Developing a Scale to Evaluate the Fatalism of Epilepsy in Turkey

Opracowanie skali do oceny fatalizmu padaczki w Turcji

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Abstract

Introduction. Many people believe that there is something predetermined in their life. Fatalism affects people's adaptation to their diseases in epilepsy as well as in every disease.
Aim. The study was conducted methodologically to determine the fatalism towards epilepsy disease.
Material and Methods. "Information Form" and "Epilepsy Fatalism Scale" were used as data collection tools. With the literature review, a pool was created from the items of the previously developed fatalism scales. After removing the items with low factor load as a result of confirmatory factor analysis, confirmatory factor analysis was performed again.
The data of the research were collected through social media. Kaiser–Meyer–Olkin (KMO) and Bartlett test, Principal Component Analysis, and Varimax Rotation were used for exploratory factor analysis in the evaluation of the data. For construct validity, confirmatory factor analysis was performed within the scope of explanatory and structural equation modeling χ^2, χ^2/SD, RMSEA, CFI, IFI compatibility tests were used for Confirmatory Factor analysis.
Results. The Cronbach's alpha coefficient for the entire scale was found to be 0.768. It was determined with the results of the fit index analysis χ^2/SD: 3.736, GFI, 0.922, AGFI 0.909, CFI 0.904, TLI 0.914, RMSEA: 0.062, RMR: 0.041 that the validity of the scale was ensured.
Conclusions. The scale consisted of 10 items and three dimensions. The scale is a valid and reliable measurement tool in evaluating epilepsy fatalism. **(JNNN 2023;12(2):63–68)**
Key Words: epilepsy, fatalism, scale

Streszczenie

Wstęp. Wiele osób wierzy, że w ich życiu jest coś z góry ustalonego. Fatalizm wpływa na przystosowanie się człowieka do chorób związanych z padaczką i każdą inną chorobą.
Cel. To metodologiczne przeprowadzone badanie ma na celu określenie fatalizmu w kierunku choroby padaczkowej.
Materiał i metody. Jako narzędzia gromadzenia danych wykorzystano „Formularz informacyjny" i „Skalę śmiertelności padaczkowej". W wyniku przeglądu literatury utworzono pulę pozycji z wcześniej opracowanych skal fatalizmu. Po usunięciu w wyniku konfirmacyjnej analizy czynnikowej pozycji o niskim ładunku czynnikowym, ponownie przeprowadzono konfirmacyjną analizę czynnikową.
Dane do badania zbierano za pośrednictwem mediów społecznościowych. Do eksploracyjnej analizy czynnikowej w ocenie danych wykorzystano test Kaiser-Meyer Olkin (KMO) i Bartletta, Analizę Głównych Składowych i Rotację Varimax. Dla trafności konstruktu przeprowadzono konfirmacyjną analizę czynnikową w zakresie modelowania równań objaśniających i strukturalnych. Do analizy czynników potwierdzających wykorzystano testy zgodności χ^2, χ^2/SD, RMSEA, CFI, IFI.
Wyniki. Stwierdzono, że współczynnik alfa Cronbacha dla całej skali wynosi 0,768. Na podstawie wyników analizy wskaźnika dopasowania χ^2/SD: 3,736, GFI, 0,922, AGFI 0,909, CFI 0,904, TLI 0,914, RMSEA:0,062, RMR: 0,041 stwierdzono, że trafność skali została zachowana.

Wnioski. Skala składała się z 10 pozycji i trzech wymiarów. Skala jest ważnym i wiarygodnym narzędziem pomiarowym w ocenie fatalizmu padaczki. **(PNN 2023;12(2):63–68)**
Słowa kluczowe: padaczka, fatalizm, skala

Introduction

A chronic neurological disease characterized by recurrent seizures, epilepsy causes significant problems to cognitive, psychological, intellectual, and social functions [1]. Throughout history, religions have influenced the interpretation of epilepsy, both in terms of society and the individual. In many countries, instead of being understood as a disease, epilepsy is interpreted using mystical concepts [2].

One of the six pillars of faith in Islamic societies is the fatalism belief. The belief in fate, which is also included in other divine beliefs, is at the center of discussions, where there exist several theological doubts and hesitations. Many people are undecided as to how much of the events they have experienced and the phenomena that have taken place are the decisions of God, and how much of them are due to their own free will. At the point between free will and fatalism, depending on their outlook on life and evaluation of their experiences, people's lives and psychology can change. In this context, it becomes important to determine where people's perception of fate falls on the fatalism scale [3].

An individual with high health fatalism will perceive their health to be dependent on fate or God. However, religious belief can be a helpful resource in mental and physical health and is potentially integrative [4].

Beliefs can have both positive and negative effects on health [5]. Many fatalism studies focusing on different groups exist in the literature, and fatalism has been shown to be associated with a variety of beliefs, and its consequences are often associated with health. In Powe's hypothesis on health fatalism, an individual who voluntarily rejects cancer screenings believes that cancer is related to their fate and does not find it important to participate in screenings because they cannot change their situation [6]. Likewise, according to Lange and Piette [7], it is a quirk of the effect of fate on health that diabetic patients keep their glycemic control out of their will and attribute it to fate. For effective and successful intervention in such cases, patients' fatalistic approaches should not be ignored [7].

In Turkey, a Muslim country, the belief in fatalism is extremely common. When an illness occurs, many different Muslim groups believe that it is God's will, that God is the only possible source of healing [8]. Though research on religiosity and religious coping in epilepsy patients exists in the literature [9–11], research on developing a tool to measure fatalism in epilepsy patients does not exist.

Fatalism is based on the belief that 'the passive rejection of personal control and death is inevitable when serious illness is present' [6]. Existing research has argued that the nature of fatalism, the individuals' inability to control perceived internal and external events, the concepts of destiny, luck, and the predetermination of a disease or a health condition, and the concepts of powerlessness, hopelessness, and meaninglessness due to negative health expectations can be conceptualized as a whole as health belief in fatalism.

In addition to the existing scales, inspired by their items, the items of the epilepsy fatalism scale were created to evaluate fatalistic attitudes toward epilepsy. Its items concern the subdimensions of predetermination, fatality, and untreatableness. The weighting of these items became evident in subsequent analyses. We aimed to test the measurability of the three-factor structure we created with the validity (i.e. better reflecting the semantic meaning of the structure) and reliability analyzes to measure epilepsy fatalism.

We created the items of the scale by adapting the items of the fatalism scales found in the literature for epilepsy [6,12–14].

Material and Methods

The data were collected between January 1, 2021, and January 10, 2021 via social media in Turkey. The study population consisted of individuals living in Turkey and speaking Turkish. Since the number of participants in scale development studies, according to the literature, should be five or 10 times the number of items, this study included 184 participants.

The 'Information Form' and the draft 'Epilepsy Fatalism Scale' were used for data collection. The databases were scanned using the relevant keywords — fatalism, scale, and epilepsy — and then, from the obtained studies, a 12-item pool was created and arranged according to expert opinions. A preapplication was conducted.

The epilepsy fatalism scale's surface and content validity, construct validity, and reliability analyzes were performed. Expert opinion was sought for content validity. The Kaiser–Meyer–Olkin (KMO) and Bartlett test, Principal Component Analysis (PCA), and Varimax Rotation were used for exploratory factor analysis. Explanatory factor analysis was performed for construct validity, and confirmatory factor analysis — using

compatibility tests such as χ², χ²/SD, RMSEA, CFI, and IFI — was performed within the scope of the structural equation modeling. For reliability analysis, Cronbach's alpha and total item correlation analysis were used, and finally, to evaluate the participants' age, gender, marital status, educational status, and the presence of epilepsy, the number and percentage analyses were used.

Permission was obtained from a local ethics committee to conduct the study. Consent was received from the participants.

Results

Out of the participants, 64.1% (N=118) were single, 70.6% (N=130) female, and 96.7% had undergraduate or higher education; 98.9% (N=182) did not have epilepsy, and 89.7% (N=167) had no family history of epilepsy. The mean participant age was 28.12±8.78 years.

To determine the suitability of the data set for factor analysis, we obtained the KMO coefficient and the Bartlett Sphericity test significance level: the former is close to 1, and the latter is <0.05, making the data set suitable for factor analysis (Table 1).

Table 1. Results of the KMO and Bartlett Sphericity Test for the Epilepsy Fatalism Scale

KMO		0.766
Bartlett Sphericity Test	Chi-square	631.866
	SD	66
	p	0.000

According to the total explained variance table given below, since the number of factors with an eigenvalue greater than 1 is 3, it can be said that 12 items are weighted under 3 factors. The first factor per se explains 32.6% of the total variance, the second 14.4%, and the third 10.2%. Together, the three factors explain 57.2% of the total variance (Table 2).

The factor item weight matrix is given in the Table 3. Accordingly, under which factor the items are weighted can be seen.

The items "I think that a healthy lifestyle is not important in epilepsy" and "I think that if a person has epilepsy, it does not matter how they are treated" were excluded from the study, since both factors were weighted close to each other. Factor analysis was then repeated.

Table 2. Results of the explained variance for the Epilepsy Fatalism Scale

Component	Initial Eigenvalue			Sum of Squares		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	3.922	32.684	32.684	3.922	32.684	32.684
2	1.722	14.350	47.035	1.722	14.350	47.035
3	1.220	10.163	57.197	1.220	10.163	57.197
4	0.971	8.092	65.289			
5	0.791	6.588	71.877			
6	0.739	6.159	78.036			
7	0.637	5.310	83.346			
8	0.564	4.701	88.047			
9	0.419	3.489	91.536			
10	0.383	3.191	94.727			
11	0.354	2.951	97.678			
12	0.279	2.322	100.000			

Table 3. The factor item weight matrix for the Epilepsy Fatalism Scale

	Factor		
	1	2	3
If a person has epilepsy, it is their fate.	0.767		
I think that if a person is going to have epilepsy, they will still have epilepsy no matter what they do.	0.741		
If a person has epilepsy, it is the order of Allah.	0.740		
A person's epileptic seizure is their fate.	0.711		
I think that if a person is going to have epilepsy, it will definitely happen.	0.628		
If a person has epilepsy, I think they will die soon.		0.737	
I think that if a person has epilepsy, they will die of epilepsy anyway.		0.717	
I think that even if a person has been diagnosed with epilepsy and is being treated, they probably still cannot recover from epilepsy.		0.548	
I think that a healthy lifestyle is not important in epilepsy.		0.492	0.487
I do not think it matters if a person has epilepsy and doctors and nurses tell them what to do.			0.774
I am not worried about my health because it is in God's hands.	0.449		0.669
I think that if a person has epilepsy, it does not matter how they are.	0.473	0.481	treated

The first factor per se explains 35.9% of the total variance, the second 14.3%, and the third 12.2%. Together, the three factors explain 62.4% of the total variance (Table 4).

An examination of the item weight matrix revealed the distribution of items weighted under the factors (Table 5, Figure).

Items 1, 2, 3, 5, and 11 were weighted under the first factor; items 4, 6, and 7 under the second; and items 8 and 12 under the third. The factor structure obtained by exploratory factor analysis was then tested with confirmatory factor analysis, and the resulting model diagram and path coefficients are given below.

The ratio of the chi-square statistics obtained as a result of the analysis to the degrees of freedom (χ^2/df) was 3.736 (χ^2=119.543 df=32). The root mean square approximation error (RMSAE) was 0.07, the Tucker–Lewis index (TLI) value 0.91, and the comparative fit index (CFI) value 0. A model with CFI and TLI values of 0.90 or higher is a well-fitted model (Table 6).

To check the reliability of the scale, the Cronbach's alpha coefficient and item correlation analyzes were used. For the entire scale, the Cronbach's alpha coefficient was 0.768. It was determined to be 0.721 for the predetermination sub-dimension, 0.591 for the fatality sub-dimension, and 0.635 for the untreatableness sub-dimension.

Table 4. Results of variance after deletion of 2 items for the Epilepsy Fatalism Scale

Component	Initial Eigenvalue			Sum of Squares		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	3.599	35.989	35.989	3.599	35.989	35.989
2	1.428	14.280	50.269	1.428	14.280	50.269
3	1.216	12.156	62.426	1.216	12.156	62.426
4	0.908	9.076	71.501			
5	0.776	7.765	79.266			
6	0.579	5.793	85.059			
7	0.435	4.347	89.406			
8	0.389	3.893	93.299			
9	0.372	3.717	97.016			
10	0.298	2.984	100.000			

Table 5. Factor loadings of epilepsy fatalism scale items after deletion of two items

	Factor		
	1	2	3
I think that if a person is going to have epilepsy, they will still have epilepsy no matter what they do.	0.792		
If a person has epilepsy, it is their fate.	0.760		
If a person has epilepsy, it is the order of Allah.	0.682		
A person's epileptic seizure is their fate.	0.682		
I think that if a person is going to have epilepsy, it will definitely happen.	0.649		
If a person has epilepsy, I think they will die soon.		0.809	
I think that if a person has epilepsy, they will die of epilepsy anyway.		0.804	
I think that even if a person has been diagnosed with epilepsy and is being treated, they probably still cannot recover from epilepsy.		0.511	
I am not worried about my health because it is in God's hands.			0.767
I do not think it matters if a person has epilepsy that doctors and nurses.			0.739 tell them what to do

Table 6. Fit Indices Values of Epilepsy Fatalism Scale

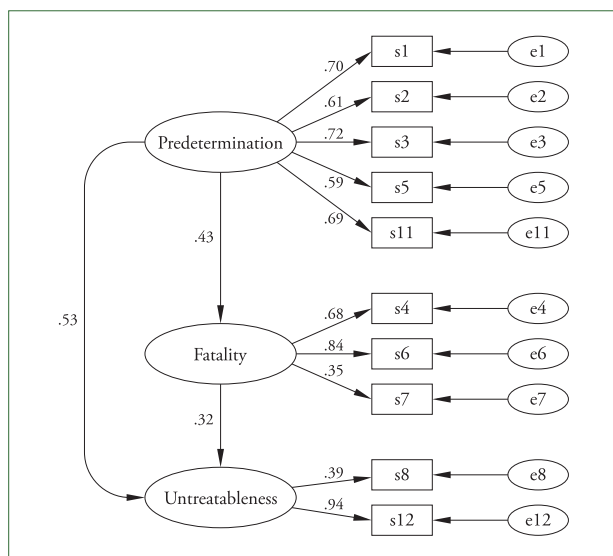| Acceptable Fit Indices	Calculated Fit Indices
$\chi^2/SD<5$	3.736
GFI>0.90	0.922
AGFI>0.90	0.909
CFI>0.90	0.904
TLI>0.90	0.914
RMSEA<0.08	0.062
RMR<0.08	0.041

Figure. Path of Epilepsy Fatalism Scale

Discussion

Several studies exist in the literature on cancer fatalism, diabetes fatalism, health fatalism, and the health fatalism scale for Muslims [6,12,15]. In this study, we developed a scale with three sub-dimensions to evaluate society's fatalistic attitudes concerning epilepsy. Eigenvalues above 1 were considered in determining the scale's sub-dimensions — predetermination, fatality, and untreatableness — which are similar to Powe's cancer fatalism scale [6].

In the predetermination sub-dimension, the factor loadings of the items "I think that if a person is going to have epilepsy, they will still have epilepsy no matter what they do", "If a person has epilepsy, it is their fate", "If a person has epilepsy, it is God's order", "An epileptic seizure is their fate", and "If a person will have epilepsy, I think it will definitely happen" were above 0.4 and weighted in one sub-dimension. There thus exists a societal attitude toward epilepsy that treats it like other diseases that are part of a predetermined fate.

We obtained similar results in the fatality sub-dimension, which may have actually stemmed from the belief that death is a fate and a predetermined situation. Only two items were weighted in the untreatableness sub-dimension: "I am not worried about my health because it is in God's hands" and "If a person has epilepsy, I think it does not matter if doctors and nurses tell them what to do". These statements suggest the existence of a societal belief that individuals' health and epilepsy status will not be affected by their or health workers' curative activities.

In the exploratory factor analysis performed to verify the scale's validity, the KMO value was found to be sufficient. The factor analysis of the scale was thus continued. The explained variance level of the scale was above 50%, an acceptable value for the validity of the scale.

To evaluate the overall fit of the model with the data, we considered the general fit index values of χ^2/df, GFI, CFI, and RMSSA. First, the GFI produces values ranging

from 0 to 1, with values above 0.90 indicating a good fit. Second, the CFI produces values ranging from 0 to 1, with values greater than 0.90 indicating a good fit. Third, the RMSAE values of 0.08 or less indicate a reasonable fit, although values of 0.06 or less should be preferred. The fit index values of the scale were found to be acceptable for the three-factor structure [16].

The scale's reliability was found to be at the limit, which may be due to the small number of items in the scale's sub-dimensions. However, the Cronbach's alpha coefficient was found to be good for the entire scale. The scale was thus found to be reliable for use.

Conclusions

The validity of the developed epilepsy fatalism scale, according to several analyzes, is high. According to the reliability analysis, the reliability values of the sum of the items on the scale are at an acceptable level. However, the Cronbach's alpha coefficients of the subdimensions are low. Consequently, the epilepsy fatalism scale can be used as a valid and reliable measurement tool.

Implications for Nursing Practice

With the epilepsy fatalism scale, nurses can easily use this tool in researching the level of fatalism of epilepsy disease and the factors that contribute to it, both in clinically ill individuals and in healthy individuals in the society. Fatalism scales can be developed for other diseases or conditions by taking this scale as a reference. Pioneering data can be obtained for the development of nursing interventions for fatalistic behaviors.

References

[1] Sirven J.I. Epilepsy: A Spectrum Disorder. *Cold Spring Harb Perspect Med*. 2015;5(9):a022848.

[2] Dayapoglu N., Ayyıldız N.İ., Şeker D. Determination of health fatalism and the factors affecting health fatalism in patients with epilepsy in the North of Turkey. *Epilepsy Behav*. 2021;115:107641.

[3] Horozcu Ü. Development of Theistic Fatalism Scale: Reliability and Validity Study. *Journal of Istanbul University Faculty of Theology*. 2018;29(1):9–24.

[4] Salazar-Collier C.L., Reininger B.M., Wilkinson A.V., Kelder S.H. Exploration of Fatalism and Religiosity by Gender and Varying Levels of Engagement Among Mexican-American Adults of a Type 2 Diabetes Management Program. *Front Public Health*. 2021;9:652202.

[5] Turan G.B., Dayapoğlu N., Özer Z. Evaluation of nursing students' health fatalism, knowledge, and attitudes toward patients with epilepsy. *Epilepsy Behav*. 2022;127:108497.

[6] Powe B.D. Cancer fatalism among elderly Caucasians and African Americans. *Oncol Nurs Forum*. 1995;22(9): 1355–1359.

[7] Lange L.J., Piette J.D. Personal models for diabetes in context and patients' health status. *J Behav Med*. 2006; 29(3):239–253.

[8] Kahissay M.H., Fenta T.G., Boon H. Beliefs and perception of ill-health causation: a socio-cultural qualitative study in rural North-Eastern Ethiopia. *BMC Public Health*. 2017;17(1):124.

[9] Bone I., Dein S. Religion, spirituality, and epilepsy. *Epilepsy Behav*. 2021;122:108219.

[10] Lin C.Y., Saffari M., Koenig H.G., Pakpour A.H. Effects of religiosity and religious coping on medication adherence and quality of life among people with epilepsy. *Epilepsy Behav*. 2018;78:45–51.

[11] Tedrus G.M., Fonseca L.C., De Pietro Magri F., Mendes P.H. Spiritual/religious coping in patients with epilepsy: relationship with sociodemographic and clinical aspects and quality of life. *Epilepsy Behav*. 2013;28(3):386–390.

[12] Egede L.E., Ellis C. Development and psychometric properties of the 12-item diabetes fatalism scale. *J Gen Intern Med*. 2010;25(1):61–66.

[13] Nageeb S., Vu M., Malik S., Quinn M.T., Cursio J., Padela A.I. Adapting a religious health fatalism measure for use in Muslim populations. *PLoS One*. 2018;13(11): e0206898.

[14] Shen L., Condit C.M., Wright L. The psychometric property and validation of a fatalism scale. *Psychol Health*. 2009;24(5):597–613.

[15] Rajabi G., Zolmajd Z. Psychometric Properties of the Persian Version of the Family Empowerment Scale. *Iranian Journal of Psychiatry and Clinical Psychology*. 2018;24(2):216–229.

[16] Hooper D., Coughlan J., Mullen M.R. Structural Equation Modelling: Guidelines for Determining Model Fit. *Electron J Bus Res Methods*. 2008;6(1):53–60.

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