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The reliability and validity of Arizona sexual experiences scale in Turkish ESRD patients undergoing hemodialysis

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Although sexuality was the fifth most important life stressor cited by dialysis patients, sexual dysfunctions (SD) receive a very limited attention in the follow-up of these patients. The main aim of the present study was to investigate the reliability and validity of the Arizona Sexual Experiences Scale (ASEX) for end-stage renal disease (ESRD) patients undergoing hemodialysis (HD) in Turkey. The instrument's reliability and validity were assessed in 43 ESRD outpatients undergoing dialysis. All patients were assessed at baseline and at 6 months. ASEX showed good internal consistency (Cronbach's α's 0.89 and 0.90) and test–retest reliability ($r = 0.88$, $P < 0.001$). Convergent validity of ASEX was measured by means of the scales' correlation with the psychiatrists' assessment for the presence of SD ($r = 0.53$, $P < 0.001$). The results of receiver operating characteristics analysis for criterion validity revealed that ASEX scores could discriminate well (0.85 ± 0.06 (95% confidence interval, 0.73–0.90), $P < 0.001$) between patients with 'no SD ($n = 26$)' and 'with SD ($n = 17$)'. A total ASEX score of ≤ 11 was found to be the best cutoff point (sensitivity = 100%, specificity = 52%) for screening in this group of patients. The findings of this study indicate that the ASEX is a valid and reliable instrument for use in clinical trials on sexual functioning of ESRD patients undergoing HD.
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Introduction

Successful dialysis improves most symptoms of end-stage renal disease (ESRD), yet many patients continue to experience many forms of sexual dysfunction (SD).[1–4] More than half of the patients receiving dialysis treatment describe SD, most commonly a loss of interest in sexual activity.[1,4] A questionnaire given to dialysis patients revealed that 65% were dissatisfied with sex since starting dialysis, 40% have stopped having sex, 27% have no desire for sex and 23% reported they could not achieve orgasm.[2] Although sexuality was the fifth most important life stressor cited by dialysis patients,[2] SD receives very limited attention in the follow-up of dialysis patients.[1] In order to prevent and treat dialysis patients with SD, screening for SD may allow patients at risk to be identified so that they can benefit from specific interventions.

The Arizona Sexual Experiences Scale (ASEX) is a five-item, self-administered questionnaire developed to detect and follow-up SD for depressed patients.[5] It is a quick scale to administer and requires no special training in terms of interpretation. ASEX may have some utility as a screening and assessment instrument in patients with ESRD undergoing hemodialysis (HD), yet the reliability and validity of the instrument has yet to be established in patients with medical illness. The present study was designed to examine the reliability and validity of the ASEX in Turkish ESRD patients undergoing HD.

Materials and methods

Subjects

The subjects were ESRD patients on dialysis treatment in the year 2002, at the Hemodialysis Center of

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İbni-Sina Hospital of Ankara University, Ankara, Turkey. Of all patients receiving maintenance HD in the year 2002, eligible patients were informed about the study protocol and 43 sexually active patients (25 male, 18 female) agreed to participate. The eligibility criteria included: age between 18 and 65 y, dialysis for at least 12 months, medically stable, without hospitalization or acute illness in the preceding 3 months, ability to complete self-rating scales (thus, blindness and low educational level were the exclusionary criteria). Consent and permission to access medical records were obtained for all the participants.

Procedure

A demographic questionnaire collected data about patients' characteristics and medical status. Patients were asked to fill out ASEX scale at baseline and 6 months. In addition, at 6 months The Hamilton Depression Rating Scale[6] (HDRS) was administered to all patients. The interval of 6 months between observation points was chosen on the psychometric basis that a short time lapse between observations could artificially inflate the correlation. At the same time the patients filled out the ASEX scale, the patient's latest Kt/*V* value, which was indicative of the adequacy of dialysis, was noted from the medical record.

The ASEX is a brief five-item scale designed to assess the core elements of sexual functioning: drive, arousal, penile erection/vaginal lubrication, ability to reach orgasm and satisfaction with orgasm. The female and male versions of ASEX differ on the gender-specific question 3 addressing erection/lubrication. Each item is rated with a six-point Likert system, with higher scores reflecting impaired sexual function. A total ASEX score of 19 or greater, any one item with an individual score of 5 or 6, three or more items with individual scores of 4 have all been found to be highly correlated with clinician-diagnosed SD.[5] The reliability and validity of the Turkish version of ASEX has not been established yet. To establish the Turkish version of the original English version of ASEX scale, two independent bilingual clinicians translated the scale into Turkish. Similarly, two independent bilingual clinicians made back translations. Finally, these four decided on the final form.

Each patient's level of depression was assessed with HDRS, which consists of 17 items each representative of a category of depressive symptoms.[6] A trained psychiatrist for the administration of HDRS and who was ignorant of to ASEX scale results, administered the HDRS interview to all patients at 6 months. HDRS has been adapted into Turkish by Akdemir *et al*[7] and found to have reliability and validity coefficients comparable to values of the original scale.

The presence of clinically significant SD was assessed during the administration of the HDRS interview at 6 months. During the assessment of item 14 (genital symptoms), psychiatrist asked detailed questions about sexual functioning to elucidate the presence of SD. Patients with no indication of SD were assigned to the 'no SD' group, while patients with symptoms of SD grouped as 'with SD'.

Statistical analysis

Data were analyzed using SPSS, version 11. Test–retest reliability of ASEX was assessed with the administration of the scale at baseline and at 6 months. Internal consistency was measured by means of split-half reliability for each observation. Convergent validity was assessed with the psychiatrists' assessment for the presence of SD. Divergent validity was assessed with HDRS total score. For criterion validity receiver operating characteristics (ROC) analysis was performed in addition to sensitivity, specificity and calculations for cutoff points. Confidence intervals (CI) were 95% (two sided) for all analyses.

Results

Subject characteristics

This study was conducted with 43 ESRD patients undergoing HD treatment. The mean age was 41.90 ± 10.47 (range = 22–62) y, 18 (41.8%) of the patients were female and 37 (86%) were living with a spouse or partner, 12 (27.9%) had a university education. The mean length of time the patients were being dialyzed using HD was 68.63 ± 46.33 (range = 12–192) months.

The mean age, duration of dialysis, educational level and marital status were not significantly different between male and female patients. However, total ASEX scores were proportionately higher in females, and the gender difference was significant at the baseline ($t_{(41)} = -2.28$, $P < 0.05$) and at 6 months ($t_{(41)} = -3.48$, $P < 0.001$) assessments. In addition, total ASEX score was significantly correlated with age ($r = 0.30$, $P < 0.05$). The duration of dialysis, educational level and marital status were not correlated with ASEX total score.

The mean Kt/*V* was 1.39 ± 0.2 at baseline and 1.32 ± 0.3 at the 6-month observation point, a paired *t*-test revealing no evidence of a statistically significant difference in dialysis adequacy between observations ($t_{(42)} = 1.21$, $P = 0.17$). The mean total ASEX scale scores were 14.25 ± 5.77 at the baseline

Table 1 Guttman split-half reliability internal consistencies (Cronbach's α's) for ASEX at baseline and at 6-month assessments

Psychiatric Scale	*0m[a] Cronbach's α*			*6m[a] Cronbach's α*		
	1st half	*2nd half*	*Overall*	*1st half*	*2nd half*	*Overall*
ASEX ($n=43$)	0.81	0.75	0.89	0.84	0.84	0.90

[a]ASEX = Arizona Sexual Experiences Scale; 0m = baseline Scores; 6m = 6 months scores.

and 14.44 ± 6.41 at 6-month observation and there were no statistically significant differences between observations ($t_{(42)} = -0.55$, $P = 0.62$). In addition, comparisons of the baseline and 6 months ASEX item scores did not reveal any significant differences.

Reliability of ASEX scale

Internal consistency was evaluated with Guttman split-half reliability analysis. Table 1 outlines first half, second half and overall Cronbach's α's for ASEX scale for the baseline and 6-month visits. For each observation, internal consistencies were 0.89 and 0.90 for ASEX scale. Cronbach's α's were 0.92 and 0.88 female version, 0.81 and 0.92 for male version, at the baseline and 6-month assessments, respectively. These observations all exceed the minimum of 0.70, indicating excellent Cronbach's α for internal consistency.

Pearsons's correlation coefficients between baseline and 6-month scores were calculated for the test–retest reliability analysis of ASEX scale. Correlation coefficients revealed highly significant correlations statistically for Item 1 ($r = 0.69$, $P < 0.001$), Item 2 ($r = 0.79$, $P < 0.001$), Item 3 ($r = 0.72$, $P < 0.001$), Item 4 ($r = 0.76$, $P < 0.001$), Item 5 ($r = 0.84$, $P < 0.001$) and total ASEX score ($r = 0.88$, $P < 0.001$). These observations all indicate highly significant test–retest reliability for ASEX in this population.

Validity of ASEX scale

Psychiatrists' clinical assessment at 6 months revealed the presence of SD in 17 patients and these patients constituted the 'with SD' group, while the remaining 26 the 'no SD' group. Erectile dysfunction in men and decreased arousal and orgasm in females, were the most common disturbances in our sample.

ASEX total scores were significantly correlated with HDRS, item 14 (genital symptoms item) ($r = 0.35$ $P < 0.02$) and with psychiatrist's assessment for SD ($r = 0.53$, $P < 0.001$). These significant intercorrelations demonstrate that self-rated ASEX scale, psychiatrist-rated HDRS, item 14 score and clinical evaluation of SD nearly measure the same construct, indicating the convergent validity of ASEX scale. Although item 14 measures SD, HDRS total scores measure a different construct, which is the 'severity of depression'. Divergent validity was assessed with HDRS total scores and no significant correlation was found ($r = 0.14$, $P = 0.87$), indicating that ASEX and HDRS measured different constructs.

With respect to criterion validity of the ASEX scale, ROC analysis was conducted. Psychiatrists' assessment of patients SD status as 'with SD ($n = 17$)' and 'no SD ($n = 26$)' constituted the criterion standard. Statistically significant areas under the curves (AUCs) are indicative of diagnostic accuracy of the instruments. The results of ROC analysis revealed that AUC (SE) for ASEX scale was 0.85 ± 0.06 and showed that ASEX scores could well discriminate between patients with 'no SD' and 'with SD' ($P < 0.001$). A total ASEX score of ≤ 11 was found to be the best cutoff point (sensitivity = 100%, specificity = 52%) for screening SD for patient undergoing HD. Two other criteria were proposed for detecting the presence of SD in the original study:[5] (a) three or more items with individual scores of 4 at ASEX scale and (b) any individual item score of either 5 or 6 performed ROC analysis for both criterions; the AUCs (SE) for criterion (a) 0.88 ± 0.06 and criterion (b) 0.71 ± 0.09 were both statistically significant. ROC analysis revealed that criterion (a) ($P < 0.001$) and (b) ($P < 0.02$) could discriminate between patients with 'no SD' and 'with SD' at significant level.

Discussion

Despite the importance of sexuality for the quality of life, only 1–25% of ESRD patients discuss the issue with their physicians.[3,8] Moreover, it has been noted that conservative attitudes, lack of knowledge and anxiety when discussing sexual concerns are widespread among health-care providers.[8,9] Therefore, we observed that, a brief and simple, self-administered scale with good coverage of the symptoms of SD would be useful for screening and follow-up of SD in ESRD patients undergoing HD.

The findings of this study indicate that the ASEX scale has excellent split-half reliability internal consistency for a self-report assessment tool and excellent test–retest reliability. In the original article for ASEX scale,[5] the measures of internal consistency (Cronbach's $\alpha = 0.90$) and test–retest reliability ($r = 0.80$–0.89, $P < 0.01$ for all r's) indicated results similar to the present study. The finding that there was no statistically significant difference in ASEX total and individual item scores over time also suggests that the ASEX is a relatively stable measure in this chronic illness patient group. The ASEX scale had adequate sensitivity, specificity and accuracy for discriminating patients with 'no SD' and 'with SD'. Convergent and divergent validity for ASEX was also supported with our findings.

In the original study,[5] a cutoff point of ≤ 19 (sensitivity = 82%, specificity = 90%) of ASEX total score was suggested for identifying patients with SD. As we propose the use of ASEX for initial screening to remove the barrier of embarrassment between the patient and health-care worker when delving into the sensitive area of sexual functioning, we preferred to suggest a cutoff point which establish higher sensitivity at the cost of specificity. Among various cutoff points, we found that a cutoff point of ≤ 11 (sensitivity = 100%, specificity = 52%) would be the best value for screening purposes, which include all patients with SD. However, all positive cases from screening need to be confirmed with a more specific diagnostic method.

There were some limitations in this study where patients were recruited from one dialysis center only. First, our sample size was relatively small for us to study gender-specific reliability and validity for all analyses. Second, we have not used a structured interview for comprehensive clinical assessment of SD in our patients; rather, we assessed sexual functioning with routine clinical questioning of Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV)[10] criteria for SDs. Third, we could only control some confounding variables such as dialysis adequacy that might especially affect test–retest reliability. Last but not least, our sample was more representative of educated, middle aged, middle class and married patients with full insurance coverage, who agreed to participate to the study.

Potentials for ASEX administration include the initial screening of SD, assessing and following up the effects of all kinds of interventions including biological, social and psychological ones on sexual functioning of ESRD patients undergoing HD. In addition, ASEX may be most useful in alerting HD teams to high-risk patients early, to indicate the need for further assessment of factors that can cause SD in ESRD patients undergoing HD. Since, improving the quality of life is a major goal in medicine, we should pay more attention to the sexual functioning of our patients that might help increasing our patient's enjoyment and satisfaction with life at minimal or no additional cost.

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