BMC Psychology

RESEARCH

Open Access

Psychometric properties of the Iranian version of the attitudes to disability scale in people with physical disabilities

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Abstract

One way to gain insight into the social construction of disability is by examining the attitudes of individuals with disabilities toward disability itself. This study aimed to evaluate the psychometric properties of the Persian version of the Attitudes to Disability Scale (ADS) within a sample of individuals with physical disabilities. This psychometric study employed a forward-backward translation process to translate the general items of the ADS from English to Persian. The instrument's validity and reliability were subsequently evaluated. The face and content validity of the instrument items were assessed. Confirmatory Factor Analysis (CFA) was conducted to verify the factor structure of the ADS, based on data from 172 individuals with physical disabilities, aged 22 to 60. Cronbach's alpha was calculated to assess the internal consistency of the ADS subscales. Both the Content Validity Index (CVI) and Content Validity Ratio (CVR) for all items were found to be acceptable. The results of CFA revealed that the 16 items of the ADS loaded onto four distinct factors: inclusion (4 items), discrimination (4 items), gains (4 items), and prospects (4 items). The four-factor ADS demonstrated good fit indices, with a root mean square error of approximation of 0.054, a root mean square residual of 0.054, a comparative fit index of 0.93, a relative Chi-square (χ^2/df) of 1.50, a Tucker-Lewis index of 0.914, and a goodness of fit index of 0.906. Cronbach's alpha values were 0.70 for the inclusion, discrimination, and prospects subscales, 0.73 for the gain subscale, and 0.76 for the overall scale. In conclusion, the findings indicate that the Persian version of the ADS is a reliable and valid tool for assessing attitudes toward disability among individuals with physical disabilities in Iran.

Keywords Attitudes to disability scale, Factor structure, People with physical disabilities, Persian version, Psychometric properties

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Introduction

The term "disability" includes the adverse impact of the interaction between an individual with a health condition and various contextual factors such as the environment and personal factors. This includes impairments, limitations in activities, and restrictions in participation [1]. The increasing prevalence of chronic health conditions and aging populations has led to a rise in the number of individuals living with disabilities worldwide [2]. It is estimated that over one billion people globally experience some form of disability [2]. Of these, around 190 million individuals aged 15 and above face significant functional challenges [3]. The prevalence of disabilities in Iran is reported to be 1.3% [4], with a higher occurrence of physical and intellectual impairments in the general population [5].

Disability is a social issue, arising from a combination of physical, mental, or sensory impairments that interact with social and environmental factors, hindering participation in society [6]. Social barriers hinder the full integration of people with disabilities into society, negatively affecting how they grow, live, learn, and work [7]. People with disabilities face social barriers, including limited access to healthcare services, employment, and educational opportunities. These factors can result in lower incomes, poorer health, and a reduced overall quality of life [8, 9]. However, the most fundamental barriers to the participation of people with disabilities in society, which also reinforce other barriers, are attitudinal [7, 10].

Attitudes towards disability involve cognitive and behavioral processes, such as judgment and positive or negative responses to aspects of impairment. Negative attitudes to disability can have adverse effects on individuals with disabilities, including reduced social integration, self-esteem, and social involvement [11]. Moreover, negative attitudes can contribute to the stigmatization and marginalization of people with disabilities in society, affecting their quality of life and access to resources [12–14]. Conversely, improving positive attitude to disability can lead to an improvement in the quality of life for individuals with disabilities [15]. Examining the attitudes to disability in individuals with disabilities is a valuable approach to analyzing societal perceptions of disability [13]. Understanding attitudes towards disability is crucial for explaining discrimination against people with disabilities and developing effective behavioral interventions [16]. Positive attitudes can lead to more adaptive and healthy behaviors [17] by contributing to the improvement of related health services and promoting self-acceptance among individuals with disabilities. Therefore, this can enhance the integration of people with disabilities into society [18].

Validated instruments for assessing attitudes to disability are crucial for evaluating training programs and conducting research in this field [19]. To the best of our knowledge, most existing measurement tools, such as the Multidimensional Attitudes Scale toward Persons with Disabilities (MAS) and the Attitudes and Perspectives toward Persons with Disabilities (APPD), primarily focus on assessing the attitudes and perspectives of the general population toward individuals with disabilities [20, 21]. Power et al. developed a 16-item scale to measure attitudes to disability in English, which is often utilized to evaluate attitudes towards disability among individuals with physical or intellectual disabilities. The Attitudes to Disability Scale (ADS) was developed through a qualitative phase involving cross-cultural focus groups from various centers worldwide. This scale has several unique features that distinguish it from other tools used to assess attitudes toward disability. Unlike many scales that rely solely on expert opinions, the ADS integrates the perspectives and experiences of individuals with both physical and intellectual disabilities. It is suitable for assessing attitudes toward disability in both individuals with disabilities and non-disabled respondents, and is available in multiple language versions [22].

This study was conducted in response to the recognized need for cultural adaptation of measurement instruments [19] and the importance of assessing attitudes toward disability among individuals with disabilities in Iranian culture using valid and reliable tools. Understanding these attitudes is crucial for developing targeted interventions and policies aimed at improving the quality of life for people with disabilities, leading to more effective support and services [23]. The study's findings can inform programs and policies designed to increase the participation and inclusion of people with disabilities [24, 25]. By understanding how Iranian individuals with disabilities perceive disability, stakeholders can develop interventions that promote positive attitudes and reduce discrimination. This study aimed to assess the validity and reliability of the Iranian version of the ADS in a sample of individuals with physical disabilities in Iran.

Methods

Study design

This psychometric study was conducted from December 2021 to February 2022 in Qazvin, Iran. The protocol of the study was approved by the Ethics Committee of the Iran University of Medical Sciences (with the code IR.IUMS.REC.1398.935).

Study participants

Given that the recommended sample size for assessing construct validity is 10 respondents per survey item [26], this study selected 172 participants from a total of 623 employees with physical disabilities at the Firooz Hygienic Group, located in Alborz Industrial City and

Qazvin, Iran. Participants were selected using a systematic random sampling method. One of the researchers of the present study conducted face-to-face interviews to complete the ADS to assess its construct validity. The inclusion criteria for participants were: (1) a reported history of physical disabilities for at least the past year, (2) no visual or hearing disabilities, and (3) willingness to participate in the study.

Table 1 Demographic information of the participants in the construct validity assessment ($n=172$) and internal consistency assessment ($n=28$)

Variable	Construct validity assessment		Internal consistency assessment	
	Mean ± SD	*N*(%)	Mean ± SD	*N*%
Age	38.61 ± 7.53		37.35 ± 7.55	
Sex				
Female		60(34.88)		17(60.71)
Male		112(65.11)		11(39.28)
Education level				
Illiterate		0(0)		0(0)
> 12th grade		51(29.65)		15(53.57)
≤ 12th grade		121(70.34)		13(46.42)
Marital status				
Married		114(66.27)		12(42.85)
Single		58(33.72)		16(57.14)
Cause of disability				
Congenital		104(60.46)		17(60.71)
Non-Congenital		68(39.53)		11(39.28)
Duration of disability		33.5 ± 11.43		33.5 ± 13.72
Type of physical disability				
Neuromuscular disorders (cerebral palsy)		40(23.2)		10(35.7)
Skeletal disorders (scoliosis)		21(12.2)		2(7.1)
Spinal disorders (paraplegia)		13(8)		2(7.1)
Amputations or severe limb injuries		12(7)		1(3.5)
Congenital disorders (congenital organ defects)		24(13.6)		3(10.9)
Disorders caused by diseases (poliomyelitis)		38(22)		10(35.7)
Disorders caused by traumatic injuries (falling, accident)		24(14)		0(0)

In this study, physical disability is defined as the total or partial loss of bodily function, such as gross and fine motor skills, or the total or partial loss of a body part, such as in the case of amputation, which affects an individual's mobility and participation in society [24, 25]. The exclusion criteria included: (1) a history of severe psychological illnesses requiring medication, such as major depression, and (2) a history of intellectual disabilities and/or cognitive deficits.

After being informed of the study's objectives and providing written consent, one of the researchers conducted face-to-face interviews to complete the ADS items for the participants. The response rate was 100%. Demographic information of the participants is presented in Table 1.

The original ADS

The ADS developed by Power et al. and consists is a 16-item self-reported instrument designed to assess the notion of individuals with physical or intellectual disabilities, as well as those without disabilities, regarding disability. The scale comprises four subscales: inclusion (4 items), discrimination (4 items), gain (4 items), and prospects (4 items). Each item is rated on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) [22]. To evaluate the validity and reliability of the Persian version of the ADS, a series of stages were conducted as presented below.

Backward-forward translation

Regarding the validity of the translation process, the ADS was translated following the standards outlined in the guidelines [27, 28]. Written permission was first obtained via email from the WHOQOL-Dis Group, a co-author of the scale. Next, two English-Persian translators—one bilingual with expertise in disability and the other a general translator—independently translated the ADS. A panel of experts, including two professional translators, then reviewed both translations and synthesized them into a single Persian version of the ADS. Subsequently, two Persian-to-English translators, who were blinded to the original English version, performed a back-translation. The expert panel then compared the back-translated results with the original instrument to identify any differences and similarities. A pilot test was conducted with 10 individuals with physical disabilities. Participants completed the Persian version of the ADS and were asked to identify any ambiguous items and suggest alternative wording if necessary. The pilot test did not result in any changes to the items.

Face validity assessment

The face validity of the translated version of the ADS were evaluated both qualitatively and quantitatively. To assess quantitative face validity, ten individuals with

physical disabilities were asked to rate the importance level of each item and its alternatives on a 5-point Likert scale ranging from not at all to very important. An impact score higher than 1.5 was considered acceptable for each item. Additionally, ten individuals with disabilities were interviewed face-to-face to provide feedback on the clarity, simplicity, and readability of the scale items to assess qualitative face validity [29].

Content validity assessment

At this stage, the qualitative and quantitative content validity of the ADS was evaluated. An expert panel of 10 specialists in health education, psychology, nursing, and rehabilitation assessed the relevance and representativeness of the scale items to measure quantitative content validity. Based on their feedback, the Content Validity Index (CVI) and Content Validity Ratio (CVR) for the items were calculated. The CVR is defined as a direct linear transformation that reflects the level of agreement among experts who rated an item as essential. The formula for CVR is given by CVR = (ne - N/2) / (N/2), where 'ne' represents the number of panelists who rated an item as 'essential,' and 'N' is the total number of panel members. The necessity of the items was evaluated using a three-point rating scale: (3) essential, (2) useful but not essential, and (1) not necessary. The CVI is calculated by counting the number of experts who rated the item as 3 and dividing that figure by the total number of experts. The relevance of the items was assessed using a four-point rating scale: (1) not relevant, (2) slightly relevant, (3) relevant, and (4) very relevant. Items with a CVR of less than 0.62 and a CVI of less than 0.79 were removed. Additionally, experts were asked to review the items and provide feedback on grammar, wording errors, appropriate terminology, item placement, and scaling, ensuring qualitative content validity.

Construct validity assessment

The Confirmatory Factor Analysis (CFA) was conducted to verify the factor structure of the ADS in a sample of Iranian individuals with physical disabilities from December 2021 to February 2022. During this stage, model fit was evaluated using the following indices: Chi-square test, chi-square to degrees of freedom ratio (χ^2/df) < 5, Comparative Fit Index (CFI) > 0.90, Tucker-Lewis Index (TLI) > 0.90, Root Mean Square Error of Approximation (RMSEA) < 0.10, Goodness of Fit Index (GFI) > 0.90, and Standardized Root Mean Square Residual (SRMR) < 0.10 [30, 31].

Reliability assessment

Following the validity assessment, the internal consistency of the ADS subscales was evaluated by calculating Cronbach's alpha. For this evaluation, a group of 28 individuals with physical disabilities from the Firooz Hygienic Group completed the instrument. A Cronbach's alpha value of 0.70 or higher was considered satisfactory [32].

Statistical analysis

Statistical analyses, including frequency and mean calculations, were conducted using SPSS software (Version 23; IBM Corporation, Armonk, NY, USA). CFA was performed using R software (version 4.2.2; R Core Team, 2021) with the "lavaan" and "tidySEM" packages.

Results

A total of 172 participants (112 males and 60 females), aged 22 to 60 years, participated in this study to assess CFA, with a mean age of 38.61 ± 7.53 years. Additionally, 28 participants (11 males and 17 females) were included to evaluate the internal consistency of the scale. To minimize the likelihood of missing data in the CFA, one researcher conducted face-to-face interviews to ensure the completion of ADS items by participants. Consequently, all 172 participants responded to every ADS item, resulting in a dataset with no missing values for this study. Demographic information about the participants involved in the construct validity and internal consistency assessments is presented in Table 1.

The results of face validity

In this stage, some errors were corrected. Based on participant feedback, two items from the original ADS were revised to reflect cultural differences in Iran. The item, *"People often make fun of my disability,"* was modified to *"Because of my disability, people often look at me with pity."* This change recognizes that, in Iranian culture, individuals are more likely to express pity rather than ridicule toward people with disabilities. Participants emphasized that Iranian society generally demonstrates greater compassion and empathy toward people with disabilities than ridicule. Similarly, the item, *"Because of my disability, people think they should not discuss sex with me"* was revised to *"Because of my disability, people think they should not discuss sex or marriage with me".* This modified item aligns more closely with cultural norms, as most sexual relations in Iran occur within the framework of marriage (Table 2). It is important to note that all items had an impact score exceeding 1.5 (Table 2).

The results of content validity

After incorporating participants' feedback in the face validity stage, experts evaluated the content validity of the items. The results indicated that all items in the ADS had satisfactory CVR and CVI of ≥ 0.62 and ≥ 0.79, respectively (Table 2). During this stage, no items were removed from the ADS. Additionally, the CVI and CVR

Table 2 Content validity index, content validity ratio and impact score of the final items of the Persian version of the attitudes to disability scale

Items	Content validity index	Content validity ratio	Impact Score
1. Because of my disability, I find it harder than others to make new friends.	0.93	0.80	2.87
2. Because of my disability, I have problems getting involved in society.	0.96	0.80	3.28
3. Because of my disability, People often look at me with pity.	0.90	0.80	0.84
4. Because of my disability, I am easier to take advantage of (exploit or treat badly) compared with other people.	0.83	0.80	3.36
5. Because of my disability, I feel I am a burden on society.	1	0.80	3.36
6. Because of my disability, I feel I am a burden on my family.	1	0.80	3.28
7. Because of my disability, I feel I am a stronger person.	0.86	0.80	2.28
8. I feel I am a wiser person (I have learned a lot about life) because of my disability.	0.83	0.62	2.34
9. I achieve more because of my disability (I am more successful).	0.76	0.80	1.70
10. Because of my disability, I am more determined than others to reach my goals.	0.90	0.80	2.87
11. Because of my disability, people tend to become impatient with me.	0.93	1	1.70
12. Because of my disability, people tend to treat me as if I have no feelings.	0.86	0.80	1.80
13. Because of my disability, people think they should not discuss sex or marriage with me.	0.83	0.62	2.16
14. Because of my disability, people should not expect too much from me.	1	0.80	2.73
15. Because of my disability, I am not optimistic (hopeful) about my future.	0.80	0.93	3.20
16. Because of my disability, I have less to look forward to than others.	0.80	0.86	3.28

Table 3 Goodness of fit statistics for the Persian version of the attitudes to disability scale

Tests	Value
χ2/df	1.500
df	98
Root mean square error of approximation	0.054
The root mean square residual	0.079
Comparative fit index	0.93
Standardized root mean residual	0.062
Tucker-Lewis index	0.914
Goodness of fit index	0.906

of the modified items 5 and 13 were acceptable (Table 2). The format and wording of three items were also revised during this stage.

The results of confirmatory factor analysis

Goodness-of-fit indices assess how well the model fits the data. Common indices include the RMSEA, CFI, and TLI, as reported in Table 3. Factor loadings represent the effect of the latent variable on the observed measurements, and they are illustrated in Fig. 1.

CFA results revealed that the 16 items of the ADS loaded onto four factors labeled as inclusion (items 1, 2, 5, 6), discrimination (items 3, 4, 11, 12), gains (items 7, 8, 9, 10), and prospects (items13, 14, 15, 16). The recommended scoring for the scale was a profile set of four sub-scores, or, if a higher-order factor was present in the CFA, a single total score based on the sum of the 16 scale items could be obtained (Fig. 1).

The results of the CFA presented that the four-factor structure of the ADS exhibited a good fit. The goodness-of-fit characteristics for the ADS are presented in Table 3. All the goodness-of-fit statistics reached acceptable levels, indicating that the data from this research aligns well with the factor structure of the scale [33]. The items within the scale correspond closely to the underlying structure, providing additional evidence for the validity of the ADS.

The results of the reliability assessment

Cronbach's alpha was 0.70 for the inclusion, discrimination, and prospects subscales, 0.73 for the gain subscale, and 0.76 for the total scale. Finally, a 16-item instrument with four subscales consisting of inclusion, discrimination, gain, and prospect was confirmed for the assessment of ADS in Persian and can be used to assess attitudes of people with physical disability towards disability. The questionnaire is a self-report measure with scores ranging from 1 to 5, where 5 indicates 'strongly agree' and 1 represents 'strongly disagree.' Negatively worded items—specifically items 1 to 6 and 11 to 16—are reverse-coded. Higher scores on the ADS reflect more positive attitudes toward disability, meaning they correspond to lower attitudinal barriers [24, 34]. The final items of the Persian version of ADS are presented in appendix.

Discussion

In this study, we assessed the psychometric characteristics of the Persian version of the ADS. The findings demonstrated that the Persian version of the ADS is a reliable and valid instrument for assessing the attitudes of people with physical disabilities toward disability in Iran, which aligns with the findings of Palad et al. and Qi et al. [24, 35].

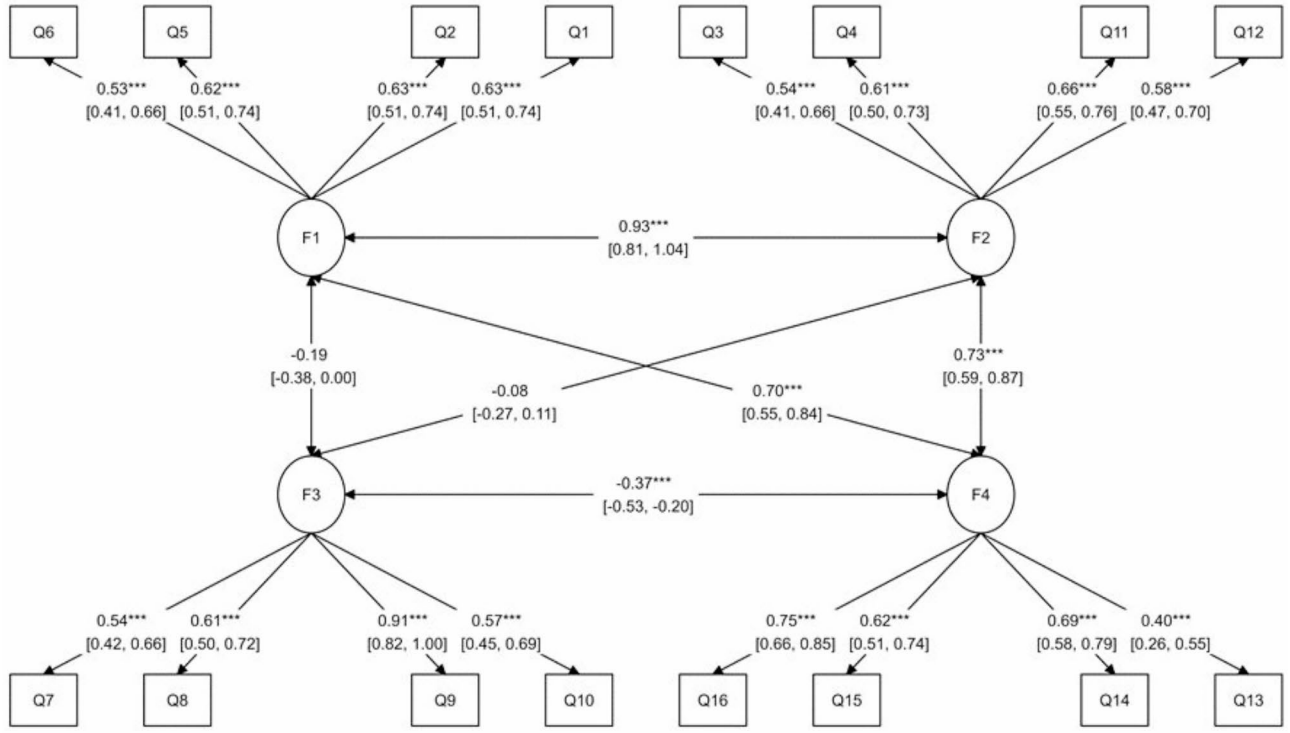

Fig. 1 The final pattern of the 16-item instrument following confirmatory factor analysis of 172 persons with Physical disabilities. The data fitted the attitudes to the disability subscale

The majority of currently available instruments, such as the Multidimensional Attitudes Scale toward Persons with Disabilities (MAS) and the Attitudes and Perspectives toward Persons with Disabilities (APPD), primarily focus on measuring the general population's attitudes and perspectives toward people with disabilities [20, 21]. A key distinction of the ADS compared to other scales is its applicability in assessing attitudes in both individuals with physical or intellectual disabilities, as well as in healthy respondents [21].

The importance of measuring disabled individuals' attitudes toward their own disability has been demonstrated in several studies. For instance, Townend et al. demonstrated that personal beliefs about accepting disability can predict emotional adaptation following a stroke [36]. The implicit attitudes of individuals with disabilities towards disability are significantly associated with their perceptions of disability as a lack of independence, an impairment, and/or about the norm, as well as their explicit attitudes towards disability [37]. There is a need to develop interventions aimed at enhancing the personal attitudes of individuals with physical disabilities towards their disabilities. The effectiveness of such interventions has been demonstrated in various studies. For instance, MacMillan et al. found that peer groups and increased contact with individuals with disabilities can lead to improved attitudes towards disability [38]. In another study, Armstrong et al. showed that direct, extended, and guided imagined contact interventions were effective in promoting positive attitudes towards disability [39].

The original English version consisted of 16 items divided into four categories: inclusion, discrimination, gain, and prospects. The first sub-scale focuses on problems related to burdening families and society as a whole, as well as inclusion and exclusion. In the original ADS, the first subscale is named "Inclusion". This term was retained in the Persian version as it accurately represents the same concept in both cultural contexts. Long and Guo emphasized the importance of inclusion, participation, and a feeling of belonging for the development of children with disabilities. This essay highlights the advantages of inclusive practices, successful methods to increase involvement, and the importance of fostering a sense of belonging. Inclusive practices can profoundly alter the lives of children with disabilities. Nevertheless, it is important to note that inclusion is merely the initial stage towards achieving a sense of belonging. Inclusive environments facilitate active engagement in activities within such surroundings and foster the formation of social connections grounded in common interests, so promoting personal advancement, maturation, and self-reliance [40].

The second subscale focuses on several specific issues related to general discrimination, which is especially

important for those with intellectual disabilities. This item primarily reflects social aspects. In other words, it is influenced by social attitudes towards disability. In line with this, Soltani et al. concluded that negative attitudes towards people with disabilities are closely related to the cultural norms of a society [41]. Abdi et al. reported that socio-cultural factors pose challenges for individuals with disabilities who require necessary services [42]. The literature has shown a cultural weakness in accepting the needs of people with disabilities. For instance, Taghizadeh et al. reported that the community tends to ignore the sexual needs of people with disabilities and there are barriers to their marriage. They also found that caregivers of individuals with disabilities lack sufficient knowledge about their abilities [43]. In a study by Daruwalla and Darcy, it was concluded that changing societal attitudes is easier than changing personal attitudes [44]. Individuals with disabilities feel a sense of "normalcy" when societal structures enable them to actively engage in everyday life and be fully included in society [45].

The third subscale, which strongly focuses on positivity, captures benefits that are advantageous for both the individual and any potential observers of the individual's impairment. In a study conducted by Lindsay et al., it was found that employing individuals with disabilities promotes human dignity and social inclusion. Research suggests that hiring individuals with disabilities can result in various benefits, such as improved self-confidence, a broader social circle, and a stronger sense of belonging [46]. Some studies [47, 48] emphasize the importance of promoting self-determination among people with disabilities, as they are more likely to develop and achieve future goals when given the freedom to make decisions and take control of their lives. According to the study by Maggio et al., the future aspirations of individuals with intellectual disabilities were influenced by autonomy, health and well-being, interpersonal relationships, and personal growth [48].

The fourth subscale is mostly concerned with hopes and prospects for the future, both now and in the future, and whether or not a disability affects these hopes. People may be able to live more effectively and with better physical and mental health if they have hope [49]. Those with hope are better able to take care of themselves [50]. Pasyar et al. demonstrated in a study how hope in hemodialysis patients predicted their acceptance of disability [51]. This result is in line with past research showing a correlation between patients' hope and their acceptance of their disabilities among those with chronic diseases [52, 53]. Furthermore, individuals with physical disabilities who accept their disability are likely to experience hope. This hope can also contribute to the positive impact of acknowledging their disability on promoting well-being, including agency and pathways, among people with physical disabilities [54]. Considering that individuals with disabilities live in a social environment it is crucial to change the societal and familial perceptions of their abilities through mass media. Furthermore, policymakers should prioritize the social needs of individuals with disabilities and provide the necessary infrastructure to meet those needs.

While the current study offers a reliable instrument for measuring attitudes to disability in individuals with physical disabilities, it is important to acknowledge its limitations.

Although this study is one of the few that assesses the psychometric properties of attitudes toward disability in individuals with physical disabilities in Iran, it does have a significant limitation. The data were collected from a sample of individuals with physical disabilities employed at the Firooz Hygienic Group in Alborz Industrial City, Iran. The homogeneity of the sample may limit the generalizability of the findings to other subgroups of individuals with disabilities living in different areas of Iran. Future research should aim to validate the ADS for individuals with non-physical disabilities and for those who are unemployed.

Conclusion

The findings of the study indicated that the Persian version of the 16-item ADS, with four subscales inclusion (4 items), discrimination (4 items), gains (4 items), and prospects (4 items) is a valid tool for identifying the attitudes of people with physical disabilities toward disability. This tool can be used to assess the needs of people in Iran and to formulate effective strategies for improving the attitudes of individuals with physical disabilities toward their disabilities.

Appendix

The final items of the Persian version of the attitudes to disability.

Subscales and Items
Inclusion
1. Because of my disability, I find it harder than others to make new friends.
2. Because of my disability, I have problems getting involved in society.
3. Because of my disability, I feel I am a burden on society.
4. Because of my disability, I feel I am a burden on my family.
Discrimination
5. Because of my disability, people often look at me with pity.
6. Because of my disability, I am easier to take advantage of (exploit or treat badly) compared with other people
7. Because of my disability, people tend to become impatient with me.
8. Because of my disability, people tend to treat me as if I have no feelings.
Gains

Subscales and Items
9. Because of my disability, I feel I am a stronger person.
10. I feel I am a wiser person (I have learned a lot about life), because of my disability.
11. I achieve more because of my disability (I am more successful).
12. Because of my disability, I am more determined than others to reach my goals.
Prospects
13. Because of my disability, people think they should not discuss sex or marriage with me.
14. Because of my disability, people should not expect too much from me.
15. Because of my disability, I am not optimistic (hopeful) about my future.
16. Because of my disability, I have less to look forward to than others.

Acknowledgements
We appreciate the participants involved in the study for their cooperation.

Author contributions
MP, TD wrote the main manuscript text. MP, TD, IMZ, NM and SHAR contributed to the study's design and interpretation of data and prepared the manuscript.MP contributed to the data collection.

Funding
This study was supported by the Iran University of Medical Sciences, Tehran, Iran.

Data availability
Sequence data that support the findings of this study have been deposited in the Corresponding Author data archive and is available by sending request.

Declarations

Ethics approval and consent to participate
The study was approved by the ethics committee of Iran University of Medical Sciences, Tehran, Iran (Ethical Approval Code: IR.IUMS.REC.1398.935). All participants were informed about the study objectives and completed an informed consent form.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Conflicts of interest/competing interests
The authors declare that they have no competing interests.

Received: 17 February 2024 / Accepted: 17 February 2025
Published online: 27 March 2025

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