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Reliability and Validity of Drugs Use Health Belief Scale in Adult Women

Behice Erci[1]* and Zeynep Çiçek[2]

[1]*Department of Nursing, Health Sciences Faculty, İnönü University, Turkey*
[2]*Department of Nursing, Health School, Mevlana University, Turkey*

*Corresponding author: *Behice Erci, Department of Nursing, Health Sciences Faculty, İnönü University, Malatya, Turkey, Fax: +904223410220, E-mail: behiceerci@hotmail.com*

Abstract

Purpose: The aim of this study was to develop a scale for measure health beliefs about drug use and test psychometric properties of the scale.

Methods: The research was methodological study design. A convenience sample of 210 women at a primary health care centre completed a structured questionnaire including the health beliefs related drug use scale for women in 2012. The researchers visited primary health care centre on 5 working days in every week and conducted interviews with the women. The researchers invited the women participate to the study.

Results: In the assessment of construct validity, six factors were identified; they related perceived susceptibility, perceived severity, health motivation, perceived benefit, perceived barriers, and self-efficacy. The overall internal co-efficient of this scale was 0.91. The drug use health beliefs is a six-factors instrument specifically developed to support research of health beliefs related conscious and prescription drug use. The scale has adequate validity and reliability and a high level of acceptability for this sample group.

Conclusion: The present study provided evidence of the drug use health beliefs scale validity and reliability. The drug use health beliefs scale can be used to assess aspects of health beliefs for conscious and prescription drug use and in researches.

Keywords

Health beliefs, Conscious and prescription drug use, Instrument development, Validity and reliability

Introduction

The World Health Organization reported that around the world, 50% of all medicines were prescribed, dispensed, or sold inappropriately, while 50% of patients fail to take their medicines adequately [1]. The irrational use of drugs is a global healthcare problem. Poly pharmacy, over prescription of injections, choice of more expensive drugs, under use of available effective medicine, inappropriate self-medication, overuse of antibiotics, failure to prescribe by clinical guidelines, and insufficient attention to non pharmacologic options are some of the examples of the irrational use of drugs. Irrational prescribing habits of physicians can lead to wasted resources and can cause medication errors, adverse or drug reactions, and loss of patients' confidence in physicians and healthcare authorities [1-3].

A health care system provides treatment and support for people who are ill, injured, or disabled. A tendency for self-medication by over-the-counter drugs is known to be common in many cultures. There are many publications indicating that people seek help for their health complaints first from pharmacists, asking for drugs without a prescription from physician by either describing their condition or by directly giving the name of the drug. These studies also show an increasing rate of sale of prescription drugs and without prescriptions [4-10]. This tendency may be due to an inability to receive healthcare services because of poverty or remoteness from healthcare centres or physicians. But it may also stem from the belief of persons, who regard the pharmacist as a reliable and more easily accessible source of information, that they can resolve their problems without consulting a physician by using this, in fact, questionable knowledge. Drugs, when used irrationally, may in fact lead to more problems rather than cure the present one [11-15].

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Original Health Belief Model is that health behaviour is determined by personal beliefs or perceptions about a disease and the strategies available to as decrease it occurrence [16]. The model also shows that a person's health-related behaviour is influenced by his/her perception of the threat caused by a health problem and the value associated with his/her action to diminish the threat. In this coverage, drug use health beliefs questionnaire was designed to measure drug use health beliefs, which is viewed in the context of the Health Belief Model.

In recent years, many different types of measures have been developed and applied to assess health beliefs. In the health beliefs, most early measuring tools focused on breast cancer, self examination of breast cancer, breast cancer screening, parental health beliefs, health beliefs and health behaviours of physical therapist. However, no researcher has developed a tool to measure drug use health beliefs. This scale is important because it measures drug use health beliefs measure in community. Health care researchers who work with culturally diverse communities need to be aware that the measurement of drug use health beliefs may vary in different cultural groups. Therefore, the drug use health beliefs scale can be adapted to other cultures, although this scale is the best representation of the constructs of drug use health beliefs from a Turkish perspective. It is possible that this scale can be adapted to all the available communities. For diverse communities, it is important to know drug use health beliefs since community health and health promotion in communities. Drug use health beliefs scale can be used for different populations for this purpose. This study describes the development of the scale about drug use health beliefs. This scale was specifically designed to meet psychometric criteria while assessing health beliefs related conscious and prescription drug use.

The purpose of the study was to develop a scale for measure health beliefs about drug use, test psychometric properties of the scale, and to provide initial evidence for its validity.

Methods

Design

A psychometric design was used to this study. In order to make sure the quality of a development instrument, international norms should be followed. We aimed to follow these essential steps based on the literature [17-19]. The study phases were; first, content analysis by a panel of specialists; and, second, psychometric testing (construction validity, a reliability coefficient, and inter-item correlations).

Setting

The participants of this study were women who lived in Erzincan, Turkey. A convenience sample was recruited in 2012 from women attending a primary health care centre in the city. The sample size of 245 women was estimated using power analysis based on an error probability of 0.05 with two tailed and power of 0.95, and assumed effect size was 0.30 for the sample size estimation [20,21]. The researchers requested from the women participate to the study and to complete the drug use health belief scale during their appointment. The women were chosen through convenience sampling method as consecutive from women who applied to primary health care centre.

The researchers visited primary health care centre on 5 working days in every week and conducted interviews with the women. The researchers introduced the questionnaire to the participants and explained the material to be covered. Subsequently, the participants who agreed voluntarily read the questionnaire and marked their answers on the sheets. The questionnaire was given to the women in a separate quiet room of the primary health care centre. The questionnaire took approximately 20 minutes to complete and could be understood by people with minimal reading ability. Thirty five women did not complete the questionnaire because they were busy. Thus, 210 women responded to the questionnaire. The response rate was 85.7%. Test retest of the scale was conducted on the same women after 4 weeks. The inclusion criterion was limited to women who could read and understand the Turkish language.

Drug use health beliefs scale

The drug use health beliefs were measured by "the drug use health beliefs scale" prepared by the researchers. The scale was constructed through a review of the literature. We did not use any other existing instruments or adapt items from other scales in the literature. Four experts reviewed the instrument, and they made wording recommendations. Two are experts are in area of public health nursing and the other two are experts in instrument development. We implemented their wording suggestions in the scale. A pool of items was generated from the literature and the experts were asked to identify any additional issues they felt should be included in the questionnaire. Combining information from these different sources resulted in a draft questionnaire. The draft instrument was pilot tested with another group from the target population. As a result, several items were reworded and a number of new items were added to the questionnaire. The scale included conscious and prescription drug use related perceived susceptibility this subscale consisted of 1., 2., 3., 4., 5., 6. items and it assesses perceptions of susceptibly for conscious and prescription drug use; perceived severity this subscale formed of 7., 8., 8., 10., 11., 12. items and it measures perceptions of severity for conscious and prescription drug use; health motivation this subscale composed of 13., 14., 15., 16., 17., 18. items and it measures health

motivation related conscious and prescription drug use; perceived benefit this subscale consisted of 19., 20., 21., 22. items and it measures perceived benefit of conscious and prescription drug use; perceived barriers this subscale composed of 23., 24., 25., 26., 27., 28. items and it assesses the extent to which perceived barriers of conscious and prescription drug use; and self-efficacy this subscale formed of 29., 30., 31., 32., 33., 34., 35. item and it assesses self-efficacy of conscious and prescription drug use. The resulting list of 35 drug use health beliefs items was used and as the basis of the health beliefs related conscious and prescription drug use described in the present study. The scale consisted of 35 items on a 5-point score with the following coding: strongly disagree (1), disagree (2), uncertain (3), agree (4) and strongly agree (5) 23, 24, 25, 26, 27 and 28 items are negative scored. The scale measures six dimensions. The maximum score of the scale was 151 and minimum score was 59 point. Evaluation of the scale score was made by totalling the sum points. The higher score referee the higher health beliefs related conscious and prescription drug use.

Additional questions

Questions about the women's age, marital status, family income and education level and occupational status were also asked. These demographic questions allowed recognizable of the participants.

Data Analysis

Internal consistency and homogeneity

Clark and Watson [22] indicate that internal consistency may be a necessary condition for homogeneity or one dimensionality of a scale, and Cronbach's alpha must be 0.70. They recommend using the mean inter-item correlation as criterion for internal consistency. This should be least 0.15. They point out that inter-item correlation of all items should be within these limits. In other words, one can only be ensured of one dimensionality if all items inter-item correlations are clustered closely around the mean inter-item correlation.

Content validity

The developed scale, consisting of 35 items, was judged by the expert panel on relevance and phrasing of the instrument items. For each item, the experts could suggest possible improvements in phrasing. Subsequent revisions of the instrument were made and discussed each time by the panel members until agreement about the content was reached.

Construct validity

The data were analyzed by principal component analysis with varimax rotation. In order to reach the best fitting structure and the correct number of factors, the following criteria were used: eigenvalue higher than 1.0, factor loadings higher than 0.40, and the so-called

elbow criterion regarding the eigenvalue is the measures of the variance of all the variables that are accounted for in a given factor [23]. Before conducting the principal component analysis of the drug used health beliefs scale, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test were calculated to evaluate whether the sample was large enough to do a satisfactory factor analysis. The KMO measures the sampling adequacy that should be greater than $p < 0.05$ for a satisfactory factor analysis to proceeding.

Ethical considerations

Permission to undertake this study was gained from the ethical committee at the Atatürk University and informed approval was obtained from the each women. The women were informed about the purpose of the research, and they were assured of their right to refuse to participate or to withdraw from the study at any stage.

Construct validity of the drug use health beliefs was examined using principal components analysis with the resulting factor rotated using the varimax procedure [24]. The number of components retained was initially determined by means of the eigenvalue greater than one rule [25]. The resulting factor solution was reviewed with 35 items. Internal consistency of the scale was assessed by Cronbach's coefficient alpha (α). The test retest reliability of the scale was examined by correlation. Item total correlations were also assessed for an internal coefficient that indicates a direct association between the variables.

Results

Participant demographics

Demographic characteristics of the women were shown in table 1. The mean age of the women was 34.7 ± 9.2 years and their mean monthly income was US $870.10 ± 135.18. The majority of the women (36.2%) graduated from

Table 1: Characteristics of participating women (n:210).

Characteristics	N	%
Women's education level		
Primary school	76	36.2
Secondary school	34	16.2
High school	69	32.9
University degree	31	14.8
Occupation situation		
Employed	29	13.8
Unemployed	181	86.2
Marital status		
Married	178	84.8
Single	32	15.2
Health insurance		
There is	189	90.0
There is not	21	10.0
	Mean ± SD	
Age (years)	34.7 ± 9.2	
Household Monthly Income (US $)	870.10 ± 135.18	

Table 2: Principal components analysis followed by varimax rotation factor loadings and item-total correlations of items of the drug use health beliefs scale (n = 210).

Scale items	Corrected item-total correlation	Cronbach's alpha of items	Factor loading of items	Variance
Perceived susceptibility		**0.89**		**16.4%**
1. If I use non prescription drug, likelihood harm is very high for me.	0.725	0.873	0.670	
2. If I use a non prescription drug, drug allergy is likely high.	0.751	0.869	0.659	
3. If I use non prescription drug, I possibly will death.	0.645	0.889	0.687	
4. If I use non-prescription drug, my body and organs damage.	0.726	0.873	0.652	
5. Others suggest the drugs will harm to me.	0.726	0.873	0.708	
6. I do not suggest my drug to others for causing damage.	0.740	0.871	0.730	
Perceived severity		**0.80**		**14.5%**
7. A drug allergy scares me.	0.522	0.786	0.618	
8. When I think damage/adverse of drugs to body, I will be stress.	0.565	0.777	0.797	
9. I am afraid of think allergy of non prescription drug.	0.657	0.755	0.747	
10. I live problems concerning side effects/damage of non-prescription drug to be continuing a very long time.	0.677	0.753	0.631	
11. If I use non-prescription drug, my concrete surroundings can undermine confidence to me in my environmental relationship.	0.436	0.808	0.475	
12. If I use incorrect and non-prescription drug, it can do serious changes in my life (loss of vision).	0.561	0.777	0.506	
Health motivation		**0.92**		**13.7%**
13. I would like to make early discovery my health problems.	0.755	0.921	0.691	
14. To be healthy is very important for me.	0.825	0.911	0.774	
15. I investigate new information to improve my health.	0.771	0.918	0.717	
16. I learn new information for use of correct drug.	0.790	0.916	0.723	
17. I think it is important I do behaviours and knowledge to be improve my health.	0.851	0.908	0.803	
18. I use prescription drug.	0.766	0.919	0.691	
Perceived benefits		**0.90**		**10.0%**
19. To use prescription drug for my benefit.	0.838	0.861	0.825	
20. To use prescription drug provides my healing.	0.798	0.875	0.785	
21. To use prescription drug, drug poisoning (allergies) can decrease or completely blocked.	0.758	0.889	0.780	
22. To use prescription drug protects my legal rights.	0.764	0.888	0.742	
Perceived barriers		**0.84**		**9.1%**
23. To take prescription drug very difficult for me due to process.	0.536	0.830	0.502	
24. Procedures of take prescription drug get my very time.	0.608	0.815	0.598	
25. No one will help me for taking prescription drug.	0.710	0.795	0.727	
26. I do not have to comply tedious procedures since non prescription drugs heal me.	0.681	0.801	0.679	
27. If drug make heal, prescription is not needed for drug.	0.550	0.827	0.513	
28. I do not have time to get prescription drug.	0.626	0.812	0.563	
Self-efficacy		**0.93**		**5.2%**
29. I know the procedure of getting prescription drug.	0.580	0.944	0.555	
30. I am able to use my drug correctly.	0.859	0.913	0.819	
31. I can heal using my drug correctly.	0.867	0.912	0.827	
32. I can get drug information from explained to me and I can correct use my drug.	0.742	0.925	0.693	
33. I can get the information required since I can correct use drug.	0.864	0.913	0.824	
34. I can use my drugs correct doses.	0.847	0.915	0.844	
35. I can use my drug recommended time intervals.	0.767	0.922	0.737	
Total		**0.91**		**69.1%**

primary school, and 86.2% of them were unemployed. In the sample group 84.8% of women were married.

Validity and reliability

The questionnaire consisting of 35 items was evaluated by the expert panel for relevance and phrasing of the items. For each item, the experts suggested possible improvements in phrasing. Subsequent revisions of the questionnaire were made and discussed again by the panel members until agreement.

The instruments completed by 210 women were used for the analyses. The drug use health beliefs had an overall coefficient alpha of 0.91 (Table 2). The corrected item-total correlations were acceptable [26]. The inter-item cor-

relations ranged from 0.43 to 0.86, but indicated a non one-dimensional scale. The Kaiser-Meyer-Olkin (KMO) was 0.90 with a *p* value < 0.001, indicating that the sample was large enough to perform a satisfactory factor analysis and that the sample size was adequate for psychometric testing of a 35-item questionnaire. The first step of the factor analysis was a principal component analysis revealing six factors with an eigenvalue of higher than 1 (Table 2). The six factors together explained 69.1% of the variance. Internal consistency reliability was 0.91 for the whole scale. For the first factor, with an alpha of 0.89, factor loadings were found for items which dealing primarily with the Perceived Susceptibility Subscale (six items), which assesses perceptions of susceptibility for conscious and prescription drug use. This factor explained 16.4% of the variance. On the second factor (alpha = 0.80), loadings were found which refer the Perceived Severity Subscale (seven items), which assesses perceptions of severity for conscious and prescription drug use. For this factor, the explained variance was 14.5%. The third factor with an alpha of 0.92 exclusively referred to items which deal with the Health Motivation Subscale (six items), which assesses health motivation related conscious and prescription drug use. The explained variance of the third factor was 13.7%. The fourth factor with an alpha of 0.90 was Perceived Benefits Subscale (four items), which assesses perceived benefit of conscious and prescription drug use and this factor explained 10.0% of the total variance. The fifth factor was Perceived Barriers Subscale (six items), which assesses the extent to which perceived barriers of conscious and prescription drug use. Internal consistency reliability of this factor was 0.84 and it explained 9.1% of the total variance. The sixth factor with an alpha of 0.93 was Self-Efficacy Subscale (seven items), which assesses self-efficacy of conscious and prescription drug use. The factor explained 5.2% of the total variance.

Factor loadings of all items were above 0.40 and factor loading of the items ranged from 0.47 to 0.84 in the current study. Table 2 shows principal components analysis followed by varimax rotation factor loadings of items of the scale. The stability of the scale was established by measuring test retest reliability, and test retest reliability of the scale was 0.77.

The mean scores of the participants ranged from 13.59 ± 2.41 to 27.62 ± 2.24 point. Also, the skewness was small than 0.1 for all subscales. This means that the distribution is near to symmetrical (Table 3). Inter correlations among subscales were shown in table 4. Perceived Barriers was negative correlated with other subscales. There was positive relationship between Self-efficacy with other subscales except Perceived Barriers subscale.

Discussion

The developed scale, consisting of 35 items, was judged by the expert panel on relevance and phrasing of the instrument items. For each item, experts could suggest possible improvements in wording. Subsequent wording revision of the instrument was made and discussed each time by the panel members till agreement about the content was reached. Then, the panel reviewed about the content of the drug use health beliefs scale until there was no need to change its content.

The drug use health belief is a six-dimensional instrument and specifically developed to allow support to health beliefs about conscious and prescription drug use. The scale has adequate validity and reliability and a high level of acceptability for this sample group.

According to the content validity of the drug use health beliefs scale, there was no need to change its content. Besides, the internal consistency of the drug use health beliefs scale seems adequate in view of the range of item-total correlations of the scale, and item-total correlations changed from 0.43 to 0.86. It is suggested that the acceptable least point for inter-item correlations

Table 3: The drug use health beliefs scale minimum and maximum scores, scale mean and skewness.

Drug use health beliefs scale	Minimum	Maximum	Mean	Skewness
Perceived susceptibility	6.00	30.00	23.14 ± 2.37	0.054
Perceived severity	6.00	30.00	21.39 ± 1.85	0.203
Health motivation	6.00	30.00	24.90 ± 2.20	0.217
Perceived benefits	4.00	20.00	16.25 ± 1.84	0.038
Perceived barriers	6.00	30.00	13.59 ± 2.41	0.247
Self-efficacy	7.00	35.00	27.62 ± 2.24	0.039

Table 4: Correlations between subscales of drug use health beliefs scale.

	Perceived susceptibility	Perceived severity	Health motivation	Perceived benefits	Perceived barriers	Self-efficacy	Total scale
Perceived susceptibility	1	0.690***	0.610***	0.516***	-0.188**	0.475***	0.809***
Perceived severity	0.690***	1	0.477***	0.448***	-0.095	0.413***	0.757***
Health motivation	0.610***	0.477***	1	0.588***	-0.246***	0.532***	0.769***
Perceived benefits	0.516***	0.448***	0.588***	1	-0.257***	0.654***	0.743***
Perceived barriers	-0.188**	-0.095	-0.246***	-0.257***	1	-0.262***	0.002
Self-efficacy	0.475***	0.413***	0.532***	0.654***	-0.262***	1	0.750***
Total scale	0.809***	0.757***	0.769***	0.743***	0.002	0.750***	1

**p < 0.01; ***p < 0.001.

is 0.15 [27,28]. With respect to this result, the correlations were adequate. Also, internal consistency and item-total correlations had adequate criteria [15,28]. According to the literature, an item total correlation of 0.30 is considered to be the lowest acceptable level [15,29].

As indicated by the result of the KMO, the sample was large enough to perform a satisfactory factor analysis. Factor analysis with varimax rotation indicated that, with regard to the content, six factors could be discerned: Perceived Susceptibility, Perceived Severity, Health Motivation, Perceived Benefits, Perceived Barriers, Self-Efficacy subscales. The total variance of the scale was 69.1%. Internal consistency reliability was 0.91 for the scale. It is stated that a reliability of 0.80 is considered the lowest acceptable coefficient for a well-developed measurement tool. For a newly developed instrument, a reliability of 0.70 is considered acceptable [30]. George and Mallery [31] stated that an alpha of 0.70 may be acceptable at a minimal level. Also, it is stated that the alpha coefficient must be 0.70 or more [15,29]. Explained variance should be 30% and above [15,28]. In this study, internal consistency and explained total variance had adequate criteria [15,28].

Factor loadings of all items were above 0.40 and factor loading of the items in the scale ranged from 0.47 to 0.84 in this study. The acceptable minimum point for factor loading is 0.30 [32]. In this study, all items met these criteria, and factor loadings were high. With respect to this result, construct validity of the scale was obtained.

Test-retest reliability of the scale was 0.77. It is customary to state that measurements of repeatability for group comparisons should be at least 0.70 [28]. The test retest reliability was adequate for the scale. According to the results of this study, construct validity of the scale was obtained.

In this study, the skewness was small than 0.1 for all subscales. This means that the distribution is near to symmetrical. Inter correlations among subscales were shown in table 4. Perceived Barriers was negative correlated with other subscales. There was positive relationship between Self-efficacy with other subscales except Perceived Barriers subscale.

There are some limitations of the study. The sample was selected by convenience sampling, the most of the women low education levels (36.2% primary school) and work in the home (86.2%). The sample reflects only one area of Turkey and therefore cannot be generalized to all women in Turkey.

Conclusion

In this study, according to provided evidence, the drug use health beliefs is a valid, reliable, and acceptable tool. The scale is very important since it provides standardized data on health beliefs for conscious and prescription drug use. The "drug use health beliefs scale" will enable identification of conscious and prescription drug use. Assessment of drug use health beliefs should be an essential part of nursing practice in all communities. In this study, a standardized instrument is presented based on data obtained from the Turkish women population. The drug use health beliefs scale can be adapted to other communities. The identification of variables provided by further study may improve the scale of drug use health beliefs. Once a valid and reliable scale is ready for use, it can be employed to measure outcomes in intervention studies. This will allow further testing of drug use health beliefs scale that will support health promotion of communities. With the scale now, the study can continue to further validate the scale and it use to outcomes research.

Implications for research include that the scale's validity and reliability can be tested in other areas and other countries that also represent a diverse sample from a wide range of ages, race, education, and income backgrounds to see if the results of the study are consistent with what has been derived in this study (using drug use health beliefs scale). The literature review revealed the need for more studies relating to drug use health beliefs for all socioeconomic groups. Further studies concerning how drug use health beliefs can aid health professionals will better identify drug use health beliefs related conscious and prescription drug use. Utilization of the results will promote the mental and physical health of person and communities. It could also be helpful for health care providers in primary health care during home visits and in primary health care centres. Public health nurses and other health care providers can offer counselling and education for person and communities.

Conflict of Interest

No conflict of interest has been declared by the author.

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