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Validity and Reliability of the Edmonton Symptom Assessment Scale in Turkish Cancer Patients

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ABSTRACT

The Edmonton Symptom Assessment Scale (ESAS) is simple and easy to use with cancer patients. This study was planned for the purpose of adapting and determining the validity and reliability of the ESAS for Turkish culture. The study was conducted in outpatient and inpatient chemotherapy units at a university hospital between December 2004 and February 2005. A total of 113 cancer patients participated in the research. Written permission to conduct the research was obtained from the facility and verbal and written consent was obtained from the patients. Research data were collected using a questionnaire, the ESAS and the Rotterdam Symptom Checklist (RSC). In the ESAS validity study, language validity, content validity and criterion-related validity were tested. In the reliability study Cronbach's alpha and item-total score correlation were calculated. The patients' mean age was 48.86±13.18. The Pearson product moment correlation coefficient between the ESAS and RSC scores was calculated to be r=0.75, $p < 0.05$. A Cronbach's alpha coefficient of 0.77 was determined for the ESAS. The lowest item-total correlation on the ESAS (r=0.30, $p < 0.05$) was for item 10 (other, constipation) and the highest (r=0.62, $p < 0.05$) was for item 1 (pain). The Turkish version of the ESAS was determined to be a valid and reliable tool for use in Turkish individuals with cancer. [Turk J Cancer 2008;38(2):62-67]

KEY WORDS:

Cancer patient, Edmonton Symptom Assessment Scale, Rotterdam Symptom Checklist

INTRODUCTION

Cancer patients experience many symptoms related to both their illness and its treatment (1-4). However, there are few valid and reliable tools that can be used in the evaluation of symptoms experienced by cancer patients in our country. The Edmonton Symptom Assessment Scale (ESAS) is a visual analogue scale developed for use in symptom assessment of palliative care patients. Health care team's time is limited, patients avoid discussing these symptoms with them. In addition, they may be missed and inadequately evaluated because there are few valid and reliable tools in Turkey for evaluating the symptoms that cancer patients experience.

The aim of this research was to adapt the ESAS for Turkish culture by testing its validity and reliability to determine if it can be put into practice and used by nurses and thus to provide a useful tool to nurses to use in the evaluation of their patients' symptoms.

In recent decades, the concepts regarding palliative care has been increasing and spreading in medicine in different countries and cultures (5,6). Symptom assessment can be used to evaluate symptom relief, to compare treatment responses or to demonstrate the effects of specific rehabilitative approaches. In the palliative care setting, the patient population is often frail, has deteriorating health so these factors affect the ability to assess patients' symptoms (7).

Symptom control seems to be the most important components in palliative care setting (5,8). Many assessment tools have been developed to measure the multidimensional features in patients with cancer both in the early or the advanced stage of their disease (7,9). The Edmonton Symptom Assessment Scale (ESAS) was developed in the Palliative Care Unit of the Edmonton General Hospital (Canada) for use in daily symptom assessment of palliative care patients (10). ESAS has been widely used in palliative care settings. Bruera and MacDonald (11) compared the ESAS with the Support Team Assessment Schedule (STAS) (12) and found good agreement. Philip et al. (13) compared the ESAS with the Rotterdam Symptom Checklist and the Brief Pain Inventory validated for the Australian population and found a good correlation. Rees et al. (14) found practical difficulties in assessing 71 patients admitted to a British hospice, showing that patients with a very low performance status need other tools for symptom assessment. Dudgeon et al. (15) used ESAS to audit the adequacy and speed in symptom control in a Canadian palliative care hospital. Chang et al. (16) demonstrated the good agreement between the ESAS, the Functional Assessment Cancer Therapy (FACT), the Memorial Symptom Assessment Scale (MSAS) and the Karnofsky Performance Status (KPS), showing that the ESAS is a valid instrument with a good internal consistency. Heedman et al. (17) used ESAS for symptom assessment in home care cancer patients. Finally, Stromgren et al. (18) used ESAS, the European Organisation for Research and Treatment of Cancer Quality of Life Instrument (EORTC QLQ-30) and the Hospital Anxiety and Depression Scale (HADS) for assessing symptoms in three palliative care settings: in-patients, outpatients and home care patients.

The aim of this research was to adapt the ESAS for Turkish culture by testing its validity and reliability to determine if it can be put into practice and used by nurses and thus to provide a useful tool to nurses to use in the evaluation of their patients' symptoms in palliative care units.

MATERIALS AND METHODS

Sample

A total of 130 cancer patients who were ongoing cancer therapy were interviewed. Seventeen of these patients didn't want to participate in the research. The final group was composed of 113 cancer patients (inpatient n=53, outpatient n=60) who were 18 years or older, knew how to read Turkish, could write, were able to communicate, and not have been diagnosed with psychiatric disorder. The patients were recruited from outpatient and inpatient clinic of a university hospital in western Turkey.

Permission to conduct this study was obtained from School of Nursing Ethical Committee, and both verbal and written consent was obtained from each participant. Patients were informed of the purpose of the research.

Instruments

Research data were collected using an individual identification form, ESAS and RSC.

Individual identification form

This questionnaire was developed by the researchers and contains 12 questions about factors related to the individuals and their diseases.

Edmonton Symptom Assessment Scale (ESAS)

The ESAS was developed by Bruera et al. (10). The symptoms included on the ESAS are listed as 10 items: pain, activity, nausea, depression, anxiety, insomnia, anorexia, not feeling very well, shortness of breath, and others. All of the items on the ESAS have a value of 0-10 points.

Rotterdam Symptom Checklist (RSC)

The RSC is used for the evaluation of complaints that develop related to symptoms experienced by cancer patients. There are six subscales including psychological and physical discomforts. The tool's items are scored on a

likert type scale which ranges between 1 and 4. There are a total of 27 items on the scale which includes 8 items on the psychological symptoms subscale and 19 items on the physical discomforts subscale. The lowest possible score on the psychological complaints subscale is 8 points and the highest is 32 points; the lowest possible score on the physical complaints subscale is 19 and the highest is 76 points. As the score on the tool increases the greater is the discomfort that is experienced. The validity and reliability of the Turkish version of this tool has been established (19).

Procedure

In the first phase of the research the tool was translated into Turkish by 10 individuals who know both languages (English/Turkish) well in a method that is appropriate to test for language validity. Then using the back translation method the tool was retranslated into its original language (English) by a language export who knows English well and the retranslation was then compared to the original statements in the tool. In the second phase for concept validity the draft version of the Turkish form and original language form were given to 10 faculty members who work in the area of cancer for their opinions. Changes were made that were necessary according to the expert opinions. In the third phase, before the form was implemented, in addition to language validity, a pilot study was conducted to test if the items were understandable with a group of 10 individuals who met the study inclusion criteria. Statements that were unclear were corrected and the tool was written in its final form. In the fourth phase the ESAS and RSC were given to 113 cancer patients and a validity technique to determine the validity of the tool (criterion-related validity), a reliability technique to determine the internal consistency (item-total score correlation) and Cronbach's alpha were calculated.

Statistical analysis

A statistician conducted the statistical analysis. The data obtained in the research were analyzed using the SPSS (Statistical Package for Social Sciences for Windows), Version 11.0. The patients' descriptive information was calculated as a distribution in number and percentage. Student's t-test was conducted to determine the difference between the means from the ESAS and RSC scores. In the criterion-related validity of the ESAS the Pearson product

Table 1
Symptoms Experienced by Patients (ESAS)

	All Patients (n=113)		Ambulatory patients (n=60)		Hospitalized patients (n=53)		P
Symptoms	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	
1. Pain	3.01	3.20	2.15	2.83	3.98	3.34	0.0021
2. Activity	4.27	3.22	3.67	3.09	4.96	3.26	0.0323
3. Nausea	2.82	3.24	2.72	3.29	2.94	3.23	NS
4. Depression	2.88	2.85	2.53	2.93	3.28	2.73	NS
5. Anxiety	3.90	5.81	2.90	3.19	5.04	7.67	0.0508
6. Insomnia	2.54	3.26	1.43	2.57	3.79	3.52	0.0001
7. Anorexia	3.38	3.63	2.95	3.67	3.87	3.57	NS
8. Not feeling well	3.42	3.19	2.68	3.11	4.25	3.10	0.0088
9. Shortness of breath	1.32	2.60	0.72	1.91	2.00	3.09	0.0084
10. Other (Constipation)	1.24	1.29	0.00	0.00	0.51	1.87	0.0367

Comparison of means was done with t-test

SD: Standard deviation; NS: Not significant

Table 2
Symptoms Experienced by Patients According to ESAS and RSC

	ESAS (n=113)		RSC (n=113)		
Symptoms	**Mean**	**SD**	**Mean**	**SD**	**P**
1. Pain	3.01	3.20	–	–	–
2. Activity	4.27	3.22	–	–	–
3. Nausea	2.82	3.25	2.12	1.11	0.006
4. Depression	2.88	2.85	2.37	1.01	0.039
5. Anxiety	3.90	5.82	2.02	0.92	0.001
6. Insomnia	2.54	3.26	1.96	1.12	NS
7. Anorexia	3.38	3.64	2.22	1.21	<0.001
8. Not feeling well	3.42	3.19	–	–	–
9. Shortness of breath	1.32	2.61	1.67	1.09	NS

Comparison of mean was done with t-test
SD: Standard deviation; NS: Not significant

moment correlation coefficient between the ESAS and RSC scores was determined. To determine the internal consistency of the ESAS the Cronbach's alpha coefficient and the item-total score correlations were calculated. For all analyses a p value less than 0.05 was accepted as statistically significant.

RESULTS

General characteristics of sample

In the first phase of the study 130 cancer patients were interviewed. From these patients there were 113 who completed both the ESAS and the RSC. Because 17 patients did not completely fill in the forms they were not included in the study. The mean age of the patients was 48.86±13.18 years. The majority were women (54%), married (86.7%), primary school graduates (29.2%), lived together with their spouses (44.2%), were unemployed (80.5%) and had moderate economic level (71.7%). It was also determined that there were more patients in this research who had diagnoses of gastrointestinal (27.4%) and breast cancer (26.5%) than other types of cancer.

Symptoms

The patients in the research stated that constipation was an "other" (item 10) problem that they experienced. The mean ESAS symptom scores for both ambulatory and hospitalized patients are shown in table 1. The mean symptom scores were significantly higher in the hospitalized patients for pain ($p < 0.05$), activity ($p < 0.05$), anxiety ($p < 0.05$), insomnia ($p < 0.05$), not feeling well ($p < 0.05$), and shortness of breath ($p < 0.05$).

The mean scores for the shared items in ESAS and RSC are shown in table 2. In the ESAS, other than the symptoms of insomnia ($p > 0.05$) and shortness of breath ($p > 0.05$), the means for the scores of the other symptoms (nausea, anxiety, depression, anorexia) were significantly higher compared to the RSC.

Reliability

The highest mean score obtained on the ESAS was for item 2 (Activity, $\overline{X}=4.27$) and the lowest mean score was for item 10 (Constipation, $\overline{X}=1.24$). The Cronbach's alpha coefficient for ESAS in this research was determined to be 0.77. The lowest item-total correlation on the ESAS was for item 10 ($r=0.30$, $p < 0.05$) (Other, Constipation) and the highest was for item 1 ($r=0.62$, $p < 0.05$).

Validity

The Pearson product moment correlation coefficient between the ESAS and RSC scores was determined to be $r=0.75$ ($p < 0.05$).

DISCUSSION

The results of this research show that the ESAS is a simple and well accepted tool that can be used in studies conducted with Turkish cancer patients.

The patients in this research were observed to be able to easily fill in the ESAS. However patients tended to give higher scores on the ESAS to symptoms found on both the ESAS and the RSC. Based on this result it appears that nurses may need to give more explanation to patients in the use of the ESAS, because patients are able to adjust to the differences in these types of tools.

Validity

Validity is the most important issue in the evaluation of an instrument of measurement. Validity states how accurately an instrument measures a characteristic that it was intended to measure. Validity can be proven in three ways with content validity, criterion-related validity, and construct validity (20-23). In this research the ESAS was tested for validity using content validity and criterion-related validity.

After the ESAS's content validity was tested in this research the concurrent validity approach was used as it is the most commonly used method of testing criterion-related validity in the literature. In concurrent validity the correlation is calculated between the scores obtained from the tool under investigation and a tool which has had its validity and reliability confirmed (21,22). In this study the RSC, which has been tested for validity and reliability with Turkish cancer patients, was used to test the concurrent validity of the ESAS. The scores obtained from the ESAS and RSC were compared and evaluated in the ESAS's criterion-related validity test. Positive correlations at a high level were determined between the ESAS and RSC ($p < 0.05$). Based on this result it can be said that the two tools can be used in studies for the evaluation of symptoms in cancer patients. In the study by Bruera and MacDonald (11) a good correlation was found between the ESAS and the Support Team Assessment Schedule; in the study by Chang et al (16). a correlation was found between the ESAS and Functional Assessment of Cancer Therapy-FACT and the Memorial Symptom Assessment Scale (MSAS). Philip et al. (13) compared the ESAS with the Rotterdam Symptom Checklist and the Brief Pain Inventory validated for the Australian population and found a good correlation.

Reliability

Reliability is the quality of a measurement tool's ability to measure without error. Internal consistency was used to test the ESAS's reliability in this research. The ESAS's internal consistency Cronbach's alpha and item-total score correlation technique was used. For the Cronbach's alpha tool reliability test the measurement of internal consistency of the items in the measurement tool is the most frequently used (24). Cronbach's alpha coefficient ranges between 0 and 1 and the closer to 1 means the greater the reliability of a tool (21, 24-26).

The Cronbach's alpha value obtained for ESAS in this research was found to be 0.77. In the study by Chang et al. (16) a Cronbach's alpha value of 0.79 was obtained for ESAS. These study results show that Cronbach's alpha value is at a high level that is satisfactory.

The item-total score correlation compares and examines the variance between an item on a test with the variance of the total test score. For an item-total score correlation to be acceptable it needs to be at least 0.20. Having an item score below 0.20 means that that item needs to be removed because it is decreasing the tool's reliability (27). In this research the ESAS's item-total correlation coefficients varied between 0.30-0.62. Because none of the item correlation coefficients were below 0.20 on the Turkish version of the ESAS, none of the items were removed. In this research the 10^{th} item on the Turkish version of the ESAS was determined to be the symptom of constipation.

CONCLUSION

These research results show that the ESAS is a valid tool for use with patients in the medical oncology group. The ESAS primarily evaluated physical wellness. This tool can be used in future studies for evaluation of symptoms.

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