

Research Article

Exploring the interplay between sociodemographic factors, clinical characteristics, and anxiety levels in cancer patients: a cross-sectional study

Kanser hastalarında sosyodemografik faktörler, klinik özellikler ve anksiyete düzeyleri arasındaki ilişki: Kesitsel bir çalışma

Asim Armagan Aydin*¹, Erkan Kayikcioglu²

¹Health Sciences University Antalya Training and Research Hospital, Department of Medical Oncology, Antalya, Turkey

²Istinye University School of Medicine, Department of Medical Oncology, Istanbul, Turkey

Abstract

Aim: The primary aim of this study was to examine the correlation between anxiety levels and the sociodemographic and clinical characteristics in cancer patients undergoing chemotherapy. Precisely identifying patient cohorts with varying psychological responses can substantially enhance cancer treatment through the improved integration of personalized therapeutic options.

Material and Methods: A cross-sectional study involving 199 cancer patients at a medical oncology department utilized a questionnaire and the Hamilton Anxiety Scale (HAM-A) to collect sociodemographic and clinical data. Statistical analysis assessed anxiety levels and their correlation with various factors.

Results: The study included 199 cases with an average age of 57.28 ± 11.76 years, consisting of 47.7% males and 52.3% females. Women exhibited a higher average age (55.18 ± 1.15 years) compared to men (59.58 ± 1.17 years). Among the participants, 165 were married, and 41.2% were high school graduates, with 67.8% not employed. Colorectal and pancreaticobiliary system tumors were most common (26.1%), while central nervous system tumors were least common (0.5%). The majority (59.3%) had metastatic cancer, and 55.8% were undergoing classical chemotherapy. The average Hamilton Anxiety Scale (HAM-A) score was 25.63 ± 7.90 , with women scoring higher than men (26.67 ± 0.77 vs. 24.48 ± 0.80 , $p=0.025$). Minor anxiety was observed in 46.7%, while 53.3% experienced major anxiety. Genitourinary system tumors had the highest HAM-A score (26.08 ± 1.54), and metastatic patients and those undergoing immunotherapy reported higher anxiety levels. No significant relationships were found between anxiety scores and sociodemographic factors, cancer type, comorbidity, cancer stage, treatment method, Eastern Cooperative Oncology Group Performance Status, or radiotherapy.

Conclusions: The study highlighted gender differences in anxiety, aligning with existing literature. Sociodemographic factors, except gender, showed no significant correlation with anxiety levels. Specific cancer types and advanced stages demonstrated higher anxiety, emphasizing the need for targeted psychosocial support. This research contributes to understanding the complex interplay between sociodemographic factors, clinical characteristics, and anxiety in cancer patients. The findings support the development of targeted interventions for specific patient groups, aligning with the broader goal of providing empathetic and comprehensive cancer care.

Keywords: Cancer, Anxiety, Hamilton Anxiety Scale (HAM-A), Sociodemographic factors

Corresponding author*: Asim Armagan Aydin, Health Sciences University Antalya Training and Research Hospital, Department of Medical Oncology, Antalya, Turkey

E-mail: drarmaganaydin@gmail.com

Orcid: 0000-0001-8749-9825

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Öz

Amaç: Bu çalışmanın temel amacı, kemoterapi gören kanser hastalarında anksiyete düzeyleri ile sosyodemografik ve klinik özellikler arasındaki ilişkiyi incelemektir. Farklı psikolojik tepkilere sahip hasta gruplarını doğru belirlemek, kişiselleştirilmiş tedavi seçeneklerinin daha iyi entegrasyonu yoluyla kanser tedavisini önemli ölçüde iyileştirebilir.

Gereç ve Yöntemler: Tıbbi onkoloji bölümünde 199 kanser hastasını içeren bu kesitsel çalışmada, Hamilton Anksiyete Ölçeği (HAM-A) anketi kullanılarak sosyodemografik ve klinik veriler toplandı. İstatistiksel analiz, anksiyete düzeylerini ve çeşitli faktörlerle olan ilişkilerini değerlendirdi.

Bulgular: Çalışma, yaş ortalaması 57.28 ± 11.76 olan, %47.7'si erkek ve %52.3'ü kadın olan 199 vaka içeriyordu. Kadınlar, erkeklere kıyasla daha yüksek bir ortalama yaşa sahipti (sırasıyla 55.18 ± 1.15 ve 59.58 ± 1.17). Katılımcıların 165'i evliydi ve %41.2'si lise mezunuydu, %67.8'i ise çalışmıyordu. Kolorektal ve pankreatik-biliyer sistem tümörleri en yaygın olanıydı (%26.1), merkezi sinir sistemi tümörleri ise en az yaygın olanıydı (%0.5). Katılımcıların çoğunluğu (%59.3) metastatik kansere sahipti ve %55.8'i klasik kemoterapi alıyordu. Ortalama Hamilton Anksiyete Ölçeği (HAM-A) puanı 25.63 ± 7.90 idi ve kadınlar, erkeklere kıyasla daha yüksek puan aldı (26.67 ± 0.77 ve 24.48 ± 0.80 , $p=0.025$). Katılımcıların %46.7'sinde hafif anksiyete gözlemlendi, %53.3'ünde ise ciddi anksiyete yaşandı. Genitoüriner sistem tümörleri en yüksek HAM-A puanına sahipti (26.08 ± 1.54), metastatik hastalar ve immünoterapi alanlar daha yüksek anksiyete seviyelerini bildirdi. Anksiyete puanları ile sosyodemografik faktörler, kanser türü, eşlik eden hastalıklar, kanser evresi, tedavi yöntemi, Eastern Cooperative Oncology Group Performans Durumu veya radyoterapi arasında anlamlı bir ilişki bulunamadı.

Sonuçlar: Çalışma, anksiyetede cinsiyet farklılıklarını vurgulayarak mevcut literatürle uyumludur. Cinsiyet dışındaki sosyodemografik faktörlerin anksiyete seviyeleriyle anlamlı bir ilişkisinin olmadığı ortaya çıkmıştır. Belirli kanser türleri ve ileri evreler daha yüksek anksiyete göstermiştir, psikososyal destek ihtiyacının özellikle bu gruptaki hastalarda desteklenmesini gerektirir. Bu araştırma, kanser hastalarında sosyodemografik faktörler, klinik özellikler ve anksiyete arasındaki karmaşık etkileşimi anlamamıza katkı sağlamaktadır.

Anahtar Kelimeler: Kanser, anksiyete, Hamilton Anksiyete Ölçeği (HAM-A), sosyodemografik faktörler

Introduction

Cancer, a formidable adversary to physical health, introduces a profound emotional upheaval for those affected. The journey from cancer diagnosis to treatment encompasses a spectrum of psychological responses, shaping the overall experience of individuals facing this formidable challenge. Understanding the intricate interplay between cancer diagnosis and the psychological aspects of this profound moment is essential for providing holistic and patient-centered care.

Receiving a cancer diagnosis is a pivotal moment in an individual's life, often marked by an influx of emotions ranging from shock and fear to uncertainty and anxiety. The impact of this revelation extends beyond the physical realm, reaching deep into the psychological and emotional core of the individual. Each patient's response to a cancer diagnosis is a unique and personal experience, influenced by various factors, including the type and stage of cancer, individual coping mechanisms, and the availability of a robust support system.

The emotional impact of a cancer diagnosis extends beyond

the immediate shock, encompassing long-term psychological aspects that influence coping mechanisms, treatment adherence, and overall quality of life. The significance of understanding these psychological dimensions lies in the potential to tailor interventions and support systems that address the unique needs of each patient.

In this exploration, we delve into the existing literature, drawing on both quantitative and qualitative insights, to paint a comprehensive picture of the psychological responses observed in cancer patients post-diagnosis. By shedding light on these psychological aspects, we aim to contribute to the growing body of knowledge that informs healthcare professionals, researchers, and policymakers about the intricate nuances of cancer care.

The comprehensive review conducted by Dinapoli L. et al. highlights the prevalence of anxiety, distress, depression, and posttraumatic stress disorder among breast cancer patients, emphasizing the need for ongoing psychotherapeutic and supportive interventions throughout the oncological journey

[1]. Numerous studies conducted on patients monitored with various cancer diagnoses have investigated psychological disorders, including depression and anxiety [2,3,4,5].

In a study conducted by Naser and colleagues on anxiety and cancer, it was concluded that the prevalence of anxiety approaches 50%, particularly in cancers with high incidence rates such as lung, prostate, and breast cancer [6]. Additionally, 15% of these patients required supplementary medical treatments for the management of anxiety [6]. In a large multicenter cohort study conducted by Goerling and colleagues on the frequency and severity of anxiety in cancer patients, it was demonstrated that the risk of anxiety significantly increases in cancer patients. Furthermore, the study emphasized the importance of the challenges in managing anxiety in patients with advanced-stage cancer [7]. In a study conducted by Vitale and colleagues evaluating the relationship between anxiety and depression in cancer patients and gender differences, it was found that women are more open to expressing their experiences with anxiety and depression compared to men [8]. However, the rate of anxiety among men was also notably high [8]. The study demonstrated that anxiety impacts daily life and poses challenges in treatment for both genders [8].

Building upon this foundation, our study seeks to establish a framework for a compassionate, patient-centric care model. This model aims to address not only the physiological manifestations of the disease but also its emotional dimensions, thereby acknowledging and comprehending the psychological complexities linked with a cancer diagnosis.

Material and Methods

This study was conducted following the approval granted by the Ethics Committee of Health Sciences University Antalya Training and Research Hospital, as per the decision numbered 315/2023 dated 29.10.2023. The study involved 220 participants aged 18-75, who sought care at the Medical Oncology Department of Health Sciences University Antalya Training and Research Hospital between 02.11.2023-03.12.2023 and who provided informed consent. Twenty-one participants were excluded from the study due to missing data.

For data collection, a questionnaire encompassing socio-demographic and clinical information and the Hamilton Anxiety Scale (HAM-A) were administered to individuals admitted to the Medical Oncology Department of the Hospital. The socio-demographic survey form included

questions about age, gender, education level, marital status, employment status, income level, and smoking status. The clinical data survey form inquired about comorbidities, cancer type, cancer stage at diagnosis, the treatment administered, and whether radiotherapy was applied.

The HAM-A scale, utilized to assess anxiety levels and symptom distribution, comprises 14 questions measuring both physical and psychological symptoms, utilizing a five-point Likert-type scale [9]. The total score ranges from 0 to 56, with each question scored between 0 and 4. Scores of 0-5 indicate no anxiety, 6-14 indicate minor (mild-moderate) anxiety, and 15 and above indicate major (severe) anxiety [10].

Statistical analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences, version 27 (SPSS Inc., Chicago, IL). Continuous variables are presented as median, mean \pm standard deviation, while categorical variables are expressed as numbers and percentages. Normal distribution was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. Data conforming to normal distribution were compared using the Student T test, while the Mann Whitney U and Kruskal Wallis tests were employed for data not complying with normal distribution. Results with a p-value below 0.05 were considered statistically significant.

Results

The average age of the 199 cases who applied to the Medical Oncology department was 57.28 ± 11.76 years. Ninety-five (47.7%) of the cases were male, and 104 (52.3%) were female. The average age of women in the study was 55.18 ± 1.15 years, while the average age of men was 59.58 ± 1.17 years. One hundred sixty-five cases were married, and among them, 163 had children. Among the cases participating in the study, 41.2% were high school graduates, and 67.8% were not working. Ninety-four percent of the cases in the study resided in Antalya. Table 1 summarizes the sociodemographic data of the cases.

In our study, colorectal and pancreaticobiliary system tumors were the most frequently observed (26.1%), while central nervous system tumors were the least common (0.5%). While 118 (59.3%) of the cases were metastatic patients, 111 (55.8%) were undergoing classical chemotherapy treatment. ECOG PS was 1 in 150 cases (75.4%). Table 1 summarizes the clinical data of the cases.

The average HAM-A score for the cases in our study was 25.63 ± 7.90 . The average HAM-A score was 26.67 ± 0.77 in

women and 24.48 ± 0.80 in men. When categorizing anxiety into minor (mild-moderate) and major (severe) based on the HAM-A scale. According to the HAM-A scale, 93 cases (46.7%) exhibited minor anxiety, while 106 cases (53.3%) had major anxiety.

The HAM-A score average was found to be higher in women than in men, and a statistically significant difference was found between them ($p=0.025$). There was no significant difference between sociodemographic data such as educational status, marital status, income status, occupational status, presence of children, and living alone and HAM-A score averages ($p>0.05$). Table 1 summarizes the sociodemographic data along with the HAM-A score averages (anxiety levels) of the patients. Among different cancer types, the highest average Ham A score was found in genitourinary system tumors (26.08 ± 1.54), while the lowest was observed in colorectal and pancreatic/biliary system tumors (22.96 ± 0.97). Metastatic patients were found to have higher anxiety than early-stage patients. Higher anxiety was found in those receiving immunotherapy treatment compared to other types of treatment. No significant relationship was found between age, cancer type, smoking status, comorbidity, cancer stage at diagnosis, treatment method used, ECOG PS, and radiotherapy treatment, and HAM-A score averages ($p > 0.05$). Table 2 summarizes the clinical data along with the HAM-A score averages (anxiety levels) of the patients.

Table 1. The distribution of sociodemographic characteristics among the patients and their association with anxiety levels.

Categorical features	n(%)	HAM-A score average	p value
Educational Background			
Illiterate	41(20.6%)	27.39±1.02	0.051
Primary school	64(32.2%)	25.47±0.88	
High school	82(41.2%)	25.46±1.01	
University	12(6.0%)	21.58±1±80	
Marital status			
Married	165 (82.9%)	25.75±0.61	0.369
Single	34 (17.1%)	25.03±1.44	
Child			
Yes	36(18.1%)	26.06±0.63	0.078
No	163(81.9%)	23.67±1.16	
Professional status			
Working	64(32.2%)	24.84±1.03	0.160
Not working	135(67.8%)	26.0±0.66	
Income Status			
Low	23(11.6%)	26.04±1.60	0.680
Modarate	132(66.3%)	26.05±0.68	
High	44(22.1%)	24.66±1.23	

Abbreviations: HAM-A; Hamilton Anxiety Rating Scale, statistical significance; (P <0.05)

Table 2. The distribution of clinical characteristics among the patients and their correlation with anxiety levels.

Categorical features	n(%)	HAM-A score average	p value	
Age (year)				
<58	95 (47.7%)	26.23±0.81	0.239	
≥ 58	104 (52.3%)	25.08±0.78		
Gender				
Female	104 (52.3%)	26.67±0.77	0.025	
Male	95 (47.7%)	24.48±0.80		
Smoking				
No	129 (64.8%)	25.97±0.72	0.330	
Yes	70 (35.2%)	25.0±0.88		
Comorbidity				
No	153 (76.9%)	25.65±0.63	0.803	
Yes	46 (23.1%)	25.57±1.25		
ECOG PS				
0	49 (24.6%)	26.02±1.15	0.689	
1	150 (75.4%)	25.5±0.64		
Cancer type				
Lung cancer	43 (21.6%)	27.46±1.42	0.082	
Breast cancer	54 (27.1%)	27.55±1.05		
Prostate cancer	8 (4%)	27.88±2.97		
Colorectal and pancreaticobiliary cancer	52 (26.1)	22.97±1.00		
Genitourinary cancer	12 (6%)	26.08±1.54		
Gynecologic cancer	16 (8%)	24.63±1.84		
Head and neck cancer	11 (5.5%)	24.36±2.43		
Central Nervous System cancer	3 (3.7)	25.00±2.00		
Cancer stage at diagnosis				
Early stage	81 (40.7%)	24.70±0.93		0.301
Metastatic stage	118 (59.3%)	26.26±0.69		
Treatment received				
Classical chemotherapies	111 (55.8%)	25.34±0.78	0.352	
Immunotherapy	21 (10.6%)	29.0±1.97		
Chemotherapy + immunotherapy	22 (11.1%)	25.45±1.71		
Smart drugs	6 (3.0%)	26.33±1.76		
Chemotherapy + smart drugs	39 (19.6%)	24.62±1.01		
Radiotherapy treatment				
No	181 (91.0%)	25.85±0.59	0.388	
Yes	18 (9.0%)	23.44±1.89		

Abbreviations: ECOG PS; Eastern Collaborative Oncology Group performance status, HAM-A; Hamilton Anxiety Rating Scale, statistical significance; (P <0.05)

Discussion

The results of our study shed light on the intricate relationship between cancer diagnosis, socio-demographic factors, clinical

characteristics, and anxiety levels in patients undergoing cancer treatment. The journey from cancer diagnosis to treatment is a multifaceted experience that profoundly influences the psychological well-being of individuals. Understanding the nuanced aspects of this experience is crucial for developing comprehensive and patient-centered care strategies.

Our findings revealed that gender significantly correlates with anxiety levels, with women exhibiting higher anxiety scores compared to men. A study in newly diagnosed cancer patients conducted in Iran found that anxiety was more common in women [11], while a study in operated lung cancer patients found that anxiety was more common in women [12]. In a study conducted in Germany in young cancer patients, anxiety was more common in women [13]. This aligns with existing literature indicating that gender can play a role in the emotional responses to a cancer diagnosis [14,15,16]. However, other sociodemographic factors such as age, educational background, marital status, employment status, income level, and smoking status did not show significant correlations with anxiety levels. This suggests that while gender may be a notable factor, the impact of other sociodemographic variables on anxiety levels may be more complex and multifactorial.

The type of cancer and its stage at diagnosis emerged as important factors influencing anxiety levels [14]. Breast cancer patients and those diagnosed at advanced stages exhibited higher anxiety scores. This underscores the need for tailored psychosocial support for individuals facing specific cancer types or advanced disease stages. Additionally, our study found that metastatic patients and those undergoing immunotherapy treatment reported higher anxiety levels. This emphasizes the emotional toll associated with the severity of the disease and certain treatment modalities.

The recognition of these associations holds implications for the development of patient-centered care strategies. Musical interventions, nurse-led educational interventions, using mindfulness-based stress reduction techniques have been shown to lower anxiety levels in cancer patients [17,18,19]. Tailoring interventions based on gender, cancer type, and disease stage can optimize the effectiveness of support systems. Psychosocial interventions focusing on anxiety management should be integrated into the overall cancer care plan, with particular attention to high-risk groups identified in this study.

Despite valuable insights gained, the current study has certain limitations. Due to its cross-sectional design, there are constraints in establishing causal relationships, and the

focus on a specific seasonal period may affect generalizability. Similar to many studies inferring higher levels of emotional stress among advanced cancer patients, it should be noted that variable circumstances regarding cancer screening and early diagnosis awareness among the population where the study was conducted could influence the outcomes. In the future, there is a critical need for comprehensive research based on larger cohorts and long-term follow-up regarding the relationship between cancer and anxiety.

Conclusion

This study contributes to the growing body of knowledge on the psychological aspects of cancer care. By understanding the interplay between sociodemographic factors, clinical characteristics, and anxiety levels, healthcare professionals can enhance the development of targeted interventions that address the unique needs of cancer patients. This holistic approach aligns with the broader goal of providing empathetic and comprehensive care that extends beyond the physical aspects of the disease.

Declaration of conflicting interests

The authors declare no potential conflicts of interest regarding the research, authorship, or publication of this study.

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Ethics Statement

This study was approved by the Institutional Review Board of Health Sciences University Antalya Training and Research Hospital and Antalya Provincial Health Directorate (Approval Number: 2023/315). Before initiating the study, written informed consent was obtained from all participants.

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