

ORIGINAL RESEARCH

Factors affecting psychological adjustment of oncology patients at different cancer welfare societies in Saudi Arabia

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ABSTRACT

Background and objective: Cancer induces more psychological pressure than any other illness in humans, and produces various physical, psychological, social, economic, and family issues. There are many factors associated with adjustment in cancer patients. Various cancer therapies can complicate and affect patient's adjustment to the disease. Study aim: To assess factors affecting psychological disease adjustment of oncology patients at different cancer societies in Saudi Arabia.

Methods: A quantitative cross sectional correlational research design was utilized to conducted the study among cancer patients at different cancer welfare societies in regions of Kingdom of Saudi Arabia. Two electronic questionnaires were used to collect data including Mental Adjustment to Cancer (MAC) Scale, and Factors affecting patient's adjustment to cancer disease questionnaire. Data were tabulated in MS Excel and all data analyses were carried out using SPSS version 26.

Results: 374 cancer patients most common age group from them was 18-29 years old (31.3%) with more than a half were females (53.2%) and nearly all (89.6%) were Saudis. In terms of mental adjustment, female gender and low income had a negative impact on worried preoccupation, whereas regular exercise, listening to music, having a family history of cancer, and having friends with cancer had a beneficial impact. Non-Saudis had a higher fighting spirit than Saudis, while those with a decent income and regular exercise had a lower fighting spirit. Fatalism also had a strong impact on patients who were less educated or had a family history of cancer.

Conclusions: The overall mental adjustment of cancer patients had been affected by the regular exercise and similar illness among their friends but non-Saudis demonstrated better coping strategies than Saudi patients. The researchers recommend that health care providers encourage the patient to express feeling and to perform regular exercise to decrease the level of anxiety and enhance mood.

Key Words: Cancer, Neoplasm, Psychological adjustment, Emotional adjustment, Emotional adaptation

1. BACKGROUND

Cancer is described as uncontrollable cell growth and spread caused by a single cell change. External agents and/or inherited genetic factors can trigger the transformation, which

can affect every part of the body. A normal cell's transformation into a tumor cell is a multi-stage process in which tumors often invade surrounding tissue and spread to distant locations.^[1] Cancer has been on the rise in recent decades,

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and its negative effects are among the factors that have drew specialists' attention to the disease more than ever before.^[2] The report claims that Cancer is the second leading cause of death globally, about one out of every six deaths occurs due to cancer.^[3]

Cancer has been diagnosed. Induces more psychological pressure than any other illness in humans, and produces various physical, psychological, social, economic, and family issues. Pain, excessive fatigue, nausea, vomiting, a loss of appetite, diarrhea, anemia, shortness of breath, libido loss, physical and physiological changes, and alopecia are one of the most common problems associated with this condition.

Moreover, various cancer therapies can complicate and affect adjustment to the disease.^[4] Cancer patients experience large physical and emotional challenges related to side effects of chemotherapy drugs, which make coping and adaptation essential issue for coping with disease.^[5] Furthermore, cancer treatments will make adjusting to the disease more difficult.^[4]

Patients' distress levels and mental adjustment to cancer disease should be assessed at the time of diagnosis, as they are particularly vulnerable to distress throughout this time, and early intervention to decrease level of distress among cancer patients can improve their QoL during the recovery period.^[6] Despite the difficulties associated with cancer, most patients are able to develop effective ways of accepting and coping with the disease.^[7] Understanding how to support patients and the reasons that cause adjustment can be beneficial to them.^[8] Cultural and social conditions are hugely influenced by adaptation to illnesses and religious beliefs. Therefore, Examining the factors that influence psychological adjustment in different cultures will help to understand this concept in health care. The current research aims to assess adjustment status and related factors in cancer patients, given the rising prevalence of cancer and its implications, as well as the impact of adjustment to care and lifestyle changes on patients.^[9]

1.1 Literature review

The researchers combed through all available literature in search of important findings that could aid future study. Literature searches were conducted using a variety of electronic databases, including PubMed, CINAHL, and Medical literature on Line (Medline), Google Scholar and Medical Data Base (EMBASE). The topic was found by typing in a word or phrase that encapsulated the main concepts in the papers, key ward factors affecting psychological adjustment of cancer patients to their disease.

De Luca et al.^[10] sought to discover how psychological fac-

tors and attachment styles aid people in making changes and improving their mental health. Each couple had one participant attend surgery centers at the University Hospital of the study, which included 176 participants. Each participant filled out five questionnaires about their relationship, quality of life, anxiety, depression, and psychosocial adjustment to illness. The study discovered a connection between the patient's psychological distress and the partner's sense of marital satisfaction: the latter is lower in couples with an oncological patient who is distressed.

The aim of Czerw et al.^[11] was to determine the effect of socioeconomic variables on coping strategies, disease acceptance, and adjustment, as well as to assess coping strategies, disease acceptance, and cancer adjustment in breast cancer patients. The research used paper and pencil interviewing, demographic questions, and psychometric tests among 193 women diagnosed with breast cancer at the Center of Oncology, Maria Sklodowska Curie Institute in Warsaw. The study discovered that a respondent's level of disease acceptance is affected by his or her income. The higher the pay, the better the recognition of illness.

Abdul-Rashid et al.'s^[12] study aimed to look into the effects of cancer on the psychosocial aspects of Pakistani patients and their families. The study conducted among 200 Pakistani patients who visited AKUH's oncology clinic between December 2010 and May 2011. FACT-G QOL (functional assessment of Cancer Therapy General quality of life) component responses were recorded on pre-designed questionnaires. One-third of cancer patients was found to be depressed. They relied heavily on religious support as a coping mechanism.

Laubmeier et al.'s^[13] study aimed to see whether cancer patients' perceptions of life threat (PLT) are more strongly linked to psychological change than a more objective measure of disease prognosis. this study conducted among 97 patients diagnosed with various types of cancer. PLT, cancer related repetitive thoughts, anxiety, and quality of life were all assessed using questionnaires. The study found the PLT is associated with depression in cancer patients, and that this correlation is partially due to cognitive symptoms associated with post-traumatic stress disorder (PTSD) symptomatology. As a result, patients who consider their illness to be life threatening can benefit from cognitive therapies that reducing the distress caused by intrusive thoughts.

Cerezo et al.^[14] wanted to see whether breast cancer patients' personality profiles are related to psychological transition or psychopathology. The research included 109 women with breast cancer, with an average age 52.01. The participants completed the Millon Clinical Multiaxial Inventory-III (MCMI-III), the Life Orientation Test-Revised (LOT-R), the

Satisfaction with Life Scale, and the positive and negative Affect Scales. According to the findings, personality traits can influence the psychological adjustment of breast cancer survivor.

Czerw et al.'s^[15] study aimed to Identifying the coping mechanisms used by patients diagnosed with an oncologic disorder. The study conducted among 74 patients at central clinical hospital of the ministry of Interior. The study used Mini-Mental Adjustment to Cancer (mini-MAC) scale to evaluate the degree of adaptation to the cancer disease. Individual sub-scales, such as helplessness-hopelessness, and nervous preoccupation, were analyzed in conjunction with socio-demographic factors. The study found the cancer patients use a variety of coping mechanisms to deal with their suffering depending on socio-demographic factors.

Brandão et al.^[16] investigated how sociodemographic and psychosocial factors affect post-diagnosis psychological transition to breast cancer (BC). The researchers used full-text, peer-reviewed publications to perform the analysis, which took place in 9 separate health-related databases between 2000 and December 2015. Just 41 studies out of 1780 were found to have a substantial relationship between psychosocial factors and psychological improvement. Income, fatigue, cancer stage, and physical functioning were all clear sociodemographic and disease-related variables that predicted adjustment.

Chambers et al.'s^[17] study use growth mixture models to explain trajectories of health-related quality of life (QoL) and psychological change for men with prostate cancer and identify predictors of worse outcomes. The study conducted among 1,064 men diagnosed with prostate cancer and assessed using self-report assessments and questionnaires. The study found poorer physical was produced among older age and low income, lower life satisfaction among younger age and low income. Poorer psychological trajectories among younger age and low income. Over time, improved urinary and sexual function is linked to better overall outcomes.

The study done by Grassi et al.^[18] examines recent advances in psychosocial and psychopharmacological treatments. They are implementing screening methods for cancer-related psychological symptoms such as depression, anxiety, post-traumatic stress, and demoralization. A number of scientific cancer societies have also developed treatment guidelines for psychological distress. According to the report, cancer patients experience severe psychological issues such as anxiety, which may progress to depression in some cases.

1.2 Research problem

Cancer patients experience stress-related intrusive thinking and avoidance (e.g. Cordova et al. 1995). Intrusive thoughts have been linked to worse psychological and physical outcomes in cancer patients (Epping-Jordan Compas & Howell, 1994) which are a form of stressor-related mental re-exposure (Baum Cohen & Hill, 1993). In the current research, interference and avoidance were monitored in addition to more objective features of cancer stress in predicting anxiety/depression symptoms as a measure of overall psychological trauma. Variations in handling as a result of different stress physiological arousal are a second problem that has hampered research on coping efficacy. The controllability of the stressor is the most important of these, with both objective and subjective aspects of control being important.^[19]

1.3 Aim of the study

This study aims assess factors affecting psychological disease adjustment of oncology patients at different cancer societies in Saudi Arabia through the following objectives:

- 1) Assess psychological adjustment of patients with cancer' to their illness.
- 2) Assess factors affecting psychological adjustment of cancer patients to their disease.

1.4 Research question

What are the factors affecting psychological adjustment of oncology patients at different cancer societies in Saudi Arabia?

2. MATERIALS AND METHODS

2.1 Research design

A quantitative, survey study design was used to conduct this study. This design was selected because it would help to define the factors affecting psychological adjustment of cancer patients to their disease.

2.2 Study setting

This study was conducted at cancer welfare societies from three regions of the Kingdom of Saudi Arabia; Al-Hayat Association in Qurayyat (northern Saudi Arabia), Cancer Charitable Society in Al-Ahsa "Optimism" (Eastern Saudi Arabia) and Najran cancer Foundation (Southwestern Saudi Arabia).

2.3 Sample and sample size

A convenience sample of approximately 360 cancer patients from the previous mentioned setting, who had agreed to participate in the study and fill out the study questionnaires. The sample size was calculated using Raosoft website and

confirmed by statistician based on the number of the population of the study which is approximately 5000 patients in the three cancer welfare societies, with a 95% confidence interval and a 5% margin of error. Inclusion criteria involved adult cancer patients of 18 to 65 years of age, and who can see and use their mobile phones, iPad or laptops to answer the electronic questionnaires. The exclusion criteria were presence of pre-existing psychiatric problems or recent loss that can affect their psychological adjustment.

2.4 Tools for data collection

The following two electronic structured questionnaires were used for collecting the study data from the cancer patients who were covering the criteria of the sample:

a) The first questionnaire was concerned with assessment of the factors affecting patient's adjustment to cancer disease. It was developed by the researchers in Arabic language. It involves two parts as follow: First, the socio demographic and medical data of the study participants e.g., age, gender, nationality, level of education, working status, income, diagnosis, type of treatment, and time since diagnosis in the form of ten MCQs. Second, the factors affecting adjustment to cancer disease e.g., exercising, believes, presence of social support, etc. in the form of twelve Yes/No questions. Number and percentage were calculated.

b) The second tool: Mental Adjustment to Cancer Scale (MACS): It is a self-rating questionnaire that describes cancer patient's adjustment to cancer. It was developed by Watson et al. (1988) and modified by the researchers then translated into Arabic language. It involves 19 statements corresponding to three dimensions as follow; fighting spirit (FS; 13 items) characterized by a determination to fight the illness and the adoption of an optimistic attitude, anxious preoccupation (AP; 3 items) characterized by constant preoccupation with cancer and feelings of devastation, anxiety, fear, and apprehension, and fatalism (FA; 3 items) where the patient puts him/herself in the hands of God. The responses for those statements are on a four-point Likert scale ranging from "definitely does not apply to me" (1) to "definitely applies to me" (4). By adding the scores of each statement, the total score for each dimension was computed. Every dimension's mean and standard deviation were calculated.

2.5 Validity and reliability

Face and content validity of the study tools were tested by a jury of five experts from Faculty of Nursing, King Abdulaziz University who tested its clarity, relevance for the aim of the study and the importance of every item in the questionnaires. The tools were modified accordingly. The content validity index values were 100 and 80 percent for MACS and the second questionnaire respectively.

Internal consistency was assessed by computing Cronbach's alpha coefficients. These alpha coefficients were satisfactory for the FS ($\alpha = 0.84$) but were below 0.70 for the AP ($\alpha = 0.65$) and FA ($\alpha = 0.65$) scales.

2.6 Ethical considerations

The research in consistency of the helsinki code of ethics that there is no physical or psychological harms posed to participating in this research. Ethical approval was obtained from Scientific Research and Ethical committee, Faculty of Nursing, King Abdulaziz University as well as the participating cancer welfare societies through E-mails after explaining the aim of the study and ensuring privacy, confidentiality and protection of participants' information. Participants were informed that participation is voluntary, and they have the right to withdraw from the study and not to answer the questionnaires. Participants' approvals were obtained through consent at the beginning of the electronic questionnaires as they were informed that answering the questionnaires denoting acceptance to participate in the study. The researchers ensured that participation in the study were anonymous and that confidentiality was maintained during the analysis.

2.7 Data collection process

After getting the permission from college of Nursing at King Abdulaziz University and three cancer welfare societies:

The electronic questionnaires were created using Google Form.

The researchers started to disturbed the electronic questionnaires to the selected cancer welfare societies at three regions of the Kingdom of Saudi Arabia on 16 of Mars, 2021 and requested them to distributed it for the all patients who fulfill the inclusion criteria (cancer patients, age over 18 years old, etc.).

Answering the questionnaire was considered as a consent to participate in the study.

The researcher reach 155 respondents from all three cancer welfare societies in the first two months.

The researchers noted that the responses are not sufficient and not met the desire sample size in the study. The researcher contacted again with the three cancer welfare societies and asked them to resend the questionnaires and increase the effort to increase the number of participant.

The number of participants start to increase gradually until the researcher get the desire sample size.

The data collection stopped on 12 of April, 2021 when the number of the participants reached 374 respondents.

2.8 Statistical analysis

The data analyses were performed using the statistical package for social sciences, version 26 (SPSS, Armonk, NY:

IBM Corp.). Descriptive statistics were presented using numbers, percentages, mean, standard deviation and median (Interquartile range). The median scores of mini-MACS and its domains were compared to the socio demographic characteristics of the patients by using Mann Whitney U test. Normality tests were performed using Shapiro Wilk test. The scores of MACS and its domains follows abnormal distribution. Pearson correlation coefficient was used to determine the linear relationship between mini-MACS and its domains. *p*-value < .05 was considered statistically significant while *p*-value .01 was considered highly statistically significant.

3. RESULTS

This study involved 374 cancer patients. As seen in Table 1, the most common age group was 18-29 years old (31.3%) with more than a half were females (53.2%) and mostly were Saudis (89.6%). With regards to their level of education, 42% earned higher education and 32.6% were secondary level. Furthermore, 57.2% were unemployed and 58.3% expressed of insufficient monthly income.

Figure 1 showed the type of cancer being diagnosed among patients. It was revealed that breast cancer was the most commonly diagnosed cancer (30.5%), followed by blood cancer (24.3%) and colorectal cancer (13.6%) while lymphoma cancer was the least (9.1%).

Figure 2 depicted the type of treatment among cancer pa-

tients. It can be observed that the most commonly known treatment was chemotherapy (56.1%), followed by surgical treatment (14.2%) and combined therapy (11.8%).

Table 1. Type of diagnosed cancer

Study variables	N (%)
Age group	
18-29 years	117 (31.3)
30-39 years	95 (25.4)
40-49 years	86 (23.0)
≥ 50 years	76 (20.3)
Gender	
Male	175 (46.8)
Female	199 (53.2)
Nationality	
Saudi	335 (89.6)
Non-Saudi	39 (10.4)
Level of education	
Illiterate	47 (12.6)
Primary	32 (08.6)
Intermediate	16 (04.3)
Secondary	122 (32.6)
Higher education	157 (42.0)
Working status	
Working	160 (42.8)
Not working	214 (57.2)
Income status	
Enough	156 (41.7)
Not enough	218 (58.3)

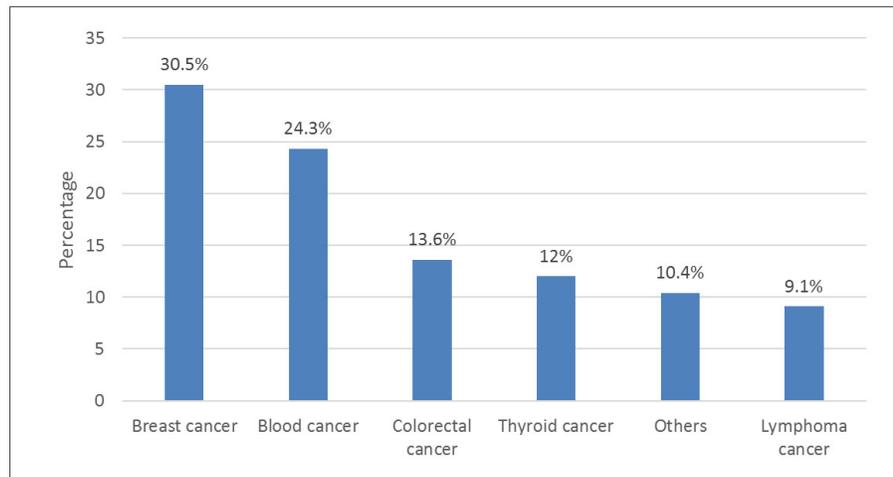


Figure 1. Type of diagnosed cancer

In Figure 3, it was shown that 42.8% indicated that they had been diagnosed with cancer since the past 1 year or more and 29.1% reported of cancer diagnosis since the last 6 months – 11 months.

In Table 2, first time to diagnose with cancer constitutes 89.6%. Among the coping strategies, faith in God (98.1%),

prayer or reading the Qur’an (97.1%) were the main coping strategies by the patients. Furthermore, 62.8% were self-distracted that cause them to lose their focus with their illness. Similarly, nearly 40% indicated with previous family history of cancer and 82.6% had heard similar experiences with other patients. Additionally, 89.8% believe with fatalism and 91.2% had already accepted their illness.

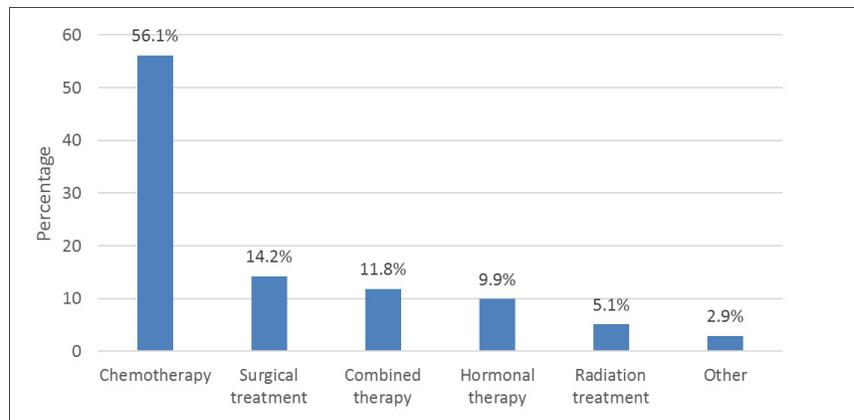


Figure 2. Type of treatment

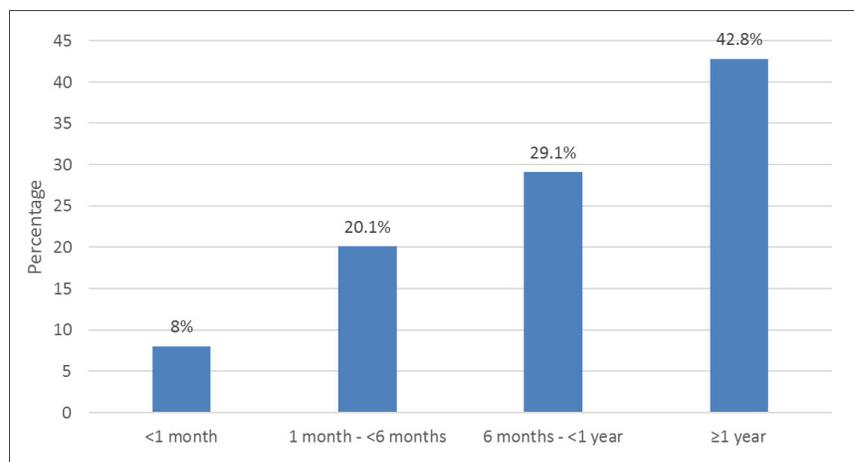


Figure 3. Time since diagnosed with cancer

Table 2. Factors affecting patient’s adjustment to cancer disease (n = 374)

Factor	Yes N (%)	No N (%)
The first time for being diagnosed with cancer	335 (89.6)	39 (10.4)
Practice exercise	220 (58.8)	154 (41.2)
Resorting to prayer or reading the Qur’an to feel comfortable	363 (97.1)	11 (02.9)
Listen to music	172 (46.0)	202 (54.0)
Having hobbies	282 (75.4)	92 (24.6)
Food is affecting on the psyche during treatment positively	249 (66.8)	124 (33.2)
Getting family support during the treatment period	349 (93.3)	25 (06.7)
Getting friends’ support during the treatment period	312 (83.4)	62 (16.6)
Having a strong belief in God and confidence that he will recover me	367 (98.1)	07 (01.9)
Distracting from focusing on the illness through any activities	235 (62.8)	139 (37.2)
Having a family member who had the same illness/diagnosis	148 (39.6)	226 (60.4)
Having friends who had the same illness/diagnosis	136 (36.4)	238 (63.6)
Hearing from other similar patients’ experiences	309 (82.6)	65 (17.4)
Believing in fatalism	336 (89.8)	38 (10.2)
Accepting illness	341 (91.2)	33 (08.8)

The descriptive statistics of mini-MACS was given at Table 3. It can be observed that the overall median score of mini-MACS was 29.0 (IQR 10) points. With regards to

mini-MACS dimension, the median score of anxious pre-occupation was 5.0 (IQR 3) points, fighting spirit was 20.5 (IQR 6.03) and median score of fatalism was 5.0 (IQR 2.0).

Table 3. Descriptive statistics of the mini- Mental Adjustment to Cancer (MACS) Scale (n = 374)

MACS dimension	No. of Items	Mean ± SD	Median	IQR
Anxious Preoccupation score	03	4.99 ± 2.08	5.00	3.00
Fighting spirit score	13	20.5 ± 6.03	18.0	8.00
Fatalism score	03	5.35 ± 1.67	5.00	2.00
Total MACS score	19	30.8 ± 8.16	29.0	10.0

Note. IQR – Interquartile Range.

In Table 4, Pearson Correlation Coefficient revealed that there was positive significant correlation between fighting spirit and anxious preoccupation ($r = 0.666; p < .001$). We further observed that the correlation between fatalism and fighting spirit was positively highly statistically significant ($r = 0.298; p < .001$). Finally, the correlation between the total mini-MACS score in relation to anxious preoccupation ($r = 0.758; p < .001$), fighting spirit ($r = 0.970; p < .001$) and fatalism were positively highly statistically significant.

Table 4. Correlation (Pearson-R) between MACS and its domains (n = 374)

MACS dimension	AP	FS	FA	MACS
Anxious Preoccupation	1			
Fighting spirit	0.666**	1		
Fatalism	0.050	0.298**	1	
Total mini-MACS	0.758**	0.970**	0.438**	1

**Correlation is significant at the .01 level (2-tailed).

When measuring the difference in median scores of anxious preoccupations, fighting spirit, fatalism and mini-MACS, it was found in Table 5 that the median score of females was statistically significantly higher in anxious preoccupation ($Z = -3.292; p = .001$). It was also found that the median scores of non-Saudis was statistically significantly higher in fighting spirit ($Z = -2.444; p = .015$) and in mini-MACS ($Z = -2.357; p = .018$). Likewise, the median score of patients with secondary or below educational level was statistically significantly higher in fatalism ($Z = -2.264; p = .024$). On the other hand, the median scores of patients who were having regular exercise were statistically significantly lower in anxious preoccupation ($Z = -5.969; p < .001$), fighting spirit ($Z = -3.225; p = .001$) and total mini-MACS ($Z = -3.709; p < .001$). Similarly, patients who were regularly listening to music ($Z = -2.025; p = .043$) and those with family history of cancer ($Z = -3.985; p < .001$) exhibited significantly less median score. In addition, those who had friends with cancer were observed to have significantly lower median score in anxious preoccupation ($Z = -3.954; p < .001$) and total mini-MACS ($Z = -2.263; p = .024$).

4. DISCUSSION

The aim of study is: see how mental adjustment affects cancer patients at various cancer welfare societies in Jeddah, Saudi Arabia. Gender, ethnicity, level of education, income status, daily exercise, listening to music, family history of cancer, and friends with cancer were among the socio demographic characteristics that influenced the mental adjustment of the patients, according to the findings of this study. These results are similar to those of.^[20] Age, marital status, educational level, employment status, monthly income, form of procedure, comorbidities, family history, cancer stage, and physical activity were discovered to be ten predictive variables influencing mental adjustment in women with breast cancer.^[21] Age is a good predictor of mental change^[21,22] but age did not seem to be a factor in our study because the findings were not substantially different across the groups ($p > .05$).

Although there was no consistent relationship between age and mental adjustment in previous reports, but several factors were found to be significantly related to mental adjustment, including education, marital status, financial status, employment, and religious belief, but not age, duration with cancer, or duration of chemotherapy or place of residence which were consistent with our results.^[23]

Non-Saudis fared better in the overall mini-MACS than Saudi patients, but routine exercise and friends with similar cancers fared worse. However, age, gender, education level, employment status, income, music listening, and family history of cancer were not found to be significant factors in overall mental adjustment. Sex, income level, daily exercise, listening to music, family history of cancer, and friends who had been diagnosed with cancer were all established as factors in anxious preoccupation (AP). AP was found to be higher in women and those with low income, while daily exercise, listening to music, having a family history of cancer, and having friends who had similar cancers were found to be lower.

Table 5. Association between MACS and its domain with the Socio demographic characteristics of the cancer patients (n = 374)

Factor	AP Score (12) Median (IQR)	FS Score (52) Median (IQR)	FA Score (12) Median (IQR)	MACS Score (76) Median (IQR)
Age group				
< 40 years	4.00 (3.00)	18.0 (8.00)	5.00 (2.00)	28.0 (09.75)
≥ 40 years	5.00 (3.25)	19.0 (8.00)	5.50 (2.00)	29.5 (11.00)
Z-test; p-value	-0.961; .337	-0.859; .391	-0.298; .766	-0.981; .326
Gender				
Male	4.00 (3.00)	17.0 (8.00)	6.00 (2.00)	28.0 (11.00)
Female	5.00 (4.00)	19.0 (8.00)	5.00 (2.00)	29.0 (10.00)
Z-test; p-value	-3.292; .001**	-1.597; .110	-1.068; .285	-1.671; .095
Nationality				
Saudi	4.00 (3.00)	18.0 (7.00)	5.00 (2.00)	28.0 (09.00)
Non-Saudi	6.00 (4.00)	23.0 (12.0)	6.00 (3.00)	34.0 (14.00)
Z-test; p-value	-1.856; .064	-2.444; .015 **	-0.460; .646	-2.357; .018**
Level of education				
Secondary or below	4.00 (3.00)	19.0 (8.50)	6.00 (2.00)	29.0 (12.00)
Higher education	5.00 (3.50)	18.0 (7.00)	5.00 (2.00)	29.0 (08.50)
Z-test; p-value	-1.357; .175	-0.343; .732	-2.264; .024 **	-0.498; .619
Working status				
Working	4.00 (3.00)	18.0 (7.75)	6.00 (2.00)	28.0 (09.00)
Not working	5.00 (3.25)	18.5 (8.25)	5.00 (2.00)	29.0 (11.25)
Z-test; p-value	-1.499; .134	-0.984; .325	-0.109; .913	-0.947; .343
Income status				
Enough	4.00 (3.00)	17.0 (7.00)	5.00 (2.00)	28.0 (09.00)
Not enough	5.00 (4.00)	19.0 (9.00)	6.00 (3.00)	30.0 (10.25)
Z-test; p-value	-2.647; .008**	-2.052; .040 **	-1.111; .267	-1.111; .267
Regular exercise				
Yes	4.00 (3.00)	17.0 (6.75)	6.00 (2.00)	28.0 (08.00)
No	6.00 (5.00)	19.5 (10.0)	5.00 (2.00)	31.0 (11.25)
Z-test; p-value	-5.969; < .001**	-3.225; .001**	-1.497; .134	-3.709; < .001**
Listening to music				
Yes	4.00 (3.00)	18.0 (7.00)	6.00 (3.00)	28.0 (08.00)
No	5.00 (3.25)	19.0 (9.00)	5.00 (2.00)	29.0 (12.00)
Z-test; p-value	-2.025; .043**	-1.778; .075	-1.587; .113	-1.449; .147
Family history of cancer				
Yes	4.00 (3.00)	18.0 (8.00)	6.00 (2.00)	28.0 (10.00)
No	5.00 (4.00)	18.5 (36.0)	5.00 (2.00)	30.0 (11.00)
Z-test; p-value	-3.985; < .001**	-1.535; .125	-2.157; .031**	-1.602; .109
Friends with cancer				
Yes	4.00 (3.00)	18.0 (7.00)	6.00 (2.00)	28.0 (08.75)
No	5.00 (4.00)	19.0 (8.00)	5.00 (2.00)	30.0 (11.00)
Z-test; p-value	-3.954; < .001**	-1.952; .051	-1.142; .253	-2.263; .024**

Note. p-value has been calculated using Mann Whitney U test. ** Significant at $p < .05$ level.

In Yemen there are eight predictors of AP, including age, level of education, family history of breast cancer, mastectomy, widower, comorbidities, employment, and stage III cancer.^[22] And in South Korea the researchers found that the AP and helpless-hopeless dimensions were significantly correlated with distress in thyroid cancer patients.^[6] Our research found three predictors of fighting spirit (FS): ethnicity, income status, and daily exercise. The researchers discovered that non-Saudis and those with insufficient income had a higher fighting spirit than the other cancer patients, but those who exercised regularly had a lower fighting spirit. Size of household, performance status, support from physicians, and satisfaction with support were all found to be predictors of patients' FS in Japan.^[24] Another Italian researcher found that social reinforcement and positive thought were associated with both FS and FA.^[25] Furthermore, the researchers discovered two causes for Fatalism (FA): educational level and family history of cancer, with less qualified patients and those with a family history of cancer having a higher risk of fatalism. This finding is superior to that of Abdo et al.^[20] who found no significant impact of fatalism on all socio-demographic characteristics using stepwise regression, which was consistent with the paper published in Italy.^[25] Furthermore, the researchers discovered many associations between mini-MACS and its dimensions through correlational procedures. For example, the researchers discovered that there was a strong positive correlation between FS and AP, FA and FS, and total mini-MACS in terms of FS, AP, and FA. This means that an increase in one dimension's score is associated with an increase in another, such as the total mini-MACS score. When FS is raised, for example, AP is likely to rise as well. The correlation between FA and AP, on the other hand, did not indicate a substantial difference ($p > .05$). They found a similar result in Sweden.^[26] The Swedish research discovered important links between AP and helplessness-hopelessness, fatalism and cognition, and FA and FS. Patients who used the helpless-hopeless and AP responses had more anxiety and depression, as well as a lower HRQL, according to correlation procedures. On the other hand, presented opposing opinions, claiming that there is an opposite and important association between change and religious beliefs and their dimensions ($p \leq .05$), with higher religious beliefs leading to higher disease adjustment.^[23] It's worth noting that, although the majority of them believe in fatalism and have already accepted their fate, patients expressed strong faith in God, with prayer or reading the Qur'an being the most popular coping strategies listed. Religious belief/spiritual healing was also the most common coping strategy among Korean and Mexican-Americans,^[27]

which was consistent with our findings.

5. CONCLUSION

Cancer diagnosis causes more psychological stress in humans than any other disease, resulting in a variety of physical, psychological, social, economic, and family problems.^[6] The overall mental adjustment of cancer patients had been affected by the regular exercise and similar illness among their friends. Saudis demonstrated better coping strategies than Saudi patients. Regarding the dimension of mental adjustment, female gender and insufficient income had a negative effect on anxious preoccupation but regular exercise, listening to music, family history of cancer, and friends with cancer demonstrated positive effect. For fighting spirit, non-Saudis had better fighting spirit however, those with sufficient income and those with having regular exercise demonstrated less. Furthermore, fatalism had a great effect on less-educated patients and those with a family history of cancer.

The following were the study's limitations:

- 1) The analysis was completed in a short period of time because the time was limited due to several challenges in handing out the questionnaire or interviewing participants related to covid-19, the questionnaire was completed online and without interviewing them.
- 2) The majority of cancer welfare society participants were elderly patients which limit study generalizability.

Recommendations

- 1) A similar study needs to be replicated on larger probability samples with different demographic variables.
- 2) Conduct similar studies using face-to-face interview questionnaire or quantitative design.
- 3) The same study can be replicated among younger age group (18 years and above) to evaluate psychological adjustment with their cancer.
- 4) Give more attention to psychological adjustment assessment for cancer patients in the welfare societies to evaluate their coping with cancer disease.
- 5) Encourage the patient to express feeling and to perform regular exercise to decrease the level of anxiety and enhance mood.
- 6) Encourage listening to music to decrease level of stress and enhance adjustment.
- 7) Provide spiritual support for the patients with cancer disease to reduce their level of anxiety.

CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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