Distress and related factors in patients with papillary thyroid cancer just before the radioactive iodine therapy: Does perceived social support predict distress?

Papiller tiroid kanserli hastalarda radyoaktif iyot tedavi öncesi distres ve ilişkili faktörler: Algılanan sosyal destek distresi predikte eder mi?

Hayriye Dilek Hamurcu[1], Ibrahim Ozer[2], Gulin Ucmak[3], Ali Caykoylu[4], Ozgur Ahmet Yuncu[5]

[1]Assoc. Prof., Department of Psychiatry, Dr. Abdurrahman Yurtaslan Oncology Research and Training Hospital, Ankara, Turkey,https://orcid.org/0000-0002-1456-2499
[2]M.D, Psychiatry Clinic, Afyonkarahisar State Hospital, Afyon, Turkey,https://orcid.org/0000-0003-2659-1630
[3]M.D., Department Of Nuclear Medicine, University of Health Sciences, Abdurrahman Yurtaslan Oncology Research And Training Hospital, Ankara, Turkey, https://orcid.org/0000-0002-0268-4747
[4]Prof. Dr., Department Of Psychiatry, Ankara Yıldırım Beyazıt University Medical Faculty, Ankara, Turkey, https://orcid.org/0000-0003-1586-9334
[5]M.D., Psychiatry Clinic, İzmir Buca Seyfi Demirsoy Research And Training Hospital, İzmir, Turkey, https://orcid.org/0000-0002-2546-3744

SUMMARY

Objective: Since radioactive iodine therapy (RIT) applied in the treatment of patients with papillary thyroid cancer requires isolation, the distress in this period is a difficult issue for the clinician to cope with. Therefore, we aimed to address the prevalence of distress just before RIT, to examine some sociodemographic and clinical factors associated with distress, and to determine the relationship between distress and perceived social support. **Method:** Psychiatric examination of 143 patients was performed. Distress thermometer (DT), hospital anxiety depression scale, the Multidimensional Scale of Perceived Social Support (MSPSS) were applied. Those with a cut-off score of 4 and above in DT were included in the distressed group. **Results:** The prevalence of distress was 78%. Those with distress had more psychopathology, low and high income, comorbid physical illness, higher anxiety and depression scores, and lower MSPSS scores. Family problems, physical problems and depressive symptoms were predictors of distress. **Discussion:** Prevalence of distress is high among thyroid cancer patients just before RIT. Since psychopathology, anxiety, and depressive symptoms are more common in distressed group, the clinician's request for psychiatric consultation before RIT will facilitate coping with the distress du-ring the isolation process. On the other hand, family problems, which can be considered as the negative aspect of social support, seem to predict distress. Since physical problems and depressive symptoms also predict distress, it is important to consider the medical and psychosocial factors as a whole when assessing the patient's distress.

Key Words: psychological distress, psychopathology, depression, social support, thyroid cancer, radioactive iodine therapy

ÖZET

Amaç: Papiller tiroid kanserli hastaların tedavisinde uygulanan Radyoaktif iyot tedavisi (RIT) izolasyon gerektirdiğinden bu dönemdeki distres klinisyenin baş etmekte zorlandığı bir konudur. Bu nedenle, RIT öncesinde distres prevalansını ele almayı ve distres ile ilişkili bazı sosyodemografik ve klinik faktörleri incelemeyi, distres ile algılanan sosyal destek arasındaki ilişkiyi belirlemeyi amaçladık. **Yöntem:** 143 hastanın psikiyatrik muayenesi yapıldı. Distres termometresi (DT), Hastane Anksiyete Depresyon ölçeği (HADÖ), Çok Boyutlu Algılanan Sosyal Destek Ölçeği (ÇBASDÖ) uygulandı. DT'de kesme puanı 4 ve üzerinde olanlar distres grubuna dahil edildi. **Bulgular:** Distres yaygınlığı %78 idi. Distresi olanlarda düşük ve yüksek gelir, ek fiziksel hastalık, psikopatoloji daha fazla, anksiyete ve depresyon puanları daha yüksek, ÇBASDÖ puanları daha düşüktü. Aile sorunları, fiziksel sorunlar ve depresif semptomlar distresi predikte etmekteydi. **Sonuç:** Tiroid kanseri hastalarında RIT'den hemen önce distres prevalansı yüksektir. Distresi olanlarda psikopatoloji, anksiyete ve depresif belirtiler daha sık görüldüğünden klinisyenin RIT öncesi psikiyatri konsültasyonu istemesi izolasyon sürecinde distres ile baş etmeyi kolaylaştıracaktır. Sosyal desteğin olumsuz yönü olarak değerlendirilebilecek aile sorunlarının distresi yordadığı görülmektedir. Fiziksel sorunlar ve depresif semptomlar da distresi predikte ettiğinden, distresi değerlendirirken tıbbi ve psikososyal faktörlerin bir bütün olarak ele alınması önemlidir.

Anahtar Sözcükler: psikolojik distres, psikopatoloji, depresyon, sosyal destek, tiroid kanseri, radyoaktif iyot tedavisi

INTRODUCTION

Although distress is a widely studied topic in the field of psychooncology, no study has been found examining distress in patients with papillary thyroid cancer just prior to radioactive iodine therapy (RIT). Because most patients with papillary thyroid cancer have a favorable prognosis, their distress may have been overlooked. This issue is important. Because the RIT process requires isolation and the high distress levels of the patients during this period are a difficult issue for the clinician to cope with. After surgical removal of the thyroid, patients with thyroid papillary cancer are hospitalized for RIT (1). During the RIT period, inpatients are usually subjected to protective isolation due to higher dose treatments (2). Immediately after RAI administration, patients should be separated from others to avoid exposing others to radiation (3). When the individual is isolated, the necessary social support cannot be obtained and remains hidden from the outside environment physically, socially and emotionally. It is stated that anxiety and depression levels are higher in socially isolated people. Social isolation has been shown to be a strong determinant of poor mental and physical health, while social support has been shown to be protective. Researchers state that low social support increases vulnerability to depressive and anxiety symptoms and is among modifiable predictors of distress (2,4,5). It has been shown that when distress cannot be managed, it negatively affects the quality of life of cancer patients (5). In our clinical practice, maladaptive reactions to distress can cause psychopathology, causing patients to interrupt RIT and not to follow isolation rules. Since psychiatric interview is not possible during the isolation process, psychiatric treatment cannot be given to the patient in the presence of psychopathology. This situation both disrupts the patient's compliance with the treatment and causes others to be exposed to radiation. For these reasons, the detection of distress and distress related sociodemographic and clinical factors and social support status just before RIT is important. In this way, patients will be able to receive the necessary psychological or psychiatric support just before isolation period. On the other hand, we think that having a high level of social support perceptions, even in isolation, will contribute positively to distress levels. In this way,

the difficult isolation process for patients will be overcomed more easily.

For these reasons, the aims of this study are as follows:

(i) to determine the prevalence of distress in papillary thyroid cancer patients just before RIT,

(ii) to examine the distress-related sociodemographic and some clinical variables,

(iii) to examine the relationship between distress and perceived social support,

(iv) to identify the factors predict distress.

This is the first study to examine distress before RIT in patients with papillary thyroid cancer.

METHOD

Procedures and participants

This study was conducted in the Nuclear Medicine inpatient treatment unit for one year. The sample of this study consists of thyroid cancer patients hospitalized in the Nuclear Medicine Clinic to receive RIT. Inclusion criteria include being between the ages of 18-65, being literate, having mental functions at a level to understand what they read, and agreeing to participate in the study. Illiteracy, psychotic disorder, dementia or mental disability, alcohol or substance addiction were exclusion criteria. After applying the exclusion criteria, 143 papillary thyroid cancer patients, aged 18-65 were recruited. 58 patients were excluded from the study because they were illiterate and one patient did not agree to participate in the study. Informed consent was obtained from all patients.

In our sample, levothyroxine is discontinued approximately one month before admission to the hospital. All patients were hypothyroid when placed on RIT. On the first day of admission to the Nuclear Medicine Clinic inpatient unit, the patients were subjected to a psychiatric examina-

tion consisting of a semi-structured clinical inter-view according to by the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV-TR) (6). They were asked to complete the distress ther-mometer, perceived social support, and hospital anxiety and depression scale. They received RIT on the 2nd day of their hospitalization and entered the isolation process.

All procedures were approved by the ethics com-mittee of Dr. Abdurrahman Yurtaslan Research and Educatian Hospital with the decision num-bered 2014-10/117.

Measures

Sociodemographic data form: A form prepared by the researchers in order to obtain socio-demo-graphic data. It includes age, gender, education level, marital status, income level and medical his-tory. The patients were asked if they had any addi-tional physical illness. For patients who reported having an additional physical illness, they were specified as having a comorbid physical illness.

Semi-structured clinical interview: Clinical inter-views were conducted with the patients by a psychi-atrist working in the field of psychooncology.

Distress Thermometer (DT): It is a self-report scale that developed by National Comprehensive Cancer Network which measures distress levels (7). Patients are asked to rate their distress in the last week from 0 (no distress) to 10 (extreme distress). Then, the patients are asked to fill in whether they have experienced any of the problems (yes / no) in the problem list (PL) in the last week. There are five categories in PL: practical problems, family problems, emotional problems, spiritual / religious concerns, and physical problems. In the study con-ducted with cancer patients in Turkey, it was stated that 4 cut-off points have optimal sensitivity and specificity in screening the psychological distress (8).

*Hospital Anxiety and Depression Scale (HADS):*The HADS is a 14-item self-report questionnaire (9). It consists of two subscales measuring anxiety

(HADS-A) and depressive symptoms (HADS-D). Each subscale consists of 7 items scored between 0 and 3 and results in a total score of 21. Participants are asked to choose the option that best describes their feelings during the previous week. Its validity and reliability in Turkish was made by Aydemir, and the scale was found to be reliable in terms of screening for symptoms of depression and anxiety in those with physical illness. In the Turkish popu-lation, 10/11 cut-off score for anxiety subscale and 7/8 for depression subscale was found. Accordingly, those who score above these scores are considered at risk (10).

The Multidimensional Scale of Perceived Social Support (MSPSS): The scale was developed by Zimet et al. (11). The MSPSS consists of 12 items that are grouped into three factors: Family (items 3, 4, 8 and 11), Friends (items 6, 7, 9 and 12) and Significant Others (items 1, 2, 5 and 10). The respondents were asked to indicate their level of agreement to each item by using a seven-point Likert scale ranging from 1 "very strongly disagree" to 7 "very strongly agree" (11). Sub-scale scores are obtained by summing the scores of the four items in each sub-scale. The total score of the scale is obtained by adding up all the sub-scale scores. The subscale and total scores range are 4-28 and 12-84 points, respectively. Higher scores show that the perceived social support is high. The validity and reliability study of the MSPSS Turkish form has been conducted by Eker et al. (12,13).

Statistical Analysis

Study data were analyzed using the Statistical Package for Social Sciences (SPSS) for Windows version 20.0. Descriptive statistics were presented as mean, standard deviation, median and frequency (percentage). Normal distribution of the variables was tested by Kolmogorov-Smirnov Test. Chi-square test was used to evaluate the relationships between categorical variables. Mann-Whitney U test was used for non-parametric variables. Spearman correlation analysis was used to examine the correlation among distress thermometer, hospi-tal anxiety-depression, perceived social support. For the multivariate analysis, the possible factors identified with univariate analyses were further

entered into the logistic regression analysis to determine independent predictors of distress. A logistic regression was performed to determine which clinical and psychosocial variables best predict distress among thyroid cancer patients. Hosmer-Lemeshow goodness of fit statistics were used to assess model fit. A 5% type-I error level was used to infer statistical significance.

RESULTS

A total of 143 patients were recruited in the study. Those with a cut-off score of 4 and above were included in the distressed (D) group, 3 and below were included in the non-distressed (ND) group. Of the 143 patients 78.3% were in D group and 21.7% were in ND group. The mean of DT was 5.51± 2.80 points.

Table 1 shows the comparison of sociodemographic features and some clinical variables between D and ND group. There are statistically significant differences between two groups in terms of monthly income. In the D group, low and high income (p=0.023), psychopathology as a result of psychiatric evaluation (p=0.037), comorbid physical illness (p=0.016) were more than the ND group. The presence of comorbid physical illness was stated according to the patient's statement.

As a result of the psychiatric evaluation, depression was detected in 13% (n = 19) and anxiety disorder in 11% (n = 15), while no psychopathology was detected in 76% (n = 109). Of the fifteen patients diagnosed with anxiety disorder, ten were diagnosed with generalized anxiety disorder, three with mixed anxiety-depressive disorder, and two with panic disorder. Of the cases, 9% (n=13) were using psychiatric treatment when they were included in the study. When evaluated according to the HADS cut-off score, 56.6% of the cases had a HADS-D cut-off score of 8 and above, and 30.8% had a HADS-A cut-off score of 11 and above.

There are statistically significant differences between two groups in terms of HADS-A (p<0.001), HADS-D (p<0.001) scores and all subscale scores of MSPSS (family (p=0.003), friends (p=0.004), significant others (p=0.002), total

Table 1. *Comparison of D and ND Groups in terms of Sociodemographic Features and Some clinical variables*

	Distressed (n=112) DT≥4	NonDistressed (n=31) DT≤3	χ²/ z	p
Gender *n (%)*				
Female	87 (77.7)	23 (74.2)		0.684[b]
Male	25 (22.3)	8 (25.8)		
Age *(M,SD)*	42.74 (11.28)	39.40 (11.96)	-1.422	0.157[a]
Education year *(M,SD)*	7.63 (0.39)	9.38 (0.89)	-1.849	0.064[c]
Marital status *n (%)*				
Married	87 (77.7)	24 (77.4)	0.001	0.976[b]
Not married	25 (22.3)	7 (22.6)		
Monthly income *n (%)*				
Low income	78 (83)	16 (17)		
Middle income	18 (40)	12 (60)	7.520	**0.023[b]**
High income	16 (84.2)	3 (15.8)		
Occupation status *n (%)*				
Working	22 (19.6)	4 (12.9)	0.741	0.599[b]
Not working	90 (80.4)	27 (87.1)		
Cancer in the family *n (%)*				
Yes	54 (48.2)	12 (38.7)	0.883	0.347[b]
No	58 (51.8)	19 (61.3)		
Social support *n (%)*				
Yes	58 (51.8)	15 (48.4)	0.112	0.738[b]
No	54 (48.2)	16 (51.6)		
Having RAI treatment before *n (%)*				
Yes	17 (15,2)	5 (16.1)	0.017	0.897[b]
No	95 (84,8)	26 (83.9)		
Comorbid Physical illness *n (%)*				
Yes	35 (31.2)	3 (9.7)	5.791	**0.016[b]**
No	77 (68.8)	28 (90.3)		
Psychiatric treatment history *n (%)*				
Yes	33 (29.5)	4 (12.9)	3.472	0.062[b]
No	79 (70.5)	27 (87.1)		
Psychiatric examination result *n (%)*				
Having psychopathology	31 (27.7)	3 (9.7)	4.341	**0.037[b]**
No psychopathology	81 (72.3)	28 (90.3)		

Abbreviations: n= Number of patients; M=Mean; SD=Standard Deviation; n= Number of patients a=Independent Samples Test; b=Chi-square test; c=Mann-Whitney U Test; p<0.05 is significant

(p<0.001)). In the D group, HADS-A and HADS-D scores were higher, all subscale scores of MSPSS were lower (Table 2).

Table 2. *Comparison of Distressed and NonDistressed Groups in terms of scale scores*

	Distressed (n=112) DT≥4	NonDistressed (n=31) DT≤3	χ²/z	p
HADS-A score *M (SD)*	9,51 (4,31)	5,51 (4,04)	-4,431	**<0.001[c]**
HADS-D score *M (SD)*	9,34 (4,28)	4,90 (3,87)	-4,726	**<0.001[c]**
MSPSS scores *M (SD)*				
Family *M (SD)*	23.5 (6.32)	26.4 (4.53)	-2,975	**0.003[c]**
Friends *M (SD)*	18.6 (9.08)	26.4 (4.53)	-2,899	**0.003[c]**
Significant Others *M (SD)*	16.9 (9.18)	22.5 (8.02)	-3,173	**0.002[c]**
Total *M (SD)*	59.1 (19.9)	72.5 (14.8)	-3,590	**<0.001[c]**

Abbreviations: M =Mean SD=Standard Deviation; n=Number of patients; HAD=Hospital Anxiety Depression Scale; c=Mann-Whitney U Test.

According to the list of problems in the distress thermometer, family (p=0.001), emotional (p<0.001) and physical problems (p<0.001) were higher in the D group (Table 3).

There was a moderate positive correlation between DT and HAD-A (r=0.556, p<0.01) and HAD-D (r=0.487, p<0.01) scores. There was a low level of negative correlation between DT and the perceived social support scale family (r= -0.279, p=0.001), friend (r= -0.235, p=0.005), special person (r= -0.297, p<0.01) and total scores (r=-0.302, p<0.01).

Table 3. *Comparison of Distressed and NonDistressed Groups in terms of problem list*

	Distressed (n=112) DT≥4	NonDistressed (n=31) DT≤3	χ²/ z	p
Practical problems *n (%)*				
Yes	36 (32.1)	6 (19.4)	1.914	0.167[a]
No	76 (67.9)	25 (80.6)		
Family problems *n (%)*				
Yes	50 (44,6)	4 (16.1)	10.407	**0.001[a]**
No	62 (55,4)	27 (83.9)		
Emotional problems *n (%)*				
Yes	88 (78.6)	14 (45.2)	13.252	**<0.001[a]**
No	24 (21.4)	17 (54.8)		
Spiritual/religious concerns *n (%)*				
Yes	11 (9.8)	3 (9.7)	0.001	0.981[a]
No	101 (90.2)	28 (90.3)		
Physical problems *n (%)*				
Yes	102 (91.1)	17 (54.8)	22.822	**<0.001[a]**
No	10 (8.9)	14 (45.2)		

Abbreviations: n= Number of patients; a= Chi-square test; p<0.05 is significant

Variables that were statistically significant such as monthly income, psychiatric examination result, HADS-D, HADS-A, MSPSS total and all subscale scores, family, emotional and physical problems in terms of problem list were entered into a logistic regression model. Backward method was used to identify the predictors of distress.The overall model fit was found to be significant with the model correctly classifying almost 83% of cases. The data are given in Table 4. According to the results of logistic regression analysis, family problems, physical problems, HADS-D scores are important predictors of distress (p<0.05). If the patient had family problems, risk of being exposed to distress increased 5.2 times. If the patient had physical problems, risk of being exposed to distress increased 4.7 times. One unit increase in HADS-D score increases the probability of distress 1.2 times.

DISCUSSION

In the present study, the prevalence of distress was high. Those with distress had low and high income, more psychopathology, higher anxiety and depressive symptoms, lower social support and more comorbid physical illness. Family problems, physical problems and depresive symptoms were predictors of distress. Among sociodemographic characteristics, only income level was found to be associated with distress. It is stated that up to 80% of patients with cancer attribute their distress to financial stressors (14,15). Ramsey et al. states that the financial distress has a negative impact on health outcomes in cancer patients (16). Mongelli et al. reported that financial distress is common among thyroid cancer survivors and is associated with worse health-related quality of life (17). It has been reported that low and high income levels increase the risk of distress in cancer patients, cause higher symptom burden and are associated with low quality of life (4,18,19). In our study, low and high-income patients had more distress. The financial burden of cancer may be a source of dis-

tress for patients with low income. High-income individuals are expected to have a high quality of life. Cancer can contribute to the distress of these individuals by causing serious deterioration in quality of life.

RIT is one of the five most frequently expressed psychological difficulties related distress in thyroid cancer patients (20). In the present study, the distress prevalence is 78%. In various studies, the prevalence of distress in thyroid cancer patients has been reported as 43% (20,21). In our study, there could be many reasons for the high distress rate. Hypothyroidism can be one of the causes. Levothyroxine is discontinued 4 weeks before RIT. It is reported that the decrease in cognitive functions after levothyroxine withdrawal impaired health-related quality of life in differentiated thyroid cancer patients (22,23,24). Another reason for the high distress rates may be the high rate of depressive symptoms in this sample. While the rate of depressive symptoms in patients with thyroid cancer was 17-37% in studies, it was much higher with 57% in our study (2,23,25). Indeed, we found that depressive symptoms predicted distress in this sample group. This high rate of depressive symptoms may be related to the overlapping symptomatology of hypothyroidism and depressive symptoms. Several studies have found that anxiety and depression are the most common mental symptoms in patients with thyroid cancer (2,23,25). A recent study reported that thyroid cancer survivors experience high levels of distress, anxiety, and depression even years after the end of their treatment (26). In the literature, anxiety symptoms are reported in 19-26% of patients with thyroid cancer. This data was close to the rate of 31% in our study. In studies conducted with thyroid cancer patients, it is seen that anxiety and depression levels are generally expressed by scale scores (23,25) and no psychiatric evaluation is performed by the Diagnostic and Statistical Manual of Mental Disorders (6). Scale scores above the cut-off score do not indicate the presence of psychopathology. While patients with psychopathology need professional mental health services defined as psychotherapy, pharmacotherapy or emergency psychiatric care, social support will be sufficient for patients experiencing subthreshold depressive and anxiety symptoms (14). It is important to distinguish the presence of psy-

Table 4. Results of Logistic Regressions on some Characteristics related with Distress

	OR	95% CI	p
Family problems n (%)			
No		Reference	
Yes	5.201	1.417-19.095	**0.013**
Physical problems			
No		Reference	
Yes	4.700	1.460-15.134	**0.009**
Emotional Problems			
No		Reference	
Yes	2.432	0.881-6.719	0.086
HADS-D	1.219	1.058-1.405	**0.006**
MSPSS score-friends	0.935	0.871-1.002	0.057

Abbreviations:OR: Odds ratio; CI: Confidency Interval; Dependent variable: Being exposed to distress
Cox & Snell R²= 0,454; Nagelkerke R ²=0,432; -2 Log likelihood = 99,605

chopathology in the proper use of health care resources. In this study, the rate of psychopathology was higher in those with distress. As a result of the psychiatric evaluation, 13% of the patients were diagnosed with depressive disorder and 11% with anxiety disorder. When depressive and anxiety symptoms were compared with other studies, the rate of depressive disorder and anxiety disorder was lower as a result of the psychiatric evaluation. It is stated that interview-defined depression and anxiety is less common in patients with cancer (27). These data show that the patients have subthreshold depressive and anxiety symptoms that do not meet the diagnosis of a psychiatric disorder and cause distress (28).

Perceived social support is important in managing distress. In our study, the distress of the patients increased with the increase in anxiety and depressive symptoms, and decreased with the increase of social support. Social support is a powerful instrument that can mediate the effects of difficult life stressors, reduce depression and anxiety levels, improve quality of life, and reduce the incidence of mood disorders (29). It has been reported that psychological nursing interventions reduce distress and improve quality of life in thyroid cancer patients (30,31). Perhaps these interventions may have an effect by increasing the patients' perception of social support. On the other hand, in this study, although perceived social support is low in the distressed group, it does not predict distress. Family problems, which can be considered as the negative aspect of social support, seem to predict distress. In a previous study, it was emphasized that communication with family and friends facilitates the isolation process (32). We interpret the isolation process as a period in which individuals will need more family support. In our study, the presence of family problems increased distress 5.2 times. Family problems may have contributed to the distress by reducing the perception of social support in patients during the isolation process. Therefore, it is important for clinicians to pay attention to the social support status of the patient and to provide social support resources in reducing distress. In the presence of family problems, family-focused psychotherapeutic interventions before RIT can help patients spend the isolation process with less distress. We found that family, emotional,

and physical problems were more common in the distressed group. Family and physical problems may have caused emotional problems. In a recent study, emotional problems was associated with a higher level of distress in patients with thyroid cancer. It has been reported that irritability and sadness from emotional symptoms and fatigue from physical symptoms predict distress (33). In this study, family problems, physical problems, and HADS-D scores were predictors of distress. We found that physical problems increased the risk of distress by 4.7 times. The cases in our study being hypothyroid and having accompanying medical diseases might have contributed to the physical problems. We asked the patients about the number of RITs, previous psychiatric illnesses, and comorbid physical illnesses, considering that they may contribute to distress (33). We found that only comorbid medical diseases were more in the D group. It is reported that the anxiety of cancer patients intensifies with the presence of comorbidity (34). The presence of comorbidities such as coronary artery disease, stomach disease, skin disease and diabetes in cancer patients adversely affects the quality of life and causes more stress than normal controls (19,35). The higher prevalence of comorbid diseases in the distressed group may have caused the patients to experience more physical problems.

Study Limitations

There are some limitations of our study. This is a cross-sectional study and its causality inference results are limited.

Secondly, the psychiatric evaluation of the patients in our study by a psychiatrist according to the Diagnostic and Statistical Manual of Mental Disorders constitutes both the strengths and weaknesses of the study. Because we think that routine psychiatric evaluation of patients hospitalized for RIT is both time consuming and not easy to apply in oncology practice. On the other hand, to say that there is a clinical level of psychopathology through the scales applied to the patients will cause unnecessary psychiatric overdiagnosis.

Thirdly, we did not include illiterate women which

could have affected the results. The number of illiterate women was one third of the cases included in the study.

CONCLUSION

Ultimately, the prevalence of distress is high in thyroid cancer patients just before the RIT. Since psychopathology, anxiety and depressive symptoms are more common in the distressed group, it is important for the clinician to request psychiatric consultation from distressed patients before RIT. It is important to recognize the presence of psychopathology. Because while it is necessary to get help from a psychiatrist in the presence of psychopathology, social support resources may be sufficient for adaptation in the presence of distress. This distinction is important in the proper use of health care resources. On the other hand, although perceived social support is low in the distressed group, it does not predict distress. Family problems, which can be considered as the negative aspect of social support, seem to predict distress. In the presence of family problems, family-focused psychotherapeutic interventions before RIT can help patients spend the isolation process with less distress. While evaluating the distress of the patients just before RIT, even if they enter the isolation process, their social support situations should be taken into account. Since physical problems also predict distress, it is important to consider the medical and psychosocial factors as a whole when assessing the patient's distress.

This was the first study to investigate distress just before RIT. Longitudinal follow-up studies that assess distress levels before and after RIT and include distress intervention are needed in the further researches.

Conflict of Interest: The authors declare no potential conflict of interest.

Data Availability Statement: Data availability: The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Correspondence address: Assoc. Prof. Hayriye Dilek Hamurcu , Ahmet Andiçen Onkoloji Hastanesi, Mahmut Esat Bozkurt Cad. No: 2 Psikiyatri Kliniği, Kolej/ Çankaya/ Ankara 06640 Ankara, Türkiye hdyalvac@hotmail.com

REFERENCES

1. Baker KH, Feldman JE. Thyroid cancer: a review. Oncol Nurs Forum 1993; 20: 95-104.

2. Tagay S, Senf W, Schöpper N, Mewes R, Bockisch A, Görges R. Protective factors for anxiety and depression in thyroid cancer patients. Z Psychosom Med Psychother 2007; 53:62-74. doi: 10.13109/zptm.2007.53.1.62.

3. Sisson JC, Freitas J, McDougall IR, Dauer LT, Hurley JR, Brierley JD, Edinboro CH, Rosenthal D, Thomas MJ, Wexler JA, Asamoah E, Avram AM, Milas M, Greenlee C. Radiation safety in the treatment of patients with thyroid diseases by radioiodine 131I : practice recommendations of the American Thyroid Association. Thyroid 2011; 21: 335-46. doi: 10.1089/thy.2010.0403. Epub 2011 Mar 18. Erratum in: Thyroid 2011;21:689.

4. Syrowatka A, Motulsky A, Kurteva S, Hanley JA, Dixon WG, Meguerditchian AN, Tamblyn R. Predictors of distress in female breast cancer survivors: a systematic review. Breast Cancer Res Treat 2017; 165:229-245. doi: 10.1007/s10549-017-4290-9.

5. Evans M, Fisher EB. Social Isolation and Mental Health: The Role of Nondirective and Directive Social Support. Community Ment Health J 2022; 58:20-40. doi:10.1007/s10597-021-00787-9

6. First MB, Spitzer RL, Gibbon M, & Williams JB. User's guide for the Structured Clinical Interview for DSM-IV axis I disorders SCID-I: clinician version. American Psychiatric Pub, 1997.

7. National Comprehensive Cancer Network. NCCN clinical practice guidelines in oncology (NCCN Guidelines Version 1.2021- September 30, 2020. Distress Management. www.nccn.org. Accessed November 24, 2020.

8. Özalp E, Cankurtaran ES, Soygür H, Geyik PO, Jacobsen PB. Screening for psychological distress in Turkish cancer patients. Psychooncology 2007; 16:304-311. doi: 10.1002/pon.1059.

9. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. Acta Psychiatr Scand 1983; 67:361-370. doi: 10.1111/j.1600-0447.1983.tb09716.x.

10. Aydemir Ö. Validity and reliability of Turkish version of Hospital Anxiety and Depression Scale. Turkish Journal of Psychiatry 1997; 8:280-287.

11. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The multidimensional scale of perceived social support. J Pers Assess 1988; 52:30–41. doi:10.1207/s15327752jpa5201_2.

12. Eker D, Arkar H. Perceived social support: psychometric properties of the MSPSS in normal and pathological groups in a developing country. Soc Psychiatry Psychiatr Epidemiol 1995;

30: 121-6. doi: 10.1007/BF00802040.

13. Eker D, Arkar H, Yaldız H. Factorial structure, validity, and reliability of Revised Form of the Multidimensional Scale of Perceived Social Support. Turk Psikiyatri Derg 2001; 12:17-25.

14. Dekker J, Braamse A, Schuurhuizen C, Beekman ATF, van Linde M, Sprangers MAG, Verheul HM. Distress in patients with cancer - on the need to distinguish between adaptive and maladaptive emotional responses. Acta Oncol 2017; 56: 1026-1029. doi: 10.1080/0284186X.2017.1280848.

15. Yabroff KR, Dowling EC, Guy GP Jr, Banegas MP, Davidoff A, Han X, Virgo KS, McNeel TS, Chawla N, Blanch-Hartigan D, Kent EE, Li C, Rodriguez JL, de Moor JS, Zheng Z, Jemal A, Ekwueme DU. Financial hardship associated with cancer in the United States: Findings from a population-based sample of adult cancer survivors. J Clin Oncol 2016; 34:259-67. doi: 10.1200/JCO.2015.62.0468.

16. Ramsey SD, Bansal A, Fedorenko CR, Blough DK, Overstreet KA, Shankaran V, Newcomb P. Financial insolvency as a risk factor for early mortality among patients with cancer. J Clin Oncol 2016; 34: 980-986. doi: 10.1200/JCO.2015.64.6620.

17. Mongelli MN, Giri S, Peipert BJ, Helenowski IB, Yount SE, Sturgeon C. Financial burden and quality of life among thyroid cancer survivors. Surgery. 2020; 167:631-637. doi:10.1016/j.surg.2019.11.014

18. Subramaniam S, Kong YC, Chinna K, Kimman M, Ho YZ, Saat N, Malik RA, Taib NA, Abdullah MM, Lim GC, Tamin NI, Woo YL, Chang KM, Goh PP, Yip CH, Bhoo-Pathy N. Health-related quality of life and psychological distress among cancer survivors in a middle-income country. Psychooncology 2018; 27:2172-2179. doi: 10.1002/pon.4787.

19. Buchmann L, Ashby S, Cannon RB, Hunt JP. Psychosocial distress in patients with thyroid cancer. Otolaryngol Head Neck Surg 2015; 152:644-9. doi: 10.1177/0194599814565761.

20. Rubic M, Kuna SK, Tesic V, Samardzic T, Despot M, Huic D. The most common factors influencing on quality of life of thyroid cancer patients after thyroid hormone withdrawal. Psychiatr Danub 2014; 26:520-527.

21. Roerink SH, de Ridder M, Prins J, Huijbers A, de Wilt HJ, Marres H, Repping-Wuts H, Stikkelbroeck NM, Timmers HJ, Hermus AR, Netea-Maier RT. High level of distress in long-term survivors of thyroid carcinoma: results of rapid screening using the distress thermometer. Acta Oncol 2013; 52:128-137. doi: 10.3109/0284186X.2012.723822.

22. Burmeister LA, Ganguli M, Dodge HH, Toczek T, DeKosky ST,Nebes RD. Hypothyroidism and cognition: preliminary evidence for a specific defect in memory. Thyroid 2001; 11:1177–1185. doi:10.1089/10507250152741037.

23. Tagay S, Herpertz S, Langkafel M, Erim Y, Bockisch A, Senf W, Görges R. Health-related quality of life, depression and anxiety in thyroid cancer patients. Qual Life Res 2006; 15:695-703. doi: 10.1007/s11136-005-3689-7.

24. Jung MS, Visovatti M. Post-treatment cognitive dysfunction in women treated with thyroidectomy for papillary thyroid carcinoma. Support Care Cancer 2017; 25:915-923. doi: 10.1007/s00520-016-3481-y.

25. Yoo SH, Choi-Kwon S. Changes in quality of life and related

factors in thyroid cancer patients with radioactive iodine remnant ablation. J Korean Acad Nurs 2013;43:801-811. doi:10.4040/jkan.2013.43.6.801.

26. Dionisi-Vici, M., Fantoni, M., Botto, R., Nervo, A., Felicetti, F., Rossetto, R., Gallo, M., Arvat, E., Torta, R., & Leombruni, P. (2021). Distress, anxiety, depression and unmet needs in thyroid cancer survivors: a longitudinal study. Endocrine, 74(3), 603–610. https://doi.org/10.1007/s12020-021-02786-y.

27. Mitchell AJ, Chan M, Bhatti H, Halton M, Grassi L, Johansen C, Meader N. Prevalence of depression, anxiety, and adjustment disorder in oncological, haematological, and palliative-care settings: a meta-analysis of 94 interview-based studies. Lancet Oncol 2011; 12:160-74. doi: 10.1016/S1470-2045(11)70002-X.

28. Linden W, Vodermaier A, Mackenzie R, Greig D. Anxiety and depression after cancer diagnosis: prevalence rates by cancer type, gender, and age. J Affect Disord 2012; 141:343-351. doi: 10.1016/j.jad.2012.03.025.

29. Pinar G, Okdem S, Buyukgonenc L, Ayhan A. The relationship between social support and the level of anxiety, depression, and quality of life of Turkish women with gynecologic cancer. Cancer Nurs 2012; 35:229-35. doi: 10.1097/NCC.0b013e31822c47bd.

30. Wu, L., & Zou, Y. (2020). Psychological nursing intervention reduces psychological distress in patients with thyroid cancer: A randomized clinical trial protocol. Medicine, 99(38), e22346. https://doi.org/10.1097/MD.0000000000022346

31. Wang S, Huang H, Wang L, Wang X. A Psychological Nursing Intervention for Patients With Thyroid Cancer on Psychological Distress and Quality of Life: A Randomized Clinical Trial. J Nerv Ment Dis. 2020; 208:533-539. doi:10.1097/NMD.0000000000001157.

32. McGrath PN, Fitch MI. Patient perspectives on the impact of receiving radioactive iodine: implications for practice. Can Oncol Nurs J 2003; 13:152-163. doi: 10.5737/1181912x133152156.

33. Hung CT, Chen YJ, Chan JC, Fang YY, Li IF, Shih HH, Ku HY, Chiu WT, Lee YH. Psychological distress, social support, self-management ability and utilization of social resources for female patients with cancer in oncology outpatient settings in Taiwan. Support Care Cancer 2020; 28: 3323-3330. doi: 10.1007/s00520-019-05143-y.

34. Durak Batıgün A, Hisli Şahin N, Karslı Demirel E. Stress, self-perception and interpersonal style in patients with physical illnesses. Turk Psikiyatri Derg 2011; 22:245-254.

35. Sauer C, Weis J, Faller H, Junne F, Hönig K, Bergelt C, Hornemann B, Stein B, Teufel M, Goerling U, Erim Y, Geiser F, Niecke A, Senf B, Weber D, Maatouk I. Impact of social support on psychosocial symptoms and quality of life in cancer patients: results of a multilevel model approach from a longitudinal multicenter study. Acta Onco 2019; 58:1298-1306. doi: 10.1080/0284186X.2019.1631471.