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# Disabled woman attitude scale: Reliability and validity study

**Melike Punduk Yilmaz,[1] Besey Oren[2]**

[1]Duzce Provincial Health Directorate, Public Health Services, Duzce, Turkey

[2]Department of Midwife, University of Health Science Turkey, Faculty of Health Science, Istanbul, Turkey

## ABSTRACT

**OBJECTIVE:** The objective of the study was to develop a scale to determine the attitude of nursing and midwifery university students towards disabled women.

**METHODS:** In the development of the scale; expert opinion, content validity, item reliability, and construct validity stages were included in the study. It was realized with a total of 167 students. To evaluate the suitability of the data for factor analysis, the Kaiser-Meyer-Olkin Sample Fit Test and Bartlett's test have been applied. To evaluate validity and reliability; test-retest, factor analysis, and internal consistency analysis have been applied. Permission from the institutions and ethics committee permission was obtained.

**RESULTS:** The number of the items in the scale decreased from 64 to 31 in accordance with expert opinion. Internal consistency, Cronbach's alpha coefficient was 0.817 and the test-retest correlation coefficient was 0.992. The exploratory factor analysis revealed an four-factor structure, accounting for 59.81% of the variance. Kaiser-Meyer Olkin coefficient of 0.793, $p<0.005$ in Bartlett's test showed a correlation between the items and there was a positive correlation between the items. As a result of the analyses, the number of the items decreased to 17.

**CONCLUSION:** It was concluded that the Disabled Woman Attitude Scale can be used as a valid and reliable measurement tool in healthcare workers.

*Keywords: Attitude; disabled woman; healthcare worker; midwife; nurse; scale development.*

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It refers to the loss or restriction of the ability to do a job within the limits that can be accepted as normal for a human being as a result of a deficiency. Most people may experience temporary or permanent deficiency during their lifetime and gradually decrease in their functions. It should not be forgotten that disability is a part of humanity [1].

The population of disabled people in both Turkey and the world is quite high. Even, the rate of disabled individuals in the world has been reported to be 15% [2]. The population of disabled people in Turkey is 8 million. Two-point-fifty-eight percent of the people in Turkey (1.8 million people) has orthopedic (1.25%), visual (0.60%), hearing (0.37%), speech (0.38%), and mental (0.48%) disabilities [3].

Disabled people need support in many respects. Provision of this support is not only a matter of conscience but also related to rights and justice. These people should have the rights to fair treatment, respect, freedom, and member of the society [4]. All individuals and organizations have responsibilities concerning these issues. So that social, cultural and economic adaptation of disabled people can be achieved, relevant organizations and health professionals should make attempts in accordance with novel approaches [5].

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Correspondence: Melike PUNDUK YILMAZ, MD. Duzce Il Saglik Mudurlugu, Halk Sagligi Hizmetleri Baskanligi, Duzce, Turkey.
Tel: +90 380 523 92 72 e-mail: melikepunduk@gmail.com

Throughout history, the disabled have been isolated and have had to lead their life under poor living conditions. All disabled individuals, especially females seem to experience problems with getting involved in the society. It has been emphasized in many studies that females with disabilities are at a more disadvantage in all cultures [6].

Authors approaching disabilities from a feminist viewpoint argue that gender differences and inequalities are disregarded in disability research. Disabled women are not given chance of fulfilling several roles both in the society (e.g., having a job and receiving education) and in their private life (e.g., having a child and sexuality). Therefore, disability research performed on women is of great importance [7].

Disabled women experience disadvantages of belonging to the female gender and having a disability. They face considerable discrimination in the society. Discrimination against them ranges from overprotective attitudes of their families to difficulties encountered during education and at work [4]. In addition, disabled women are more frequently exposed to abuse than disabled men [8]. However, there have been few studies revealing under what conditions they are at a disadvantage. Research attracting attention to problems of disabled women and solutions to them is needed [4] Involvement of this disadvantaged group in the society is associated with attitudes of the society towards them [9].

Therefore, in this study, it is thought that developing a valid and reliable tool by which healthcare workers can evaluate their attitudes toward disabled women will be useful in measuring and evaluating the attitudes of health professionals toward the problems of this group. There have been many approaches to measurement of attitudes. The most commonly used approach so far is the creation and implementation of an attitude scale. Attitude scales are self-reporting tools used to determine whether an attitude is positive or negative and to measure its proportions in terms of one or more aspects [10].

An attitude scale is composed of a number of statements about an attitude to be measured. The most frequently used scale is Likert scales. They are directed towards obtaining information from individuals. To this aim, questions about how individuals react to certain situations are asked either orally or in a written way. In general, individuals are given a questionnaire, inventory, scale or a test and are asked to respond to items in the given tool. They are asked to mark or write what attitudes or behavior they display in hypothetical situations explained in the items [10].

**Highlight key points**

- The ADWS is valid and reliable for use the purpose of determining views and attitudes towards women with disabilities.
- The ADWS scale developed for disabled women of 17 items and consists of 4 factors.
- After factor analysis, the total Cronbach's alpha value is 0.817. While the highest Cronbach alpha value of ADWS is Factor 1 (0.87), the lowest Cronbach alpha value is Factor 4 (0.67).

There have been many studies and scales about disabled people in our country [11–13]. However, there have been few studies about disabled women and there has not been a valid and reliable scale to measure attitudes of the society to them. Since health professionals offer health-care services to this disadvantaged group, a valid and reliable tool which will allow objective evaluations of their attitudes is needed. Therefore, in this study was developed to reveal opinions of students about disabled women and their perceptions and attitudes concerning problems of these women.

## MATERIALS AND METHODS

### Aim and Design of the Study

This is a descriptive and methodological study and was performed the scale design in Turkish measure (Appendix 1) opinions of nursing and midwifery students about disabled women and their attitudes to problems of these women.

### Study Population and Sampling

The study population comprised 1st and 2nd years midwifery students of a state university and 2nd and 3rd years nursing students of another state university. This group of students was chosen because they are the health-care professionals of the future. The study sample included 167 midwifery and nursing students accepting to participate in the study and not having any mental, psychiatric, or disability problems. The draft version of Attitude Scale for Women with Disabilities (ADWS) was composed of 31 items. In scale development studies to meet criteria for minimal sample size, the size of the sample on which it is implemented should be at least 5 times higher than the number of the items in the tool [14]. In fact, it is recommended that five-ten people should be included in the sample for each item [15]. The sample size of the present study was sufficient since it was 5 times higher than the number of items in the draft scale.

### Data Collection

Data were collected with the draft scale directed towards revealing opinions of midwifery and nursing students about disabled women and measuring their attitudes to problems experienced by these women and with a form composed of questions about demographic features and disability status. Both tools were created by the researchers in light of the literature. The demographics and disability status form was composed of which were about descriptive characteristics including, class, nationality, age, gender, employment status, and type of family, were type of disability in participants their family members. The draft scale about attitudes to problems of disabled women included 31 questions. To create the scale, the literature about problems experienced by disabled women and gender factor was reviewed [4, 8, 9]. Then an item pool composed of 64 items about positive and negative attitudes to disabled women were created. The draft scale was formed by 31 items selected from the item pool.

The literature about problems and difficulties experienced by disabled women and the gender factor were examined. A pool of 64 positive and negative items about attitudes to disabled women was formed. First, opinions of the researchers and their colleagues about the items were utilized to determine whether the items were understandable to achieve the face validity of the draft scale. Then, expert opinion about the items was requested from ten specialists consisting five clinical nurses and five academic nurses.

### Ethical Considerations

This study was conducted in accordance with the Declaration of Helsinki. Ethical approval was obtained from the University of Health Sciences, Hamidiye Non-interventional Research Ethics Committee (date: 01.06.2018; approval number: 46418926) and written permission was obtained from the institutions where the study was conducted. All the participants were given information about the aim of the study and their written informed consent was obtained before data collection. The questionnaires were administered to the students at face to face interviews in their classrooms after classes between January 19 and February 20, 2018. The students were asked to fill in the questionnaire.

### Data Analysis

Obtained data were analyzed with SPSS (Statistical Package for the Social Sciences) 25.0. Descriptive statistics mean, standard deviation, and minimum and maximum scores about the scale items were determined. t-test and item-total score correlation analysis were used to determine relations. In addition, Kaiser-Meyer-Olkin (KMO) sampling adequacy test and Bartlett's test were utilized to determine whether obtained data were suitable for factor analysis. To evaluate the validity and reliability of the scale, test-retest, factor analysis, and Cronbach's alpha were used.

**Table 1.** The distribution of the students their features and disability status

| Characteristics | Category | % |
|---|---|---|
| Age (years±SD, Min–Max) | 20.08±1.91, 17–37 | |
| Age (years) (n=167) | Total | 100.0 |
| | <20 | 40.7 |
| | ≥20 | 59.3 |
| Gender | Male | 4.8 |
| | Female | 95.2 |
| Department | Midwife | 64.7 |
| | Nursing | 35.3 |
| Class | 1 | 21.0 |
| | 2 | 43.7 |
| | 3 | 35.3 |
| Nationality | Turkish | 88.6 |
| | Foreigner | 11.4 |
| Type of family (n=167) | Nuclear | 83.8 |
| | Extended | 16.2 |
| Working | Yes | 10.8 |
| | No | 89.2 |
| Place where the participants lived the longest | Town | 24.6 |
| | City | 28.7 |
| | Big city* | 46.7 |
| Type of disability in family members (n=12) | Yes | 7.2 |
| | No | 92.8 |

SD: Standard deviation; Min: Minimum; Max: Maximum.

## RESULTS

The study included 167 students with a mean age of 20.08±1.92 years (range: 17–37 years). Out of 167 students, 95.2% (n=159) were female. Of all the students, 64.7% were midwifery students, 35.3% were nursing students, and 84% had a nuclear family. Seven percent of the students (n=12) had a disabled family member (Table 1).

TABLE 2. The distribution of the students' responses to the items in ADWS

| | Item ADWS | Strongly agree (%) | Agree (%) | Degree nor disagree (%) | Disagree (%) | Strongly disagree (%) | Mean±SD |
|---|---|---|---|---|---|---|---|
| 1. Factor | 10-Disabled women should not marry. | 3 | 4.2 | 5.4 | 24 | 63.5 | 4.41±0.98 |
| | 11-Disabled women should not have children. | 1.8 | 3 | 10.8 | 23.4 | 61.1 | 4.39±0.92 |
| | 9-The disabled woman should not work. | 4.2 | 3 | 10.2 | 25.7 | 56.9 | 4.28±1.05 |
| | 12-Disabled woman has no sexual life. | 1.2 | 3.6 | 13.2 | 21 | 61.1 | 4.37±0.93 |
| | 8-Disabled women should not go out alone. | 3.6 | 10.8 | 22.2 | 24 | 39.5 | 3.85±1.16 |
| | 14-The disabled woman can't be alone. | 6 | 11.4 | 33.5 | 26.3 | 22.8 | 3.49±1.14 |
| 2. Factor | 2-Disabled women are more disadvantaged than disabled men. | 19.8 | 27.5 | 17.4 | 15.6 | 19.8 | 2.88±1.42 |
| | 1-Disabled women are disadvantaged in society | 15.6 | 32.3 | 18 | 13.2 | 21 | 2.92±1.39 |
| | 15-Disabled women have more problems than men with disabilities. | 11.4 | 31.1 | 30.5 | 15 | 12 | 2.85±1.18 |
| | 3-The mother, father and the environment of people with disabilities may be discomforted to have relatives with disabilities. | 7.2 | 21 | 31.1 | 21 | 19.8 | 3.25±1.20 |
| 3. Factor | 30-Doing physical activities is not asked by the family. | 1.8 | 16.2 | 36.5 | 28.1 | 17.4 | 3.43±1.01 |
| | 31-Disabled women are excluded from the community. | 7.8 | 18.6 | 28.7 | 16.2 | 28.7 | 3.40±1.29 |
| | 24-Health care workers do not want to deal with disabled people. | 1.2 | 12.6 | 37.1 | 26.9 | 22.2 | 3.56±1.00 |
| | 28-Disabled woman needs someone for care. | 7.8 | 23.4 | 46.7 | 15.6 | 6.6 | 2.90±0.98 |
| 4. Factor | 22-Hospital conditions in Turkey are not suitable for the examination of women with disabilities. | 11.4 | 24.6 | 36.5 | 19.8 | 7.8 | 2.88±1.10 |
| | 20-Women with disabilities have more sexual abuse than women without any disabilities. | 11.4 | 24.6 | 38.3 | 20.4 | 5.4 | 2.84±1.05 |
| | 18-Women with disabilities experience more violence than healthy women. | 5.4 | 20.4 | 40.1 | 18 | 16.2 | 3.19±1.10 |
| | | 1. Factor | 2. Factor | 3. Factor | 4. Factor | Total | |
| | Mean±SD | 24.78±4.86 | 11.90±3.88 | 13.29±2.99 | 8.91±2.54 | 58.88±9.61 | |
| | Median | 26 | 11 | 13 | 9 | 59 | |

ADWS: Attitude scale for women with disabilities; SD: Standard deviation.

## Content Validity

Content validity is tested to determine whether items of a scale are appropriate for the aim of the scale and expert opinions about the items are requested [16]. In the present study, after the items of the scale was created, opinions of ten experts, of whom five were nursing academicians in a health sciences faculty and five were nurses working with disabled people in several departments of the hospitals where the study was conducted, were requested. The experts evaluated the items on a three-point scale on which one corresponds to unacceptable, two needs revision and three acceptable and the items were revised in accordance with their opinions. Consequently, the number of the items in the scale decreased from 64 to 31 (Table 2).

The validity of ADWS was tested with expert opinions and factor analysis and the reliability of the scale was determined with test-retest analysis, item-total score

Table 3. Factor analysis of ADWS and item-total score correlation

| Factors | Item ADWS | Items | ITSC* | Value | Cronbach Alpha (α) | Variance (%) |
|---|---|---|---|---|---|---|
| 1. Factor | 1 | 10. item | 0.50 | 0.89 | 0.873 | 26.91 |
| | 2 | 11. item | 0.50 | 0.84 | | |
| | 3 | 9. item | 0.54 | 0.84 | | |
| | 4 | 12. item | 0.41 | 0.79 | | |
| | 5 | 8. item | 0.47 | 0.71 | | |
| | 6 | 14. item | 0.41 | 0.59 | | |
| 2. Factor | 7 | 2. item | 0.49 | 0.86 | 0.736 | 16.68 |
| | 8 | 1. item | 0.47 | 0.81 | | |
| | 9 | 15. item | 0.40 | 0.58 | | |
| | 10 | 3. item | 0.39 | 0.58 | | |
| 3. Factor | 11 | 30. item | 0.35 | 0.78 | 0.639 | 9.24 |
| | 12 | 31. item | 0.40 | 0.66 | | |
| | 13 | 24. item | 0.38 | 0.63 | | |
| | 14 | 28. item | 0.32 | 0.54 | | |
| 4. Factor | 15 | 22. item | 0.30 | 0.82 | 0.679 | 6.97 |
| | 16 | 20. item | 0.30 | 0.80 | | |
| | 17 | 18. item | 0.45 | 0.53 | | |
| | Total | – | – | 0.817 | 59.81 | |
| | KMO | 0.792 | | | | |
| | Barlett's Sphericity Test Ki-Kare Value ($\chi^2$) | | 1080.221 | | | |
| | df | | 136 | | | |
| | Significance level (sig.) | | <0.001 | | | |

*: ITSC: Item-total score correlation; KMO: Kaiser-Meyer-Olkin; df: Degrees of freedom; ADWS: Attitude scale for women with disabilities.

correlation analysis, and Cronbach's alpha. Cronbach's alpha ≥0.70 and the item-total score correlation coefficient >30 were considered significant. The internal consistency of the scale was evaluated using the item-total score correlation coefficient and Cronbach's alpha [15] (Table 3).

## Construct Validity/Factor Analysis

The most frequently used method for the detection of subdimensions of a construct is factor analysis [17]. In the current study, the construct validity of the scale was tested with a factor analysis. To determine whether obtained data were appropriate for factor analysis, KMO=0.792 and Bartlett's tests ($\chi^2$=1080.221, p≤0.000) were performed. The results showed that the data could be used to make factor analysis [14].

To analyze the factor structure of the scale, principal components analysis and varimax rotation were utilized. The factor load of the scale was considered as 030 and 0.50 between [15].

The factor analysis revealed an four-factor structure of the scale accounting for 59.81% of the variance (Table 3).

The items loaded on Factor 1 were concerned with marriage, employment, having children, loneliness, sexual life, and benefitting from healthcare services. Therefore, it was called Disabled Women and their Private Life (Table 4).

The items loaded on Factor 2 were about gender-related issues like having more disadvantages compared to disabled males, disadvantages of being a disabled woman in the society, rejection of disabled women by their families and experiencing more problems than disabled males. Therefore, it was called Disabled Women and Disadvantage (Table 4).

Factor 3 involved the items about restricted physical activity and discomforts of the society and health-care professionals. Therefore, the factor was called Disabled Women and Social Support (Table 4).

**Table 4.** ADWS score average according to the introductory features of the participants

| Characteristics | Category | ADWS | | | | |
|---|---|---|---|---|---|---|
| | | 1. Factor Mean±SD | 2. Factor Mean±SD | 3. Factor Mean±SD | 4. Factor Mean±SD | Total Mean±SD |
| Age | <20 | 24.90±4.36 | 11.69±4.16 | 13.68±2.70 | 8.72±2.84 | 58.99±9.14 |
| | ≥20 | 24.71±5.19 | 12.04±3.69 | 13.02±3.17 | 9.04±2.31 | 58.81±9.97 |
| | t | 0.248 | 0.570 | 1.396 | 0.770 | 0.117 |
| | p | 0.805 | 0.569 | 0.165 | 0.443 | 0.907 |
| Gender | Men | 25.50±3.42 | 12.75±3.54 | 13.75±2.60 | 10.38±1.85 | 62.38±9.05 |
| | Woman | 24.75±4.93 | 11.86±3.90 | 13.26±3.02 | 8.84±2.55 | 58.70±9.63 |
| | t | 0.426 | 0.635 | 0.447 | 1.684 | 1.054 |
| | p | 0.671 | 0.526 | 0.656 | 0.094 | 0.293 |
| Department | Midwifery | 24.09±5.21 | 11.69±4.07 | 13.40±3.08 | 8.85±2.64 | 58.03±10.24 |
| | Nursing | 26.05±3.87 | 12.29±3.51 | 13.08±2.85 | 9.02±2.35 | 60.44±8.18 |
| | t | 2.529 | 0.959 | 0.645 | 0.401 | 1.663 |
| | P | 0.012* | 0.339 | 0.520 | 0.689 | 0.099 |
| Class | 1. | 23.63±4.28 | 11.49±4.15 | 12.86±2.91 | 9.34±2.61 | 57.31±9.42 |
| | 2. | 24.44±5.60 | 11.86±4.08 | 13.70±3.19 | 8.63±2.66 | 58.63±10.86 |
| | 3. | 25.90±3.97 | 12.19±3.49 | 13.03±2.77 | 9.00±2.33 | 60.12±7.93 |
| | F | 2.784 | 0.360 | 1.265 | 0.991 | 0.979 |
| | p | 0.065 | 0.698 | 0.285 | 0.373 | 0.378 |
| Nationality | Turkish citizen | 25.28±4.74 | 11.96±4.00 | 13.36±3.02 | 8.84±2.62 | 59.43±9.69 |
| | Foreign | 20.95±4.09 | 11.42±2.81 | 12.74±2.81 | 9.47±1.74 | 54.58±7.92 |
| | t | 3.801 | 0.743 | 0.851 | 1.029 | 2.093 |
| | P | <0.001* | 0.464 | 0.396 | 0.305 | 0.038* |
| Type of Family | Nuclear | 24.86±4.88 | 11.82±3.92 | 13.22±2.96 | 8.93±2.59 | 58.84±9.53 |
| | Extended | 24.37±4.80 | 12.30±3.72 | 13.63±3.21 | 8.81±2.29 | 59.11±10.20 |
| | t | 0.482 | 0.581 | 0.647 | 0.213 | 0.136 |
| | P | 0.630 | 0.562 | 0.518 | 0.832 | 0.892 |
| Working | Yes | 24.22±5.31 | 12.50±4.50 | 13.39±3.82 | 9.94±2.44 | 60.06±12.42 |
| | No | 24.85±4.82 | 11.83±3.81 | 13.28±2.89 | 8.79±2.53 | 58.74±9.26 |
| | t | 0.518 | 0.695 | 0.122 | 1.845 | 0.436 |
| | p | 0.605 | 0.488 | 0.904 | 0.067 | 0.668 |
| Place where the participants lived the longest | Town | 23.83±6.16 | 12.32±3.53 | 13.29±3.31 | 8.56±2.48 | 58.00±10.13 |
| | City | 25.46±4.49 | 12.81±4.64 | 13.17±3.09 | 9.42±2.60 | 60.85±10.63 |
| | Big city¥ | 24.87±4.26 | 11.12±3.41 | 13.36±2.79 | 8.78±2.51 | 58.13±8.57 |
| | F | 1.270 | 3.242 | 0.061 | 1.453 | 1.430 |
| | p | 0.284 | 0.042* | 0.941 | 0.237 | 0.242 |
| Type of disabil-ity in family members | Yes | 23.50±4.64 | 9.92±3.50 | 12.42±3.65 | 9.58±2.11 | 55.42±10.39 |
| | No | 24.88±4.88 | 12.05±3.88 | 13.35±2.94 | 8.86±2.56 | 59.15±9.53 |
| | t | 0.950 | 1.849 | 1.046 | 0.954 | 1.298 |
| | p | 0.343 | 0.066 | 0.297 | 0.341 | 0.196 |

*: p<0.05; ¥: 750,000 and above population; t: Independent samples t-test; F: One-way ANOVA test; SD: Standard deviation; ADWS: Attitude scale for women with disabilities.

Table 5. Correlations of the test-re-test (n=31)

| ADWS | Test | Test-re-test |
|---|---|---|
| 1. Factor | | |
| Mean±SD | 25.56±4.34 | 25.56±4.35 |
| ICC | r=1.000 | |
| Cronbach's Alpha | α=1.000 | |
| 2. Factor | | |
| Mean±SD | 11.15±3.50 | 11.81±2.95 |
| ICC | r=0.937* | |
| Cronbach's Alpha | α=0.946 | |
| 3. Factor | | |
| Mean±SD | 12.11±2.95 | 12.11±2.90 |
| ICC | r=0.976* | |
| Cronbach's Alpha | α=0.975 | |
| 4. Factor | | |
| Mean±SD | 8.30±2.20 | 8.22±2.12 |
| ICC | r=0.996* | |
| Cronbach's Alpha | α=0.996 | |
| ADWS-Total | | |
| Mean±SD | 57.11±9.08 | 57.70±8.68 |
| ICC | r=0.991* | |
| Cronbach's Alpha | α=0.992 | |

*: p<0.001; ICC: Intraclass correlation coefficient; ADWS: Attitude scale for women with disabilities; SD: Standard deviation.

Factor 4 was composed of items about disadvantages of being a disabled woman and violence against her. Therefore, factor 4 was called Disabled Women and Gender (Table 4).

### Internal Reliability

To determine the factor structure of the scale, principal components factor analysis method were applied to the scores obtained from the answers given by 167 students to the 5-point Likert-type scale, using the varimax rotation method. To reach the appropriate factor analysis model, 14 items with a total correlation value of <0.30 and a factor load value of <0.45 or overlapping were removed from the scale for 31 items in the scale. As a result, as a result of the factor analysis performed with 1, 2, 3, 8, 9, 10, 11, 12, 14, 15, 18, 20, 22, 24, 28, 30, and 31 items, 17 items with eigenvalues >1 The four factors collected under it were obtained.

As shown in Table 4, Disabled Women and their Private Life had the highest Cronbach's alpha (0.87) and Disabled Women and Restricted Physical Activity had the lowest Cronbach's alpha (0.63). Cronbach's alpha for ADWS was 0.82 (Table 3). The reason for its low rate is that families cannot provide sufficient activity opportunities for disabled women in the society.

### Item-Total Score Correlation Analysis

Item-total score correlation analyses 31 items in were performed to explain the relation between scores for the items and the total score for the scale. Item correlations of the scale take values between 0.30 and 0.50 (Table 3).

### Test-Retest Analysis

To determine the reliability of a scale across time, it is administered to a group of people two times at certain intervals and correlations between scores from two administrations are evaluated. The draft version of ADWS was implemented on 31 students, of whom 25 were midwifery students and six were nursing students, twice at a 15-day interval. Correlations between the scores obtained at these two sessions were calculated using Pearson's correlation analysis. The results of the analysis showed that the correlation between the first and second scores was significant (r=0.992; p≤0.001) (Table 5).

## DISCUSSION

Validity determines the extent to which the test serves its intended use. Reliability is related to how accurately the scale measures the features it wants to measure [18–20].

The high validity measurement tool has high reliability to a certain extent. However, its high reliability does not give clear information about the high validity of the tool. Therefore, validity and reliability cannot be considered independently from each other. Both features should be tested in scale studies [21].

In this study, it was aimed to develop a valid and reliable tool that can be used to measure the attitudes of midwifery and nursing students, who will work in the field of health, toward women with disabilities by conducting a validity and reliability study of ADWS.

Content validity is done to determine the suitability of scale items for the intended use of the scale [21]. Indicates the scale as a whole and the extent to which each item in the scale serves the purpose. In the content validity analysis obtained by collecting the scores

given by the experts for each item; items are expected to be evaluated in terms of conformity and the result is expected to be above 2 points on average [15, 17, 19]. The average of 31 items submitted for expert opinion is 2.6±0.4 and the average of these items is over 2 points.

Test-re test reliability is a method frequently used to determine the level of reliability in Likert-type attitude scales [16]. Test-re test reliability is based on the view that the measuring tool will give the same results when applied under similar conditions at different times. The correlation coefficient used to determine that the scale is invariant with time should show an advanced level and positive correlation [19–23]. The fact that the item correlation coefficients in the study are above 0.30 is very important in terms of showing that the scale items have a distinctive feature [15–24]. In this study, the correlation coefficient was found to be positively and advanced level correlated (Table 5, r=0.991; p=0.00).

Construct validity is a method that is used to prove how accurately the measurement tool measures the concept and how accurately it measures the relationship between scale items and the desired factor or factors [16–22]. In factor analysis, suitability of variables to factor analysis is important. It is stated that the lower limit for KMO value should be 0.50. If the KMO is ≤0.50, it is reported that the data set cannot be factored [25]. It is stated that the statistical significance of Bartlett's test (p<0.5) shows that the items on the scale are suitable for factor analysis [26, 27]. When variables were evaluated with KMO (0.749) and Bartlett test ($\chi^2$=1803.564; df=406, p=0.000), it was seen that the variables were suitable for factor analysis (Table 3).

The Cronbach alpha coefficient is the measure of the internal consistency and homogeneity of items that are related to each other. The higher this value, the more consistent the items in the scale are assumed to be composed of items that predict the items of the same feature. The minimum value of Cronbach alpha is controversial and recommended acceptable values range from >70 to >0.50 [24]. Cronbach's alpha ranges from 0.00≤ to <0.40 for a scale, the scale is not reliable, if it ranges from 0.40≤ to <0.60, the scale has a low reliability, if it ranges from 0.60≤ to <0.80, the scale is reliable and if it ranges from 0.80≤ to <1.00, the scale has a high reliability [28].

After factor analysis, Cronbach alpha values in total and sub-dimensions (Total Cronbach alpha. 0.817; sub-dimensions, respectively; 0.87, 0.73, 0.63, and 0.87) are at acceptable levels in the reliability examination of ADWS, which has become a 17-item scale (Table 3). While ADWS was taken from Factor 4 with the lowest Cronbach alpha 0.67, the highest Cronbach alpha was taken from Factor 1 with 0.87. The Cronbach Alpha coefficient of the Disabled Woman Attitude Scale is 0.817 in total, which shows that the scale is quite reliable [29–31].

The minimum recommended correlation between item and total scores is over 0.30 [32, 33]. Item total score correlation coefficients of ADWS; it was found to be at an acceptable level and compatible with the values stated in the literature [22].

## Limitations of the Study

The first limitation of the study is that the study was conducted only with nursing and midwifery students. The second limitation is that the students in the study group were not questioned about their disability.

## Conclusion

In light of the results of this study, it can be concluded that ADWS is valid and reliable to determine opinions and attitudes of midwifery and nursing students about disabled women in Turkey.

The scale is important in that it can be used evaluate attitudes of the students and health professional to problems experienced by disabled women and the gender factor. Since health professionals offer health-care services to this disadvantaged group, a valid and reliable tool which will allow objective evaluations of their attitudes is needed. It can be recommended that the validity and reliability of the scale should be tested in different samples. Since there has not been a similar scale in the literature, it can provide guidance for further studies about attitudes to disabled women.

**Ethics Committee Approval:** The University of Health Sciences, Hamidiye Scientific Research Ethics Committee granted approval for this study (date: 01.06.2018, number: 46418926).

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## Appendix

**Appendix 1.** Engelli Kadın Tutum Ölçeği Türkçe Versiyonu

| | Engelli Kadınlar Tutum Ölçeği (EKTÖ)<br>İfadeler | Kesinlikle katılıyorum<br>n (%) | Katılıyorum<br>n (%) | Kararsızım<br>n (%) | Katılmıyorum<br>n (%) | Kesinlikle katılmıyorum<br>n (%) | Ort.±SS |
|---|---|---|---|---|---|---|---|
| 1. Faktör | Engelli kadın evlenmemelidir. | 5 (3) | 7 (4.2) | 9 (5.4) | 40 (24) | 106 (63.5) | 4.41±0.98 |
| | Engelli kadın çocuk sahibi olamamalıdır. | 3 (1.8) | 5 (3) | 18 (10.8) | 39 (23.4) | 102 (61.1) | 4.39±0.92 |
| | Engelli kadın çalışamamalıdır. | 7 (4.2) | 5 (3) | 17 (10.2) | 43 (25.7) | 95 (56.9) | 4.28±1.05 |
| | Engelli kadının cinsel hayatı olmaz. | 2 (1.2) | 6 (3.6) | 22 (13.2) | 35 (21) | 102 (61.1) | 4.37±0.93 |
| | Engelli kadın tek başına dışarı çıkmamalıdır. | 6 (3.6) | 18 (10.8) | 37 (22.2) | 40 (24) | 66 (39.5) | 3.85±1.16 |
| | Engelli kadın yalnız kalamaz. | 10 (6) | 19 (11.4) | 56 (33.5) | 44 (26.3) | 38 (22.8) | 3.49±1.14 |
| 2. Faktör | Engelli kadın engelli erkeğe göre daha fazla dezavantajlıdır. | 33 (19.8) | 46 (27.5) | 29 (17.4) | 26 (15.6) | 33 (19.8) | 2.88±1.42 |
| | Engelli kadınlar toplumda dezavantajlıdır. | 26 (15.6) | 54 (32.3) | 30 (18) | 22 (13.2) | 35 (21) | 2.92±1.39 |
| | Engelli kadın engelli erkeğe göre daha fazla sorun yaşar. | 19 (11.4) | 52 (31.1) | 51 (30.5) | 25 (15) | 20 (12) | 2.85±1.18 |
| | Engelli insanların annesi, babası ve çevresi engelli yakınının olmasından rahatsızlık duyabilir. | 12 (7.2) | 35 (21) | 52 (31.1) | 35 (21) | 33 (19.8) | 3.25±1.20 |
| 3. Faktör | Engelli kadının spor vb. fiziksel aktiviteler yapması ailesi tarafından istenmez. | 3 (1.8) | 27 (16.2) | 61 (36.5) | 47 (28.1) | 29 (17.4) | 3.43±1.01 |
| | Engelli kadın toplum içinden dışlanır. | 13 (7.8) | 31 (18.6) | 48 (28.7) | 27 (16.2) | 48 (28.7) | 3.40±1.29 |
| | Sağlık çalışanları engelli insan ile uğraşmak istemezler. | 2 (1.2) | 21 (12.6) | 62 (37.1) | 45 (26.9) | 37 (22.2) | 3.56±1.00 |
| | Engelli kadın bakım için birine muhtaçtır. | 13 (7.8) | 39 (23.4) | 78 (46.7) | 26 (15.6) | 11 (6.6) | 2.90±0.98 |
| 4. Faktör | Türkiye'de hastane koşulları engelli kadınların muayenesi için uygun değildir. | 19 (11.4) | 41 (24.6) | 61 (36.5) | 33 (19.8) | 13 (7.8) | 2.88±1.10 |
| | Engelli kadın herhangi bir engeli olmayan kadınlara göre daha çok cinsel istismara uğramaktadır. | 19 (11.4) | 41 (24.6) | 64 (38.3) | 34 (20.4) | 9 (5.4) | 2.84±1.05 |
| | Engelli kadın, sağlıklı kadına göre daha çok şiddet görür. | 9 (5.4) | 34 (20.4) | 67 (40.1) | 30 (18) | 27 (16.2) | 3.19±1.10 |
| | | 1. Factör | 2. Factör | 3. Factör | 4. Factör | Total | |
| | Ort.±SS | 24.78±4.86 | 11.90±3.88 | 13.29±2.99 | 8.91±2.54 | 58.88±9.61 | |
| | Medyan (Minimum–Maksimum) | 26 (6–30) | 11 (4–20) | 13 (6–20) | 9 (3–15) | 59 (30–80) | |

Ort.: Ortalama; SS: Standart sapma.