and scholars working on social accountability were identified and their views on this concept were gained as much as possible via semi-structured interviews. This method was used to interview these people since they understand social accountability and can help accurately recognize the components of social accountability.

In addition, the interviews had a semi-structured nature since their topics were pre-determined and based on the main components of the research in the literature. In total, seven experts, who were familiar with the concept of social accountability, were selected through purposive-judgmental sampling method. This number was selected because the ideal number of interviewees was between 6 and 12 people. In addition, it encourages the participants to add to the quality of the discussion and to make it more rigorous by sharing their opinion. The discussion will focus on just one or two people, and the spectrum of possible opinions about the subject will not be revealed if the number of people is below six. On the other hand, the necessary dynamics will not arise in the discussion. At this stage, the interviewed group was requested to indicate the degree of appropriateness of the indices and components extracted from the study of the literature before

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presenting the questionnaire. The goals pursued at this stage were:

- Grammatically correcting the items
- Modifying the indexes so that they fit the vocabulary used in the treatment centers
- Adding important factors that are not identified in the subject literature
- Removing indices that were similar to other indicators or were not significant in the treatment centers

In this phase, the questionnaire was prepared based on four components of clinical activities, advocacy programs, research, and education with 38 indicators and a five-point Likert scale (very high-very low) and each components having a value of one-five. After ensuring the content validity of the questionnaire in the second stage, a factor analysis was used to complete the data collected in this section. In factor analysis, one of the determining factors for achieving valid factors is the sample size and its representativeness. Sample size was determined using the opinion of Loehlin and Monte Carlo, who believe that the researcher should plan on collecting a minimum of 100 subjects for factor analysis.

The variables in the analytical model included 38 items, assessing four components. Before performing the factor analysis, it was necessary to consider two issues:

1) Sufficient sampling

2) Ensuring that the infrastructure correlation matrix in society is not zero

The size of Kaiser-Meyer-Olkin (KMO) reflects the adequacy of sampling and suggests that the correlation between pairs of variables can be explained by other variables. In this questionnaire, the size of KMO was 0.80, which indicated the adequacy of research sampling. Bartlett's test of sphericity was exploited to verify that the data correlation matrix was not zero in society. For a factor analysis model to be useful, variables must be correlated with each other. Otherwise, there is no reason to explain the factor model. In the present study, the statistical significance of Bartlett's test of sphericity (level of significance was assessed with the significance level of X^2) was shown at the 0.99 significant level. Therefore, in addition to the sampling adequacy, implementation of the factor analysis can be justified. To this end, a confirmatory factor analysis was performed for each of the components in the research tool separately. All components and related statistical attributes are shown in Table 1.

While there are several statistics in the Liseral output, RMSEA and CFI statistics are mostly criticized and evaluated since they are less affected by sample size. In addition, RMSEA

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level varies between zero and one, where the more the value is close to zero, the better the fit of the model. As observed in Table (1), the value of this statistic was acceptable for components of the research model. Another statistic is the root mean square residual (RMR), the 0.05 score of which is indicative of the acceptable fit of the model. The value of these statistics regarding the components of the research model showed the acceptable fit of the model. Another statistic is the goodness-of-fit index (GFI), the value of which varies from zero to one. The more the value of this statistic is close to zero, the more it is indicative of the fit of the model. In this regard, the components of the model represent the optimal fit of the model.

The last statistic is the comparative fit index (CFI), which fluctuates between zero and one. In this regard, the greater the value, the better the fit of the model. In the structures evaluated, the value of this statistic showed an appropriate fit of the model. According to the results of the confirmatory factor analysis, the questionnaire had a high validity. In addition, the confidence coefficient of the questionnaire was calculated using Cronbach's alpha method, which was estimated at 0.82, 0.78, 0.77, and 0.80 for the variables of clinical activities, advocacy programs, research, and education, respectively. These numbers indicated that the questionnaire could be trusted and, in other words, was reliable. After validation, the questionnaire was distributed among the research subjects in different days. The objectives of the research were explained to the subjects and they were ensured of the confidentiality terms regarding their personal information. Generally, the questionnaires were filled anonymously.

Table 1: Statistical Characteristics and Statistical Indices of Verifiable Factor Analysis of Research Tool Components

Component	RMR	GFI	CFI	RMSEA
Clinical Activities	**0/07**	**0/90**	**0/86**	**0/6**
Advocacy Programs	**0/06**	**0/93**	**0/91**	**0/6**
Research	**0/05**	**0/91**	**0/90**	**0/7**
Education	**0/02**	**0/94**	**0/98**	**0/04**

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Results

A) Description of Results

*Description of Demographic Characteristics Results

The distribution frequency of the statistical population according to gender and age showed that 36% of men were experts while 22% of them were professors and 16% were general practitioners. On the other hand, 13% of the professors and 13% of the general practitioners were female. Information related to the age of respondents also indicated that the mean age of the experts, professors, and general practitioners was 50.5, 44.4, and 44.1 years, respectively.

B) Analysis of Results

In this section, data analysis was carried out, which was the modeling of structural equations in this study. In addition, the research assumptions were tested. In other words, structural analysis results in structural equations were applied to evaluate the research hypotheses. The test results of assumptions are presented in the following table according to the t statistic and path coefficient and the level of significance.

Table 2: Path coefficients and significant level

Significance Level	t Values	Path Coefficient	Path
0/00	**3/87**	**0/93**	**Social Responsiveness □ Education**
0/02	**5/21**	**0/75**	**Social Responsiveness □ Clinical**
0/03	**3/76**	**0/44**	**Social Responsiveness □ Research**
0/59	**1/01**	**0/12**	**Social Responsiveness □ Advocacy**

1) Is there a relationship between requirements of social accountability in curriculum of general practitioners in the field of clinical activities? Considering the level of significance of zero (which is below 5%), this relationship was significant and the path coefficient was 0.07.

2) Is there a relationship between requirements of social accountability in curriculum of general practitioners in the area of advocacy programs? No, this relationship was not significant and the educational needs was deleted from the field of advocacy programs of the route model.

3) Is there a relationship between requirements of social accountability in curriculum of general practitioners in the field of research? Considering the level of significance of 0.01 (which is below 5%), this relationship was significant and the path coefficient was 0.44.

4) Is there a relationship between requirements of social accountability in curriculum of general practitioners in the field of education? Considering the level of significance of zero (which is below 5%), this relationship was significant and the path coefficient was 0.93.

Structural Model Evaluation

The structural model was evaluated after analyzing and measuring the measurement model. In path analysis, the relationships between variables flow in one direction and are considered as distinct paths. The concepts of path analysis are best explained through their major feature, meaning the path diagram that reveals potential causal links between variables. The structural equation model and the path diagram of the research model are shown in figures 2 and 3.

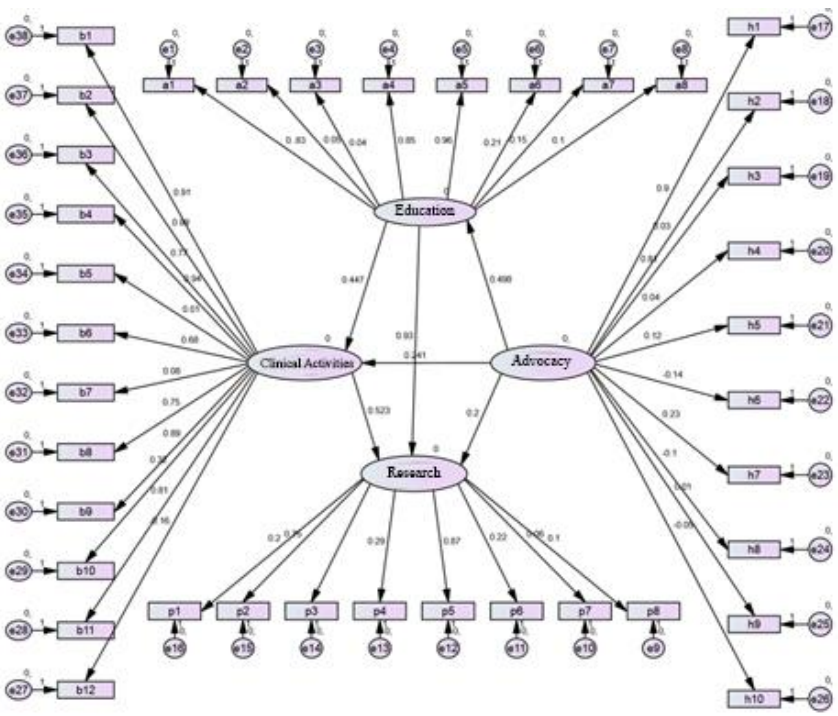

Figure 1: Conceptual model fitted in standard estimation mode

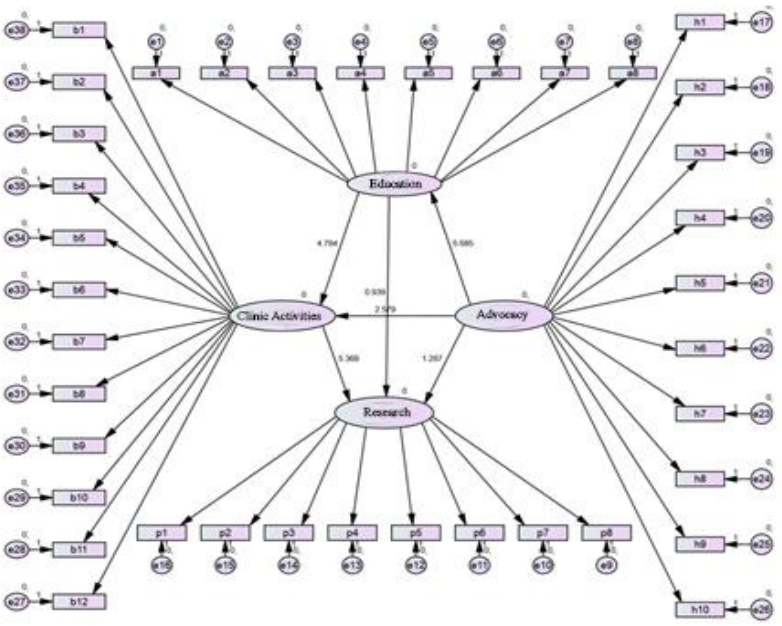

Figure 2: Conceptual model fitted in the meaningful state of the parameters

Model Fitness Index

The values of each fit index for independent and dependent variables are presented in Table 3, according to which the indexes were positive and above zero. In addition, the relationship between the components of the research are evaluated in Table 4. In this regard, the Student's t-test was applied to confirm or reject the research components.

Table 3: CV Com and CV Red Indices

Variable	CV Com	CV Red
Research	0/225	0/219
Education	0/263	0/26
Clinical	0/248	0/26
Advocacy	0/282	0/014

Table 4: Regression coefficient and significance of the relationship between education and research component

Hypothesis	Direct Rout	Regression Coefficient	t	Result
1	Education □ Research	0/93	3/87	Rejected
2	Advocacy □ Research	0/20	1/28	Rejected
3	Clinical □ Research	0/52	5/36	Confirmed
4	Educational □ Clinical	0/44	4/78	Confirmed
5	Advocacy □ Educational	0/49	5/68	Confirmed
6	Advocacy □ Clinical	0/24	2/57	Confirmed

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Discussion

The present study aimed to determine requirements of social accountability in curriculum of general practitioners based on CARE model in Mashhad Medical School in order to improve the promotion field of this important issue.

Question 1- clinical field: is there a relationship between requirements of social accountability in curriculum of general practitioners in the field of clinical activities? Considering the level of significance of zero (which is below 5%), this relationship was significant and the path coefficient was 0.75. According to the results, despite the presence of little evidence on these two variables inside and outside the country, it could be expressed that these results are in line with the results obtained by Yamani et al. (17), Omid et al. (18), Mohammadi Mehr et al. (19), and Shiri et al. (20). The relationship between skills in the clinical field or practical skills with social accountability demands the higher activity of physicians in practical classes during their education and not just passing the internship or apprenticeship units since it is associated with professionalism after graduation. However, it should be noted that clinical skill is a necessary condition and not sufficient.

Question 2: is there a relationship between requirements of social accountability in curriculum of general practitioners in the field of social accountability? Considering the level of significance of 0.01 (which was below 5%), this relationship was significant and the path coefficient was 0.44. Unfortunately, there was no similar study to compare the results. Nonetheless, our findings are in line with results obtained by Emadzadeh et al. (21), Ghafari et al. (22), Ardestani et al. (23), Avizhgan et al. (24), and Scochilak (25) in some respects. In explaining this finding, it can be argued that in the Ministry of Health, higher education must teach practical exploration with a specialized view to medical sciences to physicians before their graduation. The culture of exploration has a special place in the health system. The slang “one medicine cannot be prescribed for all patients” emphasizes the attention and necessity of exploration spirit in physicians. Due to the rapid growth of technology and the emergence of new and emerging diseases in the developing world, on the other hand, the creation of resistance in the supply of bacteria and germs based on the well-known principle of Darwinism (whatever is more consistent, remains), physicians who have previously gained the spirit of exploration and problem-solving can be accountable to their society. The mere use of the term

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“academic exploration" in the student period is insufficient and must be associated with the promotion of the spirit of exploration and solving new problems and crises during the education of these individuals.

Question 3: is there a relationship between requirements of social accountability in curriculum of general practitioners in the field of educational activities? Considering the level of significance of zero (which was below 5%), this relationship was significant and the path coefficient was 0.93. In some ways, these findings are in line with the results obtained by Karami et al. (26), Hojat (27), Ryan Milli et al. (28), and Willard and Bullen (29). The University of Medical Sciences is responsible for teaching the important principle of continuous education after graduation and lack of overlooking the importance of updated science in the field of medicine to medical graduates during their education.

Every moment, new diseases are found in this science, for which new therapies and surgical styles are proposed. For instance, being recruited by specific centers and having stability in the working condition and income level and job security might lead to neglecting the need for new educations in the medical world. Over and over again, we have witnessed the use of outdated techniques by physicians to treat patients. In addition, there is no organization to monitor the work of experienced physicians who have no knowledge about the new sciences in the medical world. Physicians should know that, as long as they practice medicine, they must use the modern world of medicine and education in order to be able to respond to the community.

Question 4- advocacy: is there a relationship between requirements of social accountability in curriculum of general practitioners in the area of social accountability? This relationship was not significant and the educational need in the area of advocacy programs was eliminated from the model’s route. This question was not confirmed, which might be related to the unwillingness of physicians to participate in groups and social challenges and to serve in deprived areas or to participate in NGO groups. This is mainly due to the lack of commitment of physicians to the Hippocratic Oath (the oath taken by all doctors during the graduation ceremony). The true explanation is that most graduated physicians tend to open an office in good urban areas while spontaneously working with other physicians in deprived regions or environments facing specific crises across the country would make headlines. This spirit and intention to solve the health

problems of the community must exist in all physicians. It could be stated that adhering to the Hippocratic Oath would resolve this issue (30). In this regard, the solution is more practical and targeted training in the field of medical ethics at medical universities. There must come a day when medical universities do not suffice the Hippocratic oath and witness the greater accountability of physicians. Education planners and policymakers must realize that training inadequate physicians would not guarantee the health of a society.

Considering the results of the present research, the development of educational programs in medical sciences universities aimed at promoting community health, the special attention of educational management groups of universities to planning and education in the Ministry of Health and Medical Education, the use of Socratic teaching or discussion methods, exploration and problem-solving, and more focus on common diseases in each climate with regard to the service location of physicians are recommended. Some of the major drawbacks of the current study were the lack of attitude of educational management in the medical staff, which resulted in lack of equal attention to educational issues, employment of physicians as education staff, and lack of specialized training with the view of educational management for designing the curriculum of medical schools.

Conclusion

The Ministry of Health and Medical Education is responsible for ensuring the health of the community, for which the necessary human resources is trained at medical universities. Physicians are a group of human resources trained in medical, general and specialized levels in medical schools. The ultimate goal of training physicians is improving the physical, psychological and social conditions of the people in the community. Therefore, they must be trained in a way that competent physicians could be introduced to the community after graduation. Some of the characteristics of these physicians include the ability to understand the community's needs, helping people solve individual and social problems, and being capable of adjusting themselves to responding to the changing needs of the society and to the progress made in medical sciences. Social accountability in medical education is interpreted as seeking and being able to adapt to patient needs and patient care systems both nationally and globally. According to the results of present research and considering the

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speed of changes in the health system and community needs, it is necessary to revise medical education in a way that physicians are ready to confront the problems of the 21st century. Determining the degree of matching of the syllabus taught with the types of diseases and problems of patients visited by general practitioners can help decide about the review and modification of the contents of the curriculum of general practitioners based on accountability to the community's needs.

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