

# Corporate Public Hospitals, Systematic Review

Rahati M<sup>1</sup>, Masoudi Asl I<sup>2</sup>, Abouhallaje M<sup>3\*</sup> and Jafari M<sup>4</sup>

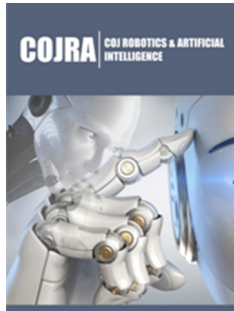
<sup>1</sup>Faculty of Management, South Tehran Branch, Islamic Azad University, Iran

<sup>2</sup>Department of Health Services Management, School of Health Management and Information Sciences, Iran University of Medical Sciences, Iran

<sup>3</sup>Department of Health Services Management, School of Health Management and Information Sciences, Iran University of Medical Sciences, Iran


<sup>4</sup>Department of Health Services Management, School of Health Management and Information Sciences, Iran University of Medical Sciences, Iran

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**\*Corresponding author:** Abouhallaje M, Department of Health Services Management, School of Health Management and Information Sciences, Iran University of Medical Sciences, Iran

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## Abstract

**Background:** In recent years, corporatization has been introduced as an institutional plan for public hospitals in order to improve efficiency and reduce public ownership, and also to decentralize health system. In this regard, this study is a systematic review of identifying types of corporate hospitals and introduces necessary components for the corporate hospitals.

**Method:** This study was conducted in 2018. In the initial search, 52 studies were found that by examining 24 related articles were elected. A qualitative assessment of documentation was made, which 17 papers selected. The collected data were described and compared based on the World Bank model variables as: ownership, structure, decision right, responsiveness and social functions.

**Result:** Each country has implemented a specific type of corporation due to its environmental conditions and infrastructure of health system, including healthcare companies, Foundation or charitable foundations, joint stock companies, limited liability companies, holding companies, and trusts. Some variables are incomplete and some are completely implemented, in each country.

**Conclusion:** Corporatization has increased autonomy of hospitals in terms of financial, human, physical, and equipment resources. Increasing independence leads to the responsiveness of managers. One goals of corporatization have been to increase efficiency of hospitals, which most countries must achieve it.

**Keywords:** Corporate public hospital; Systematic review; Hospital

**List of abbreviation:** PPP: Public-Private Partnership; NHS: National Health System

## Introduction

Over the past 50 years, many of low and middle-income countries have built their health systems based on government budget, which became vertical bureaucracy within sector. The most important functional weaknesses maybe are technical and allocation inefficiencies, failures in coverage of low-income and poor groups, and also poor responsiveness to stakeholders [1,2]. It is obvious that governments cannot put all or a large part of health care system from the state budget [3,4]. In the meantime, hospitals as the most important components of health system, have a special sensitivity and also importance in the economy and health [5] so that about 50-80% of health sector budget is allocated to hospitals (especially in developing countries) [6-8]. Claim is that the reform of public hospitals into autonomous units improves management, allocation of public resources, and promotes hospital responsiveness. This will be done by reducing mechanisms of government direct control, as well as delegation of authority from the state to hospital managers' level. According to World Bank model, different levels of autonomy can be considered for public hospitals on a spectrum, and in this one, four organizational models are defined for hospitals: budget hospitals (administrative

units affiliated to higher regional or national levels), autonomous hospitals (giving more authority and responsibility to hospitals, and exposing them to the market), Corporate hospitals (imitation of the private sector decision making system in the public hospital) and private hospitals [9].

In recent years, corporatization has been introduced as an institutional plan for public hospitals in order to improve efficiency and reduce public ownership, and also to decentralize health system [10]. Various studies shown that corporatization has different results. In some researches, public hospitals efficiency has increased after corporatization, and has led to improve production and financial resources [11,12]. In some cases, performance has improved, but progress has not been sustained. Failure to implement key aspects of the model has led to poor results in other cases [9,13]. With corporatization, complete control over all inputs and service delivery issues are almost given to managers. Corporations are often established as a legally independent entity. The status of the corporate entity includes a hard budget that makes it fully responsive to its financial performance. At least in the event of bankruptcy, dissolution is impossible, theoretically. When a hospital is a corporation, often acts as a private corporation, though is still owned by the public sector. The responsibility mechanism is carried out by the board of directors, which includes financial performance objectives such as profit or return on assets or equity, dividends, and reinvestment policies. These objectives usually require sufficient commercial returns. In a corporate hospital, managers (board members) who usually have complete responsibility [9]. In this regard, according to the above, this study is a systematic review of identifying types of corporate hospitals and introduces necessary components for the corporate public hospitals.

## Methodology

### Databases and search strategies

In this systematic review, in order to achieve scientific documentation and evidence related to corporatization of public hospitals, databases such as Science Direct, Scopus, ProQuest, PubMed, springer and Google scholar and along with some Iranian databases such as SID and Magiran were investigated. The key words were "Hospital", "Health", "Company", "Enterprise", "Corporation", "Public Company", "Joint-Stock Company", "Trusts", "Government-Owned Company", using the "and" and "or" letters. No time limitation was considered for retrieving studies. Primarily, a study protocol was developed, which consisted of formulating the study question, defining the inclusion and exclusion criteria, and developing a database search strategy. The other stages included retrieving the relevant studies, extracting the relevant data, appraising the retrieved studies, synthesizing the data, and creating a report. The reference lists of the retrieved articles were scanned for any relevant papers that were not found in the first search. Furthermore, hand searches were performed for identifying additional studies and completing the search coverage.

### Inclusion and exclusion criteria

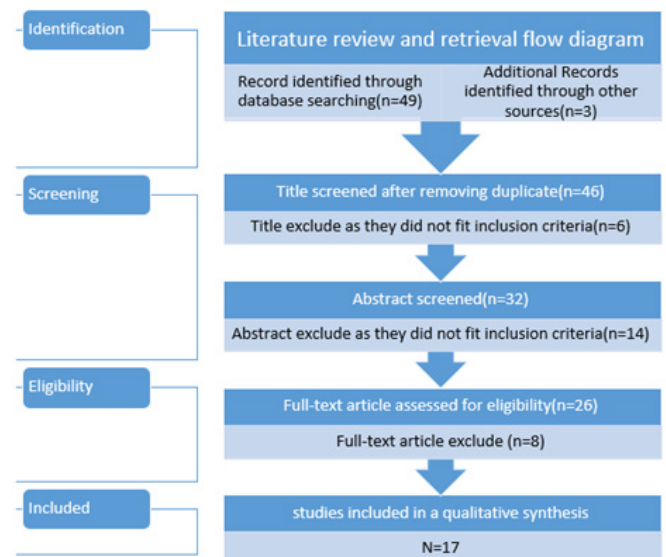
Inclusion criteria were studies published in English or Persian languages; conducted by applying qualitative, quantitative, or mixed-method designs. Also, those articles without full text and/or those that were duplicates were excluded.

### Methods of screening and selection criteria

We import selected papers into the Endnote software and delete duplicate papers. All papers were qualitatively evaluated by two researchers. Both researchers initially analyzed the titles for relevance. A consensus agreement was necessary for each publication to be documented on the review board. The relevance and role in developing the concept of the study were the main criteria for assessing the quality of the articles in the process of interpretive review of the articles [14]. Table 1 shows the quality appraisal checklist. Furthermore, the data associated with each of the selected papers were summarized in a form. Figure 1 explains the screening process of retrieved papers.

**Table 1:** Criteria for quality appraisal of the papers.

Row	Question
1	Are the research goals and objectives clearly specified?
2	Is the research design clearly specified and is it suitable for achieving research goals?
3	Is the research process clearly explained?
4	Are enough data displayed to support research interpretations and conclusions?
5	Is the analysis method appropriate and adequately explained?



**Figure 1:** Screening process of retrieved papers.

### Data analysis

In this study, content analysis was used to summarize the data. So we first read the texts and re-read them to get a sense of the whole idea and general understanding of what the authors

were talked about. Then we divided each texts into smaller parts meaningful units, and these units were coded and then classified into categories. We went further and created themes for reporting the results. The coding was done by 2 coders, and classes were identified based on the knowledge of researchers involved in the coding. This process was repeated until an agreement about the richness of classes was achieved. The grouping of the codes was accomplished with respect to the World Bank model variables as following:

- A. Ownership: public, semi-public or private
- B. Structure: board of directors, supervisory board or mix of them
- C. Decision right: includes making decision regarding financial management, procurement, residual claimant, and human resources management
- D. Market exposure: earn revenue under market conditions rather than rely on government funding
- E. Responsiveness: Responsiveness to board of directors, Independent audit, Publishing results in a transparent and understandable way, Formation of one or more quality committees
- F. Social functions: Includes identification of goods or public services and Private non-drafted package of public goods, transfer of public goods to governments, allocation of subsidies to demand side, development of insurance and so on.

The coding was accomplished using MAXQDA Version 10 software.

### Finding

In a systematic review, referring to variety of companies which their definitions are given as in Table 2. The achievements demonstrated that the under studying countries were from Europe (6 countries), Asia (4 countries), Oceania (one country), and Africa (one country), Which include Czech Republic, Estonia, Spain, Portugal, Sweden, England, New Zealand, Tunisia, Singapore, Malaysia, Lebanon and Iran. (Table 2) As Table 3 presents, seven countries have Republic political system, and the other five countries have constitutional monarchies. Health system of five countries is National Health System (NHS), Social Security System in five countries, Health Insurance Fund in one country, and one country has Compulsory Savings Fund system. Stewardship of health sector is defined in Ministry of Health level in all countries, except the Czech Republic. In Czech Republic, local authorities and in some cases the central government is responsible. Hospital corporatization was done under the name of Healthcare companies in six countries, Foundation or charitable foundations in four countries, joint stock companies in two countries, Limited Liability companies in two countries, Holding companies in two countries, and Trust in one country. Additional information about countries, and also their hospital corporatizations types are given in Table 3.

As shown in Table 4, reforms in corporate hospitals, explained as follow.

**Table 2:** variety of companies and definitions.

Type	Definition	References
Company	An organization that sells goods or services in order to make money	Cambridge Dictionary
Corporation	A large company or group of companies authorized to act as a single entity and recognized as such in law.	Oxford Dictionary
Enterprise	A company or business that is often small	Collins Dictionary
Joint-Stock Company	A company that is owned and controlled by shareholders, with shares that are traded on a stock market	Cambridge Dictionary
Limited Liability Company	A type of company in which the owners have specific tax advantages and no personal financial risk if the company should fail	Cambridge Dictionary
Trusts	A kind of company that is generally nonprofit. Part of the British national health system.	UK Gov
Holding	A company whose main purpose is to control another company or companies through owning shares in it or them	Cambridge Dictionary
Benevolent Corporation	A company established for benevolent purposes, not for commercial purposes	USLegal

**Table 3:** Features of countries and the types of corporatization hospital.

Row	Country	Political System	Health System	Health Stewardship	Corporatization Models	References
1	Czech Republic	Parliamentary Republic	Social Security System	District Authority (in some cases, Central Government)	1. Limited Liability Companies 2. Joint-Stock Companies 3. Benevolent corporations	1- Pirozek & et al, 2015 2- Ditzel & et al, 2006 3- Saltman, Durán, & Dubois, 2012
2	Estonia	Parliamentary Republic	Health Insurance Fund (under the private sector law)	Ministry of Social Affair and Related Organization	1. Joint-Stock Companies 2. Foundations	Saltman, Durán, & Dubois, 2012

3	Spain	Constitutional Monarchy	National Health system	Ministry of Health and Affair Customer	1. Public Healthcare Companies 2. Public Healthcare Foundations 3.Foundation	Saltman, Durán, & Dubois, 2012
4	Portugal	Parliamentary Republic	1.National Health System 2.Special insurance plan (for some professions, compulsory for employees) 3. Private health insurance	Ministry of Health	1. Public Enterprise Entity Hospitals 2.Public-Private Partnership Hospitals	1-Ferreira et al. [11] 2- Moreira et al. [16] 3- Saltman, Durán, & Dubois, 2012
5	Sweden	Constitutional Monarchy	National Health System	Ministry of Health and Social Welfare	Limited Liability Companies	Aidemark et al. [12]
6	England	Constitutional Monarchy	National Health System	Ministry of Health and Social Care	1- Self-Governing Trusts 2-Foundation Trusts	1- Howell, Bronwyn,2004 2-Saltman, Durán, & Dubois, 2012 3- Preker et al. [9] 4- GAOJIE, 2015
7	New Zealand	Constitutional Monarchy	National Health System	Ministry of Health and Regional Health Department	Crown Health Enterprises	1- Ditzel& et al,2006 2- Bronwyn,2004 3- Jacobs & Nilakant, 1996
8	Tunisia	Republic	Social Security System	Ministry of Public Health	Government-owned Health Corporations	1- Preker & Harding, 2009 2- De Geyndt, 2017
9	Singapore	Republic	Compulsory Savings Fund or Central Prospective Fund	Ministry of Health	Health Corporation of Singapore	1- Ramesh et al. [18] 2- Preker & Harding, 2009
10	Malaysia	Monarchy	1. Social Security System 2. Employees' precautionary fund	Ministry of Health	Public Holding Company	1- Preker & Harding, 2009 2- De Geyndt, 2017
11	Lebanon	Parliamentary system	Social Security System	Ministry of Health	Public Health Enterprise	Eid et al. [10]
12	Iran	Islamic Republic	1. Social Security System 2.Health insurance (government employees and self-employed)	Ministry of Health and Medical Education	Holding Health Company	1-Quarterly Journal of Board of Trustees of Currency Savings in Patient Treatment, 2017 2-Ministry of Health and Medical Education, 2018

**Table 4:** Reforms of corporate public hospitals.

Country	Ownership	Structure	Financial Management	Procurement	Residual Claimant
Czech Republic	Hospital as a Joint-stock company owned by local government	Supervisory board is designated by regional government for hospital board of directors	1. Revenue based on insurance funds payment 2. Cash Flow Management and Payment Providers 3. Regional government invest with own resources and loans	-	Regional government may allow for residual claimant
Estonia	Hospital as a joint-stock company, owned by the national government and municipal as shareholder;	1. Hospital has board of supervisors and board of directors. Supervisory board is appointed by shareholders, and board of directors is appointed by supervisory board (double-headed government structure) 2. The company's activities were under commercial law	1. Revenue based on insurance fund contract; 2. pharmaceutical studies are another source of revenue 3. Financing through EU funds and loans 4. Pay dividends to shareholders	Purchase of expensive, high-volume equipment is done centrally	Hospital right for residual claimant

Spain	Hospital as public healthcare company;	1. Hospital has supervisory board that appointed by district health secretary.2. Company's activities were under commercial law	1. Hospital budget set by regional assembly. 2. Financing and budgeting management according to general budget law 3. Investments under public procurement law	Resource management and contract for goods in accordance with the Public Procurement Law	Hospital do not have financial independence
Portugal	Public Enterprise Entity Hospitals was established by Ministries of Health and Finance	Board of directors is appointed by Ministry of Health and Finance Ministry (may include a non-executive member proposed by municipality).	1. 80% of the revenue is from state budget. Other sources of revenue are from the NHS, private insurance, and charitable contributions (in particular for purchasing equipment and products). 2. Restrictions on financing (with the permission of the responsible ministries and the regional organization), 3. Hospital has right to invest, up to 2% of their revenue	-	Residual claimant from insurance payments
Sweden	Hospital as a Limited Liability Company, owned by the Skåne Region (Health Services Provider in southern Sweden);	1. Majority political party has representative on board of directors, but majority of members are private (board of directors with business orientation without the owner's involvement) 2. City Council is signed partnership agreement with companies for a 5year.	1. Rules are centrally determined for negotiations, prices, return on investment, and productivity goals. 2. Hospitals are not business entities (for profit) nor charitable foundations (not for profit). They generate financial balance (without profit).	1. Contract with buyers without budget constraints during the first year. 2. Hospitals are paid for something that agreed before.	Hospital right for residual claimant
England	Hospital was registered as a NHS Trust Foundation (non-profit corporation, Foundation Trusts)	1. Trust has board of directors that selected by members (patient, employee and people). 2. Trust's activities were under the commercial law. 3. Board of directors has a very high authority and is accountable for decisions (almost without political interference).	1. Revenue from the buyer of service and sale of assets 2. Investment through loans and credit facilities of Trusts 3. large investments through public-private partnership (currently performed by Ministry of Health) 4. Trustee board has full freedom to invest. 5. Tariffs determine based on cost (current costs, depreciation costs and return on capital)	-	Trust right for residual claimant
New Zealand	Crown Health Enterprises was established by Regional Board Hospitals	1. Hospital has board of directors that appointed by Ministry of Health and Region. 2. The company's activities were under the law of New Zealand companies.	1. Revenue based on contracts, patient payments and grants 2. Capital financing through equity, loans from the government (based on population) and private sector 3. Financial activities under Fund's Financing and Performance Fund, district health department	Purchase contracts for 90% of revenue	-
Tunisia	Training hospitals transfer to healthcare companies	1. Hospital has board of directors, 16 persons (9 persons appointed by Ministry of Health and 7 persons selected among the staff). The chairman of board is appointed by the Minister of Health. 2. multi-year performance contracts between Ministry of Health and Executive Directors 3. The company's activities were under commercial law	1. Authority to set up operational budget, investment, financing plan and receive the loan by the board of directors 2. Auctions up to 100,000 dinars with permission from the board	-	Residual claimant with the permission of board

Singapore	Establishment of the Health Corporation of Singapore (Holding) and putting university hospital company under its supervision	1. Holding has a board of directors including government officials and all heads of company's subsidiary 2. Company's activities were under commercial law	1 Right to set tariffs for some services 2. Optional payment system for physician in any hospital	-	Hospital right for residual claimant
Malaysia	Establishing public holding company (one of the hospitals as its corporation, National Heart Hospital)	1. Company has board of directors (9 persons; including representatives of Ministry of Health, Ministry of Finance, private sector, 3 persons; representatives of hospital), that appointed by Ministry of Finance with proposal of Ministry of Health, also CEO (Chief Executive Officer). 2. Establishing management, audit, and professional advisory committees	1. Authorization to use financial resources 2. Determine tariff by the Ministry of Finance in consultation with the Ministry of Health	Authorization to purchase medical equipment and supplies	Hospital right for residual claimant
Lebanon	Establishing public health enterprise or public hospital board since 1996	1. Board of directors is appointed by Council of Ministers on the recommendation of Ministry of Health 2. Board members should expertise in medical, business, financial, law or public health.	1. Revenue includes transfer of central government; operating costs and other resources. 2. financial and managerial independence	-	Residues claimant remains for Ministry of Health
Iran	Establishing a non-profit company (Moheb Health Company) affiliated with the Ministry of Health.	1. Hospital has board of directors that appointed by the Ministry of Health. 2. The company's activities were under commercial law	1. Setting the tariffs as public, private or semi-private basis 2. Authorization for physician' payment system 3. Investing from revenue and charity	-	Hospital right for residual claimant

## Ownership

The ownership of corporate hospitals is belonging to national governments in 8 countries (Spain, Portugal, Tunisia, United Kingdom, Singapore, Malaysia, Lebanon, and Iran), is belonging to local and regional governments in 3 countries (Czech Republic, New Zealand and Sweden). In Estonia, in addition to government municipality is shareholder of hospitals, too.

## Structure

In 7 countries hospitals are administrated as joint stock company (Czech Republic, Estonia, Spain, Portugal, Tunisia, Malaysia and Lebanon), as Holding in Singapore and Iran, as a Limited Liability Company in Sweden, and as Trust in England. Hospital has board of directors in 7 countries (Portugal, Tunisia, New Zealand, England, Singapore, Malaysia, and Iran), which most of them were selected by Ministry of Health. In Lebanon, board of directors is appointed by the Council of Ministers by Ministry of Health recommendation. In Portugal and Malaysia, members are appointed by the Ministry of Finance, in addition to Ministry of Health. In Tunisia, members were selected amongst the employee, in New Zealand, by Region government, and in Sweden, majority political party have representative in board of directors, but the majority of

the members are private. Corporations are administrated by the Supervisory Board that appointed by the Minister of Health, in 2 countries of Spain and Estonia, In the Czech Republic, companies are administrated by board of supervisors and the board of directors. Supervisory board is appointed by shareholders, and board of directors appointed by board of supervisors. Tunisia has established a medical committee, in addition to board of directors. The corporation's activities are under government supervision in 7 countries (Czech Republic, Sweden, Portugal, the United Kingdom, Singapore, Malaysia, and Lebanon), and also are under commercial law in 5 countries (Estonia, Spain, Tunisia, New Zealand and Iran)

## Financial management

The main source of revenue is based on insurance contracts in 6 countries (Czech Republic, Estonia, Sweden, Singapore, Malaysia and Iran). It is based on state budget in 3 countries (Spain, New Zealand and Tunisia). In Lebanon, in addition to the state budget, financing was done from the sale of services. In Spain, the budget is set up by the regional assembly, by government in New Zealand, and by board of directors in Tunisia. In Portugal, 80% of revenue is from state budget, and in England, is achieved from buyer of services and assets sale. Hospitals have right for investments in 6 countries (Estonia, Tunisia, England, Singapore, Malaysia, and

Iran). In Czech Republic, regional government invest through own resources and loans. In Spain, Investments was done under public procurement law, and in New Zealand based on a fixed budget. In Portugal, hospital has right to invest, up to 2% of their revenue. In England investment was done through loans and credit facilities of

Trusts, and large investments were done through public-private partnership (PPP Model). In Sweden, rules are centrally determined for negotiations, prices, return on investment, and productivity goals (Table 5).

**Table 5:** Reforms of corporate public hospitals.

Country	Human Resource Management	Market Exposure	Responsiveness	Social Functions
Czech Republic	1. Change in professional structure is done hardly, but proposal is possible. 2. Most employees are given salaries, some of them are self-employed.	Negotiation for service packages determining with insurance fund.	1. Medium Responsiveness 2. Meetings are not public. 3. Obligation to report as commercial law	-
Estonia	1. Management can affect professional and internal structures. 2. Decisions are given to clinical units. 3. Most of the employees are contractors and some of them are self-employed.	1. Basic services are decided by the Ministry of Social Affairs. 2. New service need to approved by government	1. Obligation to publish annual reports 2. Meetings are not public.	-
Spain	1. Employees under private sector law and also public service or Parliament law 2. New job post must be approved by the Department of Finance and the Regional Office. 3. Specialist are nongovernmental staff.	Service packages determining by Regional Health Authority.	1. Annual inspection by external audit of company, Local Government Audit Office and Andalusian Parliament, 2. Meetings are not public. 3. No obligation to report	-
Portugal	1. Authority to contract with human resources (employee or labor contract) 2. Contract with private doctors for specific services.	1. Authority to define level of clinical services 3. Definition of services with permission from Ministry of Health (consistent with the hospital referral network)	1. Response to Ministry of Health and Ministry of Finance (monthly and annual reports about clinical and financial performance). 2. Meetings are not public. 3. Must be used from accounting program of Ministry of Health.	-
Sweden	There is no competition between the hospitals for the contract with the buyer of service. There is only competition for employees.	Hospitals compete each other for service delivery.	Remove indirect control of citizens (accountability) and replace with increased administrative control (management)	-
England	1. Authority to decide for human resources 2. Most employees are given salaries. Contract staff and part-time employees are also recruited. 3. Doctors are administered by the Board of Directors. Hospital manager only manages other employees.	1. Permission for defined service delivery. For higher level services, requires extensive consultation. 2. Agree with medical groups to reduce prices	1. Accountability to local authorities, parliament and NHS 2. There is no obligation to hold public meetings, except for some basic trusts	Free service delivery regarding Trust needs and capabilities
New Zealand	1. Employees are employed in individual or collective contracts in accordance with labor laws. 2. Human resources include hospital staff and self-employed or hired by others.	1. Applies competition law. 2. Increase competition in long-term care and community 3. Provide 24-hour acute care 4. Provide business plan (strategic goals, plans and budget forecasts)	1. responsive to regional and district health authorities (Department of Finance and Performance) and the Ministry of Health 2. Board of directors has ultimate responsibility for decision making.	-
Tunisia	1. No authority to decide for human resources 2. Authority to determine the number and level of organizational posts 3. Appointment of doctors, pharmacists and dentists as hospital chairman 4. Formation of medical committee (management, department heads and representatives of employee groups) 5. Authority to apply disciplinary procedures to staff, exception of medical staff	1. Competition for medical staff attract. 2. Flexibility to employ qualified managers 3. Authority to open and close wards (with approval of Ministry of Health)	1. Establishing comparative assessment system for hospitals 2. Medical committee responsive to requests and to Minister of Health or Board of Directors	No reform was taken for social functions

Singapore	1.Extensive authority for employees recruitment, payment and remuneration conditions 2. Authority for employees composition	Increasing services value and costs recovering (these increases accompanied by reduction in government subsidies that increased supply side significantly)	Corporate management is only responsive to board directors for performance.	1. Continuous internal cross-subsidy system 2. subsidies from Ministry of Finance for poorer
Malaysia	1. Ministry of Finance must approve change for employees' salaries or payment of bonds and shares, and any fees or expenses 2. Staff a) can stay in hospital in condition of resigning from the government and early retirement b) stay in hospital for two years and use benefits of the state; and c) resigning from hospital and join to government	1. Full authority to deliver what services, to who and how 2. Monopoly authority in some markets, such as cardiac transplantation, pediatric cardiac care and transmissible diseases 3. Authority to attract specialists 4. Implementing new plan and strategies in the wards by specialists with relative ease	Indirectly through board directors	Cross subsidies for poor patients
Lebanon	Applicants for hospital jobs should be ranked according to grade in exam. Board has authority to arrange exam.	1. Hospitals authority to earning revenue from services delivery, that replacing with Ministry of Health budget gradually. 2. Hospital increases revenue sources through purchase of private and, in part, patients covered by Ministry of Health.	1. Board director is responsive. 2. Ministry of Health shall monitor day-to-day operations of hospital through the main member and voter of board, representative of Ministry.	Getting subsidies from Ministry of Finance for the poor
Iran	1- Human resources recruiting under private labor law 2. Authority for employees composition.	1. Competition for recruiting medical personnel 2. Authority to employ qualified managers 3. Adding wards, equipment and services (approved by Ministry of Health)	Hospital board is responsive to holding and the ministry of health	-

## Procurement

Procurement is expressed in 5 countries (Estonia, Spain, Sweden, New Zealand, and Malaysia). In Sweden purchase was done without budget constraints during the first year. In New Zealand, purchase contracts were done for 90% of revenues. In Malaysia, they have authorization to purchase medical equipment and supplies. In Estonia, purchase of expensive, high-volume Equipment is done centrally. In Spain resource and contract management was done in accordance with the Public Procurement Law.

## Residual claimant

In 7 countries, hospitals have right for residual claimant (Estonia, Tunisia, England, Sweden, Singapore, Malaysia, and Iran). In Czech Republic, regional government may authorize the hospital for residual claimant. In Spain, hospital is not able to maintain residual claimant. In Portugal, residual claimant was done from insurance payments, and in Lebanon, Ministry of Health has authority for residual claimant.

## Human resource management

Human resources in seven countries are combination of public and private sector employees (Czech Republic, Estonia, Portugal, New Zealand, England, Sweden and Malaysia). In these countries, changes in employee salaries and benefits must be approving by

Ministry of Health or the Ministry of Finance. The staff employed in corporate hospitals in the three countries of Singapore, Lebanon, and Iran are completely contractual and salaries and benefits in accordance with private-sector labor law, and they are complete authority to decide on their arrangement. In Spain employees are under the law of the private sector, and also public service or Parliament law. In Tunisia there is no authority for deciding about human resources, but they have authority for determining number and level of organizational posts. Hospital has authority to apply disciplinary procedures for staff, except the medical staff. In the England, physicians are administered by board of directors. Hospital director only manages other employees. In Portugal, private physicians are contracted for special services. In Tunisia, physicians, pharmacists, and dentists are working as chairman in hospital.

## Market exposure

Service packages determining was done based on Ministry of Health or the Regional Health decision in 6 countries (Spain, Portugal, Sweden, Tunisia, England, Singapore, Lebanon, and Iran). In Portugal, corporate hospitals are independent in determining package of services. Service package is determined by negotiating with the insurance fund in Czech Republic. In Estonia, determine of service packages is decided by Ministry of Social Affairs, and new services need to be approved by government. In New Zealand,

although, competition law applies, but there is a monopoly of geography for acute care over 24 hours. Malaysia has the full authority to deliver every services, to who and how. There is a competition between Tunisia and Iran for attracting medical personnel, and they have authority to employ qualified managers, as well as having authority to open and close wards (with approval of health department). In Malaysia, there are Monopoly authorities in some markets, like cardiac transplantation, pediatric cardiac care, and transmissible diseases. They are also main authority to employ specialists, and then specialists can implement new programs and strategies for clinical departments. In England, Trusts can agree with medical groups to reduce service tariffs. In Sweden, hospitals compete with each other to increase service delivery.

### Responsiveness

In all countries, board of directors is responsive to public supervision entities, to Ministry of Health, particularly, for its responsibilities and functions. In 3 countries of Singapore, Malaysia, and Iran, in addition to being responsive to public supervision entities, they are also responsive to their holding. In New Zealand, there are 3 public supervision entities (District and Regional Health Authorities, and Ministry of Health), and in England and Spain there are two public supervision entities (local government and parliament).

### Social functions

Corporations are doing social responsibility through cross subsidies for vulnerable groups in three countries of Singapore, Malaysia, and Iran. In England Free services are delivering regarding to Trust needs and capabilities. In other countries, there is no mention for social function, according to studies.

### Discussion

As mentioned above, each country has implemented a specific type of corporation due to its environmental conditions and infrastructure of health system, including healthcare companies, Foundation or charitable foundations, joint stock companies, limited liability companies, holding companies, and trusts. Some variables are incomplete and some are completely implemented, in each country. In the under study countries, ownership of all hospitals remains for government after reforms and restructuring. Preker et al. [9], according to their successful experiences in hospital reform, stated in England that there is no need to transfer hospitals ownership to private sector, and it is possible to merely delegate affairs [9]. But in the Pirozek et al. study (2015) it was demonstrated that successful management in form of economic results adjusted only with the private type of ownership. Size of the hospital, size of supervisory board, and senior management education did not have a reliable effect on hospital management efficiency [3]. In countries with corporatization hospitals, that their activities were under commercial law, it can be said priority is to increase efficiency and cost recovery. This is proved in Ferreira et al. [11] study, and they stated that corporatization hospitals have the highest efficiency levels [11].

A study by Rego et al. [15] showed that hospitals efficiency in Portugal has increased since the time of beginning corporatization [15]. Also, Moreira [16] study pointed out that corporate hospitals are going to become more efficient [16]. Aidemark et al. [12] showed in Sweden, corporatization has improved the production and financing [12]. But in the Braithwaite et al. [17] study stated, most of the debate about the privatization and corporatization of public hospitals is ideological rather than evidence-based [17]. The study argues that advocate of privatization or corporatization claim for increased efficiency, better service quality, and opponents believe that privatization leads to negative consequences such as reducing justice, endangering efficiency and reducing the quality of services. Generally, researchers concluded that evidence was often weak and contradictory, and stated these results depended on motivator of assessor.

In most countries, board of directors has been selected to manage hospital affairs. In all of them Ministry of Health, with direct or indirect choice of members, intends to monitor hospitals performances after reform. Also in some countries, finance ministry has been involved in selection of board members, which led to control of revenue and expenditure. In this regard, Ramesh [18] study emphasizes management independence for hospital reform. He stated independence should be accompanied by strong government stewardship, continuous monitoring, and also coordination [18]. In many countries, corporate hospitals have public and private sector employees. Salaries and benefits of private sector employees are under labor law, and management can have full authority over them.

Also, in public sector employees (except in the field of salaries and benefits), management have authority to incentives employees and deliver quality services and also more quantity. Hellgren et al. [19] concluded physicians who are employee in private sector and corporate hospitals, and change-oriented, respectively, and they are more productive at private hospitals compared to physicians in general hospitals [19]. Also, there are organizational condition, justice, and trust in private and corporate hospitals compared to general hospitals. They conclude in this way that physicians of private and corporate hospitals have more positive experiences about their working conditions.

### Conclusion

Corporatization has increased autonomy of hospitals in terms of financial, human, physical, and equipment resources. Increasing independence leads to responsiveness of managers. One goals of corporatization have been increase efficiency of hospitals, which most countries must achieve it. Hospitals should consider social functions along with efficiency increasing.

It can be said health system has complexity and special issues in each country that cannot prescribe a global version for reforming it. But with regard to the above, consideration of the following variables is essential in the public hospitals corporatization.

#### A. Ownership

- B. Structure
- C. Right to make decisions on Financial Management
- D. Right to make decisions on Procurement
- E. Right to make decisions on Residual Claimant
- F. Right to make decisions on Human Resource Management (HRM)
- G. Market exposure
- H. Responsiveness
- I. Social Functions

### Limitation

This study focus was just on English and Persian texts, as the researchers were fluent in both these languages; English as an international scientific language and Persian as the first language of the researchers' team members, so other studies in other languages have not been considered in the analysis.

### Declaration

#### Ethics approval and consent to participate

The study was approved by the Ethical Committee in Faculty of Management, South Tehran Branch, Islamic Azad University, Tehran, Iran.

#### Consent for publication

Not applicable.

#### Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

#### Authors' contributions

MR: Conception and study design, data collection, data analysis and drafting the manuscript. IMA Conception and design study design, data collection, and data analysis. MA: Conception and design, data interpretation, critical review. MJ: Study design, data interpretation. All authors read and approved the final manuscript.

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