

# A Comparative study on organizational positions of health management and information technology department of hospitals and proposing a model for Iran

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## Original Article

### Abstract

**Introduction:** Human resources in hospitals are one of the most important factors that play a key role in the information management plans success. This study was carried out with the aims of proposing an organizational jobs and positions model for health management and information technology department in Iranian hospitals.

**Methods:** Our descriptive study was completed in two phases. In the first phase, the organizational positions of the mentioned department were extracted from the selected countries and in the second phase a total of 22 unique organizational positions were sent to 36 experts to ask their opinions. Checklists and the researcher's questionnaire were tools used to collect information in the first and second phases, respectively. After collecting questionnaires, their agreement and disagreement with various dimensions of the suggested model was appraised using descriptive statistical indicators and SPSS Software.

**Results:** The organizational positions related to management department are health information manager and health information senior manager. The organizational position of management and IT is IT manager, statistician, Health information management expert, Information storage and retrieval expert, information analyzer, health informatics and IT expert, IT expert in-charge, and clinical coder.

**Conclusion:** Lack of an organizational structure proper with a department may be problematic for employees of that department who intend to fulfill their jobs. Since in Iran Medical Records departments work mostly based on manual activities and information technology has been marginalized, it is stressed that information management and IT departments perform in concert information related affairs of hospitals, which helps them to achieve their main objectives.

**Key words:** Organization - Health Information - Hospital

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## Introduction:

Hospitals highly rely on information and use them in different issues such as improving quality of healthcare, supporting repayment process, supporting organization's management, training healthcare specialists and patients, conducting legal procedures, examining prevalence and occurrence rate of diseases and mortality rate, getting information about social health problems, policy making and extending healthcare services. Therefore, the senior managers of hospitals need to know that information resources should be managed as well. Capabilities and capacities of information systems and information management can be imported into the hospitals' business strategies only through strong fields of management and information technology (1,2). Thus, all healthcare related organizations need a highly organized department to conduct information management related activities (3,4).

High-quality manpower is one of the most important aspects of organizing departments and organizations (5). Organizing and training an efficient human group paves the way for promoting and meeting organizational objectives very effectively (6-8). Therefore, conducting information manager activities in hospitals depends on a proper organizational structure for such activities, proper staff, organizational positions and specialties proper with certain the job descriptions. The available studies indicated that the need of healthcare organizations to well-trained staff and employees to perform health management information technology job is increasing. According to the Us Bureau of Labor Statistics estimation, presently a total of 170000 people are working in the health information management (HIM) area and it will reach to 200,000 people in 2016, which shows a 17.8-percent growth in the required forces (9).

In the same view, taking advantage of IT in health area has been developed in certain issues such as solving clinical problems, treatment, education and researches (1). Such technologies have changed the methods of collecting, managing and accessing health information across the world and hence new jobs in the developed countries have been developed for example in health information technology area or some fundamental developments have been reported on HIM related jobs (10,11).

In this regard, Iran has experienced some broad developments, in terms of educational level, in academic majors related to HIM and health information technology; however, organizational structure and occupations of this area are still managed in the framework of traditional activities and roles defined by the Medical Records sector. Previous studies in Iran have suggested that information management related activities are often conducted by medical records departments with traditional structure and procedures and the necessity of changes and modifications is felt there (4). In this regard, modification of hospitals' organizational structure was approved in the 48<sup>th</sup> gathering of Iranian Medical Universities Chairmen (held in July 2003). In fact, in the approved model, the establishment of an Information Technology Department with defined structure and duties has been emphasized, but it seems that its designing has been completed without asking opinions of the relevant experts (12).

Sheikh Taheri et al. started a study in order to design a proper organizational structure for HIM activities in the Iranian hospitals. In this study, a model for hospitals' health information management area, including IT and HIM departments, was started to be controlled by a unit management, recognized by the participant experts. In this model, field of activities and duties of HIM department were defined, but the required organizational jobs in the new structure and also their duties and on the other hand employees' field of activity, positions and duties of IT were not proposed (13). Information technology developments and using IT in healthcare, education and researches have been accompanied with an ever-increasing emphasis on the necessity of developing a certain organizational structure and designing or improving the related organizational positions and jobs (13-15). On the other hand, implementing the suggested model in Iran is impossible without determining and defining the required jobs. As a result, planning a study to complete the previous one with aim of proposing a model for the related organizational jobs on health management and information technology departments in the Iranian hospitals seems necessary.

## Methods:

As a descriptive study, this research was completed in two phases. In the first phase, the related organizational positions in hospitals of the United States, Australia, UK, Canada and Iran were studied in terms of analyzing the available literature. The author's own checklist, whose validity has been confirmed by three specialists of this area, was used in this phase. In the second phase, initially a model was proposed for the organizational positions in HIM departments of the Iranian hospitals and then it was analyzed using Delphi process. In this phase a questionnaire, which has been designed and distributed regarding the suggested model's content, was used. The mentioned questionnaire included questions about people's demographic data and a total of 22 organizational positions, out of 59 organizational positions that have been extracted in the first phase, were selected. It is necessary to note that, the main criterion for selecting organizational positions for the suggested model was that they should be available at least in two countries. Three HIM experts were asked to examine the questionnaire's content reliability. Its validity also was confirmed by Cronbach's alpha (0.8). Our population in this study was composed of experts and faculty members of Medical Informatics, HIM, Health Information Technology majors, who were active in Tehran hospitals, Iranian universities of medical sciences and Information Technology Department of Ministry of Health and Medical Education. In this study, questionnaires were sent to 40 experts and specialists and finally 36 people of this list participated in this study. The inclusion criterion was working at least three consecutive years in HIM area. The questionnaire was sent for asking opinion, agreement, disagreement and/or suggesting a new position for the people studied in this project. After collecting the completed questionnaires, their agreement and disagreement with the suggested positions was measured using descriptive statistical indicators (both absolute and relative frequencies of agreements and disagreements) by SPSS software. A suggestion was considered in the final model for items on which the agreement rate was more than 75%; items on which the agreement level varied between

50% and 75% were resent to the experts one more time to ask their opinions; and items on which the agreement rate was less than 50% were removed. In the second stage of Delphi process, for approving an item at least agreement of 75% of experts was need. In this stage, items with agreement of less than 75% of experts were removed from the final model.

## Results:

The results of the study showed that in the first phase of the research, a total of 59 organizational positions were extracted from the available literature, out of which 27, 5, 8, 22, and 8 positions belonged to the United States, Canada, Australia, UK and Iran, respectively. Key positions in most countries are HIM Director, Information Senior Manager, Clinical Coder and Data Quality Manager. The United States and Canada have the highest and lowest organizational positions in HIM related departments.

The results gained from the second phase of the study are summarized in the following tables. Table 1 summarizes demographic information of 36 experts participated in this study (in both stages of Delphi process).

**Table 1. Frequency of demographic information of people participated in this study (first and second stages of Delphi process)**

	No.	Percentage	
Education level	M.S. owners	27	75
	Ph.D. owners and Ph.D. students	9	25
Academic major	Medical records	7	19.4
	HIM	24	66.7
	Medical Informatics	5	13.9
Occupation	Faculty member	26	72.2
	Non faculty member	10	27.8

Table 1 implies that 75 of participants had M.S. degree and the majority of them (72.2%) were faculty members. Table 2 summarizes the data collected from the first stage of Delphi process.

Table 4 (second stage of Delphi process) shows that most (more than 75%) participants of the study were agreed with the suggested organizational positions. Thus, these titles need to be changed in the final model.

**Table 2. Frequency of participants answers to organizational positions of HIM section (first Delphi process)**

Organizational Position	Frequency	Agreed		Disagreed		Abstention	
		No.	Percentage	No.	Percentage	No.	Percentage
HIM Director		34	94.4	2	5.6	-	-
Clinical coder		28	77.8	7	19.4	1	2.8
Hospital's data resources manager		18	50	12	33.3	6	16.7
Informational quality expert		27	75	5	13.9	4	11.1
Information Confidentiality and Security Expert		25	69.4	7	19.4	4	11.1
Chief information officer (CIO)		28	77.8	5	13.9	3	8.3
IT trainer		14	38.9	20	55.6	2	5.6
Informational storage and retrieval expert		31	86.1	5	13.9	-	-
Information analyzer		24	66.7	7	19.4	5	13.9
Service quality improving coordinator		13	36.1	16	44.4	7	19.4
Health informatics and IT specialist		28	77.8	5	13.9	3	8.3
Health information expert		29	80.6	5	13.9	2	5.6
Receptionist and information in-charge		22	61.1	11	30.6	3	8.3
Statistician		29	80.6	5	13.9	2	5.6
IT in-charge expert		26	72.2	7	19.4	3	8.3
HIM expert		31	86.1	3	8.3	2	5.6
Network manager		18	50	12	33.3	6	16.7
Information systems analyzer		20	55.6	13	36.1	3	8.3
Clinical information dissemination expert		20	55.6	13	36.1	3	8.3
Knowledge manager		12	33.3	17	47.2	7	19.4
ICT infrastructure manager		14	38.9	17	47.2	5	13.9
Web designer		15	41.7	16	44.4	5	13.9

## Conclusion:

The results of this study suggested that above-mentioned positions are available in most countries. The outstanding example for this is the organizational position of "HIM Manager" which is available in the United States, Australia, and Canada. Regarding the results, in Iran, 94.4% of participants were agreed with this position, but its title was changed to Health Management and Information Technology Manager and was considered in the final model as a suggestion. Similarly, the organizational position of "clinical coder", whose job is categorizing diseases, is available in the selected countries and according to our results 75% of participants were agreed with this organizational position in health IT sections of the Iranian hospitals. In contrast, some organizational positions such as data disclosure manager, confidentiality director and information security manager are available in the selected counties, but they did not get the sufficient scores in our inventory and were removed from the final model. "Information Quality Export" position is available in the selected countries and after the second Delphi process was recognized by the final model under title of Information Quality Manager.

Some organizational positions are exclusively available in a single country such as APC and DRG which are only available in the United States; while duties of such positions in UK, Australia and Iran are fulfilled by the Clinical Coder and In Canada by Information Analyzer. Some of organizational positions failed to gain the quorum after two stages of Delphi process. They were: data resources director, web designer, knowledge manager, network manager, receptionist and information in-charge, patients' discharge affairs in-charge, service quality improvement coordinator, IT trainer, clinical information dissemination expert, ICT infrastructure manager, and information system analyzer which were finally removed from the suggested model. It seems that some activities of the mentioned positions can be outsourced or fulfilled by HIS companies, who have contracts with hospitals, hence, it seems that this is the main reason why experts were disagree with some of these organizational positions in HIM area. On the other hand, some of activities can be performed by some other confirmed organizational positions. It seems that it was another reason for why experts disagreed with some positions.

Organizational positions in Iran are very old in contrast to other countries and some of them are not

proper with the duties defined for management and information technology. Presently, there is only medical records sector in Iran with emphasis on manual activities and organizational structure of Health Information Technology has been marginalized. Previous studies have demonstrated this (4,16).

Likewise, since there is not a certain chart in Iran for IT affairs, hospitals have personalized these affairs; for example, in some hospitals IT Department and Medical Records Department perform separately duties of these sectors. However, in another hospital, these two departments may locate at the single place, but their duty descriptions are separated. This lack of a proper organizational structure may make difficult fulfilling their duties for staff and may make them disappointed. Previous studies demonstrated that the developed countries emphasize that medical records and HIM should work together and should be managed by a single department in hospitals (16). Previous studies in Iran also showed that experts agree with implementing such structures in Iran (4). Thus, as the results of this study and opinions of experts represent, it seems better that these two departments are integrated under a single department, Health Management and Information Technology in Iran, like many developed countries. Their duties must be defined exactly based on the new developments. In the developed countries, these two departments usually work together and under supervision of CIO (18). This study made it clear that most experts are agree to add this organizational position to Iranian hospitals. Previous studies showed the similar result (4).

Regarding to the results, finally ten organizational position titles are suggested for Health Management and Information Technology Department of Iranian hospitals:

- Chief Information Officer (CIO)
- Health Information Management Department Manager
- Information Quality Manager
- Statistician
- Health Information Management Expert or Health Information Expert
- Information Storage and Retrieval Expert
- Information Analyzer

- Health Informatics and Information Technology Expert
  - IT Expert
- Clinical coder

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## مطالعه تطبیقی پست‌های سازمانی مرتبط با بخش مدیریت و فناوری اطلاعات سلامت بیمارستان‌ها و ارائه پیشنهاد برای ایران

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### چکیده

**مقدمه:** نیروهای انسانی یکی از مهمترین فاکتورهای موفقیت برنامه های مدیریت اطلاعات در بیمارستان محسوب می‌شود. این مطالعه با هدف ارائه الگوی مشاغل و پست‌های سازمانی بخش مدیریت و فناوری اطلاعات سلامت برای بیمارستان‌های ایران انجام گرفت.

**روش کار:** مطالعه توصیفی فوق در دو مرحله انجام گرفت. مرحله اول ۵۹ پست های سازمانی بخش مذکور از کشورهای منتخب استخراج گردید و در مرحله دوم، تعداد ۲۲ پست‌های سازمانی غیرتکراری برای نظرسنجی در اختیار ۳۶ نفر از صاحب‌نظران قرار گرفت. ابزار جمع‌آوری داده ها در مرحله اول چک لیست و در مرحله دوم پرسشنامه پژوهشگر ساخته بود. پس از جمع‌آوری پرسشنامه‌ها، میزان موافقت یا مخالفت ایشان با ابعاد مختلف الگوی پیشنهادی، با استفاده از شاخص های آمار توصیفی با کمک نرم‌افزار آماری SPSS/اندازه‌گیری شد.

**نتایج:** پست سازمانی پیشنهادی مرتبط با مدیریت بخش شامل: مدیریت اطلاعات سلامت و مدیر ارشد اطلاعات سلامت است. پست سازمانی مرتبط با مدیریت و فناوری اطلاعات سلامت شامل: مدیر کیفیت اطلاعات، کارشناس آمار، کارشناس مدیریت اطلاعات سلامت، کارشناس ذخیره سازی و بازیابی اطلاعات، تحلیل‌گر اطلاعات، کارشناس انفورماتیک و فن‌آوری اطلاعات سلامت، کارشناس مسئول فناوری اطلاعات، کدگذار بالینی می‌باشد.

**نتیجه‌گیری:** عدم ساختار سازمانی متناسب با بخش می‌تواند پرسنل بخش را در اجرای مناسب وظایف‌شان با مشکل مواجه نماید. از آنجا که در ایران بخش مدارک پزشکی با تأکید بر فعالیت‌های دستی وجود دارد و به فناوری اطلاعات توجهی نشده است؛ لذا تأکید می‌شود بخش مدیریت اطلاعات و فناوری اطلاعات به طور هماهنگ، امور اطلاعاتی بیمارستان را انجام دهند تا این دو بخش به اهداف اصلی خود نائل آیند.

**کلیدواژه‌ها:** سازمان - اطلاعات سلامت - بیمارستان

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