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Validity and Reliability of the Turkish Version of "Nijmegen-Gender Awareness in Medicine scale"

"Nijmegen-tıpta Cinsiyet Farkındalığı ölçeği" Türkçe Geçerlik ve Güvenirlik Çalışması

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ABSTRACT

Introduction: Gender is a concept that expresses how the society sees, perceives, thinks individuals and how they should behave as a men and women. Gender-based norms and values, while strengthening the differences between men and women, also bring social inequalities. One of the areas that cause inequality is health. The aim of this methodological and descriptive study is to analyze the validity and reliability of the Turkish version of "Nijmegen gender awareness in medicine scale".

Methods: The study was carried out with 150 medical students. The data of the study were collected in April 2016.

Results: As a result of the reliability analysis of the Turkish version of the scale, two items were excluded from the original scale (26 item). It was determined that three items (items 8, 10, and 11) were placed in another subdimension (factor 3) but as these items were not structurally compatible with the other items that they were factored with these items were also removed from the scale. In order to test the reliability of the scale consisting of 21 items split-half reliability method was used. The model was found to be compatible.

The validity of the scale was assessed by factor analysis. Kaiser-Meyer-Olkin and Bartlett tests were performed to determine the adequacy of the sample size. The fit indices obtained from the model generated by confirmatory factor analysis confirmed the three-dimensional structure of the scale.

Conclusion: It was determined that the Turkish version of the scale was valid and reliable.

Keywords: Gender, medicine, education, undergraduate, student

ÖZ

Amaç: Toplumsal cinsiyet, toplumun bireyleri nasıl gördüğü, algıladığı, düşündüğü kadın ve erkek olarak nasıl davranmaları gerektiğini ifade eden kavramdır. Cinsiyete dayalı normlar ve değerler, kadınlar ve erkekler arasındaki farklılıkları güçlendirirken sosyal eşitsizlikleri de beraberinde getirir. Eşitsizliğe neden olan alanlardan biri de sağlıktır. Bu metodolojik ve tanımlayıcı çalışmanın amacı "Nijmegen-tıpta cinsiyet farkındalığı ölçeği" Türkçe geçerlik ve güvenirlik analizlerinin yapılmasıdır.

Yöntemler: Çalışma 150 tıp öğrencisi ile gerçekleştirilmiştir. Çalışmanın verileri 2016 Nisan ayında toplanmıştır.

Bulgular: Ölçeğin Türkçe versiyonunun güvenirlik analizi sonucunda, orijinal ölçeğin (26 madde) iki maddesi çıkarılmıştır. Üç madde (madde 8, 10 ve 11) başka bir alt boyutta (faktör 3) yerleşmiştir, ancak bu öğeler faktörün diğer maddeleriyle yapısal olarak uyumlu olmadığı için ölçekten çıkarılmıştır. Yirmi-bir maddeden oluşan ölçeğin güvenirliğini test etmek için yarıya bölme güvenilirlik yöntemi kullanılmıştır. Modelin uyumlu olduğu bulunmuştur.

Ölçeğin geçerliliği faktör analizi ile değerlendirilmiştir. Örneklem büyüklüğünün yeterliliğini belirlemek için Kaiser-meyer-olkin ve Bartlett testleri yapılmıştır. Doğrulayıcı faktör analizi ile oluşturulan modelden elde edilen uyum indeksleri, ölçeğin üç boyutlu yapısını doğrulamıştır.

Sonuç: Ölçeğin Türkçe versiyonunun geçerli ve güvenilir olduğu belirlenmiştir.

Anahtar Kelimeler: Cinsiyet, tıp, eğitim, lisans, öğrenci

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Introduction

While biological sex expresses the biological and physiological characteristics of women and men, gender expresses the roles, behaviors and activities socially constructed by society (1). Gender is a concept that expresses how the society sees, perceives, thinks individuals, and how they should behave as men and women (2). The content of this concept is determined by the norms set by the society and these norms are learned in the process of socialization by men and women. Gender-based norms and values also bring about social inequalities while strengthening the differences between men and women (1). One of the areas that cause inequality is health. There is an invisible and inseparable bond between health and gender. Gender awareness of physicians is aimed at improving the health of women and men, and at the same time it contributes to the rights and equality in health (3,4).

The integration of gender issues from the undergraduate level to the whole medical education process (in terms of knowledge, attitude and skill) during continuous professional development is defended by all medical disciplines (5,6). Gender awareness of physicians means that physicians know and understand the concept of gender and incorporate the concept of gender as a basic determinant of health and illness into their daily practice (7). Gender-sensitive medical education is possible by integrating gender and gender-related processes, reactions and treatments into the education curriculum. Although the importance of biological sex and gender is recognized in health area, it takes time to integrate these issues into the medical education curriculum. In recent years, an increasing number of researches on the integration of these subjects into medical education have been reported in countries such as Netherlands, Sweden, Australia and the United States (5,8). Canada is also a country working on this issue. In Netherlands, a national project was initiated in 2002 to include issues related to gender-linked health problems into the medical education (9,10). In our country, with the gender equality attitude document, higher education institutions and the higher education committee are committed to acting in a sensitive manner to gender equality in all components (11).

The purpose of this study was to investigate the Turkish validity and reliability of a scale developed to measure the gender awareness of medical faculty students.

Methods

Type of Study

This research was a methodological and descriptive study designed to test the validity and reliability of the Turkish version of the "Nijmegen-gender awareness in medicine scale (N-GAMS)".

Nijmegen-gender awareness in medicine scale

	Turkish version	English version
Item	**Toplumsal cinsiyet duyarlılığı**	**Gender sensitivity**
1	Hekimler, kadın ve erkeğin sadece biyolojik farklılıklarını dikkate almalıdır. R	Physicians should only address biological differences between men and women. R
2	Cinsiyete özgü olmayan sağlık sorunlarında hastanın cinsiyeti hekim için önemsizdir. R	In non-sex-specific health disorders, the sex/gender of the patient is irrelevant. R
3	Hekimler, kadın ve erkeğin şikâyetlerini mümkün olduğunca biyomedikal yönle sınırlandırmalıdır. R	A physician should confine as much as possible to biomedical aspects of health complaints of men and women. R
4	Erkek ve kadın hekimler arasındaki fark, üzerinde durulmayacak kadar önemsizdir. R	Differences between male and female physicians are too small to be relevant. R
5	Erkek ve kadınlar aynı olmadığından, hekimler herkesi farklı şekilde tedavi etmelidir.*	Especially because men and women are different, physicians should treat everybody the same. R
6	Toplumsal cinsiyet farklarını dikkate alan hekim önemsiz konularla uğraşıyor demektir. R	Physicians who address gender differences are not dealing with the important issues. R
7	Hasta hekim iletişiminde hekim için hastanın erkek ya da kadın olması fark etmez. R	In communicating with patients, it does not matter to a physician whether the patients are men or women. R
	-	In communicating with patients, it does not matter whether the physician is a man or a woman. R
9	Erkek ve kadın hastalar arasındaki fark hekimlerce dikkate alınamayacak kadar önemsizdir. R	Differences between male and female patients are so small that physicians can hardly take them into account. R
	Hastaya yönelik toplumsal cinsiyet algısı	Gender role ideology towards patients
	-	Male patients better understand physicians' measures than female patients.
	-	Female patients compared to male patients have unreasonable expectations of physicians.
12	Muayene odasında konuşulması gerekmeyen problemleri, kadınlar erkelerden daha sıklıkla hekimleri ile tartışmak isterler.	Women more frequently than men want to discuss problems with physicians that do not belong in the consultation room.
13	Kadınlar, hekimlerden çok daha fazla duygusal destek beklerler.	Women expect too much emotional support from physicians.
14	Erkek hastalar kadın hastalardan daha az talepkardır.	Male patients are less demanding than female patients.
15	Kadınlar gerçek ihtiyaçlarından daha fazla sağlık hizmeti tüketicisidirler.	Women are larger consumers of health care than is actually needed.

Nijmegen-gender awareness in medicine scale		
	Turkish version	**English version**
Item	**Toplumsal cinsiyet duyarlılığı**	**Gender sensitivity**
16	Erkekler kendilerine zarar vermediğini düşündükleri sağlık sorunları için hekime gitmezler.	Men do not go to a physician for harmless health problems.
17	Kadınlar sağlıkları hakkında daha fazla sızlandıkları için tıbben açıklanamayan belirtiler daha çok gelişir.	Medically unexplained symptoms develop in women because they lament too much about their health.
18	Kadın hastalar erkek hastalardan daha fazla ilgiye ihtiyaç duydukları için sağlıklarından daha çok şikâyet ederler.	Female patients complain about their health because they need more attention than male patients.
19	Erkekler doğrudan iletişim kurdukları için sağlık şikayetlerinin nedenlerini bulmak erkeklerde daha kolaydır.	It is easier to find causes of health complaints in men because men communicate in a direct way.
	Hekime yönelik toplumsal cinsiyet algısı	Gender role ideology towards doctors
8	Hasta hekim iletişimde hekimin erkek ya da kadın olması fark etmez.** R	-
10	Hekimlerin değerlendirmelerini, erkek hastalar kadın hastalardan daha iyi anlarlar. **	-
11	Kadın hastaların erkek hastalara göre hekimlerden mantık dışı beklentileri vardır.**	-
20	Erkek hekimler kadın hekimlerle karşılaştırıldığında tıbbın teknik yönlerine daha fazla vurgu yaparlar.	Male physicians put too much emphasis on technical aspects of medicine compared to female physicians.
21	Kadın hekimler erkek hekimlere göre muayenelerini daha çok uzatırlar.	Female physicians extend their consultations too much compared to male physicians.
22	Erkek hekimler kadın hekimlerden daha verimlidir.	Male physicians are more efficient than female physicians.
23	Kadın hekimler erkek hekimlerden daha empatiktir. *	Female physicians are more empathic than male physicians.
24	Kadın hekimler bir hastanın hastalığı nasıl deneyimlediğini gereksiz yere dikkate alırlar.	Female physicians needlessly take into account how a patient experiences disease.
25	Kadın hekimler hastalarıyla oldukça duygusal bağ içindedirler.	Female physicians are too emotionally involved with their patients.
26	Erkek hekimler muayenelerinde kadın hekimlere göre daha acelecidirler.	Compared to female physicians, male physicians are too hurried in their consultations.

*Items removed in factor analysis due to low factor loading.
** Excluded item (items which were not structurally compatible with the other items that they were factored with)
Items scored in reverse - R

Sample

It is emphasized that enough samples should be taken to apply factor analysis in scale studies. It is stated that the correlation coefficients calculated with small sample are less reliable. Tavşancıl suggested that the sample size should be at least five times, or even ten times the number of items (12). Since there are 26 items in this scale, it was estimated that at least 130 students should be reached for this study. Third-year students who have not yet received clinical training but who have received preclinical medical training are considered eligible for determining awareness in the study and the research was carried out on this group. In the 2016-2017 academic years, 165 third-year students (n=348) studying at Erciyes University Faculty of Medicine were included in the study. Fifteen of these students were not included in the survey because the scale questions were incomplete and analyses were made on 150 students.

The data of the study were collected in April 2016. The purpose of the study was explained to the students, and the questionnaires were distributed and collected. The survey took about 10 minutes.

Data Collection Tools

Two forms were used to collect the data:

- Socio-demographic information form: This form consists of seven questions asking the socio-demographic characteristics of the students (age, sex, marital status, educational status of parents, working status of parents).

- N-GAMS (Nijmegen gender awareness in medicine scale):

In 2008, the scale was developed by Verdonk et al. (7) and it was revised in 2012 (13). The scale was developed to measure the gender attitudes and values of medical students. It was aimed to make a basic assessment

of gender sensitive perspective inclusion to the education curriculum and to make an evaluative measurement after integration. It consists of 26 items and three sub-dimensions [Gender Sensitivity (GS), Gender Role Ideology Towards Patients (GRI-P), GRI Doctors (D)]. The scale is in five-point Likert (1=totally disagree, 5=totally agree). There are nine items on the scale (from 1 to 9) that determine GS, ten items (from 10 to 19) that determine GRI-P, seven items (from 20 to 26) that determine GRI-D. All items that determine GS are scored inversely. While the GS sub-dimension scale focuses on attitudes of students towards gender issues in patient care (students' ability to perceive gender differences, problems and health inequalities in health care), GRI-P measures students' thoughts on gender roles about patients. GRI-D measures students' thoughts on gender roles about doctors. Increasing scores of GS subscale means that the GS of the student increases. Higher scores in the other two sub-dimensions show that gender stereotypes are more accepted. Reliability coefficients in the original study were found to be 0.76, 0.89 and 0.89, respectively, for the subscales (13).

Procedure

For the linguistic equivalence of the scale, translation into Turkish was made according to the forward and backward procedure. Firstly, the scale was translated into Turkish individually by three professors working at the university who dominate the issue of gender and medicine education at language level and expert in their areas. Then, these people discussed the translation text. Necessary corrections were made in terms of meaning and language. Finally, a common text was created. After that, the text was translated back into English by two lecturers from the English department to confirm that whether each item lost its meaning. The faculty members, who translated into Turkish and English, then made the necessary corrections by debating on the scale together. The pilot application of the questionnaire was carried out with a total of ten residents and 45 randomly selected interns working in family medicine department and public health department. Criticisms about the clarity of the language of the scale were taken from residents and intern physicians. After the pilot application, these criticisms were reassessed among the research lecturers and the questionnaire was rearranged. In order to obtain expert opinion on the completed scale, a final version of the form of the questionnaire to be applied to students was sent to the two lecturers working in medical education at different universities and their opinions were taken.

Ethical Approach

Before starting the research, an e-mail was written to Petra Verdonk and necessary permission was obtained in order to translate the scale into Turkish. Another permission was obtained from the Dean of Erciyes University Faculty of Medicine and the Ethics Committee of Erciyes University for the study to be conducted in medical faculty students (decision no: 2016/368, date: 24.06.2016). Informed consent form was obtained from participants.

Statistical Analysis

Data were evaluated using IBM SPSS Statistics 22.0 (IBM Corp., Armonk, New York, USA) and IBM SPSS AMOS 24.0 statistical package program. As descriptive statistics, number of units (n), percentage (%), and mean ± standard deviation (mean ± SD) values were given. Normality of the numerical variables were evaluated by Shapiro-Wilk normality test and Q-Q graphs.

The internal consistency between the items in the evaluation of scale validity Cronbach alpha coefficient, unit number adequacy in the sample Kaiser-Meyer-Olkin (KMO) test, factoring Barlett test, and determination of factor structure was assessed by analysis of the main components. The varimax method was used to determine the factors to be included in the final inventory. Confirmatory factor analysis (CFA) was conducted. The reliability of the scale was evaluated by means of intra-group correlation coefficients and split-half reliability. With 95% confidence interval, $p<0.05$ value was considered statistically significant. In the validity study, item analysis and discriminant validity studies were performed, and internal consistency and test re-test reliability coefficients were calculated for the reliability studies.

Results

The data of 150 students were analyzed. The distribution of socio-demographic characteristics of the students is shown in Table 1.

Table 1. Distribution of sociodemographic characteristics of students

Characteristics		
Age (mean ± standard deviation)	**21.7±2.3 years**	
	n	**%**
Sex (n=144)		
Male	79	53.7
Female	68	46.3
Mother's educational status (n=146)		
Illiterate	6	4.1
Literate	7	4.8
Primary school graduate	36	24.7
Secondary school graduate	16	11.0
High school graduate	42	28.8
Undergraduate graduate	39	26.6
Father's educational status (n=147)		
Illiterate	3	2.0
Literate	1	0.7
Primary school graduate	25	17.0
Secondary school graduate	13	8.8
High school graduate	38	25.9
Undergraduate graduate	67	45.6
Mother's working status (n=146)		
Housewife	105	71.9
Retired	9	6.2
Working	32	21.9
Father's working status (n=145)		
Unemployed	3	2.1
Retired	46	31.7
Working	96	66.2

Reliability Analysis of the scale

Reliability and item analysis were performed to evaluate the fiction, content, structure, and phenomenon questioning competence of the scale. In order to measure gender awareness in medical students that we want to measure with scale, item total test correlation coefficients were examined to determine the measurement power of each item and to bring the scale to a more reliable state. The item total test correlation coefficient should be no minus marked and greater than + 0.25 (14). Therefore, two items (item 5 and 23) that did not fulfill this requirement were removed from the scale. It was determined that three items (items 8, 10, and 11) were placed in another subdimension (factor 3), but as these items were not structurally compatible with the other items that they were factored with, these items were also removed from the scale. In order to test the reliability of the scale consisting of 21 items, split-half reliability method was used [part 1 cronbach alpha coefficient: 0.788, part 2 cronbach alpha coefficient: 0.871, total cronbach alpha coefficient 0.883 (corrected cronbach alpha coefficient; 0.889)]. The Hotelling T2 test was performed to test the model fit, the model was found to be compatible (Hotelling T2 288, 677; $p<0.001$). Evaluation of the score is as same as the original scale. Increasing score of the GS subscale means that the GS of the student increases. The high scores in the other two sub-dimensions show that gender stereotypes are more accepted.

Validity Analysis of the scale

The validity of the scale was assessed by factor analysis. Before conducting factor analysis, KMO and Bartlett tests were performed to determine the adequacy of the sample size. For the factor analysis of 21 items, the KMO value was calculated as 0.857 and the Bartlett test result was found as (1450.3; SD: 210; $p<0.001$). Table 2 shows the descriptive factor analysis of the scale.

When Table 2 is examined, it is seen that the factor load values of the items change between 0.749 and 0.593 for factor 1 and that the items 1,2,3,4,6,7,9 are in the first factor; Factor 2 is between 0.839 and 0.579, and items 12,13,14,15,16,17,18,19 are in the second factor; for factor 3 the values range from 0.767 to 0.494 and items 20,21,22,24,25,26 are found in the third factor.

The Turkish version of the "Nijmegen gender awareness in medicine scale" was gathered into three factors, as in the original scale.

The first nine items in the original scale (1-9; GS) determine GS. In the adapted scale, two items appear to be removed from the scale. The

Table 2. Descriptive factor analysis of the "Nijmegen gender awareness in medicine scale"

	Factor 1 (Gender sensitivity)	Factor 2 (Gender role ideology toward patients)	Factor 3 (Gender role ideology toward doctors)
Item 1	0.610	-	-
Item 2	0.729	-	-
Item 3	0.593	-	-
Item 4	0.749	-	-
Item 6	0.679	-	-
Item 7	0.596	-	-
Item 9	0.765	-	-
Item 12	-	0.661	-
Item 13	-	0.637	-
Item 14	-	0.716	-
Item 15	-	0.696	-
Item 16	-	0.702	-
Item 17	-	0.787	-
Item 18	-	0.839	-
Item 19	-	0.579	-
Item 20	-	-	0.494
Item 21	-	-	0.595
Item 22	-	-	0.593
Item 24	-	-	0.633
Item 25	-	-	0.767
Item 26	-	-	0.754
SELF-VALUE %	33.146	47.157	54.296
EXPLAİNED VARİANCE %	23.806	16.236	14.254
Total Explained Variance %	23.806	40.042	54.296
Cronbach Alpha Values of Sub-Dimensions (Standard Cronbach Alpha Based on items)	0.809 (0.811)	0.883 (0.884)	0.829 (0.833)

next ten items on the original scale (10-19; GRI-P) measure students' thoughts on gender roles about patients. It appears eight items (12-19) were included in this sub-dimension. The last seven items of the original scale (20-26, GRI-D) define the ideology of gender roles for physicians. This sub-dimension measures students' thoughts on gender roles about doctors. In the adapted scale, six items were included in this sub-dimension.

The ratio of the chi-square statistics to the degree of freedom (χ^2/df) obtained from the conducted analysis was 1.95 (χ^2=362.826 df=186); root mean square approach error was 0.080; The Tucker-Lewis index value was 0.85 and the comparative fit index value was 0.87. The model formed by CFA is presented in Figure 1. The three-dimensional structure of the scale is verified with this model. These results show that the scale reached enough fit values.

Discussion

The aim of this research was to analyze the validity and reliability of the Turkish version of "Nijmegen-gender awareness in medicine scale". For the linguistic equivalence study, which is extremely important in the scale adaptation, backward and forward translation of "Nijmegen-gender awareness in medicine scale" was performed. The members of the faculty who translated it from English into Turkish and from Turkish into English discussed on the scale and completed the translation stage by giving the final state to the scale. All item correlation analyses were performed to ensure scale reliability. Two items (items 5 and 23) with an overall correlation coefficient of less than 0.25 were removed from the scale. Three items (items 8, 10, and 11) were removed from the scale because the items that they were factoring with did not provide meaningful consistency. Factor distributions of the 21 items showed the same distribution as the original scale.

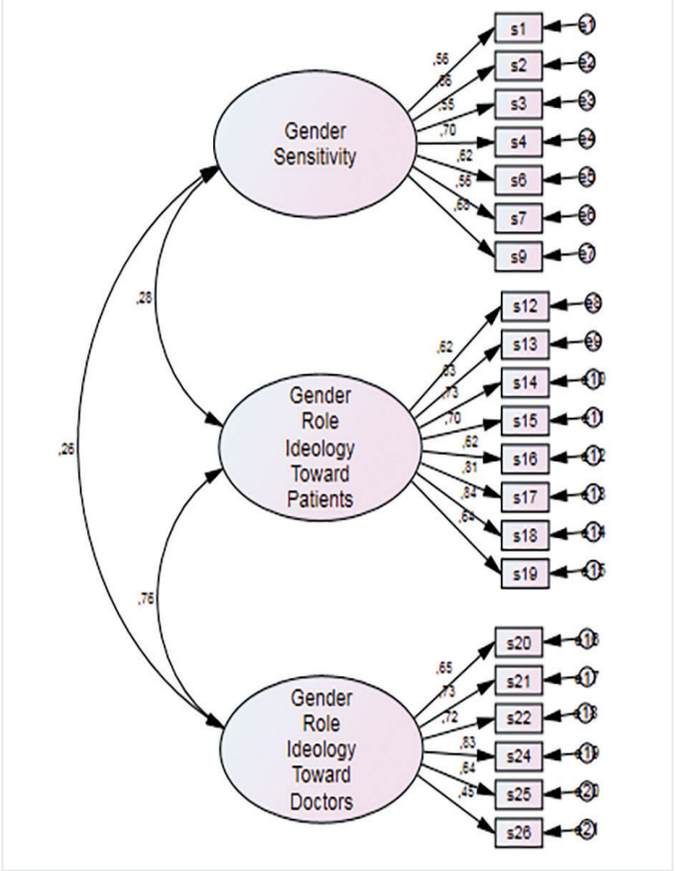

Figure 1. Confirmatory Factor Analysis of "Nijmegen gender awareness in medicine scale"

As a result of AFA (explanatory factor analysis), a three-factor structure that accounts for 54.3% of the total variance was obtained. In addition, when the compliance index limits for DFA are taken into consideration, it is seen that the model has a sufficient level of adaptation and that the Turkish version of the original factor structure conforms to the factor structure.

Conclusion

From this study, it was determined that the Turkish version of the scale was valid and reliable.

Ethics Committee Approval: Another permission was obtained from the Dean of Erciyes University Faculty of Medicine and the ethics committee of Erciyes University for the study to be conducted in medical faculty students (decision no: 2016/368, date: 24.06.2016).

Informed Consent: Informed consent form was obtained from participants.

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