

Assessments Of Personality Traits, Cognition And Body Image In Breast Cancer Survivors



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Abstract: *The current study aimed to examine the relationship between personality traits, cognition, and body image in breast cancer survivors. A cross-sectional research design was employed, involving a total of 300 participants. Among them, 150 were breast cancer survivors, while the other 150 were individuals without a history of cancer. The participants were selected using purposive sampling techniques. The collected data were analysed using SPSS, with both descriptive and inferential statistics calculated. Independent sample t-tests, Pearson correlation, and regression analyses were conducted. The results of the study revealed several significant findings. Neuroticism exhibited a negative correlation with its counterparts. Extroversion showed negative correlations with self-aggrandizement, vitality, sexual fulfilment, and physical contact. Agreeableness demonstrated negative correlations with self-aggrandizement, vitality, sexual fulfilment, and physical contact. Consciousness displayed negative correlations with openness, comments from others, perceived cognitive abilities, impact on quality of life, self-aggrandizement, vitality, sexual fulfilment, and physical contact. Similarly, openness exhibited negative correlations with comments from others, perceived cognitive abilities, impact on quality of life, self-aggrandizement, vitality, sexual fulfilment, and physical contact. Perceived cognitive impairments were found to have negative correlations with impact on quality of life, self-aggrandizement, and physical contact. Furthermore, comments from others showed negative correlations with impact on quality of life, self-aggrandizement, and physical contact.*

Keywords: Personality traits, Cognition, Breast cancer Survivors, Body image

Introduction

Cancer is a group of diseases characterized by the uncontrollable growth of abnormal cells, leading to high incidence and mortality rates. One of the most prevalent forms of cancer, breast cancer, originates in breast tissue and is caused by the loss of normal cellular control mechanisms. Healthy cells typically grow, divide, and stop when no longer needed, but cancer cells continue to proliferate uncontrollably, leading to tumors and

potentially fatal complications. Mutations in genes responsible for regulating protective cellular pathways contribute to the uncontrolled growth of these cells (Chen et al., 2014). A variety of factors, including genetic predispositions and environmental exposures, contribute to the onset of breast cancer. Notably, exposure to oestrogen has been linked to DNA damage and subsequent mutations that increase the risk of breast cancer (Cavalieri et al., 2006).

Impact on Pakistani Women

In Pakistan, the lack of awareness and social stigma surrounding breast cancer leads to late diagnoses, which exacerbates the disease's impact. Many women delay seeking medical attention due to cultural barriers and fears of losing their femininity. The psychological and physical effects of breast cancer treatments, including surgery and chemotherapy, further complicate patients' recovery. Loss of breast tissue, for instance, is deeply tied to body image and self-identity, which can lead to stress, anxiety, and depression (Malik & Kiran, 2013). Among patients in the Bannu district of Khyber Pakhtunkhwa, 65% of breast cancer cases were reported, with the highest prevalence in women aged 15–60 (Wahid et al., 2019). The rising number of cases in rural areas underscores the need for better education, early detection, and affordable treatment options.

Personality Traits and Their Impact on Breast Cancer Outcomes

The development and progression of breast cancer are significantly influenced by personality traits. While some research has suggested that there may be a correlation between personality and cancer incidence, findings on the connections between personality and health outcomes in cancer patients have been mixed. Personality, which encompasses how individuals perceive, behave, and emotionally react, plays a crucial role in shaping the course and outcomes of cancer (Jokela, Hakulinen, Singh-Manoux, & Kivimäki, 2014). Several studies have explored how personality traits influence the prognosis and quality of life of cancer patients, particularly breast cancer survivors (Chang et al, 2016; Lai et al, 2019). Researchers emphasized the role personality plays in illness perception and health-seeking behaviors (Costa & McCrae, 2008).

The Five-Factor Model of personality, one of the most scientifically supported frameworks for understanding personality traits, includes extraversion, conscientiousness, agreeableness, neuroticism, and openness to experience (Costa & McCrae, 2008). Certain behaviors, such as emotional restraint and suppression of negative

emotions, have been linked to a higher cancer risk (Lemogne et al., 2013). For example, a Type C personality, characterized by a lack of aggressiveness, conformity, and difficulty expressing negative emotions like anger, has been associated with adverse health behaviors (Lai et al., 2019). These personality traits may also be linked to unhealthy habits such as smoking, skipping cancer screenings, or not adhering to prescribed medical treatments (Aschwanden et al., 2019).

Extraversion and Cancer Screenings

Extraversion, which is marked by traits such as sociability, assertiveness, and positivity, has been linked to more proactive health behaviors, including cancer screenings (Neeme, Aavik, & Punab, 2015). Research indicates that certain personality traits, like neuroticism and conscientiousness, influence both the psychological and physical aspects of quality of life for breast cancer patients. Women with high extraversion levels may seek more detailed information about their health and demonstrate a stronger desire for support from medical professionals. This trait may also make individuals more likely to engage in early detection practices for breast cancer (Chapman et al., 2009; Nettle, 2005).

Neuroticism and Psychological Health

Neuroticism has been identified as the personality trait most commonly linked to poorer outcomes in breast cancer patients, including lower quality of life, fatigue, and depression. Studies have shown that neuroticism, which is closely associated with anxiety and depression, plays a significant role in the development of depressive symptoms after surgical treatment for breast cancer and also leads to low self-esteem (Iqbal & Khattak, 2019). High levels of neuroticism are often linked to negative thinking patterns, making it more difficult for individuals to cope with stressors (Anagnostopoulos & Botse, 2016). Neuroticism also contributes to physiological hyper-arousal, which can lead to insomnia and exacerbate other health issues (Goodwin & Engstrom, 2002; Wasylikiw & Fekken, 2002).

Agreeableness and Health Behavior

Agreeableness, which refers to an individual's tendency to be kind, cooperative, and trusting, has also been studied in relation to health behavior. Highly agreeable individuals are often more compliant with medical advice and maintain positive relationships with their healthcare providers. Women with high levels of agreeableness may be more likely to follow medical recommendations and communicate openly with their doctors (Chapman et al., 2009). Conversely, lower levels of agreeableness are associated with traits like aggressiveness and selfishness, which may help some individuals overcome barriers to accessing healthcare services (Mendiburo-Seguel, Páez, & Martínez-Sánchez, 2015).

Conscientiousness and Preventive Health Behaviors

Conscientiousness is another personality trait that has been linked to positive health behaviors. Individuals high in conscientiousness tend to be organized, self-disciplined, and responsible, which may encourage them to engage in preventive health measures, such as regular cancer screenings and following medical advice (Bogg & Roberts, 2004). Conscientious individuals are also more likely to avoid harmful habits like smoking and excessive drinking and to engage in regular physical activity (Terracciano & Costa Jr., 2004).

Openness to Experience and Alternative Health Practices

Openness to experience, characterized by a willingness to explore new ideas and challenge authority, has been linked to health behaviors such as the use of alternative or complementary therapies. Women with higher levels of openness may seek out non-traditional health practices, such as alternative medicine, in addition to conventional medical treatments (Honda & Jacobson, 2005). However, the impact of openness on breast cancer outcomes, particularly in relation to self-examination, remains unclear.

Cognitive Impairment in Breast Cancer Survivors

Cancer-Related Cognitive Impairment (CRCI)

often occurs during and after treatment and may be influenced by various factors, including age, psychological and social factors, genetic predisposition, and comorbidities. Deficits in cognitive and executive skills often emerge during chemotherapy (Billiet et al., 2018). Verbal and spatial cognitive impairments are common among breast cancer patients' post-chemotherapy. Other treatment modalities, such as endocrine therapy and postoperative radiation, have also been linked to cognitive issues. There is significant variation in how long cognitive impairment persists post-treatment. Some studies report that cognitive function improves after treatment while others suggest the impairment can persist or develop gradually over time. Cognitive impairment appears to be more pronounced in older patients and those with advanced disease stages. Neuroimaging and patient self-reports indicate long-term cognitive changes in some patients, up to 20 years after chemotherapy. Self-reported cognitive impairments are often linked to depression and anxiety rather than objective neuropsychological measure (Ahles et al., 2008).

Body image

Body image refers to an individual's beliefs, perceptions, and emotions regarding their body, particularly in relation to physical characteristics and integrity (Fingeret & Teo, 2018). Research indicates that more than half of breast cancer survivors develop negative body image, with a significant proportion experiencing body image-related anxiety long after their recovery. Women who undergo mastectomies often report discomfort with their new bodies, with many expressing concerns about diminished attractiveness, fear of rejection, and sexual difficulties. These physical and emotional changes often lead to a diminished quality of life. Post-surgery, women may choose breast augmentation, prosthetics, or decide against both, each choice carrying its own physical and emotional implications (Brunet et al., 2013).

The effects of treatment on body image are significant. Chemotherapy, hormone therapy, and radiation treatments can cause weight gain, hair loss, and other physical changes that further

decrease survivors' body image satisfaction (Kołodziejczyk & Pawłowski, 2019). Muslim women, in particular, may experience body image issues differently from women in Western societies, as modesty and humility are highly valued in Islamic culture (Fouladi et al., 2013). The wearing of the hijab, for instance, can shield women from some of the external pressures related to appearance (Heidari et al., 2015). Approximately 77% of breast cancer survivors report body image distress following treatment, particularly those who have undergone mastectomy (Olfatbakhsh et al., 2018).

Objectives

- To compare personality traits between breast cancer survivors and healthy individuals.
- To examine cognitive performance between breast cancer and healthy individuals.
- To compare body image between breast cancer survivors and healthy individuals.
- To examine the relationship between personality traits, cognition and body image

Hypotheses

- Breast cancer survivors and healthy individual would have different personality traits.
- Breast cancer survivors would have cognitive impairment as compared to healthy individuals.
- Breast cancer survivors would have negative body image as compare to healthy individuals.
- There would be a correlation between personality traits, cognition and body image.
- Cognitive performance would be dependent on personality traits and body image.

METHOD

Sample

The sample size of the study was 300. 150 were breast cancer female patients and 150 were healthy individuals. The purposive sampling technique was used to collect data. The setting of the data was in different cancer hospitals (1: Northwest General Hospital & Research Centre, Peshawar. 2: Shaukat Khanum Memorial Cancer Hospital. 3: Bannu Institute of Nuclear Medicine Oncology and Radiotherapy in KP.

Research Design

Cross-sectional research design was used.

Instruments

There were three key instruments used in this investigation. It included Big Five Factors, body image scale.

Big Five Inventory (BFI)

Big Five Inventory (BFI). Participant personality traits will assess by using Big Five Inventory (BFI). The Big Five Factors are (chart recreated from John & Srivastava, 1999). 44 items make up the Big Five Inventory, which measures the five personality qualities extraversion, receptivity to new things, life satisfaction, and social competence. Each attribute has six items that are evaluated on a 5-point Likert scale, with 1 being the strongest agreement and 5 being the least agreement (strongly agree). The BFI is a globally recognized scale with proven reliability and validity which has been validated in different countries (Alansari 2016; Fossati et al.). Between $\alpha = .76$ and $.90$ was the range for the Big Five scales' dependability (Cronbach's alpha).

FACT-Cog

The FACT-Cog version 3 is a 37-item questionnaire with four subscales: perceived cognitive impairments (Cog PCI), perceived cognitive abilities (Cog PCA), cognitive issues noticed by others (Cog Oth), and the impact of cognitive changes on quality of life (Cog QOL). It uses a 5-point scale to assess either the frequency or severity of cognitive difficulties experienced in the past week. The total score

ranges from 0 to 132, with higher scores indicating better cognitive functioning. The questionnaire has been validated in Asian breast cancer patients, showing strong internal consistency (Cronbach's $\alpha = 0.71-0.93$) and good test-retest reliability (ICC = 0.70-0.76)

Dresden Body Image Scale

The Dresden Body Image Questionnaire (DBIQ) is a 35-item scale with items that are positively and negatively worded (reversely coded) and is divided into five subscales: Acceptance of one's

body (e.g., "I wish I had a different body"), vitality (e.g., "I am physically fit"), physical contact (e.g., "I do not like people touching me"), sexual fulfilment (e.g., "I am very satisfied with my sexual experiences"), and self-aggrandizement (e.g., "I use my body to attract attention"). Level of agreement is scored on a 5-point Likert scale ranging from 1 = not at all to 5 = fully. Higher scores indicate a more positive body image. The validity and reliability of the scales are satisfactory. Cronbach's α for the present sample was .95.

Results

Table 1

Frequency of Variable %

Variables	<i>f</i>	%age
Demographic variables		
Healthy	150	50%
Cancer Patient	150	50%
Age		
21 to 30	129	43%
31 to 40	118	39.3%
41 to 50	15	4.9%
Marital Status		
Married	150	50%
Unmarried	150	50%
Family Status		
Joint	120	40%
Nuclear	180	60%
Current Status		
Metastases	22	7.3%
Recovered	82	27.3%
Relapse	8	2.7%
Second Tumor	38	12.7%
Current Therapy		
Chemotherapy	94	31.3%
Radiation	32	10.7%
Surgery	24	8%
Socioeconomic Status		

Lower	4	1.3%
Middle	124	41.3%
Upper	22	7.3%
Relationship with Family before Diagnosis		
Never	23	7.7%
Rarely	70	23.3%
Sometimes	57	19%
Relationship with Family after Diagnosis		
Never	48	16.0%
Rarely	79	26.3%
Sometimes	23	7.7%
Relationship with Friends before Diagnosis		
Worst	5	1.7%
Good	98	32.7%
Best	47	15.7%
Relationship with Friends after Diagnosis		
Worst	40	13.3%
Good	105	35%
Best	5	1.7%
Hope before Diagnosis		
Never	21	7%
Rarely	3	1%
Sometimes	63	21%
Very Often	62	20.7%
Always	1	0.3%
Hope after Diagnosis		
Never	20	6.7%
Rarely	25	8.3%
Sometimes	66	22%
Very Often	36	12%
Always	3	1%
Loneliness before Diagnosis		
Never	39	13%

Table 1 shows frequency and percentage of breast cancer patient and healthy person with respect to different demographic variables. Breast cancer patients belong to different age group ($f=21-30$, 129%) are greater than their

counter parts. Breast cancer patients belong to different marital status to married ($f=150$, 50%) are equal as compare to unmarried ($f=150$, 50%). Patients belongs to nuclear family system ($f=180$, 60%) are grater in number as compare

to joint family system ($f = 120, 40\%$). Breast cancer patients belong to different socioeconomic status to upper ($f = 22, 7.3\%$) and lower ($f = 4, 1.3\%$) are lower as compare to middle ($f = 124, 41\%$). Patients belongs to relationship with family before diagnosis rarely ($f = 70, 23\%$) are grater in number as compare to their counter parts. Breast cancer patients belong to

relationship with family before diagnosis rarely ($f = 79, 26\%$) are grater in number as compare to their counter parts. Breast cancer patients belong hope before diagnosis sometime ($f = 63, 21\%$) are grater in number as compare to their counter parts. Breast cancer patients belong hope before diagnosis sometime ($f = 66, 22\%$) are grater in number as compare to their counter parts

Table 2

Psychometric Properties of Study Variables (N = 300)

Variables	M	SD	α	Range		Skewness	Kurtosis
				potential	Actual		
Extroversion	25.3	4.8	.73	12	38	.03	.40
Agreeableness	31.8	4.0	.76	23	42	.07	-.59
Conscientiousness	28.5	3.4	.87	21	36	.17	-.46
Neuroticism	26.6	4.3	.89	17	40	.49	.52
Openness	34.1	3.8	.76	24	44	.16	-.28
Perceived Cognitive Impairments	36.5	13.2	.80	3	71	.11	-.15
Comments From Others	6.9	3.6	.85	0	16	-.04	-.11
Perceived Cognitive Abilities	14.5	5.4	.76	1	28	-.31	.22
Impact on Quality of Life	8.0	3.9	.77	0	16	-.12	-.34
Self-Aggrandizement	50.8	5.8	.74	38	68	.18	-.09
Vitality	25.7	4.1	.74	15	35	-.12	-.40
Sexual Fulfilment	14.7	5.5	.80	6	28	.38	-.48
Physical Contact	17.4	3.7	.76	6	25	-.45	.45

Table 2 shows psychometric properties of study variables. The reliability analysis indicate that the reliability coefficients of extroversion is .63, agreeableness .56, conscientiousness .67, neuroticism .89, openness .76, and perceived cognitive impairments.80, comments from others .85, perceived cognitive abilities .66, impact on quality of life .67, self-aggrandizement .54, vitality .54, sexual fulfilment .80 physical contact .76 respectively

which indicates satisfactory internal consistency. the value of skewness and kurtosis for extroversion, agreeableness, conscientiousness, neuroticism, openness, and perceived cognitive impairments, comments from others, perceived cognitive abilities impact on quality of life, self-aggrandizement, vitality, sexual fulfilment, physical contact scale are less than 1 which indicates that univariate normality is not problematic.

Table 3*Correlation Analysis*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
Extroversion		.04*	.31**	-.26**	.21**	.18**	.01*	.25**	.12*	-.33**	-.34**	-.27**	-.08*
Agreeableness	-		.29**	.02*	.43**	.07*	.24**	.01*	.04*	-.31**	-.36**	-.26**	-.07*
Conscientiousness		-		.32**	-.02*	.08*	-.02*	-.03*	-.39**	-.40**	-.32**	-.16**	-.27**
Neuroticism			-		-.03*	-.08*	.02*	-.14*	.18**	.18**	.16**	-.06*	.41**
Openness				-		.10*	-.03*	-.05*	-.24**	-.24**	-.24**	-.05*	-.20**
PCI					-		.58**	.48**	-.05*	-.17**	.06*	.14*	-.13*
Comments From Others						-		.39**	-.06*	-.16**	.05*	.13*	-.09*
PCA							-		.07*	-.03*	.19**	.13*	.12*
IQL								-		.14*	.20**	.09*	.09*
Self-Aggrandizement									-		.75**	.66**	.76**
Vitality										-		.43**	.68**
Sexual Fulfilment											-		.51**
Physical Contact												-	

Note: PCI= Perceived Cognitive Impairment, PCA= Perceived Cognitive ability. IQL= impact of quality of life

** $p \leq .001$, * $p \leq .01$

Table 3 shows that Pearson correlation among study variables. The finding shows that Neuroticism is negative correlated with their counter parts. (-.26**). Extroversion is negative correlated self-aggrandizement, vitality, sexual fulfilment and physical contact (-.33**) (.34**) (.27**) (-.08**). Agreeableness is negative correlated self-aggrandizement, vitality, sexual fulfilment and physical contact (-.31**) (-.36**) (-.26**) (-.07**). Conscientiousness is negative correlated openness, comment from other, Perceived Cognitive Abilities, Impact on Quality

of Life, self-aggrandizement, vitality, sexual fulfilment and physical contact (-.02**) (-.02**) (-.03**) (-.39**) (-.40**) (-.32**) (-.16**) (-.27**). Openness is negative correlated comment from other, Perceived Cognitive Abilities, Impact on Quality of Life, self-aggrandizement, vitality, sexual fulfilment and physical contact (-.03**) (-.05**) (-.24**) (-.24**) (-.24**) (-.05**) (-.20**). Perceived Cognitive Impairments is negative correlation with impact on quality of life, Self-Aggrandizement and physical contact (-.05**) (-.17**) (-.13**). Comments from Others is negative correlation with impact on quality of life, Self-Aggrandizement and physical contact (.06**) (-.16**) (-.09**).

Table 4

Mean, Standard Deviation, and t-Value for Patients and Healthy Persons on Big Five Personality, Cognitive Function and Body Image. (N = 300)

Variables	healthy individual(n=150)		breast cancer (n=150)		p	t(298)	95%CI	
	M	SD	M	SD			lower	upper
Extroversion	25.3	4.8	25.3	4.8	0.93	0.08	-1.5	0.23
Conscientiousness	31.8	4.0	31.8	4.0	.000	.29	.92	0.1
Neuroticism	28.5	3.4	28.5	3.4	.000	.34	.79	0.4
Openness	26.6	4.3	26.6	4.3	.000	.39	.86	0.6
Agreeableness	32.0	3.5	30.7	4.86	.000	.78	.85	0.30
Perceived Cognitive Impairments	34.1	3.8	34.1	3.8	.000	.36	.75	0.9
Comments From Others	32.3	10.2	36.5	13.2	.000	.41	.56	0.3
Perceived Cognitive								
Abilities	6.9	3.6	7.6	4.0	.000	.32	.89	0.28
Impact on Quality of Life	14.5	5.4	14.5	5.4	.000	.78	.99	0.4
Self-Aggrandizement	40.8	7.9	40.8	8.1	.000	.36	.19	0.9
Vitality	22.8	4.2	23.7	4.5	.000	.71	.40	0.1
Sexual Fulfilment	25.7	4.1	25.7	4.1	1.00	.41	-1.0	0.6
Physical Contact	14.7	5.5	14.7	5.5	.000	2.4	-2.7	-0.2

Table 4 Mean, standard deviation, and t-value for patients and healthy persons on big five personality, cognitive function and body image. Result shows that breast cancer patients have score high on conscientiousness as compare to healthy individual. Breast cancer patients have score high on Neuroticism as compare to healthy individual. Breast cancer patients have score high on openness as compare to healthy individual. Breast cancer patients have score

high on Perceived Cognitive Impairments ability as compare to healthy individual. Breast cancer patients have score high on comments from other as compare to healthy individual. Breast cancer patients have score high on impact on quality of life as compare to healthy individual. Breast cancer patients have score high on vitality as compare to healthy individual. Breast cancer patients have score high on Physical Contact as compare to healthy individual.

Table 5

Simple Linear Regression showing Personality Traits and Body Image as Predictor of Cognition (N=300).

Variables	Unstandardized		Standardized		
	<i>B</i>	<i>SE B</i>	β	<i>T</i>	<i>p</i>
Constant	190.61	15.81		12.05	.000
Personality traits	-.67	.10	-.34	-6.4	.000
Body image	-.25	.08	-.16	-3.0	.003

$p < .01$, $p < .001$. R^2 .174, $F = 31.3^{**}$

Table 5 shows that R^2 value of .174 indicate that 17.4% variance in the depended variable can be accounted for, by the predictor with F (31.3^{**}). The results show that personality traits and body image have significant negative effect on cognition.

Discussion

Our research underscores that the interplay between personality traits and health significantly differs between individuals in good health and those managing breast cancer. Notably, while traits like extraversion, openness, and agreeableness showed limited correlation with health outcomes, higher conscientiousness and lower neuroticism were consistently linked to better physical health and health-conscious behaviors. This aligns with the health behavior paradigm, suggesting that personality traits influence health behaviors and well-being, even amidst the challenges of cancer (Benjamin & Simpson, 2009; Löckenhoff et al., 2008; Smith, 2006; Akrami et al., 2009). Our study highlights that personality traits accounted for 18-27% of the relationship between conscientiousness, neuroticism, and physical health, though the concise measure of health behaviors used might have underestimated their effects (Turiano et al., 2015).

Additionally, breast cancer survivors in our study reported significant cognitive impairments across multiple domains, including memory, processing speed, and executive functioning.

These cognitive changes impacted their self-perception and social interactions, leading to frustration and diminished self-confidence. Women frequently expressed that their cognitive impairments made them feel fundamentally altered and less capable, affecting their social relationships and self-esteem. These findings highlight the need for healthcare professionals to be trained in recognizing and treating cognitive deficits, particularly after adjuvant therapy, and suggest the need for longitudinal research to better understand cognitive impairment in cancer survivors (von et al., 2013).

Furthermore, our study contributes to understanding how breast cancer affects body image, both negatively and positively. We developed a grounded theory of body image, which provides a comprehensive view of how women with breast cancer perceive and manage their body image. This theory, supported by empirical data, underscores the dynamic and multifaceted nature of body image post-cancer and highlights the importance of intrapersonal and interpersonal factors in shaping body image (Brunet et al., 2021). These insights offer valuable guidance for future research and intervention development, aiming to improve body image and overall well-being among breast cancer survivors.

Conclusion

The current study found that differences across major measures—personality traits, cognition,

and body image were not statistically significant. Correlations between these variables were noted, the results did not meet standard significance levels. Factors such as financial difficulties, lower educational attainment, lack of family support, and concerns about body image significantly affect cancer patients. Financial constraints and lower education levels often correlate with higher neuroticism and cognitive impairment, while inadequate support from family can exacerbate these challenges.

Implications

Assessing personality traits, cognitive function, and body image in breast cancer survivors is vital for identifying patterns related to the disease's etiology and prognosis. This study underscores the need for comprehensive research to explore the common and underlying traits of individuals who cope well with breast cancer and those who struggle. Although correlations were found, they should not be mistaken for causation. The findings suggest new research avenues, including investigating how body image affects recovery, the role of cognitive abilities in managing breast cancer, and the impact of personality traits on cancer prognosis.

Limitation

The result of the study may be generalized to study other types of cancer like uterine cancer in female, gastric cancer, and scrotal cancer in male. The sample size was relatively small and data for this study was collected from Khyber Pakhtunkhwa only, it may be extended to other hospital of the provinces of Pakistan.

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