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Utilization and out of pocket (OOP) payment for physiotherapy services in public hospitals of Shahid Beheshti University of Medical Sciences

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Abstract

Background: Physiotherapy services constitute a principle part of health care systems, and interest in their use has increased in the recent decades. This study was conducted to investigate the utilization and OOP payment for physiotherapy services in public hospitals of Shahid Beheshti University of Medical Sciences in Tehran, Iran.

Methods: This cross-sectional study was conducted using the data of physiotherapy department of three public hospitals. The study sample included 6528 patients who had received 7257 episodes of care. Data were extracted through hospital information systems and analyzed using multivariate regression analysis by SPSS17.

Results: The average episode per patient was 1.11 and 12.6 session per episode. The average cost of each episode and treatment session was 1 784 660 IRR (USD 59) and 142 023 IRR (USD 4.7), respectively. The OOP payment share for physiotherapy was 31%. Age, OOP amount, having insurance coverage, insurance type, and service type significantly affected physiotherapy utilization. Number of treatment sessions, having insurance coverage, type of insurance coverage, and gender were related to OOP payment.

Conclusion: There is a large variety in utilization and OOP payment in the insurance funds, which could restrict the accessibility and utilization of services by patients, leading to inequalities in utilization. Therefore, policymakers should conduct an overall review on the tariffs and service packages of insurer organizations to provide better conditions for the elderly, unhealthy, and vulnerable population to mitigate inequality in service utilization and decrease OOP payment.

Keywords: Utilization, Out of pocket (OOP) payment, Physiotherapy, Outpatient service, Public hospitals

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Introduction

Physiotherapy services constitute a principle part of health care systems in the world and involve treatment of functional restrictions commonly experienced by many people (1). Physiotherapy as a health profession focuses on rehabilitation of physical injuries (2) and pursues the aim of preservation, restoration, and improvement of optimal movement and functional abilities throughout life (3). The physiotherapy scope includes restoration of bodily movement that is affected by pain, injury, stress, pathological conditions, and even environmental factors (3). Physiotherapy services, through promoting the functional capabilities and higher independence in activities of daily living, empower the individual to live an independent and productive life (4). A diversified spectrum of acute and chronic physical conditions from infancy to old age need physiotherapy services, so that the interest in using physiotherapy services has increased throughout the recent decades, especially in developing countries (5, 6).

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↑What is "already known" in this topic:
The OOP payment share was 31% and 69% of the costs covered by the insurer organisations. Number of treatment sessions, having insurance coverage, type of insurance coverage, and gender were related to OOP payment.

→What this article adds:
A large variety is found in utilization and OOP payment in insurance funds, which could restrict the accessibility and utilization of services by patients, leading to inequalities in utilization. Age, OOP amount, having insurance coverage, insurance type, and service type significantly affected physiotherapy utilization.

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Physiotherapy services in Iran are provided by private and public providers in outpatient centres and hospitals. Out of 29 physiotherapy services defined in the 'Relative Values of Diagnostic and Medical Services' (RVDMS) Book, only 13 services are included in the services package of basic insurance organizations, and only a part of their costs are covered by the insurers (7). In addition, there are great differences between the insurers in Iran, which include the Health Insurance Organization of Iran (HIO), Social Security Organization (SSO), Armed Forces Medical Services Organization (AFMSO), Imam Khomeini Relief Committee (IKRC), and small insurance funds concerning the services and costs coverage. Incomplete insurance coverage of physiotherapy services is one of the greatest challenges in this domain, and consequently a considerable part of physiotherapy cost must be paid in the form of out of pocket (OOP) by the patient. OOP payments refer to the charges to be paid by the patient at the service point that are not reimbursed by the insurers or other third parties (8). Accordingly, this could result in negative consequences like catastrophic health expenditures and impoverishment of families (9).

Considering the ageing of the population(10), increasing the number of accidents, and high rate of obesity and diabetes, which are influential factors on the increase of musculoskeletal disorders in the near future, the need for physiotherapy services will rise, and thus the pertaining costs will also increase by far as a consequence (2). The increase in costs imposes a huge financial burden on low-income families with no insurance coverage, resulting in lower use of the physiotherapy services and worsening of the health status of patients. In general, expenses are important factors in accessibility to and use of services and cost significantly affects the patients' satisfaction of the services (11, 12).

In Iran, the OOP expenditure as a percentage of total health expenditure was reported to be about 48% in 2014 (13). The decrease in the amount of OOP payment below 30% has been one of the objectives of the governments during the past 2 decades, and strong emphasis has been placed on them in the Fourth and Fifth Development Plans of Islamic Republic of Iran (14, 15). Accordingly, the Ministry of Health has initiated a reform titled, 'Health Transformation Plan' in 2014 with three objectives: (1) decreasing OOP payment, (2) promoting service quality, and (3) enhancing equity in accessibility. However, this reform only includes the inpatient services of public hospitals, and besides the physician's consultation in the hospital- based clinics, other outpatient services are not included in the service package (16).

Conducting studies in the field of health services is of utmost importance, as health systems are keeping up the pace to control the costs and provide high quality and high value care. Studies on physiotherapy provide valuable information on organizing and providing physiotherapy services, the payment policies, and the related costs (17). In the era of health systems reforms and cost containment, acquiring precise information on the utilization patterns and cost of health services is necessary. Cost analysis to investigate financing methods, budgeting, and correct financial planning in the future, as well as assessment of hospital services is extremely significant. Although various studies have been conducted on the utilization and costs of physiotherapy services (4, 18-20), to our knowledge, no particular study dedicated to the issue has been conducted in Iran. Hence, the present study was conducted to investigate the utilization and OOP payment for physiotherapy services in public hospitals of Shahid Beheshti University of Medical Sciences in Tehran, Iran.

Methods

This cross-sectional and retrospective study was conducted using the data of physiotherapy department of three large public hospitals of Shahid Beheshti University of Medical Sciences in Tehran during March 21, 2015 to March 20, 2016. These hospitals were selected because of possessing similar hospital information system (HIS) and accessibility of data. The study sample included 6528 patients who had received 7257 episodes of care. In this study, all patients were examined, and there was no sampling. All the required data were extracted through HISs.

The measurement unit of utilization in this study was the episode and the treatment sessions. An episode of care included the services provided for one patient for an injured part of his/her body, encompassing the beginning to the end of the treatment period, usually 10 treatment sessions in Iran. Physiotherapy services in Iran involves 29 service codes in accordance with the RVDMS Book, from which only 8 services were provided to outpatients in the studied hospitals (Table 1). OOP is defined by World Health Organization (WHO) as "direct payments made by individuals to health care providers at the time of service use" (21). We used the same definition in this study to calculate the amount of OOP.

The effect of demographic characteristics on service utilization (treatment sessions) and OOP was analyzed by multivariate regression analysis in SPSS Version 17 software. The Rial to US dollar exchange rate in the study year was 1USD= 30240 IRR (22). This study was approved by

Table 1. Classification of physiotherapy services

Service Code	Service Name
901620	Assessment and planning for the physiotherapy
901625	Continuous Passive Motion (CPM) or low level laser for rehabilitation of organs
901645	Routine physiotherapy methods or treatments (Such as exercise, treatment with hot and cold compresses, mechanical stretch, electrical stimulation, use of ultraviolet, infrared, microwave, ultrasound, etc.)
901646	Diathermy
901655	Occupational therapy methods and techniques
901680	Magnetic Field Therapy
901685	Active rehabilitation for backbone and organs
901690	Kinesio taping

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the Research Ethics Committee of Shahid Beheshti University of Medical Sciences.

Results

From 6528 patients, about 60% (n= 3917) were females, and the average (SD) age of the patients was 49.8 (±17.9) years. About 86% (n= 5614) of the patients had insurance coverage, and the highest number of insured patients had SSO insurance.

In sum, 7257 episodes of care and 91191 treatment sessions were provided to the patients, with an average of 1.11 episodes per patient and 12.6 sessions per episode of care. The greatest number of services provided for the patients included the routine physiotherapy methods and treatments (77961 sessions), and the smallest number was related to kinesio taping (13 sessions) (Table 2). The patients lacking insurance coverage had used only 6% of the sessions.

The total cost of the provided services amounted to 13 billion IRR (USD 428,283), from which 8 817 170 561 IRR (USD 291 573) was reimbursed by the insurer organisations and

4 011 747 197 IRR (USD 132 663) was OOP payments by the patients. About 90% of the total costs of physiotherapy services were related to routine physiotherapy methods and treatments**,** and using Kinesio taping incurred the lowest cost. The most expensive service was active rehabilitation with an average session cost of 308 000 IRR (USD 10.18) and the second most expensive service was magnetic field therapy, with an average session cost of 264 000 IRR (USD 8.73). Physiotherapy assessment and planning, with an average session cost of 61 612 IRR (USD 2.03), was the least expensive service. As Fig. 1 demonstrates, Kinesio taping, active rehabilitation, and magnetic field therapy had the highest OOP share at 100%. Diathermy, assessment and planning, and routine treatments, with 23%, 27%, and 27% constituted the lowest OOP payment rates, respectively.

The average cost of each episode of physiotherapy care and treatment session was 1 784 660 IRR (USD 59) and 142 023 IRR (USD 4.7), respectively. In sum, the OOP payment share for physiotherapy was 31%, and about 69% of the costs were covered by the insurer organisations.

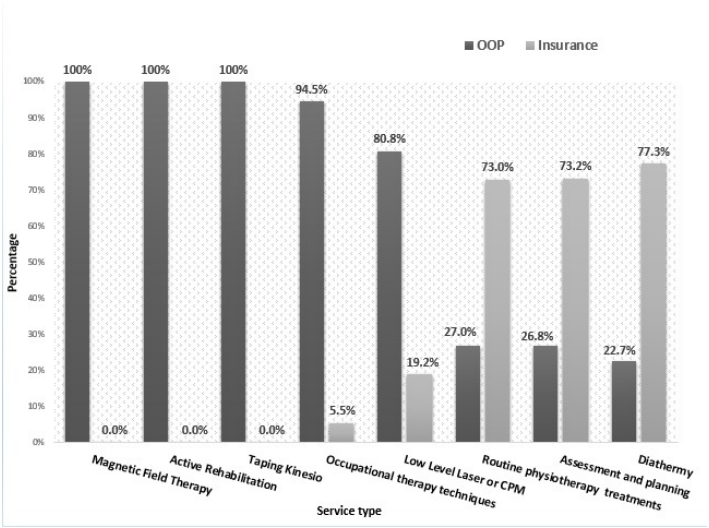


Fig. 1. Percentages for OOP and insurance

Table 2. The cost and utilization of outpatient physical therapy services

Service Name	Total Cost IRR (USD)	Share of Service in Total Cost (%)	Number of Sessions	Average Cost of Session IRR (USD)
Routine physiotherapy methods or treatments	11,661,883,200 (385,644)	90,0	77961	149,586 (4.94)
CPM or Low Level Laser	407,259,580 (13,468)	3,14	4628	87,999 (2.91)
Magnetic Field Therapy	80,784,000 (2,671)	0.62	306	264,000 (8.73)
Diathermy	150,585,600 (4,980)	1,16	2139	70,400 (2.32)
Assessment and planning for the physiotherapy	294,138,973 (9,727)	2,27	4774	61,612 (2.03)
Active rehabilitation	87,472,000 (2,893)	0.67	284	308,000 (10.18)
Kinesio taping	2,516,800 (83)	0.02	13	193,600 (6.40)
Occupational therapy methods and techniques	266,640,000 (8,818)	2,05	1086	245,524 (8.11)
Total	12,951,280,153 (428,283)	100	91191	142,023 (4.69)

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Table 3. The impact of demographic factors on utilization of outpatient physiotherapy services

Variable		S.E	Beta	p
Age	<40	0.076	-0.20	0.01
	>40	-	-	
Gender	Male	0.071	0.08	0.27
	Female	-	-	
Insurance coverage	Yes	0.532	33.4	≤0.001
	No	-	-	
Insurance Type	AFMSO	0.478	-20.7	
	HIO	0.446	-23.6	
	IKRC	0.611	-23.4	0.001≤
	SOO	0.444	-23.7	
	Traffic accidents	0.482	-18.0	
	Others	-	-	
Service Type	Routine physiotherapy methods or treatments	0.372	0.55	
	CPM	0.278	4.30	
	Magnetic Field Therapy	0.613	-8.20	
	Diathermy	0.476	5.20	0.001≤
	Assessment and planning	0.368	-5.57	
	Active rehabilitation	0.649	-14.36	
	Kinesio taping	0.981	2.57	
	Occupational therapy	-	-	

Dependent variable: treatment sessions; Durbin-Watson= 1.85

Table 4. The impact of demographic factors on OOP for outpatient physiotherapy services

Variable		S.E	Beta	p
Age	40>	3,395	-3,590	0.29
	40<	-	-	
Gender	Male	3,162	-6,865	0.03
	Female	-	-	
Number of sessions		339	23,870	≤0.001
Insurance coverage	Yes	24,368	-1,334,435	≤0.001
	No	-	-	
Insurance Type	AFMSO	22,221	570,731	
	HIO	20,734	800,413	
	IKRC	27,803	805,672	
	SOO	20,699	794,145	≤0.001
	Traffic accidents	22,211	45,381	
	Others	-	-	
Service Type	Routine physiotherapy methods or treatments	16,372	240,051	
	CPM	12,405	157,404	
	Magnetic Field Therapy	25,845	1,015,410	
	Diathermy	21,239	-59,733	
	Assessment and planning	16,499	29,800	≤0.001
	Active rehabilitation	26,778	1,335,501	
	Kinesio taping	46,761	-258,737	
	Occupational therapy	-	-	

Dependent variable: OOP (IRR); Durbin-Watson= 1.80

Based on regression analysis, age, having insurance coverage, insurance type, and service type significantly affected the physiotherapy services utilization ($p<0.05$) (Table 3). With an increase in the patient's age, the service use also increased, and lack of insurance coverage was accompanied by lower use of the services. Being covered by the traffic injuries insurance and other insurances (Ministry of Oil, Banks, etc.) had a positive effect on utilization of the services. Also, some services like active rehabilitation, assessment and planning, and magnetic field therapy had negative effects on utilization.

Based on the second regression analysis, number of treatment sessions, service type, having insurance coverage, type of insurance, and gender had a significant impact on the OOP payment ($p<0.05$) (Table 4). With an increase in the number of treatment sessions, the OOP increases. Using active rehabilitation and magnetic field therapy increases OOP. The patients without insurance coverage, compared with the patients with insurance coverage, had more OOP. Also, having IKRC, HIO, and SSO insurance was accompanied by higher OOP payment. Gender had a slight effect on OOP, women paid more.

Discussion

This study was conducted to assess the utilization and OOP payment for outpatient physiotherapy services in public hospitals, and the findings revealed that the average number of episodes per patient was 1.11, and the average sessions per episode was 12.6. In the Machlin et al. study in the United States, the average episodes per patient was 1.07, and the average sessions per episode was 9.6 (18). The Leemrijse et al. study in Netherlands reported that the average number of treatment sessions per course of physiotherapy was 10.5 (23). The most important reason for the difference in the number of physiotherapy treatment sessions may be the difference in insurance policies of each country. Applying restrictions on the number of sessions by the insurer organisations plays an important role in utilization (5) because the number of sessions greater than the

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determined ceiling shall be accompanied by more OOP payment by the patient.

Services like active rehabilitation and magnetic field therapy have been negative factors on the number of sessions of physiotherapy services due to higher tariff and lack of insurance coverage. In previous studies, a positive relationship was reported between physiotherapy utilization and insurance coverage (5), which seems rational. According to the study findings, the least used services were not covered by the insurance and their costs was higher than the other services.

Lack of insurance coverage and having OOP payment was accompanied by limited use of the services, which was consistent with the findings of studies in Switzerland and the USA (5, 20). Patients without insurance coverage are less likely to use services due to higher OOP costs (24). On the whole, insurance coverage has a positive effect on the accessibility and use of outpatient services, and insured patients make more use of such services (25). The patients covered by small insurance funds (such as the Oil Ministry and bank employees) and traffic accidents insurance, which have lower OOP payment, have used more sessions compared with other insured patients. Similar results are also indicative of influence of insurance schemes on the use of physiotherapy services, which is restricted and controlled by determining different franchises and limitation on reimbursement ceiling (5).

The female patients used more sessions compared to males, which was consistent with the findings of similar studies (5, 18, 19, 26). It seems that the lesser use of physiotherapy services by male patients relates to the priority they give to quick pain relief methods (like drug or surgery) and the longer physiotherapy treatment periods, which prolongs returning to work (26). Age was an effective factor on utilization, which is similar to the previous similar studies (1, 5, 19), and older patients are prone to musculoskeletal disorders, stroke, and multiple fractures, and accordingly require greater physiotherapy services (5, 20).

The share of OOP payment for physiotherapy services was 31% in public hospitals. Based on the government legislation on the medical tariffs, 30% co-payment for outpatient services has been determined (27), and accordingly, the study findings are indicative of compliance with this law. Health insurance is one of the most effective tools of risk pooling and can greatly affect service usage. However, like other countries of the world, in Iran, there is great variability in the coverage of services and costs by insurer organisations. Physiotherapy services in countries like France, Germany, UK, Austria, and Switzerland are covered under the insurance umbrella, but in countries like the USA, Spain, and Australia, only part of such services are covered by the insurances (28). Overall, insurance is an important factor in decreasing OOP from the perspective of those who use rehabilitation services (29).

The findings showed that patients with IKRC, HIO, and SSO insurance had higher OOP than other insurances. It appears that the diversified service packages of insurance organisations have caused patients to pay a different OOP percentage. AFMSO insurance, in addition to the basic part, includes complementary coverage so that it covers part of the costs, and hence, the insured pays about 10% co-payment (30). Also, according to the article (92) of The Fourth Development Plan and Paragraph (B) of the article (37) of The Fifth Development Plan, treatment costs (including physiotherapy) of the injured people in traffic accidents shall be free of charge (14, 15).

Active rehabilitation and magnetic field therapy were the most expensive services in the selected hospitals, with each session costing 308 000 and 264 000 IRR, respectively. In the meantime, neither of them are covered by basic insurance, and accordingly, it is rational that using such services be accompanied by the increase in the amount of OOP payments. In similar studies, deficiencies have been reported in the insurance coverage of physiotherapy services, so that despite being insured, the patients pay considerable amount of money (4, 23).

The number of service sessions was accompanied by higher OOP payment. Since a co-payment percentage has been defined in most insurance schemes and uninsured patients must pay all the expenses in cash, it would be quite expected that the patients pay more with the increase in the number of physiotherapy sessions. In addition, uninsured patients have had higher OOP payments compared to insured patients, which is consistent with the findings from previous studies (4, 31). There was no significant relationship between age and OOP payment, and this has been reported in the study by Machlin et al. (16). Gender had a slight effect on OOP payment, with females paying more than males.

This study had some limitations. Due to inaccessibility of the comprehensive information on the patient records, variables such as the disease conditions and physiotherapy indications were excluded from the study. In addition, variables like income, education level, place of residence, and improvement after receiving services are effective factors on the utilization and costs of service, which can be investigated in future studies. In addition, since most of the outpatient services including physiotherapy are provided by the private sector, the study of utilization and the relevant costs will help present a better picture of service delivery status in the country.

Conclusion

Based on the study findings, there was a large variety in utilization and OOP payment in the insurance funds, which could restrict the accessibility and utilization of services by all patients in need of such services and could also lead to inequalities in utilization. Accordingly, an overall review of the tariffs and service packages of insurer organisations must be conducted by policymakers, so that better conditions are provided for the elderly, unhealthy, and vulnerable population, resulting in mitigating the inequality in service utilization and decreasing the OOP payment. In addition, considering the increase in the number of the ageing population and higher use of rehabilitation services, new insurance coverage policies should be developed; moreover, policymakers and insurance managers should look for solutions and find ways to finance physiotherapy services.

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Conflict of Interests

The authors declare that they have no competing interests.

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