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# Beneficial and Adverse Effects of the Integration of Medical Education and Health Service in IR. Iran; A Delphi Exercise

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In 1995 a huge revolution occurred in Iran's health system, the entire medical-related education program integrated into the Ministry of health. This paper aims to explain the beneficial and adverse effect of the integration after 27 years of implementation. For this purpose, responses from two Round Delphis were analyzed, addressing Iranian medical education policymakers. This paper provides a qualitative survey carried out using the Delphi method. Results of other studies as well as the information gathered by means of several semi-structured interviews conducted fed into the Delphi instrument for measuring each item importance. Participants were selected according to their experience and their role on the integration of Medical Education and Health Service Delivery. Statements were around the integrated system strengths and weaknesses in five core subjects which were combined and formed 10 major subscales. In addition, two other subscales extracted to show barriers and recommendations; so statements were organized into 12 subscales. New integrated system was successful in enlarging education facilities to address acute human resource shortage. Furthermore, the results of the analyses indicated 3 most ranked statements were "Main focus of universities is on specialty and subspecialty training", "Many of researches are done just to be published in ISI journals" and "The faculty members' promotion criteria are not related to integration". The study results led us to suggest a revised approach to developing new integrated system in which promoting the quality of education and health service delivery is emphasized without pursuing an increase in the production capacity as a main objective.

**Key words:** Integration, medical education, health service, Iran

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## INTRODUCTION

Before Iran's Islamic revolution in 1979, Iran had a poor health care system largely supported by foreign health workers. There were a limited package of preventive health care and curative care was available only in Tehran and in some of large cities. Those people living in small towns and large villages had to seek the advice of foreign physicians speaking a different language. Most of disadvantaged people and particularly the residents of over 65,000 villages had no faire access to medical care (Marandi, 2009).

Iran Revolution considerably exceeded population's health expectation for better health service. Ministry of Health established the Primary Health Care System throughout the country to achieve Health for All strategy in the decade of 80, but the main problem was inadequate health human power (Marandi, 1996, 2009; Aghajani *et al*., 2009). However, when Iraqi Imposed War on Iran began, heavy daily war casualties on the one hand and the emigration of a fair number of Iranian physicians on the other, uncovered a severe shortage of skilled physician. The unique solution for this situation was the integration of medical and health education into the health services system, forming the new Ministry of Health and Medical Education (MOHME) which happened at 1985.

Following the approval of integration, the system passed through three organizational phases. In Phase 1, all activities related to health care, medical education and research were assigned to the new ministry and two distinct organizations were formed within that ministry: the universities of medical sciences and the provincial health organizations. In Phase 2, the provincial health organizations and the universities were merged in each province and the university chancellors were incharge of all health service provision activities; who were the minister's representatives in each province. In Phase 3, all educational, research and health service activities were assigned to the provincial universities and the provincial health organizations were separated again (Majdzadeh *et al*., 2010).

Integration was undertaken initially to increase medical student admissions. This objective was achieved initially. Naturally, in 1994, the number of medical students was increased by 5.8-fold compared with 1970 (Azizi, 2009). In addition integration has promoted medical education responsiveness by providing human resources, who are appropriate with given community's health needs (Entezari *et al*., 2009).

Some measures have been taken for and against integration and some researches have been done to survey experts opinions who are with or against of the integration (Marandi, 2009; Zarenejad and Delara, 2009). Moreover, a team of national and international experts including (WHO, 2013) consultants was formed to evaluate the structural and functional aspects of the Iranian integrated system, in 2006. This study has remained unfinished because of financial reasons (WHO, 2013; WFME, 2004).

Despite the benefits and the noble mission of integration, there is not a lot of literature on the subject. With parliament approval in 1985, the integration has been materialized hastily to comply with community's conditions without thorough consideration of all possible consequences. Consequently, policy makers in ministry of health didn't take evidence informed decision making into account during the process of integration implementation (Lameei and Labaf Ghassemi, 2009).

In past studies, scholars have tended to focus on review article rather than ordinal research when assessing the integrated system (Marandi, 2009; Zarenejad and Delara, 2009). Our choice to focus on the Delphi method is also because there is not any consensus on the object. In fact, to the best of our knowledge, the literature has not yet attempted to identify main aspect of integration using quantitative method.

We investigate how integration has shaped medical education system and health care system. In this context, present study is based on Delphi data collected through rounds which explore integration positive and negative aspects during 27 years.

Apart from the current topic under study, authors have carried out a grounded theory study discovering different aspects of integration from expert's view; which results have been presented in another article (Turani *et al*., 2011). The outputs of grounded theory study fed into the Delphi instrument for measuring each item importance (Egan, 2007).

## MATERIALS AND METHODS

This study provides a qualitative survey carried out using the Delphi method. Results of other studies as well as the information gathered by means of several semi-structured interviews (conducted with the experts) fed into the Delphi instrument for measuring each item importance. Finally, 12 major parts of Delphi questionnaire were 5 positive and 5 negative aspects of integration as well barriers and recommendation; which are +Community Based Medical Education (CBME), +Community-Oriented Research (COR), +Education Quality, +Managerial obstacles, +Service Delivery System, -Community Based Medical Education (CBME), -Community-Oriented Research (COR), -Education Quality, -Managerial Achievements, -Service Delivery System, Barriers, Recommendation.

The Delphi method attempts to obtain consensus from a group of experts using repeated responses of questionnaires and controlled feedback (Nevo and Chan, 2007; Shengsheng *et al*., 2011). Participants were carefully selected from different academic and managerial levels. Criteria for participant selection were defined as having research project or paper related to integration or being involved in the integration medical education and health service provision system policy making. Purposeful sampling were used and continued with snow ball sampling as at the end 23 participants were selected; Fig. 1 shows their demographics by position in the organization.

Following the normal Delphi procedures, the Delphi study was carried out in two parts; An interview phase to generate a list of integration achievements and challenges -which its results has presented in another paper- and a ranking phase to identify the importance of each item.

After all responses had been received, two judges sorted the answers, aggregating related items into basic categories and creating a consolidated list of most emphasized items. As most of the participants were top managers or policymakers, it wasn't possible to gather all of them for a panel session, so for participants convenience, Delphi instruments were send to them via Email. Before sending Emails, verbal consent was obtained.

Agreement between judges was statistically measured using Cohen's k and was good (k = 0.8). Once finalized, the list was sent back to research team for review and validation. Based on the responses received, two major categories were dropped: "Problems and Weaknesses" and "Achievements and Strengths". In addition, a small number of items were further aggregated. As the goal of a Delphi study is to attain consensus among its panel members, Kendall's coefficient of concordance (W) was used to measure agreement in the rating of capabilities. Similar to other measures such as Spearman's or Kendall's rank-order correlation coefficient, W measures the strength of association among the ranking of items. The coefficient of concordance allows for multiple judges (rather than just two), a quality that makes it most suitable to test inter-judge reliability (Nevo and Chan 2007).

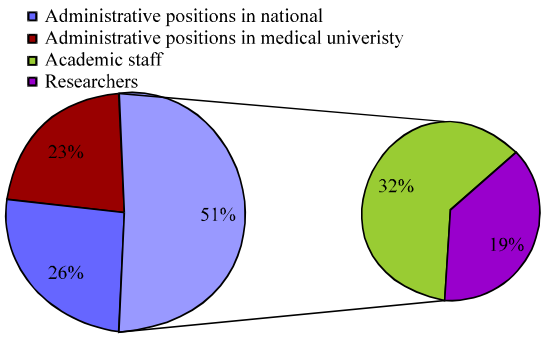



Fig. 1: Characteristics of Delphi participants

As a general guideline, scores closer to 1 represent a stronger consensus. Specifically, Schmidt *et al*. (2001) proposed that strong consensus exists for W<0.7; moderate consensus for W = 0.5; and weak consensus for W<0.3.

To compute the Kendall's W measure, we first converted all ratings into rankings, allowing for ties. After the first round, the W indicated weak consensus (W = 0.61; p<0.001). In round 2, rating average was sent for all participants and they were therefore asked to revise their rating carefully and to provide an explanation for cases in which their rating differed substantially from the group's average. After the second round, consensus had improved (W = 0.76; p<0.001) and detailed explanations were provided when individual ratings differed substantially from the group's. By improving consensus, we ended the Delphi study.

## RESULTS

**Round one and two:** In interview phase, 23 expert panel members generated 215 total statements that were coded and consolidated into 123 statements. Generally statements were around the strengths and weaknesses in five core subjects which were combined and formed 10 major subscales. In addition, two other subscales extracted to show barriers and recommendations; So Statements were organized into 12 subscales (Table 1).

To reduce threats to internal validity, a peer checking process was used to code the open-ended responses (Krathwohl, 1998). The two analyses were then compared and any differences were resolved with the assistance of a third objective rater.

Individual statement importance was rated and subscales were ranked by participants in subsequent

Table 1: Main integration characteristics

| |
|---|
| **Integration strengths** |
| + Community based medical education (CBME) |
| + Community-oriented research (COR) |
| + Education quality |
| + Managerial obstacles |
| + Service delivery system |
| **Integration weaknesses** |
| - Community based medical education (CBME) |
| - Community-oriented research (COR) |
| - Education quality |
| - Managerial achievements |
| - Service delivery system |
| **Barriers** |
| **Recommendation** |

rounds. Participants were also given the opportunity to comment on each item during the Round two iteration of the study.

Data from the two rounds of this study were organized and compared using descriptive statistics. A summary of the total and consolidated responses arranged by 12 priority areas or subscales is presented in Table 2.

**Comparison of individual items from rounds one and two:** In Delphi studies, the same questionnaire is used in both Round One and Round two. The data from Round two are considered the final results, but the results from Round One can be used to illustrate potential convergence between rounds. Table 3 displays the distribution of mean scores for all items on the questionnaire for Round One and Round two. The mean scores from the responses of 30 of the 123 questionnaire items increased from Round One to Round two.

Consistency between rounds is illustrated in Table 4 which contains descriptive statistics for the items rated as having very high importance (M = 8.00) in Round two and the corresponding ratings in Round One. 15 of the 28 items from Round two were also rated as having very high importance in Round One. In addition, there was an overall increase in mean scores from Round One to Round Two and a corresponding decrease in standard deviations. These highly rated items included responses from 11 of the 12 identified subscales. No mean response values from items in the subscale of "-management" met the criteria for highest rated responses. Four of the highest-rated items were from the "-CBME" subscale which prove further evidence of the importance this item.

**Comparison of priority areas from rounds one and two:** In addition to the individual ratings within each subscale, respondents were also asked to rank the importance of the subscales relative to each other. The rankings for the 12 subscales from Round Two and the corresponding rankings from Round One are presented in Table 6. The rankings from Round One to Round Two are virtually identical, with the exception of the "+ Community-Oriented Research (COR)" which raised from a Round One ranking of seven to a Round Row ranking of four. An examination of the results demonstrates a reduction in standard deviation values for all subscales from Round One to Round Two.

## DISCUSSION

Our goal was to identify the impact of integration on both medical education and health service delivery system. This Delphi study focused on identifying what participants perceived as the most important integration impacts. Therefore, the Positive and negative aspects of integration implementation were studied. Furthermore, to make better understand of participants statements, we classified them according to the 12 subscales that integration has generally affected them (+ Community Based Medical Education (CBME), +Community-Oriented Research (COR), +Education Quality, +Managerial obstacles, +Service Delivery System, -Community Based Medical Education (CBME), -Community-Oriented Research (COR), -Education Quality, -Managerial Achievements, -Service Delivery System, Barriers, Recommendation) (Table 2).

Table 2: Number of interview phase responses by subscale

| Subscale | All statements | Consolidated statements |
|---|---|---|
| + Community based medical education (CBME) | 16 | 4 |
| + Community-oriented research (COR) | 9 | 4 |
| + Education quality | 13 | 8 |
| + Managerial achievements | 15 | 5 |
| + Service delivery system | 14 | 6 |
| - Community based medical education (CBME) | 19 | 9 |
| - Community-oriented research (COR) | 20 | 13 |
| - Education quality | 12 | 11 |
| - Managerial obstacles | 25 | 24 |
| - Service delivery system | 17 | 9 |
| Barriers | 24 | 10 |
| Recommendation | 31 | 20 |
| Total | 215 | 123 |

Table 3: Frequency distribution of mean scores for all items from round one and round two

| | Round one | | Round two | | | |
|---|---|---|---|---|---|---|
| Mean score(a) | Frequency | Percent | Frequency | Percent | Percent of cumulative Round 2 | Net change |
| ≥9.00 | 3 | 2.4 | 11 | 8.9 | 8.9 | 8 |
| ≥8.00<9.00 | 15 | 12.2 | 17 | 13.8 | 22.8 | 2 |
| ≥7.00<8.00 | 31 | 25.2 | 51 | 41.5 | 64.2 | 20 |
| ≥6.00<7.00 | 41 | 33.3 | 21 | 17.1 | 81.3 | -20 |
| ≥5.00<6.00 | 16 | 13.0 | 13 | 10.6 | 91.9 | -3 |
| ≥4.00<5.00 | 12 | 9.8 | 7 | 5.7 | 97.6 | -5 |
| ≥3.00<4.00 | 5 | 4.1 | 3 | 2.4 | 100.0 | -2 |
| ≥0<3 | 0 | 0.0 | 0 | 0.0 | 100.0 | 0 |
| Total | 123 | 100 | 123 | 100 | 100 | 0 |

(a) = Responses were rated on a scale of 1 to 10, with ≥0<3 = no importance, ≥3.00<5.00 = low importance, ≥5.00<6.00 = medium importance, ≥6.00<8.00 = high importance, ≥8.00 = very high importance

Table 4: Comparison of items rated "high importance" to "very high importance" (M =8.00) from Round Two (R2) and corresponding ratings from Round One (R1)

| | | R2 | | | R1 | | |
|---|---|---|---|---|---|---|---|
| Subscale | Statement | Rank | M | SD | Rank | M | SD |
| - CBME | Main focus of universities is on specialty and subspecialty training | 1 | 10 | 0.57 | 1 | 9.5 | 0.73 |
| - COR | Many of researches are done just to be published in ISI journals | 2 | 10 | 0.89 | 7 | 8.7 | 0.73 |
| - Management | The faculty members' promotion criteria are not related to integration | 3 | 9.7 | 0.89 | 8 | 8.65 | 1.05 |
| - Management | Integration was structural and did not affect performance | 4 | 9.6 | 0.8 | 10 | 8.3 | 0.6 |
| - Management | Conflict between academic and health service roles of university faculty members | 5 | 9.3 | 0.66 | 3 | 9.1 | 0.98 |
| Recommendation | Balance between supply and demand of health human resources | 6 | 9.3 | 0.66 | 20 | 7.9 | 0.74 |
| + COR | Good progress in research | 7 | 9.2 | 0.7 | 37 | 6.9 | 0.8 |
| Recommendation | Curriculum revision | 8 | 9.2 | 0.62 | 6 | 8.7 | 0.94 |
| Recommendation | Autonomy of universities must be emphasized | 9 | 9.2 | 0.96 | 5 | 8.8 | 0.82 |
| Barriers | There is no mark for integration related activities in international university ranking systems | 10 | 9.1 | 0.6 | 9 | 8.6 | 0.67 |
| - CBME | Academics' connections with executive fields is not defined | 11 | 9 | 0.59 | 11 | 8.2 | 0.81 |
| - CBME | Unfamiliarity and unwillingness of physicians to CBME | 12 | 9 | 0.65 | 24 | 7.4 | 0.98 |
| - CBME | Community problems are not reflected in to medical schools and curricula | 13 | 9 | 0.96 | 2 | 9.4 | 0.99 |
| - COR | Overindulgence of faculty members in service delivery and education and lack of time for research | 14 | 9 | 1.05 | 18 | 7.9 | 1.24 |
| - COR | Researchers are not based on needs assessment | 15 | 9 | 0.78 | 13 | 8.1 | 0.9 |
| - Education quality | Integration has increased the universities' workload and responsibilities | 16 | 9 | 1.03 | 21 | 7.8 | 1.03 |
| + Education quality | Savings in student training costs | 17 | 8.9 | 0.66 | 4 | 8.9 | 0.96 |
| Barriers | Distinguishable differences in incentives of faculty members and service delivery managers | 18 | 8.9 | 0.85 | 15 | 8 | 1.01 |
| - Education quality | Training medical students In specialized teaching hospitals while they will work at health centers | 19 | 8.7 | 0.82 | 28 | 7.3 | 1.02 |
| + Education quality | Learning in the situation which will work later | 20 | 8.7 | 0.68 | 22 | 7.5 | 0.85 |
| + Service quality | Increasing community access to advanced health | 21 | 8.7 | 0.87 | 12 | 8.1 | 1.05 |
| - Service quality | Choosing high academic achievers as service delivery managers and hope they learn on the job | 22 | 8.7 | 0.92 | 29 | 7.2 | 1.1 |
| Barriers | Most of problems are not due to integration and disintegration will not solve them | 23 | 8.7 | 0.62 | 33 | 7 | 0.81 |
| + Education quality | Increasing the number of universities | 24 | 8.6 | 0.96 | 26 | 7.3 | 0.98 |
| + CBME | working in field make students and faculties prepared to identify problems | 25 | 8.6 | 0.6 | 38 | 6.8 | 0.96 |
| + Service quality | preparing advanced medical services in the country | 26 | 8.5 | 0.66 | 14 | 8 | 0.94 |
| - Service quality | Using physicians as managers in different levels of health system | 27 | 8.4 | 0.59 | 32 | 7.1 | 0.82 |
| Management | Expansion of specialized health human resources | 28 | 8.3 | 0.7 | 25 | 7.3 | 0.73 |

The lowest rated items from Round two (M = 5.00) and the corresponding ratings from Round One are presented in Table 5, seven of the ten items included in this category were also rated similarly in Round One

Table 5: Comparison of lowest rated items (M = 5.00) from Round Two and corresponding items from Round One

| | | R2 | | | R1 | | |
|---|---|---|---|---|---|---|---|
| Subscale | Statement | Rank | M | SD | Rank | M | SD |
| - Management | There is no clear supervision on the legislations that are passed | 1 | 3.3 | 0.66 | 2 | 3.3 | 0.98 |
| + CBME | Faculty members are more involved in community problems | 2 | 3.5 | 0.65 | 1 | 3.1 | 0.82 |
| - COR | Inadequate attention to research in curricula | 3 | 3.9 | 0.85 | 3 | 3.3 | 0.74 |
| - Education quality | Inadequate attention to basic medical sciences | 4 | 4.1 | 0.6 | 6 | 4.2 | 0.96 |
| - Service quality | Slow progress in pharmaceutical industry | 5 | 4.3 | 0.82 | 8 | 4.3 | 0.8 |
| + Education quality | Provision of Continuous Medical Education by Universities | 6 | 4.4 | 0.68 | 15 | 4.9 | 1.02 |
| - COR | Service delivery managers feels they are capable of doing research themselves | 7 | 4.6 | 0.68 | 9 | 4.7 | 0.94 |
| + Education Quality | More attention of curricula on different aspects of health | 8 | 4.7 | 0.7 | 4 | 3.8 | 1.1 |
| - Service Quality | Inadequacies in referral system | 9 | 4.7 | 0.87 | 21 | 5.5 | 1.02 |
| Recommendation | Delegating society's health responsibility to the schools departments | 10 | 4.9 | 0.4 | 11 | 4.9 | 1.05 |

Using the qualitative Delphi method, we drew on the knowledge and experience of 23 experts who were actively involved in integration's policy making or implementing. We invited a wide range of potential respondents from policy making, research and educational groups and organizations to take part in the study. Our results showed a high degree of consensus among these experts, in Round 2 more than 81% of statements received scale of 6 and more.

Comparison priority areas from Rounds One and Two showed that there were most consensus on statement which were classified in "Barriers" subscale; lake of strong incentive for integration related activities in both service delivery and educational systems due to using the international university audit criteria. As Iranian medical education integrated system is unique, its special audit and accreditation system should be defined.

Table 6: Means and standard deviations for subscales from Round Two (R2) and corresponding ratings from Round One (R1)

| | | R2 | | | R1 | | |
|---|---|---|---|---|---|---|---|
| Subscale | Statement | Rank | M | SD | Rank | M | SD |
| Barriers | 10 | 1 | 8.02 | 0.60 | 1 | 7.22 | 1.30 |
| - Community based medical education (CBME) | 9 | 2 | 8.00 | 0.58 | 2 | 7.20 | 2.06 |
| Recommendation | 20 | 3 | 7.79 | 1.34 | 3 | 7.01 | 1.74 |
| + Community-oriented research (COR) | 4 | 4 | 7.68 | 0.27 | 5 | 6.38 | 1.65 |
| - Education quality | 11 | 5 | 7.10 | 0.82 | 6 | 6.39 | 2.36 |
| + Managerial achievements | 5 | 6 | 7.10 | 1.90 | 7 | 6.39 | 2.47 |
| - Managerial obstacles | 24 | 7 | 7.09 | 1.09 | 4 | 6.91 | 2.72 |
| + Education quality | 8 | 8 | 6.86 | 1.02 | 8 | 6.17 | 2.62 |
| - Community-oriented research (COR) | 13 | 9 | 6.62 | 1.10 | 11 | 5.65 | 2.73 |
| + Service delivery system | 6 | 10 | 6.40 | 1.02 | 10 | 5.66 | 2.62 |
| - Service delivery system | 9 | 11 | 6.36 | 1.02 | 9 | 5.72 | 2.62 |
| + Community based medical education (CBME) | 4 | 12 | 6.13 | 1.62 | 12 | 5.51 | 2.41 |

Furthermore, distinguishable differences in faculty members' incentives and service delivery managers' incentives are another integration barrier. When university faculties are concerned, having published papers, writing book, participating in scientific conferences, training students are their success sign; while in service delivery system, having more production with less cost and managing executive problems are valuable achievements (Upvall *et al*., 2002; Allen *et al*., 2010).

Our result showed that participants believed that the only change has been occurred is a structural integration and integration did not affect performance. While structural integration can be achieved with measurements like shifting managers or making changes in organizational chart, the functional integration requires defining cross boundary processes (Pardo *et al*., 2008).

Comparison of items rated "high importance" to "very high importance" in two rounds showed 4 of the most important statements were in "- CBME" subscale. CBME (community based medical education) was one of the integration's three main goals. As Marahatta has illustrated, "community based medical education programs can create more appropriate knowledge, skills and attitudes; deepen understanding of the whole range of health, illness and the workings of health and social services" (Marahatta, 2009). It seems most participants believe that we have not rich to community based medical education yet.

Academics' connections with executive fields are not well defined. While CBME emphasis on making better use of expertise and availability of staff and patients who are in primary health care settings; our university's main focus is on specialty and subspecialty training programs in specialized hospitals. However, the overall objective of CBME is to produce highly qualified doctors in sufficient numbers to meet the health needs of the nation at community levels (Omotara *et al*., 2006).

Similarly, most experts believed that treatment takes priority over prevention and unwillingness. This imbalance is driven partially by lack of Community-Based staff and funding restrictions. while working in field make students much better prepared to identify community's health problems and their solutions (Saide and Steward 2001). Furthermore, a unified stewardship of service delivery administration system and its audit system were problems within the service delivery system.

Another main concern of participants was in "Community-Oriented Research"; as they believed many of university faculties researches are done just to be published in ISI journals not to solve community problems. Being dependent to the public findings ensure university's authorities that they don't need any effort to create other financial resources and it lead to weak connections with community and industry (Plewa and Quester, 2007). Consequently, faculties prefer to stay at their office and do research which may are not necessarily address service delivery system or community's problems. Building on our empirical findings we suggest curriculum revision and emphasizing on autonomy of universities as most important recommendation statements in Delphi instrument. In many cases, universities continue to be centrally governed and are deprived of opportunities to make autonomous and independent decisions; so for the sake of transparency more power should be shifted to the universities' boards (Oba 2005).

Pulling together the insights obtained in this study, we found support for the fact that while integration is a valuable policy to make strong connection between medical and paramedical education research and health service delivery, especially in developing country; there are not a set of policy and strategic plan to materialize it yet.

One important contribution of our study was in identifying and exploring the most important integration impacts after more than 26 years.

## LIMITATIONS

Our study was not without limitations. Specifically the size of the Delphi Study population was small, although it was methodologically sufficient.

## CONCLUSION

This study focuses on the need for the new view of integration policy making, in light of recent changes in the way that Iranian Ministry of Health and Medical Education (MOHME) view its duties. The results of our quantified analysis confirmed the philosophy of integration but suggested managerial solution should be more strongly considered.

In summary, defining cross boundary process and establishing appropriate organizational culture is essential to achieve functional integration's goals. As a result, all people at different organizational levels identify their duties in relation to others and to fulfill the mission and goals of the integrated system.

Education and service delivery system are two side of a coin. Trends in medical education in the world show that medical education has taken away from society's needs and expectations. To correct this trend, medical schools have adopted a variety of measures; efforts like, cooperation with the community, community based education, training in community settings and collaboration with service delivery system. At the international level it has been recommended repeatedly that the education system and health service delivery system must work together on the basis of clear mechanisms.

Service delivery system also has its own problems; Lack of equitable access, doubts on interventions effectiveness, low productivity and soaring costs of care, waste of resources, duplication and delay in service delivery are only a short list of service delivery system problems. It seems that the separation of education and health services system has mutual side effects.

The study results led us to suggest a revised approach to developing new integrated system in which promoting the quality of education and health service delivery is emphasized without pursuing an increase in the production capacity as a main objective.

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