RESEARCH ARTICLE

Analyzing Depressive Symptoms Among Elderly Cancer Patients: A Comprehensive Examination of Demographic and Medical Correlates

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Abstract

Objective: This study aimed to explore the relationship between depressive symptoms and demographic as well as health-related variables in elderly individuals diagnosed with cancer. **Methods:** A cohort of 50 elderly cancer patients participated in the study. Data collection involved the completion of surveys and assessments encompassing demographic characteristics, medical profiles, levels of depression, cognitive functioning, activities of daily living, and perceived social support. **Results:** Findings revealed that among the elderly participants, 45% experienced mild depression, 20% exhibited moderate depression, and 5% showed severe depression. Depression levels were found to be linked to marital status (P = 0.03), with widowed individuals reporting the highest depression rates (80%) and single individuals reporting the lowest (4%). Living arrangements were significantly associated with depression (P = 0.012), with participants cohabiting with their partner and children showing lower depression rates (6%) compared to those living solely with their children (40%). Additionally, depression showed a significant correlation with income (P = 0.01), as individuals reporting insufficient income for living expenses displayed higher levels of depression (58%). Furthermore, depression was notably linked to chronic health conditions like diabetes and respiratory ailments (P = .023), with individuals grappling with respiratory issues reporting the highest depression scores. **Conclusion:** Recognizing and addressing factors such as marital status, living situation, income level, and the presence of chronic illnesses hold the potential for healthcare professionals to tailor interventions effectively to meet the specific requirements of this vulnerable demographic. This tailored approach has the capability to contribute significantly to enhancing the overall well-being and mental health outcomes of elderly cancer patients.

Keywords: Depressive symptoms- geriatric oncology- oncology nursing- psycho-social factors

Introduction

Cancer stands as a prevalent and severe chronic ailment in today's landscape, imposing significant stress on affected individuals [1]. The World Health Organization (WHO) reports the discovery of 10 million new cancer cases annually, with estimations indicating a projected rise to 15 million by 2020 [2]. Receiving a cancer diagnosis disrupts and disturbs various facets of an individual's life, encompassing social, financial, familial, physical, and psychological well-being [3, 4].

The elderly face an elevated cancer risk due to prolonged exposure to carcinogens, with over half of cancer cases and more than three-quarters of cancer-related mortalities occurring in individuals aged 65 and above [2-4]. A retrospective analysis published in 2020 unveiled that the median age for cancer diagnoses in Jordan was 56 years, with a split of 60 years for males and 52 years for females. The breakdown of cancer instances by age group revealed that approximately 44% of Jordanian cases emerged in individuals aged 60 and above, with a higher occurrence rate among males (56.5%) compared to females (43.5%) within the same age bracket. Cancer significantly impacts patients, rendering them more susceptible to feelings of anxiety and despair. The prevalence of depression in cancer patients varies, ranging from 17% to 26%, influenced by factors such as cancer type, treatment phase, and diagnostic approaches [5, 6].

Depression encompasses a spectrum of symptoms such as diminished pleasure, social isolation, decreased motivation, reduced resilience to setbacks, alterations in weight and appetite, fatigue, early onset of tiredness,

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disrupted sleep patterns, sporadic headaches, menstrual irregularities, constipation, and dry mouth [7, 8].

n the elderly population, depression often presents with physical indications like decreased bone density, heightened susceptibility to diabetes and hypertension, and cognitive irregularities that may resemble dementia [9].

Risk factors for depression in older individuals diverge from those observed in younger age groups [10]. Common contributors to depression in the elderly include limitations in performing daily tasks due to chronic ailments, persistent pain, cognitive impairments, restricted retirement income, deficient social backing, and diminished life satisfaction [11]. Numerous studies have delved into depression among Jordanian cancer patients [12-14]. However, the researcher's database search unveiled a research gap concerning the holistic investigation of factors influencing depression in the elderly, particularly addressing depression linked to both aging and cancer.

Given the elevated prevalence of depression among the elderly and its substantial impact on their quality of life, especially considering the unique factors influencing depression in this demographic, a comprehensive treatment strategy for depression is indispensable. This strategy should encompass concurrent conditions, cognitive and functional constraints, and should not rely solely on pharmaceutical interventions. The study aimed to shed light on how demographic and medical attributes interconnected with depressive symptoms could enhance the quality of life for elderly cancer patients, thereby advancing healthcare provision and planning for this demographic segment.

Materials and Methods

Setting and participants

This cross-sectional study was conducted between July and August 2020 at a governmental hospital in north Amman, Jordan, involving 50 elderly cancer patients selected through convenient sampling. This research component is part of a larger project investigating the relationship between depression symptoms and social support among elderly cancer patients, incorporating variables such as demographics, medical profiles, and symptoms. The study specifically delved into the correlation between depressive symptoms and demographic and health-related factors in this population of elderly cancer patients. Inclusion criteria comprised individuals aged 60 or above, with a cancer diagnosis spanning at least 6 months, and a willingness to participate. Exclusion criteria included an Abbreviated Mental Test (AMT) score below 4.

Ethical approval

The study received ethical approval from the pertinent institutional review board (HHCR-321-2020). Prior to participation, all participants provided formal declarations of informed consent.

Data collection procedure and instruments

The investigator briefed the participants on the study's objectives and obtained their written informed consent. Subsequently, eligible patients were identified, and they were administered the Activities of Daily Living Scale (ADL) [15], the Multidimensional Perceived Social Support Scale [16], the Geriatric Depression Scale (GDS) [17], the Abbreviated Mental Test (AMT) [18], and a questionnaire covering demographic and medical characteristics for completion and data collection.

The Geriatric Depression Scale (GDS) comprises 15 items and requires "Yes" or "No" responses. It classifies scores as follows: 0–4 for no depression, 5–8 for mild depression, 9–11 for moderate depression, and 12–15 for severe depression. Malakouti et al. [17] evaluated the validity and reliability of the GDS in a study involving Iranian elderly adults. Their study reported a reliability coefficient of 0.9, a specificity of 0.84, and a Cronbach's alpha of 0.9 for the scale [17].

Cognitive function was assessed using the 10-item Abbreviated Mental Test (AMT). A score of 6 or below on this test indicates cognitive impairment, with 0–3 suggesting severe impairment and 4–6 indicating mild impairment. Foroughan et al. [18] established a cutoff score of 6 in the Iranian version of the test, demonstrating a sensitivity of 85% and a specificity of 99% [18].

Social support was evaluated based on self-reported perceptions of assistance from family, friends, or partners, utilizing the 12-item Multidimensional Perceived Social Support Scale [16]. Participants rated items on a five-point Likert scale (1 to 5), with total scores ranging from 12 to 60. Higher scores indicate better perceptions of social support. The scale exhibited high reliability, with reported Cronbach's alpha values of 0.92 and ranging from 0.85 to 0.91 [16]. The Katz Activities of Daily Living (ADL) scale was employed to assess functional abilities in six areas: bathing, dressing, toileting, transferring, continence, and feeding [15]. Each area is scored dichotomously, with 0 representing lower ability and 1 indicating higher ability. Scores range from 0 to 6, with higher scores reflecting greater independence. The scale demonstrated strong reliability, with a reported Cronbach's alpha of 0.81 [15].

Statistical analysis

Descriptive statistics were employed to calculate the mean and standard deviation as central and dispersion indices in the frequency distribution table. Data analysis was performed using SPSS software version 27.0 [19], with the results interpreted through the Mann-Whitney and Kruskal-Wallis tests.

Results

The study included 50 elderly participants, with a median age of 70 ranging from 60 to 80 years. Among the participants, 56% were female, and educational levels varied: 34% were illiterate, 48% had primary to junior high school education, 14% held a high school diploma, and 4% had a university education. Living arrangements were diverse, with 40% cohabiting with children, and 36% residing with both their spouse and children. Furthermore, 58% of participants reported insufficient income to meet their living expenses (Refer to Table 1). The average

Table 1. Analyzing Demographic Factors' Influence on Average Depression Scores Among Elderly Individuals with Cancer (n=50).

Demographic Factors	n (%)	Mean±SD of Depression Scores	P
Gender			
Female	28 (56)	5.30±1.40	0.22
Male	22 (44)	5.11±1.54	
Marital status			
Single	2 (4)	5.45±2.01	0.03
Married	8 (16)	5.06±2.48	
Widowed	40 (80)	6.17±1.32	
Living arrangements			
Living with Spouse	9 (18)	5.33±1.57	0.012
Children	20 (40)	6.47±1.42	
Spouse and children	3 (6)	6.82±1.46	
Alone	18 (36)	5.24±2.77	
Frequency of contact with children			
Daily	2 (4)	4.77±1.40	0.04
Weekly	10 (20)	6.00±1.50	
Monthly	34 (68)	6.33±1.88	
No contact	4 (8)	5.30±2.87	
Education			
Illiterate	17 (34)	5.56±3.34	0.632
Primary	24 (48)	5.33±1.12	
High school diploma	7 (14)	4.66±4.1	
University	2 (4)	4.32±2.93	
Income			
Less than expenses	29 (58)	5.43±1.45	0.01
Matching expenses	21 (42)	4.72±1.44	
Diabetes			
Yes	9 (18)	5.32±1.66	0.034
No	41 (82)	7.22±1.34	
Respiratory			
Yes	8 (16)	6.11±4.22	0.05
No	42 (84)	3.33±1.46	
Kidney			
Yes	3 (6)	5.53±1.63	0.237
No	47 (94)	4.54±1.36	
Heart			
Yes	6 (12)	5.72±1.43	0.085
No	44 (88)	5.2±2.47	
Hypertension			
Yes	6 (12)	5.41±1.61	0.784
No	47 (94)	7.34±1.54	
Gastrointestinal			
Yes	2 (4)	8.19±1.51	0.087
No	48 (96)	7.20±2.45	
Muscular			
Yes	1 (2)	7.50±1.26	0.739
No	49 (98)	7.20±2.28	
Skeletal			
Yes	2 (4)	6.00±1.43	0.401
No	48 (96)	6.24±2.39	
Neurological			
Yes	4 (8)	5.49±1.02	0.344
No	46 (92)	5.37±1.50	

SD, Standard deviation; n, number; K, Kruskal-Wallis

Table 2. Mean Depression Scores in Elderly Cancer Patients by Cancer Type (n=50)

Cancer	n(%)	Mean±SD
Colon		
Yes	8 (16)	3.16±3.25
No	42 (84)	4.42±3.16
Esophageal		
Yes	7 (14)	4.16±2.66
No	43 (86)	4.21±3.34
Breast		
Yes	5 (10)	4.24±1.15
No	44 (90)	4.02±1.5
Prostate		
Yes	4 (8)	2.56±1.53
No	44 (92)	5.30±1.66
Lung		
Yes	12 (24)	5.00±1.6
No	38 (76)	4.08±1.43

SD, Standard deviation

depression score was 5.24 ± 1.43, with 30% exhibiting no depression, 45% experiencing mild depression, 20% demonstrating moderate depression, and 5% displaying severe depression. Depression in elderly patients showed significant associations with income (P = 0.01), marital status (P = 0.03), living arrangement (P = 0.012), and frequency of interactions with their children (P = 0.04). Single elderly individuals had the lowest depression scores (4%), whereas widowed individuals had the highest (80%). Those cohabiting with their partner and children had lower depression levels (6%) compared to those living solely with their children (40%). More frequent daily contact with children correlated with lower depression levels (4%), while monthly contact was linked to higher depression levels (68%). Additionally, depression prevalence was lower among elderly patients whose income matched their expenses (42%) than those with income deficits (58%). Gender and educational attainment did not demonstrate a significant correlation with depression among the study participants.

Patients diagnosed with chronic illnesses, especially diabetes and respiratory diseases, displayed elevated levels of depression. The study identified a significant correlation between depression and these health conditions, notably highlighting that individuals coping with respiratory issues reported the highest depression scores (P = 0.023).

Significantly, colon cancer patients exhibited lower scores on the depression scale in comparison to patients diagnosed with other types of cancer (Table 2). Depression manifested associations with symptoms like shortness of breath, discomfort, vomiting, hair loss, and nausea, but no significant correlations were observed with the presence of metastasis (Table 3). Moreover, the study did not find substantial relationships between depression and the disease stage (P = 0.09) or the frequency of chemotherapy (P = 0.08).

Table 3. Comparative Analysis of Mean Depression Scores in Elderly Cancer Patients by Complications and Disease Stage (n=50)

Complication	n (%)	Mean±SD	P
Metastasis			
Yes	7 (14)	1.11±0.23	0.87
No	43 (86)	1.23±0.23	
Pain			
Yes	24 (48)	3.04±0.57	0.003
No	26 (52)	1.12±1.12	
Nausea			
Yes	8 (16)	4.15±1.56	0.021
No	42 (84)	2.11±0.66	
Vomiting			
Yes	14 (28)	1.65±1.89	0.002
No	36 (72)	2.43±1.34	
Hair loss			
Yes	8 (16)	3.34±1.27	0.003
No	42 (84)	1.65±1.78	
Shortness of breath			
Yes	11 (22)	3.22±1.65	0.01
No	39 (78)	2.98±1.54	
Stage of the disease			
Stage two	40 (80)	2.34±1.65	0.09
Stage three	10 (20)	3.23±1.89	

SD, Standard deviation

Discussion

The prevalence of mild depression was reported at 45%, moderate depression at 20%, and severe depression at 5% in this study. Overall, the incidence of depression among older cancer patients in this research stood at 70%, surpassing rates observed in comparable studies involving elderly populations [20, 21]. For instance, Wang et al. indicated a prevalence of depression symptoms at 40.2% and anxiety symptoms at 35.3% in older cancer patients [20]. Meanwhile, Wiskemann et al. [21] found depression prevalence at 38.5% and anxiety at 30.7% in older adults with cancer [21].

Heidarzadeh et al. documented a depression rate of 55% among 142 elderly cancer patients, with 43% experiencing severe depression and 12% reporting mild depression [22]. Contrastingly, Weiss Wiesel et al. discovered a depression prevalence of 12.5% within a cohort of 500 elderly cancer patients in the United States [23].

Regarding specific cancer types, Niedzwiedz et al.[24] investigated depression prevalence in cancer patients and found an overall rate of 13% [24] However, this prevalence varied based on the cancer type. Notably, lung cancer patients exhibited the highest depression prevalence at 47.2%, followed by pancreatic cancer patients (33-50%), breast cancer patients (1.5-46%), and colorectal cancer patients (11-44%) [24].

Discrepancies in reported depression rates can be attributed to several factors, including variations in data collection methods, diverse cutoff points, and distinct participant characteristics. These participant attributes encompass variables such as comorbidities, cancer stage, frequency of chemotherapy, complications, levels of social support, and an individual's coping capacity with the illness.

In this study, elevated levels of depression were notably observed among widowed elderly patients, a finding consistent with research by Hung et al. [25] .This underscores the potential impact of having family support nearby on increased social interactions and enhanced self-esteem. Additionally, a lower prevalence of depression was noted among patients with a university education or higher, as indicated by Keyes et al. [26].

Keyes et al. [26] investigated the association between educational attainment and depression in adults in the United States. The study revealed that individuals with a university education were less prone to depression compared to those with lower education levels. Furthermore, the research highlighted that this relationship was more pronounced among women than men. These findings underscore the importance of higher education in reducing the prevalence of depression. This information is valuable for healthcare providers to grasp the risk factors for depression and tailor interventions effectively for high-risk patients [26].

In a study published in 2018, Zajacova and Lawrence found that individuals with a college degree had a lower likelihood of experiencing a major depressive episode during their lifetime in comparison to those with less than a high school diploma [27]. The research also suggested that this association was stronger among individuals residing in low-income households [27].

Conversely, Mashhadi et al. [28] observed in their study that patients with higher levels of education exhibited significantly higher rates of depression. These disparities in depression rates among individuals with varying education levels may be linked to factors such as patients' awareness of their prognosis and cancer diagnosis. It is possible that illiterate patients experience lower levels of depression due to a limited understanding of their medical condition [28].

In this study, individuals with incomes that aligned with their expenses demonstrated the lowest depression scores, with statistical significance noted in this disparity. Moreover, it is observed that a low income can render elderly individuals more susceptible to stress, anxiety, and depression [27].

In the present investigation, lung cancer patients exhibited the highest levels of depression, highlighting a significant correlation between depression and colon cancer compared to other cancer types. These outcomes contrast with a study by Hartung et al. [29], where the highest depression prevalence was observed among patients with prostate cancer, and those with malignant melanoma experienced the least depression, as opposed to individuals with pancreatic cancer, thyroid issues, and cerebral tumors [29].

Limitations

This study did not consider potential religious

differences among participants. The sample size was relatively small, potentially limiting the generalizability of the findings to a broader population. Expanding the sample size and incorporating more diversity could offer a more representative insight into the target population.

In conclusion, the study's findings suggest a heightened incidence of depression among elderly cancer patients compared to other age groups, which could potentially influence disease progression, overall quality of life, and survival outcomes. To address this challenge, it is recommended to implement screening procedures and supportive counseling interventions to prevent depression and assist elderly cancer patients in effectively managing their condition.

Author Contribution Statement

Mr. Rami Hejase: Conceived, designed the experiments, performed the experiments. Dr. Arul Vellaiyan: wrote the paper. Dr. Ahmad Mahmoud Saleh: Analyzed and interpreted the data and wrote the paper. Dr. Hassanat R. Abdel-Aziz: Contributed reagents, materials, analysis tools, or data and wrote the paper. Dr. Ahmad Khaleel AlOmari: Confirm results. Dr. Abrar Ahmad AlOmari: Revised the paper.

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Conflict of Interests
The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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