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Health Care Utilization and Expenditure in War Survivors

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Abstract

Background: To describe the utilization and out-of-pocket (OOP) payments of war survivors receiving health care services and its determinants.

Methods: A cross-sectional study was carried out by systematic random sampling at national level (n = 3079) on healthcare utilization in war survivors on their last received services. A validated questionnaire was used to gather the information of inpatient and outpatient healthcare services and OOP payment. The data were analyzed to indicate the determinants of health utilization and expenses.

Results: Health care utilization was reported in 91.6% (n = 2822). The majority (82.5%) received one or two services in their last visits, mostly related to physician visits and medications (65.97%). Health care utilization was higher than general population annually, especially in physician visit (6.6 versus 4.89), medication (5.1 versus 3.6), and hospitalization (0.78 versus 0.15). About 20.2% (n = 599) of the study population paid out of their pocket for their last medical care services. The frequency of OOP payment was greater for physician visit and medication. Payment for hospitalization, imaging, and lab tests were more significantly associated with proceeding to reimburse the expenses ($P<0.001$). The median OOP payment was US$10.8 (interquartile range US$20.6). Gender ($P=0.003$), area of residence ($P=0.01$) and being war victims ($P=0.005$) were the significant determinants for both OOP payments and reclaiming the expenditure. Higher amount of payments ($P<0.001$) and more received health services ($P=0.002$) were also important factors in reclaiming the expenditure.

Conclusion: Both outpatient services and hospital admission are more frequent among war survivors compared to the general Iranian population. Future studies should attempt to explore the reasons.

Keywords: Health care, Health expenditure, Injuries, Utilization, War

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Introduction

During 8 years of the Iran-Iraq war, which was the longest war in the 20th century, about 200 000 Iranians were killed while half million were injured and suffered from chronic complications. Today war survivors are middle-aged, with health issues complicated by comorbidities of poly-trauma and aging.[1] There are more than one million families of not only martyrs (who lost their life due to Iran-Iraq war) but also war survivors. Today, 30 years after the end of the war, survivors are left with many physical, mental, and chemical injuries. There are few articles about satisfaction of medical services among Iranian survivors of the war.[2,3] Despite many published papers about injured victims, there has been no inclusive study on health care utilization in this population.

Almost 44 million households and more than hundred million face tragic health care costs annually.[4,5] In addition, a large number of people may decide not to use even simple medical and laboratory services due to financial hardship.[6] Principally, the use of health services should not be determined by ability to pay.[7] Out-of-pocket (OOP) payment is when a patient pays money directly to the provider for provision of services which increases the incidence of impoverishment and catastrophic health expenditure.[8] OOP payments for outpatient/inpatient services, mainly among people with chronic conditions, could be more detrimental over the long period of time and lead to an unpredictable situation that family member may be hard equipped to deal with. Moreover, this might impose additional burden on vulnerable populations.[9]

Since many war survivors survive injuries that would have killed or caused them multiple injuries (amputations; brain injury; head trauma and/or blindness), they will require long-term costly rehabilitation. Doctor/hospital visits, use of diagnostic testing and other health care technologies has been growing dramatically. Burdens

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of health expenditure imposed on all veterans and their families can be no longer ignored. The crucial challenges are to quantify the impact of health care expenses of a family and to control health care spending.[10-12]

Coverage of medical and rehabilitation healthcare facilities remains inadequate for the vulnerable parts of community.[13] Low- and middle-income families are more affected by the impact of growth in OOP health care expenditure while wealthier families are able to pay more for health.[14,15] The World Health Organization (WHO) believes that payments by the recipients of health services are the most inaccurate method of payment.[13]

It is anticipated that governments must play a principal role in providing healthcare services for the population, but only a small part of government revenue is assigned to this purpose.[7] In Iran, the government allocates adequate portion of its budget to healthcare expenditure for war survivors and their families. Providing insurance to the war survivors' community and covering most health care expenses is the policy of Veterans and Martyrs Affairs Foundation (VMAF). Insurance coverage includes health services, physician visit, medication, outpatient/inpatient surgeries, paraclinical services, nursing, refractive errors treatment, ambulance transport (in or between the cities), and home care services.[16]

Despite improvement of health indices, availability of resources for medical care facilities is still inadequate and economic safety for health expenditures is not well distinguished. The amount of paying OOP in war survivors and its associated factors is not clear. Information on the current levels and distribution of expenditures on health care is needed to plan for better health in this particular group of the community. Today, war survivors are middle-aged, with health issues complicated by comorbidities of poly-trauma and elderly. The aim of this study was to evaluate health care utilization, expenditure and OOP payment by Iranian war survivors for health care services, and to find the associated factors in the target population.

Materials and Methods

Study Design and Setting

A cross-sectional study was conducted on war survivors. In this survey, war survivors consisted of war victims, families of the war victims, and families of the martyrs. Information on health care utilization and prevalence of OOP payment for the received medical services was collected from all provinces in both urban and rural areas.

Health care utilization indicators were assessed based on the information on received health care services during the months preceding the study in 2015. The studied population were asked on the frequency of health care services during the two months before the interview. Then, the probability of health utilization was calculated in one day, and this probability was annualized for inpatient and outpatient medical services, separately. Three thousand seventy-nine cases were studied, and among them, the latest information on the type of service received in the last two months was collected.

Information on the frequency of OOP payment for the received health care services was collected, as well. In cases where the recipient prepared the expense of health care, the amount of payment was questioned. Reclaiming the expenditure through the reimbursement process was also inquired.

Using telephone interviews, data was collected on the variety of health care services in the war survivors and their family members. Information on the latest health service that the insurer received was collected via interviews. Demographic data were collected in terms of age, gender, level of education, marital status, and employment status. Additionally, OOP payment data were collected using a validated questionnaire. The questionnaire consisted of different health services including outpatient visit, medication, lab test, imaging, home care, medical trip and hospital admission.

Participants/Sampling

The data of war victims suffering from war-related injuries and their families (including parents, spouses, and children), as well as the families of the martyrs are kept by the VMAF.[16] Their contact information was obtained at the national level from all 32 provinces using a database of the VMAF. Sample size was calculated with 95% confidence with error not exceeding 0.05% for estimation of each health care utilized services with $P = 0.50$ and $d = 0.05$. The samples for each health service was calculated at 385 (2695 samples totally). In this study, a systematic random method was used and 4161 telephone calls were made. Of these, 3308 responded to the calls (response rate to call: 79.5%). About 3079 cases were interviewed (response rate: 93.1%). Health care services were reported to have been received in 2822 of the interviewed population during the two months before the interview (health care utilization 91.6%). We respected the confidentiality and anonymity of our research respondents and their participation was voluntarily.

Data Analysis

Data were explored using descriptive and inferential statistical tests including chi-square, Mann-Whitney U test and logistic regression analyses (variables with P value less than 0.2 were entered to regression). Determinants of OOP payment and proceeding to reclaim the expenditure of health services were also examined using R version 3.5.0.

Results

Among the recipients of health services, 38.6% (1089) were war victims and 1733 (61.4%) were their families. The mean age was 52.4 (SD = 17.5) years, and males

accounted for 53.1% (1497) of the sample. The majority of the study sample (86.9%; n = 2453) were living in urban areas, 369 cases (13.1%) were living in rural areas, and 29.1% (822 cases) were unemployed. The study population utilized 5127 health care services, a majority (82.5%) received one or two services (1.82 per individual), mostly related to physician visits and medications (65.97%; 3387 health services). Physiotherapy was the least utilized service (0.7%). The average number of health care utilization in war survivors compared to the general population is presented in Table 1. As the table shows, total health care utilization, outpatient visit and especially hospital admission in the studied population were higher compared to the general population. Moreover, although war victims received more health services compared to their family members, there was not any significant difference between the groups.

The prevalence of payment for receiving health care was reported in 37.4% (n = 1054) with median and interquartile range of US$10.8 and US$20.6 and 95% CI: 35.6, 39.2 (351 000 and 669 500 Rials- Iranian currency, respectively); first quartile 0.5 and third quartile US$21.1. The expenses were between US$0.31 and 4612 (10 000-150 000 000 Rials). Less than half of the participants who paid for their health care expenses proceeded to reimburse their expenditure (43.2%; n = 455). The median amount of payment was US$26.2 (851 500 Rials). Health expenditure including details of amount of payment for reimbursing the expenditure and OOP are demonstrated in Table 2. OOP payment was significantly correlated with the type of health services (P <0.001). Frequency of OOP payment was greater for physician visit and medication. Hospitalization, imaging, and laboratory test were more significantly associated with proceeding to reclaim the expenses (P < 0.001) (Table 2). As Table 2 shows, the participants who paid more significantly were more likely to proceed to reclaim their expenses, especially in the outpatient visit, medication, lab tests, imaging, home care, and hospitalization.

The determinants of OOP and proceeding to reclaim the expenses of medical services are demonstrated in Tables 3 and 4. Gender, area of residence and being war victim were significantly the most important determinants for OOP. The determinants of proceeding to reclaim the expenses were greater amount of payment, more health care received, being male and war victims.

Discussion

This study was based on a national probability-based sample, which assessed the frequency and pattern of health care utilization and expenditure for both outpatient services and hospital admission among war survivors. We have highlighted the high rate of health care utilization. The results of this study showed that most health care services used were related to physician visits and medications. The annual rate of outpatient health services

Table 1. Health Care Utilization Indicators (Outpatient and Inpatient) in War Survivors (N = 3079)

	Annualized Health Care Utilization in Studied Population			General Population Annualized Health Care Utilization 2015[17,18]
	War Victims	War Victims' Family	Total	
Physician visit	8.9	5.6	6.6	4.9
Medication	6.6	4.3	5.0	3.6
Lab test	1.9	1.6	1.7	0.7
Imaging	0.9	0.9	0.9	0.4
Paraclinic	2.9	2.5	2.6	1.0
Outpatient	22.2	12.1	14.1	9.6
Inpatient/hospitalization	0.79	0.76	0.78	0.1
Total	22.8	12.7	14.8	9.7

Table 2. Distribution of Health Expenditure in War Survivors (US$) by Received Health Care Services

		Proceeding to Reimburse Expenditures					Out-of-Pocket (OOP) Payment					*P* Value*
		No. (%)	Median (US$)	Q1 (US$)	Q3 (US$)	IQR (US$)	No. (%)	Median (US$)	Q1 (US$)	Q3 (US$)	IQR (US$)	
Physician visit	n=490	203 (41.4)	7.7	6.1	9.2	3.1	287 (58.6)	6.2	3.4	9.2	5.8	<0.001
Medication	n=449	150 (33.4)	13.8	6.1	30.8	24.6	299 (66.6)	9.2	3.6	18.5	14.9	<0.001
Lab test	n=110	57 (51.8)	19.5	11.2	30.7	19.6	53 (48.2)	15.4	6.2	30.8	24.6	0.1
Imaging	n=151	83 (55.0)	24.6	12.3	55.4	43.1	68 (45.0)	18.5	6.4	38.4	32.0	0.01
Hospital admission	n=140	80 (57.1)	161.5	65.4	161.5	596.3	60 (42.9)	58.3	18.5	123.1	104.6	<0.001
Home care	n=56	22 (39.3)	38.5	15.4	110.8	106.2	34 (60.7)	2.6	1.2	16.9	15.8	<0.001
Medical trip	n=43	12 (27.9)	12.3	8.6	30.8	22.1	31 (72.1)	10.8	6.9	21.5	14.6	0.4
Total	n=1439	607 (41.2)	26.2	10.5	81.8	72.4	832 (58.8)	10.8	5.5	26.1	20.6	<0.001

*Mann-Whitney U test.

Table 3. Determinant of Out-of-Pocket Payment on Medical Services in the Studied Population (n = 2822)

	Out-of-Pocket Payment		Adjusted Odds Ratio	95% Confidence Interval		*P* Value[a]
	No	Yes		Lower	Upper	
Gender						
Female	905	314	1.0 (Ref.)			
Male	1145	244	1.68	1.19	2.36	0.003*
Employment						
Employed	1507	448	1.0 (Ref.)			
Unemployed	543	110	1.16	0.88	1.52	0.29
Area of residence						
Rural	253	87	1.0 (Ref.)			
Urban	1797	471	1.38	1.10	1.80	0.01*
War survivors group						
Martyrs' family	759	257	1.0 (Ref.)			
War victims	893	190	1.47	1.12	1.92	0.005*
War victims' family	398	111	1.34	0.90	2.01	0.14

[a] Logistic regression.

Table 4. Determinant of Proceeding to Reimburse the Expenses of Health Services (n = 1054)

	Proceeding to Reimburse the Expense		Adjusted Odds Ratio	95% Confidence Interval		*P* Value[a]
	No	Yes		Lower	Upper	
Gender						
Female	314	209	1.0 (Ref.)			
Male	244	203	0.63	0.41	0.97	0.03*
War survivors group:						
Martyrs' family	257	154	1.0 (Ref.)			
War victims	190	156	0.60	0.38	0.87	0.007*
War victims' family	111	102	0.64	0.36	1.11	0.11
Number of paid for health services	558	412	1.41	1.13	1.74	0.002*
Amount of payment (national currency)	558	412	1.0	1.0	1.1	<0.001*

[a] Logistic regression.

utilization was 14 which is twice higher than that of the general Iranian population. The annual rate of physician visits and medications/prescription was higher compared to the general population. Most of the clients received medications on their last physician visits. War survivors received three time more para-clinical services. Although the inpatient admission was much higher than the general Iranian totally,[17,18] the rate was similar in both war victims and their families. The causes should be addressed in future studies. First, the excess health care utilization highlights the important situation of individual's health care needs and government health care expenditures. Second, the higher rate of utilizing health care might be due to the fact that this population is under the cover of supplemental insurance so they have free and better access to health care services. Future studies should focus on the details separately, especially regarding hospital admission in the war survivors. Sociodemographic, diagnosis variables, psychosocial and functional status should be studied for better understanding of the use of inpatient-outpatient, home physician visits or nursing. Increasing the load of rehabilitation and health planning to decrease disability in the population will help for amending this burden. Going forwards, health systems need to expand to accommodate population aging which accounts for most of the increase in health utilization.

Our study revealed that more than 85% of war survivors received medications on their last physician visits which was higher than similar studies.[16,19] The medication is known as a supplemental commodity of general practitioners' visits.[16,19] A study in Canada showed that one of the main factors of not using doctors' visits is high cost of the drug.[20] Patient participation in drug costs resulted in a 15% reduction in the number of visits to the doctor.[21] This can also cause resorting to low-price, non-scientific methods or self-medication.[22] Insurance coverage has a key role in providing and utilizing healthcare services and some factors affecting the correlation among insurances and healthcare coverages.[23] People with insurance (basic or supplementary) need more health services.[24-28] An explaining reason might be that people with insurance express their health problems more easily and receive more medical care.[26] The findings highlight the need to plan and assess new interventions that increase health-care accessibility. These could be programs such as home-based evaluation, electronic medical/personal records and devices, as well as innovative health facility platforms including smartphones or telemedicine. These

performance measures help to identify war survivors who live in rural areas or those who have less access to care.

One-fifth of the study population had paid for the expense of their last incoming health service including both outpatient and inpatient health services with an average US$33. This finding is lower than similar surveys (35%–50%),[29,30] and the study by Moses et al. In that study, the unit costs for outpatient and inpatient services for the funds needed to meet a united health care standard were estimated at US$67 and US$7217 respectively.[24] War survivors paid less OOP for receiving health care services which might be related to the their supplemental and complementary health insurance.

OOP financing is the main mechanism in most Asian and developing countries.[31] In a study on health-related socio-economic indicators, do Rosário estimated the share of drug costs in household income as one of the highest Gini coefficients (extreme inequality).[32] Studies in Asian countries showed that at least 30% of the health care financing costs were provided by OOP payments.[33,34] Our expense was based on the population in 2015 but future estimates should include the additional expense associated with population aging. Remarkably, expenditure (OOP payment) and proceeding to reimburse the expenditure were significantly correlated with hospitalization, imaging and lab tests. These services are usually expensive, and a large number of the health centers are private and not under the contract of health insurance.

Except for travel health services, higher amount of payment was accompanied with proceeding to reimburse the expenditure. Travel health issues accounted for the highest amounts of expenditure, while the least in terms of proceeding to reimburse the expenditure. Although participants were under the cover of insurance, they did not use their insurance to get medical care during trips. They paid for their medical expenses and did not proceed to reclaim their expenses. In fact, bureaucracy, lack of time and distance from health centers covered by the insurance, compels patients not to use their insurance during traveling in these cases. The health system can help the insured by facilitating the rules on insurance repayment.[35]

The higher the expense, the more likely it was to be reclaimed. This was more observed for hospital admission and medication as shown in Table 2. The median difference between OOP and Proceed to Reimburse expenditures was US$1.3–1.5. Based on the contract, the insurance company is pledged to repay the money within a month. Our study showed wherever the health recipient spent more than average on receiving a health care service, they would more probably proceed to reimburse it. This was more obvious for hospital admission, imaging and medication. In some cases, the amounts were catastrophic (US$4000). As shown in Table 3, the studied population more frequently paid out of their own pocket for the expensive health services. Facilitating reimbursement is needed, particularly processing of claims, with monitoring and evaluating the process. Disability increased government-reimbursed expenditures for health care, which will place a huge burden on government finances. The correlation between disability and medical expenses, that modifies disability itself and its effect on health care use, is expected to be multifaceted.[36] Increase in OOP payment creates greater incentive to seek insurance and affect the household economy. However, it must be emphasized that the current information is insufficient for make-or-buy decisions.

The results also indicated that the amount of expenditure is significant for the families of martyrs and war victims with insurance coverage. Moreover, a higher rate of OOP payment was observed in men and urban communities. This can be related to two main factors: first, most of the population of war survivors who need more medical care are men, and second, the distribution of medical services varies widely in rural and urban. Living in a rural area is associated with greater disparity in access to health care compares to urban areas.[37] Rural areas are less developed than urban areas in Iran, resulting in poorer access to medical resources. This inconvenience probably ends in poor health condition and more medical expenses. To reduce medical financial inequality, accessibility of medical care should improve. Furthermore, medical recompense motivations such as higher reimbursed insurance fees, increased payment for circuit medical services, or subsidizing transportation costs should be implemented to cover medical services. The findings indicate that health providers need to promote better equity of treatment for health recepients.[38]

Limitations

The first limitation is that we estimated the health care utilization and expenditure based on self-reported health services received by the studied population. Another limitation is the recall bias which may have resulted in underestimation or overestimation of both health care utilization and expenditure. This bias could have an ignorable impact on determinant factors. About 20% did not respond to the phone calls; thus, the possibility of selection bias due to non-response should be considered as another limitation. Moreover, the outcomes were measured at a single period of time, making it difficult to establish causation. These statistics are limited in that we did not explore any extra data, especially the differences in hospital admission, physician visits, types of medication and para-clinical care use, total health expenditures and socioeconomic status in the studied population.

In conclusion, outpatient and especially inpatient services are more frequent among war survivors compared to the general Iranian population. Future studies should attempt

to explore the reasons. Interventions must be tailored to the health essentials of war survivors. Evaluating provider attitudes concerning these interventions is important for future health planning. The rate of OOP payment was higher for hospitalization, imaging and lab tests, mostly without proceeding to reimburse the expenditure. Implementation of supplemental insurance is one of the most essential medical policies for war survivors in Iran. Supplemental insurance improved access to medical and health services, resulting in a remarkable shift to reducing OOP payments. However, improvements are required to moderate the economic burden imposed on in-need war survivors (rural residents). Last but not least, future studies must ascertain whether health is improved, unchanged, or even adversely affected through medical care.

Strengths and Limitations

- This is the first study to examine the frequency and pattern of health care utilization and expenditure for both outpatient services and hospital admissions among war survivors, using samples from a representative cross-sectional survey.
- This survey contributes to better understanding of the epidemiological distribution of health care utilization and OOP payment and its associated factors in war survivors.
- Limitations of cross-sectional study are present; thus, it is not possible to establish causality.

Key Findings

- The annual rate of hospital admission was five times higher than the general Iranian population.
- The annual rate of outpatient health services utilization in war survivors was 14 which is 1.5 times higher than the general Iranian population.
- 85% of clients received medications on their last physician visits.
- While all participants were under the cover of insurance, 21% paid for their medical expenses out of their own pocket.

Authors' Contribution

BM was the principal investigator, designed the study, analyzed the data, and wrote the first draft. FM and KM actively contributed to study design and data analysis. FM, MS and BM collected the data. FM, MS, KM and BM actively contributed to elements of the study. RM interpreted the results, revised the manuscript and approved the final draft. All authors agreed to be responsible for this work.

Availability of Data and Material

The generated and/or analyzed data during the current study are available from the first author on reasonable request.

Conflict of Interest Disclosures

The authors declare that they have no competing interests.

Ethical Statement

The Ethics Committee of the Janbazan Medical and Engineering Research Center (JMERC), Tehran, Iran approved the project through protocol no. 93EP101, 2015. All subjects gave consent.

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