## Original Article

# Reliability and validity study for the adaptation of the Camberwell Assessment of Need Short Appraisal Schedule and the Self-Rated Version of the Camberwell Assessment of Need Short Appraisal Schedule to Turkish for Individuals with Severe Mental Disorder

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## Abstract

**Objectives:** The study aimed to adapt the Camberwell Assessment of Need Short Appraisal Schedule/Self-Rated version (CANSAS/CANSAS-P) to Turkish, and to test its validity and reliability on individuals with severe mental disorder.

**Methods:** The sample consisted of 111 individuals with severe mental disorders who were receiving care at five separate Community Mental Health Centers in Izmir. The CANSAS was applied by the Researcher and an Observer to evaluate the participants, while the CANSAS-P was completed by the participants.

**Results:** The content validity index of CANSAS and CANSAS-P was found to be 0.84. Results from the exploratory factor analysis showed that the compliance values of the CANSAS and CANSAS-P were 0.68 and 0.65, respectively. From the confirmatory factor analysis of the scales, the compliance indices were found to be acceptable at 0.075 and 0.054. In the CANSAS compliance analysis conducted to determine the level of agreement between the independent observers the total Kappa value was 0.621. In the parallel form reliability testing, two of the need levels were found to vary between 0.431 and 0.936.

**Conclusion:** From the results, this study concludes that CANSAS and CANSAS-P are valid and reliable tools for conducting assessments of individuals with severe mental disorders in Turkey. The CANSAS is administered by a mental health team, while CANSAS-P is completed by the individual with chronic mental impairment, making them both important tools for identifying the views of both the specialist and the individual. It is believed that with these tools, a cooperative service mentality can be formed in planning treatment and care.

**Keywords:** Need assessment; reliability and validity; severe mental disorders.

Determining the needs of individuals with severe mental disorders is the foundation for creating mental health services that provide the right care.[1] This approach ensures that patients are given holistic care that targets their needs.[1,2] The quality of mental health services improves when patients are provided with care that focuses on their needs and their participation in treatment.[3,4] The most ideal settings for tailoring healthcare services to patients' needs are community mental health service facilities that are made directly accessible to the public.[5,6] In this context, being able to determine individual needs and tailoring community-based services according to these needs based on the identification of patient characteristics is of vital importance.

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**What is known on this subject?**
- The Camberwell Needs Assessment tools are used throughout the world to determine the needs of individuals with chronic mental disorders. However, Turkey lacks assessment tools applicable to individuals with chronic mental disorders for which a validity and reliability study has been performed.

**What is the contribution of this paper?**
- In this study, it was determined that the CANSAS and CANSAS-P tools for determining the needs of individuals with chronic mental disorders through patient and expert evaluation were valid and reliable for use in Turkish culture.

**What is its contribution to the practice?**
- With the use of these tools for individuals with chronic mental illness, the needs of both the patient and the specialist can be identified and holistic care based on this needs assessment can be provided.

A number of instruments have been developed for the purpose of evaluating the needs of individuals with severe mental disorders.[1,7–11] The Camberwell Assessment of Needs(CAN) instruments are the most commonly used.[12,13] These instruments are short, easy to administer and have been translated into 27 languages from around the world.[14,15] The instruments determine a patient's needs and provide guidance in the planning of adequate and satisfactory care.[14] With the law enacted in Turkey to foster the development of community-based services, there have been changes made to the system of healthcare. As a result of the legislation, community mental health centers began to be established in 2011.[16] There is, however, no questionnaire available in Turkey that has been designed to detect patient needs. Mental health services are consequently unable to determine patient needs.[3,4,8,13] Identifying patient needs will therefore provide guidance to the services and intervention programs of the Community Mental Health Centers (CMHC) in their efforts to offer psychosocial care to the population.[17]

## Aim

It is to address this need for a reliable mental health instrument that this study has aimed to carry out the validity and reliability studies of the CANSAS and CANSAS-P instruments.

# Materials and Method

### Measures

#### Patient Identification Information Form

In order to obtain information about the characteristics of individuals with chronic mental disorders, a patient information form was prepared in accordance with the literature.[1,5,6,8,9] This form included questions on age, gender, educational status, working status, diagnosis of chronic mental illness, duration of the disease, follow-up period from CMHC.

#### Camberwell Assessment of Need Short Appraisal Schedule (CANSAS)

The CANSAS by Slade et al. was designed for routine clinical and research purposes.[7] The items on the CANSAS include the same items as those on the CAN. When the instrument was developed, the correlation between total need score test-retest and independent interrater reliability was found to be 0.99 and 0.78, respectively. The percentage of correlations between the items was found to be between 81.6%–100% (interrater reliability) and 58.1–100% (test re-test reliability). Kappa coefficients for interrater reliability were between k=0.39 and k=1.00.

### Self-Rated Version of the Camberwell Assessment of Need Short Appraisal Schedule (CANSAS-P)

Slade et al. developed the CANSAS-P based on the principles of self-report to enable the CANSAS to be understood and answered by patients themselves.[8] The only change distinguishing it from the CANSAS is in the response format, meaning that in addition to the three standard options, the fourth option "I do not want to answer this question" has been added.[18]

Correlation levels of met, unmet and total need levels in the test re-test reliability were r=0.36, r=0.81 and r=0.66, respectively. Correlation levels of the CANSAS and the CANSAS-P were found to be r=0.59, r=0.65 and r=0.70, respectively.[8,18]

CANSAS and CANSAS-P are characterized and evaluated as follows: The CANSAS and CANSAS-P instruments consist of 22 items that address the health and social needs of individuals with severe mental disorders. The goal of each item is to determine if the patient has any needs and whether he/she has received adequate help for those needs. The instruments assess these needs on the basis of the last month.

In both instruments, each item is evaluated by assigning them numbers of "0", "1", or "2". However, these numbers do not have a number value, but instead, have symbolic value. The met need level is the sum of the items assigned the symbol of "1"; the unmet need level is the sum of the items assigned the symbol of "2"; and the total need level is the sum of the items assigned the symbols of "1" and "2". The lowest and highest possible scores for Met, Unmet and Total Needs score is 0 and 22 points, respectively.[1,7,8]

### Data Collection Procedure

The population of this study included the individuals with severe mental disorders who were receiving follow-up care at one of the five CMHCs in Izmir/Turkey between November 2017 and May 2018. The pilot study was conducted with 10 patients from the study population. Patients who were involved in the pilot study were not included in the sampling. The sample size of the study consisted of 111 participants who were selected using the probability-based sampling method [18]. The sampling inclusion criteria were that the patients must be between the ages of 18 and 65, receiving follow-up care at one of the CMHCs, and have a diagnosis of a severe mental disorder.[19,20]

In order to examine the psycholinguistic features of the instruments, a six-step method involving translation, re-translation,

expert opinions and concept equivalence studies was used. As the first step, the content of the instruments was submitted to experts in the field for confirmation of validity. The content validity index score for the expert opinions was found to be 0.84, and the forms were finalized. After receiving the expert opinions, the instruments were piloted with 10 patients. Two interviews were conducted with the patients over the course of an average of eight days. Prior to conducting the interviews, the 'Researcher' who training on how to manage the CANSAS assessment, to evaluate the materials and to fill out the form. The training nurses and psychologists in the CMHCs also participated in this process as observers. Either one psychologist or one nurse from each CMHC participated. The first interview was conducted to carry out an internal consistency reliability analysis. The researcher and observer joined together in the first interview. The researcher completed the form according to the patient's answers to the questions on the CANSAS instrument. At the same time, the observer completed the CANSAS instrument independently of the researcher. The researcher and the observer were not allowed to exchange views during or after the interview. At the end of the interview CANSAS-P was given to the patient who was asked to fill it out. Any questions that the patients had about the items on this self-report instrument were explained to prevent misunderstandings and to ensure that the content was valid.

### Ethical Considerations

Prior to conducting the study, permission to use the CANSAS and CANSAS-P instruments was granted from the author of these instruments, Prof. Mike Slade. Approval of the Ethics Committee was obtained from the Non-Interventional Research Ethics Committee of Dokuz Eylül University for the execution of the research. Institution permission to perform the research was received from all the CMHCs. Before starting the data collection process of the research, verbal and written consent of the observer nurses and psychologists and the participants were taken.

### Data Analysis

The Statistical Packages for the Social Sciences (SPSS) 22.0 and the AMOS (Analysis of Moment Structures) package program were used in the evaluation of the data. The socio-demographic data derived from the Patient Identification Form were analyzed in terms of number and percentage, mean and standard deviations. The significance level was accepted as $p<0.05$.

Validity and reliability studies were conducted to examine the psychometric properties of the instruments. For the validity portion of the study, the content validity index score was calculated based on expert opinions, an exploratory factor analysis was conducted for the structure validation of CANSAS and CANSAS-P, and the RMSEA was calculated as part of the confirmatory factor analysis. For the reliability portion of the study, the time-invariance test, the test-retest method and Pearson's correlation Coefficient for the CANSAS and the repeated ap-

plications of the CANSAS-P were applied. The Cohen Kappa statistic was used to test the interrater reliability of CANSAS, while for parallel form reliability of the CANSAS and CANSAS-P, the Pearson's correlation coefficient statistic was used.

## Results

The Table 1 data related to the socio-demographic characteristics of the participants who were receiving follow-up care at one of the CMHCs shows that 69.4% are male and 30.6% are female, 40.5% had only completed up to primary-level education, 87.4% were unemployed and 39.6% visited their respected CMHC at least once a week and 32.4%, every day. Furthermore, 69.4% of the patients were diagnosed with schizophrenia and other psychotic disorders, while 30.6% were diagnosed with bipolar and related disorders.

In the exploratory factor analysis of the CANSAS, the Kaiser-Meyer-Olkin (KMO) coefficient was found to be 0.68, while the Bartlett's Test chi-square ($\chi^2$) was 1224.660 with a p value of 0.000, indicating significance and hypothetical relevance.

**Table 1. Socio-demographic characteristics of the sample (n=111)**

| Socio-demographic characteristics | Mean±SD | Min-Max |
|---|---|---|
| Age | 41.35±1.01 | 20–65 |
| Duration of illness | 13.01±0.75 | 2–36/yıl |
| Duration of care at CMHC | 28.80±1.56 | 12–60/ay |
| | **n** | **%** |
| Gender | | |
| Female | 34 | 30.6 |
| Male | 77 | 69.4 |
| Education status | | |
| Illiterate | 2 | 1.8 |
| Elementary education | 45 | 40.5 |
| High school | 36 | 32.4 |
| University | 28 | 25.2 |
| Working status | | |
| Working full-time | 8 | 7.2 |
| Unemployed | 97 | 87.4 |
| Working part-time | 6 | 5.4 |
| CMHC visit frequency | | |
| Everyday | 36 | 32.4 |
| At least once a week | 44 | 39.6 |
| Up to once a week | 10 | 9.0 |
| Once or never per month | 21 | 18.9 |
| Disease diagnosis | | |
| Disorders related to schizophrenia | 77 | 69.4 |
| Disorders related to bipolar disorder | 34 | 30.6 |

CMHC: Community Mental Health Centers; SD: Standard deviation; Min: Minimum; Max: Maximum.

**Table 2. CANSAS exploratory factor analysis distribution of item factor loadings**

| Factor title | Items | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| Daily life skills | 3. Looking after the home | 0.888 | | | | | | |
| | 4. Self-care | 0.865 | | | | | | |
| | 2. Food | 0.812 | | | | | | |
| | 21. Money | 0.670 | | | | | 0.572 | |
| | 6. Physical health | 0.547 | | | | | | 0.476 |
| Information skills | 18. Basic education | | 0.907 | | | | | |
| | 19. Telephone | | 0.884 | | | | | |
| | 20. Transportation | | 0.874 | | | | | |
| | 1. Accommodation | | 0.590 | | | | | 0.447 |
| Relationships | 15. Intimate relationships | | | 0.818 | | | | |
| | 16. Sexual expression | | | 0.794 | | | | |
| | 14. Company | | | 0.757 | | | | |
| | 5. Daytime activities | | | 0.752 | | | | |
| Safety | 11. Safety of others | | | | 0.824 | | | |
| | 10. Safety of self | | | | 0.822 | | | 0.328 |
| | 13. Drugs | | | | 0.764 | | | |
| | 12. Alcohol | | | | 0.663 | | 0.319 | 0.494 |
| Psychological coping | 9. Psychological distress | | | | | 0.888 | | |
| | 8. Information on condition and treatment | | | | | | 0.856 | |
| | 7. Psychotic symptoms | | | | | 0.811 | | |

*Kaiser-Meyer-Olkin Measure of Sampling Adequacy; 0.68. Bartlett's Test; p<0.001. Total variance explained; 74.4%. CANSAS: Camberwell Assessment of Need Short Appraisal Schedule.

After confirming the assumptions, 7 factorial structures were found that accounted for 74.41% of the total variance over the eigenvalue of one. In Varimax rotation, five factorial structures were determined by these seven factors. The five factorial structures were Daily Life Skills, Information Skills, Relationships, Safety, and Psychological Coping. The factor loadings related to the items under Daily Life Skills were 0.86 for self-care, 0.81 for food, 0.67 for money, and 0.54 for physical health; for the items under Information Skills, they were 0.90 for education, 0.88 for telephone, 0.87 for transportation, and 0.59 for accommodation; for the items under Relationships, they were 0.81 for intimate relationships, 0.79 for sexual expression, 0.75 for company, and 0.75 for daytime activities; for the items under Safety, they were 0.82 for safety of others, 0.82 for safety of self, 0.76 for drugs, and 0.66 for alcohol, and finally, for the items under Psychological Coping, they were 0.88 for psychological distress, 0.85 for information on condition and treatment, and 0.81 for psychotic symptoms.

According to the validation factor analysis of the CANSAS, the structural equation of the 20-item, five-dimension instrument had a significance p value of 0.000. The results of the first level multi-factor analysis to determine the goodness of fit index of CANSAS were as follows: RMSEA=0.075, RMR=0.032, CFI=0.899, IFI=0.901, GFI=0.813, TLI=0.886, and an $x^2$ value of 1.615 (p=0.000).

From the exploratory factor analysis of CANSAS-P, it was found that the KMO coefficient was 0.65 and the Bartlett's Test chi square ($\chi^2$) was 797.257, with a p value of 0.000. After the assumptions were tested, eight factorial structures were found, describing 70.14% of the total variance over the eigenvalue of one. The Varimax rotation showed that there were five factorial structures determined by these eight factors. The Five factor structure, which is presented in Table 3, included Self-Care, Life Skills, Interpersonal Relationships, Psychological Health, and Dependence. The factor loadings for the items under the Self-Care factor were 0.79 for food, 0.77 for looking after the home, and 0.70 for self-care; for the items under Life Skills, they were 0.87 for education, 0.85 for telephone, and 0.80 for transportation; for the items under Interpersonal Relationship, they were 0.75 for company, 0.71 for intimate relationships, 0.66 for sexual expression, and 0.65 for daytime activities; for the items under Psychological Health, they were 0.72 for psychotic symptoms, 0.71 for psychological distress, 0.54 for physical health, and 0.49 for information on condition and treatment, and finally, for the items under Dependence, they were 0.79 for alcohol, 0.64 for drugs 0.64 and 0.50 for accommodation.

According to the confirmatory factor analysis performed on the CANSAS-P, it was determined that the structural equation of the 17-item, 5-subdimension instrument had a significance p value of 0.000. The results of the first level multi-factor analysis to determine the goodness of fit index of CANSAS-P were as follows: RMSEA=0.054, RMR=0.031, CFI=0.919, IFI=0.922, GFI=0.867, TLI=0.908, and an $\chi^2$ value of 1.322 (p: 0.000).

**Table 3. CANSAS-P exploratory factor analysis distribution of item factor loadings**

| Factor title | Items | I | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| Self-care | 2. Food | 0.793 | | | | | | | |
| | 3. Looking after the home | 0.777 | | | | | | | |
| | 4. Self-care | 0.700 | | | | | | | |
| Life skills | 18. Basic education | | 0.871 | | | | | | |
| | 20. Transportation | | 0.858 | | | | | | |
| | 19. Telephone | | 0.850 | | | | | | |
| Interpersonal relationships | 14. Company | | | 0.754 | | | | | |
| | 15. Intimate relationships | | | 0.710 | | | | | |
| | 16. Sexual expression | | | 0.661 | | | | | |
| | 5. Daytime activities | 0.363 | | 0.653 | | | | | |
| Psychological health | 7. Psychotic symptoms | 0.350 | | | 0.729 | | | | |
| | 9. Psychological distress | | | | 0.716 | | | | |
| | 6. Physical health | | | | 0.543 | | 0.438 | | |
| | 8. Information on condition and treatment | | | 0.334 | 0.498 | | | | 0.316 |
| Dependence | 12. Alcohol | | | | | | | 0.796 | |
| | 13. Drugs | | | | | | | 0.646 | 0.337 |
| | 1. Accommodation | | | | | | 0.332 | 0.509 | |

*Kaiser-Meyer-Olkin Measure of Sampling Adequacy; 0.65. Bartlett's Test; p<0.001. Total variance explained; 70.1%. CANSAS-P: Camberwell Assessment of Need Short Appraisal Schedule/Self-Rated version.

**Table 4. Relationship between test Re-Test Need Levels in CANSAS and CANSAS-P (n=111)**

| | Met needs | Unmet needs | Total needs |
|---|---|---|---|
| CANSAS Relationship Between Test Re-Test Need Levels | | | |
|     Met needs | 0.865* | | |
|     Unmet needs | 0.154 | 0.881* | |
|     Total needs | 0.801* | 0.499* | 0.877* |
| CANSAS-P Relationship Between Test Re-Test Need Levels | | | |
|     Met needs | 0.824* | | |
|     Unmet needs | 0.002 | 0.724* | |
|     Total needs | 0.668* | 0.475* | 0.778* |

*p<0.001. CANSAS-P: Camberwell Assessment of Need Short Appraisal Schedule/Self-Rated version.

**Table 5. CANSAS-P and CANSAS Parallel Form Reliability Need Level Values**

| | Met needs | Unmet needs | Total needs |
|---|---|---|---|
| Met needs | 0.897* | | |
| Unmet needs | 0.061 | 0.918* | |
| Total needs | 0.773* | 0.525* | 0.902* |

*p<0.001. CANSAS-P: Camberwell Assessment of Need Short Appraisal Schedule/Self-Rated version.

## Reliability Results

The evaluations performed by the observers and the researcher were measured using the Kappa value (κ). The compliance values between the researcher and the observers were determined by examining the extent to which they were in agreement on the level of need. The Kappa values for met needs, unmet needs and total needs were found to be 0.562, 0.549, and 0.621, respectively, which indicated that there was no significance difference between the researcher's and observers' evaluations of needs (p<0.05).

Test re-test reliability was performed for the CANSAS. The levels of the needs as evaluated by the researcher in the first interview and the second interview were compared by applying Pearson's Correlation Coefficient Analysis, the results of which are presented in Table 4. There was a significant positive correlation between met need level r=0.865, unmet need level r=0.881 and total need level r=0.877 (p<0.05). Regarding the needs levels of the CANSAS-P, there was a significant positive correlation (p=0.000) with the met need level r: 0.824, unmet need level r=0.724 and total need r=0.778.

The CANSAS and the CANSAS-P were shown to have parallel form reliability. Need levels were compared by conducting the Pearson's Correlation Coefficient Analysis, the results of which are presented in Table 5. There was a significant positive correlation between met need levels r=0.897, unmet need levels r=0.918 and total need levels r=0.902 (p<0.001).

## Discussion

The findings from the validity and reliability studies carried out by the present study on the CANSAS and CANSAS-P revealed that the instruments are compatible with Turkish culture. Exploratory and confirmatory factor analyses have not been performed in previous validity and reliability studies of CANSAS and CANSAS-P.[20,21] The items, social wages and child care, on the CANSAS and the items, safety of self, safety of others, social wages, money and child care, on the CANSAS-P did not comply with the factor assumptions structures. These items were not included in the factor structure due to the sample size, which in this study was 5 times the number of items. It is stated that for factor analysis, the sample size should be 5, 10 or 15 times the number of items.[19] Although these items were not included in the factor structure, it was decided that 22 items from the original version of the forms should remain, as the other validity and reliability results of the instruments were appropriate. In previous validity and reliability studies of the CANSAS and CANSAS-P, exploratory and confirmatory factor analyses were generally not performed because the structure of these instruments showed index characteristics.[21–26] In the study by Slade et al. which was conducted to develop the CANSAS, 7 factor constructs were identified.[7] The significant factor constructs found in the study were as follows: The first factor construct had the items of looking after the home, self-care and money; under the Daily Life Skills factor construct in the present study, the items, looking after the home, self-care and money, were retained. The second factor construct had the items of sexual life, intimate relations and psychological distress; under the Relationships factor in the present study, only sexual life and intimate relations were retained. The third factor construct had the items of alcohol, drugs/substances, and safety of others; under the Safety factor in the present study, the items, alcohol, drugs/substances and safety of others, were retained. The fourth factor contained the items of shelter and nutrition, but there was no common factor construct in the

present study's factor solution related to these aspects. Ritsner et al. conducted a factor analysis of CANSAS-P with 108 participants.[25] According to the results of their exploratory factor analysis, a 4-factor structure was defined, namely self-care, life skills, psychological health, and addiction, along with their respective items. Results of the confirmatory factor analysis conducted in Ritsner's study showed that the RMSEA value of the CANSAS, which is an indicator of compliance, was 0.075. In parallel with the results found in the present study, Wennström and Sörbom reported an RMSEA value of 0.054 from the confirmatory factor analysis they conducted on the CAN tool.[20]

In the present study, interrater reliability was poor, and there was no need score that indicated total agreement. There was moderate agreement, however, as to met and unmet needs, and a good level of agreement for total needs. It can thus be said that the present study revealed a good level of interrater agreement. The literature indicates that CANSAS enjoys high levels of interrater reliability in validity and reliability studies and is therefore a preferred, commonly used and reliable method.[21,24,26,27] In a study involving 32 patients that was conducted by Andresen et al., the internal consistency measures between independent raters regarding the need levels for CANSAS reported Kappa scores in the range of 0.39–1.00.[21] On the other hand, in the validity and reliability studies for CAN that were conducted by Stefanatou et al., where 53 patients were evaluated, total interrater reliability was found to have excellent agreement at k=0.96, and the Kappa scores for met and unmet needs were found to be above 0.88.[27] In contrast with the present study, the validity and reliability studies for CANSAS and CANSAS-P conducted by Van der Krieke et al. with 227 patients showed a moderate level of agreement, with Kappa scores varying between 0.41–0.56.[24] This is believed to stem from the fact that the sample sizes in these studies were either too large or too small.

In the present study, the CANSAS test-retest reliability levels of met, unmet and total needs were found to be very good. The test-retest reliability of the CANSAS-P displayed a very good met need rating, and a good level of agreement for unmet and total needs. These data indicate that the instruments have a very good level of test-retest reliability. The CAN questionnaires are a commonly preferred form of testing reliability over time.[22,23,26,27] In studies where test-retest reliability of CAN was performed, it was found in two evaluations that the correlation coefficient between the met, unmet and total requirement levels indicated medium and high levels of correlation.[18,23,26,27]

The parallel forms reliability revealed a very high positive correlation between need levels in the present study This indicates that the instruments displayed parallel form reliability. In the validity and reliability studies for the CAN instruments, correlation coefficients were calculated for parallel form reliability. Van der Krieke et al. carried out validity and reliability studies for CANSAS and CANSAS-P with 227 participants and they involved parallel forms reliability testing, where it was re-

ported that the met needs correlation coefficient between the questionnaires was 0.64 and the unmet needs coefficient was 0.70, both of which are indications of good agreement, while total needs stood at 0.39, an indication of poor agreement.[24] The difference between the two studies is thought to have stemmed from the small sample size in the present study. A very high positive agreement was found between the correlation coefficients of the need domains, which ranged between 0.76–1.00.[21]

## Conclusion

In the results of the analysis of the psycholinguistic and psychometric characteristics of CANSAS and CANSAS-P, instruments that assess the needs of individuals with severe mental disorders, it was found that the instruments are valid, reliable and compatible for use in the Turkish culture. It is believed that the use of CANSAS by mental health teams working in Community Mental Health Centers and of CANSAS-P by individuals with severe mental disorders will prove to be invaluable in terms of revealing the perspective of both specialists and patients on needs. It is further believed that the two forms will be of help in developing the concept of cooperation in providing services and planning interventions. Finally, when these two instruments are implemented in Turkey, it will create more opportunities for research to be carried out on determining patients' needs in the context of public health services offered in the field of mental health.

**Conflict of interest:** There are no relevant conflicts of interest to disclose.

**Peer-review:** Externally peer-reviewed.

**Authorship contributions:** Concept – G.Z.T., Z.Ç.D.; Design – G.Z.T., Z.Ç.D.; Supervision – Z.Ç.D.; Fundings - G.Z.T., Z.Ç.D.; Materials – G.Z.T., Z.Ç.D.; Data collection &/or processing – G.Z.T.; Analysis and/or interpretation – G.Z.T., Z.Ç.D.; Literature search – G.Z.T., Z.Ç.D.; Writing – G.Z.T., Z.Ç.D.; Critical review – G.Z.T., Z.Ç.D.

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