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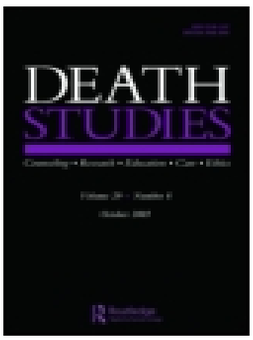

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A scale-development study: Exploration of intensive-care nurses' attitudes towards futile treatments

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ABSTRACT

The study was conducted to determine the validity and reliability of the tool used to assess nurses' attitudes towards futility, and to explore intensive-care nurses' attitudes towards futility. Principal components analysis revealed that 18item scale was made up of four sub-dimensions that assess Identifying(beliefs), Decision-Making, Ethical Principles and Law, and Dilemma and Responsibilities related to futile treatments. The internal consistency of the scale was in the acceptable range, with a total Cronbach's alpha value of 0.72. Overall the results of study suggest that scale can be used as a valid and reliable assessment tool to assess nurses' attitudes towards futility.

The vagueness of the dividing line between life and death and the use of high technology in health-care settings like intensive-care units (ICUs) may cause ethical dilemmas regarding the start and maintenance of life-support (Faber-Langendoen & Lanken, 2000; Mobley, Rady, Verheijde, Patel, & Larson, 2007; Wilkinson & Savulescu, 2011).Today, prolonged life-span and reduced quality of life due to technological advances have brought the concept of medical futility to the forefront as a central issue in medical environments, especially in intensive-care settings (Ferrell, 2006; Kadooka, Asai, & Bito, 2012; Nurok & Sadovnikoff, 2013; Wilkinson & Savulescu, 2011). In a study by Ozden, Karagozoglu, Yildirim & Tabak (2013a), 55% of the nurses and physicians working in the ICU, 87.0% of the physicians and 95% of the nurses in a study conducted in Canada reported that they provided futile care (Palda, Bowman, McLean, & Chapman, 2005). Several other studies in the literature have reported that the frequency of futile care is very high (Ferrell, 2006; Sibbald, Downar, & Hawryluck, 2007; Vincent, 1999).

Treatments and/or medical interventions that are considered useless or ineffective by health-care professionals, patients or patients' relatives, that contribute little to the quality of life of the patient and/or that are unlikely to meet the patient's expectations or to ensure the patient's chances of survival are defined as futile (Cosgrove, Nesbitt, & Bartley, 2006; Gampel, 2006; Gillett, 2011; Griffith, 2013; Mohammed & Peter, 2009; Schneiderman, 2011; Stewart, 2011; Turkish Medical Association, 2010; Wilkinson & Savulescu, 2011; Wilson, Goettemoeller, Bevan, & Mc Cord, 2013). Trotter (1999) discusses the terms 'goal' and 'action' as two important concepts related to medical futility. In this context, all medical interventions have a goal, and actions are intended to achieve this goal. In cases where the action fails to achieve this goal, it can be said that the treatment and interventions have been futile. Referring to courts' decisions about futile interventions, Griffith (2013) has reported that courts have decided that life-sustaining applications should be discontinued if they do not serve their purpose.

Advances in technology and changes in health care lead to nurses having to take on new responsibilities, causing them to suffer moral distress and to face ethical dilemmas during the care and treatment of the patients, especially during the end-of-life process (Corley, Minick, Elswick, & Jacobs, 2005; Elpern, Covert, & Kleinpell, 2005; Griffith, 2013; Pendry, 2007; Ozden, Karagozoglu, & Yildirim, 2013b; Scanlon

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& Murphy, 2014; Wilkinson & Savulescu, 2011; Wilson et al. 2013). Moral distress is an important professional problem that affects not only the quality, quantity and cost of nursing care but also the physical and emotional well-being of nurses (American Association of Colleges of Nursing (AACN). In two studies, Rice, Rady, Hamrick, Verheijde, and Pendergast (2008) and Wilson et al. (2013) indicate that nurses witnessing futile medical interventions frequently suffer moral distress. Professionals working in intensive care, transplantation and oncology clinics experience moral distress more often compared to those who work with other types of patient care (Hamric, Borchers, & Epstein, 2012; Lazzarin, Biondi, & Di Mauro, 2012; Rice et al. 2008). Frequent applications of futile and aggressive treatment that prolong the terminal period in these clinics and the inability to control pain symptoms can often lead to moral distress (Yildirim, Ozden, & Karagozoglu, 2013).

Moral distress due to the administration of futile treatments has been found to affect (and be affected by) a number of other factors. In particular, Ozden et al. (2013b) found that nurses who are demoralized due to futile interventions experience low levels of job satisfaction but high levels of desensitization. They also reported that nurses who believe that the patient or relatives should take part in the decision-making process related to the administration of potentially futile treatments experience higher levels of job satisfaction and personal achievement. In their study investigating the relationship between moral distress and the perception of futility in ICUs, Mobley et al. (2007) determined that nurses who thought that futile care was implemented in their units suffered high levels of moral distress. They also determined that the longer the nurses worked in the ICU, the higher was their level of moral distress.

Approaches to the end of life can vary from country to country due to cultural and religious traditions (Sprung et al., 2007). In Turkey, there is no ethical code other than the declarations of the Turkish Medical Association regarding the decision to withdraw or limit treatment, and thus legal concerns come to the fore among health workers in their practices (Akpinar, 2013). Turkey is a country where Islam is the religion of the majority of the population, and according to Islamic bioethics, life support can be withdrawn if the treatment does not improve the patient's condition and quality of life, and thus death is unavoidable. However, in the process, nutrition should be sustained and pain should be relieved. According to Islamic principles, the length of a person's life is determined by God, and therefore no one has the right to decide to end another person's life. Therefore, euthanasia is not welcomed by İslam and is considered murder or suicide. (Aghabarary & Nayeri, 2017; Sachedina, 2005; Zahedi, Larijani, & Bazzaz, 2007).

Only a handful of studies have been conducted in Turkey on the provision of futile care in ICUs (Akpinar, Senses, & Er, 2009; Ozden, Karagozoglu, Tel, & Tabak, 2012; Ozden et al. 2013b). In Akpinar, Senses, and Er's study (2009), half of the nurses supported the idea that aggressive treatment should continue until brain death occurs, whereas some of them considered that all aggressive treatments should be withdrawn and only palliative care should be continued. In another study of ICU nurses in Turkey, 60.0% of the nurses stated that some patients received futile treatments in ICUs and 32.5% stated that such practices took place everyday (Ozden et al., 2012). In the same study, the nurses considered the following treatments and practices as futile: those to which the patient is unlikely to respond (25.0%), those contributing very little to the patient's quality of life (15.0%) and those prolonging the duration of pain and suffering of a patient (10.0%) (Ozden, et al., 2012).

Due to the frequent provision of futile care in ICUs and its various effects, there is a great need for tools to be used to assess attitudes about futile treatments. Such tools would also help to refine the concept of futility, raise awareness of this issue, and develop appropriate strategies. However, in the international literature, there is not a standardized tool to assess nurses' attitudes towards futility. Therefore, it is essential to develop measurement tools to reveal nurses' attitudes towards futility and appropriate approaches aiming to resolve ethical dilemmas caused by futility. Nurok and Sadovnikoff (2013) emphasized the importance of a systematic approach to define futility, and to determine and solve problems associated with it.

The purpose of this present study is to a) develop an instrument specific to futility and determine the validity and reliability of the tool in order to assess nurses' attitudes towards futility, and b) explore Turkish intensive-care nurses' attitudes towards futility. The following are the questions will be examined in the study:

1. Is the Nurses' Attitudes towards Futile Treatment Scale (NAFTS) a valid and reliable instrument?
2. What are intensive-care nurses' attitudes regarding futility in Turkey?

Method

The study setting and participants

The sample included 315 nurses who agreed to participate in the study. These nurses worked in the adult ICUs of seven university hospitals located in the Central Anatolia region of Turkey between January 1 2012 and April 1 2012. Within the scope of the inclusion criteria of the study, only the state university hospitals located in the Central Anatolia region in Turkey were included in the study. In order to participate in the study, nurses were required to have worked in ICUs for at least two years. The nurses were selected with a non-probability sampling method.

Materials

The data were collected with the socio-demographic questionnaire and the Nurses' Attitudes Towards Futile Treatment Scale (NAFTS), whose validity and reliability were tested in the present study.

The socio-demographic questionnaire consists of seven questions developed by the researchers based on the literature. This questionnaire includes questions related to the nurses' age, gender, marital status, educational status, length of service, the name of the clinic where the they work and how many hours they work there.

The Nurses' Attitudes Towards Futile Treatment Scale (NAFTS) is an 18-item scale developed by the researchers to measure the intensive-care nurses' attitudes towards futility. An earlier version of this scale was used in a prior study on futility conducted by the same authors (Ozden et al. 2013b), which demonstrated that intensive-care nurses experienced serious problems related to the implementation of futile treatment.

This initial version of the questionnaire was used to evaluate the nurses' attitudes towards futility and consisted of nine items that assessed: (1) effects of futile treatment and interventions on individuals' quality of life; (2) how futile treatment and interventions demoralize health professionals, and patients and their relatives; (3) maintaining the treatment until the end of life even if it is futile; (4) the role of patients and their relatives in deciding whether futile implementations should be implemented; (5) implementing futile interventions upon patients' relatives' request, (6) ineffective communication between health professionals and patients during futile implementations; (7) team collaboration during the decision-making process; (8) contradictions between 'the decision to implement futile treatment and interventions' and 'the aims of the treatment and care'; and (9) efforts to prevent futile implementations.

It was considered that this nine-item questionnaire was not enough to fully assess health professionals' attitudes toward futile treatments. Thus, the items were broken down and a 27-item pool was created. Eight experts specialized in different areas (one professor and two associate professors in nursing, two professors in ethics and history of medicine, one professor and one associate professor in assessment and evaluation and one associate professor in psychology) were asked to evaluate the scale, which was developed by the researchers reviewing the relevant literature (Baily, 2011; Fleming, 2005; Kasman, 2004; Lawson, 2004; Mobley et al. 2007; Ozden et al. 2013b; Palda et al. 2005; Pellegrino, 2005; Schneiderman, 2011; Sibbald et al. 2007; Stewart, 2011).

The experts were informed about the purpose of the study and the characteristics of the study group. The experts were requested to rate each item in the scale from 1 to 4 in terms of content validity, taking the following criteria into account:

- Does the item represent the properties of the attitude to be measured?
- Is the item easily understood by the target audience?
- Is the item clear enough?

To evaluate the experts' views, the content validity index was used (Burns & Grove, 1997; Talbot, 1995). The evaluation criteria were as follows: '1 – not appropriate; 2 – partly appropriate (the item should be rewritten appropriately); 3 – quite appropriate (the item is applicable but needs slightly adjusting); 4 – very appropriate'. The experts considered that 82% of the items were 'quite appropriate' or 'very appropriate'. Content Validity Index (CVI) values were calculated by dividing the total scores obtained from the prospective items that the experts considered as quite appropriate and very appropriate by the total number of the experts. Because the CVI values in the present study were greater than 80%, the scale was considered adequate in terms of content validity. In line with the experts' opinions, the number of the items in the scale was reduced from 27 to 22 because CVI values for the removed items were low. In order to ensure content integrity and simplicity of language, several changes were made in the scale before it took its final form.

The scale was piloted on a group of 30 people not included in the study. The results of this pilot test revealed that the respondents considered the questions difficult and thus answered them without thinking

them over. The experts and the researchers discussed this issue and the items were reviewed in terms of significance, readability, clarity of the terms, length of the sentences and clarity of meaning.

An additional four items were removed from the 22-item pool based on the item-total correlation of the items. Therefore, in the present study, a scale consisting of 18 items was used.

The scoring of the items in the scale was achieved with a five-point Likert-type scale (1 = Strongly agree, 2 = Agree, 3 = Neither agree nor disagree (undecided), 4 = Disagree, 5 = Strongly disagree). The possible total score to be obtained from the scale ranges between 18 and 90. Lower scores obtained from the scale are indicative of an attitude that futile interventions should not be performed, whereas, higher scores represent the attitude that futile interventions can be performed in accordance with certain rules and principles. Two items (items12 and 15) are scored with reverse scoring.

Procedure

The questionnaires were delivered to nurses responsible for the clinic. The researchers informed the nurses working in each unit about the purpose, scope and protection of confidentiality of the research, both verbally and in writing, and told the nurses that participation in the study was voluntary (as stated in the informed consent form). They also asked the nurses who volunteered to participate in the study to take the questionnaires from the charge nurses to whom the questionnaires were given in a sealed envelope and to return them to the charge nurses in a sealed envelope. Then the data were collected in the participants' own environments. Due to the intense working conditions in ICUs, the nurses were allowed to fill in the questionnaires handed out in sealed envelopes at any appropriate time and place in the hospital.

During the first application of the scale, 50 participants selected randomly were asked to choose an alias and indicate it on the form. The scale was re-administered to the same test group two weeks later, and the participants were asked to indicate the alias on the form they chose during the first application of the scale. Then the forms with the same aliases were paired (50) and the retest results were obtained.

Research ethics

Before the study was carried out, it was approved by the ethics review boards at the authors' institution (Decision No. 2011/062) and written permissions of the institutions where the study was to be conducted were obtained. After the nurses participating in the study were informed about the study, their consents were obtained. When the study was performed, the principles of the Declaration of Helsinki were taken into consideration. The nurses were told that the study participation was on a voluntary basis, that they were not required to write their names on the questionnaire, that the data obtained would not be used out of the scope of the study, and that the confidentiality of their personal information would be strictly protected.

Data analysis

The data collected were analysed using the SPSS 14 computer software. Item analysis, Cronbach's alpha coefficient and test–retest correlations showing invariance across time were used to assess the reliability of the scale. Principal components analysis with Varimax rotation was used to assess the underlying factor structure of the scale. Prior to the analysis, Kaiser–Meyer–Olkin (KMO) values and Bartlett sphericity test results were considered. A Scree plot was used to determine the optimal number of factors.

Results

Characteristics of the sample

The mean age of the nurses participating in the study was 29.60 ± 5.69 (min = 20, max = 46). Of the participants, 81.9% were female, 45.0% were married and 56.2% had a bachelor's degree in nursing. The nurses' mean total length of service was 8.08 ± 6:00 years. Their mean length of service in the ICU was 4:46 ± 4.41 years.

Reliability of the scale

To assess the reliability of the 18-item scale, item-total correlations, Cronbach alpha and the test–retest method were used. Cronbach's alpha coefficient was 0.72 for the total scale. Item-total correlations of the scale varied between 0.68 and 0.74 (Table 1).

The results of the analysis performed with an interval of two weeks indicated that the test–retest correlation was $r = 0.92$; $p = 0.000$ and that the relationship was statistically significant. The total values for test–retest measurements were close to each other, which suggests that the scores the participants obtained from the test–retest measurements were consistent with

Table 1. Item-total correlations of the items in the scale ($N = 315$).

Items	r	Mean ± SD
1. Futile treatments and interventions are clinical practices that do not contribute to the improvement of the quality of life.	.693	2.40 ± 1.37
2. Futile treatments and interventions prolong the duration of pain and suffering of a patient	.685	2.60 ± 1.33
3. Futile treatments and interventions are contrary to the purpose of medicine to protect life.	.695	3.05 ± 1.23
4. Treatment and interventions provided for patients whose brain death has occurred are futile.	.699	2.62 ± 1.43
5. Treatment and interventions considered as futile should not be performed.	.682	2.88 ± 1.31
6. Futile treatments and interventions should not be provided for end-stage patients.	.687	2.86 ± 1.36
7. If a patient does not benefit from futile treatments or interventions, the physician should not continue the treatment.	.687	2.22 ± 1.25
8. The decision that the treatment provided for the patient is futile is sometimes controversial.	.697	2.00 ± 1.16
9. Even if the futility decision has been made, the patient has a right to receive these treatment and interventions till the very last moment.	.724	2.29 ± 1.22
10. Futile treatments and interventions should be performed in accordance with the principles and criteria specific to the unit.	.700	2.04 ± 1.19
11. The decision to perform futile treatments and interventions should be made by all the members of the team.	.705	2.05 ± 1.14
12. When the decision to perform futile treatments and interventions is made, the ethical principle "do no harm" should be observed.	.744	4.21 ± 0.99
13. When the decision to perform futile treatments and interventions is made, fair use of limited resources should be considered.	.705	1.93 ± 1.08
14. There should be national criteria related to performing futile treatments and interventions and the criteria should include ethical and legal aspects of the issue.	.705	1.93 ± 1.09
15. Futile treatments and interventions by health care professionals do not cause ethical dilemmas.	.730	3.20 ± 1.24
16. When futile treatments and interventions are performed, there is no difference between the decisions of withholding and withdrawal of the life support system in terms of moral responsibility.	.724	2.92 ± 1.25
17. Futile treatments and interventions are medical practices which ignore the patient/family autonomy.	.709	2.87 ± 1.16
18. There should be policies preventing futile treatments and interventions from being performed.	.712	2.65 ± 1.31

Table 2. Sub-scales for the Nurses' Attitudes Towards Futile Treatment Scale.

Sub-dimensions of the scale	Sub-dimension Items	Range	Min	Max	Mean ± SD
Identifying	1–7	7–35	7.00	35.00	18.66 ± 6.53
Decision-making	8–11	4–20	4.00	20.00	8.40 ± 3.18
Ethical Principles and Law	12–14	3–15	3.00	14.00	8.07 ± 1.62
Dilemma and Responsibilities	15–18	4–20	4.00	19.00	11.65 ± 2.75
Total scale	1–18	18–90	26.00	73.00	46.79 ± 9.05

each other, and that the scale was a reliable measurement tool.

The lowest and the highest mean scores the nurses obtained for each item of the scale were 1.93 ± 1.08 and 4.21 ± 0.99, respectively (Table 1). Their mean total score for the whole scale was 46.79 ± 9.05 (Table 2). The lowest mean scores were obtained from the following items: 'when the decision to perform futile treatments and interventions is made, fair use of limited resources should be considered' (1.93 ± 1.08) and 'there should be national criteria related to performing futile treatments and interventions and the criteria should include ethical and legal aspects of the issue' (1.93 ± 1.09). The highest mean score was obtained from the following item: 'when the decision to perform futile treatments and interventions is made, the ethical principle "do no harm" should be observed' (4.21 ± 0.99).

Construct validity and reliability

The factor structure of the scale was evaluated with principal components analysis using Varimax rotation. Prior to the analysis, the KMO value and Bartlett's test results were taken into consideration. The data were considered appropriate for factor analysis.

When determining the optimal number of components, eigenvalues for each component and the Scree plot were considered. All retained components had eigenvalues >1. Figure 1 shows that eigenvalues decreased very little after component 4, which seemed to represent a bend in the curve of the Scree plot. Therefore, the number of significant components was accepted as four. Then the related items were grouped under sub-dimensions. These four sub-dimensions were labeled as: Identifying (items 1–7); Decision-Making (items 8–11), Ethical Principles and Law (items 12–14) and Dilemma and Responsibilities (items 15–18).

Discussion

The use of futile treatments constitutes one of the most important problems faced by health professionals (Kadooka et al. 2012). Prior to this study, there was a need for a valid and reliable instrument to assess health professionals' attitudes towards futile treatments.

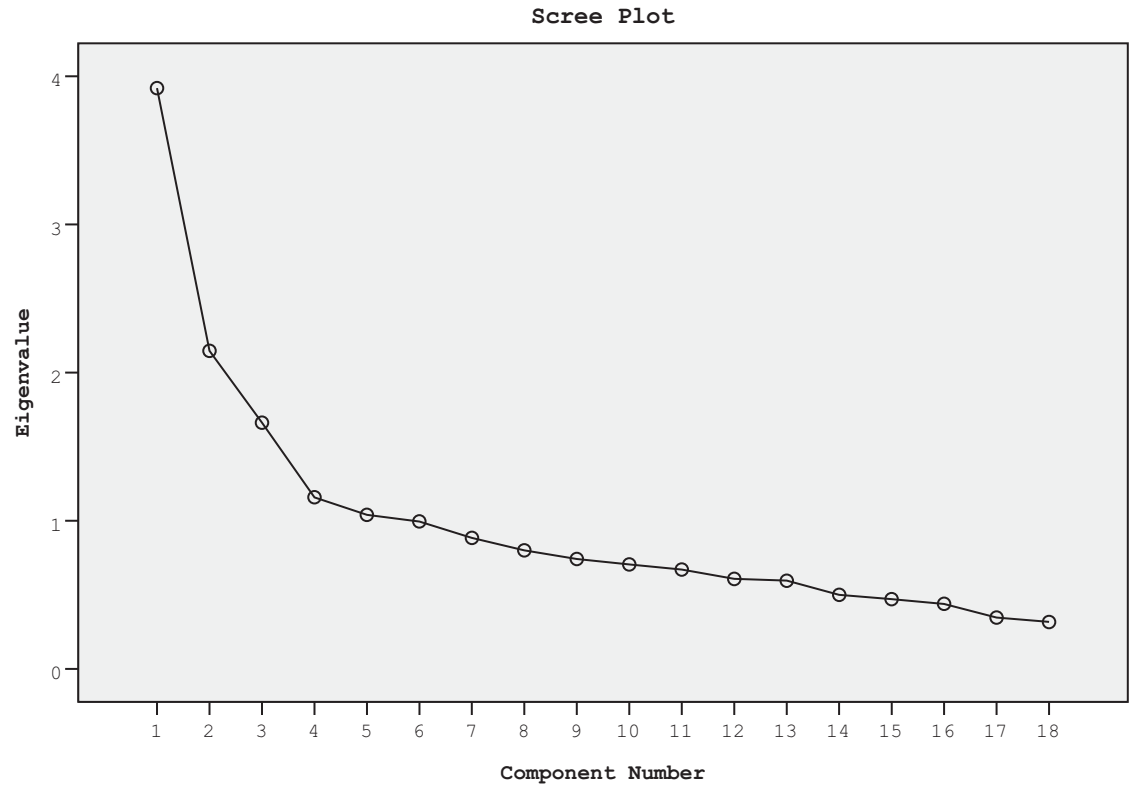

Figure 1. Scree plot for principal components analysis.

Reliability and factor structure of the scale

The present study was conducted to fill this gap and determine the validity and reliability of the Attitudes Towards Futile Treatment Scale. The results obtained indicated that the scale could be applied to nurses providing health care. The content validity index values were determined to be within the reference values proposed by Gozum and Aksayan (2003), indicating that the items of the scale adequately represent the construct being measured. The experts considered the items they evaluated to be appropriate.

The values for the Cronbach's alpha and the test–retest reliability of the scale were quite high. These findings indicate that the scale is a consistent measurement tool capable of providing similar values during the repeated measurements performed with the scale.

The principal components analysis of the scale indicated that the scale had a four-factor structure that accounted for 55.14% of the total variance. These four sub-dimensions included: Identifying, Decision-Making, Ethical Principles and Law, and Dilemma and Responsibilities. The first sub-dimension assesses intensive-care nurses' attitudes towards futile treatment and implementation at a cognitive level. The second sub-dimension assesses attitudes towards the way decisions are made. The third relates to attitudes towards the way ethical and legal evaluations are determined, and the fourth measures attitudes towards dilemmas and responsibilities experienced in their jobs.

Implications for clinical practices

According to Ozden et al. (2013b), the majority of the nurses are of the opinion that each patient has a right to benefit from all the treatment and care interventions in ICUs, which is similar to the findings of this present study. In Akpinar, Senses, and Er's (2009) study too, it is reported that half of the nurses support the idea that the aggressive treatment should continue until brain death occurs. The vast majority of the participants in the present study stated that when the decision to perform futile treatments and interventions is made, a fair use of limited resources, the ethical principle (do no harm) and national criteria, including ethical and legal dimensions, should be taken into consideration (Table 1).

It is striking that the participants were undecided about the following items: 'futile interventions are a practice that ignores the purpose of medicine: protect life' and 'these interventions do not lead to ethical dilemmas among health professionals' (Table 1). In

the literature, it is reported that although modern medicine has very effective methods that can be used for the prolongation of life, these methods cause pain and suffering in dying individuals (Akpinar et al. 2009; Ferrell, 2006; Meltzer & Huckabay, 2004; Mobley et al. 2007) and that important ethical and moral problems arise when considering the use of futile interventions (Terra & Powell, 2012). However, deciding when medical care and interventions provided for the patient should be considered as futile is a controversial issue (Redman, 2011; Scanlon & Murphy, 2014).

Another controversial issue is who will decide whether to continue or to cease futile interventions. Though the literature emphasizes that the patient and family have priority in deciding whether futile interventions should be continued or halted, the participants' opinions in our study were not as clear cut. In Baily's study (2011), it is reported that the decision to continue or to stop futile interventions is mostly made by health professionals and family members, but that the priority should be given to the patient when the decision is made. Similarly, Scanlon, and Murphy (2014) emphasize that nurses should consider not only their own but also the patient's value systems during the decision-making process regarding futile interventions. Barlem et al. (2013) report that nurses suffer moral distress if patient autonomy is ignored in the ICU. A study conducted on physicians and the community by Kadooka et al. (2012) determined that physicians displayed a more negative approach about the decision to implement futile interventions, whereas individuals in society had a more positive approach to futile interventions and considered that the patient and the family should be given priority when the decision regarding futile interventions is made.

Stewart (2011) reports that futility is a concept that cannot be explained only by the medical model and that handling this concept with a procedural approach would enable decision-makers to achieve better solutions during the decision-making process. It has also been reported that acting together with a multidisciplinary team approach and working with the ethics committee and legal decision-makers when necessary during the decision-making process regarding interventions forms the basis for the procedural approach.

In this context, nurses may have difficulty deciding to sustain life or to provide and maintain quality of life, and thus face ethical dilemmas. Our findings suggest that with the introduction of advanced technology and changes in health care, nurses face dilemmas when making decisions to implement care and treatment interventions to dying patients due to their respect for life, their instinct to keep patients alive, and their care and patient-advocacy roles.

Limitation of the study

The results of this present study are limited to the nurses who participated in this study. It is recommended to test the validity and reliability of the scale with different groups of health professionals and in different cultures. Although this scale was found to have a four-factor structure and strong reliability, more research is needed to establish its convergent and predictive validity.

Conclusion

In the present study was conducted to determine the validity and reliability of the Attitudes Towards Futile Treatment Scale. This scale can be used as a valid and reliable assessment tool to assess nurses' attitudes towards futility treatments. It is hoped that this newly developed scale will contribute to the development of individual and institutional arrangements that relate to the implementation of potentially futile treatments.

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