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PAGES: 498-507

ORIGINAL PDF URL: https://dergipark.org.tr/tr/download/article-file/767859

RESEARCH / ARAŞTIRMA

A METHODOLOGICAL STUDY: DEVELOPMENT OF THE RATIONAL DRUG USE SCALE*

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ABSTRACT
Aim: The aim of this study was to develop the Rational Drug Use Scale which can be used to determine the knowledge, attitude and behaviors of patients for rational drug use according to the Theory of Planned Behavior.
Methods: The sample of this methodological study consisted of 550 patients who are being admitted to a Family Health Center. In the validity study of the Rational Drug Use Scale; content validity (content validity rate), construct validity (exploratory and confirmatory factor analysis) and criterion validity (Pearson's correlation analysis) were evaluated. In reliability analysis; internal consistency (Cronbach's alpha reliability coefficient) and item analysis were used.
Results: The mean age of the patients was 53.00 ± 9.62 years and 66.9% of them were female. It was found that there was consistence between the expert views on the items of scale (90.71%). As a result of the exploratory factor analysis for construct validity, 36-item scale with 6 factors was reached. After confirmatory factor analysis, it was determined that the model was acceptable with data. For criterion validity, equivalence analysis was performed and Morisky 8-item Medication Adherence Scale was used. A significant positive correlation was found between Morisky 8-item Medication Adherence Scale ($X=5.57\pm2.26$) and Rational Drug Use Scale ($X=51.04 \pm 7.39$) mean scores. The Rational Drug Use Scale Cronbach's alpha was found 0.85.
Conclusion: It was determined that Rational Drug Use Scale was a valid and reliable measurement tool. Accordingly, it may be advisable to use Rational Drug Use Scale to assess patients' knowledge, attitudes and behaviors towards rational drug use.
Keywords: Chronic patient; rational drug use; scale development; validity and reliability analysis.

ÖZ
Metodolojik bir çalışma: Akılcı İlaç Kullanımı Ölçeği'nin Geliştirilmesi
Amaç: Planlı Davranış Teorisi'ne göre hastaların akılcı ilaç kullanmaya yönelik bilgi, tutum ve davranışlarını belirlemede kullanılabilecek Akılcı İlaç Kullanımı Ölçeği geliştirmektir.
Yöntem: Metodolojik olarak yapılan araştırmanın örneklemini; bir Aile Sağlığı Merkezi'ne başvuran 550 hasta oluşturdu. Akılcı İlaç Kullanımı Ölçeği'nin geçerlik incelemesinde; kapsam geçerliği (kapsam geçerlik indeksi), yapı geçerliği (açımlayıcı ve doğrulayıcı faktör analizi) ve ölçüt geçerliği (Pearson's korelasyon analizi) değerlendirildi. Güvenirlik incelemesinde; ölçek iç tutarlık (Cronbach's alfa güvenirlik katsayısı) ve madde analizleri kullanıldı.
Bulgular: Çalışmaya katılanların yaş ortalaması 53.00 ± 9.62 yıl ve %66.9 kadındır. Ölçekte yer alan maddelere ilişkin uzman görüşleri arasında uyum olduğu saptandı (%90.71). Yapı geçerliği için yapılan açımlayıcı faktör analizi sonucunda 36 maddelik 6 faktörlü bir ölçek yapısına ulaşıldı. Doğrulayıcı faktör analizi sonucunda modelin veri ile kabul edilebilir bir uyum gösterdiği belirlendi. Ölçüt geçerliği için eş değerlik analizi yapıldı ve Morisky 8-Maddeli Tedavi Uyum Ölçeği kullanıldı. Morisky 8-Maddeli Tedavi Uyum Ölçeği ($X=5.57\pm2.26$) ile Akılcı İlaç Kullanımı Ölçeği ($X=51.04 \pm 7.39$) puan ortalamaları arasında pozitif yönde anlamlı ilişki bulundu. Akılcı İlaç Kullanımı Ölçeği Cronbach's alfa 0.85 bulundu.
Sonuç: Akılcı İlaç Kullanımı Ölçeği'nin geçerli ve güvenilir bir ölçüm aracı olduğu belirlendi. Buna göre, hastaların akılcı ilaç kullanmaya yönelik bilgi, tutum ve davranışlarını değerlendirmek için bu Akılcı İlaç Kullanımı Ölçeği'nin kullanılması önerilebilir.
Anahtar Kelimeler: Kronik hasta; akılcı ilaç kullanımı; ölçek geliştirme; geçerlik ve güvenilirlik analizleri.

* This study was presented as a oral presentation at the 2nd International Internal Medicine Nursing Congress, 17-19 December 2020.
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INTRODUCTION

The medicine, which has an important place for human and community health, saves human health and life when used correctly, and can put an end to life when used incorrectly (1). Rational drug use is an important factor in ensuring quality health care for patients and society (2). Rational drug use was defined by WHO in Nairobi meeting in 1985 as, 'patients receive drugs suitable to their clinical needs, in doses that meet their own individual needs, for a sufficient period of time, and at the lowest cost to themselves and their society' (3). Rational drug use, including a combination of many correct procedures for the use of the drug (4); the correct indication, the right medication, the appropriate dose and time, the patient is adequately informed, the process of monitoring and evaluation of the drug intake process is the whole (5,6).

Rational drug use is a systematic approach that includes accurate diagnosis of the patient, careful identification of the problem, determination of treatment goals, selection of proven (reliable) treatment from various options, writing an appropriate prescription, initiation of treatment by giving clear knowledge and instructions to the patient, monitoring and evaluation of the results of treatment (4, 7-10).

Many negative causes arising from production of drug to its disposal after use can lead to irrational drug use (6, 11). Non-rational drug use leads to the pharmacist's wrong medication, decreased treatment compliance of patients, the use of drugs at the wrong doses and times, the drug interactions, development of resistance to some drugs, the recurrence or prolongation of the diseases, increased in the incidence of adverse events and increased treatment costs (8, 12-14).

One of the most important health problems in the world, especially in developing countries is irrational drug use. (6, 15, 16). Common types of irrational drug use are: the use of too many drugs per patient, unnecessary use of antimicrobials, over-use of injections when oral formulations would be more suitable, failure to prescribe in accordance with clinical guidelines, inappropriate self-medication often of prescriptiononly drugs (13, 17).

Worldwide more than half of all drugs are not used correctly (6, 13, 18). In our country and in the world, the use of wrong or unnecessary medication seriously affects public health (14, 16, 19). In many questionnaires about rational drug use (5, 18, 20, 21), it is shown that drugs are used unnecessarily and incorrectly.

WHO's recommendations in many countries (13) rational drug use program launched in the direction of Turkey in 20 years is a long time if taken a certain way about the rational use of drugs is carried out is also continuing problem use of drugs (22). There are important responsibilities for physician, pharmacist, nurse, other health personel, patient/patient relatives, sector, regulatory authority, professional organizations and other groups (Media, Academy etc.) (12, 22). Nurses who important responsibilities have for rational drug use should assess whether patients have any questions about their medication and inform patients about the use of prescribed drugs. Nurses should particularly provide training and counseling on issues such as compliance with treatment, use of non-prescription medication, self-medication, and use of medicines with the advice of neighbors and friends. They should also raise awareness of the public about storing medicines in appropriate conditions, the correct use of drugs accumulated in the home, and should monitor the use of medication to ensure the success of the treatment (23).

In the literature review, there is no valid and reliable measurement tool for determining rational drug use in our country and there is a questionnaire about Rational Drug Use (RDUS) created by the Ministry of Health. Therefore, in this study; The Rational Drug Use Questionnaire was reviewed, questions were added, and a model was tried to be translated into a scale. The Theory of Planned Behavior (TPB), was used to develop RDUS.

TPB is one of the most preferred theories of social-psychology by researchers to predict behavior (24-26). TPB was first developed by Ajzen in 1985 (27). "TPB has been used successfully in attempts to provide a better understanding of such diverse health-related behaviours as exercising, donating blood, adhering to a low-fat diet, using condoms for AIDS prevention, using illegal drugs, and wearing a safety helmet, among many more (28)."

"According to TPB, the immediate forerunner of a particular behavior is the intention to perform the behavior. Intention is assumed to be determined by three types of thinkings or beliefs (behavioural, normative and control beliefs) (29). "However, in the theory of planned

behavior, demographic, environmental and personal characteristics are considered background variables that can influence behaviour indirectly by affecting behavioural, normative and control beliefs" (28).

The aim of this study was to develop RDUS, which can be used to determine the knowledge, attitude and behavior of patients to use rational drugs according to TPB.

MATERIALS AND METHODS

Study design: This study is a methodological type scale development study.

Study setting: This study was conducted in the Demirci No.1 Family Health Center in Turkey.

Study universe and sample: The universe of the study consisted of all patients who came to Demirci No.1 Family Health Center between 1 January 2018 and 1 May 2018. The study sample consisted of 550 patients who applied to Demirci No.1 Family Health Center and met the criteria of inclusion. 10 times the number of items in the scale were taken into consideration in the determination of the sample size (30).

Study participants: Patients aged between 18 and 65 years who were taking oral medication for any chronic disease, who were illiterate in Turkish and who did not have any communication problems, did not have any diagnosed psychiatric disease, answered the questions and were willing to participate in the study were included in the study. Patients who were diagnosed with cancer, who had physical disabilities and did not respond fully to the forms were excluded from the study.

Study instruments: The data of the study were collected by the Patient Identification Form, the RDUS and the MMAS-8.

Patient Identification Form: The form was consisted of 11 question. These 11 questions are related demographic characteristics (age, sex, marital status, education and etc.)

The Rational Drug Use Scale (RDUS): Rational drug use questionnaire developed by the Ministry of Health for patients; was used for this study by revising and adding new substances. First of all, rational drug use (3, 10, 13, 20, 31), developing Likert type scales (32, 33) and literature about TPB were investigated (34,35). The steps for developing a Likert type attitude scale were followed and a pool of 55 items based on the TPB was created. Scale items were prepared based on the sub-dimensions of TPB by taking expert views. After the validity and reliability analysis, the scale included a total of 36

items related to the rational drug use of the patients. Scoring of items in the scale developed as a three-point Likert type is never 0, sometimes 1 and always 2. The scores that can be taken from the scale vary between 0-72. The score obtained from the RDUS increases, the level of rational drug use increases.

The Morisky 8-item Medication Adherence Scale (MMAS-8): The scale was developed by Morisky et al in 2008 (36). This scale was validated in Turkish by Oğuzülgen et al in 2014. It is an eight-item scale that evaluates the patient's drug use behavior and includes questions that will allow for better assessment of obstacles that may lead to treatment incompatibility. A total of 8 points can be obtained from this scale. In the first 4 questions No 1 point Yes 0 point; In the 5th question Yes 1 point No 0 point; In the 6th and 7th questions No 1 point Yes 0 point; In the 8th question there is no time to score 1 point and the other 4 are 0 points. The scale is categorized as a 0-5 point low fit, 6-7 medium fit, and 8 points high fit (37).

Data collection: The data were collected Demirci No.1 Family Health Center between 1 January 2018 and 1 May 2018 by the researchers by face to face interview. 10 patients were pre-tested to understand the questions, difficulty status, filling time and characteristics were evaluated.

Data analysis: Collected data in the study were evaluated by using Versiyon 22.0;SPSS for Windows and Version 8.0 LISREL Statistics. Data are shown as mean±standard deviation (SD), number and percentage. $p<0.05$ was considered to be statistically significant. In the validity study of the RDUS; content validity (content validity rate-CVR), construct validity (exploratory and confirmatory factor analysis) and criterion-dependent scale validity (Pearson's correlation analysis) were evaluated. In reliability analysis; internal consistency (Cronbach's alpha reliability coefficient) and item analysis were used.

Ethic considerations: Scientific and universal principles were complied with in this study. In this respect, the principles of informed consent, autonomy, confidentiality and privacy protection, equity, non-harm / benefit principles were taken into consideration. This study was approved by Manisa Celal Bayar University School of Medicine Clinical Research Ethics Committee (Approval no. 20478486) and Manisa Health Directorate. The purpose of the study, written benefits, and the data to be taken out of the purpose of the study will not be used, the

individual data is not explained to the patients written notifications were written.

RESULTS AND DISCUSSION

The mean age of the patients who participated in the study was 53.00 ± 9.62 years, 66.9% of them were female, 62.4% were primary school, 89.6% were married and 58.4% were housewives (Table 1).

Table 1. Demographic Characteristics of Patients (N = 550)

Demographic characteristics		Mean ± SD	
		n	%
Age (years)		53.00±9.62	
Sex	Female	368	66.9
	Male	182	33.1
Marital status	Married	493	89.6
	Single	57	10.4
Education	Literate	36	6.5
	Primary school	343	62.4
	Middle school	43	7.8
	High school	71	12.9
	University/ Graduate	57	10.3
Job	Housewife	321	58.4
	Officer	39	7.1
	Worker	34	6.2
	Retired	126	22.9
	Self-employment	21	3.8
	Unemployed	9	1.6

SD, standard deviation.

Rational Drug Use Scale Validity

The validity of the scale in the study was evaluated by using the content validity, construct validity and criteron-related validity.

Content validity

55 items prepared for the RDUS were submitted to expert views. The opinions of 11 experts were evaluated according to Davis technique. According to the evaluations of the items by 11 experts with respect to content validity, total CVR for relatedness of items was found 0.98, total CVR for simplicity of items was found 0.97 and total CVR for clarity of items was found 0.96. CVR values of the items ranged from 0.63-1.00. As a result of the content validity of the study, 5 items were removed from the scale and 5 items were added to the scale in accordance with the recommendations of the experts. In the present condition, 55-item scale including 37 positive and 18 negative was created.

Content validity is to what extent the scale and each item in the scale serve the purpose as a whole (38). One of the logical ways to test the content validity is to consult expert views (39).

While assessing the experts views to determine the content validity, one of the methods used to determine the CVR is the Davis technique. Davis (1992) technique evaluates expert views as quaternary; (a) appropriate, (b) the item should be reviewed slightly, (c) the item should be reviewed seriously and (d) the item is not suitable. In this technique, the number of experts marking the CVR for the article was found by dividing the number of experts making option (a) and (b) to the total number of experts and 0.80 was accepted as a criterion (33). The views of 11 experts for the RDUS were evaluated according to the Davis technique. An item was excluded from the scale because it received a value below 0.80 (33). It was found that there was a consensus between the expert views on the 55 items included in the scale and the content validity was ensured.

Construct validity

Exploratory factor analysis: Before examing the factor structure of the RDUS, Kaiser-Meyer- Olkin (KMO) analysis and Bartlett test are applied. The scale was found to be KMO=0.87 and Barlet test p<0.001.

In this study Principal Component is used as factor analysis and in determining the factor numbers eigenvalues greater than one are evaluated. The literature suggests subtracting items with a factor load below 0.40 from the scale. It is found that six factor's eigenvalue was greater than 1 and and percentage of total variance is 59.94%. The scale consisted of 36 items (Table 2).

Factor analysis is one of used multivariate statistical techniques that makes a large number of interrelated variables a small significant and independent factors (40). KMO analysis is applied to determine whether the sample is sufficient for factor analysis before the factor structure is examined. The KMO value ranges from 0 to 1 and 0.60 is recommended as a minimum value for a factor analysis (41). The KMO value for the 36-item form of RDUS was found to be 0.87. The Bartlett test should be significant (p <0.05) in order to accept the factor analysis as appropriate. The Bartlett test result of RDUS was p <0.001. These results showed that the structure of RDUS was suitable for factor analysis and could be divided into factors (41).

In the exploratory factor analysis used for construct validity, it is stated that the factor loadings between 0.30 and 0.40 can be taken as the lower cut-off point. Factors with an eigenvalue above 1.00 should be considered in the calculation of factors (42). In the study, eigenvalue was taken 1.00 and factor load was taken as 0.40. The

literature suggests subtracting items with a factor load below 0.40 from the scale. For this reason, as a result of factor analysis, the scale consisted of 36 items and six factors. Factor loadings of the items in the first dimension were among 0.47 to 0.92, factor loadings of the second dimension were among 0.52 to 0.88, factor loadings of the items in the third dimension were among 0.59 to 0.89, factor loadings of the items in the fourth dimension were among 0.42 to 0.83, factor loadings of the items in the fifth dimension were

among 0.49 to 0.66 and the factor loadings in the sixth dimension were among 0.67 to 0.69. The higher the variance rates of the factors, the stronger the factor structure of the scale and variance rates varying from 40% to 60% are considered sufficient (42). In this study, six factors with eigenvalue above 1 explain 59.94% of the total variance.

Table 2. Reliability Analysis Results and Factor Structure for the Rational Drug Use Scale (N=550)

Factors	Items (Items in Draft Scale)	Factor loading	Eigenvalue	Variance (%)	Total Variance (%)	Item Total	Item Remaining	Item Discrimination	Cronbach's Alpha
Factor 1 (Information)	M 29 (M 47)	0.47				0.853	0.810	7.138	
	M 30 (M48)	0.51				0.855	0.813	7.770	
	M 31 (M 49)	0.75				0.856	0.812	7.672	
	M 32 (M 50)	0.92				0.585	0.393	7.215	
	M 33 (M 51)	0.86				0.855	0.810	8.024	
	M 34 (M 52)	0.87				0.898	0.870	7.012	
	M 35 (M 53)	0.88	5.41	15.03		0.776	0.691	6.578	0.87
	M 36 (M 55)	0.88				0.636	0.454	8.992	
Factor 2 (Behavioral Beliefs)	M 1 (M 1)	0.82				0.882	0.851	8.271	
	M 2 (M 2)	0.87				0.863	0.826	7.897	
	M 3 (M 3)	0.88				0.806	0.749	8.518	
	M 4 (M 4)	0.74				0.731	0.652	6.246	
	M 5 (M 5)	0.71				0.620	0.473	8.458	
	M 6 (M 6)	0.52				0.732	0.655	7.858	
	M 7 (M 7)	0.72				0.740	0.657	8.953	
	M 8 (M 8)	0.64	5.34	14.85		0.688	0.585	8.711	0.89
	M 9 (M 9)	0.71				0.760	0.682	9.327	
Factor 3 (Control Beliefs)	M 10 (M 10)	0.86			59.94	0.822	0.760	9.920	0.85
	M 11 (M 11)	0.89				0.849	0.795	10.095	
	M 12 (M 12)	0.84				0.828	0.767	10.622	
	M 13 (M 13)	0.76				0.787	0.686	12.047	
	M 14 (M 21)	0.67				0.726	0.592	11.368	
	M 15 (M 19)	0.61	4.25	11.85		0.671	0.527	10.985	0.88
	M 16 (M 22)	0.59				0.656	0.496	8.986	
Factor 4 (Intention)	M 24 (M 42)	0.42				0.775	0.652	6.463	
	M 25 (M 43)	0.79				0.675	0.430	7.225	
	M 26 (M 44)	0.58				0.779	0.670	5.846	
	M 27 (M 45)	0.83				0.683	0.367	9.154	
	M 28 (M 46)	0.81	2.77	7.72		0.781	0.672	6.656	0.74
Factor 5 (Attitude)	M 17 (M 18)	0.63				0.607	0.327	9.811	
	M 18 (M 20)	0.49				0.590	0.323	6.768	
	M 19 (M 23)	0.66				0.655	0.409	11.805	
	M 20 (M 27)	0.62				0.610	0.346	6.988	
	M 21 (M 28)	0.60	2.07	5.77		0.652	0.396	12.359	0.60
Factor 6 (Subjectif Norm)	M 22 (M 31)	0.69				0.841	0.531	10.064	
	M 23 (M 32)	0.67	1.70	4.73		0.905	0.531	8.679	0.68

The components of TPB were taken into account when the factors were named (28). Eight of the items were collected under the first factor and were included in the 'information' level. Nine of the items were collected under the second factor and were included in the "behavioral beliefs' level. Seven of the items were collected under the third factor and were included in the 'control beliefs' level. Five of the items were grouped under the fourth factor and were included in the 'intention' level. Five of the items were grouped under the fifth factor and were included in the 'attitude' level. Two of the items were grouped under the sixth factor and were included in the 'subjective norm' level.

Confirmatory factor analysis: Lisrel program was used for confirmatory factor analysis. The acceptability of the model was examined using some of the fit indices in the confirmatory factor analysis. When the structural validity of the scale is examined, the fit values of the six-factor model; $\chi^2/df=2.90$, RMSEA=0.069, SRMR=0.054, GFI=0.82, AGFI=0.80, NFI=0.92, CFI=0.95 and RFI=0.92 (Table 3).

Table 3. Goodness of Fit Indexes of Confirmatory Factor Analysis of Rational Drug Use Scale (36 Items)

Goodness of fit indexes	High goodness of fit values	Acceptable of fit values	Scale of fit values
χ^2/df	$0 \leq \chi^2/df \leq 2$	$2 < \chi^2/df \leq 3$	2.90
RMSEA	0.00<RMSEA<0.05	0.05<RMSEA<0.10	0.069
SRMR	0.00<SRMR<0.05	0.05<SRMR<0.10	0.054
GFI	0.95<GFI<1.00	0.90<GFI<GFI<0.95	0.82
AGFI	0.90<AGFI<1.00	0.85<AGFI<AGFI<0.90	0.80
NFI	0.95<NFI<1.00	0.90<NFI<0.95	0.92
CFI	0.95<CFI<1.00	0.90<CFI<0.95	0.95
RFI	0.90<RFI<1.00	0.85<RFI <0.90	0.92

Confirmatory factor analysis is a method that can examine whether the findings obtained from the patients are compatible with the theoretical structure. Multiple compliance index can be used for confirmatory factor analysis. These are Adjusted Goodness-of-Fit-Index (AGFI), Comparative Fit Index (CFI), Goodness-of-Fit Index (GFI), Normed Fit Index (NFI), Relative Fit Index (RFI), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR) (43, 44). Table 3 shows the compliance values of the most used fit indices (43) and the compliance values of the proposed model. As a result of analyzes performed, it can be said that the model shows acceptable compatibility with the data.

Standardized regression values show the power of predicting the sub-dimensions of scale items, that is, factor loadings. If the factor loads are high, it means that the items are loaded towards the dimensions and it is desired to be over 0.30 (44). The factor loadings of the confirmatory factor analysis model belonging to the Theory of Planned Behavior of RDUS, whose PATH diagram was drawn with Lisrel program, is shown in Figure 1.

Criteron-related validity

Scale validity was also tested with criterion-related validity approaches. For this purpose, both the developed scale and MMAS-8 were applied to 550 patients. The mean total score of RDUS was 51.04±7.39 (minimum=30.00 and maximum=72.00) and the MMAS-8 score was 5.57±2.26 (minimum=0.00 and maximum=8.00). As a result of Pearson correlation analysis performed between the average scores of RDUS and MMAS-8, showed a positive, weak and significant correlation between the two scales (r=0.30, p <0.01).

Similar scale validity, a type of criterion validity, scores are compared with a currently existing criterion (42). In this study, MMAS-8 was used to compare the validity and reliability of the study. Correlation between the scales was evaluated by Pearson moments correlation coefficient analysis. Correlation coefficients were
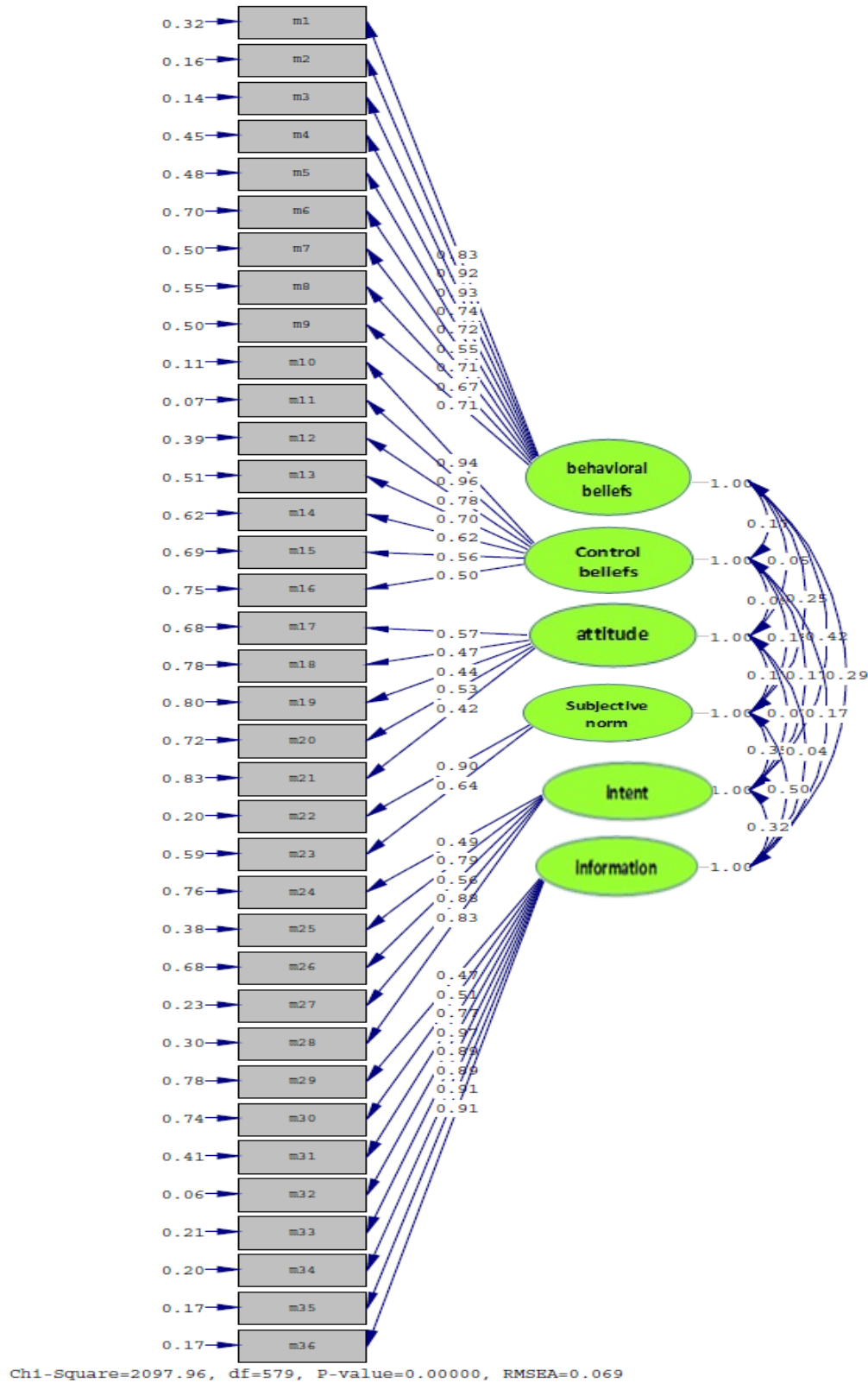
Figure 1. Confirmatory Factor Analysis Model Factor Loads of the Planned Behavior Theory of the Rational Drug Use Scale.

When looking at the standardized parameter values in the scale diagram shown in Figure 1, the factor loads are between 0.42 and 0.97.

interpreted as r<0.20 poor relation, 0.20 <r <0.39 low relation, 0.40 <r <0.59 moderate relation, 0.60 <r <0.80 strong relation, 0.80 <r <1 high relation (45). A positive and weak correlation was found between RDUS and MMAS-8. According to this result, the scores of MMAS-8 increase as RDUS scores increase.

Rational Drug Use Scale Reliability

Although there are various methods to evaluate the reliability of the scale, internal consistency and item analysis were used in this study.

Internal consistency

In this study, RDUS Cronbach's Alpha was found 0.85. Cronbach's Alpha value was 0.87 for the first (information), 0.89 for the second (behavioral beliefs), 0.88 for the third (control beliefs), 0.74 for the fourth (intent), 0.60 for the fifth (attitude) and 0.68 for the sixth (subjective norm) (Table 2).

Cronbach α coefficient is used if there are three or more answers to the scale items (Buyukozturk, 2008). In the literature, it is stated that Cronbachns Alpha coefficient varies between 0-1 (40, 46). The coefficient is between 60 and 80 indicates that the scale is highly reliable, and if the scale is 80 and above, then the scale is highly reliable (47). The Cronbach alpha reliability coefficient of RDUS was calculated as 0.85 for the 36-item form, 0.87 for the sub-factors, 0.89 for the behavioral beliefs, 0.88 for the control beliefs, 0.74 for the intent, 0.60 for the attitude, and 0.68 for the subjective norm. The Cronbach's Alpha coefficient in this study showed that the 36-item form of RDUS was a highly reliable scale.

Item analysis

The item-total correlations of RDUS were found between 0.58 to 0.89 for the first (information), 0.62 to 0.88 for the second (behavioral beliefs), 0.65 to 0.82 for the third (control beliefs), 0.68 to 0.78 for the fourth (intent), 0.59 to 0.65 for the fifth (attitude) and 0.84 to 0.90 for the sixth (subjective norm). The item remaining correlations of RDUS were found between 0.39 to 0.81 for the first (information), 0.47 to 0.85 for the second (behavioral beliefs), 0.49 to 0.79 for the third (control beliefs), 0.36 to 0.67 for the fourth (intent), 0.59 to 0.65 for the fifth (attitude) and 0.53 for the sixth (subjective norm). T values for item discrimination coefficients of RDUS were found between 0.58 to 0.89 for the first (information), 6.24 to 9.32 for the second (behavioral beliefs), 8.98 to 12.04 for the third (control beliefs), 5.84 to 9.15 for the fourth

(intent), 6.76 to 12.35 for the fifth (attitude) and 8.67 to 10.06 for the sixth (subjective norm) (Table 2).

Item analysis refers to the relationship between the value of each item in the scale and the total value taken from the whole scale (48). In this study, item total, residual matter and item discrimination indices were calculated as item analysis procedures. The positive and high item total correlation indicates that substances exemplify akin to behaviors and demonstrate that the test has high internal consistency. The item total correlation was determined by Pearson correlation coefficient. As the item total correlation is low, the item total correlation coefficient is not negative and it is expected to be at least 0.20 since it has a lowering effect (42). In this respect, it can be said that item total score correlations are sufficient.

The item residual correlation is the relation of the item with the total score obtained from the other items except itself. The relationship coefficient obtained from the total item is expected to be higher than the relationship coefficient obtained from the item residual. In addition, it is expected that both item total and item residual results will be significant at a minimum $p < 0.05$ level (42, 49). In our study, all of the items were statistically significant at $p < 0.001$ level and they were decided to stay in the same dimension.

Item discrimination; When the group is ranked from the highest point to the lowest score according to the total scores taken from the scale, it can be found that the differences among the item mean scores of the lower 27% and upper 27% groups are analyzed by using independent t-test (45, 50). Significant differences in the desired direction between the groups are considered as an indicator of the internal consistency of the test (50). In this context, independent t-test was applied for the upper and lower groups of 27% in order to look at the discrimination levels of the items in the scale. The scores of the patients from the scale were ordered from the largest to the smallest and two categories were created: upper and lower 27%, 148 lower and 148 upper groups. The discriminatory index of each item in the scale was calculated according to the responses of the lower and upper groups. Significance level was accepted as 0.10 in item discriminant analysis. In our study, all of the items were found to be significant at $p < 0.001$ level and the discriminant feature was found to be good.

Limitations of the Study

While developing RDUS, the sample was chosen from the patients who live in Demirci district of Manisa province and applied to the one family health center. Therefore, it is the limitation of this study that finding are not generalizable.

CONCLUSION AND RECOMMENDATIONS

This research, aimed of determining the validity and reliability of RDUS, based on the Planned Behavior Model, throgh the support of literature and expert opinions and it was concluded that it brought a valid and reliable scale into Turkish literature, thus the research has reached the aim. Accordingly, it may be advisable to use RDUS to assess patients' knowledge, attitudes and behaviors towards rational drug use.

Conflicts of interest: No conflict of interest was declared by the authors.

Author contributions: V. C. obtained data and performed the data coding, analysis and writing composition; S.C.P. decided on research design, supervised the entire work process and critically reviewed the work. All authors read and confirmed the latest article.

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