ISSN: 1343-4292
Volume 140, Issue 02, May, 2022

Prevalence of depression and suicidal behavior among cancer ill patients at Zagazig University Hospitals

Hanaa Hamdy Ali Elzeiny[1], Soad Abdalla Hassan[2*], Nashwa Ahmed Hussein Abdel karim[3]

Assistant Professor and head of Psychiatric & Mental Health Nursing, Faculty of Nursing, Zagazig University[1]
Clinical instructor at Technical institute of nursing, Zagazig University[2]
Lecturer of Psychiatric Mental Health Nursing Faculty of Nursing Zagazig University, Egypt[3]

Corresponding author: 2*

ABSTRACT— Depression and suicide are increasing concern on cancer patients. Cancer represents the second leading cause of mortality in the world. To assess the prevalence of depression and suicidal behavior among cancer ill patients at Zagazig University Hospitals. A cross sectional design was utilized in the current study on a sample of 513 cancer ill patients at 3 oncology out-patients clinic "the hematology clinic, Internal medicine tumor clinic and oncology and nuclear Medicine Clinic" at Zagazig University Hospitals. The tools used for data collection were Socio-demographic data sheet, Beck Depression Inventory (BDI-II) and Columbia Suicide Severity Rating Scale (C-SSRS). Of the current study revealed that the prevalence of depression and suicide behavior among cancer patients was (30.4%) and (0%) respectively. There was no correlation between depression score and suicide score. The present study proven that depression is more common in patients with cancer. Depression increased by age, secondary level of education, single, retired, who had gastrointestinal tract, head and neck cancer. The oncology out patient's clinic must include multidisciplinary psychiatric team who are fully involved in each patient's management plan.

KEYWORDS: Cancer, Depression, Suicide

1. INTRODUCTION

With an expected 17 million deaths in 2030 and a general percentage of one in six deaths, cancer is the world's second largest cause of death [1]. Cancer is a phrase that refers to a varied group of non-communicable disorders defined by uncontrolled cell development in the body's most diverse tissues. The genesis of metastasis occurs when cancer cells travel from one tissue to another [2]. Additionally, Psychological discomfort, anxiety and depressive symptoms, and subjective well-being are all linked to cancer. Chemotherapy-induced hair loss, appetite loss, and surgical scars are just a few of the physical adverse effects of cancer treatment. Cancer patients frequently experience emotions of inadequacy and poor self-esteem [3]. Depression affects 10-15 percent of people at some point in their lives, and it is often regarded as one of the most debilitating illnesses. Despite current treatment efforts, depression is the biggest cause of disability among people aged 12 to 44, with an estimated 400 million people affected [4]. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) defines major depressive disorder (depression) as the occurrence of low mood or anhedonia, as well as at least four other types of depressive symptoms, over a two-week period, that cause clinically significant distress or impairment of important daily functions, and that cannot be attributed to the physiological effects of a substance or another condition [5]. Moreover, depression is a common side effect in cancer patients, and it can cause a wide range of psychological and physical (somatic) symptoms. Fatigue, appetite disruption or weight loss, sleep issues, memory and concentration difficulties, an increase in pain perception, and a reduction in tolerance of

cancer treatment side effects are some of these symptoms. Evidence shows that these symptoms cause significant deterioration in patients' functional capacity, social roles, quality of life, treatment compliance, and maybe even death [6]. Suicide is the 10th highest cause of mortality in the United States, and it is a major cause of death in most Western countries [7]. Every year, roughly 800,000 individuals die by suicide, with the number of suicide attempts believed to be almost twenty times greater. Over 90% of persons who commit suicide have a mental disease, the most frequent of which is major depressive disorder, which affects up to two-thirds of patient [8]. Furthermore, Suicide is defined as the act of intentionally killing oneself, and it is recognized as a severe worldwide public health issue that demands immediate attention [9]. Clinical comorbidity refers to the co-occurrence of depression and cancer that is greater than the statistically expected probability – that is, values greater than the prevalence of depression in the general population, which is about 4.5 percent – as well as the impact of the co-occurrence on the disease's course [10]. Suicide risk is up to twice as high among cancer patients as it is in the general population. Furthermore, the danger is largest in the first few months and, in any event, within the first year or two years following diagnosis. Indeed, cancer in the head and neck, as well as those developing in the digestive tract (particularly in the pancreas, esophagus and stomach), as well as those affecting the lungs and prostate are linked to a greater likelihood of suicide. The incidence rises with age, as well as in those who are in the advanced or terminal stages of cancer [11].

Research questions

What is the prevalence of depressive symptoms among cancer ill patients at Zagazig University Hospitals?

What is the prevalence of suicidal behavior among cancer ill patients at Zagazig University Hospitals?

Is there correlation between depression and suicidal behavior among cancer ill patients at Zagazig University Hospitals?

2. Methodology

2.1 Study design

A cross- sectional study design was utilized in the current study.

2.2 Study setting

The existing study was conducted at two places at Zagazig University Hospitals first out patients clinic" the hematology clinic, and Internal medicine tumor clinic" second heart and chest building" oncology and nuclear Medicine Clinic" at Sharkia Governorate

The subjects of the current study composed of 513 cancer ill patients.

2.3 Inclusion criteria

Age from 18 years old and above and all educational levels, all cancer types and grades and free from mental disability.

2.4 Exclusion criteria

Patient's age less than 18 years old, patient in coma, patient with mental disorder, patient not diagnosed with cancer and patient who refused to share in this study.

2.5 Sample size

Assuming that total number of cancer patients attending Zagazig University hospitals in 6 months are 12878

patients, the sample was calculated to be 513 patients calculated by (Epi info version 6.02), proportion allocation technique number of patients in each clinic/ total number of patients*sample size.

2.6 The tools

The tools were used for collecting data of the present study composed of; Tool (1) Socio-demographic data sheet: this tool was developed by researcher to assess the personal characteristics of cancer patients as age, gender, education level, marital status, religion, medical diagnosis, cancer stage, duration and treatment; Tool (2) Beck Depression Inventory (BDI-II): This scale was developed to assess the presence and severity of symptoms of depression. Beck Depression Inventory is consisted of 21 items. Each item was rated on a 4- points scale ranging from 0 to 3. The highest total score is 63. The scoring system; (0-13) is considered minimal depression, (14-19) mild depression, (20-28) moderate depression and (29-63) severe depression; Tool (3) Columbia Suicide Severity Rating Scale (C-SSRS): These scale designed to distinguish the dominions of suicidal ideation and suicidal behavior. Four structures are measured. The first one is the severity of ideation (hence for the referred to as the "severity subscale"), which is rated on a 5-point ordinal scale the scoring system: 1=wish to be dead, 2=nonspecific active suicidal thoughts, 3=suicidal thoughts with methods, 4=suicidal intent and 5=suicidal intent with plan. The 2nd is the intensity of ideation subscale (hereafter referred to as the "intensity subscale"), which comprises 5 items. The scoring system: Each rated on a 5-point ordinal scale: frequency, duration, controllability, deterrents, and reason for ideation. The 3rdis the behavior subscale, which is ranked on a nominal scale. The scoring system includes: Actual, aborted, and interrupted attempts, preparatory behavior, and non-suicidal self-injurious behavior. The 4th is the lethality subscale, which assesses actual attempts; actual lethality. The scoring system: Is rated on a 6-point ordinal scale, and if actual lethality is zero, potential lethality of attempts is rated on a 3-point ordinal scale.

2.7 The reliability

The reliability of the utilized tool was assessed by Cronbach's Alpha that used to measure the internal consistency was 0.714 for depression.

2.8 Administrative Design

On the basis of letters from the post graduate affairs and nursing college, Zagazig University, an official permission was obtained from the out-patient clinic director, dean of the Faculty of Medicine Zagazig University after explaining the nature and aim of this study to get the permission for data collection and facilitate the role of researcher. The ethical issues were taken into consideration during the study. The study was approved by the pertinent authority of research ethics committee of faculty of nursing at Zagazig University.

2.9 Ethical considerations

The cancer ill patients were given verbal explanation of the aim of the study, it's probable benefits, and methods for fulfilling data collection tools to obtain the patients trust to share in the study. Oral consent was taken from each patient in order to join in the study. Each patient was notified that participation is voluntary and removal is permissible. Tools did not include any injury and did not distress any religious and traditional issues during the study sample. Confidentiality was confirmed throughout the study process; where personal data were not revealed, and the patients were reassured that all data are handled only for the research purpose.

2.10 Field work

The tools were collected during COVID 19 the researcher followed precautionary measures as (wearing mask and keeping distance). Once permission was granted, the researcher met with cancer ill patients

undergoing chemotherapy and radiotherapy at (hematology clinic, Internal medicine tumor clinic and oncology and nuclear Medicine Clinic) who fulfilled the inclusion criteria. The researcher begun collection from heart and chest building then went to outpatient clinic in the morning shift, three hub hazard days per week to collect data from different patients and to meet them. The patients were interviewed on individual bases for about 15:20 minute's. The researcher contacted with the patients by introducing herself and explained the nature and purpose of the study to obtain patient's informed consent .All questions answer and instructions were given to the patients to obtain acceptance and cooperation during interview session The following steps were followed to collect the data by using tools sheet:- socio demographic sheet, Beck depression inventory BDI and Columbia suicide severity rating scale C-SSRS, from pilot study results , it founded that average time needed to fill all data sheets was 15-20 mints. Socio demographic sheet 5 mints, BDI 10 mints and C-SSRS 5 mints. The tools data was distributed to patients before receiving chemotherapy or radiotherapy session. The average number of completed tools daily ranged from 7-9 sheets. Data collection time continued for 6 months from the beginning of September 2020 to the end of February 2021.

2.11 Statistical analysis

All data were collected, tabulated and statistically analyzed using SPSS 20.0 for windows (SPSS Inc., Chicago, IL, USA 2011). Quantitative data were expressed as the mean ± SD & (range), and qualitative data were expressed as absolute frequencies (number) & relative frequencies (percentage). Percent of categorical variables were compared using Chi-square test. Pearson's correlation coefficient was calculated to assess relationship between various study variables, (+) sign indicate direct correlation & (-) sign indicate inverse correlation, also values near to 1 indicate strong correlation & values near 0 indicate weak correlation. All tests were two sided. P-value < 0.05 was considered statistically significant (S), p-value < 0.001 was considered statistically significant (HS) and p-value ≥ 0.05 was considered statistically insignificant (NS). The logistic regression is a predictive analysis. Logistic regression is used to describe data and to explain the relationship between one dependent binary variable and one or more nominal, ordinal, interval or ratio-level independent variables.

3. Results

Table (1) reveals that, among the study cancer patients, It was found that 58.5% of them were females and 41.5%, were males, 41.3% of patients aged between 38 to 57 years old, 40.4% of patients were from secondary educational level, 64.3% of patients were married, 49.1% of patients were housewives and 85.5 of them were Muslim patients. Table (2) shows that, there were 23.8% of patients had digestive/gastrointestinal cancer, 19.7% of patients had cancer breast, 16.6% of patients had cancer blood, 8.8% of patients had genitourinary, 5.8% of patients had endocrine/neuroendocrine, 5.3% of patients had head and neck cancer, 5.1% of patients had gynecologic, 3.9% of patients had musculoskeletal, also same percent of patients had respiratory\thoracic, 3.3% of patients had cancer skin. Least percent of cancer manifest as eye and neurological cancer 1.9% for each. Table (3) reveals that, patients complaint from hypertension were 43.3%, 98.2% of them affected one system of body, 28.1%, suffering from cancer from > 6 months to 1 year, 46.8% of patient at second stage 55.4% were treated by intravenous chemotherapy, 93.0%, of the treated by one line of treatment. Table (4) shows that, all of studied patients never had suicidal thoughts or wishes, almost of study patients 99.8% of studied cancer patients never had guilty feeling, 96.3% of them had never past failure, 62.8% of them had almost never changes in sleeping time, 38.9% of them had sometimes tiredness or fatigue, 27.5 % of them had always irritability. Figure (1) illustrated that, prevalence of depression among cancer patients was (30.4%) of the studied patients had depression. Table (5) shows that, there was statistically significant relation between depression level and cancer types of studied cancer patients. This table shows ranking of studied cancer patients according their

moderate depression level: 13.9% of digestive\gastrointestinal cancer patients had moderate depression level, followed by 11.1% of head and neck patients, then 10% of cancer eye patients and neurologic cancer patients. After that cancer breast patients (9.9%), moderate level of depression represent with low percent among other types of cancer. Table (6) reveals that, there was statistically significant relation between depression level and the following Sociodemographic characters of studied cancer patients; age p=0.007, education level p=0.0001, Social status p=0.0001, occupation p=0.006. It obvious many of Sociodemographic characters associated with depression level, where 77.7% of them their age between 18-37 years had minimal level of depression, 79.2% of them had secondary level of education had minimal level of depression, 82.7% of them were single had minimal level of depression and 78.6% of them were employed had minimal level of depression, table (7) defines that none of studied patients had neither suicidal ideation, nor suicidal behavior. Table (8) shows that the prevalence of suicidal behavior was 0% none of studied cancer patients, had previous attempt for suicide behavior. Table (9) explains that there is no correlation can be calculated between depression and suicidal score due to the value of suicidal score is constant.

Table (1): personal characteristics of cancer patients (n=513)

Variables	number	%
Age per years		
18-37 years old	139	27.1
38-57 years old	212	41.3
58-77 years old	140	27.3
> 77years old	22	4.3
Sex		.
Females	300	58.5
Males	213	41.5
Education		.
Illiterate	168	32.7
Primary	56	10.9
Secondary	207	40.4
High education	82	16.0
Social		.
Single	52	10.1
Married	330	64.3
Divorced	32	6.2
Widowed	99	19.3
Occupation		.
House wife	252	49.1
Employee	98	19.1
Retired	61	11.9
Skilled	87	17.0
Other	15	2.9
Religion		.
Muslim	439	85.6
Christian	74	14.4
Total	513	100%

Table (2): Body system involved with cancer among studied patients (n=513)

Body system involved with cancer	number	Percent
Digestive\Gastrointestinal	122	23.8
Breast	101	19.7
Blood	85	16.6
Genitourinary	45	8.8
Endocrine\Neuroendocrine	30	5.8

Head and neck	27	5.3
Gynecologic	26	5.1
Musculoskeletal	20	3.9
Respiratory\Thoracic	20	3.9
Skin	17	3.3
Eye	10	1.9
Neurologic	10	1.9
Total	513	100

Table (3): Clinical characteristics of cancer patients (n=513)

Variables	number	Percent
Medical history		
Hypertension	222	43.3
Diabetes mellitus	101	19.7
0ther	190	37.0
Number of body system affected by Cancer		
One system	504	98.2
More than one system	9	1.8
Cancer duration		
From 1month to 6 months	140	27.2
From> 6 months to 1 year	144	28.1
From >1 year to 3 years	143	27.9
More than 3 years	86	16.8
Stage of cancer		
First	137	26.7
Second	240	46.8
Third	118	23.0
Fourth	18	3.5
Treatment		
Intravenous chemotherapy Radiation	284 167	55.4 32.5
Oral chemotherapy	25	4.9
Intravenous hormonal therapy	37	7.2
Number of treatment methods		
One type of cancer treatment	477	93.0
More than one type of cancer treatment	36	7.0
Total	513	100%

Table (4): frequency of depression items among studied cancer patients (n=513)

	Never		Almost never		Sometimes		Always	
	No	%	no	%	No	%	No	%
Sadness	194	37.8	274	53.4	43	8.4	2	.4
Pessimism	297	57.9	196	38.2	18	3.5	2	.4
Past Failure	494	96.3	15	2.9	4	.8	0	.0
Loss of pleasure	157	30.6	305	59.5	44	8.6	7	1.4
Guilty Feeling	512	99.8	1	.2	0	.0	0	.0
Punishment Feeling	256	49.9	231	45.0	22	4.3	4	.8
Self-Dislike	475	92.6	31	6.0	5	1.0	2	.4
Self-Criticalness	447	87.1	57	11.1	5	1.0	4	.8
Suicidal Thoughts or Wishes	513	100	0	0	0	0	0	0
Crying	461	89.9	36	7.0	14	2.7	2	.4
Agitation	324	63.2	161	31.4	23	4.5	5	1.0
Loss of Interest	222	43.3	196	38.2	90	17.5	5	1.0
Indecisiveness	233	45.4	237	46.2	39	7.6	4	.8
Worthlessness	367	71.5	135	26.3	8	1.6	3	.6
Loss of Energy	442	86.2	67	13.1	4	.8	0	.0
Changes in Sleeping Pattern	12	2.3	322	62.8	171	33.3	8	1.6

ISSN: 1343-4292
Volume 140, Issue 02, May, 2022

Irritability	87	17.0	148	28.8	137	26.7	141	27.5
Changes in Appetite	306	59.6	197	38.4	7	1.4	3	.6
Concentration Difficulty	117	22.8	272	53.0	124	24.2	0	.0
Tiredness or Fatigue	120	23.4	174	33.9	200	38.9	19	3.7
Loss of interest in sex	7	1.4	342	66.7	156	30.4	8	1.6
Total	513							100%

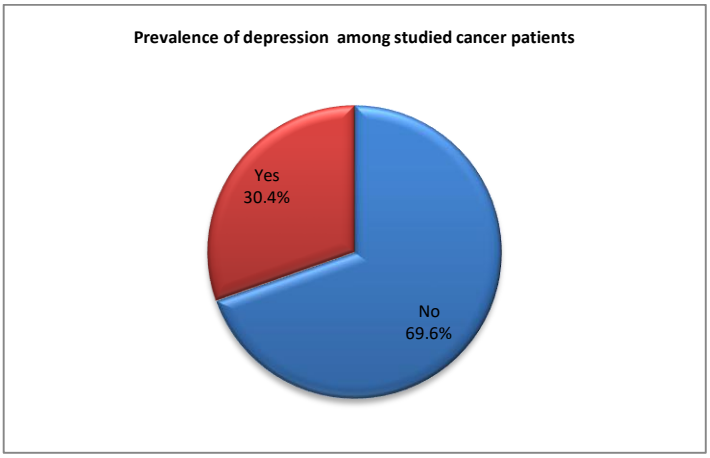

Figure (1): Prevalence of depression among studied cancer patients

Table 5: Ranking of studied cancer patients according their moderate depression level

Body system involved with cancer	Depression level						n	χ^2	rank
	minimal depression n=357		Mild depression n=113		moderate depression n=43				
	No.	%	No.	%	No.	%			
Digestive\Gastrointestinal	71	58.2	34	27.9	17	13.9	122		1
Breast	70	69.3	21	20.8	10	9.9	101		4
Blood	68	80.0	13	15.3	4	4.7	85		7
Genitourinary	31	68.9	12	26.7	2	4.4	45		8
Endocrine\Neuroendocrine	25	83.3	3	10.0	2	6.7	30		5
Head and neck	20	74.1	4	14.8	3	11.1	27	40.53	2
Gynecologic	16	61.5	9	34.6	1	3.8	26	P=0.009	9
Musculoskeletal	16	80.0	3	15.0	1	5.0	20		6
Respiratory\Thoracic	16	80.0	3	15.0	1	5.0	20		6
Skin	15	88.2	2	11.8	0	.0	17		10
Eye	7	70.0	2	20.0	1	10.0	10		3
Neurologic	2	20.0	7	70.0	1	10.0	10		3

χ^2 Chisquare test(S) Significant $p<0.05$

Table 6: Relation between depression level and Sociodemographic characters of studied patients (n=513)

Variables	Depression level						n.	χ^2	P
	minimal depression n=357		mild depression n=113		moderate depression n=43				
	No.	%	No.	%	No.	%			
Age per years									
18-37 years old	108	77.7	19	13.7	12	8.6	139	17.75	0.007
38-57 years old	150	70.8	44	20.8	18	8.5	212		(S)
58-77 years old	89	63.6	42	30.0	9	6.4	140		
> 77years old	10	45.5	8	36.4	4	18.2	22		
Sex	.	.	.	.	.	.			
Females	200	66.7	75	25.0	25	8.3	300	3.79	0.15
Males	157	73.7	38	17.8	18	8.5	213		
Education	.	.	.	.	.	.			
Illiterate	93	55.4	59	35.1	16	9.5	168		

Primary	41	73.2	11	19.6	4	7.1	56	34.37	0.0001
Secondary	164	79.2	32	15.5	11	5.3	207		(S)
High education	59	72.0	11	13.4	12	14.6	82		
Social status	.	.	.	.	.	.			
Single	43	82.7	4	7.7	5	9.6	52		
Married	244	73.9	62	18.8	24	7.3	330	26.62	0.0001
Divorced	16	50.0	12	37.5	4	12.5	32		(S)
Widowed	54	54.5	35	35.4	10	10.1	99		
Occupation	.	.	.	.	.	.			
House wife	162	64.3	69	27.4	21	8.3	252		
Employee	77	78.6	12	12.2	9	9.2	98		
Retired	40	65.6	16	26.2	5	8.2	61	21.32	0.006
Skilled	68	78.2	15	17.2	4	4.6	87		(S)
Other	10	66.7	1	6.7	4	26.7	15		
Religion	.	.	.	.	.	.			
Muslim	303	69.0	102	23.2	34	7.7	439	3.63	0.16
Christian	54	73.0	11	14.9	9	12.2	74		

χ^2Chisquare test(S) Significant p<0.05

Table 7: Frequency of Columbia-suicide severity rating scale among studied cancer patients (n=513)

Items	No		Yes	
	n.	%	n.	%
SUICIDAL IDEATION				
1. Wish to be Dead	513	100	0.0	0.0
2. Non-Specific Active Suicidal Thoughts Have you actually had any thoughts of killing yourself?	513	100	0.0	0.0
3. Active Suicidal Ideation with Any Methods (Not Plan) without Intent to Act	513	100	0.0	0.0
4. Active Suicidal Ideation with Some Intent to Act, without Specific Plan	513	100	0.0	0.0
5. Active Suicidal Ideation with Specific Plan and Intent	513	100	0.0	0.0
Intensity:	513	100	0.0	0.0
Frequency How many times have you had these thoughts?	513	100	0.0	0.0
Duration When you have the thoughts how long do they last?	513	100	0.0	0.0
Controllability	513	100	0.0	0.0
Deterrents Are there things - anyone or anything (e.g., family, religion, pain of death) - that stopped you from wanting to die?	513	100	0.0	0.0
Reasons for Ideation What sort of reasons did you have for thinking about wanting to die or killing yourself?	513	100	0.0	0.0
SUICIDAL BEHAVIOR (Check all that apply, so long as these are separate events; must ask about all types)	513	100	0.0	0.0
Actual Attempt:	513	100	0.0	0.0
Interrupted Attempt:	513	100	0.0	0.0
Aborted or Self-Interrupted Attempt:	513	100	0.0	0.0
Preparatory Acts or Behavior:	513	100	0.0	0.0
Suicidal behavior	513	100	0.0	0.0
Completed suicide	513	100	0.0	0.0
Actual Lethality/Medical Damage:	513	100	0.0	0.0
Potential Lethality: Only Answer if Actual Lethality	513	100	0.0	0.0

Table 8: Prevalence of Suicidal among studied cancer patients (n=513)

	n.513	Percent
Prevalence of suicidal ideation		
Absent	513	100.0
Present	0	0.0

()*Maximum score

ISSN: 1343-4292
Volume 140, Issue 02, May, 2022

Table 9: Correlations between depression score and Suicidal score

		Depression score	SUICIDAL
Depression score	(r)	1	a
	P		-
Suicidal score	(r)	.[a]	.[a]
	P	.	

a.=Cannot be computed because at least one of the variables is constant

4. Discussion

Depression is the most frequent psychiatric condition among cancer patients, and it can vary from isolated depressed symptoms to major depression [12]. In the present study, two fifth of cancer patient's age was ranged from 38-57 years. This may be owing to the adult population's increased exposure to carcinogenic substances over time, as well as their weakened immune system as genetic predisposing factors, sedentary life style as smoking, un healthy eating, over-weight, exposure to chemicals at working area, infectious disease. This results was agreement with earlier study [13], reported that, over two-thirds of the patients were under the age of 60. On the contrary, study [14] clarified that more over half of cancer patients were 65 years old or older. In the present study, more than half of cancer patients were females. This could be due to presence of breast cancer is the most frequent type in women in addition to another types of cancer that found in female gender. This finding is agreement with earlier study [15], clarified that, more than half of cancer patients were female. In the present study, two fifth of cancer patients were secondary educational level. This might due to lake of awareness about the importance of high educational level, the financial situation of some patients was the reason that he did not complete his education in order to help them family. And also most of girls got married in the secondary stage of education. This result of current study goes with study [16], found that, two fifth of patients were secondary education. While in another study [17], the majority of the patients was illiterate or could read or write, according to the findings. The finding of the study showed that about two third of cancer patients were married. This could due to the sample size was excluded who were under 18 years old and children and the human nature to be married to maintain the continuity of the offspring, using hormonal contraceptives increase the risk of married women for cancer. On the same line, with study [18], who clarified that, over two third of the patients were married. In the present study, about half of cancer patients were house wife. This might due to more half of the present study were female and female cancer survivors are relatively less likely to return to work than men after cancer diagnosis. This finding agree with earlier study [19], reported that three-quarters of the patients were jobless or housewives.

The present study revealed that the majority of cancer patients were Muslim. This finding might due to that Egypt is an Islamic country and most of its population is Muslim. This study finding was in agree with, study in Nigerian [20], reported that, more than three fifth of cancer patients were Muslim. On the contrast, with earlier study [21], revealed that, three fifth of patients were Christians. In the current study regarding to body system involved with cancer, found that about one quarter of patients were had digestive/gastrointestinal tract cancer followed by breast, blood, then other body systems. The possible explanation of this finding is the fact that the digestive system contains the liver, rectum, colon, pancreas, and stomach, which have a high rate of cancer, also the breast cancer, because most of the patients were women. And blood cancer because their number was large in specify the sample size of this study. This finding was agreed with study [22], found that more over a quarter of the patients had gastrointestinal tract cancer, followed by breast cancer, and then other bodily systems. In the present study, found that, the vast majority of patients had cancer in one system of the body. This finding might due to that the most of includes sample size were in the first stages of cancer (I, II) and less were in the fourth stage (metastasis).

This finding agree with study in Saudi Arabian [23], confirmed that, About half of the patients were diagnosed with a single tumor. In the current study, found that, nearly two third of cancer patients had positive medical history (hypertension and diabetes) and the vast majority of patient treated by one type of cancer treatment. Furthermore the majority of patients are treated with chemotherapy, followed by radiotherapy separately. The fact that the prevalence of hypertension has been growing in Egypt is a possible reason for this observation. In Egypt, it was recently projected to reach 29.5 percent. The prevalence of hypertension is high, but the proportion of hypertensive patients who are aware of illness and are treated appropriately remains low [24]. On the other hand, earlier study [25], clarified that, the majority of patients had no additional medical conditions, and approximately one-third of them were treated with more than one form of cancer treatment (surgery + chemotherapy + radiation + other) (hormone therapy). In the present study, found that more than one quarter of cancer patients were suffering from cancer from 6 months to one year. These finding might due to that more than half of the patients were women, and that there was at this time the President's initiative to detect breast tumors, and most of them discovered that they had cancer through this initiative.

These finding agree with study [26], clarified that approximately two-thirds of cancer patients had been diagnosed with the disease for less than or equal to one year. On the contrast, earlier study [27], found that more over two fifth of the patients had been diagnosed with cancer for two to five years. The present study clarified that, more than two fifth of cancer patients were diagnosed as second stage of cancer. These findings might due to that cancer is an obvious disease, People don't do regular checkups and go to the doctor when the pain is severe and most patients discover it by chance. This result was in agreement with study [28] reported that, over than half of cancer patients were diagnosed as being in the second stage of cancer. While another study [29], Clarified that, one third of cancer patient were at fourth stage of cancer. In the current study, more than half of patients treated with chemotherapy. This findings might due to chemotherapy is more effective in treating malignant cancer and useful in cases of metastasis and can increase survival rates [30]. This finding is agree with study [31], reported that, approximately two third of patients receiving chemotherapy. On the other hand, study [32], stated that, majority of cancer patient treated by surgery. In the present study, reported that, the most prevalent symptoms were nearly two fifth of them had fatigue or tiredness, more than three fifth of patients had changes in sleeping time and more than one quarter of them had irritability. These results might be due to side effects of treatment and this is the criteria of depression. This finding was agree with earlier study [33], revealed that, The most common symptoms were tiredness or fatigue and a lack of energy in the great majority of patients, most of patients had changes in sleeping patterns, almost a third of them had changes in appetite and a loss of interest in sex, and more than two-thirds of them had concentration problems. The present study results revealed that the prevalence of depression among cancer ill patients as nearly one third of patients had symptoms of depression. This finding might be due to that cancer itself causes psychological problems for patients, the most important of which is depression, and that the cancer patient thinks that his end is near, the side effects of treatment that cause physical problems for patients. In addition, the complications of procedures and routines to obtain treatment, which causes effort on patients and dissatisfaction. Further, higher rate of depression were reported among female patients with cancer [34]. Similarly, study in Spain [35], clarified that, the prevalence of clinically significant depressive symptomatology observed was 27%, also on the same line, study [10], and reported that, the prevalence rate of clinical depression with a mean of 21.2 % depression for different cancer entities.

On the contrary, study in Egypt [36] revealed that, the study participants exhibited a high prevalence of depressed symptoms, with somewhat more than two-thirds of them having depressive symptoms, also study by [37] reviled that, the prevalence of depression in cancer patients was 11%. In the current study, found

significant relation between depression level and cancer types of studied cancer patients. Developing of depression was high in patients with digestive\gastrointestinal cancer, followed by head and neck cancer, cancer eye and neurologic cancer, cancer breast, depression represent with low percent among other types of cancer. These findings might be due to that digestive system and neurological system are responsible about vegetative functions (sleeping, movement, eating and sexuality) and in breast cancer some of women had loss of self- confidence and deformity because it the source of a woman's beauty. These findings were in congruence with study by [38], was shown that survivors of digestive tract and brain cancers have a higher chance of acquiring depression, while earlier study [39], clarified that, Patients with prostate, bladder, lymphoma, sarcoma, breast, and oral, thyroid cancers had a higher rate of depression than those with leukaemia, lung cancer, GIT, and gynecological cancers. In the present study, there was found significant relation between depression level and age of the studied patients. As minimal depression level were more prevalent in age between 18 and 37 years. This discovery might be attributed to someone under the age of 40 having a detrimental impact on a person's family, education, or career. It is a significant risk factor for depression, especially among those under the age of 40 who are actively participating in the workforce. Many people abandon their employment after being diagnosed with cancer, resulting in a loss of position and status.

On the same line, earlier study [40] revealed that the age of cancer patients under 40 years old was found to be a factor causing depression. On the contrast, study in Malaysia [41], reported that, Patients above the age of 60 were more likely to suffer from depression than those under the age of 60. Considering relation between depression level and education level, the current study clarified that there was a significant relation between depression and education level of patients, as minimal depression more frequency in patients with secondary educational level. This result might be indorsed to the fact that high educated individuals are more adaptive the disease process and more responsive to health education messages, more understandable of their condition, management, and to find many ways of coping mechanisms. Similarly, earlier study [42], clarified that, there was a link between educational attainment and the frequency of depression. The prevalence of depression diminishes as one's education level rises, while, study by [43], reported that, as one's educational level raised, so rose their levels of depression. The present study revealed that there was significant relation between depression level and social status, as minimal depression was found in single patients. This might be due to the fact that being single is a predictor of depression. Given that cancer sufferers face a variety of issues, including loss of social status, financial difficulties in managing life conflicts, and a lack of emotional support from others, they can play an important role in maintaining psychological balance. On the contrast, study in Saudi Arabia [44], reported that, patients who were married had a much greater rate of depression than those who were single. As to relation between depression level and occupation, the current study reported that there was significant relation between depression level and occupation of patients, as minimal depression more relevant in employed patients. These findings might be due to that the patient of working age will have fears about the impact of cancer on his work because employment is known to maintain emotional function and self -esteem of cancer subjects. And therefore it will affect the financial condition in addition to the costs of treatment. On the contrast, earlier study [45], clarified that Unemployed people were shown to be more likely to suffer from depression. In the present study, regarding the prevalence of suicidal behavior among cancer patients demonstrated that none of studied cancer patients had previous attempt for suicide behavior.

The possible explanation of these findings is present of several factors as: Religion was the main factor, the patients had a family and that they were clinging to life for them, in some patients their spouse had died and they had to be treated for the sake of their children, presence of social support from patient's family. Also their view that this disease is a test from "God" and we are satisfied with the judiciary and that it is like any

other disease. In the contrast, study by [46], reported that, small percentage of patients reported having thoughts to commit suicide (8.3%). Further, earlier study [47], reported through standardized mortality ratio that suicide risk is 1.5 times higher in cancer patients than in the general population. In the present study, there is no correlation can be calculated between depression and suicidal score. The possible explanation of this findings is due to the value of suicidal score is constant. This result was agree with, study in United States [48], clarified that, suicidal thoughts was not usually linked to depression in cancer patients, on the other hand, study in china [49], reported that depression has a bigger effect and predictive capacity on suicidal thoughts than high demoralization.

5. Conclusion

Cancer patients are more likely to develop depression as common in consequence that affect on the treatment process of cancer, where the prevalence of depression and suicidal behavior among cancer ill patients was 30.4%, 0% No correlation between depression and suicidal score among cancer patients. Depression increased by age, secondary level of education, single, retired, who had gastrointestinal tract, head and neck cancer. While the prevalence of suicide among studied cancer patients was 0%, and this study revealed that, there was no correlation between depression score and suicidal score.

6. Recommendations

For cancer patients with depression or impaired mental adaptation, oncology out-patient clinics should conduct and implement psycho-educational interventions (which include information about the disease, causes and depression symptoms, danger signs or clues of suicide, and problem-solving method).

7. References

[1] Mendes MV, Santos SD, Ceballos AD, Furtado SM, Bonfim CD. Risk factors for suicide in individuals with cancer: an integrative literature review. Revista Brasileira de Enfermagem. 2021; 74.

[2] De Andrade FP, de Cabral ALS, de Araújo JMD, Cordeiro LV, de Barros M, da Silva AP, Dantas BB. Food nitrates and nitrites as possible causes of cancer: A review. Revista Colombiana de Ciencias Químico-Farmacéuticas. 2020; 50(1). .

[3] Park GR, Kim J. Depressive symptoms among cancer patients: Variation by gender, cancer type, and social engagement. Research in nursing & health. 2021.

[4] Dantzer R, Capuron L. Inflammation-associated depression: evidence, mechanisms and implications (Vol. 356). Springer International Publishing. 2017; 4

[5] Laake JP, Parratt J, Majeed N. Improving Access to Psychological Therapies for older adults: auditing management of newly diagnosed mild and moderate depression in six general practice within the Birmingham and Sol hull CCG. Postgraduate Medical Journal, postgradmedj. 2020; 136996.

[6] Abid G, Kehyayan V, Johnson J. Depression screening in cancer patients: A narrative. Journal of Nursing Education and practice. 2018; 8(11).

[7] Du L, Shi H-Y, Yu H-R, Liu X-M, Jin, X-H, Yan-Qian, Chen H-L. Incidence of suicide death in patients with cancer: a systematic review and meta-analysis. Journal of Affective Disorders. 2020; doi:10.1016/j.jad.2020.07.082

[8] Miola A, Porto D, Tadmor T, Croatto G, Scocco P, Manchia M, Solmi M. Increased C-reactive protein concentration and suicidal behavior in people with psychiatric disorders: Systematic review and meta-analysis. Acta Psychiatrica Scandinavica.2011 .

[9] Sierra G, Andrade P, Bel EG, Osornio AA, Cabrera MA, García NL, Sierra AT. Suicide risk factors: a language analysis approach in social media. Journal of language and social psychology. 2021; 0261927X211036171.

[10] Riedl D, Schuessler G. Prevalence of Depression and Cancer– A systematic review. Zeitschriftfür Psychosomatische Medizin und Psychotherapie. 2021; 67: OA11.

[11] Gentile G, Tambuzzi S, Calati R, Zoja R. A Descriptive Cohort of Suicidal Cancer Patients: Analysis of the Autopsy Case Series from 1993 to 2019 in Milan (Italy). International Journal of Environmental Research and Public Health. 2022; 19(2): 829.

[12] Sönmez I, Balikçi K, Denizgil T, Aydın O, Andrieu MN. The trait anxiety as a predictor of the suicidal risk in patients with cancer. Indian journal of psychiatry. 2020; 62(1), 87

[13] Xu K, Hu D, Liu Y, Han Y, Guo X, Teng F, Zhou Y. Relationship of suicidal ideation with demoralization, depression, and anxiety: a study of cancer patients in mainland China. The Journal of nervous and mental disease. 2019; 207(5): 326-332.

[14] Massetti GM, Holland KM, Jack SP, Ragan KR, Lunsford NB. Circumstances of suicide among individuals with a history of cancer. Psycho-oncology. 2018; 27(7): 1750-1756.

[15] Jimenez FP, Calderón C, Hernández R, Cajal TR, Mut M, Ramchandani A, Carmona-Bayonas A. Factors associated with anxiety and depression in cancer patients prior to initiating adjuvant therapy. Clinical and Translational Oncology. 2018; 20(11): 1408-1415.

[16] Vucic V, Radovanovic S, Radevic S, Savkovic Z, Mihailovic N, Mihaljevic O, Matic TB. Mental Health Assessment of Cancer Patients: Prevalence and Predictive Factors of Depression and Anxiety. Iranian Journal of Public Health. 2021; 50(10): 2017-2027.

[17] Khalifa SM, Darweesh AEDM, Sayed NE, Ahmed ZA, Khallaf SM. Assessment of Psychological Distress and Mental Adjustment among Cancer Patients. Assiut Scientific Nursing Journal. 2018; 6(14): 137-143.

[18] Clover K, Lambert SD, Oldmeadow C, Britton B, King MT, Mitchell AJ, Carter G . PROMIS depression measures perform similarly to legacy measures relative to a structured diagnostic interview for depression in cancer patients. Quality of Life Research. 2019; 27(5): 1357-1367

[19] Safaie N, Zeinali H, Ghahramanfard N, Mirmohammadkhani M, Moonesan M. Psychiatric Disorders in New Cancer Patients in Semnan. Education. 2021; 11: 15-6.

[20] Lasebikan V, Fakunle S, Lasebikan T, Alabi MA, Adenipekun A. Twelve-Month Prevalence of Psychiatric Morbidity in Cancer Patients in a Nigerian Oncology Centre. 2020

[21] Sudarisan SSP, Abraham B, George C. Prevalence, correlates of depression, and its impact on quality of life of cancer patients attending a palliative care setting in South India. Psycho-oncology. 2019; 28(6): 1308-1313.

[22] Grotmol KS, Lie HC, Hjermstad MJ, Aass N, Currow D, Kaasa S. European Palliative Care Research Collaborative (EPCRC. (2017). Depression—a major contributor to poor quality of life in patients with advanced cancer. Journal of pain and symptom management, 54(6), 889-897.

[23] Ahmed AE, Albalawi AN, Qureshey ET, Qureshey AT, Yenugadhati N, Al-Jahdali H, Jazieh AR. Psychological symptoms in adult Saudi Arabian cancer patients: prevalence and association with self-rated oral health. Breast Cancer: Targets and Therapy. 2018; 10: 153

[24] El Faramawy A, Youssef G, El Aroussy W, El Remisy D, El Deeb H, Aal AA, Ibrahim MM. Registry of the Egyptian specialized hypertension clinics: patient risk profiles and geographical differences. Journal of human hypertension. 2020; 34(7), 520-527.

[25] Anuk D, Özkan M, Kizir A, Özkan S. The characteristics and risk factors for common psychiatric disorders in patients with cancer seeking help for mental health. BMC psychiatry. 2019; 19(1): 1-11.

[26] Alemayehu M, Deyessa N, Medihin G, Fekadu A. A descriptive analysis of depression and pain complaints among patients with cancer in a low income country. PloS one. 2018; 13(3): e0193713.

[27] Yim J, Saw J, Viney R, Arora S, Ezendam N, Pearce A. Investigating the Association Between Self-Reported Comorbid Anxiety and Depression and Health Service Use in Cancer Survivors. Pharmaco Economics. 2021; doi:10.1007/s40273-021-01016-7

[28] Jimenez FP, Calderón C, Hernández R, Cajal TR, Mut M, Ramchandani, A., & Carmona-Bayonas A. Factors associated with anxiety and depression in cancer patients prior to initiating adjuvant therapy. Clinical and Translational Oncology. 2018; 20(11): 1408-1415.

[29] Hartung TJ, Friedrich M, Johansen C, Wittchen HU, Faller H, Koch U, Mehnert A. The Hospital Anxiety and Depression Scale (HADS) and the 9-item Patient Health Questionnaire (PHQ-9) as screening instruments for depression in patients with cancer. Cancer. 2017; 123(21): 4236-4243.

[30] Celia C, Cristiano MC, Froiio F, Di Francesco M, d'Avanzo N, Di Marzio L, Fresta M. Nanoliposomes as multidrug carrier of gemcitabine/paclitaxel for the effective treatment of metastatic breast cancer disease: a comparison with Gemzar and Taxol. Advanced Therapeutics. 2021; 4(1): 2000121.

[31] Ghanem I, Castelo B, Jimenez-Fonseca P, Carmona-Bayonas A, Higuera O, Beato C, Calderon C. Coping strategies and depressive symptoms in cancer patients. Clinical and Translational Oncology. 2020; 22(3): 330-336

[32] Fujisawa D, Umezawa S, Fujimori M, Miyashita M. Prevalence and associated factors of perceived cancer-related stigma in Japanese cancer survivors. Japanese journal of clinical oncology. 2020; 50(11): 1325-1329.

[33] Tobias KG, Lehrfeld J, Rosenfeld B, Pessin H, Breitbart W. Confirmatory factor analysis of the

Beck Depression Inventory–II in patients with advanced cancer: A theory-driven approach. Palliative & supportive care. 2017; 15(6): 704-709.

[34] Saad AM, Gad MM, Al-Husseini MJ, AlKhayat MA, Rachid A, Alfaar AS, Hamoda HM. Suicidal death within a year of a cancer diagnosis: a population-based study. Cancer. 2019; 125(6): 972-979.

[35] Lee MS, Tyson DM, Gonzalez BD, Small BJ, Lechner SC, Antoni MH, Jacobsen PB. Anxiety and depression in Spanish-speaking Latina cancer patients prior to starting chemotherapy. Psycho-oncology. 2018; 27(1): 333-338

[36] Abdalla ES, Gad HM, Abdel-Aziz HR. Depressive symptoms and its influencing Factors among Elderly Cancer Receiving Chemotherapy. Zagazig Nursing Journal. 2020; 16(2): 14-28.

[37] Licková K, Čoček A, Ambruš M, Soumarová R, Vránová J, Klézl, Javůrková A. Rapid screening of depression and anxiety in cancer patients: Interview validation of emotion thermometer Asian Journal of Psychiatry. 2021; 65: 102827, doi:10.1016/j.ajp.2021.102827.

[38] Lee SJ, Cartmell KB. Self-reported depression in cancer survivors versus the general population: a population-based propensity score-matching analysis. Quality of Life Research. 2020; 29(2): 483-494.

[39] Mushtaq R, Ansar A, Anwar Bibi HK, Ali J, Islam A, Saleem F, Tariq I. Frequency of depression among cancer patients. Annals of PIMS ISSN. 2017; 1815: 2287.

[40] Yılmaz M, Dissiz G, Usluoğlu AK, Iriz S, Demir F, Alacacioglu A. Cancer-related stigma and depression in cancer patients in a middle-income country. Asia-Pacific journal of oncology nursing, 2020; 7(1): 95.

[41] Kumar MV, Sidik SM, Rampal L, Ismail SIF, Periasamy U. Prevalence and predictors of depression among oncology patients receiving chemotherapy in government hospitals in Peninsular Malaysia. Mal J Med Health Sci. 2019; 15(2): 22-31.

[42] Arasteh M, Seyedoshohadaei SA. Comparison of prevalence of depression in cancer patients treated with chemotherapy and radio chemotherapy in the hospital Tohid Sanandaj. Med Sci. 2019; 23(95): 24-29.

[43] Budak FK, Özdemir A, Gültekin A, Ayhan MO, Kavak M. The Effect of Religious Belief on Depression and Hopelessness in Advanced Cancer Patients. Journal of Religion and Health. 2021; 1-11.

[44] Alshehri AA, Alahdal AA. Prevalence of Depression among Patients Diagnosed with Cancer in Oncology Clinic at King Abdullah Medical City, Makkah, Saudi Arabia. Annals of Clinical and Analytical Medicine. 2020; 9(3): 335-34.

[45] Ng GC, Mohamed S, Sulaiman AH, Zainal NZ. Anxiety and depression in cancer patients: the association with religiosity and religious coping. Journal of religion and health. 2017; 56(2): 575-590.

[46] Nanni MG, Caruso R, Travado L, Ventura C, Palma A, Berardi AM, Grassi L. Relationship of demoralization with anxiety, depression, and quality of life: A southern European study of Italian and

Portuguese cancer patients. Psycho-oncology. 2018; 27(11): 2616-2622.

[47] Calati R, Filipponi C, Mansi W, Casu D, Peviani G, Gentile G, Madeddu F. Cancer diagnosis and suicide outcomes: Umbrella review and methodological considerations. Journal of Affective Disorders. 2021; 295: 1201-1214.

[48] Abdel-Rahman O. Depression and suicidal ideation among patients with cancer in the United States: a population-based study. JCO oncology practice. 2020; 16(7): e601-e609.

[49] Xu K, Hu D, Liu Y, Han Y, Guo X, Teng F, Zhou Y. Relationship of suicidal ideation with demoralization, depression, and anxiety: a study of cancer patients in mainland China. The Journal of nervous and mental disease. 2019; 207(5): 326-332.