



## Original Article

## Adaptation and psychometric validation of the Turkish version of the motivation for healing scale in patients with cancer

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## ABSTRACT

**Objective:** The Motivation for Healing Scale (MHS) is a valid and reliable instrument for assessing the motivation for healing in patients with cancer. This methodological study aimed to translate the MHS into Turkish and evaluate the validity and reliability of the Turkish version (T-MHS).

**Methods:** The study sample consisted of 320 oncology patients selected using convenience sampling method. The T-MHS was assessed for face, content, construct, and convergent validity, as well as internal consistency and test-retest reliability. Face validity was evaluated by patients, content validity was evaluated using the Content Validity Index (CVI), and construct validity was evaluated using Confirmatory Factor Analysis (CFA). Convergent validity was examined by correlating the T-MHS scores with illness uncertainty and hope. Reliability was determined using Cronbach's alpha and test-retest method. Statistical analyses were performed using IBM SPSS Statistics (version 30.0) and AMOS (version 26.0).

**Results:** The mean patient age was  $52.99 \pm 13.50$  years. The T-MHS demonstrated strong content validity (CVI = 0.98) and high internal consistency (Cronbach's  $\alpha = 0.87$ ). Test-retest analysis confirmed good stability over time. CFA supported the original five-factor structure and showed excellent model fit. Convergent validity was confirmed by a positive correlation with hope ( $r = 0.57, P < 0.001$ ) and a negative correlation with illness uncertainty ( $r = -0.62, P < 0.001$ ).

**Conclusions:** The T-MHS is a reliable and valid instrument for the clinical assessment of patients with cancer and for research aimed at interventions that enhance motivation for healing in this population.

## Introduction

Cancer remains a significant public health issue, with an increasing number of new cases globally.<sup>1–3</sup> Although significant improvements in cancer survival rates have been achieved over the past decade owing to early diagnosis, advanced treatment methods, and advances in patient care strategies, the treatment process still poses a significant physical and psychological burden, which can reduce patient motivation and negatively affect treatment adherence.<sup>4–6</sup> Motivation is a fundamental psychological process that enables patients to actively participate in their treatment.<sup>7,8</sup>

Motivation for healing is a psychological force that drives individuals to engage in behaviours aimed at improving their health and well-being.<sup>9,10</sup> In patients with cancer, this motivation is essential for maintaining consistent participation in treatment and rehabilitation, coping with challenges, and enhancing psychosocial adjustment.<sup>11–15</sup> It

is considered an internal and sustainable process, enabling patients to actively manage their health and pursue healing, rather than relying solely on short-term or external incentives.<sup>16,17</sup> Motivation for healing thus plays a pivotal role in achieving not only symptom relief but also functional healing and improved quality of life.<sup>18–20</sup>

Recent studies have highlighted the central role of motivation in health-related behavior, particularly in patients with cancer. Self-Determination Theory (SDT) provides a useful framework for understanding motivation for healing, emphasising intrinsic motivation—driven by personal satisfaction and the desire to improve well-being—as crucial for sustaining treatment adherence and engagement in rehabilitation.<sup>21–23</sup> When patients feel autonomous, competent, and supported, they are more likely to internalise health behaviours and actively participate in their care, which promotes healing and improves quality of life.<sup>24,25</sup> Fundamental motivational factors, such as the willingness to live, optimism, and a sense of responsibility, have been shown to

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significantly influence treatment adherence and outcomes in patients with cancer.<sup>7,23</sup>

Several instruments have been developed to assess patients' motivation in health-related contexts, including the Treatment Self-Regulation Questionnaire (TSRQ),<sup>26</sup> Health Self-Determination Index (HSDI),<sup>27</sup> and Patient Activation Measure (PAM).<sup>28</sup> However, these tools primarily evaluate general health behaviors and do not fully capture the internal motivational dimensions that are specific to the healing process. In contrast, the Motivation for Healing Scale (MHS) was designed specifically to assess motivation for healing, addressing internal sources such as love of life, hope, religious beliefs, and family responsibility through a multidimensional structure.<sup>7</sup> Psychometric analyses have confirmed its validity and reliability; however, a culturally adapted version for Turkish patients has not yet been developed. A valid and reliable Turkish version of the MHS will facilitate the assessment of motivation for healing among Turkish patients with cancer, support the identification of individuals with low motivation, and guide the development of culturally sensitive interventions to enhance treatment adherence, psychological well-being and healing outcomes.

This study aimed to evaluate the cultural adaptability and psychometric properties of the Turkish version of the MHS (T-MHS). The research questions were as follows:

- a. Is the T-MHS valid?
- b. Is the T-MHS reliable?

## Methods

### Study design

This study used a methodological approach. It followed the psychometric validation procedures outlined in the COSMIN Study Design checklist for Patient-Reported Outcome Measures (PROMs).<sup>29</sup>

### Participants and setting

The study was conducted in Istanbul, the largest city in Türkiye. The study population comprised patients receiving treatment at the 367-bed Oncology Hospital, which is part of a larger hospital complex recognized as one of Europe's largest health care facilities.<sup>30</sup> As an important referral center serving patients from diverse socioeconomic backgrounds under the social security system, it provided access to a heterogeneous patient sample. With an average of 250–300 adult patient visits per day, the center offers a suitable environment for the study. Data were collected over a four-month period, and all patients who met the predefined inclusion criteria were invited to participate in the study. Consequently, a convenience sampling approach was employed to include all eligible patients in the study.

The patients included in the study met the following criteria: (a) aged 18 years or older, (b) diagnosed with cancer, (c) undergoing active cancer treatment, (d) not in the terminal stage, (e) able to speak and understand Turkish, and (f) willing to participate in the study. Patients with cognitive impairment or communication difficulties were excluded from the study.

### Sample size

The sample size was determined based on the recommendations for Confirmatory Factor Analysis (CFA). The literature suggests that a sample size exceeding 200 is considered adequate for structural validity studies and provides sufficient statistical power to test the model fit.<sup>31,32</sup> Over a four-month data collection period, 1000 patients were selected from the relevant hospital in Istanbul; however, 638 of these patients declined to participate in the study because of time constraints, the intensity of the treatment process, and the caregiver guidance. The remaining 362 patients provided informed consent and completed the

questionnaires (36.2%). After excluding 42 forms with missing data, 320 valid datasets were analyzed.

### Instruments

The structured instrument used in this study was divided into the following sections: (a) demographic and disease characteristics information, (b) MHS, (c) Michelle Illness Uncertainty Scale-Community (MUIS-C), and (d) Dispositional Hope Scale (DHS).

#### Demographic and illness characteristics form

Patients' demographic and disease-related characteristics were collected using an 11-item questionnaire developed by the researchers based on the existing literature. The questionnaire comprised five sociodemographic items, including age, gender, marital status, education, and employment status, and six disease-related items, such as cancer type, stage, and duration of the illness.

#### MHS

The scale was developed by Hosseini et al.<sup>7</sup> to assess the motivation for healing among Iranian patients with cancer. It is widely used because it comprehensively evaluates various aspects of patient motivation. The scale comprises 25 items across five subscales: willingness to live (six items), positive thinking ability (four items), trust in treatment (four items), trust in higher powers (four items), and sense of belonging and responsibility (five items).<sup>7</sup> Each item is scored on a 5-point Likert scale ranging from 'strongly agree' to 'strongly disagree.' The total score ranges from 25 to 125, with higher scores indicating greater motivation for healing.<sup>7</sup>

#### MUIS-C

The MUIS-C was developed by Mishel to assess the level of uncertainty experienced by individuals with chronic illnesses during the course of their illness<sup>33</sup> and was adapted into Turkish by Çal and Aydın Avcı.<sup>34</sup> The scale consists of 20 items across three subscales, with each item rated on a 5-point Likert scale. Higher scores indicate greater illness uncertainty. Items 6, 8, 22, and 23 were reverse-scored. In the study by Çal and Aydın Avcı, the Cronbach's alpha coefficient for the overall scale was reported as 0.79,<sup>34</sup> whereas in the present study, it was 0.84. This scale was also used to assess the convergent validity of the T-MHS.

#### DHS

The scale was developed by Snyder et al. to assess individuals' levels of hope<sup>35</sup> and was adapted into Turkish by Tarhan and Bacanlı.<sup>36</sup> It consists of 12 items and two subscales that evaluate individuals' ability to generate alternative pathways to achieve their goals and their motivation to pursue these pathways. In the study by Tarhan and Bacanlı, the Cronbach's alpha coefficient of the scale was reported as 0.83,<sup>36</sup> in the present study, it was 0.84. This scale was also used to assess the convergent validity of the T-MHS.

### Translation and cross-cultural adaptation

To determine the scale's adaptability to Turkish culture, permission was obtained from the original scale developer, Fatemeh Hosseini. To ensure the cultural appropriateness and psychometric validity of the scale, a six-step cross-cultural adaptation process was followed, as proposed by Beaton et al.,<sup>37</sup> which is a standard approach for ensuring the usability of self-report scales in the health and psychology fields. This method is valid and reliable across all cultures. The stages were as follows: (a) forward translation, (b) synthesis, (c) back translation, (d) expert review, (e) pilot test, and (f) final version.

In the first stage, two nursing specialists whose native language was Turkish and who were proficient in English independently translated the English version of the MHS into Turkish. Both specialists held PhDs in nursing; one specialized in psychiatric nursing and the other in oncology

nursing, and both were proficient in relevant terminology. This stage aimed to ensure linguistic accuracy and content consistency of the translation. In the second stage, the two translators and the research team (authors) compared the translations, discussed the linguistic differences, reached a consensus, and created a single draft scale form for the back-translation process.

In the third stage, two independent translators who were proficient in both languages and had not previously seen the original scale translated the draft into English. Both translators were nursing specialists who had completed their education abroad and had no prior connection with MHS. After the back-translation process was completed, the researchers compared the two English versions obtained to assess meaning and content consistency, and the preliminary final version of the scale was prepared according to the agreed-upon wording. This version was sent to the scale developer, Fatemeh Hosseini, for content validity and feedback purposes. After reviewing the pre-final version, Hosseini stated that all items accurately reflected the intended meaning and that there were no linguistic errors; therefore, no further revisions were made.

In the fourth stage, the content validity of the pre-final version was assessed by a ten-member expert panel (five nursing professors experienced in psychometrics, two oncology specialists, two clinical psychologists, and one oncology nurse). As the expert panel focused on psychometric evaluation, expertise in psychometric assessment was prioritized over clinical practice experience; therefore, only one oncology nurse was included in the panel. The original MHS and pre-final version were sent to the experts via email, and each expert was asked to evaluate the scale items in terms of importance and content validity using the Davis technique.<sup>38</sup>

In the fifth stage, the clarity and applicability of the preliminary version were evaluated through a pilot study involving 30 patients with cancer undergoing treatment at the daily chemotherapy unit of the relevant hospital. During this process, the patients were asked to rate the scale items using a 5-point Likert-type scale (1 = low fluency or comprehensibility; 5 = high fluency or comprehensibility). The scores provided by the patients were ranked from high to low according to the items. The findings showed that the scale items were understandable, clear, and easy to answer by the target audience. Thus, the face validity of the scale was established in this study. Patients who participated in the pilot study were excluded from the final sample size. In the sixth stage, no changes were made to the Turkish scale, and it was accepted that the scale was ready for psychometric analysis.

#### Data collection

The study was conducted between October 2024 and March 2025, and data were collected through face-to-face interviews. The study was directly announced to patients receiving treatment at the outpatient chemotherapy unit of the hospital. Patients who wished to participate in the study were provided with detailed information about the study's purpose, scope, and importance. Patients were informed about the purpose of the study, consent was obtained, and they were given a questionnaire package consisting of four scales. Patients independently completed the questionnaires in the waiting room before chemotherapy, with researchers providing support to patients with disabilities. The average application time was 20 min per session. For test-retest reliability, the questionnaire was re-administered to 30 patients after 14 days.

#### Statistical analysis

Statistical analyses were performed using SPSS version 30. Descriptive statistical analyses of patients' demographic and disease characteristics were conducted, with categorical data presented as counts and percentages and quantitative data presented as arithmetic mean  $\pm$  standard deviation. The threshold for statistical significance was set at  $P < 0.05$ .

#### Psychometric test

**Content validity.** A panel of ten experts used a 4-point Likert-type scale (1 = not at all relevant, 2 = somewhat relevant, 3 = relevant, and 4 = very relevant) based on Davis<sup>38</sup> to assess the content validity of the T-MHS. The item-level content validity index (I-CVI) was calculated as the ratio of the number of experts who rated the item as '3' or '4' to the total number of experts who rated it. The scale-level content validity index (S-CVI/Ave) was calculated as the average of all the I-CVI values. According to Lynn<sup>39</sup> and Polit and Beck,<sup>40</sup> in studies involving four or more experts,  $I-CVI \geq 0.78$  and  $S-CVI/Ave \geq 0.90$  indicate high content validity.

**Item analysis.** This stage represented the initial assessment of the scale within the target population and was conducted prior to the construct validity analyses. Inter-item correlations, Cronbach's alpha values when items were deleted, and item-total correlations were examined and evaluated.<sup>41</sup> In the literature, an item-total correlation coefficient below 0.30 is accepted as a criterion for removing the relevant item from the scale.<sup>42</sup>

**Construct validity.** Factor analysis is one of the primary statistical methods used to assess the construct validity of a scale.<sup>43</sup> Since the factor structure of the MHS has previously been well established, the aim of this study was to verify whether the same theoretical structure could be confirmed within the Turkish patients with cancer. Therefore, a CFA was conducted to examine the structural validity of the 25-item, five-factor model using AMOS version 26. The factor structure and model fit were assessed using the chi-square/degrees of freedom ratio ( $\chi^2/df$ ), root mean square error of approximation (RMSEA), Normalised Fit Index (NFI), Incremental Fit Index (IFI), Tucker–Lewis Index (TLI), and Comparative Fit Index (CFI).<sup>44</sup> The literature indicates that interpreting these indices together provides more consistent results in terms of model validity and reliability.<sup>45</sup> According to generally accepted criteria, a  $\chi^2/df$  ratio below 2, an RMSEA value below 0.05, and CFI, TLI, IFI, and NFI values of 0.95 or above indicate that the model has an excellent level of fit.<sup>45,46</sup>

**Convergent validity.** This validity aims to assess whether the scale scores are consistently related to measurements that are theoretically expected to be related or unrelated.<sup>42</sup> Motivation is a process that directs an individual's efforts towards achieving internal goals and is a concept positively related to hope and negatively related to uncertainty.<sup>47,48</sup> Therefore, it was expected that the T-MHS scores would correlate positively with hope levels and negatively with disease uncertainty. Accordingly, patients responded to the MUIS-C and DHS scales in addition to the main scale. Inter-scale relationships were analysed using Pearson's correlation coefficient.<sup>49</sup> A correlation coefficient of 0.50 or above indicates that the measurement tools show a meaningful relationship in measuring the same concept and thus establish convergent validity.<sup>50</sup>

#### Reliability analysis

Reliability refers to the consistency of the measurement instrument and the extent to which the data obtained are free from random errors.<sup>51</sup> The internal consistency of the scale was assessed using Cronbach's alpha coefficient with values above 0.70 generally considered acceptable.<sup>52</sup> Additionally, the scale's stability over time was examined using the test-retest method and was reapplied to 30 patients at two-week intervals. The intraclass correlation coefficient (ICC) was used for the analysis. In the literature, an ICC below 0.50 indicates poor test-retest reliability, while a value above 0.90 indicates excellent reliability.<sup>53</sup>

#### Results

##### Patients' characteristics

The mean age of the patients was  $52.99 \pm 13.50$  years, and most of them were women ( $n = 221$ , 69.1%). A large proportion of patients were

married ( $n = 217$ , 67.8%). The most common education level was university or higher ( $n = 131$ , 40.9%). Regarding employment, 214 (66.9%) patients were unemployed. The average illness duration was  $17.36 \pm 5.46$  months. Most patients were diagnosed with breast cancer ( $n = 69$ , 21.6%), followed by gynecological cancer ( $n = 58$ , 18.1%). The majority were at an advanced stage (Stage III-IV) ( $n = 189$ , 59.1%). Approximately 52.2% ( $n = 167$ ) had no relapse, whereas 47.8% ( $n = 153$ ) had relapses. Additionally, most patients had other health conditions ( $n = 192$ , 60.0%). Regarding family history, 171 patients (53.4%) reported that no other family members had a history of cancer.

### Validity analysis

#### Content validity

The I-CVI and S-CVI values based on expert opinions are listed in Table 1. The I-CVI values for individual items ranged from 0.80 to 1.00, whereas the S-CVI/Ave value at the scale level was 0.98. These results indicate that the items are highly relevant and comprehensive in terms of their content. Furthermore, the experts did not recommend removing any items, which demonstrates that the scale items were well accepted.

#### Item analysis

The item analysis and internal consistency results for the T-MHS are presented in Table 2. The mean total score for the scale was 74.90, with a standard deviation of 9.90. The mean score for each item ranged from 2.95 to 3.02, while the standard deviation ranged from 0.77 to 0.83, indicating that there were no extreme values and that the items showed balanced distribution. The asymmetry values, which indicate the symmetric distribution of the items, ranged from  $-0.26$  to  $0.41$ , while the kurtosis values ranged from  $-0.49$  to  $0.15$ , indicating that there were no problems in terms of skewness and peakedness. The item-total correlations ranged from 0.34 to 0.52, while Cronbach's alpha values remained between 0.86 and 0.87 when each item was deleted, indicating that no items needed to be removed from the scale. These findings support the T-MHS's high level of homogeneity and reliability, both overall and in its subscales.

#### Construct validity – CFA

To test the validity of the five-factor model consisting of 25 items specified by the original scale, a CFA was conducted on 320 patients.

**Table 1**

Fictitious ratings on a 25-item scale by ten experts: Items rated 3 or 4 on a four-point relevance scale.

Item No.	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Exp 7	Exp 8	Exp 9	Exp 10	Number in agreements	I-CVI
Item 1	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 2	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 3	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 4	X	–	X	X	X	X	X	X	X	X	9	0.80
Item 5	X	–	X	X	X	X	X	X	X	X	9	0.80
Item 6	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 7	X	X	X	–	X	X	X	X	X	X	9	0.80
Item 8	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 9	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 10	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 11	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 12	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 13	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 14	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 15	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 16	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 17	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 18	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 19	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 20	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 21	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 22	X	X	X	X	X	X	X	–	X	X	9	0.80
Item 23	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 24	X	X	X	X	X	X	X	X	X	X	10	1.00
Item 25	X	X	X	X	X	X	X	X	X	X	10	1.00
Proportion relevant	1.0	0.92	1.0	0.96	1.0	1.0	1.0	0.96	1.0	1.0	S-CVI/Ave = 0.98	

Exp, expert; X, items rated 3 or 4, items rated 1 or 2; I-CVI, item-level content validity index; S-CVI/Ave, scale-level content validity index, average calculation method.

The analysis revealed that each factor exhibited significant and strong factor loadings with their respective items (Fig. 1). According to the results obtained, the chi-square value was not statistically significant ( $\chi^2 = 270.263$ ,  $df = 265$ ,  $P > 0.05$ ), and the  $\chi^2/df$  ratio was 1.02. This ratio indicates that the model has an excellent level of fit. The examination of the indices revealed that CFI = 0.98, TLI = 0.97, IFI = 0.98, and NFI = 0.89, all of which exceeded the recommended acceptance thresholds (Table 3). Furthermore, the RMSEA value was 0.02, which is below the 0.05 threshold, confirming that the model had an excellent fit.

#### Convergent validity

The convergent validity of the T-MHS was assessed using Pearson's correlation analyses with MUIS-C and DHS. The analyses revealed a strong positive correlation with the DHS ( $r = 0.57$ ,  $P < 0.001$ ) and a strong negative correlation with the MUIS-C ( $r = -0.62$ ,  $P < 0.001$ ), as shown in Table 4, which supports this hypothesis. These findings demonstrate the convergent validity of the T-MHS.

#### Reliability analysis

The Cronbach's alpha for the total scale was 0.87. For the subscales, the values were as follows: sense of belonging and responsibility = 0.78, belief in God = 0.79, willingness to live = 0.84, positive thinking ability = 0.74, and trust in treatment = 0.80, as presented in Table 2. When the entire scale and its subscales were evaluated for test-retest reliability, the coefficients ranged from  $r = 0.89$  to  $0.98$  and were all significant ( $P < 0.001$ ). The ICC value for the total score of the scale was 0.99 (95% CI: 0.97–0.99), indicating excellent internal consistency and reliability over time (Table 4).

### Discussion

#### Main findings

In this study, the psychometric properties of the T-MHS were comprehensively evaluated in patients with cancer. The validity of the scale was assessed through face, content, construct (via CFA), and convergent validity, while its reliability was evaluated using internal consistency and test-retest methods. The findings revealed that the

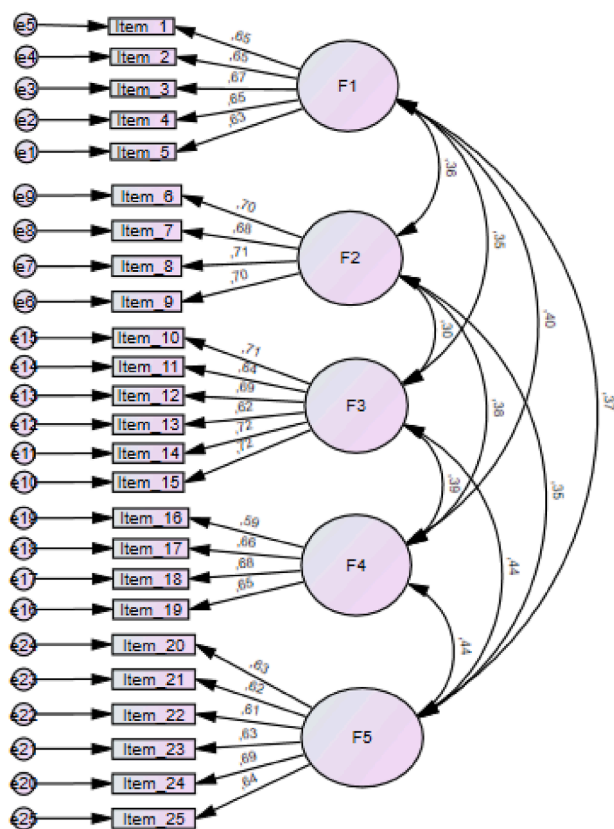


**Table 2**

Results of item analysis and reliability of T-MHS (N = 320).

Item No	Mean	SD	Skewness	Kurtosis	ITC	$\alpha$ if item was deleted	Cronbach's $\alpha$
T-MHS	74.90	9.90					0.87
Factor 1: Sense of belonging and responsibility							
Item 1	3.02	0.79	0.04	0.13	0.39	0.87	0.78
Item 2	2.99	0.80	−0.09	−0.62	0.42	0.87	
Item 3	2.99	0.79	−0.02	−0.33	0.43	0.87	
Item 4	2.99	0.81	−0.12	−0.21	0.43	0.87	
Item 5	3.02	0.81	0.21	0.13	0.39	0.87	
Factor 2: Belief in god							
Item 6	3.00	0.81	0.06	−0.22	0.41	0.87	0.79
Item 7	2.96	0.77	−0.01	−0.06	0.37	0.87	
Item 8	3.02	0.79	−0.07	−0.28	0.38	0.87	
Item 9	2.95	0.80	0.12	−0.36	0.43	0.87	
Factor 3: Willingness to live							
Item 10	3.01	0.80	0.06	−0.12	0.48	0.87	0.84
Item 11	2.99	0.80	0.02	0.15	0.45	0.87	
Item 12	2.98	0.79	−0.26	0.12	0.47	0.87	
Item 13	2.98	0.80	−0.01	−0.35	0.44	0.87	
Item 14	2.99	0.80	0.12	−0.06	0.46	0.87	
Item 15	2.98	0.80	0.41	−0.29	0.52	0.86	
Factor 4: Positive thinking ability							
Item 16	3.01	0.80	−0.06	0.01	0.34	0.87	0.74
Item 17	3.02	0.79	0.04	−0.39	0.43	0.87	
Item 18	3.00	0.77	0.03	0.15	0.46	0.87	
Item 19	3.00	0.79	−0.06	−0.17	0.39	0.87	
Factor 5: Trust in treatment							
Item 20	3.00	0.80	0.03	−0.17	0.48	0.87	0.80
Item 21	2.99	0.80	−0.01	−0.07	0.40	0.87	
Item 22	2.99	0.82	0.15	−0.11	0.44	0.87	
Item 23	3.01	0.83	0.05	−0.10	0.44	0.87	
Item 24	3.01	0.82	0.08	−0.04	0.48	0.87	
Item 25	3.01	0.82	0.19	−0.49	0.44	0.87	

T-MHS, Turkish version of Motivation for Healing Scale; SD, standard deviation; ITC, item-total item correlation.



**Fig. 1.** A standardized five-factor framework of the T-MHS (n = 320). Factor 1, sense of belonging and responsibility; Factor 2, belief in God; Factor 3, willingness to live; Factor 4, positive thinking ability; Factor 5, trust in treatment; T-MHS, Turkish version of the Motivation for Healing Scale.

T-MHS is a highly valid and reliable tool for assessing the motivation for healing among patients with cancer. These results are consistent with the findings reported by Hosseini et al.<sup>7</sup> regarding the original form of the scale and support the successful adaptation of the T-MHS to Turkish culture.

The translation process was systematic and meticulous until the final Turkish version of the scale was developed. One of the prominent strengths of this study is the application of a standardized six-step cross-cultural adaptation protocol and the review of the final version of the scale by the original developer. This approach minimized potential errors in the translation and content transfer processes, ensuring semantic equivalence of the scale. Unlike the original study, face validity was assessed solely using quantitative methods in this study; item effect scores were calculated based on the responses of 30 patients with cancer. The findings indicated that the patients found the items to be clear, understandable, and culturally appropriate. These results demonstrate that the T-MHS maintains its linguistic and content integrity and accurately and comprehensively reflects the fundamental dimensions of the motivation for healing.

The CFA results confirmed that the five-factor structure of the original MHS developed by Hosseini et al.<sup>7</sup> was successfully retained in the Turkish sample, indicating strong construct validity and cross-cultural consistency. This finding highlights that the motivational structure underlying the concept of healing is theoretically robust across cultures and aligns with the SDT framework.<sup>19</sup> Overall, the results show that the T-MHS preserves the theoretical integrity and psychometric strength of the original scale, confirming its reliability and applicability in assessing motivation for healing among Turkish patients with cancer.

In the original MHS study, convergent validity was only mentioned as a methodological step, but it was not empirically tested against any external criterion.<sup>7</sup> This created a limitation in the scale's validation process. In contrast, the T-MHS study examined the validity of the scale not only through its factor structure but also comparatively with the concepts of hope and uncertainty, which are psychological variables related to the motivation for healing. The positive correlation between the T-MHS and

**Table 3**  
Confirmatory factor analysis model fitness of the T-MHS (N = 320).

Excellent fit indices	Calculated fit indices
$\chi^2/sd \leq 2$	1.02
NFI $\geq 0.95$	0.89
IFI $\geq 0.95$	0.98
CFI $\geq 0.95$	0.98
TLI $\geq 0.95$	0.97
RMSEA $\leq 0.05$	0.02

$\chi^2/sd$ , chi-square/degrees of freedom; NFI, normalised fit index; IFI, incremental fit index; CFI, comparative fit index; TLI, Tucker–Lewis index; RMSEA, root mean square error of approximation; T-MHS, Turkish version of the Motivation for Healing Scale.

**Table 4**  
Convergent validity and test–retest results of T-MHS (N = 320).

Scale	ICC	95% Confidence Interval				Correlation	
		Lower bound	Upper bound	r	P		
Factor 1	0.70	0.36	0.86	0.89	0.000 <sup>a</sup>	MUIS-C	DHS
Factor 2	0.81	0.60	0.91	0.89	0.000 <sup>a</sup>		
Factor 3	0.79	0.56	0.90	0.91	0.000 <sup>a</sup>		
Factor 4	0.82	0.63	0.92	0.94	0.000 <sup>a</sup>		
Factor 5	0.66	0.29	0.84	0.91	0.000 <sup>a</sup>		
Total scale	0.99	0.97	0.99	0.98	0.000 <sup>a</sup>	–0.62 <sup>a</sup>	0.57 <sup>a</sup>

Factor 1, sense of belonging and responsibility; Factor 2, belief in God; Factor 3, willingness to live; Factor 4, positive thinking ability; Factor 5, trust in treatment; T-MHS, Turkish version of Motivation for Healing Scale; MUIS-C, Mishel Uncertainty in Illness Scale-Community; DHS, Dispositional Hope Scale; ICC, intraclass correlation coefficient; r, pearson's correlation.

<sup>a</sup> P < 0.001.

DHS indicates that motivation is significantly associated with hope. According to Snyder's theory of hope, hope consists of the components of generating ways to reach a goal and the determination to pursue these ways, which strengthens motivational resources in the healing process.<sup>54</sup> Conversely, the negative correlation between the T-MHS and MUIS-C revealed that higher uncertainty is associated with lower motivation.<sup>55</sup>

Internal consistency and reliability analyses demonstrated that the T-MHS had a high level of reliability and internal coherence. The results were consistent with those reported by Hosseini et al.<sup>7</sup> for the original version of the scale, indicating that the adapted version retained its psychometric properties. Minor differences observed between the Turkish and original versions may be attributed to the clinical characteristics of the patients, particularly the predominance of patients in advanced stages of treatment in the Turkish sample population. Overall, these findings confirm that the T-MHS is a stable and reliable instrument for assessing motivation for healing among Turkish patients with cancer.

The T-MHS demonstrated high reliability and stability, indicating that it provides consistent measurements of *motivation for healing* in patients with cancer. These findings are consistent with those reported for the original MHS,<sup>7</sup> supporting its cross-cultural relevance. The robust psychometric structure of the T-MHS suggests that it can be confidently used in both research and clinical settings to monitor changes in patients' motivation over time.

*Implications for nursing practice and research*

The T-MHS offers a practical tool for clinical settings, being both easy to implement and practical, owing to its concise and straightforward 25-item structure. The scale enables nurses to objectively assess patients' motivation for healing, thereby supporting the development of personalized care plans. It can be used effectively, particularly in oncology nursing practice, to increase patient support in critical areas such as treatment compliance, coping strategies, and participation in rehabilitation.

*Strengths and limitations*

The most significant strength of this study is the introduction of a scale into the literature that is concise and easy to understand, facilitating both application and interpretation, and providing practical advantages for researchers and clinicians. However, this study had some limitations that should be considered. Sampling was conducted at a single hospital, which may restrict the generalizability of the findings; therefore, the results should be interpreted with caution regarding their applicability to broader populations of patients with cancer.

**Conclusions**

The T-MHS is a reliable tool for measuring motivation for healing in Turkish patients with cancer, as it successfully passed the reliability and validity tests. Its 25 items, organized into five subscales, are easy to administer and understand, making it suitable for clinical use. This study provides a culturally appropriate tool for assessing motivation for healing, thereby making an important contribution to clinical practice and future research in this field.

**CRedit authorship contribution statement**

**Özkan Uguz:** Conceptualisation, Methodology, Software, Validation, Formal analysis, Investigation, Resources, Data Curation, Writing – Original Draft, Visualisation, Project administration. **Gülseren Keskin:** Conceptualisation, Methodology, Investigation, Writing – Review & Editing, Supervision, Project administration. All authors have read and approved the final manuscript.

**Ethics statement**

The study was approved by the Medical Research Ethics Committee of Ege University (Approval No. 24-8T/72) and was conducted in accordance with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. All patients provided written informed consent.

**Data availability statement**

The data that support the findings of this study are available from the corresponding author, Prof. Keskin, upon request.

**Declaration of generative AI and AI-assisted technologies in the writing process**

During the preparation of this manuscript, the authors used generative AI tools (Paperpal and DeepSeek) solely to assist with the language refinement. After using these tools, the authors carefully reviewed and edited the content, taking full responsibility for the accuracy, integrity, and originality of all aspects of this manuscript.

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**Declaration of competing interest**

The authors declare no conflicts of interest.

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