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Prevalence of Insomnia and Its Association with Anxiety, Depression, and Quality of Life among Moroccan Cancer Patients

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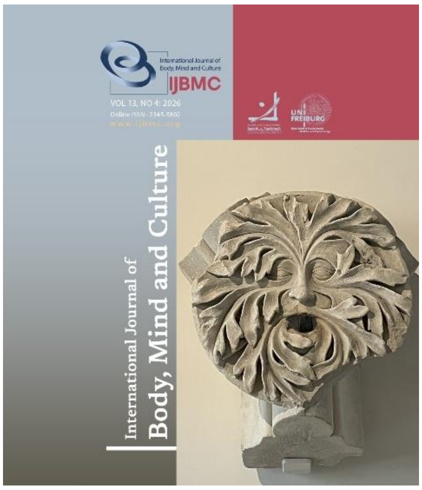

ABSTRACT

Objective: The objective was to assess the prevalence and severity of insomnia in patients with cancer, as well as its correlation with Anxiety, depression, and quality of life.

Methods and Materials: A descriptive cross-sectional study conducted from Sep 2023 to December 2024, including 246 patients treated for cancer in the Rabat Cancer Department, with histologically confirmed cancer. Each patient completed questionnaires on insomnia severity (ISI), quality of life (QLQ-C30), and anxiety (HAD). Pain was assessed using a visual analog scale.

Findings: The mean age of patients was 56.33 ± 14.78 years, with a male-to-female sex ratio of 0.71. Certain anxiety was noted in 57.7% of patients (n=142) and depression in 54.1% (n=104). Among 246 participants, 36% reported clinically significant insomnia (ISI ≥ 15), 57.7% had clinically significant anxiety (HADS-A ≥ 11), and 54.1% had clinically significant depression (HADS-D≥ 11). Insomnia, anxiety, and depression were significantly associated with lower global health/QOL scores. The presence of pain, dyspnea, insomnia, and fatigue was a factor associated with the onset of anxiety-depressive disorders in our patients ($p<0.001$). A statistically significant association was found among fatigue, pain, and the onset of insomnia ($p<0.001$).

Conclusion: The presence of pain and insomnia was a factor associated with the deterioration of anxiety/depression and of the overall health and QOL of our patients. Appropriate diagnosis and treatment should be integral to disease management.

Keywords: Cancer, insomnia, anxiety, depression, quality of life.

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Introduction

Sleep disorders are relatively common in cancer patients and affect their quality of life. They are not life-threatening but cause significant discomfort and are often overlooked in practice (Marrakchi et al., 2025; Scher et al., 2022). They are among the primary complaints reported by these patients during and after cancer treatment (Bray et al., 2018). These sleep disorders (insomnia, restless legs syndrome, daytime sleepiness, sleep apnea syndrome, etc.), when added to the various physical symptoms related to cancer (pain, nausea, vomiting, hot flashes, etc.), often cause real psychological distress and are a source of anxiety (Fennane et al., 2025; Habibi et al., 2016; Scher et al., 2022). Appropriate management is necessary and should be included in the therapeutic management.

Insomnia, the primary sleep disorder reported by patients, represents a real burden for patients who experience it. These patients often develop insomnia following the diagnosis, which is often experienced as a real psychological trauma, a "hammer blow"; insomnia can subsequently develop into a chronic condition. The diagnosis can also aggravate pre-existing occasional insomnia. Often under-addressed or under-detected, chronic insomnia nevertheless has serious consequences: increasing or persistent fatigue, decreased quality of life (Muthanna et al., 2023; Roberts, 2018), fluctuating mood, psychological distress, and decreased natural immunity (Antoni & Dhabhar, 2019; Cowdery et al., 2021).

Untreated fatigue and insomnia can increase the risk of depressive syndrome (Gao et al., 2025); insomnia is also an independent risk factor for developing a first depressive episode (Chen et al., 2025; Meaklim et al., 2023). Given the high prevalence of insomnia in these patients and the discomfort it causes, insomnia must be recognized, detected, and taken into account in the overall care of these patients.

Over the past 20 years, cancer mortality in both men and women has declined [1]. The introduction of more effective treatments for overall survival and tumor response is one of the causes. Healthcare professionals have also integrated quality of life into the care of cancer patients, reflecting the symptoms caused by the disease. The functional signs presented by cancer patients are numerous and vary depending on the location of the disease. Some complaints are common to all patients, such as fatigue and sleep disturbances. Sleep disturbances are a long-standing problem, and about thirty years ago, in a study on the use of psychotropic drugs in oncology, Biringen et al. reported the predominance of hypnotic prescriptions (Biringen et al., 2021).

Research on insomnia in cancer patients has shown that the frequency of sleep disturbances appears to be higher than in the general population. However, its prevalence varies across series (30-74%) (Al Maqbali et al., 2022; Zhao et al., 2025). Population heterogeneity can explain the observed variability, including among patients with different tumors and stages. In addition, the methods for assessing sleep quality differ across these studies. The reasons for these sleep disorders are still debated. Predisposing factors (sex, age, and history of sleep disorders) or perpetuating insomnia (lifestyle habits, sleep hygiene, diet, sedentary lifestyle, tobacco, alcohol, and coffee) have been proposed by Savard and Morin (Savard & Morin, 2001).

In Morocco, data on sleep disturbances and psychological distress among oncology patients remain limited. Understanding the interaction between insomnia, emotional distress, and quality of life in this specific socio-cultural and healthcare context is essential for developing tailored supportive care interventions. We hypothesize that higher levels of insomnia are associated with higher anxiety and depression scores and lower quality of life. This study aimed to assess the prevalence and severity of insomnia and to examine its association with anxiety, depression, and quality of life among Moroccan cancer patients treated for cancer in the Sidi Mohamed Ben Abdellah Health Center, Rabat, Morocco.

Methods and Materials

Study Design

This was a descriptive, cross-sectional study conducted at the Health Center of Rabat (Morocco) over 15 months from September 2023 to December 2024, including 246 patients with cancer. Clinical, paraclinical, and therapeutic data were collected from the medical records of the selected patients.

Participants

We offered the questionnaires to 300 subjects; 50 declined to participate, and we included 250, all of whom consented to participate in this study. After analyzing the files, we ultimately retained 246 fully completed questionnaires.

Inclusion criteria were as follows: Eligible participants were adult cancer patients aged 18 years and older receiving care at the oncology department during the study period. Exclusion criteria were young subjects under the age of 18; general practitioners, specialists, residents, interns, and externs (to avoid selection bias); subjects who refused to respond to our questionnaires; and incomplete questionnaires.

This study did not differentiate participants by cancer type, tumor stage, or treatment modality (chemotherapy, radiotherapy, hormone therapy), as the primary objective was to assess the overall prevalence of sleep disorders in a diverse cancer population. This approach provides a general overview of the phenomenon but limits the analysis of specific subgroups. Cancer type, stage, and treatment modality were not included as analytic variables in this study.

Instruments

Insomnia Severity Index (ISI): Insomnia was measured using the 7-item Insomnia Severity Index (ISI). This questionnaire asks about problems concerning sleep onset, sleep maintenance, and early-morning awakenings; sleep satisfaction; perceived interference of sleep difficulties with daytime functioning; the noticeability of sleep problems by others; and distress caused by sleep difficulties. The response options for each item are scored from 0 to 4 and summed to yield a possible score range of 0 to 28. A score between 0 and 7 indicated no sleep impairment; 8 and 14, sub-threshold sleep impairment; 15 and 21, moderate sleep impairment; and 22 and 28, severe sleep impairment. In this study, an ISI score between 8 and 14 was classified as subclinical insomnia, and an ISI score between 15 and 28 was classified as clinically significant insomnia. In the present sample, Cronbach's alpha coefficients were 0.87 for ISI, 0.84 for HADS-Anxiety, 0.81 for HADS-Depression, and 0.89 for the QLQ-C30 global health scale. The ISI is recommended as a standard assessment for evaluating insomnia in clinical populations.

Hospital and Depression Scale (HADS): The psychological test used was the Hospital and Depression Scale (HADS), an assessment scale designed to evaluate the level of depressive and anxious symptoms by eliminating somatic symptoms that could skew assessments in patients seen in medical practice who frequently present with organic problems. It is a structured self-report questionnaire of 14 items (7 items assessing depression and 7 items assessing anxiety). The depression subscale items include one assessing dysphoria, another assessing psychomotor retardation, and the other five assessing the anhedonic dimension, which, according to the authors, is highly specific to depression and whose severity warrants antidepressant treatment. The anxiety subscale items are drawn from specific sections of Wing's Present State Examination (PSE) and the Clinical Anxiety Scale. According to Zigmond and Snaith, the time period covered by the assessment is one of the major problems posed by scales of this type. The goal is to estimate the subject's current emotional state. However, if given such instructions, there is a high risk of obtaining a high score, particularly on the anxiety scale, simply because of the consultation. A possible compromise, therefore, is to ask the subject to complete the questionnaire based on their state over the past week. Scores of 0–7 were considered normal, 8–10 borderline, and ≥11 clinically significant for both anxiety and depression. The Arabic- and French-validated versions of the ISI, HADS, and EORTC QLQ-C30 were used. These versions have demonstrated adequate psychometric properties in North African populations.

Quality of Life Questionnaire - Core 30 (QLQ-C30): The questionnaire used in this study is the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire - Core 30 (QLQ-C30), a tool for assessing the quality of life of patients with all types of cancer. It includes various questions evaluating physical, emotional, and role-related aspects of each individual. It comprises 30 questions that assess the different components of quality of life: physical functioning, functional limitations, and emotional well-being. It is completed confidentially and independently, without distinction between correct and incorrect answers. This questionnaire consists of 30 items, divided into 1 subscale of overall health status; 9 measurement subscales, each composed of several items (5 for functional status and 3 for symptoms); 6 isolated symptom items; and 1 isolated item on financial difficulties. QLQ-C30 scores were linearly transformed to a 0–100 scale according to EORTC guidelines. Higher scores on functioning scales indicate better functioning, while higher symptom scores indicate greater symptom burden.

Analysis

Data were analyzed using SPSS 15.0 for Windows (SPSS Inc., Chicago). The response rate was calculated. Descriptive statistics were used for sociodemographic and clinical characteristics. Associations between insomnia, anxiety, depression, and global health status were examined using linear regression models. Multivariate models were adjusted for age, sex, marital status, and educational level. Significance was set at $p < 0.05$. Significant predictors of clinical insomnia in Steps 1–4 were included in the final fully adjusted model (Step 5).

Findings and Results

300 individuals responded to the survey, and after excluding those with missing data, 246 were included in the final analyses (Table 1). The mean age of participants was 56.44 years (SD = 14.78). 58.5% were females, and 41.5 were males.

More than half of the patients are illiterate (55.3%), while 25.6% have a primary education, 15% a secondary education, and only 4.1% have reached upper secondary or university level. This reflects a generally low level of education in the study population. Economically, monthly incomes vary considerably: 30.9% of patients earn between 2000 and 3999 MAD, 26.8% between 4000 and 5999 MAD, 28.1% earn above 6000 MAD, and 14.1% earn 2000 MAD or below. These figures reflect an overall precarious economic situation. Marital status shows that the majority of participants are married (73.6%), compared to 6.5% single, 10.6% divorced, and 9.3% widowed, suggesting that most benefit from family or marital support.

Table 1

Descriptive statistics of survey participants (n = 246)

		Number	**Percentage**
Gender	Female	144	58.5
	Male	102	41.5
Age (year) ***M = 56.44 SD = 14.78***	≤ 30	10	4.1
	31–40	22	8.9
	41–50	59	24
	51–60	53	21.5
	> 60	102	41.5
Education level	Illiterate	136	55.3
	Primary	63	25.6
	Secondary	37	15
	University	10	4.1
Monthly household income	< 200	35	14.1
	200–399	76	30.9
	400–599	66	26.8
	≥ 600	69	28.1
Marital status	Married	181	73.6
	Single	16	6.5
	divorced	26	10.6
	bereaved	23	9.3

Regarding functional scales, the median scores were relatively high: physical (73.3), role (83.3), and emotional (75.0) functioning, reflecting generally preserved autonomy and adaptation among the majority of participants. Cognitive functioning had the highest score (median = 100.0), with 95.8% of patients having a good level of cognitive functioning, indicating minimal impairment in this dimension. Social functioning also remains satisfactory (83.3), with 76.3% of patients reporting a good score, suggesting a relative maintenance of social interactions despite the disease.

Symptom scales, however, show a more marked deterioration in certain dimensions. Fatigue (median = 44.4) is reported by nearly a third of patients (32.2%) as severe. Nausea/vomiting and pain have low medians (16.8), but 55.1% and 58.1% of patients, respectively, suffer significantly from them. Insomnia is also common, with 46.6% of patients having a high score, reflecting a significant sleep disturbance. Symptoms such as loss of appetite (41.9%) and dyspnea (28.8%) are moderately represented. Conversely, constipation and diarrhea are less common, and most patients have low scores. Finally, financial difficulties appear significant, with a median of 66.8 and 66.7% of patients reporting significant discomfort.

Table 2

Assessment of the quality of life of cancer patients according to different functional and symptomatic scales

		Median/quartiles	Min	Max	n(%) scores >=66.7	n(%) scores 33.3-66.6	n(%) scores =<33.3
Global health status		58.3[33.3 ; 75.0]	0	116.7	100 (24.4%)	100 (42.4%)	36 (15.3%)
Functioning scale	Physical functioning	73.3[46.7 ; 86.7]	0	100	141 (59.7%)	63 (26.7%)	32 (13.6%)
	Role functioning	83.3[50.0 ; 100.0]	0	100			
	Emotional functioning	75.0[50.0 ; 100.0]	0	100	147 (62.3%)	74 (31.4%)	15 (6.4%)
	Cognitive functioning	100.0[83.3 ; 100.0]	33.3	100	226 (95.8%)	10 (4.2%)	0
	Social functioning	83.3[66.7 ; 100.0]	0	100	180 (76.3%)	45 (19.1%)	11 (4.7%)
Symptom scale	Fatigue	44.4[22.2 ; 66.8]	0	100	70 (%29.7)	90 (38.1%)	76 (32.2%)
	Nausea and vomiting	16.8[0.0 ; 33.3]	0	100	24 (10.2%)	82 (34.7%)	130 (55.1%)
	Pain	16.8[0.0 ; 50.0]	0	100	44 (18.6%)	55 (23.3%)	137 (58.1%)
	Dyspnea	33.3[0.0 ; 66.7]	0	100	73 (30.9%)	95 (40.3%)	68 (28.8%)
	Insomnia	33.3[0.0 ; 66.7]	0	100	66 (28.0%)	60 (25.4%)	110 (46.6%)
	Appetite	33.3[0.0 ; 66.7]	0	100	75 (31.8%)	62 (26.3%)	99 (41.9%)
	Constipation	00.0[00.0 ; 0.00]	0	100	34 (13.8%)	19 (7.7%)	193 (78.5%)
	Diarrhea	00.0[00.0 ; 33.3]	0	100	43 (18.2%)	64 (27.1%)	129 (54.7%)
Financial difficulties		66.8[33.3 ; 100.0]	0	100	158 (66.7%)	48 (20.3%)	31 (13.1%)

Simple linear regression demonstrated that global health status had statistically significant positive relationships with physical, role, emotional, cognitive, and social functioning and significant negative relationships with most symptoms. In contrast, global health status was not significantly associated with nausea/vomiting, constipation, or diarrhea. Multivariate analysis revealed that emotional functioning (β= 0.157, CI [0.038; 0.256], p=0.009), social functioning (β=0.345, CI [0.237; 0.444], p<0.001), fatigue (β= -0.345, CI [-0.473; -0.173], p<0.001), and financial difficulties (β= -0.117, CI [-0.157; -0.017], p=0.015) were significant predictors of overall health.

Table 3 presents the associations between global health status and the various functional and symptomatic scales, analyzed using univariate and multivariate models. In the univariate analysis, all functional dimensions (physical, role, emotional, cognitive, and social) were positively and significantly correlated with global health status (p < 0.001). These results reflect that an improvement in functioning, regardless of its dimension, is accompanied by a better perception of health.

Similarly, several symptoms (fatigue, pain, dyspnea, insomnia, loss of appetite, and financial difficulties) showed significant negative correlations with global health status, indicating that greater symptom intensity is associated with a deterioration in overall well-being.

After multivariate adjustment, only certain variables retained their independent influence. Thus, emotional functioning (β = 0.157; p = 0.009) and social functioning (β = 0.345; p < 0.001) remain significantly positively associated with overall health. In contrast, fatigue (β = -0.345; p < 0.001) and financial difficulties (β = -0.117; p = 0.015) have significant negative effects. These results suggest that psychosocial and economic factors have a greater influence on the perception of overall health than purely physical or symptomatic dimensions.

Table 3

Univariate and multivariate analyses of functioning and symptoms scales.

		Univariate analysis			Multivariate analysis		
		β	**95%CI**	***p***	**β**	**95%CI**	***p***
Functioning scale	Physical functioning	0.545	[0.401 ; 0.600]	<0.001	0.045	[-0.104 ; 0.187]	0.574
	Role functioning	0.539	[0.341 ; 0.513]	<0.001	0.044	[-0.075 ; 0.144]	0.530
	Emotional functioning	0.495	[0.358 ; 0.567]	<0.001	0.157	[0.038 ; 0.256]	0.009
	Cognitive functioning	0.336	[0.352 ; 0.749]	<0.001	-0.079	[-0.290 ; 0.032]	0.117
	Social functioning	0.649	[0.544 ; 0.738]	<0.001	0.345	[0.237 ; 0.444]	<0.001
Symptom scale	Fatigue	-0.649	[-0.700 ; -0.516]	<0.001	-0.345	[-0.473 ; -0.173]	<0.001
	Nausea	0.028	[-0.103 ; 0.160]	0.667			
	Pain	-0.519	[-0.518 ; -0.337]	<0.001	0.058	[-0.061 ; 0.157]	0.389
	Dyspnea	-0.499	[-0.499 ; -0.316]	<0.001	-0.094	[-0.183 ; 0.029]	0.152
	Insomnia	-0.449	[-0.422 ; -0.249]	<0.001	-0.048	[-0.121 ; 0.048]	0.402
	Appetite	-0.314	[-0.342 ; -0.151]	<0.001	0.061	[-0.028 ; 0.124]	0.218
	Constipation	-0.074	[-0.157 ; 0.042]	0.255	-	-	-
	Diarrhea	-0.012	[-0.119 ; 0.098]	0.851	-	-	-
Financial difficulties		-0.460	[-0.429 ; -0.258]	<0.001	-0.117	[-0.157 ; -0.017]	0.015

Simple linear regression demonstrated a positive association between patients' good overall health and the absence of sleep disturbances (p<0.001), anxiety (p<0.001), and depression (p<0.001). Multiple linear regression results showed that two predictors positively influenced patients' overall health (Table 4): the absence of sleep disturbances (β = 0.16, CI [2.66; 17.16], p = 0.008) and the absence of depression (β = 0.33, CI [9.20; 23.85], p<0.001).

Table 4

linear regression between overall health status and the presence of anxiety, depression, and sleep disorders

		Univariate analysis			Multivariate analysis		
		β	95%CI	*p*	β	95%CI	*p*
Sleep disorder (ISI)	Yes	1			1		
	No	0.31	[11.16; 25.61]	<0.001	0.16	[2.66; 17.16]	0.008
Anxiety (HADS)	Yes	1	-		1	-	-
	No	0,33	[10.61; 22.80]	<0.001	0.80	[-3.19; 11.27]	0.27
Depression (HADS)	Yes	1			1		
	No	0.44	[16.20; 27.71]	<0.001	0.33	[9.20; 23.85]	<0.001

Discussion and Conclusion

Several studies have attempted to understand the reasons for the more frequent occurrence of sleep disturbances in patients with cancer. Patients often perceive the announcement of a cancer diagnosis as a psychological trauma, which can alter sleep quality. The impact of the diagnosis on the quality of life of 246 Moroccan patients with cancer was studied. Quality of life was assessed using the European Organization for Research and Treatment of Cancer (EORTC) Quality of Life Questionnaire (Q30) before and after diagnosis. These results show that the study population is primarily female, elderly, and of modest socio-educational background. The predominance of women (58.5%) may be linked to the high incidence of certain female cancers (particularly breast cancer) in the region, a phenomenon already observed in several Moroccan and African studies (Ell et al., 2005).

The high average age (56 years) is consistent with the epidemiology of cancers, the frequency of which increases with aging, which may also influence the occurrence of sleep disorders and anxiety observed in your study (Al Maqbali et al., 2024). The low level of education (more than 80% have not gone beyond primary school) constitutes a vulnerability factor: it can limit understanding of treatment, communication with caregivers, and the ability to adapt to the disease. Several studies show that health literacy is positively correlated with quality of life and anxiety management in cancer patients (Golboni et al., 2024; Zhang et al., 2025).

Significant differences were observed in the following areas: emotional, psychological, and social. The study by Page et al. showed that 21% of insomnia was reported in 9350 patients with cancer (Page et al., 2025). However, sleep disturbances may persist in patients considered cured of their cancer. For example, Gooneratne et al. studied the sleep quality of 76 elderly patients (mean age 73.6 years) who had undergone surgery more than 8 years previously: 56.6% of patients with lung cancer had a PSQI > 5, compared with only 29.5% in the comparison group ($p < 0.001$). The explanations put forward by the authors were the possible presence of chronic obstructive pulmonary disease or the existence of an anxiety-depressive syndrome. The study of the different items of the PSQI questionnaire showed a significant difference between the study group and the control group regarding the pain item ($p = 0.04$) as a cause of nighttime awakenings.

Symptoms associated with cancer, such as pain, cough, and dyspnea, can also be factors in poor sleep. A recent study of 80 patients treated for painful secondary bone lesions showed a low average sleep efficiency of 70.7% (Qiao et al., 2024). There was no control group in this study, preventing comparison. In our study, sleep efficiency was measured at 78% for patients treated for cancer and 88% for our cancer-free group. The study of the items of the PSQI questionnaire found more frequent use of hypnotics and numerous nighttime awakenings attributed to respiratory problems or pain in patients with bronchial cancer. Hot flashes in women operated on for breast cancer also seem to be correlated with sleep disorders. Thus, Savard et al. recorded 24 patients treated for non-metastatic breast cancer by polysomnography. The authors found more frequent awakenings among patients who reported more severe hot flashes (Savard et al., 2004). Finally, a study of 357 cancer patients highlighted significant risk factors for insomnia or nonspecific sleep disorders, including pain, digestive symptoms, and anxiety and depression assessed by the HAD scale (Gyawali et al., 2024).

However, not all studies found a link between sleep and mood disorders. For example, Silberfarb et al. did not find a correlation between mood disorders and sleep disorders assessed by polysomnography in patients treated for lung and breast cancer (Silberfarb et al., 1993). The reported scores indicate that patients have almost intact cognitive functioning (median = 100, with 95.8% in the “good score” category), and social functioning is also relatively well preserved (median = 83.3, 76.3% in the “good score” category). Role (83.3) and emotional (75.0) functioning are also rather high. These results suggest that despite the disease, patients retain relatively good cognitive and social capacities, which is encouraging. These dimensions constitute important resources for the overall quality of life. In contrast, the global health status score (median ≈ 58.3) indicates that, even if some functions are relatively spared, the overall impression of health remains moderate. This may reflect a feeling of fragility, vulnerability, or reduced “functional reserve”.

Sleep disorders in cancer patients are currently widely treated by prescribing hypnotics (Grassi et al., 2023). However, the presence of factors that promote sleep disorders may prompt attempts to specifically control these symptoms (pain, depression and anxiety, hot flashes, etc.). Non-pharmacological treatments have been widely studied in the management of insomnia (Chan et al., 2021). This involves a comprehensive approach, including behavioral (sleep restriction, witnessing stimuli, etc.), cognitive, and educational (sleep hygiene, fatigue, and stress management). These techniques have been evaluated in the management of sleep disorders in patients treated for breast cancer. For example, Savard et al. measured changes in sleep quality after inclusion in a program using non-pharmacological therapies in a randomized study of 57 patients with localized breast adenocarcinoma (Savard et al., 2005).

Sleep disturbances were assessed by polysomnography and the ISI questionnaire. This study showed significant improvements in polysomnographic parameters, such as sleep efficiency, and in the insomnia score (ISI) in treated patients. Barsasella et al. found similar results by assessing sleep quality using actimetry in patients treated for breast and prostate cancer (Barsasella et al., 2021).

These observations highlight the central role of social and emotional functioning in perceived quality of life. The ability to maintain satisfactory social relationships and manage emotions appears to be a major protective factor in perceived health. Conversely, persistent fatigue appears to be the most detrimental symptom, significantly altering perceptions of health, consistent with several studies highlighting its impact on the quality of life of patients with chronic conditions (Ell et al., 2005; Knoop et al., 2021). Furthermore, financial difficulties negatively affect overall health, highlighting the importance of socioeconomic context in understanding perceived well-being. This often-overlooked dimension deserves special attention in support interventions and public health policies.

These results are consistent with those reported in other Moroccan studies. A study conducted in Casablanca (El Kherchi et al., 2023) showed that more than 70% of breast cancer patients had significant sleep disorders. Similarly, a survey carried out in Ben Mellal (Aboufaras et al., 2024) highlighted a significant impairment in quality of life in cancer patients with sleep disorders. This confirms that insomnia is a widespread problem among Moroccan oncology populations, regardless of the hospital setting. Our cross-sectional findings indicate that insomnia, anxiety, and depression are prevalent among cancer patients and are associated with lower quality of life. While causal relationships cannot be inferred, these results highlight the importance of assessing psychological well-being in routine oncology care.

This study has several limitations that should be noted when interpreting the results. First, its observational and cross-sectional nature does not allow us to establish a causal relationship between anxiety, insomnia, and quality of life. The observed correlations reflect associations but do not specify the direction of the effects. It is thus possible that anxiety aggravates insomnia and quality of life, but also that the deterioration of general well-being in turn amplifies sleep disorders and anxiety. Second, the limited sample size and its recruitment in a single center (Sidi Mohamed Ben Abdallah Health Center) may limit the generalizability of the results to other populations of cancer patients, particularly in different socioeconomic or cultural contexts. Furthermore, the assessment of quality of life and psychological disorders is based on self-administered questionnaires (EORTC QLQ-C30, anxiety and insomnia scales), which are likely to be influenced by subjectivity or social desirability biases. The lack of longitudinal follow-up also prevents observation of symptom evolution and quality of life over the course of treatment, even as several recent studies highlight the temporal variability of these dimensions in cancer patients (Wang & Pan, 2025; Zhang et al., 2025). The absence of a control group prevents comparison of the prevalence of insomnia to that of the general population. Furthermore, the use of self-reported questionnaires introduces social desirability bias. Drug treatments (analgesics, corticosteroids, psychotropic medications) that could influence sleep were not systematically taken into account in the analysis.

Other limitations include the cross-sectional design, which prevents causal inference; single-center recruitment; and a lack of stratification by cancer type or treatment modality. Self-reported measures may introduce reporting bias, and pharmacological treatments that may affect sleep were not systematically assessed. Despite these limitations, the results offer important clinical implications. They confirm the central role of insomnia and anxiety as major determinants of quality of life in cancer patients, consistent with the conclusions of international studies (Zhang et al., 2025). Maintaining satisfactory cognitive and social functioning could be a resilience factor to be valued in overall care. These data support the systematic integration of early screening for sleep disorders and anxiety into oncological monitoring, as well as multidimensional care involving oncologists, psychologists, nurses, and social workers. The use of cognitive behavioral therapy programs for insomnia (CBT-I) or psychoeducational interventions focused on stress management and adaptation to the disease has shown positive effects on quality of life and reduction of psychological distress (Golboni et al., 2024).

Scientifically, this study paves the way for longitudinal and interventional research to understand better the mechanisms underlying the interactions among anxiety, sleep, and quality of life. It would be relevant to include objective measures of sleep (actimetry, polysomnography) and biomarkers of stress (cortisol, inflammatory cytokines) to deepen the pathophysiological understanding of these links. Finally, at the institutional level, the results highlight the need to strengthen the psychological and socio-economic support provided to patients, particularly within Moroccan public structures, to improve the overall quality of care and reduce the psychological and social impact of cancer.

The results of this study highlight the need to integrate sleep disorder screening into cancer care systematically. Regular assessment of insomnia, anxiety, and depression should be conducted using validated tools such as the ISI and the HADS, from diagnosis onward and throughout treatment. Non-pharmacological interventions, such as sleep education, cognitive behavioral therapy adapted for cancer patients, and stress management programs, should be offered as first-line treatments. From an organizational perspective, implementing multidisciplinary consultations involving oncologists, psycho-oncologists, and sleep specialists would enable a comprehensive approach to improving patients' quality of life. Finally, training and awareness-raising initiatives for healthcare staff regarding the impact of sleep disorders could optimize the early detection and prevention of psychological and functional complications.

Insomnia, anxiety, and depression are common among cancer patients and are associated with poorer quality of life. Routine screening and supportive interventions targeting these symptoms may benefit patient well-being. The study highlights an overall average to impaired quality of life among cancer patients. The emotional and physical dimensions are the most impacted, likely linked to the presence of anxiety and insomnia. These results highlight the need for multidimensional care that integrates psychological support, pain and sleep management, and socio-economic support to improve the quality of life of these patients. The results suggest that improving social and emotional functioning, reducing fatigue, and addressing financial constraints are priorities for optimizing patients' quality of life and overall health. These data support an integrated approach that combines medical, psychological, and socioeconomic support.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

Ethical approval was granted by the Faculty of Medicine Ethics Committee (ref. 023/2022). Participants with clinically significant insomnia, anxiety, or depression were offered referral to psychological services. Written informed consent was obtained from all participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors’ Contributions

All authors equally contribute to this study.

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