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Determining the Performance-based Payment Model with an Educational Approach in Training Hospitals of Iran and Comparing it with the Models Existing in the Healthcare System of Countries Implementing the Scheme

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Abstract

Background & Objective: The purpose of this study is to explain and analytically compare the pay for performance model with the educational approach in educational and treatment centers of Iran.

Materials and Methods: This study was conducted in two ways: structural analysis - drainage and documentary method. The statistical population of the study included all managers, experts, and specialists of pay for performance system in the 6th regional district. The sampling method was purposeful sampling and snowball technique that theoretical saturation of sampling was obtained until 10 persons. Semi-structured interviews were used to gather information on the components of the current payment system. Two external inspection and external validation tools were also used to gain confidence -reliability. Nvivo 12 software was used to develop the existing model and Spss for analyzing the contextual attributes.

Results: Findings show that out of the 22 influential components that involve in the calculation of the pay for performance formula in educational centers in Iran, only 7 main variables of 5 sub-components are involved in practice and other influential variables such as education have not been noticed in the aforementioned financial system.

Conclusion: Studying of pay for performance models in Iran, despite the fact that physicians and staffs spend most of their time working in educational centers, there is little difference between the pay for performance methods of these centers and the purely medical centers.

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Introduction

Performance is a multidimensional and enclosed element that determines both results and processes creating the results. Performance improvement requires focusing on issues such as increasing the absorptive capacity, elevating motivation by providing internal and external rewards, and increasing opportunities by creating the right environment for employees. Performance management is an integrated and strategic process that leads to sustainable organizational success through enhancing performance and developing the capabilities of individuals and working teams. On the other hand, the performance-based payment system has been designed and developed to respond to the need of passing from a position-based traditional payment method and moving toward the systems that emphasize and value performance. In addition to the fact that failure to reward the right behaviors will lead to false results, lack of proper communication between work and reward by employees will directly affect their efforts and activities. In other words, the reward strategy is the clear expression of intentions and defines the organizational goals in the long-term to develop and implement processes, functions, and reward systems that realize the business objectives and meet the needs of individuals and interest groups.

The importance of the payment system is such that it has always been the subject of discussion in many developed and developing countries in providing financial resources for health services since the 1980s. Overall, various methods are used in all countries of the world to pay for different health, diagnostic, treatment, and rehabilitation costs. These methods include per

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case, total budget, per capita, reward payment method, global payment system (payment based on the type of disease regardless of the hospitalization duration), daily payment and fixed salary. Various performance-based payment methods are applied in various countries of the world to guide the activities of healthcare workers in line with increasing motivation in these individuals and preventing the decrease of service quality. Service compensation includes not only the external earnings but also all earnings that exist in the job, such as identification and introduction, promotion, career advancement opportunities, job enrichment, and favorable work conditions. Meanwhile, salaries are usually limited to employees' financial receipts.

According to the research, the staff of an organization is the axis of any organizational strategy and policy and any use of resources. Therefore, organizational success or failure completely depends on how to attract and retain human resources. Given the fact that financial motives are the most important factors affecting individual and organizational behavior in the health sector and have different effects on the organizing health and service quality and quantity, special attention must be paid to the impacts of motives on the behaviors of buyers and sellers. In addition, one of the tools to control and limit general health costs in high-income countries is payment methods to providers that affect the quantity and cost of healthcare. The relationship between the payment system and performance evaluation is of paramount importance, especially in organizations where salary is paid based on performance. Recent studies in the US show that performance-based payment plans across the country are guaranteed by more than 100 health insurance and public insurance programs. In this regard, education is the most important element of productivity in the development of sectors (e.g., the healthcare sector). With laying the foundation for optimal use of the existing resources, we can provide a type of education that can assist students to acquire the knowledge and skills required for the future career. Despite having a strong theoretical foundation, new graduates seem to lack adequate proficiency, skills, and efficiency in clinical settings and fail to solve job-related issues. Given the fact that medical service providers are generally divided into two groups of purely medical hospitals and training healthcare centers, the present study aimed to evaluate and identify payment mechanisms and its components in Iran and compare them to payment methods of other countries. In the end, we will use the results to improve the education quality of professors and healthcare staff by providing the components affecting performance-based payment.

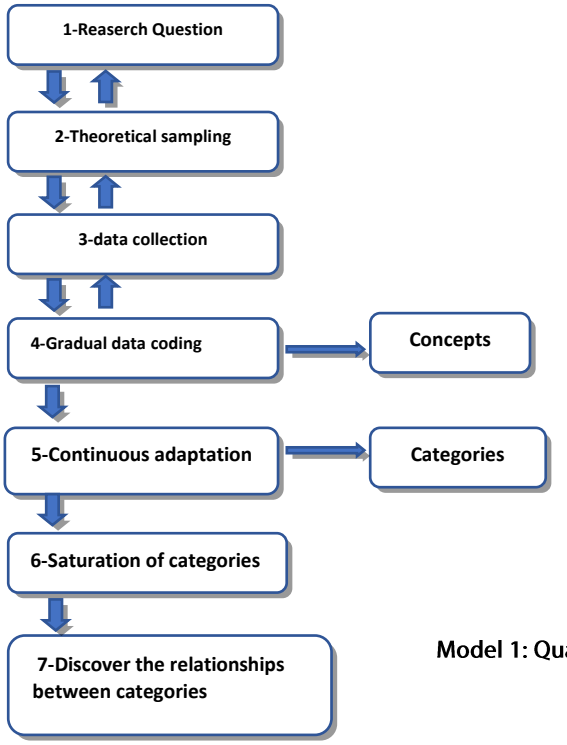
Materials and Methods

This was a developmental-applied study in terms of objective and a qualitative-documentary study regarding methodology. The documentary method is among the unobtrusive and non-reactive techniques, in which documents are considered as a social reality. The documents could include statistical data, describing the official operations of activity, and an image. However, the difference between the documentary method and recording facts is that data is collected by the theoretical framework method in the former. In general, the information analysis unit in the documentary method can be organizational reports and notes, censuses, and official votes. In the present study, the statistical population included all managers, experts, custodians, and specialists of performance-based payment systems at the 6th regional district's medical sciences universities of Iran. The sample size was determined by data saturation method, for which interviews continued until no new component would be found.

In the end, data saturation was achieved with 10 subjects. In the study, the participants were selected by purposeful and gradual sampling method, meaning that the researcher performed the coding process from the first interview gradually following the purposeful selection of the subjects. Data collection tools were semi-structured interviews with four main questions of 1) what are the components involved in the payment system of employees? 2) what is the

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order of precedence for the components? 3) how are the payment components operationally related to each other? And 4) what is the weight of the components in calculating performance-based payments? In addition, two supplementary questions were asked: 1) what are the sub-components of this model? and 2) sub-components are a subset of which main components? The implementation method and data collection processes were based on a few major steps, which are presented in Diagram 1.



Model 1: Qualitative analysis of the interview (Bryman, 2008: 545) Zolfagharian, 2011

In addition, the validity and reliability of the tools were confirmed using the Lincoln and Guba evaluation method, based on which we assessed four criteria of reliability, credibility, transferability, and verification.

In the present study, we took the following measures to approve reliability (credibility):

1) Allocating sufficient time to each interview (each interview took an average of 40 minutes)
2) Using some experts to confirm the research process (the full transcript of all interviews along with initial coding and categories) was delivered to two professors of research methods and statistical experts. In addition, the full transcript of two interviews along with coding was sent to two experts in the field. Moreover, confirmation and supplementary opinions of expert professors in all stages of the work were used to implement, codify, and extract the primary classes. Furthermore, the results of each interview and a summary of the interviewee's report were provided to the person for final approval.
3) Using two coders specialized in the field of interviews to ensure the relative

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agreement of coders' views (the Kappa coefficient obtained for two coding processes was 0.781 [sig=0.002]. The appropriate agreement coefficient between the two coding processes was confirmed due to being in the threshold of 0.6-0.8).

4) Applying clear and objective questions (to this end, the transcript of the interview and the extracted codes were presented to the participants after a short time to receive their opinion about the accuracy of the information. The content was revised in case of any discrepancies. In addition, the researcher clarified any ambiguous issue by phone, text, or e-mail).

To simplify transferability, we first presented a clear description of the selection method of participants and their characteristics, as well as data collection and analysis techniques so that the audience could use the results in other situations. Furthermore, the transferability of results was increased by providing accurate results.

1. Verification

Verification occurred by a full description of research stages, including data collection and analysis, and forming themes in order to enable the audit of research by early audiences and readers. In addition, the implementation method was presented to several technical assistants of the research and some professors to confirm the accuracy of the research method.

2. Reliability

In this study, reliability was confirmed using four methods:

1) Structured processes (convergent interviews)
2) Organizing the structured processes (systematic recording, writing, and interpretation of data)
3) Using at least two people to perform parallel, separate interviews and compare the results of two or several researchers (in this study, two interviewers were used for the first three interviews based on the available facilities)
4) Using the steering committee to evaluate and implement the interview schedule (in this study, we used the opinions of two professors in the field of performance-based payment, an expert in qualitative methodology, and a specialist in statistics in the humanities)

Moreover, the codes and main themes were determined and graphic models were presented using Nvivo version 12 (qualitative data analysis software). Notably, we adhered to ethical considerations by ensuring the participants of the confidentiality terms regarding their personal information and receiving written consent prior to the research.

Results

According to the results, the number of male participants (70%) was three times higher than female subjects. In terms of age, more than half of the interviewees (elites) were in the age range of 41-50 years. In addition, the majority of the subjects had education in the management field, and more than 10 years of work experience. Moreover, 50% of the elites had a PhD or higher degree and had managerial positions. Most of the elites had passed the course of introduction to the performance-based payment system, which was held by the custodians of the ministry of health for the authorities of universities and hospitals in the form of in-person or virtual educational workshops.

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Table1: Demographic Characteristics of Statistical Sample

Variable	Sub-Group	Frequency	Percent
gender	Man	7	70
	Woman	3	30
Age	31to 40	3	30
	41 to 50	6	60
	More than 50 years old	1	10
Major	Department of Finance and Budget	2	20
	Department of Management	6	60
	Department of Medicine	2	20
Work Experiences	1-10 years	4	40
	More than 10 years	6	60
Qualification	Bachelor	2	20
	Masters	3	30
	PhD and higher	5	50
Organizational position	Expert	2	20
	Responsible expert	3	30
	Manager	5	50
Passing the training courses based on Pay for performance system	yes	9	90
	No	1	10

Interviews with elites (15, 22)(15, 22)(15, 22)(14, 21) led to the extraction of a primary list of 22 factors in the performance-based payment system of the ministry of health, which included: type of employment, obligatory time, on-call, non-obligatory performance time, modified payment obligation, modified non-obligatory performance payment, non-performance non-obligatory payment, total payment, rial amount of overtime per hour, compensation for overtime, on-call of single-person funds, compensation for working multiple jobs, compensation from the place of management share, encouragement from the place of management share, encouragement of natural childbirth, gross output payment of the ministry of health's performance-based payment, university-approved gross payment, in part payment of the fee, in part payment of overtime, system output after subtracting the in part payment, and gross payment after subtracting the in part payment).

With multiple revisions and integration of codes based on the principle of operational application in the performance-based payment system of the Ministry of Health, we ultimately obtained seven main themes (points for presence, points for work experience, points for occupation, performance quality points, degree points, performance-based payment, and financial resources) and five subthemes (on-call [presence in the organization in case of need], overtime work, office hours , administrative support departments, and diagnostic-treatment departments)- drawn through the Nvivo software relationship analysis command- which, in practice, is used to calculate performance-based payments of the staff of educational and medical centers (Model 1).

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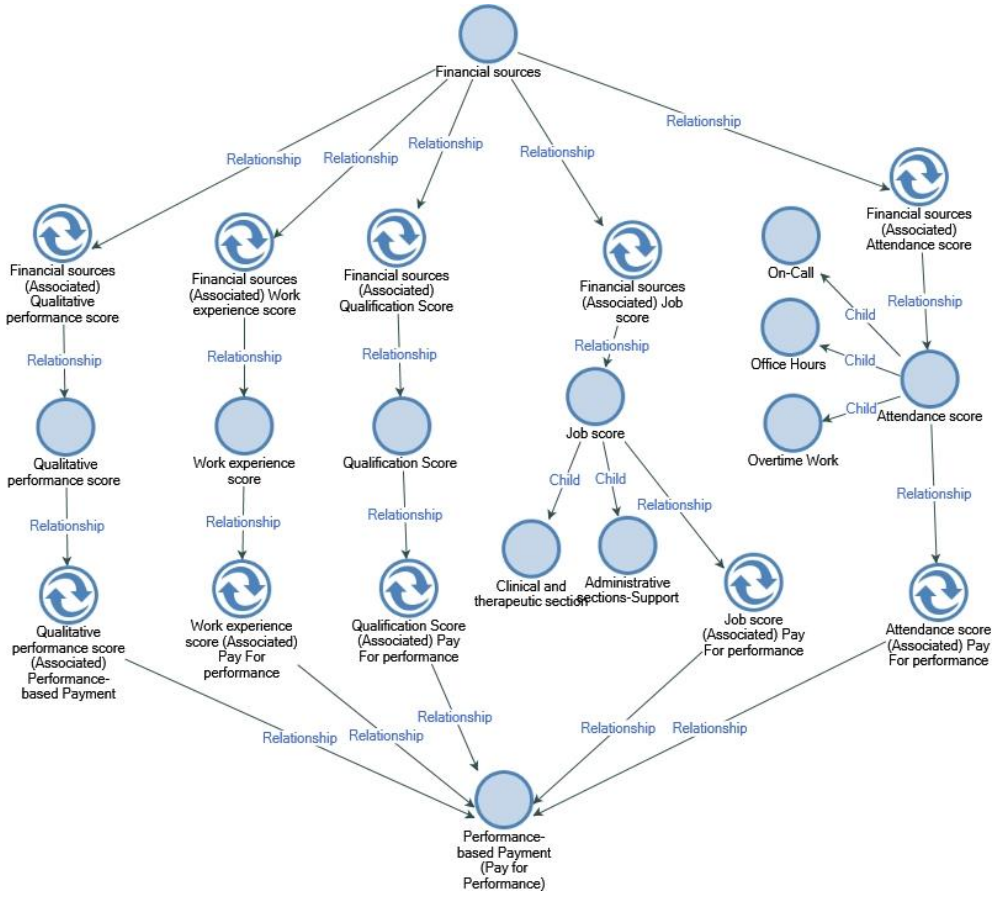


Table 2 shows the themes extracted, which were operationally or directly involved in the calculation of performance-based payments of the staff. A part of several interviews is presented below, which include the themes indicated in Table 2.

Table 2: Themes and sub-themes extracted performance-based payment from data analysis

Attendance score	On- call
	Non-Mandatory working time
	Mandatory working time
Work experience score	-
Job score	Administrative sections-Support
	Clinical and therapeutic section
Qualitative performance score	-
Qualification Score	-
Financial source	-

Financial Resources

1."Well, I have to say that two methods are usually used for professors and staff in the university after the changes made in the payments of the staff in the training-medical departments and physicians following the implementation of the health reform plan. The basics of physicians' payment are based on the relative value of the services, which are communicated to the hospital every year by the ministry in the form of a book on the relative value…"

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Points for Occupation and Degree of Education

1. "Another method is used for payment of healthcare and support personnel of the hospitals, in which a part of the per case fee of physicians, which is currently about 27.5%, is separated from the total revenue of the hospital and is distributed among various hospital departments and staff based on a series of indexes. Overall, the indexes considered for personnel's payment are diverse and include items such as type of profession, level of education, work experience, and duration of physical presence in the department."

Points for Presence

1. The quality of service, as well as the time of employees' presence in different departments and the amount of overtime, as well as work experience of individuals (i.e., veterans), and degree of education are considered in hospital payments to employees in the new system.

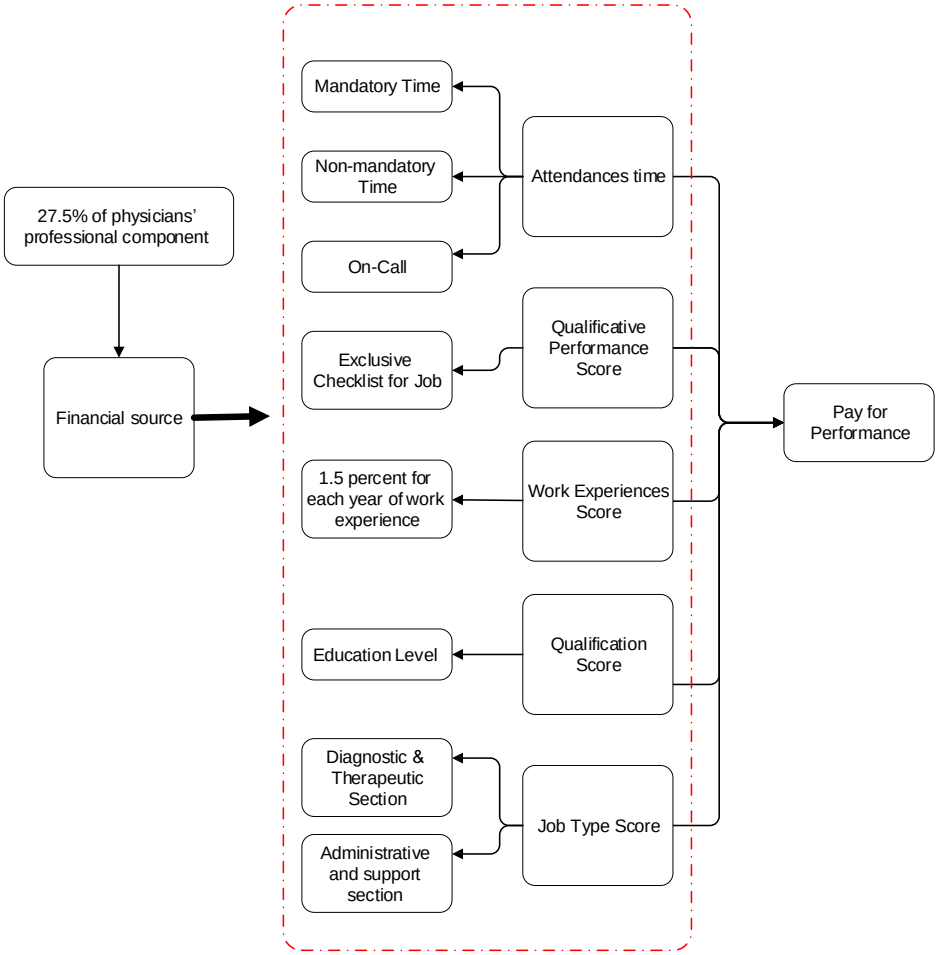
In Iran, physicians are paid based on codes known as the California codes in the form of a book entitled "The Relative Values of Diagnostic and Therapeutic Services". In our country, tariff determined as relative value is often derived from the general principles of the book (Current Procedural Terminology [CPT]), which is a system for coding diagnostic services. Despite several periods of changes in the book of tariffs, the necessary revision was made in 2014 based on the changes made in the book of Relative Value of the United States (2004-2012 edition) in accordance with the structural features of Iran and the existing book of the relative value of services was presented. The book is the main basis for determining the salary of physicians in healthcare centers and a tool for performance-based payments. Components such as the level of knowledge, complexity of work, and equipment depreciation are taken into consideration in defining the relative value of services.

The existing book and its codes include the activities of physicians working in different groups, and do not include other professions, such as nurses. Therefore, the problem of this group of employees and other staff of healthcare centers is solved by subtracting a part of the tariff of physicians' services from the total revenue of the hospital and paying it in the form of a performance-based payment system based on the model 3 obtained from the first step of the present study. It should be noted that the resource-based relative value scale (RBRVS) is currently used in other countries such as Switzerland, South Africa, the United Kingdom, and the Philippines. In these countries, the relative value of services is determined almost the same way used by Xiao et al. in the United States-i.e., the relative value system based on resource consumption with minor changes.

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Pay For Performances model in Iran



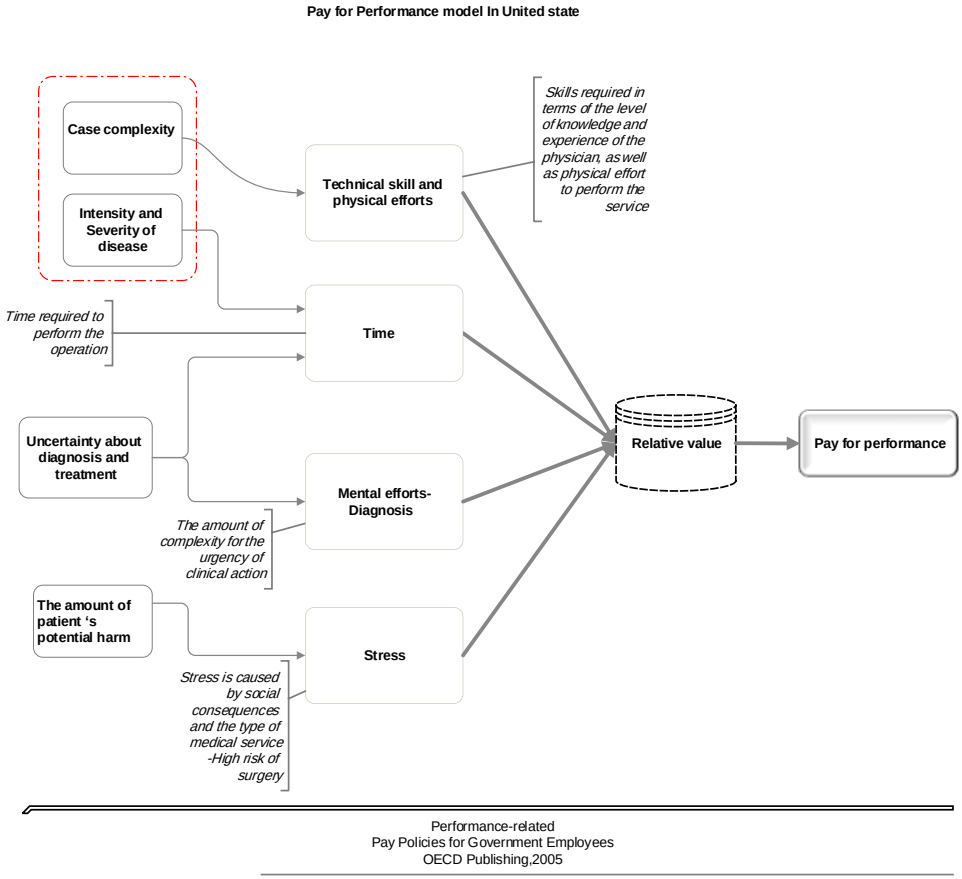
Afterwards, the components for determining the relative value of services in countries around the world are presented in Table 3 in order to get a clearer image of the model extracted from the research and compare it with other performance-based payment systems (models established in some countries). It is noteworthy that the relative value of services is the basis of payment for staff and physicians in most countries of the world. Therefore, In Iran, relative value is not currently defined for all employees working in the educational and medical sector, and a part of physicians is allocated to other employees as the main source of performance-based payment. The mentioned countries were selected primarily due to access to reliable sources and comprehensiveness of samples from a range of developed to developing countries.

Table 3: Summarizes the components of determining the relative value of services in leading countries in the category of Pay For Performance

Row	Countries	Main Factors	Sub-components	education oriented	Treatment-oriented
1	USA	Technical skills - physical effort Time Mental effort and diagnosis Stress	Case complicity Severity of disease Uncertainty about diagnosis and treatment The amount of possible harm to the patient	✓	✓
2	Canada	Practice cost Intensity and complexity Time of service	Total cost of service Cost of equipment and disposable instrument Communication skills Knowledge and diagnosis Technical skills (experience) Risk and stress of service type Time before service Time during service Time after service	✓	✓
3	South Korea	Practice cost Intensity and complexity Time of service	Total cost of service Cost of equipment and disposable instrument Communication skills Knowledge and judgment Technical skills (experience) Danger and stress Time before service Time during service	✓	✓
4	Japan	Time of service delivery The amount of mental efforts The amount of physical efforts	- - -	–	✓
5	Taiwan	Time of service The amount of mental effort and complexity The amount of physical effort Individual skill level	- - - -	–	✓

Performance-based Payment System in the US: In order to make performance-based payments for physicians and affiliated medical and paramedical groups in the US, the Physicians Pay Review Committee managed by Xiao et al. (1988) presented a codified RBRVS plan used as the initial plan for the actual implementation of the salary program in 1992. After taking measures to recognize the factors affecting payment by receiving the opinions of experts, a total of six variables affecting the work of physicians known as relative service value were found, including: 1) time of service provision, 2) mental effort, 3) knowledge and judgment, 4) technical skill, 5) physical effort, and 6) stress. All of the mentioned factors can be presented in the form of model 4. As observed, the factors can be divided into four major groups, among which the level of physicians' knowledge and the experience was one of the components affecting the determining of the relative value of services according to performance-based payment. A similar relative value system is used to carry out performance-based payment for other groups working in the health field, such as nurses, midwives, and clinical psychologists. One of the most important features of these models is the lower relative value of services of these groups compared to medical groups.

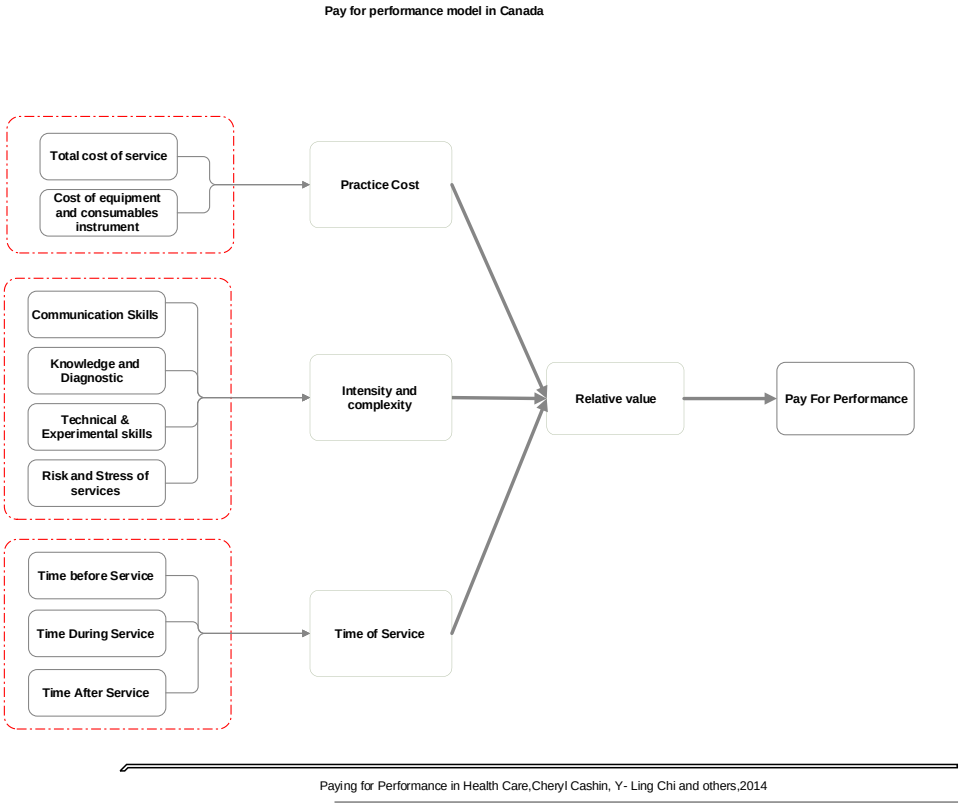
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Performance-based Payment System in Canada

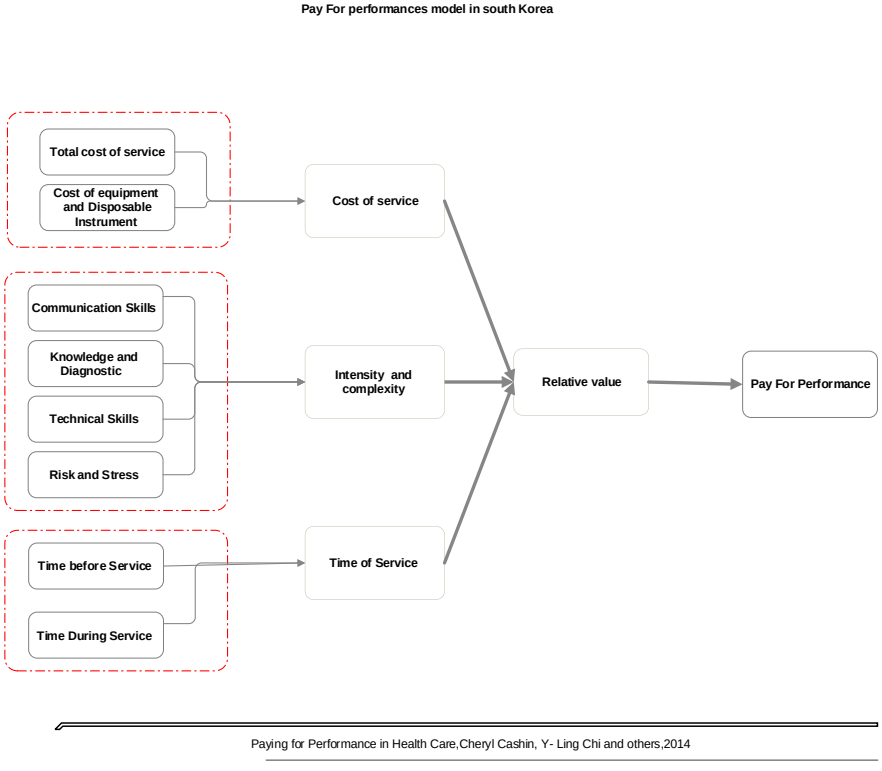
Following the formulation of new relative values of services and assessing extensive research and texts by experts of the country, the Ontario Medical Association (OMA) introduced three types of variables to be taken into consideration in determining the relative value of services, including: 1) time of service provision, 2) difficulty and complexity of the type of service, and 3) service provision fee based on time of service (i.e., the time before, during and after the main service). According to Model 5, the most important factors affecting the determining of the relative value of services through the variable of difficulty and complexity of the type of service were knowledge and scientific level, technical skills, experience, risk and stress of type of service. One of the most important features of this model is the lower relative value of paramedical services, compared to medical groups.

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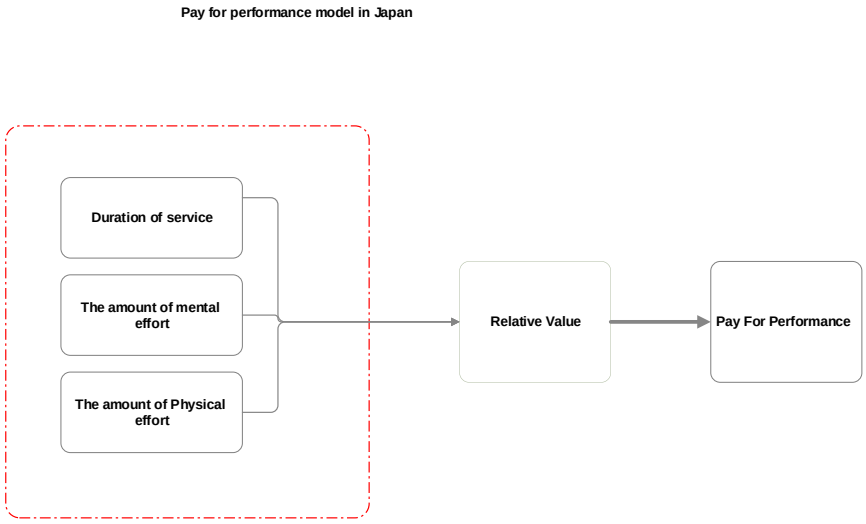
Performance-based Payment System in South Korea:

The RBRVS plan was first introduced in this country in the early nineties. In this regard, the main variables considered were the cost of service provision, difficulty, and complexity of the type of service and time of service provision. In this regard, Model 6 presents the main components and subsets of this adaptation model.



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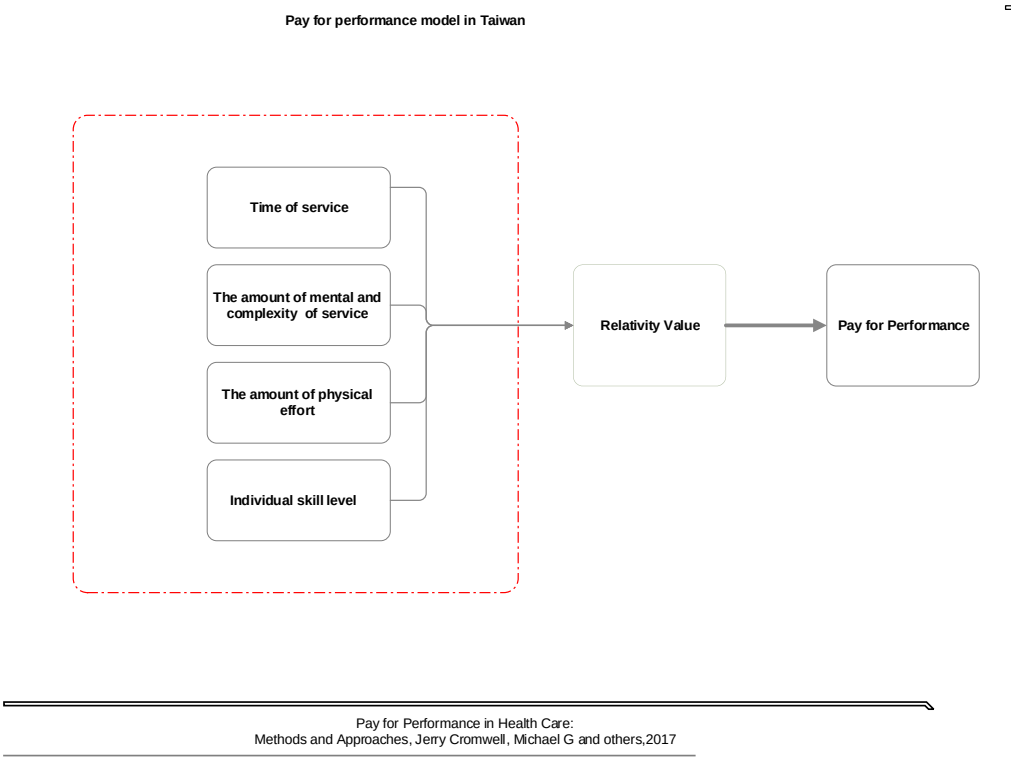
Performance-based Payment System in Japan:
In Japan, the relative value was determined for all service providers (physicians and paramedics) based on a scientific model. This led to the identification of the relative value of services for all healthcare service providers, which became the basis for performance-based payment for all healthcare workers (Model 7). According to the research, the factors affecting relative value - as the final determinant of performance quantity – were the duration of service provision, mental effort, and amount of physical effort. It is notable that in practice, the model is very similar to the model applied in the US.



Pay for Performance in Health Care:
Methods and Approaches, Jerry Cromwell, Michael G and others,2017

Performance-based Payment System in Taiwan:
In this country, the main factors affecting the relative value of services were determined in various groups of employees using the Delphi method. In this regard, the relative value of services is determined based on variables such as the time of service provision, mental effort, and judgment, physical effort, level of technical skills and knowledge of service provider, and stress level of each service. Currently, this relative value is a basis for performance-based payment. The schematic overview of the model is shown in Model 8.

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Discussion

The present study aimed to determine the performance-based payment model with an educational approach in Iranian medical training centers and comparing it with the models existing in the healthcare systems of other countries. According to the results of the present research, various factors were involved in determining the relative value of services in different sectors of global healthcare systems, such as the duration of service provision, knowledge level of service providers, physical and mental efforts, and level of stress imposed on the individual during the provision of a service. After final modifications, the mentioned components are used as the basis of the performance-based payment system in the form of a series of codes. In this regard, our findings are in line with the results obtained by Nasirpour et al. (2016) in a research entitled "the relationship between service compensation methods and job performance among nursing staff". These researchers found a significant relationship between five dimensions determining the career components of nurses and variables of work experience and level of education of nurses.

In another research by Biman et al. entitled "training needs and management training of nurses", a significant relationship was observed between care quality and variables of nurses' educational and work experience, which is consistent with our findings regarding attention to the education component. Moreover, our findings are congruent with the results presented by the world health organization (2000), which reported the existence of inefficient payment systems in about half of hospitals due to lack of attention to the effective components. While similarities were found between the performance-based payment method used for the physicians in training medical centers of Iran and the model used in the US, there are some differences in the components and elements of the models that determine the relative value of services. These differences often show the weakness of Iran's payment model. For instance, the current payment model in the country has neglected the area of education, compared to other

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components affecting this issue. This defect in the system has led to equal payments for physicians and staff of training medical hospitals and those working in purely medical centers. In this respect, a part of our findings is in accordance with the results obtained by Oliaeimanesh et al. (2017) in a study entitled "the evaluation of the effectiveness of implementing a new performance-based payment system compared to the new administrative system of hospitals in the health reform plan". Moreover, our findings are consistent with the results obtained by Fox et al. (2014) in a study entitled "university centers and managed care: anxious colleagues". The study showed that the activity of faculty members in educational and medical centers requires more financial resources due to spending more time on student education. Since these centers have higher efficiency in the quality of patients' treatment, attention to education - as an effective component - can be seen in the payment model.

In the end, our findings are congruent with the results obtained by Litaker et al. (2008) in a study entitled "performance-based payment and medical education, strategies to prepare physicians for the future" in terms of neglecting the educational activities of physicians and overlooking the topic in performance-based payment. Overall, qualitative studies (e.g., interviews) have several limitations. In most of these studies, subjects are considered a unique sample. Therefore, the statistical population and sample size of this method is less than quantitative methods and there are doubts regarding the generalization of results. In a documentary method, since each official document is considered as an analysis unit, and the goal is focusing on depth of information, any shortcomings in the availability of official documents and sources affect the quality of such research. In the current study, reliable and official sources regarding performance-based payment in the health care system, especially in our country face major obstacles due to the time frame of the current payment method. Some of these problems are related to the lack of codified information, which made the investigation about the topic more difficult. Furthermore, with regard to the time frame of the project, there is a lack of comprehensive studies and field research on the effect of the performance-based payment method on service quality and promotion of education in the field of medicine. Therefore, a comprehensive understanding of the dimensions of performance-based payment methods has become challenging in the ministry of health.

Conclusion

According to the current performance-based payment system for physicians in the country, inadequate attention is paid to all variables involved in the activities of physicians, including educational activities. Therefore, considering other coefficients and the next modifications in the existing payment system practically makes no difference in the relative value of services and the final tariff of full-time faculty physicians and full-time medical physicians working in healthcare centers. Meanwhile, insufficient resources are provided for personnel payments and other training matters considering the models presented in this article and valid scientific sources in the educational-medical centers of the country. In addition, the specific relative value of services has not been determined for all health workers in different occupations in Iran. According to the existing rules for this group of employees, amounts have been deducted globally from the total performance of medical groups that have codes related to relative value, and payment is made in the form of Model 3 and its components. According to the content of the extracted model, other important indicators such as educational activity have not been paid much attention and no significant difference has been observed in the principles and foundations of the current payment system for non-medical staff. In fact, the amounts received by staff and physicians working in purely medical hospitals have been higher, compared to employees with the same rank and full-time faculty members working in training hospitals with equal activity duration. This has negatively affected the quality of

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education in these centers, in a way that it has decreased clinical education quality and might adversely affect the health system of the country in the future.

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