STUDY ON CANCER PATIENTS, AFTER TREATMENT WITH REGARD TO HAPPINESS, DEPRESSION AND LIFE SATISFACTION.

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Abstract

The present study aims to investigate happiness, depression and life satisfaction levels after cancer treatment in individuals assessed by tools such as GHS, HDS and SWLS and to check the correlation between depression and a person's degree of happiness post cancer treatment. a sample of 50 cancer patients was found who met the inclusion criteria. Out of this group, all cancer patients who had treatment at least a year prior and who currently visit the hospital for follow-up exams every three to twelve months were included in the study. It was discovered that patients whose treatment terminated during the first two years had higher levels of depression than other groups and considerably lower levels happiness and life satisfaction vary more in some groups in comparison to others. Similarly, survivors who are younger have lower levels of depression than those that are older and show slight high levels of happiness and life-satisfaction. It has been shown that cancer survivors' depression and happiness are negatively associated to each other, as are their life satisfaction and depression, but life satisfaction and happiness are positively related. Finally, we can conclude that gender, cancer type, medication, and residence were not predictors of depression, happiness, and life satisfaction among cancer survivors.

Keywords: Cancer, after treatment, happiness, depression, life satisfaction.

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INTRODUCTION

Cancer is a general term which is used for groups of diseases which affect any part of the body. It's a type of condition in which human cells advance rapidly & spread all over adjoining organs of the body and spreads to other organs. Cancer is probably the major causes of death in the globe. It can develop without any noticeable symptoms; other time symptoms can get worsen with no time. symptoms of all common cancer can be similar to common illness or less serious illness.

Based on the type of cell that is originally harmed and the area of the body where the cancer begins, there are several different types of cancer. Skin cancer, notably non-melanoma skin cancer, which makes up nearly one-third of all cancer diagnoses, is the most prevalent type of cancer worldwide. Lung, breast, prostate, colorectal, and stomach cancers are additional prevalent cancer. However, the most prevalent type of cancer can change based on variables including age, gender, location, and lifestyle factors like smoking, nutrition, and exposure to pollutants in the environment. The likelihood of a successful cancer diagnosis, treatment, and recovery can significantly increase with early identification and therapy.

How far the cancer has grown and spreads describes the stage of cancer. Stage of cancer can be diagnosed by measuring how much cancer has spread at the time of first diagnosis. Best treatment option of the cancer can be done by taking into consideration of which stage of cancer one person is in. Most commonly 'numbered cancer stage system' and 'TNM system' is used for staging of cancer. The TNM system and any additional pertinent data are combined with the numbered system to classify tumors into overall stages. In this method of staging system there are four stages which are from stage 0 to stage 4. In stage 0 cancer, abnormal cells are seen in the cells off body but the cells have not started spreading to other parts and organs of the body. This stage is also known as 'in situ' which means it's in the original place. In this case it's not necessary that situ cells are not cancerous or malignant, these cells have chances to develop as cancerous cells in future and spread in nearby locations. Stage 1 cancer is used for staging cancer when the cancer cells is small and has spread only a little into tissues which are nearby. Stage 2 and 3 of cancer staging is done when cancer cells is big in size and has already been spread into lymph nodes and tissues nearby. The last staging of cancer is done in stage 4 where the cancer cells are all spread to other areas of body. The next common system used for staging the cancer is TNM system, in this system stages are noted in three types which is characterized by the letters TNM, this system also uses number to describe the cancer. T (tumor) where it shows how big the tumor or cancer has been spread to tissues nearby, number which can be denoted will be from 1 to 4 in which 1 can be denoted as small and 4 as large. N (nodes)is to know if cancerous cells has spread into lymph nodes which are nearby of the original place and how many lymph nodes are been affected by the cancerous cells, the number given in this stage can be from 0 which classifies as no lymph nodes are cancerous to 3 which denotes many lymph nodes are cancerous. M (metastasis) this stage is to know if the cancerous cells has spread from the original place. In this 0 means no spread has been seen and 1 means the cancerous cells has been spread to other parts and organs of body.

Every cancer kind call for a different treatment plan, so a precise cancer diagnosis is crucial for the right kind of treatment. Typically, systemic therapy, radiation, and/or surgery are used in treatment (chemotherapy, hormonal treatments, targeted biological therapies). When choosing a treatment plan, it is important to check both the malignancy and patient. To achieve the desired therapeutic outcome, the treatment method must be completed within the time range specified. Setting treatment objectives is a crucial first step. Often, the primary goal is to treat cancer or considerably increase life expectancy. Increasing the patient's standard of living is a main motivation. Physical assistance for the patient, emotional, as well as a sense of spirituality as well as palliative-care for those with cancer that is terminal, this can be aided. Cancer can cause a wide range of emotions that you're not used to coping with, just as it might have an impact on your physical health. It may also intensify already felt emotions. They may alter daily, hourly, or even minute to minute.

A favorable relationship exists between happiness and self-efficacy in cancer patients (M K 2013). with improved mental health after giving importance to self-care has been seen (M B 2011). Cancer survivors are linked to low risk of suffering cancer survivors with poor psychological and/or physical wellness (Burse, N. R, 2022). They were seen moderately happy with their lifestyles. Few psychological therapies were used to help them feel better. (Zeliha Koç1 Selin Keskin Kiziltepe 2017)

Almost all people who have been diagnosed with cancer and got treated for cancer had risk of anxiety and depression. To improve quality-of-life and lower mortality, a major need to recognise as well as treating depressive symptoms in those with

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cancer is found. A cancer diagnosis is major factors that cause mental and emotional stress and changes the course of one's life. Nonpathological melancholy is one of the common responses to a cancer diagnosis, but stress that exceeds capacity of patient's coping systems may lead to severe depressive disorder. It has been reviewed those biological mechanisms of depression, including damage of tissue, mediators of inflammatory processes, and the recurrent stress response, as well as how these immune and endocrine pathways may contribute to depression in cancer. (Niedzwiedz 2019). Long-term Breast cancer survivors over the age of 80 years have a much greater depression symptoms are common than controls, which could be explained by recurrence and individual variables. It is seen that depression is frequent in breast cancer survivors, and even more so following a recurrence. (Doege, D. 2020). Only recently diagnosed cancer survivors (up to 5 years following diagnosis) were strongly associated with depression. Breast cancer survivors had the strongest association, followed by genitourinary and gynaecological cancer survivors (Petrova, D 2021) People after getting treatment of cancer were over time linked to improved social functioning, subjective vitality, and general mental health, as well as lower depression and pain perceptions. The studies have proved that the impact of mental wellness on daily life kept becoming better, possibly due to positive feedback loops as people started interacting with their surroundings from a place of improved affect. The overall health of elderly cancer survivors is influenced by their mental health and social support (Utley, M 2022) Survivors of childhood cancer face a long-term of hazard developing a diverse situation of severe physical and mental health issues as a result of the disease and the process of treatment, as-well-as negative social and socioeconomic implications and a reduction in psychological well-being and quality of life. It is crucial to note, however, that more than few survivors have no or less health effects (Erdmann, F, 2020) Modern breakthroughs in process of treatment of cancer have resulted in an 80% overall survival rate for younger cancer patient. It is believed that 1 One in every 900 young adults has endured curative cancer treatment. therapy as a youngster (Mitus-Kenig, M, 2020). They exhibit the predisposition to feel good emotions, anticipate happy results in life, stress the good things in life and try to find meaning in them, as well as the ability to recognise and control their own emotions. Also, they have a more favourable opinion of themselves, are tougher when faced with challenges, and exhibit Overall, there is a

better emotional adjustment with reduced levels of stress, worry, and melancholy. (Cerezo, M. V.2022)

Aims and objectives:
The following aims and objectives were conceptualized for the current study sample:
1. To measure cancer patients' post-treatment levels of depression, happiness, and life satisfaction.
2. To analyze the correlation between depression and a person's degree of happiness post cancer treatment.
3. To assess cancer patients' life satisfaction levels after treatment.

Hypotheses:
H1 Cancer patients who have been treated for longer than 4 years will exhibit less depression than those who have been treated for less than 4 years.
H2 After treatment, cancer patients' happiness and depression will be negatively correlated.
H3 Patients with cancer who have had treatment for more than four years will have higher levels of life satisfaction than patients who have received treatment for less than four years.
H4 Patients' levels of happiness and life satisfaction will be nearly similar.
H5 Low levels of depression and relatively higher levels of happiness and life satisfaction will be seen in people after cancer treatment.
H6 After undergoing cancer treatment, there will be a negative correlation between life satisfaction and depression.

Variables:
In the present study the independent variable is depression and dependent variables are life satisfaction and happiness.

METHODOLOGY
Sample:
The present study was conducted on a sample of 50 cancer patients. They were divided into two groups basis of gender (female and male). Further these two groups were subdivided into three groups on the basis of age (up to 30, 31 to 60, above 61). This data was also divided according to duration after treatment (up to 2, 2 to 4, above 4), selected through purposive sampling method. Out of this group, all cancer patients who had treatment at least a year prior and who currently visit the hospital for follow-up exams every three to twelve months were included in the study.

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Inclusion criteria of cancer patients after treatment:

- Patients of all the age group who have had cancer and got treated.
- Both females and males who completed treatment at least a year before.
- Able to understand English/ Hindi/ Telugu.
- Willingness to be part of the study.
- Both married & non- married were taken.
- Patients who have received a cancer diagnosis of any kind.

Exclusion criteria of cancer patients after treatment:

- Patients receiving treatment.
- People whose cancer has recur during the previous 12 months.
- Individuals with intellectual disability or any other psychiatric disease who also have one or both.
- Patients with cognitive impairments.

Research design

Cross-sectional, survey-style, correlation research was used in the study. For this study, a face-to-face interview survey method with a structured questionnaire was used.

Tools

All participants gave oral consent for participation in the study. The research project was briefly explained, along with the benefits and risks of participation and their right to confidentiality. The present tools were used to the chosen sample while keeping in mind the objectives of the research.

1. General happiness scale

The General Happiness Scale (GHS) is a self-report measure of subjective well-being, designed to assess a person's overall level of happiness. The scale was developed by Ed Diener and colleagues in 1985 and has been widely used and validated in various cultures and populations.

The tool's stability reliability had a Cronbach's alpha of 0.72 and its Cronbach's alpha ranged from 0.79 to 0.94.

2. Hamilton depression scale

The Hamilton Depression Scale (HDS), is a commonly used tool to measure the severe depressive symptoms in clinical settings. This scale was developed in 1960 by psychiatrist Max Hamilton, and it has been widely used and researched ever since. The initial scale (HDRS), which has 17 items, was created for hospital patients; a later 21-item version added items for subtypes of depression. (Spearman r between the duration of the interval and test-retest reliability values = -0.74). It varied from 0.65 to 0.98.

3. Satisfaction with life scale

SWLS is a widely used tool for assessing an individual's global life satisfaction. The SWLS was developed by Ed Diener and colleagues in 1985 and has since been validated and used extensively in research and clinical settings.

The Satisfaction with Life Scale has been reported to have excellent test-retest reliability, with a correlation of 0.82 over a two-month period, and very strong internal consistency, with an alpha of 0.87.

Procedure

A total of 50 patients from the "*Basavatarakam Indo American Cancer Hospital and Research Institute*," of which 30 females and 20 males had finished their treatment within the previous 12 months, were chosen as a sample. Both male and female patients who finished their treatment, met the inclusion and exclusion requirements, who gave oral consent for participation in the study and were able to articulate the study's objectives in local languages including English, Hindi, and Telugu. Participants were informed that they could leave the study at any moment if they were unwilling to continue. Socio-demographic and clinical data sheets were given to participants who met the inclusion criteria in order to acknowledge their socio-demographic and clinical characteristics. They were given out The Hamilton Depression Scale, The General Happiness Measure, and The Satisfaction with Life Scale.

STATISTICAL ANALYSIS

SPSS was used to analyse the collected data. Demographic-data was analysed using descriptive statistics such as mean, standard deviation. The relationship between the variables was tested using correlation, the t-test was calculated to see if there was a gender difference, and ANOVA was used to compare the subgroups.

RESULT

The table below shows age groups and the percentage of individuals from each age group who participated in the research.

AGE

Age in years	Frequency
Up to 30	6
31 to 60	36
Above 61	8
Total	50

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The table below shows the categories of gender and the percentage of individuals from each gender group who participated in the research.

GENDER

Genders	Frequency
FEMALES	30
MALES	20
Total	50

The table below shows the types of cancer groups that were studied, as well as the number of participants from each cancer type group who took part in the study and their percentage participation.

TYPE OF CANCER

	Frequency
Breast	21
Ovary	4
Blood	8
Liver	1
Kidney	1
Stomach	4
Tongue	4
Hodgkin's lymphoma	1
Thyroid	1
Mouth	2
Throat	1
Oesophagus	2
Total	50

The table below depicts three-time duration following cancer treatment category groupings, together with the number of individuals from each category that participated in research and their percentage participation.

AFTER TREATMENT DURATION

Duration (in years)	Frequency	Percent
Up to 2	11	22.0
2 to 4	17	34.0
Above 4	22	44.0
Total	50	100.0

To compare female and male happiness, sadness, and life satisfaction levels, an independent samples t-test was performed. According to the table below, there were no significant differences in happiness, depression, and life satisfaction levels between female and male participants. The difference in happiness levels between the two groups was marginally significant (t= -.052, p=.959), with the mean score for Female (M= 25.33, SD= 4.00, SEM=.730) being lower than Male (M= 25.40, SD= 5.12, SEM= 1.14). There was a marginally significant difference in depression levels between the two groups (t=.306, p= 761), with Female (M=7.23, SD=6.99, SEM=1.27) having a higher mean score than Male (M= 6.60, SD= 7.44, SEM= 1.66). Also, there is a marginally significant difference in life satisfaction levels between both groups (t=.843, p=.404), with the mean score for female (M= 29.46, SD= 5.15, SEM=.94) being higher than Male (M= 28.00, SD= 7.16, SEM= 1.60).

t- test

	Gender	N	Mean	Std. Deviation	Std. Error Mean	t	Sig
Happiness	Females	30	25.333	4.0029	.7308	-.052	.959
	Males	20	25.400	5.1237	1.1457		
Depression	Females	30	7.233	6.9910	1.2764	.306	.761
	Males	20	6.600	7.4438	1.6645		
Life satisfaction	Females	30	29.467	5.1511	.9404	.843	.404
	Males	20	28.000	7.1672	1.6026		

A one-way between- subjects ANOVA was run with age as independent variables and happiness, life satisfaction and depression as the dependent variable respectively. Results of ANOVA showed slightly significant difference between age groups of participants (Up to 30, 31 to 60, above 61) in respect to the variables (happiness, depression and life satisfaction). Results of ANOVA showed a significant difference between age (Up to 30, 31 to 60, above 61) on happiness level of individual; F= .112, p= .894. Where analysis revealed that age group of Up to 30 (N=6, M= 26.16, SD= 4.49) has

significantly more happiness level as compared to age group of 31 to 60 (N= 36, M= 25.27, SD=4.46) and above 61(N=8, M= 25.12, SD= 3.60).

Results showed significant difference between age (Up to 30, 31 to 60, above 61) and depression level of the participants; F= .815, p= .449. Depression level in the age group 31 to 60 (N=36, M= 25.27, SD= 7.47) was slightly more than age group of above 61 (N=8, M= 7.25, SD= 5.49) and as compared to other age groups, age group of Up to

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30 (N= 6, M= 3.50, SD= 6.71) showed relatively very less depression level.

In the last the result showed significant difference between age (Up to 30, 31 to 60, above 61) and life satisfaction level of the participants in the research; F=.198, p= .821. The result showed that there was more life satisfaction level seen in age group of Above 61(N= 8, M= 30.12, SD= 3.75) than other groups and very slight difference was found between life satisfaction of the age Up to 30(N= 6, M= 28.66, SD= 8.82)and 31 to 60 (N= 36, M= 28.63, SD= 6.01), and it was seen that there was more life satisfaction level seen in age group of Above 61 (N= 8, M= 30.12, SD= 3.75) than other groups.

ANOVA 1 Age by happiness, life satisfaction and depression

Variables	Age	N	Mean	SD	df (between groups)	F	Sig.
Happiness	Up to 30	6	26.16	4.49	2	.112	.894
	31 to 60	36	25.27	4.68			
	Above 61	8	25.125	3.60			
	Total	50	25.36	4.43			
Depression	Up to 30	6	3.50	6.71	2	.815	.449
	31 to 60	36	7.50	7.47			
	Above 61	8	7.25	5.49			
	Total	50	6.98	7.10			
Life satisfaction	Up to 30	6	28.66	8.82	2	.198	.821
	31 to 60	36	28.63	6.01			
	Above 61	8	30.12	3.75			
	Total	50	28.88	6.01			

A one-way between- subjects ANOVA was run with type of cancer (Breast, Ovary, Blood, Liver, Kidney, Stomach, Tongue, Hodgkin's lymphoma, Thyroid, Mouth, Throat, Oesophagus) as independent variables and happiness, life satisfaction and depression as the dependent variables. Result showed a significant difference between the happiness level with respect to what type of cancer (Breast, Ovary, Blood, Liver, Kidney, Stomach, Tongue, Hodgkin's lymphoma, Thyroid, Mouth, Throat, Oesophagus) the participant had; F=1.32, p= .251.

The result showed that liver, thyroid, oesophagus (M=28.00) cancer type had same mean and they significantly showed more happiness level than other cancer type. And significantly lowest happiness level is shown by the people who categorise under Hodgkin's lymphoma (M=19.00). Other cancer type falls in the middle of these two which are Breast(M=24.85), Ovary (M=27.50), Blood (M=26.50), Kidney (M=27.00), Stomach (M=27.75) , Tongue(M=20.25), Mouth(M=27.00), Throat(M=20.00).

Result shows a significant difference between depression level with respect of what type of cancer (Breast, Ovary, Blood, Liver, Kidney, Stomach, Tongue, Hodgkin's lymphoma, Thyroid, Mouth, Throat, Oesophagus) the participants had; F= 1.270, p= .278. Result shows that thyroid cancer type's mean (M=23.00) significantly has more depression level than other cancer type and the liver cancer type's mean (M= <.001) showed significantly less depression level than others. All other cancer's type fall in between these two-cancer type which are; Breast (M=7.85), Ovary (M=2.50), Blood (M=4.12), Kidney (M=7.00) , Stomach(M=5.25), Tongue(M=12.00), Hodgkin's lymphoma(M=14.00), Mouth(M=6.50), Throat (M=9.00), Oesophagus(M=3.00).

The results of life satisfaction level show significant difference with respect of what type of cancer the participants had; F=.983, p=.479. In the result Thyroid cancer type's mean (M=35.00) has significantly higher life satisfaction level than other cancer type.

Tongue cancer type (M= 21.25) show significantly lower life satisfaction level than other cancer type. Other cancer type come in the middle of these two-cancer type, which are; Breast (M=29.09), Ovary (M=32.00) Blood (M=28.50), Liver(M=30.00), Kidney(M=31.00), Stomach (M=31.00) , Hodgkin's lymphoma (M= 32.00), Mouth (M=25.00) , Throat (M=27.00), Oesophagus (M=31.50).

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ANOVA 2 Cancer type by happiness, life satisfaction and depression

variables	Type of cancer	N	Mean	SD	df (between groups)	F	Sig.
Happiness	Breast	21	24.85	4.16	11	1.320	.251
	Ovary	4	27.50	.57			
	Blood	8	26.50	3.85			
	Liver	1	28.00	.			
	Kidney	1	27.00	.			
	Stomach	4	27.75	.50			
	Tongue	4	20.25	8.99			
	Hodgkin's lymphoma	1	19.00	.			
	Thyroid	1	28.00	.			
	Mouth	2	27.00	1.41			
	Throat	1	20.00	.			
	Oesophagus	2	28.00	.00			
	Total	50	25.36	4.43			
Depression	Breast	21	7.85	6.91	11	1.270	.278
	Ovary	4	2.50	1.73			
	Blood	8	4.12	5.89			
	Liver	1	.00	.			
	Kidney	1	7.00	.			
	Stomach	4	5.25	4.27			
	Tongue	4	12.00	13.31			
	Hodgkin's lymphoma	1	14.00	.			
	Thyroid	1	23.00	.			
	Mouth	2	6.50	3,53			
	Throat	1	9.00	.			
	Oesophagus	2	3.00	1.41			
	Total	50	6.98	7.10			
Life satisfaction	Breast	21	29.09	4.57	11	.983	.479
	Ovary	4	32.00	2.58			
	Blood	8	28.50	7.63			
	Liver	1	30.00	.			
	Kidney	1	31.00	.			
	Stomach	4	31.00	5.41			
	Tongue	4	21.25	11.55			
	Hodgkin's lymphoma	1	32.00	.			
	Thyroid	1	35.00	.			
	Mouth	2	25.00	5.65			
	Throat	1	27.00	.			
	Oesophagus	2	31.50	3.53			
	Total	50	28.88	6.01			

A one- way between- subjects ANOVA was run with duration after treatment (Up to 2, 2 to 4, above 4) as independent variable and Happiness, Depression and Life Satisfaction and dependent variables. Results of ANOVA showed a significant difference between duration after treatment (Up to 2, 2 to 4, above 4) and happiness level of participants; F= .661, p= .521. The result showed that levels of happiness was seen slightly more in the people with who categorised under duration above 4 (N=22, M= 25.81, SD- 3.56) than people who categorised under the 2 to 4 (N= 17, M= 25.64, SD= 4.18) and it was seen that participants who categorised under the category of up to 2 (N=11, M= 24.00, SD= 6.24) showed significantly less happiness than other categories.

Results showed a significant difference between depression levels of participants and duration after treatment (Up to 2, 2 to 4, above 4); F= 3.03, p= .057. In this we can clearly state that depression level is significantly more in the people who fall under Up to 2 (N= 11, M= 11.45, SD= 9.94) categories than others. It is also found that people who fall under 2 to 4 (N= 17, M= 5.52, SD= 5.72) show lower level of depression than the people who come under category above 4 (N= 22, M= 5.86, SD= 5.68).

Result shows a significant difference between duration after treatment (Up to 2, 2 to 4, above 4) and life satisfaction levels of participants; F= 1.91, p= .159. The results show that life satisfaction is seen significantly less in people who fall under category up to 2 (N= 11, M= 25.90, SD= 8.70) than

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others. Slight difference in life satisfaction is found under other two categories, where people under category 2 to 4 (N= 17, M= 29.17, SD= 5.88) show slightly less life satisfaction than people who come under category above 4(N= 22, M=30.13, SD= 3.94).

ANOVA 3 Duration after treatment by happiness, life satisfaction and depression

variables	Duration (years)	N	Mean	SD	df (between groups)	F	Sig.
Happiness	Up to 2	11	24.00	6.24	2	.661	.521
	2 to 4	17	25. 64	4.18			
	Above 4	22	25.81	3.56			
	Total	50	25.36	4.43			
Depression	Up to 2	11	11.45	9.94	2	3.03	.057
	2 to 4	17	5.52	5.72			
	Above 4	22	5.86	5.68			
	Total	50	6.98	7.10			
Life satisfaction	Up to 2	11	25.90	8.70	2	1.91	.159
	2 to 4	17	29.17	5.88			
	Above 4	22	30.13	3.94			
	Total	50	28.88	6.01			

The below table shows that happiness is negatively correlated to depression and positively correlated to life satisfaction.

Correlations

		Happiness	Depression	Life satisfaction
Happiness	Pearson Correlation	1	-.655[**]	.616[**]
Depression	Pearson Correlation		1	-.479[**]
Subjective wellbeing	Pearson Correlation			1

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

DISCUSSION

This study was to measure post-treatment depression, happiness, and life satisfaction levels of cancer patients. It will also aid in understanding the current situation of cancer survivors and their way of life today. All of the tools used in the study have a good level of reliability and validity and are often used in clinical settings. The results of the relevant scales are as follows for the study's purposes: For cancer patients who had finished their treatment at least a year prior, the Hamilton depression scale, General Happiness scale, and Satisfaction with life scale were administered.

The present study discovered a statistically significant difference between all three variables, regardless of the subjects' post-treatment period. It was discovered that patients whose treatment terminated during the first two years had high level of depression than other groups & considerably low level of happiness and life satisfaction than other groups (2 to 4 and above 4). This is due to the fact that any patient might have post-cancer mental health problems, but specific triggers, such as a sense of abandonment or isolation following treatment, can trigger in the early stages of recovery. Fear of recurrence, particularly in the

first two years of survivorship, can haunt people. (Yi, J. C., & Syrjala, K. L. (2017)).

Similarly, patients who are younger (up to 30) have lower levels of depression than those who are older (31 to 60 and above 61) and have slightly higher levels of happiness and life satisfaction. A positive mindset during children's cancer treatment may include less future discomfort, lower cortisol output, improved immune function, and fewer doctor visits. While cancer increases the likelihood of future negative consequences, it can also start a resilience-moderating process. They hypothesized that cancer-related resilience processes will lower psychopathology (low-anxiety, depression, somatization), health problems, and future health perception. (Weinstein, A. G,2018).

It has been shown that cancer survivors' depression and happiness are negatively associated to each other, as are their life satisfaction and depression, but life satisfaction and happiness are positively related. Despite having lower positive affect scores and greater negative affect scores, cancer patients and informal carers report higher levels of happiness and life satisfaction than hypothetically healthy people. Cancer patients and carers are said to encounter significant problems (suffering) on a daily basis. Despite the additional challenges, they

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claim to be happy in life. (De Camargos, M. G, 2020).

SUMMARY AND CONCLUSION

The current study was to evaluate cancer patients' post-treatment levels of depression, happiness, and life satisfaction. For this study, a total of 50 cancer patients were used, including both males and females. The result discovered a statistically significant difference between all three variables, regardless of the subjects' post-treatment period. It was discovered that patients whose treatment terminated during the first two years had higher levels of depression than other groups and considerably lower levels of happiness and life satisfaction than other groups. Similarly, patients who are younger (up to 30) have lower levels of depression than those who are older (31 to 60 and above 61) and have slightly higher levels of happiness and life satisfaction. Finally, we can conclude that gender, cancer type, medication, and residence were not predictors of depression, happiness, and life satisfaction among cancer survivors.

Future directions

1. A larger sample might be used to replicate the study.
2. 2. To improve the results' generalization, the population sample should come from more diverse locations.
3. To determine how gradually the patient manages their psychological control, longitudinal research can be conducted.
4. Other variables including Pittsburgh sleep quality index, Pannas-sf, and psychological well-being can be used.

REFERENCES

1. Alquwez, N., Cruz, J. P., Alotaibi, N. S., & Alshammari, F. (2021). Validity and reliability of the subjective happiness scale Arabic version among Saudi working women. Journal of Taibah University Medical Sciences, 16(6), 835-842. https://doi.org/10.1016/j.jtumed.2021 . 05.010
2. Burse, N. R., Weng, X., Wang, L., Cuffee, Y. L., & Veldheer, S. (2022). Influence of social and behavioral determinants on health-related quality of life among cancer survivors in the USA. Supportive Care in Cancer, 31(1), 67. https://doi.org/10.1007/s00520-022-07534-0
3. Cerezo, M. V., Soria-Reyes, L. M., Alarcón, R., & Blanca, M. J. (2022). The satisfaction with life scale in breast cancer patients: Psychometric properties. International Journal of Clinical and Health Psychology, 22(1), 100274. https://doi.org/10.1016/j.ijchp.2021.1 00274
4. De Camargos, M. G., Paiva, B. S., De Oliveira, M. A., De Souza Ferreira, P., De Almeida, V. T., De Andrade Cadamuro, S., De Almeida, C. S., & Paiva, C. E. (2020). An explorative analysis of the differences in levels of happiness between cancer patients, informal caregivers and the general population. BMC Palliative Care, 19(1). https://doi.org/10.1186/s 12904-020-00594-1
5. Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. Psychological Bulletin, 125(2), 276-302. https://doi.org/10. 1037/0033-2909.125.2 .276
6. Doege, D., Thong, M. S. Y., Koch-Gallenkamp, L., Jansen, L., Bertram, H., Eberle, A., Holleczek, B., Pritzkuleit, R., Waldmann, A., Zeissig, S. R., Brenner, H., & Arndt, V. (2020). Age-specific prevalence and determinants of depression in long-term breast cancer survivors compared to female population controls. Cancer Medicine, 9(22), 8713-8721. https://doi.org/10.1002/cam4.3476
7. Dunn, J., Ng, S. K., Breitbart, W., Aitken, J., Youl, P., Baade, P. D., & Chambers, S. K. (2013). Health-related quality of life and life satisfaction in colorectal cancer survivors: Trajectories of adjustment. Health and Quality of Life Outcomes, 11(1). https://doi.org/10. 1186/1477-7525-11-46
8. Erdmann, F., Frederiksen, L. E., Bonaventure, A., Mader, L., Hasle, H., Robison, L. L., & Winther, J. F. (2020). Childhood cancer: Survival, treatment modalities, late effects and improvements over time. Cancer Epidemiology, 71(Pt B), 101733. https://doi.org/10.1016/j.canep.2020.101733.
9. Fonseca, S., Lencastre, L., & Guerra, M. (2014). Life satisfaction in women with breast Cancer1. Paidéia (Ribeirão Preto), 24(59), 295-303. https://doi.org/10.1590/1982-432724592 01403
10. Galanakis, Michael & Lakioti, Agathi & Pezirkianidis, Christos & Karakasidou, Eirini & Stalikas, Anastassios. (2017). Reliability and validity of the Satisfaction with Life Scale (SWLS) in a Greek sample. THE INTERNATIONAL JOURNAL OF

Eur. Chem. Bull. **2023**, *12(Special Issue 5), 2455 – 2465*

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HUMANITIES & SOCIAL STUDIES. 5. 120-127. 2009, Pages 43-72, ISSN 18730450, ISBN 9780123745170, https://doi.org/10.1016/B978-0-12-374517-0.00003-6.

11. Hartung, T., Brähler, E., Faller, H., Härter, M., Hinz, A., Johansen, C., Keller, M., Koch, U., Schulz, H., Weis, J., & Mehnert, A. (2017). The risk of being depressed is significantly higher in cancer patients than in the general population: Prevalence and severity of depressive symptoms across major cancer types. European Journal of Cancer, 72, 46-53. https://doi.org/10. 1016/j.ejca.2016.11.017

12. Kitamura, Y., Nakai, H., Hashimoto, T., Morikawa, Y., & Motoo, Y. (2022). Correlation between quality of life under treatment and current life satisfaction among cancer survivors aged 75 years and older receiving outpatient chemotherapy in Ishikawa prefecture, Japan. Healthcare, 10(10), 1863. https://doi.org/10.3390/healthcare10101863

13. kooç, zeliha & Keskin Kızıltepe, Selin. (2021). Determination of Anxiety, Depression, and Life Satisfaction in Lung Cancer Patients. European Journal of Oncology. 22. 138-146.

14. Krebber, A. M., Buffart, L. M., Kleijn, G., Riepma, I. C., Bree, R., Leemans, C. R., Becker, A., Brug, J., Straten, A., Cuijpers, P., & Verdonck-de Leeuw, I. M. (2013). Prevalence of depression in cancer patients: A meta-analysis of diagnostic interviews and self-report instruments. Psycho-Oncology, 23(2), 121-130. https://doi.org/10.1002/pon.3409

15. Lambert D'raven, L. T., Moliver, N., & Thompson, D. (2014). Happiness intervention decreases pain and depression, boosts happiness among primary care patients. Primary Health Care Research & Development, 16(02), 114-126. https://doi.org/10.1017/s146342361300056x

16. Lyubomirsky, S., & Lepper, H. S. (1999). Social Indicators Research, 46(2), 137-155. https://doi.org/10.1023/a:1006824100041

17. M B, M E, M F, et al (2011). Effect of self-care education on mental health of breast cancer women undergoing chemotherapy in cancer Institute of Tehran. Iran J Breast Dis, 4, 42-7.)

18. M K, M B, A D, et al (2013). The effects of cognitive behavioral stress management on sels- efficacy and happiness as normal personality traits. J of Person Indi Differ, 1, 32-47.)

19. Magyar-Moe, J. L. (2009). Positive psychological tests and measures. Therapist's Guide to Positive Psychological Interventions,

43-72. https://doi.org/10.1016/b978-0-12-3745 17-0.00003-6

20. Maroufizadeh, S., Ghaheri, A., Omani Samani, R., & Ezabadi, Z. (2016). Psychometric properties of the satisfaction with life scale (SWLS) in Iranian infertile women. International Journal of Reproductive BioMedicine, 14(1), 57-62. https://doi.org/10.29252/ijrm.14.1.57

21. Meibodi, R. P., Meftagh, S. D., & Shahangian, S. S. (2021). The effect of positive psychotherapy on happiness and character strength in cancer patients. Journal of education and health promotion, 10, 97. https://doi.org/10.4103/jehp.jehp_595_20

22. Mitus-Kenig, M., Derwich, M., Czochrowska, E., & Pawlowska, E. (2020). Quality of Life in Orthodontic Cancer Survivor Patients—A Prospective Case–Control Study. International Journal of Environmental Research and Public Health, 17(16), 5824. https://doi.org/10.3390/ijerph17165824

23. Niedzwiedz, C. L., Knifton, L., Robb, K. A., Katikireddi, S. V., & Smith, D. J. (2019). Depression and anxiety among people living with and beyond cancer: A growing clinical and research priority. BMC Cancer, 19(1). https://doi.org/10.1186/s12885-019-6181-4

24. Niedzwiedz, C. L., Knifton, L., Robb, K. A., Katikireddi, S. V., & Smith, D. J. (2019). Depression and anxiety among people living with and beyond cancer: A growing clinical and research priority. BMC Cancer, 19(1). https://doi.org/10.1186/s12885-019-6181-4

25. Olden, M., Rosenfeld, B., Pessin, H., & Breitbart, W. (2008). Measuring depression at the end of life. Assessment, 16(1), 43-54. https://doi.org/10.1177/1073191108320415

26. Oliveira Pinto, S. M., Alves Caldeira Berenguer, S. M., & Martins, J. C. (2013). Cancer, health literacy, and happiness: Perspectives from patients under chemotherapy. Nursing Research and Practice, 2013, 1-8. https://doi.org/10.1155/2013/291767

27. Oliver, A., & Greenberg, C. C. (2009). Measuring outcomes in oncology treatment: The importance of patient-centered outcomes. Surgical Clinics of North America, 89(1), 17-25. https://doi.org/10.1016/j.suc.2008.09.015

28. Petrova, D., Catena, A., Rodríguez-Barranco, M., Redondo-Sánchez, D., Bayo-Lozano, E., Garcia-Retamero, R., Jiménez-Moleón, J.-J., & Sánchez, M.-J. (2021). Physical Comorbidities and Depression in Recent and Long-Term

Eur. Chem. Bull. **2023,** *12(Special Issue 5), 2455 – 2465*

2464

Adult Cancer Survivors: NHANES 2007–2018. Cancers, 13(13), 3368. https://doi.org/10.3390/cancers13133368

29. Peykani, S., Dehghani, M., & Malekzada Moghani, M. (2018). Comparison of family resilience and coping strategies amongst married women diagnosed with breast cancer undergoing chemotherapy, breast cancer survivors and women without cancer. Iranian Journal of Nursing Research, 12(6), 10-18. https://doi.org/10.21859/ijnr-12062

30. Pezirkianidis, C., Karakasidou, E., Lakioti, A., Stalikas, A., & Galanakis, M. (2018). Psychometric properties of the depression, anxiety, stress scales-21 (DASS-21) in a Greek sample. Psychology, 09(15), 2933-2950. https://doi.org/10.4236/psych.2018.915170

31. Ramasubbu, S. K., Pasricha, R. K., Nath, U. K., Rawat, V. S., & Das, B. (2020). Quality of life and factors affecting it in adult cancer patients undergoing cancer chemotherapy in a tertiary care hospital. Cancer Reports, 4(2). https://doi.org/10.1002/cnr2.1312

32. Reynolds, W. M., & Kobak, K. A. (1995). Reliability and validity of the Hamilton depression inventory: A paper-and-pencil version of the Hamilton depression rating scale clinical interview. Psychological Assessment, 7(4), 472-483. https://doi.org/10.1037/1040-3590.7.4.472

33. Smith, B. W., Ford, C. G., Erickson, K., & Guzman, A. (2020). The effects of a character strength focused positive psychology course on undergraduate happiness and well-being. Journal of Happiness Studies, 22(1), 343-362. https://doi.org/10.1007/s10902-020-00233-9

34. SMITH, H. R. (2015). Depression in cancer patients: Pathogenesis, implications and treatment (Review). Oncology Letters, 9(4), 1509-1514. https://doi.org/10.3892/ol.2015.2944

35. Temircan, Z. (2022). The effects of perceived social support, psychological resilience and coping strategies on life satisfaction in men diagnosed with testicular cancer. Archives of Medical Case Reports and Case Study, 5(4), 01-05. https://doi.org/10.31579/2692-9392/113

36. Temircan, Z. (2022). The effects of perceived social support, psychological resilience and coping strategies on life satisfaction in men diagnosed with testicular cancer. Archives of Medical Case Reports and Case Study, 5(4), 01-05. https://doi.org/10.31579/2692-9392/113

37. Trajković, G., Starčević, V., Latas, M., Leštarević, M., Ille, T., Bukumirić, Z., & Marinković, J. (2011). Reliability of the Hamilton rating scale for depression: A meta-analysis over a period of 49years. Psychiatry Research, 189(1), 1-9. https://doi.org/10.1016/j.psychres.2010.12.007

38. Weinstein, A. G., Henrich, C. C., Armstrong, G. T., Stratton, K. L., King, T. Z., Leisenring, W. M., & Krull, K. R. (2018). Roles of positive psychological outcomes in future health perception and mental health problems: A report from the Childhood Cancer Survivor Study. Psycho-oncology, 27(12), 2754–2760. https://doi.org/10.1002/pon.4881

39. Utley, M., Adeyanju, T., Bernardo, B., Paskett, E. D., & Krok-Schoen, J. L. (2022). The association between mental health, social support and physical health outcomes among older female cancer survivors. Journal of Geriatric Oncology, 13(6), 834-838. https://doi.org/10.1016/j.jgo.2022.04.001

40. Yi, J. C., & Syrjala, K. L. (2017). Anxiety and Depression in Cancer Survivors. The Medical clinics of North America, 101(6), 1099–1113. https://doi.org/10.1016/j.mcna.2017.06.005

Eur. Chem. Bull. **2023**, *12(Special Issue 5), 2455 – 2465*

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