



## The predictors of access to health services for people with disabilities: A cross sectional study in Iranian context



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### Abstract

**Background:** In developing countries, people with disabilities (PWD) are more likely to have unequitable access to health care services than their counterparts without disabilities. Access to health care is a multidimensional concept and PWD experience various barriers to use health care. This quantitative study explored the predictors and deterrents of access to health care for PWD in an Iranian context.

**Methods:** Data were collected from a cross sectional study conducted in Tehran in 2017. A total of 403 adults with physical and/or intellectual disabilities were selected using census method. The data on PWD were collected from 14 rehabilitation centers affiliated to Welfare Organization and Red Crescent Organization. The self-report World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0) was used to collect data on disability status. T test, ANOVA, and multiple linear regressions were used to determine factors influencing access to health care for PWD. Significance level was set at 5%. Also, SPSS software version 20.0 was used for data analysis.

**Results:** The mean of access to health care among people with intellectual disabilities (mean: 61.77, 95% confidence interval (CI):59.20, 64.35) was significantly lower than their counterparts with physical disabilities (Mean: 67.97, 95% CI: 65.26, 70.69). The results of multiple linear regression analysis showed that in the affordability dimension, type of disability, marital status, and supplemental health insurance could predict access to health services for PWD. In availability dimension, only location predicted the outcome variable significantly. Also, location and type of disability were considered to be potential predictors of access to health services in acceptability dimension.

**Conclusion:** The results indicate that various factors can limit access to health services for PWD. To achieve universal health coverage, vulnerable groups and their needs should be identified to increase equitable access to health care services. Also, the health care system should pay more attention to demographic differences when planning and providing affordable and acceptable health care for PWD. Finally, the role of the government as the health stewardship is vital to promote health care access for PWD in Iran.

**Keywords:** Health disparities, Access to health care, Disability, Rehabilitation, Iran

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### Introduction

Different studies highlight the fact that many people with disabilities (PWD) do not have equitable access to

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#### ↑What is “already known” in this topic:

- Increasing the severity of disability can limit health care utilization among people with disabilities.
- Type of disability can affect access to health care.

#### →What this article adds:

- Married people with disabilities are more likely to have better access to health services than their single counterparts.
- People with developmental disabilities reported higher access to health care compared to the participants with nondevelopmental disabilities.
- Health care facilities' location can be considered as a major predictor of access to health care for PWD in both availability and acceptability dimensions.

health care. In Iran, qualitative studies have reported that Iranians with disabilities, who constitute nearly 1.3% of the general population, face different obstacles to access health care services, and thus experience unmet health care needs (1-5). Overall, the access problem is a major concern for PWD when seeking and choosing a health plan (6). At the same time, many policymakers, advocacy and interests groups in universities, and public and non-governmental organizations are making efforts to set up social movements with the aim of increasing actions and attention to disability issues.

To date, extensive efforts have been made to improve the access of people with disabilities to health services in Iran. One of the most important of these actions was the adoption of Comprehensive Act on the Protection of the Rights of People with Disabilities (CAPRPD) in Iran in 2002 (7). Although this act is considered as a critical point in the history of disability in Iran, it still faces 2 basic problems. First, the article 3 only obligates the State Welfare Organization to provide health services such as rehabilitation services and assistive devices. Second, article 16 mentions that the content of the act is implemented provided that the government allocates sufficient budgets. These problems have caused reluctance of many public organizations to implement the act.

Although since the passage of the CAPRPD the health and social status of PWD have improved (special vehicles, disability pension, free rehabilitation services, and assistive devices), they still experience different barriers to access health care in Iran (3, 5, 8). Many streets, sidewalks, health care facilities, and public transportation systems are not accessible for PWD (9-12). Health services such as dentistry, occupational therapy, speech therapy, and technical orthopedic are not covered by health insurance. Some of the barriers are related to cultural factors; for example, many physicians and dentists are reluctant to treat people with intellectual disability and do not have sufficient knowledge about health issues related to disability (2, 13, 14). These barriers indicate that the health system and other social systems have failed to address the needs of vulnerable groups.

Recently, the Ministry of Health and Medical Education (MOHME) developed the Health care System Reform Plan to achieve health system's goals, including financial protection and improvement of health care accessibility. Although people with disability were covered by a free health insurance, many of their special needs have been neglected in the benefit package, including rehabilitation services, dentistry, and assistive devices. In addition, some of the needed health services are not provided in public hospitals or centers, and therefore they have to receive services from the private sectors. It seems that lack of knowledge of health policymakers about disability, not providing financial protection for outpatient services, ignoring cultural dimensions of health service delivery, and not paying attention to the private sector and the weakness in referral system in this plan have led some PWD to even avoid seeking medical care (15-17).

In Iran, most studies are qualitative and they have focused largely on identifying barriers to health care services. The

aim of the present study was to measure access to health care services and identify the areas of disparity among PWD, which have not been considered in previous studies.

## Methods

### Sample and design

Data were collected from a cross sectional study conducted in Tehran in 2017. A total of 403 adults with physical and/or intellectual disabilities were selected using the census method. Participants who were younger than 16 years were excluded from the study. The data on PWD were collected from 14 rehabilitation centers affiliated to Welfare Organization and Red Crescent Organization. Ten rehabilitation centers provided services to people with intellectual disability (PWID) and 4 rehabilitation centers to people with physical disability (PWPD). Four centers were located in the south, 3 in west, 3 in east, 3 in north, and 1 in the center of Tehran. The rehabilitation institutions were public centers that provided low cost or free health services to PWD who could not afford health care services.

### Instruments

In the present study, 2 questionnaires were used to collect data on disability and access to health care services. The self-report World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0) was used to measure disability and determine standardized disability levels. This instrument was developed according to the concepts of the International Classification of Functioning, Disability, and Health (ICF) in 1998. WHODAS 2.0 is used as an international and interdisciplinary tool that is applicable across all cultures and diseases such as neurological, addictive, and mental disorders. In this study, the 12-item version of this tool was used to assess overall functioning. The items of this questionnaire cover 6 categories of functioning: cognition, mobility, self-care, interpersonal interactions, life activities, and participation in societies.

Also, a questionnaire was developed to determine disparity and access to health care services for PWD. To develop this instrument, the Macintyre et al conceptual framework, which defines access as the freedom to use health services, was used. In this multidimensional concept, the opportunity to use health services exists when affordable and acceptable health services are available to the health system's clients. This tool consisted of 63 items and 5 subscales: (1) demographic information (age, gender, marital status, education, income, employment, insurance, etc.), (2) use of health services (type and frequency of health services used in the last year), (3) availability, (4) affordability, and (5) acceptability. The availability dimension refers to the location of health care facilities and customers (distance), transportation options, the time of providing health services, and the type, quantity, and quality of health services. The affordability dimension includes costs of following items: diagnostic tests, medicine, assistive technologies devices, rehabilitation services, transportation, and other direct and indirect costs. The acceptability section was related to cultural factors such as attitudes of providers and consumers. The ques-

tionnaires were filled in by PWD or their families.

In addition, the reliability and validity of the questionnaire was determined by test-retest and qualitative content validity. The test-retest reliability was estimated by Kappa's statistic. All Kappa's coefficients were significant for all subscales and varied between 0.6 – 1.0, indicating that all items of the questionnaire had good or very good reliability. Also, the content validity of the questionnaire was assessed by a panel of 10 experts who were knowledgeable and familiar with the concept of disability and health.

### Data analysis

Independent sample t test and one-way ANOVA were used to compare the means of the access to health care services between independent variables of the study. In this study, the independent variables included age, gender, education level, employment, marital status, insurance coverage, type of disability, and levels of physical and intellectual disability. Also, access to health care was considered as the dependent variable in the present study. Multiple linear regression was used to explore the factors

associated with the access to health care services among PWD. The backward procedure was used to enter the variables into the equation. The independent variables were age, gender, type of disability, cause of disability, health facilities' location, education, marital status, supplemental health insurance, and household income. The dependent variables included the mean of access to health care services for 3 dimensions of availability, affordability, and acceptability. Significance levels were set at the 5%. In this study, SPSS software version 20.0 was used for data analysis.

### Results

Overall, 218 (54.1%) PWID and 185 (45.9%) PWPID participated in this study. The mean age of the participants was 35.9 years (SD: 14.52, 16-82). Also, 127 (31.5 %) PWD were illiterate and 393 (88.3%) were unemployed. Of the participants, 331 (82.1 %) had health insurance, and 118 (29.3%) PWD had supplemental insurance. Moreover, 282 (69.9%) were single and 108 (26.8%) were married. The descriptive statistics for PWID and PWPID are presented in Table 1.

Table 1. Socioeconomic and demographic characteristics of the study participants

Variables	Frequency (%)		
	PWID (n=218)	PWPID (n=185)	Total (n=403)
Gender			
Male	125(31)	104(25.8)	229(56.8)
Female	93(23.1)	81(20.1)	174(43.2)
Age			
16-30	113(33.2)	51(15)	164(48.2)
31-50	64(18.8)	63(18.5)	127(37.4)
51-70	-	39(11.5)	39(11.5)
71-90	-	10(2.9)	10(2.9)
Marital status			
Single	217(53.8)	76(18.9)	293(72.7)
Married	1(0.2)	109(27)	110(27.2)
Disability severity			
Mild	34(11)	36(11.7)	70(22.7)
Moderate	53(17.2)	49(15.9)	102(33.1)
Severe	51(16.6)	38(12.3)	89(28.9)
Profound	33(10.7)	14(4.5)	47(15.2)
Cause of disability			
Developmental	176(49.3)	24(6.7)	200(56)
Non-developmental	21(5.9)	136(38.1)	157(44)
Employment			
Full time	1(0.3)	23(5.8)	24(6.1)
Part time	1(0.2)	12(3.1)	13(3.3)
Unemployed	211(53.7)	145(36.9)	356(90.6)
Education			
Illiterate	117(30.2)	10(2.6)	127(32.8)
<diploma	79(20.4)	59(15.2)	138(35.6)
Diploma	10(2.6)	57(14.7)	67(17.3)
Associate	-	15(3.9)	15(3.9)
Bachelor	-	30(7.7)	30(7.7)
Master ≤	-	11(2.8)	11(2.8)
Supplemental Health Insurance			
Yes	48(13.1)	70(19.1)	118(32.2)
No	145(39.5)	104(28.3)	249(67.8)
Basic Health insurance			
Yes	182(46.2)	149(37.8)	331(84)
No	31(7.9)	32(8.1)	63(16)
Household Income (RLS)			
50000-100000	48(29.3)	38(23.2)	86(52.5)
1100000-2000000	34(20.7)	29(17.7)	63(38.4)
2100000-3000000	6(3.7)	5(3)	11(6.7)
3000000<	1(0.6)	3(1.8)	4(2.4)

During the last year, 58 (14.6%), 127 (31.7%), 257 (63.8%), and 264 (65.5%) PWD reported that they did not visit private clinics, public hospital clinics, public emergency clinics, or public inpatient wards. However, 238 (59%) PWD have had annual checkup during the last year, but 165 (41%) have not. Also, 249 (61.8%) and 178 (44.2%) PWD reported that they have not had any appointments with rehabilitation staff and physicians during the last year, respectively. In this study, only 8 (3.4%) PWD and 51 (27.8%) PWP noted that they have been using mobility aids products and equipment such as wheelchairs, crutches, walkers, and braces.

Table 2 shows the means of access to health services for PWD. There were significant differences between the

means of access to health services in the variables such as age, marital status, and type of disability, cause of disability, education, supplemental health insurance, and household income.

Table 3 summarizes the association between access to health services and demographic variables. Linear regression was used to determine the relationship between the independent variables and 3 dimensions of access to health services. The size of the effect of demographic variables on access to health services is expressed in adjusted regression coefficients ( $\beta$ ). To predict variables influencing access to health services, all independent variables which were significant in t test or ANOVA results were entered into the regression model (Backward model).

Table 2. The mean of access to health services for PWD

	Frequency	Mean	Standard deviation	p
Gender				
Male	229	66.1	18.6	0.063
Female	174	62.5	19.9	
Age				
16-30	164	63.67	19.09	0.055
31-50	127	66.13	18.75	
51-70	39	71.61	16.83	
71-90	10	73.5	17.82	
Marital status				
Single	293	62.55	19.44	<0.001
Married	110	70.14	17.88	
Disability severity				
Mild	70	68.32	19.1	0.078
Moderate	102	67.78	14.1	
Severe	89	67.03	16.8	
Profound	47	65.27	16.5	
Type of disability				
Physical	185	67.9	18.7	0.001
Intellectual	218	61.7	19.3	
Cause of disability				
Developmental	200	61.84	19.87	<0.001
Non- developmental	157	70.29	15.9	
Education				
Illiterate	127	61.5	18.9	0.009
<Diploma	138	65.7	20.1	
Diploma	67	68.1	16.6	
Associate	15	53.1	22.7	
Bachelor	30	70.7	18.3	
Master $\leq$	11	71.1	17.4	
Supplemental Health insurance				
Yes	118	68.77	20.11	0.018
No	249	63.82	17.85	
Household Income (RLS)				
50000-1000000	86	64.32	16.84	0.001
1100000-2000000	63	69.69	16.49	
2100000-3000000	11	52.72	33.12	
3000000<	4	91.5	14.38	

Table 3. Factors influencing access to health services for PWD: Linear regression analysis (N=403)

	$\beta$ [95% CI]	Standard error	p
Availability dimension			
Location	1.56[0.74, 2.39]	0.387	0.002
Constant	30.62[19.24,43.22]	2.33	<0.001
Affordability dimension			
Marital status	-1.56[-3.13,-0.003]	0.573	0.042
Type of disability	-3.99[-6.82,-1.15]	1.02	0.006
Supplemental health insurance	-1.476[-3.41,-0.005]	0.817	0.042
Constant	20.32[11.41,29.24]	4.52	<0.001
Acceptability dimension			
Location	0.71[0.25,1.35]	0.265	0.008
Type of disability	-2.451[-4.28,-0.004]	0.734	0.001
Constant	19.64[11.72,27.57]	4.02	<0.001

\* Adjusted regression coefficients of access to health services (with 95% CI).

In the availability dimension, only the location of health services facilities remained in the regression model. In this model, the change of the facilities location from northern (regions 1,2, and 3), southern (regions 12,15,16,17,18,19 and 20), and central areas (6,7,9,10 and 11) in Tehran to eastern (regions 4,7,8,13) and western areas (5,21,22) was associated with a mean increase of 1.17 in the access to health services score.

In the affordability dimension, the change of the marital status, type of disability, and supplemental health insurance was associated with a mean decrease of -1.56 ( $p=0.003$ ), -3.99 ( $p<0.001$ ), and -1.476 ( $p=0.042$ ) in the access to health services score, respectively. In this section, PWPDP who had supplemental health insurance and those who were married were more likely to have access to health services.

In the acceptability dimension, the location of health care facilities and type of disability remained in the model. In this dimension, PWIDs and PWD who received their services from northern, southern, and central areas of Tehran were more likely to report access to health services.

## Discussion

### *Effect of marital status, age, and gender on health care access*

The results of linear regression analysis showed that married participants were more likely to access health care services than the single and married people reported higher household incomes than PWD who were single, but the means difference was not statistically significant. Also, the results of ANOVA analysis showed that the mean of access to health care services increased with age. However, some studies reported that access to health care services decrease in older ages (65 and older) (18). In this study, older adults were more likely to pay out-of-pocket health care costs compared to younger people. In this study, men with disabilities reported higher mean of access to health care than women with disabilities, but it was not significant ( $p<0.06$ ). In developed countries, various studies have demonstrated gender differences in self-reported health care utilization, as women with disabilities reported worse access and poorer health status than men. Health care system in Iran, similar to other developed and developing countries, often does not recognize various barriers that women with disabilities may experience during seeking and choosing a health care plan. In addition, previous studies have indicated women with disabilities face more challenges in accessing maternal health care services. These challenges often resulted from personal factors such as shame, costs, lack of knowledge, mobility limitations, inaccessible buildings, and public transportation, information, and geographical barriers to access health facilities (5, 19).

### *Effects of disability on health care access*

Consistent with previous studies, PWIDs were more likely to report worse financial access to health services than PWPDP (20, 21). PWIDs experience more intellectual and functional limitations when seeking and accessing

health care services (20, 22, 23). The results of regression analysis showed that in acceptability dimension of access to health care, type of disability can be a predictive of lack of access to health care, as PWPDP were 2.451 times less likely to find health care services acceptable. This finding may indicate that many of the PWPDPs, because of higher intellectual abilities and intelligence quotient compared to PWID, were able to interpret cultural and social status of health care settings more precisely and sensitively than PWID, and thus, they were able to remember and express their dissatisfaction with health care services. Also, according to the results of ANOVA analysis, those with severe disability experienced worse access to health care across all 3 dimensions compared to those with mild and moderate disability, but the mean difference was not statistically significant. Evidence from different countries with a variety of health care systems indicates that people with severe disability are more likely to report worse access to health care because of cost, transportation, negative attitudes, long waiting lists, and physical barriers (18, 24).

### *Effects of income on health care access*

Income is one of the most important factors in accessing health services (25, 26). In this study, more than 88% of participants and 26.3% of their head of households were unemployed and had financial problems, and 41.9% of the participants reported that they had to borrow money for receiving health services. These findings indicate that despite the fact that many people with disabilities are covered by health insurance, their insurance does not cover their health costs adequately. For example, rehabilitation equipment, rehabilitation services (occupational therapy), technical orthopedic services, assistive devices, and dental care are not covered by health insurance. Furthermore, the results of ANOVA analysis showed that the mean of access to health care services significantly increased among PWD who had higher income. The review of studies demonstrated that income can affect access to health care in different ways, for instance, reduced ability to pay for medical visits, medicines and rehabilitation equipment, delay in receiving health care, and lack of access to suitable transportation (24). Some factors such as gender differences or type of disability may have a negative or positive effect on income and health status, as women with disabilities and PWIDs reported worse access to health care (18, 27).

### *Effects of health insurance on health care access*

In this study, the mean of access to health services for PWD covered by a basic health insurance was lower than the persons without any basic health insurance even though this result was not statically significant. This finding indicates that those people who had not purchased any basic health insurance plan may have belonged to high income groups and tended to pay out-of-pocket for health care services. In contrast, different studies have revealed that some health care outcomes such as satisfaction and medical visits decrease for uninsured persons with severe disabilities. On the other hand, the results of regression

analysis showed that PWD covered by a supplemental health insurance were more likely to report better access to health services than those without a supplemental health insurance. This finding suggests that supplemental health insurance, because of providing added medical coverage, are able to enhance access to health services that are not covered by basic health insurance. These types of insurances can cover medical costs for some of the health services, including dental care, rehabilitation services, and assistive devices that are needed for PWD. In the present study, only 130 (32.3%) participants were covered by supplemental health insurance and reported less barriers than others. Similarly, studies have indicated that private insurance coverage is lower among PWD compared to those without disabilities. For example, in the United States, in 2015, 43.4% of adults with a disability had private insurance, while 75.5% of working-age adults with no disability were covered by private health insurances (28). The results of this study showed that PWD need different supports to access health care. It is important to design benefit packages to support children and young people with disabilities and their families.

#### **Effect of health care location on health care access**

In this study PWD who received health care services from the north, south, and central parts of Tehran were more likely to report higher access to health care services than those who received their services from the east and west areas of Tehran. This finding showed that travel distance and time are important factors for PWD to access health care services. In Tehran, the distribution and focus of rehabilitation centers is usually in the central parts of the city, and there are a few centers in the west and east of Tehran. This result may be interpreted as follows: first, cost of land in the west of Tehran is higher than the south, east, and the center, and thus health care providers prefer to set up their centers in the central parts of the city. Second, there are many donors, charities, and low cost health care centers such as Red Crescent Society in the north parts of Tehran compared to other parts, and therefore many PWD tend to receive their services from these centers. Similarly, evidence reveals that long distance, lack of suitable transportation, and cost of transportation are known as the main barriers in developing countries for PWD. The complexity of urban contexts and socioeconomic differences between population groups in different parts of a city may jeopardize equity in access to health services; thus, PWD who live in marginal areas of a city may encounter more barriers to use health services (2, 3, 8, 29-31). Hence, considering different options to promote access to health services is essential for PWD who belong to low income groups.

#### **Availability dimension**

In this study, the location of health care facilities was a significant factor to access health care services. All health services should be distributed in a way that all people could have access to them. PWD who face more problems to have physical access to health services, need more attention. Therefore, first, policymakers should collect data

and disseminate information that can lead to evidence-based health policies. Next, an integrated approach is needed to provide health services for PWD. In Iran, various institutions such as Ministry of Health and Medical Education, State Welfare Organization, charities, Social Security Organization, the Red Crescent Society, municipalities, and NGOs are involved in providing health services to PWD. Nevertheless, there is not a mutual definition and approach to provide health services between these organizations. Thus, there is a need to make a unified model to describe disability concepts, collect data, and provide health services.

Also, municipalities have an important role in making public spaces and transportation accessible for PWD. Designing an accessibility checklist is essential to ensure accessibility for PWD. Moreover, PWD need to establish an accessibility advisory committee in municipalities to implement and monitor standards, develop plans and policies, and prepare reports for national and international entities and organizations.

#### **Affordability dimension**

Many PWD in this study belonged to low income groups and could not afford to pay health care services. To address this issue, government intervention is required. The government should consider some policy options to improve PWD's access to health services. These people need a special benefit package that cover health costs and services used frequently. Attention to the needs of vulnerable groups, PWD, is an important step to achieve universal health coverage in Iran. Basic health insurances do not cover services used by PWD and it is essential to revise the benefit package according to the needs of marginal and vulnerable groups. All dental care, rehabilitation services, assistive devices, medicines, and other needed health services should be included in the revised benefit package. Furthermore, the government should allocate financial resources according to the supportive needs of PWD. This could be accomplished by considering new methods to finance health services needed by PWD. For example, the use of sin taxes or taxes on profit gains, valued added taxes, and taxes on imported goods could finance health services (32). Hence, the ways that are used to finance health services could be progressive and lead to reduce out-of-pocket payment for PWD.

#### **Acceptability dimension**

Healthcare system in Iran needs to be more responsive to PWD, and health service provision should be more compatible with the cultural backgrounds, expectations, and beliefs of PWD (2, 5, 8, 31). Of these, attention to rights of PWD, especially PWID who face cognitive disabilities, should be a priority in the health care system. Gender differences is a remarkable issue in Islamic governments like Iran. Some studies in Iran have shown that women with disabilities feel shy to consult doctors for their health problems.

#### **Study limitations**

In the present study, disability was self-reported, which limited comparisons with different studies that used other

measures. Data were collected from rehabilitation centers affiliated to State Welfare Organization and Red Crescent Society. Unfortunately, other information of PWD such as email, phone number, and postal address was not provided to us, and the only way to collect data was through rehabilitation centers. Another issue was that data were collected when using health care services and, as a result, some PWD did not have enough time to participate in the study. Finally, the study was conducted just in Tehran, but it is essential that more comprehensive and comparable information be gathered on health status and health care success of PWD in the future.

### Conclusion

The results of this study indicated that various factors can limit access to health services for PWD. To achieve universal health coverage, vulnerable groups and their needs should be identified to increase equitable access to health care services. Also, the health care system should pay more attention to demographic differences when planning and providing affordable and acceptable health care for PWD. Finally, the role of the government as the health stewardship is vital to promote health care access for PWD.

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### Conflict of Interests

The authors declare that they have no competing interests.

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