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# Psychiatric Morbidity among Patients with Neoplasm

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## Abstract

**Background and objectives:** Confronting a serious illness like cancer has the ability to trigger feelings of depression, anxiety, and other mental health challenges in a considerable portion of patients. This study aims to evaluate the prevalence of psychiatric disorders in cancer patients.

**Methods:** The research was carried out as a cross-sectional study to assess Psychiatric morbidity at Rizgary Teaching Hospital-Oncology department and Nanakali Hospital for Hematology and Oncology, in Erbil city, Iraq. The study was initiated in April 2023 until April 2024. General health questionnaire-28 was used as a screening tool to detect psychiatric morbidity among cancer patients.

**Results:** The majority of the patients showed presence of psychiatric morbidity (59.6%) according to the General Health Questionnaire-28 scale. The mean General Health Questionnaire-28 score of the patients were 26.7±10, the mean score for somatic symptoms was 8.5±3.7, the mean score for anxiety and insomnia was 7.5±4.4, the mean score for social dysfunction was 7.6±1.2, and the mean score for severe depression was 3.3±3.9. Younger age is significantly associated with presence of psychiatric morbidity (46±9.52 vs. 51±6.33) ($p=0.001$). Gender was also significantly associated with having psychiatric morbidity, as females showed the highest prevalence (66.2%) compared to males (40%) ($p<0.05$). There is a statistically significant association, between type of treatment and presence of psychiatric morbidity($p=0.039$).

**Conclusion:** The mental health issues are prevalent among individuals with cancer. Factors such as age, gender, and treatment type play a significant role in determining the likelihood of these issues occurring.

**Keywords:** Cancer, General Health questionnaire, Psychiatric comorbidity

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## Introduction

The global cancer burden, in terms of both new cases and deaths, is escalating swiftly. This trend is fueled by factors such as population growth and aging, along with shifts in the prevalence and distribution of major cancer risk factors. many of which are associated with socioeconomic development.[1] The environmental pollution and the import of food containing carcinogenic substances after 2003 contributed to increase in the incidence of cancer in Iraq.[1] According to Sung et al.'s statistics in a study conducted in 2020, the incidence of new cancer cases worldwide was 19.3 million.[1] Facing a life-threatening illness like cancer has the potential to induce depression, anxiety, and various mental health issues in a significant number of patients.[2,3] Moreover, the management of the disease and the limitations it imposes on health can pose an additional challenge for patients. Specifically, fatigue and pain have been identified as factors negatively impacting the well-being and daily lives of patients.[4] Many individuals facing cancer across its various stages commonly encounter mental health disorders, particularly affective and anxiety disorders, referred to as common mental disorders.[5,6] This burden becomes particularly pronounced post-diagnosis and during treatment initiation, adding significantly to the psychological strain on patients. Given the well-established link between mental health issues, cancer survival rates and treatment adherence it's imperative to address these challenges attentively.[7,8] Left unattended, these mental health issues can have far-reaching consequences, not only for patients, including the development of chronic illnesses, but also for the healthcare system, resulting in escalated costs.[9] Studies have highlighted that psychiatric comorbidity correlates with increased treatment frequency and prolonged hospital stays.[9] Depression and anxiety can be anticipated in cancer patients based on factors such as medical aspects (disease type, and tumor stage), physical well-being (e.g., pain and fuctioning), sociodemographic traits (e.g., gender, and age), and psychosocial elements (e.g., family/social support).[10,11] The occurrence of psychiatric issues after the onset of cancer rises directly in correlation with the, advanced illness, level of disability and pain. This increase can be attributed to various factors, such as the biological effects of the malignancy, side effects of specific chemotherapeutic drugs, mutilation, grief over predicted losses, and the fear of death.[12] Hence, it is essential to promptly and accurately diagnose and appropriately treat comorbid mental disorders. This not only aims to enhance the quality of life but also aims to diminish adverse effects on the cancer course, treatment adherence and efficacy, length of hospital admission, and potentially the survival and prognosis.[13,14] Currently, findings regarding factors predicting mental disorders are inconclusive. The aims of this study were to 1) assess the prevalence of psychiatric morbidity among cancer patients; 2) identify the risk factors of developing psychiatric illness among cancer patients.

## Patients and methods

The cross-sectional study was conducted at Rizgary Teaching Hospital – Oncology department and Nanakali Hospital for Hematology and Oncology, in Erbil city, Iraq. The study was initiated in April 2023 until April 2024. The questionnaire's development and adaptation phase lasted for 3 months, while the data collection extended over 6 months. The subsequent stages of data analysis and thesis writing was completed within 3 months. Ethical considerations were diligently addressed, and approval was obtained from The Kurdistan Board of Medical Specialties. Each patient provided written informed consent after a comprehensive explanation of the study's


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methodology and purpose, with a strong emphasis on their freedom to decide on participation. A questionnaire was developed in Kurdish and Arabic language. In the first part of the questionnaire demographic data such age, gender, ethnicity, residency, educational level, employment status, and marital status were recorded. In the second part, clinical characteristics, and information regarding the disease were mentioned. Severity of the disease was categorized as mild, moderate and severe based on the Brief Fatigue Inventory adapted from Mendoza et al.'s study.[15] In the third part the General Health Questionnaire (GHQ-28), was used. The General Health Questionnaire (GHQ) is a tool used to screen for minor psychiatric issues in everyday people, whether they're in the community or visiting non-psychiatric healthcare settings like primary care or general medical clinics.[16] The Kurdish and Arabic versions of GHQ-28 questionnaire were adapted from previous researches, in which the process of forward translation and back translation, and pilot studies were used for the purpose of translation. The scoring system used in our study was (0, 1, 2, 3), where (0) corresponds to not at all, (1) corresponds to no more than usual, (2) corresponds to rather more than usual, (3) much more than usual. The scores (0, and 1) were considered positive response, and (2, and 3) were considered negative response. The patients for the study were chosen through a convenience sampling method, encompassing all patients, both males and females, attending Rizgary Teaching Hospital - Oncology department and Nanakali Hospital for Hematology and Oncology outpatient clinic during the study period, and expressing interest in participating in the study. The questionnaire was distributed among cancer patients and recollected upon completion. For illiterate patients, the primary investigator read the questions and recorded their answers.

Inclusion criteria were 1) Both males and females, 2) Ages between 18-65 years, 3) Willing to participate. Exclusion criteria were 1) Poor physical health, 2) Previous psychiatric diagnosis, 3) Refusing to complete the questionnaire/ partially completed questionnaires. Researchers assessed the socio-economic status (SES) of the patients using a 21-point scoring system. This total score was then divided into three groups: low (1-7 points), medium (8-14 points), and high (15-21 points) SES categories.[17] Statistical analysis was done by using SPSS (Statistical Package for Social Sciences) version 25. Categorical variables were presented as percentages, while continuous variables were expressed as mean ± SD, and median when deemed necessary.

## Results

The questionnaire was distributed among 120 cancer patients, however, only 99 patients completed and submitted their answers to the investigator. The average age of the patients was 48.78±8.7 years. Most of the cases (52.5%) were older than 50 years of age. More females (74.7%) than males (25.3%) participated in the study. The majority of the cases were Kurds (91.9%), had attended primary school (34.3%) only, lived in urban areas (62.6%), and were of middle socioeconomic status. A large portion of the study population were unemployed (80.8%) and the majority were married (94.9%). Table (1) displays the demographic data of the study population.

**Table (1):** Demographic characteristics of the study population

| Characteristic | | n (%) |
|---|---|---|
| Mean age±SD, years | 48.78±8.7 | |
| Age group | ≤35 years | 9 (9.1%) |
| | 36-50 years | 38 (38.4%) |
| | >50 years | 52 (52.5%) |
| Gender | Male | 25 (25.3%) |
| | Female | 74 (74.7%) |
| Educational level | Illiterate | 29 (29.3%) |
| | Primary-school | 34 (34.3%) |


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| | | |
|---|---|---|
| | High-school | 19 (19.2%) |
| | Bachelor's degree | 16 (16.2%) |
| | Higher education | 1 (1%) |
| Residency | Urban | 62 (62.6%) |
| | Rural | 37 (37.4%) |
| Ethnicity | Kurd | 91 (91.9%) |
| | Arab | 7 (7.1%) |
| | Christian | 1 (1%) |
| Employment status | Employed | 16 (16.2%) |
| | Unemployed | 80 (80.8%) |
| | Private sector | 3 (3%) |
| Socioeconomic status | Low | 33 (33.3%) |
| | Middle | 62 (62.2%) |
| | High | 4 (4%) |
| Marital state | Single | 3 (3%) |
| | Married | 94 (94.9%) |
| | Divorce | 0 (0%) |
| | Widow/widower | 2 (2%) |

The clinical characteristics of the study population are shown in Table (2). The severity of the cancer was mild in 3%, moderate in 66.7%, and severe in 30% of the patients. Duration of the cancer diagnosis was less than 6 months in 20.2%, 6-12 months in 20.2%, and more than 12 months in 59.6% of the cases. Most of the patients had undergone surgery (78.8%), and the majority had received chemotherapy (95.9%). Only 6.1% of the patients were smokers and none of them reported alcohol intake and usage of recreational drugs.

**Table (2):** Clinical characteristics of the study population

| Clinical variables | | |
|---|---|---|
| Severity of the cancer | Mild | 3 (3%) |
| | Moderate | 66 (66.7%) |
| | Severe | 30 (30.3%) |
| Duration of the cancer | <6 months | 20 (20.2%) |
| | 6-12 months | 20 (20.2%) |
| | >12 months | 59 (59.6%) |
| Type of treatment | Medication | 16 (16.2%) |
| | Surgery | 78 (78.8%) |
| | Radiotherapy | 5 (5.1%) |
| Chemotherapy | Received | 95 (95.9%) |
| | Not received | 4 (4.1%) |
| Smoking status | Smoker | 6 (6.1%) |
| | Non-smoker | 93 (93.9%) |
| Alcohol intake | | 0 (0%) |
| Recreational drug use | | 0 (0%) |

The majority of the patients showed presence of psychiatric morbidity (59.6%) according to the GHQ-28 scale, as shown in Figure (1).

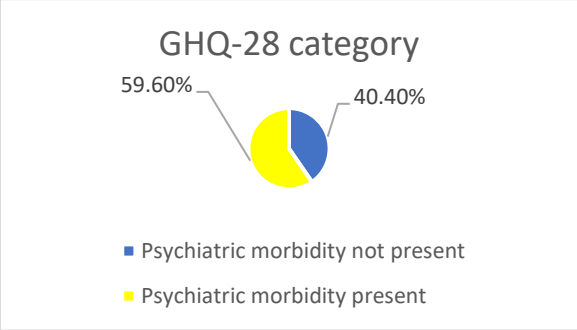


**Figure (1):** Prevalence of psychiatric morbidity among the study population

The mean GHQ-28 score of the patients was 26.7±10, the mean score for somatic symptoms was 8.5±3.7, the mean score for anxiety and insomnia was 7.5±4.4, the mean score for social dysfunction was 7.6±1.2, and the mean score for severe depression was 3.3±3.9, all shown in Table (3).

**Table (3):** Mean score of the GHQ-28 and it's sections

| | Score |
|---|---|
| Mean GHQ-28 score | 26.7±10 |
| Mean score for somatic symptoms | 8.5±3.7 |
| Mean score for anxiety/insomnia | 7.5±4.4 |
| Mean score for social dysfunction | 7.6±1.2 |
| Mean score for severe depression | 3.3±3.9 |

The effect of sociodemographic characteristics on the presence of psychiatric morbidity is shown in Table (4). Younger age is significantly associated with presence of psychiatric morbidity (46±9.52 vs. 51±6.33) (p=0.001). Among age groups we found that patients between 36-50 years of age had the highest prevalence of having psychiatric morbidity, and this finding was statistically significant (p=0.008). Gender was also significantly associated with having psychiatric morbidity, as females showed the highest prevalence (66.2%) compared to males (40%). Interestingly, psychiatric


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morbidity was most common among high school graduates (73.7%), followed by primary school graduates (64.7%), and illiterate patients (55.2%), however this finding was not statistically significant (p>0.05). A larger percentage of patients from rural areas (62.2%) had psychiatric morbidity compared to those from urban areas (58.1%), but this finding was also not statistically significant (p>0.05). More of the unemployed patients (62.5%) had psychiatric morbidity compared to the employed patients (43.8%) (p>0.05). Marital status, ethnicity, and socioeconomic status of the patients, all had no statistically significant association for the presence of psychiatric morbidity.

**Table (4):** The effect of sociodemographic characteristics and presence of psychiatric morbidity.

| Socio-demographic characteristics | | Psychiatric morbidity not present n (%) | Psychiatric morbidity present n (%) | P-value |
|---|---|---|---|---|
| Mean age ± SD, in years | | 51±6.33 | 46±9.52 | 0.001 |
| Age group | ≤35 years | 0 (0%) | 9 (100%) | 0.008 |
| | 36-50 years | 13 (34.2%) | 25 (65.8%) | |
| | >50 years | 27 (51.9%) | 25 (48.1%) | |
| Gender | Male | 15 (60%) | 10 (40%) | 0.02 |
| | Female | 25 (33.8%) | 49 (66.2%) | |
| Educational level | Illiterate | 13 (44.8%) | 16 (55.2%) | 0.257 |
| | Primary-School | 12 (35.3%) | 22 (64.7%) | |
| | High-school | 5 (26.3%) | 14 (73.7%) | |
| | Bachelor's degree | 9 (56.3%) | 7 (43.8%) | |
| | Higher education | 1 (100%) | 0 (0%) | |
| Residence | Urban | 26 (41.9%) | 36 (58.1%) | 0.668 |
| | Rural | 14 (37.8%) | 23 (62.2%) | |
| Employment status | Employee | 9 (56.3%) | 7 (43.8%) | 0.338 |
| | Unemployed | 30 (37.5%) | 50 (62.5%) | |
| | Private sector | 1 (33.3%) | 2 (66,7%) | |
| Marital state | Single | 1 (33.3%) | 2 (66.7%) | 1.000 |
| | Married | 28 (40.4%) | 56 (59.6%) | |
| | Divorce | 0 (0%) | 0 (0%) | |
| | Widow | 1 (50%) | 1 (50%) | |
| Ethnicity | Kurd | 37 (40.7%) | 54 (59.3%) | 0.423 |
| | Arab | 2 (28.6%) | 5 (71.4%) | |
| | Christian | 1 (100%) | 0 (0%) | |
| Socioeconomic status | Low | 11 (33.3%) | 22 (66.7%) | 0.568 |
| | Middle | 27 (43.5%) | 35 (56.5%) | |
| | High | 2 (50%) | 2 (50% | |

Table (5) shows the association between clinical characteristics of the cancer patients and presence of psychiatric morbidity. However statistically insignificant, it's evident that psychiatric morbidity is more prevalent among patients with moderate and severe disease forms (59.1% and 66.7%, respectively) (p>0.05). A statistically significant association was found between type of treatment and having psychiatric morbidity, in which patients who underwent surgery had a higher prevalence of psychiatric morbidity (65%), whereas, the prevalence was least common among patients


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who were on medications for treatment (31.3%) (p=0.039). It's worth mentioning that duration of the disease, receiving chemotherapy, and smoking habit of the patients, had no statistically significant association with having psychiatric morbidity (p>0.05).

**Table (5):** The effects of clinical characteristics on the presence of psychiatric morbidity

| Clinical characteristics | | Psychiatric morbidity not present n (%) | Psychiatric morbidity present n (%) | P-value |
|---|---|---|---|---|
| Severity of the cancer | Mild | 3 (100%) | 0 (0%) | 0.078 |
| | Moderate | 27 (40.9%) | 39 (59.1%) | |
| | Severe | 10 (33.3%) | 20 (66.7%) | |
| Duration of the cancer | <6 months | 9 (45%) | 11 (55%) | 0.811 |
| | 6-12 months | 7 (35%) | 13 (65%) | |
| | >12 months | 24 (40.7%) | 35 (59%) | |
| Type of treatment | Medication | 11 (68.8%) | 5 (31.3%) | 0.039 |
| | Surgery | 27 (34.6%) | 51 (65.4%) | |
| | Radiotherapy | 2 (40%) | 3 (60%) | |
| Chemotherapy | Received | 37 (39.4%) | 57 (60%) | 1.000 |
| | Not received | 2 (50%) | 2 (50%) | |
| Smoking status | Smoker | 1 (16.7%) | 5 (83.3%) | 0.397 |
| | Non-smoker | 39 (41.9%) | 54 (58.1%) | |

Table (6) shows the percentage of response categories in each question. Part A of the questionnaire corresponds to somatic symptoms and the most negative responses were recorded in question A4 (75.8%), followed by question A3 (64.6%), A2 (49.5%), and A7 (46.5%). Questions A1, A5 and A6 provoked positive responses. Part B of the questionnaire corresponds to insomnia and anxiety. Question B3 had the most negative responses (57.6%), then questions B6 (47.5%), B4 (47,5%) and B1 (44.4%). Question B5 provoked the highest percentage of positive responses (61.6%), followed by questions B2 (50.5%), and B7 (42.4%). Part C of the questionnaire measures the social dysfunction of the individual. For the majority of the questions in this section the responses were positive, only question C7 had 49.5% negative response. Part D of the questionnaire corresponds to severe depression. All the questions in this section scored positive responses mainly.

**Table (6):** Responses to GHQ-28

| Question No. | Questions | Response category | | | |
|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 |
| A1 | "Been feeling perfectly well and in good health?" | 4% | 77.8% | 15.2% | 3% |
| A2 | "Been feeling in need of a good tonic?" | 33.3% | 16.2% | 49.5% | 1% |
| A3 | "Been feeling run down and out of sorts?" | 14.1% | 17.2% | 64.6% | 4% |
| A4 | "Felt that you are ill?" | 9.1% | 6.1% | 75.8% | 9.1% |
| A5 | "Been getting any pains in your head?" | 57.6% | 16.2% | 22.2% | 4% |
| A6 | "Been getting a feeling of tightness or pressure in your head?" | 58.6% | 14.1% | 23.2% | 4% |


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| | | | | | |
|---|---|---|---|---|---|
| A7 | "Been having hot or cold spells?" | 30.3% | 20.2% | 46.5% | 3% |
| B1 | "Lost much sleep over worry?" | 39.4% | 11.1% | 44.4% | 5.1% |
| B2 | "Had difficulty in staying asleep more once you are off?" | 50.5% | 19.2% | 29.3% | 1% |
| B3 | "Felt constantly under strain?" | 30.3% | 12.1% | 57.6% | 0% |
| B4 | "Been getting edgy and bad-tempered?" | 33.3% | 12.1% | 47.5% | 7.1% |
| B5 | "Been getting scared or panicky for no good reason?" | 61.6% | 18.2% | 17.2% | 3% |
| B6 | "Found everything getting on top of you?" | 33.3% | 11.1% | 47.5% | 8.1% |
| B7 | "Been feeling nervous and strung-up all the time?" | 42.4% | 18.2% | 34.3% | 5.1% |
| C1 | "Been managing to keep yourself busy and occupied?" | 45.5% | 48.5% | 3% | 3% |
| C2 | "Been taking longer over the things you do?" | 4% | 60.4% | 31.3% | 4% |
| C3 | "Felt on the whole you were doing things well?" | 5.1% | 88.9% | 6.1% | 0% |
| C4 | "Been satisfied with the way you've carried out your task?" | 1% | 96% | 3% | 0% |
| C5 | "Felt that you are playing a useful part in things?" | 2% | 97% | 1% | 0% |
| C6 | "Felt capable of making decisions about things?" | 1% | 94% | 4% | 0% |
| C7 | "Been able to enjoy your normal day-to-day activities?" | 2% | 46.5% | 49.5% | 2% |
| D1 | "Been thinking of yourself as a worthless person?" | 63.6% | 17.2% | 18.2% | 1% |
| D2 | "Felt that life is entirely hopeless?" | 55.6% | 8.1% | 34.3% | 2% |
| D3 | "Felt that life isn't worth living?" | 70.7% | 8.1% | 7.1% | 14.1% |
| D4 | "Thought of the possibility that you might make away with yourself?" | 82.8% | 6.1% | 7.1% | 4% |
| D5 | "Found at times you couldn't do anything because your nerves were too bad?" | 66.7% | 15.2% | 17.2% | 1% |
| D6 | "Found yourself wishing you were dead and away from it all?" | 82.8% | 6.1% | 9.1% | 2% |
| D7 | "Found that the idea of taking your own life kept coming into your mind?" | 97% | 0% | 3% | 0% |

## Discussion

Psychiatric morbidity among cancer patients makes the course of treatment and disease control more difficult. The percentage of cancer patients who experience psychiatric illness is large. This indicates that more focus should be put on this issue.[3] In this study, more females (74.7%) participated compared to males (25.3%), in accordance with a study conducted in Spain by Costa-Requena et al. in which they reported a rate of 71.9% of females. [18] The average age of patients was 48.78±8.7 years in our study, which is also relatively similar to Costa-Requena et al.'s findings in which they reported the mean age of patients as 47.96±13.49 years.[18] Psychiatric morbidity was found in 59.6% of cancer patients in the current study. This finding is significantly higher than the prevalence of psychiatric morbidity in the general population according to a study conducted in Iraq in 2009, in which the authors reported a prevalence of 18.8%.[19] This difference can be attributed to two aspects; First factors related to the disease such as the fear of poor prognosis of the disease, fear of chemotherapy and fear of being disabled. Second, social factors such as job loss, fear of leaving family and children behind. Costa-Requena et al. also found a lower rate of psychiatric morbidity among cancer patients (28%) compared to our study.[18] Moreover, in SIngeret al., and Mehnert et al.'s studiesthe prevalence of diagnosis of psychiatric disorder was 30% and 31.7%, respectively. [20,21] Hartung et al. concluded in their study that the cancer patients are five times more likely to be


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affected by psychiatric morbidity than the general population.[22] In the current study, we found that younger age is significantly associated with presence of psychiatric morbidity. The most commonly affected age groups in our study were patients younger than 35 years of age (100%), followed by patients aged between 36-50 years (65.8%). This can be linked to disruption in developmental milestones, unique emotional challenges with limited coping resources. Bergerot et al. in their study reported that anxiety among cancer patients was most common among patients aged between 40-55 years.[23] We also found that the rate of psychiatric morbidity is significantly higher among females, compared to males. This finding is in accordance with Bergerot et al.'s findings in which they found female patients experienced greater psychological and emotional distress compared to males. This can be explained by the difference in hormones and their influences between males and females, and social factors such as fear leaving children behind. Numerous factors associated with the cancer itself and its treatment are expected to influence the onset of psychological distress.[24] In the current study, severity of the cancer also plays a role in the presence of psychiatric morbidity. A higher prevalence of patients with severe forms and moderate forms of the disease had psychiatric morbidity compared to patients with mild forms of cancer (66% and 59.1% vs. 0%). This can be attributed to increased treatment intensity, functional impairments, and more pain and fatiguability, and prognostic uncertainty. Another significant factor in this study was type of treatment used. Patients undergoing surgery and radiotherapy had significantly higher rates of psychiatric morbidity compared to those that are treated with medication. Cancer treatments like chemotherapy and immunotherapy can cause depression through biological pathways, such as inflammation. Additionally, some medications used to treat chemotherapy-induced nausea can reduce dopamine levels, leading to depressive symptoms.[25] Furthermore, steroids used to treat cancer can also trigger depression.[26]

## Conclusion

Psychiatric morbidity is common among cancer patients according to the findings of this study. Age, gender, and type of treatment, significantly affect the presence of psychiatric morbidity in cancer patients. Psychiatric referral and proper psychiatric assessment should be implemented as a routine checkup for patients receiving cancer diagnosis.

**The limitation:** The sample size of this study was limited by the physical state of the patients, and the sample collection venue making patients less desired to participate. Moreover, it would have been better if there were a control group to compare the results.

## Recommendations:

Upon breaking the bad news, patients should be referred for psychological guidance in order to help them adapt to the idea and help them process the grief period. Routine psychiatric check-up should be performed for patients diagnosed with cancer. Family counseling should be offered in order to guide caregivers on how to give emotional support to the cancer patients while maintaining their own mental health.

## Conflict of interest

None

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