Differences and their contexts between teaching and nonteaching hospitals in Iran with other countries: A concurrent mixed-methods study

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Abstract:

BACKGROUND: In terms of missions, hospitals are divided into teaching and nonteaching. In addition, differences in health-care systems in countries will lead to differences in hospitals’ operation. Iran, as a specific health-care system, is different from other countries. Hence, the present study investigated differences between teaching and nonteaching hospitals and their differences in Iran and the world.

MATERIALS AND METHODS: A concurrent mixed-methods study was conducted in two stages. The first stage was a narrative review of studies (2000–2020). Using narrative inquiry and reflective analysis, the content was analyzed and the categories were extracted. The second stage was a qualitative study conducted using semi-structured interviews with forty Iranian hospital managers and policymakers through a purposive sampling in 2020. Content analysis was made using deductive approach, and MAXQDA 12 was used for data analysis.

RESULTS: According to the first stage, categories were extracted as follows: service quality, type of cases, patient satisfaction, efficiency, performance indicators, patient safety, personnel, use of drugs, access to services, technologies, justice in the type of services received, using guidelines, processes, and number of services. In the second stage, 8 main categories, 17 categories, and 45 subcategories were extracted. The extracted main categories were as follows: mission and target, management and behavioral organizations, supply chain and chain of results, human resources, costs and budget, policy demands, clients’ satisfaction and patients’ right, and integration of medical education.

CONCLUSION: Unlike other countries, in Iran, the combination of missions and the complete dependence of teaching hospitals on the government has caused differences. Reducing the treatment mission of teaching hospitals; differences in the budget and development of its indicators; lower tariffs for teaching hospitals; developing a cost–income management model and supply chain; preventing uncertainty other than medical students except medicine; considering the clients’ right to choose hospital; and organizing research missions in hospitals were the solutions for decrease differences.

Keywords: Health systems agencies, systems integration, teaching hospitals, university hospitals

Introduction

Hospitals as the main lever of countries’ health system are divided into two – teaching and nonteaching hospitals.[1] On the other hand, different medical systems in different countries will lead to different performances of hospitals and their medical structures. Iran is known as a specific and unique system in the world in this regard.
which is different from many countries in various dimensions. It has been four decades that regional health organization has been merged which is an integrated structure called Medical Sciences University and Ministry of Health and Medical Education is created.[2] This structure has predicted two types of hospitals including medical education center and sometimes research and hospitals which are only responsible for medical duties.[3] Besides, this difference that teaching hospitals are a subsystem of Supreme Education Council or Ministry of Education in other countries and are a subsystem of Ministry of Health in Iran, Iran, most hospitals are governmental considering ownership and resource supply.[4] Another point is different number of teaching hospitals in Iran which is different from that of other countries of the world. According to 2017 statistics, around 45% of the whole active beds and around 63% of Ministry of Health active beds are teaching, which is increasing.[4] However, according to statistics, this rate is much lower in other countries.[5]

Teaching hospitals in most countries depend on medical university or a part of national or local health system considering organizational system.[6] In most countries, these hospitals play a strategic role in teaching health-care professionals and in some countries to serve the underserved urban population.[7] Furthermore, these hospitals play an important role in representing complex cases; they have appropriated lots of physical, human, and financial resources to themselves; and also they play related political role in societies.[8] Meanwhile, nonteaching hospitals in most countries are those with general services which have activity beside teaching hospitals to protect societies’ health.[9]

According to the preface and initial review, it is expected that the difference in the mission of teaching and nonteaching hospitals will cause differences in the outcome indicators.[10-18] In addition, as mentioned, the difference in the health and medical education system of Iran with that of other countries provides the basis for the difference between teaching and nonteaching hospitals in this field and other dimensions of an organization. Therefore, the present study first deals with the issue of whether there are differences between teaching and nonteaching hospital studies? And whether are there differences between the results of studies in Iran and other countries? So that, the question why and for what contexts teaching and nonteaching hospitals in Iran are different from those of other countries can be answerable.

**Materials and Methods**

A concurrent mixed-methods study design was used. The goal of the mixed-methods design was to investigate differences between teaching and nonteaching hospitals and their differences in Iran and the world by comparing and contrasting two qualitative results. In time orientation concurrent studies, the researcher combined only two studies in terms of time of concurrent research, but there is no preference between the two methods. In this type of research, data collection from each of the two studies is performed and analyzed and, finally, by comparing and combining the results, a general conclusion is presented.

**Study design and setting**

The first stage was designed as a narrative review of studies dated from January 2000 to July 2020. The aim of this stage was to investigate differences between teaching and non-teaching hospitals in Iran and the world. The second stage was a qualitative study conducted in Iran in 2020.

**Study participants and sampling**

In the first stage, library resources were reviewed, and reliable databases, that is, Medline, ISI Web of Science, EMBASE, Scopus, PubMed, Ebsco, Emerald, SID, Magiran, ensani.ir, IranDoc, and Google Scholar, as a common scientific search engine were searched extensively for information on hospitals. The search strategy was based on the following keywords: “nonteaching,” “non-teaching,” “nonteaching,” “teaching,” “’university hospital,” “academic hospital,” “hospital” AND “medical center.” In the second stage, the research population consisted of twenty hospital managers at different levels, and twenty policymakers who had the experience of structure hospitals in Iran and the world were recruited through a purposive sampling and by sampling from significant cases. Hospital managers and policymakers were from different cities of the country and at least had 5 years of working experience.

**Data collection tool and technique**

- In the first stage, the inclusion criteria were as follows: (1) original studies with the aim to investigate differences between teaching and nonteaching hospitals and (2) empirical studies that answered the research questions or tested the hypothesis and conducted on specific population and sample. The exclusion criteria were as follows: (1) duplicates; (2) not in English or English abstract; (2) book sections, and other formats (except journal articles); and (4) uncertainty of (the population, the sample, the data collection tool, or the method of data analysis has not been stated).

To find additional articles, relevant study lists were searched by hand. Two reviewers independently screened the title and abstract of the identified articles to confirm the eligibility. The extracted data form, for
each article, was completed. Using narrative inquiry and reflective analysis in the form of audit reports, written notes, and memos, the content was analyzed and the categories were extracted, which were then transformed into tables.

- In the second stage, data were collected by using a semi-structured interview to have an in-depth picture of the participants’ perspectives. An interview guide was prepared based on the research goals, the theoretical foundation of the topic, and an extensive review of the literature. Interview questions included the following: are the goals of these two types of hospitals different? What is their goal? Are there other differences between teaching and nonteaching hospital? Do we mean Iran teaching hospital equivalent to this concept in the world? What are the differences? For what contexts teaching and nonteaching hospitals in Iran with other countries are different?

The participants were contacted in order to arrange the time and venue of the interviews which were often held at the workplace of the interviewees. At the beginning of the interviews, the participants were presented with some explanations about the study and its purpose and were assured of the confidentiality of their information, and those who agreed to take part in the interview signed a written consent form before the interview. They were also informed of the right to withdraw from the study at any time for any reason. A sound recorder was used for recording the interviews in addition to note taking by the interviewer. The interviews lasted from 30 to 60 min and were immediately transcribed after each session. To analyze data, the deductive content analysis approach was used. Based on the initial review of studies in the deductive framework, themes were extracted. Based on these studies, the differences included the mission and purpose, results, costs, and hospital staff. Data analysis based on the deductive approach included the following steps: (1) typing the interviews, (2) perusing each interview line by line, (3) using the analysis framework, (4) allocating codes and forming themes in the matrix, (5) extracting main themes related to the aim of research, and (6) classifying data based on the similarities and differences and forming the subthemes.

Data were gathered during a 5-month period from July 2020 to November 2020. The validity of the data was based on four indicators expressed, including credibility, dependability, confirm ability, and transferability. Concerning credibility, long engagement with data and allocating enough time to gather data were taken into consideration. In terms of dependability, an external reviewer supervised the data-gathering process and approved the results. Content analysis was made using deductive approach, and MAXQDA Software version 12.

Ethical consideration
According to ethical considerations, the code of ethics IR.IUMS.REC.1398.259 was obtained from the research deputy of Iran University of Medical Sciences. Some experts were not willing to cooperate and participate in the interviews. Attempts were made to solve this problem and to attract their participation by sending official recommendation letters via our colleagues.

Results
The findings of this research were divided into two sections. As the first section, in the initial search, all the original articles that investigated one of the teaching or nonteaching hospitals (i.e. 263 articles) were found. After reviewing the criteria for entering and leaving the study, title, abstract, and full text, finally 48 articles were analyzed [Tables 1-3].

The second stage of the research was semi-structured interviews in order to examine differences between teaching and nonteaching hospitals in Iran and the world. The results of this stage obtained from the analysis of 40 interviews created 249 primary codes, which were minimized to 98 codes after deleting duplicate codes and merging similar codes. Ultimately, the leading codes from the data analysis were assigned to 45 subcategories, 17 categories, and 8 main categories [Table 4]. In the following, the research findings with an excerpt from the texts of the conducted interviews were provided.

Mission and target
Types of teaching hospitals: Difference in target and mission groups of teaching and nonteaching hospitals – Iran and the world
In this category, the participants highlighted differences in type, target, and mission of hospitals. The participants said: “We have 2 types of teaching hospitals in the world. Those affiliated with the University of Medical Sciences and a number of hospitals contracted with university. Well, this is not enough in Iran, but it is very common in the world that universities, instead of building hospitals for themselves, are very difficult to manage; buy serve (p. 6).” “There is a medical faculty in the world that has a teaching hospital. The dean of the faculty is the dean of the hospital. But we have a university of medical sciences that has several hospitals, so we are no longer like the world. In some countries, a medical or nursing faculty also has a hospital (p. 17).”
| Author            | Study location | Year (conducted) | Sample and populations                                                                 | Summary of Findings                                                                                                                                 |
|-------------------|----------------|------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Burke et al.      | Colombia       | 2019             | 232 major teaching, 837 minor teaching, and 1997 nonteaching hospitals; 2014-2015     | The total standardized costs, physician, and acute care for 30 days and total costs of 3 days were lower for large teaching hospitals, small teaching hospitals and nonteaching hospitals, respectively. Furthermore, payments for hospitalization index in large teaching hospital were higher than small teaching hospitals and then nonteaching hospitals[10] |
| Ellis et al.      | USA            | 2010             | Data up to 2006                                                                         | The rising rate of patients undergoing colectomy in teaching hospitals compared to nonteaching has increased costs. The mortality rate of these patients has increased[23] |
| Silber et al.     | USA            | 2019             | Data from 2012-2014                                                                    | Mortality, readmission, and ICU hospitalization were lower and staying longer. Although the final cost of hospitalization in Medicare patients in a large teaching hospital has increased, it seems that effectiveness has further increased[13] |
| Czarnecki et al.  | Canada         | 2019             | 16 teaching and 154 nonteaching hospitals; 2007-2014                                    | The chance of survival of referred patients with myocardial infarction outside the hospital was considerably higher in teaching hospitals[11] |
| Zelle et al.      | USA            | 2019             | US hospitals from 2005-2014                                                            | The rate of surgical treatment utilizing effective fixators for orthopedic trauma patients was considerably higher in teaching hospitals[22] |
| Memtsoudis et al. | USA            | 2016             | 540 hospitals from 2006-2013                                                            | Black patients, covered by Medicaid, without insurance, and patients in teaching hospitals had a lower chance of receiving regional anesthesia[8] |
| Gopaldas et al.   | India          | 2013             | 1000 India hospitals; period of 10 years                                               | The July effect indicates an overall increase in complications at the beginning of the course in hospitals and has had a considerable effect in nonteaching hospitals. In the evaluation of coronary artery bypass graft patients, despite higher complications at the beginning of the course in teaching hospitals, mortality was lower. Therefore, the effect of July cannot be attributed only to the presence of trainees[23] |
| Patel et al.      | USA            | 2016             | 425 hospitals from 2005-2014                                                            | Adherence, functional measures, and outcomes of care guidelines and hospitalized outcomes of patients with heart failure in teaching hospitals were better than nondenotional but not considerable[24] |
| Gopaldas et al.   | USA            | 2012             | US teaching and nonteaching hospitals; 1998-2007                                         | Patients requiring complicated cardiac treatment in teaching hospitals with a thoracic surgical residency program may get a better outcome[25] |
| Greving et al.    | Holland        | 2005             | 5 hospitals; 2000-2004                                                                   | In general, physicians in nonteaching hospitals had less positive attitude toward the usefulness of common treatment guidelines than teaching hospitals[26] |
| Holena et al.     | USA            | 2011             | 1800 acute care hospitals; 2000-2006                                                    | In general, teaching hospitals show better results for complicated elective surgeries compared to nonteaching hospitals. Patients in teaching hospitals were not White and had a minimum income level. An increased risk of mortality was observed in hospitalized patients with emergency admission and postoperative infections of elective surgeries[27] |
| Holscher et al.   | USA            | 2018             | US hospitals; 2000-2014                                                                  | The rate of aortic surgery in patients with Marfan and Ehlers-Danlos syndrome was higher in teaching hospitals. However, there was no considerable difference in mortality and side effects between teaching hospitals and nonteaching hospitals[28] |
| Masoomi et al.    | USA            | 2013             | 1000 US hospitals; 2009-2010                                                             | The rate of autologous breast reconstruction and free flaps is higher in the teaching hospital. Despite more complicated reconstructions, there was no considerable difference between educational and nonteaching hospitals regarding the results of surgery (complications and mortality)[29] |
| Murata et al.     | Japan          | 2011             | 360 teaching and 226 nonteaching hospitals; April to December 2008                      | Regarding the results of endoscopic homeostasis during hospitalization for bleeding gastrointestinal ulcers, there was no difference between educational and nonteaching hospitals in terms of average length of stay and mortality rate in 30 days[30] |

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Table 1: Contd...

| Author          | Study location | Year (conducted) | Sample and populations                         | Summary of Findings                                                                                                                                 |
|-----------------|----------------|------------------|------------------------------------------------|---------------------------------------------------------------------------------------------|
| Sandhu et al.   | Michigan, USA  | 2013             | Michigan hospitals; 2007-2009                   | There was no considerable difference in death, myocardial infarction, and contrast between educational and nonteaching hospitals in patients with coronary intervention. In teaching hospitals, the risk of vascular complications increased and the risk of emergency coronary artery bypass grafting were reduced compared to nonteaching hospitals. |
| Zafar et al.    | USA            | 2014             | US hospitals; 2007-2011                         | The results showed higher mortality and hospital costs, fewer major complications, and shorter length of stays in teaching hospitals. The difference between teaching and nonteaching hospitals was statistically significant but the difference was small. |
| Sharma et al.   | India          | 2012             | A teaching and a nonteaching hospitals; 2008    | The results of educational and nonteaching hospitals show extensive antibiotic prescribing. Further use of antibiotic compounds and their brand names in nonteaching hospitals may be due to pressure from pharmaceutical companies. |
| Dumont et al.   | USA            | 2012             | University and community hospitals; 1998-2008   | Before and after the law on working hours, restriction of resident physicians indicated that the rate of complications of surgery in teaching hospitals increased from 14% to 16%, and in contrast, it was fixed in nonteaching hospitals before and after 2003. |
| Abusaada et al. | Florida, USA   | 2017             | A major community hospital; 2011-2014           | Evaluation of hospitalized patients with initial diagnosis of chronic obstructive pulmonary disease indicated that the adjusted cost of risk and length of stay and use of counseling in the educational group were considerably lower. In general, educational services had more favorable results compared to nonden educational services. |
| Amarnah         | Jordan         | 2017             | 5 teaching and 8 nonteaching hospitals; 2010    | In teaching hospitals, shift work was the only predictor of stressors in nurses, while shift work and nursing care model predicted social support behaviors. In nonteaching hospitals, shift work, education level and nurses’ caring pattern were predictors of nurses’ stressors. |
| Cron et al.     | Michigan, USA  | 2019             | 76 hospitals; 2012-2016                         | Surgical patients discharged from teaching hospitals received prescriptions containing more opioids and adjusted risk rates higher than high-risk prescriptions. |
| De la Garza-Ramos et al. | USA | 2015             | US hospitals; 2002-2011                         | The proportion of patients undergoing revision procedures and complicated methods was considerably higher in teaching hospitals. Patients in teaching hospitals have considerably less complications. |
| Grosskopf et al.| USA            | 2001             | 236 teaching and 556 nonteaching hospitals; 1994 | Teaching hospitals are more inefficient than nonteaching hospitals (about 10% have the ability to compete). Furthermore, 90% of hospitals are exposed to outsourcing or integration and elimination of educational. |
| Nandyala et al. | USA            | 2014             | National database; 2011-2002                     | There was no considerable difference in the mean cost and mortality between hospitals. Patients in teaching hospitals had longer stay duration and more postoperative complications. |
| Valencia et al. | Texas          | 2017             | 11 major teaching, 12 minor teaching and 73 nonteaching hospitals; 2014-2015 | The mean number of laboratory tests per day was considerably higher in teaching hospitals. Patients hospitalized in large teaching hospitals received considerably more tests “after controlling the severity of the disease” and “length of stay”. |
| Lichtman et al. | USA            | 2013             | 1124 teaching and 3933 nonteaching hospitals; 1999-2006 | Seasonal patterns of adjusted risk of mortality rate 30 days after ischemic stroke (obstructive stroke) were similar in educational and nonteaching hospitals. |
| Kotwal et al.   | USA            | 2019             | Acute care hospitals; 2014                      | The mortality rate was higher in teaching hospitals with a small proportion. The mean of total cost of treatment and processes in nonteaching hospitals was lower and there was a considerable difference between the two hospitals. |
| Perez et al.    | USA            | 2018             | A university hospital; 2014-2015                 | The rate of readmission and mortality in university services was lower than noneducational, but the differences were not considerable. Academic services had considerably lower duration of stay, use of counselors and direct care costs than noneducational services. |
Multiple missions, structural contradictions, and confusion in responsiveness and responsiveness of teaching hospitals – Iran

The participants said: “When your chain of service providers is not integrated; when you do not have a separate service package, you do not have responsiveness (p. 8).” “The Vice Chancellor for Education has the condition of research to promote faculty members; The Vice President for Research has its own policies; The Deputy Minister of Health calls for the development of service delivery; Department of Development and policy organizations requiring hospitals to declare autonomy (p. 21).”

Overcoming treatment to education in teaching hospitals – Iran

In this category, the participants said: “The government’s priority now is treatment, but we have a large number of public teaching hospitals (p. 24).” “At the higher level of the health system structure, we have structural contradictions and accountability in teaching hospitals. Including educational accreditation along with medical accreditation, which is practically very superficial and weak due to the power and governance of the deputy director of treatment (p. 4).” “Visiting should not be one of the main duties of the hospital, while this is the case in Iranian hospitals, especially teaching hospitals (p. 6).”

Missing research mission in teaching hospitals

In this category, the participants said: “Lack of payment for research to hospitals; the patient you are researching on, you should not take money from him; the researcher is not given a proper budget at the right time. Accountability is also very weak, that is, even if it is in the laws, but it is not monitored (p. 38).”

Management and behavioral organizations

Difference between educational and nonteaching hospitals in extra-sectorial and intra-sectorial relationships – Iran and the world

The participants said: “The principal does not have the power or authority to exercise power and oversee departments and students, and must do so through the deputy director. Well, he is actually a member of the faculty of the medical faculty and is accountable to the faculty (p. 35).” “In Iran, we created a vertical structure in the hospital matrix structure (p. 1).”

More complexity of management in teaching hospitals – Iran and the world

In this category, the participants stated on the complexity of management in teaching hospitals rather than nonteaching hospitals: “It is very difficult to run and management a university hospital. In the world, universities tend to buy services instead of building hospitals (p. 9).” “We are witnessing a duality of management. We have even ignored Fayol’s 14 principles, including unity of command and unity of purpose (p. 24).”

Supply chain and chain of results

Difference in the chain of results of teaching and nonteaching hospitals – Iran and the world

In this category, the participants said: “Our small teaching hospitals provide easy and inexpensive services. So, complex cases are directed to higher-level public hospitals or to the private sector (p. 18).” “In terms of efficiency, a non-teaching hospital can be stronger because it has a clear structure and organization (p. 40).”

Difference in cost-income management model and supply chain of nondenotional and teaching hospitals in Iran and the world

In this category, the participants said: “Lack of coverage for education has led hospitals to seek funding from
Table 2: Studies in Iran

| Author                  | Year | Sample and populations                              | Summary of findings                                                                 |
|-------------------------|------|-----------------------------------------------------|--------------------------------------------------------------------------------------|
| Moosavisadat et al.     | 2011 | Teaching and nonteaching in Khoram-Abad; 2009       | The quality of maternity care in the nonteaching hospital was higher in terms of facilities, maternal and neonatal care processes, and furthermore more satisfaction than the teaching hospital. In the teaching hospital, the quality of physical space, the level of education and educational level of health-care personnel, and monitoring and evaluation of the quality of care should be improved. |
| Hashjin et al.          | 2014 | Hospitals of Iran; 2002-2008                        | Performance evaluation scores during 2002-2008 in noneducational general hospitals were higher than that of general educational. |
| Bastani et al.          | 2013 | Hospitals affiliated to HMoEM; 2008                 | The ratio of bed turnover and average stay in nonteaching hospitals is better than that of teaching hospitals. In the areas with a bed turnover distance in nonteaching hospitals is less than the teaching hospital. Bed occupancy rate was not considerably different in two hospitals. |
| Naghizadeh et al.       | 2014 | Tabriz Hospitals; 2011-2012                         | The highest level of satisfaction of both types of hospitals was related to physical space and the lowest level was related to information aspects. Satisfaction of nonteaching hospitals was higher than teaching hospitals. |
| Keyvanara et al.        | 2010 | Teaching and nonteaching hospitals in Kermanshah; April to Sep 2007 | A higher percentage of death certificates in teaching hospitals had a quality of registration. The mistake in the demographic information of certificates in teaching hospitals was more than noneducational. A higher percentage of certificates in nonteaching hospitals were issued by the physician and reported the mechanism of death as the cause of death. A higher percentage of the causes of death mentioned in the certificates of teaching hospitals had a reasonable causality. |
| Askarian et al.         | 2013 | University hospitals in Fars; 2001-2002             | The rate of total, sharp, and infectious waste production was higher in teaching hospital and internal waste (home) in nonteaching hospital. The percentage of total protective equipment, boots, masks and gloves and other equipment in teaching hospital and accessories, pants, and special form in nonteaching hospital was higher. |
| Dehghani et al.         | 2014 | Hormozgan hospitals; 2013                           | The mean record of medical data and financial and identity information of treatment providers in teaching hospitals was more than nonteaching hospitals. |
| Zaboli et al.           | 2014 | University hospitals in Kerman; 2014                | The quality of service from patients’ perceptions in nonteaching hospitals was considerably higher than that of teaching hospitals. Patients’ expectations of service quality in teaching hospitals were higher than nonteaching hospitals but were not considerable. The gap in service quality in teaching hospitals was considerably higher than nonteaching hospitals. |
| Shirali et al.          | 2015 | Ahvaz hospitals; 2013                               | In all attitudes toward safety except teamwork climate, nonteaching hospitals had better status. Differences in teamwork climate, stress recognition, job satisfaction, and mutual understanding of center management between two types of hospitals are considerable. |
| Zazouli et al.          | 2015 | Gorgan hospitals; 2014                              | The total and hazardous waste generation rate was considerably higher in teaching hospitals. |
| Delgoshyli et al.       | 2010 | Kashan teaching and nonteaching hospitals           | Regarding the quality of work life, the mean workspace in educational and nonteaching hospitals was at the highest level and material facilities and job design were the lowest, respectively. There was no considerable difference between quality of work life in educational and nonteaching hospitals. |
| Khoeinina et al.        | 2016 | Qazvin hospitals; 2014                              | 15% of teaching hospitals and 10% of nonteaching hospitals had poor performance. Nurses had the highest level of clinical practice in teaching hospitals in the field of patient support and in nonteaching hospitals in the area of ability to respond to differences. |
| Naghizadeh et al.       | 2014 | 3 teaching and nonteaching hospitals in Tabriz      | There was no considerable difference between vaginal delivery and cesarean section and satisfaction in educational and nonteaching hospitals. Satisfaction with care and support in nonteaching hospitals was higher than educational. |
| Hemmati-Maslakpak et al.| 2014 | Urmia hospitals; 2011                               | The majority of nurses working in educational and nonteaching hospitals evaluated their communication skills at a good level. Furthermore, with a lower proportion, most nurses in educational and nonteaching hospitals evaluated patients’ safety at a good level. |
| Safi-Arian et al.       | 2012 | University hospitals in Hamedan; 2010               | There is a considerable difference in the type of educational and nonteaching hospitals in the field of technical efficiency. Teaching hospitals have more desirable performance due to having the average stay and active beds. |
| Mirzaie et al.          | 2016 | 4 teaching and nonteaching hospitals of Iran University; 2013 | Appropriate imprescriptible drug classes based on start criteria in teaching hospitals were more than noneducational. The mean of unprescribed appropriate drug had a considerable relationship with the length of stay in teaching hospitals. |
| Naderi Manesh et al.    | 2020 | Hospitals of Tehran and Shahid Beheshti University; 2018 | In teaching hospitals, the mean of stay and bed occupancy rate were higher and bed turnover was lower. |
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The inefficiency of medical education is due to the lack of supervision and waste of resources in government affiliated universities. It is better to give the cost of education of each student to the student in a competitive way (p. 39)."

**Human resources**

*Displacement in the use of human resources – Iran*

In this category, the participants said: “Clinical students are for us as dual-personality forces. We are witnessing the recruitment of mid-skilled personnel to provide medical services (p. 38).” “In the world, the resident is not as a medical force. In Iran, medical students study during the day and serve as medical staff at night. A common mistake is of course due to lack of supervision (p. 16).”

**Cost and budget**

*Higher cost of facility management in teaching hospitals in Iran and the world*

The participants said: “In teaching hospitals, complex equipment requires additional training and more manpower maintenance costs (p. 2).” “We see the wear and tear and shorter life of the equipment in the training hospital due to its use by unprofessional and inexperienced personnel (p. 11).”

*More costly teaching hospitals – Iran and the world-

The participants said: “In the world, the extra costs that the student imposes on the system; they receive from the
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| Main category | Category                                                                 | Sub-category                                                                                       |
|---------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Mission and target | Types of teaching hospitals and difference in target and mission groups of teaching and nonteaching hospitals - Iran and the world | In the world:<br>Often approach of education abstraction (hospital as education field)<br>Refusing to establish a university teaching hospital due to financial-administrative challenges<br>Community-based teaching hospital (target population sickness) and patient-based nonteaching hospital (patient-based)<br>Mission of health, treatment, follow-up, and rehabilitation hospital In Iran:<br>Frequent approach of education integration<br>No distinction between different types of teaching hospitals<br>Requiring medical students and university affiliation of the hospital<br>Classification of services determines patient admission, not hospital mission<br>Islanding the mission of treatment, especially in the teaching hospital
| Multiple missions, structural contradictions and confusion in responsiveness and responsiveness of teaching hospitals - Iran | Numerous organizational and individual missions and tasks<br>Islanding policy units and lack of systemic view<br>Lack of intersectorial communication between supervisory organizations and lack of supervision<br>Confusion of therapeutic and educational accreditation
| Neglecting research mission in teaching hospitals - Iran | No payment to the hospital<br>Lack of patient cost coverage under research<br>No proper and timely payment to the researcher<br>Lack of monitoring and not defining a powerful response system<br>Confusion of teaching hospitals in the priority of education on treatment or treatment over education<br>Equipping teaching hospitals in the name of education to palate therapy<br>Overcoming treatment over education from the perspective of policymakers<br>Lack of supervision and policy decisions and getting the hospital away from the mission of reducing input and focusing on education<br>Providing a platform for violation by the system and receiving the costs of training human resources from the people
| Overcoming treatment to education in teaching hospitals - Iran | Difference between teaching and nonteaching hospitals in extrasectorial and intrasectorial relationships-Iran and the world<br>Difference in organizational behavior of teaching and nonteaching hospital personnel - Iran and the world<br>Creating a vertical structure in the matrix structure of teaching hospitals - Iran<br>Ignoring the correct formulation of accountability, power distribution in the organizational structure of Iran teaching hospital<br>Lack of coordination of posts with authority - Iran<br>Challenges of student presence and interaction with personnel and patients, Iran and the world<br>More complex formal and informal organizational structure - Iran and the world<br>Difference between decision making system and power distribution and authority of teaching and nonteaching hospitals<br>Ignoring the principle of command unity and the principle of goal unity in Iranian teaching hospitals<br>Lack of coordination of duties with the authority and boundaries of responsibilities in teaching hospitals - Iran

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| Main category          | Category                                                                                           | Sub-category                                                                                                                                                                                                                                                                                                                                 |
|------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supply chain           | Difference in the chain of results of teaching and nonteaching hospitals ‑Iran and the world       | Difference in value chain                                                                                                                                                                                                                                                                                                                                                                             |
|                        | Difference in the chain of results of teaching and nonteaching hospitals ‑Iran and the world       | Referring more complex case to teaching hospitals                                                                                                                                                                                                                                                                                                                                                     |
|                        | Difference in the chain of results of teaching and nonteaching hospitals ‑Iran and the world       | Outgoing teaching hospital: Patient and trained force                                                                                                                                                                                                                                                                                                                                                   |
|                        | Difference in the chain of results of teaching and nonteaching hospitals ‑Iran and the world       | Skimming by teaching hospitals (especially general teaching hospital) in Iran                                                                                                                                                                                                                                                                                                                            |
|                        | Difference in the chain of results of teaching and nonteaching hospitals ‑Iran and the world       | Difference in the structure and number of human resources in educational and nonteaching hospitals                                                                                                                                                                                                                                                                                                        |
|                        | Difference in the chain of results of teaching and nonteaching hospitals ‑Iran and the world       | Difference between physical space of educational and nonteaching hospitals difference between inpatient, clinic, and support processes of teaching hospitals                                                                                                                                                                                                                                      |
|                        | Difference in the chain of results of teaching and nonteaching hospitals ‑Iran and the world       | In the world                                                                                                                                                                                                                                                                                                                                                                                         |
|                        | Difference in the chain of results of teaching and nonteaching hospitals ‑Iran and the world       | Providing nonteaching hospital resources by providing more service capacity and higher tariffs                                                                                                                                                                                                                                                                                                             |
|                        | Difference in the chain of results of teaching and nonteaching hospitals ‑Iran and the world       | Providing teaching hospital resources by providing subsidies, negotiating with the free market, and financing the education of students In Iran                                                                                                                                                                                                                                                            |
|                        | Difference in the chain of results of teaching and nonteaching hospitals ‑Iran and the world       | Not considering the location of the resources for education costs and pushing the teaching hospital toward the supply of other resources                                                                                                                                                                                                                                                                  |
|                        | Difference in the chain of results of teaching and nonteaching hospitals ‑Iran and the world       | Waste of resources in the wide and long structure of universities and inequality of resource distribution for nonteaching hospitals                                                                                                                                                                                                                                                                 |
|                        | Difference in the chain of results of teaching and nonteaching hospitals ‑Iran and the world       | Eclectic and double payment for student education                                                                                                                                                                                                                                                                                                                                                     |
| Human resources        | Displacement in the use of human resources - Iran                                                  | Becoming a two-character clinical student                                                                                                                                                                                                                                                                                                                                                             |
|                        | Displacement in the use of human resources - Iran                                                  | Garrison of teaching hospitals and promoting injustice in medical education                                                                                                                                                                                                                                                                                                                             |
|                        | Displacement in the use of human resources - Iran                                                  | Using students as a medical force and challenging the quality of wservice and patient’s rights                                                                                                                                                                                                                                                                                                           |
| Costs and budget       | Higher cost of facility management in Iran and world teaching hospitals                            | Greater depreciation and lower reliability                                                                                                                                                                                                                                                                                                                                                             |
|                        | More costly teaching hospital ‑ Iran and the world                                                  | More training and maintenance costs                                                                                                                                                                                                                                                                                                                                                                |
|                        | More costly teaching hospital ‑ Iran and the world                                                  | Lack of accountability in damage of equipment and facilities - Iran                                                                                                                                                                                                                                                                                                                                 |
|                        | The necessity of difference in the budget of teaching and nonteaching hospitals, Iran and the world | Expenditures and equipment for training                                                                                                                                                                                                                                                                                                                                                               |
|                        | The necessity of difference in the budget of teaching and nonteaching hospitals, Iran and the world | Presence of training and less income-generating forces                                                                                                                                                                                                                                                                                                                                                |
|                        | The necessity of difference in the budget of teaching and nonteaching hospitals, Iran and the world | High cost of information management                                                                                                                                                                                                                                                                                                                                                                |
| Policy demands         | Lack of coordination of policy demands with resource supply - Iran                                  | Hidden fees                                                                                                                                                                                                                                                                                                                                                                                         |
|                        | Lack of coordination of policy demands with resource supply - Iran                                  | The cost burden of compensating the services of employees and students in Iran                                                                                                                                                                                                                                                                                                                         |
|                        | Lack of coordination of policy demands with resource supply - Iran                                  | Lack of budget indicators and rows for different allocation in Iran                                                                                                                                                                                                                                                                                                                                  |
|                        | Lack of coordination of policy demands with resource supply - Iran                                  | Lack of budget classification of different types of teaching hospitals in Iran                                                                                                                                                                                                                                                                                                                         |
|                        | Lack of coordination of policy demands with resource supply - Iran                                  | Challenge of hidden costs of teaching hospital                                                                                                                                                                                                                                                                                                                                                      |
|                        | Lack of coordination of policy demands with resource supply - Iran                                  | Medical error and more diagnostic orders                                                                                                                                                                                                                                                                                                                                                           |
|                        | Lack of coordination of policy demands with resource supply - Iran                                  | Ignoring these costs by the government in allocating the budget in Iran                                                                                                                                                                                                                                                                                                                             |
|                        | Lack of coordination of policy demands with resource supply - Iran                                  | Ignoring these costs by hospital officials and budget deficit in Iran                                                                                                                                                                                                                                                                                                                               |
|                        | Lack of coordination of policy demands with resource supply - Iran                                  | Different view of world governments to the teaching hospital                                                                                                                                                                                                                                                                                                                                       |
|                        | Lack of coordination of policy demands with resource supply - Iran                                  | Necessity of covering overhead cost by providing subsidies under the title of training coefficient (presence in field)                                                                                                                                                                                                                                                                 |
|                        | Lack of coordination of policy demands with resource supply - Iran                                  | Cost-effectiveness of medical education                                                                                                                                                                                                                                                                                                                                                             |
|                        | Lack of coordination of policy demands with resource supply - Iran                                  | Lower tariff of teaching hospital in the world due to higher error coefficient and provision of educational case                                                                                                                                                                                                                                                                                     |
| Clients’ satisfaction  | The challenge of clients’ satisfaction in teaching hospitals in Iran and the world                   | In the world of lower tariffs, coverage of re-referral services and selection of teaching hospitals through awareness= reducing the impact on patients’ satisfaction                                                                                                                                                                                                                                        |
| and patients’ right    | The challenge of clients’ satisfaction in teaching hospitals in Iran and the world                   | In Iran, receiving costs from patients, differences in the knowledge of service providers, choosing a hospital out of coercion, lack of awareness of the difference in the concept of teaching and nonteaching hospitals= affecting patients’ satisfaction                                                                                                                                 |
|                        | Inconsistent guidance of the patient to receiving services in the teaching hospital of Iran          | Ignoring the hospital’s choice                                                                                                                                                                                                                                                                                                                                                                       |
|                        | Inconsistent guidance of the patient to receiving services in the teaching hospital of Iran          | Compulsion due to the exclusiveness of expertise and facilities and limited physical access to services                                                                                                                                                                                                                                                                                             |
|                        | Inconsistent guidance of the patient to receiving services in the teaching hospital of Iran          | Having a party in the teaching hospital                                                                                                                                                                                                                                                                                                                                                             |
|                        | Inconsistent guidance of the patient to receiving services in the teaching hospital of Iran          | The difference between the patient’s preference to the choice of different types of teaching hospitals                                                                                                                                                                                                                                                                                                      |
student himself (p. 19).” “We have a lot of hidden costs in a teaching hospital for which no one is responsible. Such as manpower error, repetition of services and control tests due to defensive medicine (p. 26).”

The necessity of difference in the budget of educational and nonteaching hospitals, Iran and the world

The participants said: “The government’s policy of covering free medical education requires comprehensive provision of resources and resources (p. 28).” “There is no budget for education in Iran and we do not have indicators for it. Currently, teaching and nonteaching hospitals are not different in terms of budget. Also, the budget needs of different types of teaching hospitals vary based on the level of education, the type of trainee, the number of students, the quality of service and the quality of education (p. 13).”

Policy demands

Lack of coordination of policy demands with resource supply – Iran

The participants said: “In other countries, the government is mainly the investor in national programs and student production, and treatment is somehow outside the government’s control (p. 27).” “In the world, the cost of a teaching hospital is generally lower and the marginal cost is paid by the government. This is due to the medical error rate, the poverty of the patients in the teaching hospital and the provision of a training case (p. 6).”

Clients’ satisfaction and patients’ right

The challenge of clients’ satisfaction in teaching hospitals in Iran and the world

The participants said: “The characteristics of patients who refer to a teaching hospital in most countries include: long waiting time, acceptance of insurance due to the low cost of these hospitals (government coverage), providing free medical services, and in case of re-referral, it is the hospital’s duty to provide services. Therefore, the patient does not expect hotel services and therefore we see no effect on patient satisfaction (p. 15).”

Inconsistent guidance of the patient to receiving services in teaching hospitals of Iran

The participants said: “At the level of non-acute care services, patients’ preference is to choose a non-teaching hospital (p. 12).” “One of the reasons for the presence of a teaching hospital in Iran is to cover services (increase access) and provide inexpensive services (p. 35).”

Integration of medical education

Integration of medical education and weakening of education – Iran

The participants said: “Political pressures and policies have pushed hospitals toward greater treatment performance and weakened education (p. 27).” “In Iran, the integration of medical education has weakened education (p. 23).”

Uncertainty of presence in the field of other medical students except medicine – Iran

The participants said: “The hospital is not just for medical students, all disciplines and levels must experience the on-site training properly (p. 5).” “Not all wards of hospitals are educational, and the practical units of many medical disciplines, such as radiology and paramedical, etc., are not properly trained. Even if the coach is with them; because the coach is not motivated, the supervision is not seen and the lack of support from the hospital staff causes the training to remain incomplete (p. 9).”

Discussion

According to the results of the qualitative stage of the present study, there has been a shift in the use of
workforce in Iran. In fact, it is stated that employing students as a teaching force has enhanced the quality of service and patient rights in Iran's teaching hospitals. The results of the review phase also confirm this. Medical group students' and interns' participation in the process of curing patients is inseparable from teaching medicine. Here arises a question that whether patients are aware of teaching hospitals’ concept truly and know the level of skill and knowledge of those involved in curing them? Medical assistants and interns in medical education system involved in patient medical and care processes may expose the patient to physical, mental, and even economic complications. While, the patient has not been aware of them enough or has not been satisfied.\(^{[58]}\)

In addition, the results indicate that patient rights are ignored in Iranian public hospitals (i.e. about 80% of hospitals). Furthermore, according to the results of the review phase, there is a challenge to patient satisfaction in Iranian teaching hospitals. Studies show that considering the fact that many patients are hospitalized in teaching hospitals in one common room and considering the stampede of these units, it seems that the significance of patients’ actual condition has been forgotten.\(^{[59]}\) This challenge will be of higher importance in Iran where governmental medical service system and medical education have been merged in such a way that the patient has limited substitutions practically. In fact, according to distributive justice, although community future interest in training experienced physicians are considered in teaching medicine, it seems that the effect of this matter has not been evaluated on health system.\(^{[60]}\) A part of governmental hospitals income as well as annual budget is supplied by what is received for services and the franchise paid by people in Iran and in curing hospitalized patients. It is on health policymakers to provide the patients who are cured in teaching system with facilities to balance advantages and disadvantages related to an individual. Furthermore, it seems that the health system has looked for solutions to solve such conflicts through an organizational perspective and standardizes the form and the level of medical group students’ involvement by preparing protocol and instruction.

Based on the results of the qualitative stage of the present study, the chain of results of teaching and nonteaching hospitals in Iran and the world is different. According to the results obtained from the review stage, the output indicators of teaching and nonteaching hospitals in Iran and other countries are different. The qualitative phase of the study also emphasizes that more complex cases are referred to teaching hospitals, which is confirmed by the results of the review phase. When the dimensions of a mission are increased in a hospital, the complexities are increased too and so these hospitals are evaluated in such a way that all of their mission dimensions are evaluated. Therefore, these hospitals’ organization has to be improved by leaders’ much effort.\(^{[61]}\) In most of the countries, university medical centers are significantly important in health-care system. In addition to representing a wide range of fundamental and specialized services to the patients under the coverage of these centers, these centers are the major sites of teaching medicine and advanced studies. These centers depend on medical universities.\(^{[6]}\) In most countries, university medical centers are less involved in operations and care rather than other hospitals. According to the Association of American Medical Colleges data, teaching hospitals depending on this association form only 5% of all hospitals.\(^{[6]}\) However, these centers represent improper cares to special populations in countries such as the USA, for example Medicare and Medicaid patients, patients under the coverage of charity cares, hospital-transferred patients with complex needs, and burning and trauma victims.\(^{[9]}\)

According to the results of the present study, incomplete integration of medical education in Iran has weakened education. At the end of the 20th century, medical universities defined their goal according to their tastes and as a result, they forgot their unwritten social contract based on meeting the needs and expectations of the society.\(^{[62]}\) Countries were going to fulfill this important need following Alma Ata Conference. Teaching health human force in Iran services system has been merged following sublime purposes such as conforming teaching with health system changing needs, accountability improvement, teaching community medicine and teaching medicine in the context of the society, problem-oriented research, and ensuring clinical services quality and justice in representing and having access to services.\(^{[62,63]}\) Of course, the integration of medical education and the presence of students have also had advantages. One of the results of the review phase indicates the better quality of information registration in Iranian teaching hospitals. In most countries, the better qualitative status of registering documents in teaching hospitals may be related to the structure of this center, mutual teaching, and care team superior physician constantly supervising medical activities and students’ documentation.

According to the results of the first and second phases of the present study, teaching hospitals are more expensive. Among the costs of these hospitals are the cost of education and equipment, hidden costs, lower income due to education, more information management costs, and the burden of student attendance. In teaching merge approach, teaching hospitals face with fundamental challenges such as financial resource shortage and imbalance in meeting purposes and duties considering
interference in their inherent goal and duties in different fields of teaching, research, and representing medical services to the patients, which leads to organizational perspective growth. Specifically, financial and budget resources in these hospitals are mainly pushed to one or two items of three main functions in various cases that this imbalanced combination prevents teaching hospitals meet all of their needs.\[19\] Studies related to hospitals’ productivity and efficiency mostly use data envelopment analysis and often show the weaker performance of the university hospitals. The present study findings mentioned the factors which increase the cost of such hospitals. The most important problem in representing health and medical services is its economic problem, and hospitals in Iran are still faced with this problem.\[64\]

Furthermore, according to the results of the qualitative stage, in Iran, there is no difference in the cost-income management model and supply chain of teaching and nonteaching hospitals. Therefore, it is proposed to provide resources for teaching hospitals by providing subsidies; negotiation with the free market; or the cost of education should be provided by the students themselves. In addition, the resources of medical education were wasted in the wide and long structure of Iranian universities, which is due to the governmental nature of these hospitals and universities, which was another problem based on the results of the present study. There are two basic income resources out of government public budget and exclusive income in Iran medical sciences universities’ subsidiary hospitals. Exclusive income consists of cashes received from free patients, cash franchise received from patients under the coverage of different insurance organizations, and the income resulted from insurance services. Hospital Autonomy Bill as well as Health Comprehensive Insurance Bill in 1995 has been approved to decrease public budget. Hospitals started repaying their staff salaries through demanding and applying higher medical tariffs for patients to compensate for the reduced financial support from the government. In fact, executing Hospital Autonomy Bill successfully needs other prerequisites such as determining real medical tariffs and insurance right higher than the per capita.\[66\] Finally, hospital Autonomy cancelled in 2003 after out-of-pocket payment significant increase and free health services’ decrease. After Hospital Autonomy Bill, other policies have been used of which none were successful. A new set of rules called “Independent Hospitals” were issued aiming at increasing the income of hospitals from nongovernmental resources. However, from experts’ point of view, this plan will not be successful in the case of providing preparations and supervisions.\[66\]

According to the results of the present study, the need for differences in the budget of teaching and nonteaching hospitals is obvious, which is not the case in Iranian hospitals. Among the problems mentioned according to the present study was the lack of indicators and budget lines for different allocation in Iranian hospitals. The results of the review phase in the teaching hospital, medical error, and the number of diagnostic orders are higher. Also in Iran, the lack of coordination of policy demands with the provision of educational resources is another problem. According to the results of the present study, one of the solutions to solve these problems is to cover the overhead cost by providing subsidies under the title of education coefficient, and also the lower tariff of the teaching hospital is similar to many countries. The important point is that in some countries extra resources have been appropriated to university hospitals through specific budget called education, research, and or serving complex cases.\[67\] Although according to the instruction of Independent Hospital Office, education allowance will be sources financed through an agreement between hospitals and education and research institute, due to the lack of budget-determining indices, these sums will not compensate for the education costs imposed on the hospitals.\[67\] Education costs depend on various factors. Besides the difference in the level of individuals’ learning, other factors such as the size of hospital, the level of receptions, the number of procedures, the number of beds, the number of surgery rooms, how hospitals are managed, partnership agreement, and outsourcing units in hospitals may be effective on education.\[67\] Furthermore, according to the opinion of hospital supervisors, a large part of hospitals deductions is related to education; deduction in medical disposable appliances that a specific number of them is repaid by insurance but using them has been increased due to education and so insurance does not repay them.\[67\]

According to the results of the present study, there are different types of teaching hospitals in Iran and the world, but that in Iran, the approach of integrating education and university hospitals is dominant. Teaching hospitals which are governed by governmental budget in countries like the USA play a very important and fundamental role in representing medical services to low-income individuals. Although there is a teaching hospital in every state in most of these countries, they have faced with fundamental challenges in the field of resource shortage and decreased medical quality.\[19\] The important point is that in fact there are two types of teaching hospitals in most countries: university medical centers (big teaching hospitals) and small teaching hospitals. However, university medical centers have two components: teaching hospitals and medical universities. A teaching hospital usually does not have medical university.\[6\] However, studies show that these centers face with considerable operational challenges. Especially that most of them have been merged with
nonresearch institutes such as community-based hospitals.\textsuperscript{[27]} Ultimately, nonteaching hospitals enjoy taught and professional medical personnel, but generally they do not change and they are not leaders with medical main advances. In most countries, nonteaching hospitals include public hospitals (community-based hospitals), and their main mission is usually supplying primary or fundamental health and medical needs of a society. Although they are not known due to their medical advances or they are not as distinguished as big teaching hospitals, they are vital as much as it.\textsuperscript{[6,9]}

According to the results of the present study, teaching and nonteaching hospitals are different in extra-sectorial and intra-sectorial relationships. Furthermore, Iranian hospitals are different from that of other countries in this regard. These include: creating a vertical structure in the matrix structure of teaching hospitals; ignoring the correct formulation of accountability and distribution of power in the organizational structure of Iranian teaching hospitals; and there was a difference between the organizational behavior of the teaching and nonteaching hospital staff. However, the results of the review stage in the present study showed that there is no significant difference in the organizational behavior of teaching and nonteaching hospitals in Iran. Therefore, this issue needs further investigation. In the world, matrix structure is the helper factor in university medical centers considering their multiple missions.\textsuperscript{[20]} In most of world’s university medical centers, the head of clinical unit is accountable to the CEO of hospital and also the head of medical university. In fact, the CEO has to be the partner of medical university head. However, there have always been some conflicts among the leaders of teaching hospitals and medical universities.\textsuperscript{[20]} The head of the clinical unit is a key connection between the head of the university and the hospital’s CEO, a physician who is responsible for the management of relationship between clinical fields and education.\textsuperscript{[68]} Thus, unit heads have to be supported by both heads in appointment and selection criteria. This matter has to be considered in other fields.\textsuperscript{[67]}

For example, a study has stated that although both heads and CEOs at university medical health centers which are responsible for curing, teaching, and research have preferred curing patient and then teaching and research and probably the CEOs preferred curing patient to two other missions, university heads have rated all the three missions equally.\textsuperscript{[20]}

According to the results, one of the differences between teaching and nonteaching hospitals in Iran and the world was multiple missions, structural contradictions, and confusion in the response and accountability of Iranian teaching hospitals. These contradictions include the existence of educational and medical accreditation, the fragmented action of policymaking units, and the lack of a systemic perspective. Unlike other countries, representing education, research, and medical services has been simultaneous in Iran and so the merged structure of medical teaching and representing services causes some problems which lead to organizational complexity.\textsuperscript{[3]} According to the results, one of the another differences between teaching and nonteaching hospitals in Iran and the world was focus on the treatment mission and set aside other missions (teaching and research). Teaching hospitals in Iran face with serious challenges in playing their role due to missions’ diversity and insufficient transparency in rules and codes that this study mentioned them as previous ones.\textsuperscript{[3,69]} Moreover, these hospitals are responsible for representing specialized and sub-specialized medical services in governmental unit whether considering the number of beds and hospitalization units; representing specific specialized cares in them; and considering the efficiency and effectiveness of human, physical, and financial resources in them quantitatively and qualitatively. Therefore, make a policy, decide, and manage their different dimensions influence the efficiency and inefficiency of health system directly and significantly.\textsuperscript{[70]}

Limitation and recommendation

Some experts were not willing to cooperate and participate in the interviews. Attempts were made to solve this problem and to attract their participation by sending official recommendation letters via our colleagues. As regards the present research was a concurrent mixed-methods study, it was able to study the differences between teaching and nonteaching hospitals in several aspects, as well as the differences between these types of hospitals in Iran and other countries. However, this can be explored from other perspectives, such as differences in input sources, challenges, and problems or other study methods can be used.

Conclusion

Unlike other countries, in Iran, education is combined with research and health-care services and also the complete dependence of universities and hospitals on the government has caused differences in the results and performance of teaching hospitals in Iran and other countries. Right now, more than sixty medical universities and schools are working in Iran. There are more than 240 teaching medical hospitals covered by the Ministry of Health. However, the important point is that there is almost no teaching hospital according to the defined meaning in Iran and during two recent decades, lot of teaching centers have changed into medical centers practically and so the professors and researchers do not work effectively. Now, the specialists are member of medical sciences university faculty and work in governmental hospital and are resident in
private hospitals at the same time. It is obvious that this method will influence the university students too. Reducing the treatment input of teaching hospitals and focusing on education; differences in the budget and development of its indicators; lower tariffs for teaching hospitals or considering benefits for patients; developing a cost–income management model and supply chain; preventing uncertainty other than medical students except medicine; considering the clients’ right to choose the type of hospital; and organizing research missions in hospitals were the solutions for decrease differences in Iran and other countries.

However, there are dissatisfactions from health systems and also teaching medicine in most countries. For example, evaluating and merging health medical cares and education dimensions in teaching hospitals in Brazil show that despite collecting many groups of resources (physical, human, and financial) and also the important political role of these hospitals, the problem of resources’ waste still exists.[8] Many countries throughout the world such as Canada and the USA have taken measures such as merging teaching hospitals with the local health-care network.[8] Another important matter about the improvement of university hospitals performance is evaluating the performance of hospitals to maintain their role as progressive actors in hospital network and also as the main actors of teaching future professional human resources. In fact, around the world, hospital becoming teaching is based on the performance of hospitals.

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Conflicts of interest
There are no conflicts of interest.

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