ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

PREVALENCE OF DEPRESSION AND ITS ASSOCIATED FACTORS AMONGST CANCER PATIENTS TAKING CHEMOTHERAPY AT TIKUR ANBESSA SPECIALIZED HOSPITAL ADDIS ABABA ETHIOPIA

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ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES, SCHOOL OF MEDICINE

DEPARTMENT OF FAMILY MEDICINE

PREVALENCE OF DEPRESSION AND ITS ASSOCIATEDFACTORS AMONGST CANCER PATIENTSTAKING CHEMOTHERAPY AT TIKUR ANBESSASPECIALIZED HOSPITAL ADDIS ABABA ETHIOPIA

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LIST OF ACRONYMS

WHO……**W**orld Health**O**rganization?

DSM-5……**D**iagnostic and **S**tatistical **M**anual of **M**ental disorder, **F**ifth **E**dition

MDD….**M**ajor **D**epressive**D**isorder

SPSS….**S**tatistica**lP**ackage for**S**ocial **S**ciences

AOR….**A**djusted**O**dd **R**atio

CI…. **C**onfidence**I**nterval

COR…. **C**rude**O**dd **R**atio

IARC….**I**nternational **A**gency **f**or **R**esearch **o**n **C**ancer

DALY….**D**isability**A**djusted **L**ife **Y**ear

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Abstract

Background Cancer patients are most likely to have psychological illnesses related to diagnosis, treatment, prognosis, fear of dying, and social and economic concerns.

Depression when it occurs concomitantly with cancer, it has an impact on quality of living, duration of hospital admissions, compliance to treatment, and effect of cancer treatment. Despite the size of the issue, there aren't many researches that deal with it. In order to check the magnitude of depression and associated factors on patients with undergoing chemotherapy, this research was carried out.

Objective To estimate the prevalence of depression and its related factors on cancer patients taking chemotherapy attending Tikur Anbessa specialized hospital oncology center Ethiopia

Methods: An institution-based cross-sectional study was conducted involving 215 cancer patients undergoing chemotherapy from June to August 2025. Participants were selected using a systematic random sampling technique, and data was gathered through an organized questionnaire. Depression levels were evaluated using the Patient Health Questionnaire-9, an approved tool with a sensitivity and specificity of 85%. The collected data were cleaned, edited, and entered into EpiData version 4.6, then analyzed using SPSS Version 26. Binary logistic regression analysis was performed to identify variables and calculate the Crude Odds Ratio (COR), with results showing a P-value < 0.05 being included in a multivariable logistic regression analysis. Adjusted Odds Ratios (AOR) with 95% confidence intervals for variables with P-values < 0.05 were reported to indicate factors influencing depression in cancer patients receiving chemotherapy. The model's fit was checked using the Hosmer-Lemeshow goodness-of-fit test.

Work Plan and Budget: The study was carried out between June and August 2025, with a total budget of 19,050 ETB.

Keywords Prevalence, Cancer, depression, Chemotherapy, associated factors

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1. INTRODUCTION

1.1 Background

The diagnosis of cancer is a highly stressful event, bringing with it a multitude of burdens: the disease itself, social pressures, and psychological distress.

According to the International Agency for Research on Cancer (IARC) in 2022, there were nearly 20 million new cancer cases reported, which involves nonmelanoma skin cancers (NMSCs), along with 9.7 million deaths related to cancer. Studies show about One in five people will be diagnosed with cancer at some point in their lives, with the likelihood being one in nine for men and one in twelve for women. Lung cancer was the most prevalent type of cancer, with 2.5 million new cases, or one out of every eight cancer diagnoses in the world. Followed by breast, colorectal, prostate, and stomach (12.4%, 11.6%, 9.6% 7.3%, 4.9%) respectively. Lung cancer also topped the list of cancer fatalities, resulting in 1.8 million deaths, followed by colorectal, liver, breast, and stomach (18.7%, 9.3%,7.8%, 6.9%, 6.8%) respectively. Breast and cancer of lung were the most prevalent cancers on women and men, respectively, in terms of both cases and mortality.(Bray et al., 2024)

Prostate and lung cancer were the top cancers types followed by colorectal and liver in males, while breast and cervical carcinoma being the two most commonly encountered carcinoma types in females globally. {Obafemi, 2023 #158}

In Africa there is a high record on new cases of cancer and cancer related mortality which can be due to low access to screening and lack of knowledge. Prostate becoming the most frequent carcinoma in men, breast and cervical carcinoma were the two most serious cancer types In females (like sub-Saharan Africa) in north Africa(Egypt) with a higher incidence of cancer than sub-Saharan africa. From black African countries, Nigeria had significant amount of carcinoma patients with case fatalities. In contrast to sub-Saharan African countries north African countries account for high number and death from breast cancer than cervical cancer which might be due to knowledge gap, access to screening and associated infectious disease .(Obafemi & Umahi-Ottah, 2023)

In another study Breast and cervical cancers together account for 3 in 10 of all cancer diagnoses in the sub-Saharan region. Specifically, cancer of breast is the frequent cancer, across 28 countries while cervical carcinoma ranks first in 19 states. In men, prostate cancer has high incidence rate with liver cancer and colorectal being next respectively. In fact, in most of sub-Saharan countries prostate

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cancer is the common cause of mortality in men than liver and colorectal carcinoma next in line, with being cervical carcinoma in female accounting the highest case and cancer related mortality followed by breast.(Bray et al., 2022)

Cancer in Ethiopia presents a growing concern. In 2019, the country recorded near 53,560 new cancer diagnoses, with 39,480 deaths related to cancer and a loss of 1.42 million DALYs.From 2010 to 2019, there was a significant rise in the number of cases, deaths, and disabilities substantially. Although age-standardized rates showed a slower upward trend (or even a slight decline in DALYs, there were notable shifts in cancer types. Tobacco-related cancers are on the rise among women, while genitourinary cancers are increasing in men. The most frequently diagnosed cancers in 2019 were blood cancer(leukemia), cervical, breast, colon/rectum, and stomach cancers, with leukemia, breast, cervical and stomach cancers leading for cancer associated death.(Awedew et al., 2022)

Cancer treatment typically involves surgery, chemotherapy, and radiotherapy. While chemotherapy is a crucial and often effective treatment, it's also intense, cyclical, and produces numerous side effects. Unfortunately, cancer patients undergoing chemotherapy often experience depression, which can worsen during treatment, persist long after its completion, and even reappear when the cancer recurs.(Polikandrioti et al., 2008)

Depression is a frequent mental health concern in these patients, and it can worsen treatment adherence, quality of life, and ultimately, treatment outcomes. Adding to this is the fact that chemotherapy, a primary treatment, has its own side effects, placing further strain on already challenged social, psychological, and financial resources. Depression can be defined as a mood disorder manifesting as continuous feelings of sadness, hopelessness and diminished interest in activities that were previously enjoyable characterize the condition. The depressed mood represents a shift from the individual's usual emotional state, making it difficult to function as normal on everyday activity. For diagnosis depressed mood or a loss of interest or satisfaction in day to day actions above two weeks is needed .(Association, 2013).This psychological disorder can occur at any age and affect the patient’s quality of living. It can also result in disabilities globally, contributing to personal suffering and higher mortality rates among patients.(Kissane et al., 2011)

In progressed cancer stages, it not only reduce the quality of their lifetime with decreases adherence to treatment, prolong hospital stay, and add more psychological burden on the family members(Negesa et al., 2024) (Baraki, Tessema, &Demeke, 2020; Kissane, 2011).

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1.2 Statement of the problem

Patients with cancer are greatly affected from depression, which is a common and crippling mental illness affecting their life satisfaction, compliance to therapy, and at all prognosis. (Zabora et al., 2001)The significant magnitude of depression in patients with cancer is more complex to understand than simply saying it's a reacting to the stress of the diagnosis. It's probable that elements beyond the psychological burden of diagnosis with cancer, complications associated with it and treatments all add to the development of depression.(Sotelo et al., 2014)

Chemotherapy, a cornerstone of cancer treatment, targets the rapid division of cells that defines cancer. While effective against cancerous cells, it also affects healthy, fast-growing cells in areas like bone marrow, the mouth, the intestinal lining, hair follicles, and the reproductive system. This collateral damage results in common side effects, including immune suppression, which adds to the challenges faced by cancer patients undergoing chemotherapy. The nausea and vomiting associated with chemotherapy can be so intense that patients develop "anticipatory nausea," experiencing these symptoms simply by anticipating a hospital visit.(Pandey et al., 2006)

In a study that was done in Poland used Self-Rating Depression Scale showing that there was a slightly higher emotional distress in cancer patients on chemotherapy than who had not received chemotherapy showing that Cancer and additional treatment with chemotherapy have synergistic impact on causing depression, but it was hard to say which one donates more.(Zielińska-Wieczkowska& Betłakowski, 2010).Another research in Rwanda shows the magnitude of depression in cancer estimated to be 42.6%with increased association in patients taking chemotherapy as a treatment line more than the patients on chemotherapy and counseling showing that the increased burden of chemotherapy treatment on cancer patients for being more susceptible for depression{Habimana, 2023 #163}

In Ethiopia different studies show significant number of depression in cancer population on chemotherapy one study during covid era shows the prevalence of depression in AAU was 33.1%{Belete, 2022 #162},In another study at Gondar university comprehensive hospital and felege hiwot is 70.86%(Baraki et al., 2020),In jimma university56.6% (Negesa et al., 2024)which is significantly high .Despite high magnitude of depression on chemotherapy taking cancer patients, there is lack of sufficient studies on the area including worldwide, Africa and Ethiopia

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The intricacies of depression occurring on cancer patients highlight the critical need for a comprehensive investigation into its contributing factors. A better understanding of these factors will allow for the implementation of timely identification and intervention strategies, ultimately enhancing healthy mentality outcomes and satisfaction in life for this susceptible population. Therefore, this research seeks to estimate the magnitude of depression in cancer patients taking chemotherapy and to uncover the primary factors that drive its development.

1.3 Significance of the study

Depression when it occurs in cancer patients has a wide range of negative effects. It complicates treatment because patients must take treatment for both.(Nikbakhsh et al., 2014) ,Furthermore, it can hinder acceptance of adjuvant cancer treatments(Colleoni et al., 2000)when untreated it decrease treatment adherence,(Pitman et al., 2018) lengthen hospital stays, diminish satisfaction in life, and increase the risk of self-harm.(Yousaf et al., 2005).Advancing disease and death were also predicted with depression(Spiegel & Giese-Davis, 2003).

The magnitude of depression in cancer patients on chemotherapy is significantly high. Although routine distress screening is advised globally for effective cancer care, the focus is very low in the area because emphasis is on cancer, with minimal researches on the prevalence and the additional factors are scarce. Therefore, this study was done to improve on the gap by assessing the magnitude of depression on chemotherapy taking cancer patients and related factors by giving detail assessment on the magnitude of depression and related factors which might help for decision makers, planers, and other development stakeholders to consider the issue as a great concern. Additionally, the study also identifies an important input for further similar studies by helping as a ground for further research work.

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2. LITERATURE REVIEW

2.1 Depression

As stated in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), a diagnosis of a major depressive episode (MDE) necessitates the presence of five or more symptoms. for at least 2 weeks duration(Roehr, 2013)one of the main symptoms must be either a depressed mood or anhedonia (loss of interest or pleasure)while secondary symptom are change in appetite or weight, sleep changes like (insomnia orhypersomnia)psychomotor agitation or retardation fatigue or loss of energy decreased potential to think or concentrate ,feelings of worthlessness or excessive guilt and recurrent thoughts of suicide and the symptom should be significant enough to affect their daily activities, which should not be related to substance use, bereavement unless beyond 2 month period.(Tolentino & Schmidt, 2018)

Worldwide around 280million peoples are affected by depression with 3.8% of them develop depression mostly > 60yrs and then adults. A current WHO's Global health data shows, African accounts around 10% of the global burden of mental illness(Organization, 2017).In Africa, 29.19 million people are affected from depression, with more than 7 million being Nigerians. This same research shows in Ethiopia estimates of depression was 4.7%.

2.2 Depression experienced in Cancer patients Taking chemotherapy

Depression is common and significant co morbidity in cancer patients affecting their standard of living, treatment compliance and over all prognoses. The magnitude of depression on cancer patients fluctuates widely influenced by component tsuch as type of cancer, stage and individual psychological resilience. There was 4%higher incidence of depression in this population when compared to others.

Recently, a meta-analysis on 66 studies to estimate the magnitude of depression in cancer patients in various settings reports a overall magnitude in non-palliative care settings was 14.3% (95% Cl = 13-20%), as DSM-IV criteria 10 or16.5% byICD-10.(Mitchell et al., 2011)

The magnitude of depression increases with a person using screening tools by themselves rather than approved measures, and it varied considerably according on the diagnostic tool used. The fact that psychiatric interviews are standard tools that use more strict criteria for clinical depression as specified by the DSM or ICD than self-report methods may help to explain this disparity.

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However, some oncologists might not be able to find psychological discomfort and view of community assistant in whom experiencing signs of depression. This could lead to an underestimation of unfulfilled psychological care needs. Unacknowledged cases result in under treatment because more than half with positive screening result might progress into major depression when therapy is not received.

In India the prevalence was estimated to be 55.7% which is significantly high {Bhattacharyya, 2017 #152}.In another study that was done in Ethiopia the magnitude of depression in patients taking chemotherapy at AAU in the era of covid was 33.1% (Belete et al., 2022), in Gondar university comprehensive hospital and felegehiwot shows 70.86%(Baraki et al., 2020),In jimmauniversity56.6%(Negesa et al., 2024)

2.3 Factors related with depression in Cancer patients taking chemotherapy

The associated factors of depression in cancer patients taking chemotherapy in India was comparatively higher in age groups with higher education, ≥50,males, Hindu religion followers, family income ≥5000 rupees and with involvement in moderate or heavy work. Among cancer patients, 70.6% of those were with blood cancer, 64.3% who had undergone chemotherapy for six months or more, and 56.9% who were on their fourth cycle of chemotherapy or fewer were found to be experiencing depression. {Bhattacharyya, 2017 #152}

In Ethiopia On the study at Jimma hospital patients who chew khat , with residency in jimma, patients on their first and second cycles of chemotherapy were associated with depressed. In regard to duration since start of chemotherapy, those starting at 1–3 months have depression less than those with duration between 4–6 and more than six months(Negesa et al., 2024) and from research during the covid era in AAU those with primary education, with no employment, discharged from jobs, and from types of cancer colon, prostate, cervical cancer and cancer stage were related. For having primary education has a low predisposition for depression, patients with no job and dismissed from job were negatively related. In this study, patients diagnosed with colon, prostate, and cervical cancer were found to be less likely to encounter depression compared to those with breast cancer.(Belete et al., 2022) And in another study which was done in Gondar university comprehensive hospital and felegehiwot concluded that Educational qualification of college and above ,being Jobless ,low weight for height, duration of chemotherapy ≥ 6 months or more likely to be related to depression.(Baraki et al., 2020)

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2.4 Conceptual framework

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3. OBJECTIVES OF THE STUDY

3. 1. General Objective

The General Objective of this study is to determine the prevalence of depression and factors associated with cancer patients undergoing chemotherapy at TikurAnbessa Specialized Hospital in Addis Ababa, Ethiopia, from June –August 2025

3.2. Specific objectives

- To assess the magnitude of depression in patients with Cancer on chemotherapy in Tikur Anbessa Specialized hospital, Addis Ababa Ethiopia from June –August2025.
- To determine factors related to depression in peoples with Cancer taking chemotherapy in Tikur Anbessa specialized hospital, Addis Ababa Ethiopia from June –August2025

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4. METHODOLOGY

4.1 Study area and Study period

The research was conducted at TikurAnbessa Specialized Hospital (TASH), situated in the Addis Ababa Regional State of Ethiopia, established in 1964. The oncology ward was established in 2015.it is located in ledeta sub city providing The oncology center at TASH aims to address the increasing burden of cancer in Ethiopia, by offering services like chemotherapy, radiotherapy, surgery, and palliative care. It also plays an important role in cancer research study and education, contributing to the training of healthcare professionals in oncology and establishing awareness about cancer prevention and early detection. It also provides service to more than 60000 patients annually. The study was carried out from June to August 2025

4.2 Study Design

A cross-sectional study design based in an institution is utilized.

4.3 Population

4.3.1 Source population

All Adult patients with cancer on follow-up at Tikur Anbessa and on chemotherapy treatment were taken as the source population.

4.3.2 Study population

All Adult patients with cancer on treatment with chemotherapy and follow up within data collection period

4.4 Eligibility Criteria

4.4.1 The inclusion criteria.

Adult cancer patients with Age >18, had follow up, on chemotherapy in TASH within data collection period

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4.4.2Exclusion criteria

Patients with communication difficulties or hearing impairments were not included.

Adult cancer patients taking both chemotherapy and radiotherapy were not included

4.5 Sampling technique and Sample size

4.5.1 Sample Size Determination

Cochran's formula for finite sample size is given as:

$$n_0 = \frac{Z_{\frac{\alpha}{2}}^2 p(1-p)}{\varepsilon^2}$$

$$n' = \frac{n_0}{1 + \frac{n_0 - 1}{N}}$$

Where the terms are described as follows:

$n_0 \ldots initial \ldots sample \ldots estimate$

$Z_{\frac{\alpha}{2}}^2 \ldots s\tan dard \ldots normal \ldots value \ldots from \ldots table$

$p \ldots prevalence \ldots of \ldots the \cdots case \ldots under \ldots consideration$

$1-p \ldots the \ldots complement \ldots of \ldots p$

$\varepsilon \ldots the \ldots m\arg in \ldots of \ldots error$

$N \ldots populatio \ldots size$

$n' \ldots is \ldots the \ldots fianal \ldots sample \ldots size$

In our case we have the prevalence of depression (56.6%, taken from jimma medical oncology center)

For 95% level of significance, we have 1.96 from the standard normal table

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The optimum margin of error is 5% which is considered in most studies

The population considered in a monthly basis is estimated to be 440.

Inserting these values in their respective places, we get:

$$n_0 = \frac{(1.96)^2 * 0.56(1-0.44)}{0.05^2} = 378.62$$

$$n' = \frac{378.62}{1+\frac{378.62-1}{440}} = 204.392$$

Taking the nearest figure of the above value, it is rounded to 205 and if we take 5% of contingency for non-response (10) and totally about 215 study units are required to be covered in this research.

4.5.2 Sampling technique

The study participants were selected using a simple random sampling method.

4.6. Study variables

4.6.1 Dependent Variables

Depression is dependent variable

4.6.2 Independent variables

Socio-demographic and economic related variables

- Age
- Sex
- Religion
- Marital condition
- Occupation
- Educational background
- Living condition

Behavioral, Substance use and co morbidity factors

- Alcohol use

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- Chat use
- Tobacco use
- Physical activity
- Co morbidity

Clinical characteristics

- Cancer type
- Duration since cancer diagnosis
- Cycle of Chemotherapy
- Duration since start of chemotherapy
- Staging for cancer

4.7 Operational definition

Depression PHQ9 cut off points

A score of 5 to 9 indicates mild depression, a score of 10 to 14 reflects moderate depression, a score of 15 to 19 suggests moderately severe depression and a score of 20 or higher is classified as major (severe) depression.

Smoking status: An individual who has never smoked a cigarette in their life is referred to as a non-smoker. A former smoker is someone who used to smoke but has not done so for at least 30 days before the data collection period. A current smoker is defined as someone who has smoked one or more cigarettes within the 30 days leading up to the data collection period.

Khat chewing: A former khat chewer is someone who has consumed khat at least once in their lifetime but has not done so in the past 30 days. A current khat chewer is an individual who has used khat at least once in the month leading up to the study. A never khat chewer is a person who has never tried chewing khat at any point in their life.

Alcohol drinking status: A former alcohol user is someone who acknowledges having consumed alcohol at some point but has not done so in the past 30 days. A current alcohol user is an individual who has consumed alcoholic beverages in the 30 days prior to the study. A never user is a person who has never consumed alcohol at any time in their life.

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4.8 Data collection method, Tool, and Procedure

A well organized interviewer-supervised questionnaire was used to collect data. Socio-demographic and economic, clinical, and psychosocial factors were evaluated using approved checklists. Depression was checked by Patient Health Questionnaire-9 (PHQ-9) with nine elements scored from 0 to 3 and the total result was from 0 to 27 showing depression intensity. The PHQ9 threshold 5–9, 10–14, 15–19 and greater than or equal to 20 are as with mild level of depression, moderate level of depression, moderately severe and major depression (severe), respectively. Then, the total depression score is divided, and those cancer patients who scored >=10 are taken as having symptomatic depression. PHQ-9 is an approved instrument in Ethiopia.

4.9 Data Quality control

The questionnaire was initially created in English, then translated into Amharic, and subsequently translated back into English prior to data collection. To enhance clarity in language, the data collection tool was pre-tested on 5% of the sample population. The time taken for this process and any necessary revisions were addressed following the review of the questionnaire. The researcher ensured the quality of the data by verifying the accuracy, completeness, and consistency of the questionnaires with the data collectors. The Amharic version of the PHQ-9 has received approval in Ethiopia.

4.10 Data Processing and Analysis Methods

The data was analyzed with SPSS software program.

1. Descriptive statistics such as frequency, percent, mean and standard deviation were employed to show the demographic characteristics of the variables

2. Multiple regression analysis was done to direct relation of Age, Sex, religion, marital condition, occupation, educational background, living condition and other variables including Alcohol use, khat use, Tobacco use, physical activity, Co morbidity and type of cancer, staging for cancer, length of time Since diagnosis, duration since start of chemotherapy, cycles of chemotherapy given in Cancer patients on chemotherapy

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4.11 Ethical Consideration

The study begun after an approval letter was granted from Family Medicine department and oncology department before data was gathered. Finally, after clear explanation was given for the participants on the purpose of research, data was collected, Privacy was ensured including withdrawing was respected.

4.12 Result Dissemination.

Result of the study will be disseminated to Addis Ababa University

4.12 Result

4.12.1 Socio demographic and economic characteristics of the study participants

A total of two hundred and fifteen patients on treatment with chemotherapy responded, with100 % respondent rate .Most of the study participants 98(45.6 %) were found between the age groups of 31–50 years. In regard to sex and residence of study participants 132(61.4 %) and 122(57.7 %) were female and living in urban residence respectively. On marital status more participants, 163(75.8 %) were married. beyond half of participants 184(85.6%) live with their family members and around 72(33.5%) attended secondary school, 87(40.5%) were housewives and 150(69.8%) were Orthodox Christian

Table 1. Socio demographic and economic characteristics of participants at Tikur Anbessa hospital

Variables	Character	Number	Percent
Age	18–30	19	8.8
	31-50	98	45.6
	51-70	92	42.8
	71-80	6	2.8
Sex	Male	83	38.6
	Female	132	61.4
Residence	From Urban	122	57.7

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Variables	Character	Number	Percent
	From Rural	93	42.3
Marital condition	Being Married	163	75.8
	Single	19	8.8
	Divorced	12	5.6
	Widowed	16	7.4
	Separated	5	2.3
Living status	With family	184	85.6
	Alone	12	5.6
	With relatives	19	8.8
Educational status	Noeducation	42	19.5
	Primary school	60	27.9
	Secondary school	72	33.5
	College and above	41	19.1
Occupation	Employed	71	33
	Farmers	21	9.8
	House wife	87	40.5
	Student	8	3.7
	Unemployment	28	13
Religion	Orthodox	150	69.8
	Muslim	49	22.8
	Protestant	16	7.4
	Catholic	0	

4.12.2 Behavioral aspects, substance use, and co morbidity of participants

It was shown that 35 (16.3 %) participants used alcohol, 16 (7.4%) chewed chat and 16(7.4 %) smoked tobacco. In regard to physical exercise, 105(48.8 %) do physical exercise.74 (34.4 %) have co morbidity, and of these co morbidity, HTN accounts for 42(19.5%) (Table 2).

Table 2. Behavioral Aspects, Substance use and Co morbidity participants at Tikur Anbessa hospital

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Variables	Character	Number	Percent
Alcohol use	Yes	35	16.3
	No	180	83.7
khat use	Yes	16	7.4
	No	199	92.6
Tobacco use	Yes	16	7.4
	No	199	92.6
Physical Exercise	Yes	105	48.8
	No	110	51.2
Co morbidity	Yes	74	34.4
	No	141	65.6
HTN	Yes	42	19.5
	No	173	80.5
DM	Yes	31	14.4
	No	184	85.6
HIV AIDS	Yes	16	7.4
	No	199	92.6
Asthma	Yes	6	2.8
	No	209	97.2

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4.12.3 Type of cancer and treatment-related characteristics of participant

On this study cervical cancer 38 (17.6%) and breast cancer 35 (16.2%) followed by uterine 30 (13.9) were the two most common cancer types at TikurAnbessa hospital. 80(37.2 %), were diagnosed with the disease in the past seven to twelve months before the study. In regard to the clinical stage of the disease, the Second stage accounts for 99 (46.0 %) patients, and 73(34.0%) patients were on more than fourth cycle of chemotherapy. An entire 84(39.1%) participants were on chemotherapy for less than six months (Table 3).

Table 3. Type of cancer and treatment-related characteristics of participant at Tikur Anbessa Hospital

Variables	**Frequency**	**Percent**
Cancer types		
Breast	35	16.2
Blood	5	2.3
Lung	7	3.2
Colorectal	16	7.4
Uterine	30	13.9
Cervical	38	17.6
Gastric	7	3.2
Esophageal	7	3.2
Head and Neck	17	7.9
Bone	8	3.7
Prostate	1	0.4
Liver cancer	3	1.3
Sarcoma	9	4.1

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Variables	Frequency	Percent
Testicular cancer	5	2.3
Others	27	12.5
Staging for cancer		
Stage 1	4	1.9
Stage 2	99	46.0
Stage 3	67	31.2
Stage 4	45	20.9
Chemotherapy cycle		
First cycle	26	12.1
Second cycle	52	24.2
Third cycle	39	18.1
Fourth cycle	25	11.6
> Fourth cycle	73	34.0
Duration since diagnosis		
<6months	57	26.5
7–12 months	80	37.2
>12 months	78	36.3
Duration since start of chemotherapy		
<6months	84	39.1
7–12 months	62	28.8

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Variables	Frequency	Percent
>12 months	69	32.1

4.12.4 Prevalence of depression

This study shows, prevalence of depression on chemotherapy taking cancer patients at Tikur Anbessa Hospital is 50(23.2%)

4.12.5 Factors related with depression on chemotherapy taking cancer patients at TASH

Bivariate analysis showing Marital status, living status, Chewing khat, Co morbidities like HTN,DM,HIV/AIDS ,Stage of cancer, Duration since diagnosis, duration since start of chemotherapy were highly related and were taken for the multivariate analysis later .

Variable	Category	Depression		Chi-square	P-value	Decision
		No	Yes			
Sex	Male	68	15	2.04	0.154	Not significant
	Female	97	35			
Education back ground	No education	29	13	2.63	0.453	Not significant
	Primary education	45	15			
	Secondary education	59	13			
	College and above	32	9			
Marital condition	Single	15	4	9.97	0.041	Significant
	Married	131	32			
	Divorced	7	5			
	Separated	4	1			
	Widowed	8	8			
Residency	Urban	93	29	0.042	0.838	Not significant
	Rural	72	21			

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Living condition	Alone	7	5	9.87	0.007	Significant
	With family	148	36			
	With relative	10	9			
Occupation	Farmers	18	3	8.56	0.073	Not significant
	Gov employee	52	19			
	House wife	70	17			
	Student	8	0			
	Unemployed	17	11			
Religion	Orthodox	116	34	4.45	0.108	Not significant
	Protestant	9	7			
	Muslim	40	9			
Alcohol use	No	137	43	0.248	0.618	Not significant
	Yes	28	7			
Khat use	No	157	42	6.93	0.008	Significant
	Yes	8	8			
Tobacco use	No	155	44	1.97	0.161	Not significant
	Yes	10	6			
Physical exercise	No	81	29	1.22	0.27	Not significant
	Yes	84	21			
	No	119	22	13.44	0	Significant
	Yes	61	13			
HTN	No	14	32	11.24	0.001	Significant
	Yes	24	18			
DM	No	147	37	7.08	0.008	Significant
	Yes	18	13			
HIV AIDS	No	156	43	4.07	0.044	Significant
	Yes	9	7			

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Asthma	No	160	49	0.15	0.698	Not significant
	Yes	5	1			
Stages of cancer	First	4	0	19.9	0	Significant
	Second	87	12			
	Third	49	18			
	Fourth	25	20			
Duration since diagnosis	less than 6 months	53	4	40.43	0	Significant
	7-12 months	71	9			
	Greater than12 months	41	37			
Time since start chemotherapy	less than 6 months	79	5	49.1	0	Significant
	7-12 months	53	9			
	Greater than12 months	33	36			

Variables with a p-value less than 0.05 in multivariate analyses were taken as significantly related and others were not included. Patients who used khat, second and third stage of cancer patients and patients with HIV/AIDS Co morbidity were associated with depression.

Patients with khat use were more likely develop depression other than those without khat use with (AOR = 4.66(0.953,22.8)From co morbidities cancer patients with HIV/AIDS develop depression more likely with (AOR =7.195(0.972,53.24) second and third stage patients were less likely to develop depression than 1st and 4th stage of cancer with(AOR = 0.278(0.086,0.89)and (AOR=0.218(0.069,0.687) respectively.(Table 4)

Table 4. Factors related with depression in cancer patient undergoing chemotherapy

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Variable	Category	Depression		Bivariate analysis	Multivariate analysis		
		No	Yes	COR (95% CI)	AOR (95% CI)	P-value	Remark
arital status	Single	17	2	1	1		
	Married	151	12	0.675(0.14,3.28)	0.695(o.075,6.45)	0.749	
	Divorced	10	2	1.7(0.21,14.02)	0.546(0.055,5.434	0.606	
	Separated	4	1	2.13(0.152,29.66)	0.017(0.0001,1.76	0.085	
	Widowed	11	5	3.86(0.634,23.53)	2.543(0.276,23.39	0.41	
iving status	Alone	8	4	1	1		
	With family	171	13	0.152(0.04, 0.573)	0.541(0.057,5.10)	0.592	
	With relative	14	5	0.714(0.15,3.45)	0.89(0.119,6.64)	0.909	
Occupation	Farmers	18	3	1	1		
	Gov empoyee	52	19	2.192(0.58,8.29)	0.892(0.166,4.81	0.895	
	House wife	70	17	1.46(0.384,5.22)	0.997(0.193,5.14)		
	Student	8	0	1 (...)	1(...)		
	Unemployed	17	11	3.882(0.22,16.361)	1.56(0.214,11.37	0.997	
Khat use	No	180	19	1	1		
	Yes	13	3	2.186(0.572,8.36)	4.66(0.953,22.8)	0.057	Border case
'o morbidity	No	132	9	1	1		
	Yes	61	13	3.12(1.27,7.1)	0.66(0.111,3.92)	0.647	
HTN	No	162	11	1	1		
	Yes	31	11	5.23(2.08,13.11)	2.72(0.472,15.64)	0.263	
DM	No	167	17	1	1		
	Yes	26	5	1.89(0.642,5.56)	3.42(0.681,17.16)	0.135	
HIV AIdS	No			1			
	Yes			2.822(0.994,8.01)	7.195(0.972,53.24	0.053	Border case
ges of cance	First stage	4	0	1	1		
	Second stage	92	7	0.352(0.12,1.04)	0.278(0.086,0.89)	0.031	Significant
	Third stage	60	7	0.54(0.181,1.611)	0.218(0.069,0.687	0.009	Significant
	Fourth stage	37	8	1 (...)			
since diagn	less than 6 months	55	2	1	1		
	7-12 months	75	5	1.83(0.343,9.80)	1.245(0.146,10.66	0.841	
	ater than12 month	63	15	6.55(1.43,29.92)	2.001(0.109,36.80	0.641	
start chemo	less than 6 months	81	3	1	1		
	7-12 months	58	4	1.863(0.401,8.632)	2.22(0.346,14.25)	0.4	
	ater than12 month	54	15	7.5(2.072,27.15)	8.76(0.615,124.64	0.109	

5. DISCUSSION

This study was conducted at Tikur Anbessa specialized hospital to explore the prevalence of depression on cancer patients on chemotherapy and factors which are related with it.

The study shows depression is prevalent in50 (23.2%) of the participants with cervical, breast and uterine the commonest cancer types from most to least. This result was low when compared to a research done in India showing55.7 %with GI ,Head and Neck and Blood the commonest cancer types{Bhattacharyya, 2017 #161},research done in AAU during Covid era which was 33.1% ,at Gondar university Hospital and FelegeHiwot referral hospital70.86% (95% CI: 65.38, 75.92)Breast, cervical cancer, colorectal cancer and lung cancer{Baraki, 2020 #160}and Jimma University medical Center56.6 %(95 % CI: 50.92, 62.28)colorectal and breast {Negesa, 2024 #159}with the commonest cancer types.

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The variations of results can be due to sample size difference and topography. However, this result in the present study is very helpful in showing the benefit for early screening and diagnosis of depression in these high risk patients.

Patients who used khat were 4 times more in risk to be depressed than those who did not used khat (AOR = 4.66(0.953,22.8)). which is the same as a study at Jimma medical oncology center showing that khat users are 2 times more affected by depression than those who did not used khat {Negesa, 2024 #125}

Regarding stage, second stages and Third stage were 72%and 78% less likely to have depression than those on their first and fourth stage with (AOR = 0.278(0.086, 0.89)) and (AOR = 0.218(0.069, 0/.0687)) respectively. This might be slightly comparable to the study which was done at AAU during covid era showing stage 4 cancer patients were more susceptible than first ,second and third stages of cancer {Belete, 2022 #162} and first and second stage were more likely to be depressed on the study which was done in at Jimma{Negesa, 2024 #125}

Patients with co morbidities like HIV/AIDS were 7 times more to develop depression other than patients without HIV/AIDS(AOR=7.195(0.972, 53.24))

6. CONCLUSION ANDRECOMMENDATION

Based on this study, depression is comparably common on cancer patients taking chemotherapy. Chewing khat, stage of cancer, and cancer patients with HIV/AIDS were to be related with depression and all health professionals working at oncology clinic should be aware of it. All health care professionals must consider screening patients using PHQ-9 or other approved instruments in all cancer patients on chemotherapy, at most in those patients who are at high risk and detect some early symptoms. Additionally educate patients about the symptoms of depression and advice to come early for further evaluation and treatment. Researcher should further check more on the factors adding to depression among cancer patients on chemotherapy by using strong study technique to enable more applicable, simpler approach and halt depression in cancer patients.

7. STRENGTH OF THE STUDY

Can be used as a primary data for other studies

100% response rate

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8. LIMITATION OF THE STUDY

Smaller sample size use was the limitation

Cross sectional study use

Single center study

9. REFRENCE

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APPENDIX

Annex 1: Information sheet for participants and consent form

Good morning/afternoon, dear participant! My name is……., and I am a data collector for a study being conducted at this institution regarding the prevalence of depression and related factors among cancer patients undergoing chemotherapy at TikurAnbessa Hospital in Addis Ababa, Ethiopia. This research is being led by Dr. EyerusalemTesfaye, who is pursuing her postgraduate degree. I would like to take a moment of your time to explain the study and your selection as a participant.

The aim of this study is to determine the prevalence of depression and its associated factors in cancer patients receiving chemotherapy. The results may assist the health office in developing and implementing timely screening methods for depression and initiating appropriate early treatment. This process will take approximately 30-40 minutes. Please be assured that all information you provide will remain confidential, and you do not need to disclose your name. Therefore, I kindly ask that you respond honestly and sincerely.

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Your participation is entirely voluntary, and you have the right to decline involvement. Whether you choose to participate or not, or if you decide not to answer certain questions, it will not affect your care or treatment in any way.

Contact address:If you have any questions or would like more information about the research and its procedures, please feel free to contact the committee through the advisor's or principal investigator's address.

Principal Investigator:Dr. Eyerusalem.Tesfaye

Consent form English version

I have read and understood the process and objectives of this study titled "Prevalence of Depression and Associated Factors Amongst Patients with Cancer Undergoing Chemotherapy at TikurAnbessa, Addis Ababa, Ethiopia." I am aware of the purpose, benefits, and drawbacks of this research. I understand that there are no risks involved and that I will not receive any compensation for my participation. I have been informed that if I feel uncomfortable answering any questions, I can choose to skip them at any time. I acknowledge that my participation is entirely voluntary.

I have been assured that my responses will remain confidential and that my name will not be recorded. I am now providing my consent to participate in this study voluntarily. May I have your permission to proceed?

Yes No

Witness signature ----------date----------

Data collector Name---------- signature ----------date----------

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Questioner code

Socio demographic variables

Question	Response
Age	In numbers
Sex	1. Female 2. Male
Educational background	1.No formal education 2. Primary school 3. Secondary school 4. College and Above
Maritalcondition	1. Married 2. Single 3. Divorced 4.Widowed5. Separated
Residency	1.Urban2. Rural
Living condition	1.With family 2. Alone3. With relative
Occupation	1.Employed2. Farmer 3. House wife 4. Student5. Unemployed
Religion	1.ortodox 2 Muslim 3 protestant 4 catholic

Behavioral characteristics

Variables	**Response**
Alcohol use	Yes
	No
khat use	Yes
	No
Tobacco use	Yes
	No
Physical Exercise	Yes
	No
Co morbidity	Yes
	No
HTN	Yes
	No
DM	Yes
	No
HIV AIDS	Yes
	No
Asthma	Yes
	No

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Cancer and related characteristics

Cancer Type	
Staging for the cancer	
Duration since cancer diagnosis	<6month 7-12month >12month
Duration since start of chemotherapy	1-3month 4-6 month >6month
Cycle of Chemotherapy	1st 2nd 3rd 4th >4th

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