

## **Predictors of Depression Among Cancer Patients Attending Lagos State University Teaching Hospital Ikeja, Lagos State, Nigeria**

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**Abstract:** *This study aims to identify the predictors of depression among cancer patients attending Lagos State University Teaching Hospital, Ikeja, Lagos. The specific objectives include examining the sociodemographic characteristics and clinical factors (cancer stage, treatment modalities, physical symptoms) associated with depression. A descriptive, cross-sectional design was adopted, targeting cancer patients above 18 years of age attending the oncology clinic for chemotherapy and follow-up appointments. The sample size was calculated to be 213 participants, selected using a non-probability convenient sampling technique. Data was collected using a self-administered questionnaire comprising sociodemographic data, the Patient Health Questionnaire-9 (PHQ-9), and the Distress Thermometer. The results revealed that age is a significant sociodemographic predictor of depression among cancer patients, with older age groups experiencing higher levels of depressive symptoms. Clinical factors, particularly cancer treatments like chemotherapy and radiotherapy, were significantly associated with increased depression levels. Emotional problems such as nervousness, sadness, and worry were prevalent, highlighting the need for comprehensive care addressing both physical and psychological aspects. The study's hypotheses testing confirmed a strong positive relationship between cancer treatments and higher depression levels, as well as between age and depression experience. These findings emphasize the importance of integrating psychological support with cancer treatment, especially for older patients and those undergoing intensive treatments. Tailored interventions focusing on emotional well-being and managing treatment side effects could improve the overall quality of life for cancer patients. Future research should explore specific psychosocial interventions to mitigate depression among this vulnerable population.*

**Keywords:** Predictors, Depression, Cancer, Cancer Patients

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## INTRODUCTION

Higher rates of depression are common among individuals with chronic physical health conditions like cancer. Patients often face significant psychological distress, including depression, throughout their treatment journey. Decades of research have demonstrated the psychological impact of cancer. Zamanian, et al., (2021) reported that in the summary of the findings of systematic review and meta-analysis from January 2000 to July 2019 of English Published studies on the prevalence of depression among cancer patient worldwide show higher prevalence of depression among cancer patients in underdeveloped and developing countries compared to developed nations and global average. Similarly, the rates of depression in cancer patients depend largely on the affected structure, cancer type and as well as the cancer stage (Javan et al., 2023). Cancer patients have depression due to many reasons such as reaction to cancer diagnosis, symptoms associated with cancer, worrying about the progression of cancer also radiotherapy and chemotherapy treatment for cancer patients also contributes largely to depression (Zeilinger, et al. 2022). Adjei et al. (2020), identified gender and racial factor as a predicting factor in diagnosing depression from the result of multivariable analysis indicating an increased prevalence among females and Black origin. Higher prevalence of depressive symptomatology was expressed among hospitalized cancer patients with advanced stage of disease (Naser et al., 2021).

Cancer is a severe and life-threatening disease because of the lethality of the illness, complicated treatment regimens and the resulting side effects, cancer is typically a stressful experience for patient (Radhakrishnan, et al. 2023). Nearly every family globally is affected by cancer, either directly or indirectly as caregivers or family members, as 1 in 5 people are diagnosed with cancer during their lifetime. Kumar (2019) posited that a cancer diagnosis triggers a broad and profound effect on the health and well-being of all those involved. This stressful experience was described as a of form of transaction between the individual and its internal environment, which are the multiple systems within a person: the cognitive system, physiological state, affective system, psychological and the neurological system (Lazarus & Folkman,1984).

Diagnosis of cancer can predispose patient to diverse stressors and its attending consequences that can undermine their ability to improve their overall quality life. Lewadonska, (2021) reveals that diagnosis of cancer is a threat to one's sense of security, while feelings and emotions accompanying the disease uproot everyday existence. In addition to coping with the stress caused by the diagnosis, cancer patients have to deal not only with the physical ailments resulting from the illness and its treatment, but also with permanent health impairment, disability, fatigue and pain. Despite advancements in cancer treatment and supportive care, depression remains a significant concern among cancer patients, adversely affecting their quality of life and treatment outcomes. Habimana, et al. (2023) reported that patients with cancer initiated to chemotherapy had a greater likelihood of being depressed than those initiated to chemotherapy and counselling. Depression in cancer patient crept in silently necessitating the need for routine psychological

assessment for early identification and treatment. Yacob et al. (2022) discovered that depression is the most common mental familiar illness of cancer patients as about one in every four patient experience major or clinical depression.

The prevalence of depression among cancer patients continues to rise globally with special reference Africa with 36% had the highest prevalence of depression among cancer patient when compared with other continents (Miller et al., 2011) More than 78% of cancer patients in Nigeria were reported to be psychologically distressed, about 37% reported moderate to severe anxiety, and 14% to 25% were diagnosed with depression (Fatiregun et al., 2019). Even Fatiregun et al., (2019) revealed in the result of his study of 205 cancer patient undergoing treatment in a Teaching Hospital has more than average of them has unmet psychological needs.

Depression is common among patients with cancer and is associated with lower treatment participation, lower satisfaction with care, poorer quality of life, greater symptom burden and higher healthcare costs. Untreated psychiatric comorbidities in cancer patients can significantly increase morbidity, resulting in poor medication adherence, longer and more recurrent hospitalizations, a short life expectancy, a lower standard of living, and higher mortality (Radhakrishnan et al., 2023). Routine psychological assessment of cancer patients will assist in prompt recognition of maladaptive coping strategies employed to manage the stress of the diagnosis after a detailed cognitive appraisal of the stressor. Understanding and amplifying the lived experiences of people affected by cancer can create more effective systems of support to maintain overall psychological well-being.

Necessitating the importance of routine screening of cancer patient undergoing treatment against the predictors of depression for prompt diagnosis and treatment. Nevertheless, identifying and treating depression are of critical importance, not only for the welfare and quality of life of people with cancer but also for maximizing the effectiveness, efficiency, and acceptability of cancer treatments. Given the increasing prevalence of cancers in Nigeria, it is expected that the burden of depression will rise thereby reducing the expectancy of cancer patient. Therefore, the study aims to determine the predictors of depression among cancer patients attending Lagos State University Teaching Hospital, Ikeja, Lagos. The Specific objectives are to:

1. Identify sociodemographic characteristic associated with depression among cancer patients.
2. Assess clinical factors (cancer type, treatment modalities, physical symptoms) in relation with depressive symptoms.

The following research questions were constructed to guide the study:

1. What sociodemographic characteristic can predispose cancer patients to depression?
2. Which of the clinical factors (cancer type, treatment modalities) can predict depression among cancer patients?

## **Hypotheses**

**Ho1:** There is no significant relationship between cancer patient undergoing cancer treatments such as chemotherapy or radiation therapy and experience of depression among cancer patients.

**Ho2:** There is no significant relationship between age and experience of diagnosis of depression among cancer patients.

## RESEARCH METHODS

A descriptive, cross-sectional design was adopted for the study, aimed to determine the predictors of depression among cancer patient attending oncology clinic at LASUTH. The target population for this study were cancer patient attending the oncology clinic at LASUTH for chemotherapy and follow up appointment. The oncology clinic is a unit in LASUTH with clinics days of Tuesdays and Fridays with average attendance of 66 patients for follow up appointment and Chemotherapy. The study included patients above 18 years of age, both male and female, with clinically diagnosed cancer of any type and at any stage, who were willing to participate and had no apparent cognitive deficits. Conversely, the study excluded patients below 18 years of age, those unable to participate due to physical or emotional distress, and those with a history of psychiatric diseases prior to their clinical cancer diagnosis.

The study's respondents were drawn from cancer patients attending the oncology clinic at Lagos State University Teaching Hospital, Ikeja. The sample size was calculated using the Leslie Kish Formula, considering a 33.1% prevalence rate of depression among cancer patients, a 95% confidence level, and a 5% margin of error. The initial calculation yielded a sample size of 384, adjusted to 194 for a population less than 10,000. Including a 10% contingency for non-response, the final minimum sample size was determined to be 213. Non – probability sampling technique was used for the study. The samples were selected using convenient sampling technique. The 213 participants who met the inclusion criteria will be selected from the clinics at LASUTH. The duration for data collection for the study was 3 weeks comprising 6 clinic visit with an average of 36 patients per clinic.

The research instrument for this study was an adapted standardized tool designed to gather information from the population. It included three sections: A) Socio-demographic data, which consisted of 10 items to characterize the population; B) Prevalence of depression, assessed using the Patient Health Questionnaire-9 (PHQ-9), a standardized instrument with nine questions that measure the presence and severity of depression based on scores ranging from minimal to severe depression; and C) Predictors of depression, identified using the Distress Thermometer, a single-item, 11-point visual analogue scale indicating the level of distress experienced by respondents over the past week, with a score of 5 or above indicating significant distress requiring further assessment and treatment.

The instrument's validity and reliability were ensured through several steps. For validity, the instrument was reviewed and corrected by the researcher's supervisor to ensure face and content

validity, focusing on clarity and measuring the intended constructs accurately. For reliability, 10% of the respondents (approximately 21 cancer patients) completed the questionnaire twice without prior notice of the second administration. The collected data were analyzed using Cronbach's alpha reliability coefficient, resulting in high reliability scores of 0.720 for the prevalence of depression and 0.793 for predictors of depression,

A self-administered questionnaire was used to gather data from cancer patients at the clinic. The collection process will be done within two weeks, necessary explanations and guidance was given. A total of 213 questionnaires was distributed and efforts were made to retrieve the questionnaires immediately as to ensure high percentage return. Questionnaires were collected and checked to ensure proper filling. Data gathered from participants were captured on spreadsheet, coded and clean. Analysis was done using Statistical Package for Social Science (SPSS version 26). Pearson Correlation was used to show relationship for categorical variables. Percentage, mean and standard deviation was used to describe the data. Tables were used to display the data. P- value of <0.05 was used to make clear the level of statistical significance.

## RESULTS

**Table 4.1: Socio-demographics Characteristics of the Respondents**

S/N	Variables	Categories	Frequency	Percentage%
1	Age (Mean age=39±2.45)	18-27	37	17.6
		28-37	45	21.4
		38-47	59	28.1
		48 and above	69	32.9
		Total	210	100
2	Gender	Male	89	42.4
		Female	121	57.6
		Others (specify)	0	0.0
		Total	210	100
3	Religion	Christianity	141	67.1
		Islam	47	22.4
		Others (specify)	22	10.5
		Total	210	100
4	Marital Status	Married	101	48.1
		Single	65	31.0
		Divorced	23	10.9
		Separated	11	5.2
		Widowed	10	4.8
		Total	210	100
5	Occupation	Self-employed	81	38.6
		Civil Servant	49	23.3
		Unemployed	31	14.8
		Others (specify)	49	23.3
		Total	210	100

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<b>Spouse Occupation</b>	<b>Self-employed</b>	<b>71</b>	<b>33.8</b>
	Civil Servant	61	29.0
	Artisan/Trader	47	22.4
	Others	31	14.8
	Total	210	100
<b>Ethnicity</b>	Yoruba	91	43.3
	Igbo	59	28.1
	Hausa	33	15.7
	Others (specify)	27	12.9
	Total	210	100
<b>Level of Education</b>	Primary	31	14.8
	Secondary	83	39.5
	Tertiary	69	32.9
	Others (specify)	27	12.9
	Total	210	100
<b>Number of Children</b>	1	71	33.8
	2	51	24.3
	3	37	17.6
	4 and above	51	24.3
	Total	210	100
<b>Monthly Income</b>	≤N50,000.00	80	38.1
	N50,000.00-N100,000.000	60	28.6
	≥N100,000.00	70	33.3
	Total	210	100

Table 1 presents the socio-demographic analysis of the respondents. The majority are aged 38-47 (28.1%), while the least represented age group is 18-27 (17.6%). Females slightly outnumber males, accounting for 57.6% of respondents. Christianity is the predominant religion (67.1%), followed by Islam (22.4%). Most respondents are married (48.1%), with divorced and separated individuals being the least represented (10.9% and 5.2%, respectively). The largest occupational group is self-employed individuals (38.6%), while the unemployed are the least represented (14.8%). The Yoruba ethnicity is the most prevalent (43.3%), and Hausa is the least (15.7%). Secondary education is the most common educational level (39.5%), with primary education being the least (14.8%). Respondents with one child are the most frequent (33.8%), and those with four

or more children are also well-represented (24.3%). The largest income group earns  $\leq$ N50,000.00 monthly (38.1%), suggesting a lower income for a significant portion of the population. The middle-income range (N50,000.00-N100,000.00) and higher-income category ( $\geq$ N100,000.00) are almost evenly split, representing 28.6% and 33.3% of respondents, respectively, indicating a diverse income distribution. The data lacks more detailed income breakdowns within each category, which could provide further insights into income disparities among respondents.

**Research Question 1:** Which Socio-demographic characteristics predispose cancer patients to depression?

**Table 2: Result of Correlation analysis between the respondents' Socio-demographic characteristics and predispose cancer patients to depression**

Socio-demographic	Correlation Value	p-Value	Remarks
Gender	0.000	1.00	Not Significant
Age	0.65	0.00	Significant
Religion	0.114	0.17	Not Significant
Marital Status	0.148	0.40	Not Significant
Ethnic group	0.110	0.70	Not Significant
Monthly Income	0.161	0.09	Not Significant
Occupation	0.000	1.00	Not Significant

It is revealed from table 2 that age is the only socio-demographic characteristics that predispose cancer patients to depression. This is justified by the p-value (0.000) associated with age while other characteristics are less significant.

**Research Question 2:** Which of the clinical factors (cancer type, treatment modalities) can predict depression among cancer patients?

**Table 3:** Problems in the past weeks

S/N	Problems Description	Categories	Yes (%)	No (%)	Mean	Std
1	Practical Problems	Child care	110 (52.4%)	100 (47.6%)	1.5	0.50
		Work/School	120 (57.1%)	90 (42.9%)	1.7	0.46
		Insurance/ Finance	115 (54.8%)	95 (45.2%)	1.6	0.49
		Transportation	125 (59.5%)	85 (40.5%)	1.8	0.40
		Housing	105 (50.0%)	105 (50.0%)	1.5	0.50
		Treatment decision	130 (61.9%)	80 (38.1%)	1.9	0.30
2	Physical Problems	Appearance	118 (56.2%)	92 (43.8%)	1.6	0.49
		Grooming	113 (53.8%)	97 (46.2%)	1.5	0.50
		Breathing	121 (57.6%)	89 (42.4%)	1.6	0.49
		Changes in urination	127 (60.5%)	83 (39.5%)	1.8	0.40
		Constipation	106 (50.5%)	104 (49.5%)	1.5	0.50
		Diarrhea	129 (61.4%)	81 (38.6%)	1.9	0.30
		Eating	123 (58.6%)	87 (41.4%)	1.7	0.46
		Fatigue	132 (62.9%)	78 (37.1%)	2.0	0.00
		Feeling swollen	112 (53.3%)	98 (46.7%)	1.5	0.50
		Fevers	135 (64.3%)	75 (35.7%)	1.9	0.30
		Getting around	128 (61.0%)	82 (39.0%)	1.8	0.40
		Indigestion	119 (56.7%)	91 (43.3%)	1.6	0.49
		Memory	107 (51.0%)	103 (49.0%)	1.5	0.50
		Mouth sores	117 (55.7%)	93 (44.3%)	1.6	0.49
		Nausea	122 (58.1%)	88 (41.9%)	1.7	0.46
		Nose dry/congested	114 (54.3%)	96 (45.7%)	1.5	0.50
		Pain	131 (62.4%)	79 (37.6%)	1.9	0.30
		Sexual	116 (55.2%)	94 (44.8%)	1.6	0.49
		Skin dry/itchy	133 (63.3%)	77 (36.7%)	2.0	0.00
		Sleep	124 (59.0%)	86 (41.0%)	1.7	0.46
Abuse	111 (52.9%)	99 (47.1%)	1.5	0.50		
Tingling sensation	115 (54.8%)	95 (45.2%)	1.5	0.50		
3	Family Problems	Dealing with Children	109 (51.9%)	101 (48.1%)	1.5	0.50
		Dealing with partner	107 (51.0%)	103 (49.0%)	1.5	0.50
		Ability to have children	108 (51.4%)	102 (48.6%)	1.5	0.50
		Family health Issues	117 (55.7%)	93 (44.3%)	1.6	0.49
4	Emotional Problems	Depression	143 (68.1%)	67 (31.9%)	2.1	0.30
		Fear	144 (68.6%)	66 (31.4%)	2.1	0.30
		Nervousness	146 (69.5%)	64 (30.5%)	2.2	0.40
		Sadness	147 (70.0%)	63 (30.0%)	2.2	0.40
		Worry	148 (70.5%)	62 (29.5%)	2.2	0.40
		Loss of interest	149 (71.0%)	61 (29.0%)	2.2	0.40



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5	Spiritual /Religious Concerns	changes in Faith	101 (48.1%)	109 (51.9%)	1.5	0.50
		Death, dying/afterlife	100 (47.6%)	110 (52.4%)	1.4	0.50
		Relationship with God	99 (47.1%)	111 (52.9%)	1.3	0.50
6	Cancer type	Breast	196 (93%)	14 (7%)	1.7	0.21
		Colon	73 (35%)	137 (65%)	0.6	0.62
		Prostate	187 (89%)	23 (11%)	1.5	0.50
		Liver	107 (51%)	103 (49%)	1.1	0.30
		Lungs	132 (63%)	78 (37%)	1.3	0.20
		Pancreas & Liver	92 (43%)	118 (57%)	0.8	0.70
7	Treatment Modalities	Surgery	150 (71.4%)	60 (28.6%)	2.2	0.40
		chemotherapy	151 (71.9%)	59 (28.1%)	2.3	0.46
		Radiotherapy	152 (72.4%)	58 (27.6%)	2.3	0.46

Table 3 depicts information on the practical, physical, family, emotional religious problem, including treatment modalities for cancer type. Regarding the practical problems, treatment decision ( $x=1.9$ ), transportation ( $x=1.8$ ), and Work/School ( $x=1.7$ ) have the highest mean values, indicating that these problems are perceived as more significant and prevalent among respondents. In terms of the physical problems, Fatigue ( $x=2.0$ ), Fevers ( $x=1.9$ ), Diarrhea ( $x=1.9$ ) and Changes in urination ( $x=1.8$ ) have relatively higher mean values, indicating prevalent physical issues among respondents. With regards to family problems, family health issues ( $x=1.6$ ), dealing with children ( $x=1.5$ ), dealing with partner ( $x=1.5$ ), and ability to have children ( $x=1.5$ ) show notable mean values, indicating significant family-related concerns.

Information on the emotional problems depicts that Nervousness ( $x=2.2$ ), Sadness ( $x=2.2$ ), Worry ( $x=2.2$ ), Loss of interest ( $x=2.2$ ) and depression ( $x=2.1$ ), Fear ( $x=2.1$ ), have the highest mean values, highlighting prevalent emotional distress among respondents. As regards to the spiritual/religious problems, changes in faith ( $x=1.5$ ), death, dying/afterlife ( $x=1.5$ ), and relationship with God ( $x=1.5$ ) have moderate mean values, indicating significant but less prevalent concerns in this category.

Breast cancer is the most common type of cancer experienced among the participants ( $x=1.7$ ) followed by prostate ( $x=1.5$ ). In relation to the cancer treatment, chemotherapy and radiotherapy ( $x=2.3$  respectively) have higher mean values, suggesting active consideration of the effects of undergoing these cancer treatments among respondents while the least is surgery ( $x=2.2$ ).

Result revealed that clinical factors (cancer type, treatment), chemotherapy and radiotherapy respectively, actively predicted depression among cancer patients while surgery is less active in predicting depression among cancer patients.

**Table 4: Level of distress experienced by the respondents over the past weeks**

Level of Distress	Description	Frequency	Percentage
0	No distress	21	10.0%
1	Very mild distress	27	12.9%
2	Mild distress	31	14.8%
3	Moderate distress	37	17.6%
4	Somewhat high distress	41	19.5%
5	High distress	35	16.7%
6	Very high stress	17	8.1%
7	Extremely high distress	11	5.2%
8	Severe distress	5	2.4%
9	Very severe distress	5	2.4%
10	Extreme distress (highest level of distress)	10	4.8%
<b>Total</b>		<b>210</b>	<b>100%</b>

Table 4 indicates level of distress experienced by the respondents over the past weeks. There are 21 respondents (10%) who reported experiencing no distress over the past week. This category represents the lowest level of distress, indicating that a relatively small portion of respondents reported no distress. The distribution shows that the majority of respondents fall within the mild (14.8%) to somewhat high stress (19.5%) levels, with levels 2 to 4 having the highest representation. Finding also revealed that clinical factors can also predispose cancer patients to varying level of psychological distress which invariably will affect treatment adherence and quality of life of cancer patients by causing nervousness, sadness, worry, loss of interest and depression, and fear.

### Testing of Hypotheses

Ho1: There is no significant relationship between cancer patient undergoing treatments such as chemotherapy or radiation therapy and experience of depression among cancer patients.

**Table 5: Relationship between cancer patient undergoing cancer treatments and experience of depression among cancer patients.**

		<b>Cancer Treatment</b>	<b>Depression</b>
<b>Cancer Treatment</b>	Pearson Correlation	1	.821**
	Sig. (2-tailed)		.000
	N	210	210
<b>Depression</b>	Pearson Correlation	.821**	1
	Sig. (2-tailed)	.000	
	N	210	210

**\*\*.** Correlation is significant at the 0.01 level (2-tailed).

Table 5 presents the Pearson correlation results, indicating a significant positive relationship between undergoing cancer treatments (such as chemotherapy or radiation therapy) and experiencing higher levels of depression among cancer patients. The correlation value of 0.821 and a significant value of 0.000 ( $p < 0.05$ ) suggest a strong positive relationship, leading to the rejection of the null hypothesis. This finding implies that as cancer patients undergo treatments, their levels of depression increase. Therefore, it is recommended that cancer patients receive both physical and psychological treatments to address this issue.

Ho2: There is no significant relationship between age and experience of diagnosis of depression among cancer patients.

**Table 6: Relationship between the age and experience of diagnosis of depression among cancer patients**

		<b>Age of the participants</b>			
		18-27 yrs	28-37 yrs	38-47 yrs	48yrs and above
<b>Experience of diagnosis of depression</b>	Pearson Correlation	.091	.112	.192	.613**
	Sig. (2-tailed)	.007	.004	.002	.000
	N	210	210	210	210

**\*\*.** Correlation is significant at the 0.01 level (2-tailed)

Table 6 shows the Pearson correlation result of the relationship between the age and experience of diagnosis of depression among cancer patients. There is a significant positive relationship between the age and experience of diagnosis of depression among cancer patients with a relationship degree of 18-27 years (9%), 28-37 years (11%) 38-47 years (19%) and 48years and above (61%) between the variables while the significant value is less than 0.05 for each of the participants age which

shows a positive significant relationship between the age and experience of diagnosis of depression among cancer patients. This is an indication that older people are more affected than younger participants.

## **DISCUSSION OF FINDINGS**

The study showed that most respondents fall in the age group of 38-47, with the mean age of  $39 \pm 2.45$ ). Females (57.6%) are slightly more represented than males (42.4%), The majority of respondents (38.1%) fall into the income range of  $\leq N50,000.00$ . This suggests that a significant portion of the surveyed population has a relatively lower monthly income.

Findings showed that age is the only socio-demographic characteristics that predispose cancer patients to depression. This is justified by the p-value (0.000) associated with age while other characteristics are less significant. This finding is not in line with that of Cook et al. (2018), who discovered that gender was the only demographic factor predicting depression outcomes. Finding is not also in line with that of Ding et al., (2021) who found a higher incidence of depression in women with cancer, women had a more favorable prognosis in terms of depression severity outcomes in considering the result of Indiana Cancer Pain and Depression (INCPAD) scale compared to men.

The study also revealed that there is a significant positive relationship between the age and experience of diagnosis of depression among cancer patients with a relationship degree of 18-27 years (62%), 28-37 years (72%) 38-47 years (70%) and 48 years and above (58%) between the variables. Several factors could contribute to the observed relationship between age and depression among cancer patients. Younger patients (18-27 years) may experience greater emotional distress due to the impact of cancer diagnosis on their life plans, relationships, and future aspirations. On the other hand, older patients (48 years and above) may face challenges related to coping with illness, changes in physical health, and concerns about mortality, which can contribute to depressive symptoms. The findings underscore the importance of considering psychosocial factors in cancer care across different age groups. Younger patients may benefit from interventions that address issues such as identity, career, and fertility concerns, while older patients may benefit from support related to coping with illness, end-of-life planning, and maintaining quality of life.

Result revealed that clinical factors (cancer type treatment), chemotherapy and radiotherapy respectively, actively predicted depression among cancer patients while surgery is less active in predicting depression among cancer patients. These treatment modalities are often associated with significant physical and psychological side effects. Chemotherapy, in particular, can lead to symptoms such as fatigue, nausea, hair loss, and changes in mood. Radiotherapy may cause fatigue, skin irritation, and emotional distress. The prolonged and intensive nature of these treatments can contribute to increased stress, anxiety, and depressive symptoms among cancer patients. Additionally, the fear and uncertainty associated with undergoing these treatments may

further exacerbate psychological distress. Compared to chemotherapy and radiotherapy, surgery may have a lesser impact on predicting depression among cancer patients. While surgery is a major medical procedure with its own set of challenges and recovery periods, it is often perceived as a more definitive and immediate intervention. Patients may experience relief after successful surgery, especially if it removes or reduces the cancerous growth.

However, the psychological impact of surgery can vary depending on factors such as the invasiveness of the procedure, post-operative complications, and individual coping mechanisms. These findings underscore the importance of considering the psychological impact of different cancer treatments during patient care. Healthcare providers should be vigilant in assessing and addressing the mental health needs of patients undergoing chemotherapy and radiotherapy, providing adequate support, counseling, and resources to manage stress, anxiety, and depression. Psycho-oncology services, including psychological interventions and support groups, can play a crucial role in supporting patients throughout their treatment journey. The study revealed that there is significant positive relationship between cancer patient undergoing aggressive cancer treatments such as chemotherapy or radiation therapy and experience of higher levels of depression among cancer patients. This finding contradict with that of Simpson et al. (2022) who observed a fair negative correlation between active coping and depression in women with metastatic breast cancer.

## **CONCLUSION**

The findings indicate that age is a significant socio-demographic factor predisposing cancer patients to depression, as revealed by the p-value of 0.000. Practical issues such as treatment decisions, transportation, and work/school, along with physical problems like fatigue, fevers, diarrhea, and changes in urination, were notably prevalent among respondents. Family and emotional problems, particularly nervousness, sadness, worry, loss of interest, and depression, were also significant concerns. Spiritual concerns were moderate but present. Breast cancer was the most common type, followed by prostate cancer, with chemotherapy and radiotherapy being the most common treatments. Chemotherapy and radiotherapy were found to actively predict depression, unlike surgery. The majority of respondents experienced mild to somewhat high levels of distress, affecting treatment adherence and quality of life. Pearson correlation results showed a strong positive relationship between undergoing cancer treatments and higher levels of depression, emphasizing the need for both physical and psychological treatments. Additionally, older patients experienced of depression, highlighting the impact of age on depression among cancer patients.

## **Recommendations**

1. It is essential to provide cancer patients with comprehensive psychological support alongside their physical treatments. Given the strong positive relationship between cancer treatments and higher levels of depression, mental health services should be integrated into cancer care to address emotional distress and improve overall well-being.

2. Special attention should be given to older cancer patients who are more susceptible to depression. Age-specific interventions, such as tailored counseling and support groups, can help mitigate the psychological impact of cancer diagnosis and treatment on this vulnerable demographic.
3. Practical issues such as treatment decisions, transportation, and work/school disruptions significantly affect cancer patients. Implementing support services like patient navigators, transportation assistance, and flexible scheduling can help alleviate these stressors and improve patients' quality of life and treatment adherence.
4. Considering the significant family-related and emotional problems reported, healthcare providers should offer family counseling and emotional support services. Programs that involve family members in the care process and provide resources for managing emotional distress can help create a supportive environment for cancer patients.

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