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Impact of Posttraumatic stress disorder (PTSD) on Health-related quality of life of cancer patients: Role of experiential avoidance and psychological resilience

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Abstract

Background: Cancer is a serious chronic health condition known to potentially trigger negative psychological consequences including posttraumatic stress disorders symptoms and poor health-related quality of life. This study aims to examine the impact of posttraumatic stress disorder symptoms on health-related quality of life; and to explore the role of experiential avoidance and resilience as potential mechanisms of the association among cancer patients.

Methods: Data were obtained from 251 cancer patients (153 (61%) females, M age = 43.22; SD = 10.93) conveniently selected from University of Nigeria Teaching Hospital, Ituku-Ozala, Enugu State, Nigeria. Participants were diagnosed with either colon cancer 19 (7.6%), prostate cancer 50 (19.9%), liver cancer 20 (7.9%), gastric cancer 21 (8.4%), breast cancer 61 (24.3%), or other kinds of cancer 80 (31.9%). They completed relevant self-report measures such as the PTSD Checklist for DSM 5 (PCL), Acceptance and Action Questionnaire 11 (AAQ), Resilience Scale (RS) and Functional Assessment of Cancer Therapy-General (FACT-G). Descriptive statistics, Pearsons's correlation and Hayes PROCESS macro for SPSS were used for analysis.

Results: Results showed that posttraumatic stress disorders symptom was negatively associated with health-related quality of life, and this link was moderated by experiential avoidance such that high posttraumatic stress disorders symptom was associated with poor health-related quality of life among cancer patients with average and high, but not among those with low levels of experiential avoidance. Moreover, the association between posttraumatic stress disorder symptoms and health-related quality of life was mediated by psychological resilience.

Conclusion: These findings have revealed that experiential avoidance is a pathway through which posttraumatic stress disorder symptoms lead to poor health-related quality of life among cancer patients; and that psychological resilience may protect patients from the negative impact of posttraumatic stress disorder symptoms on health-related quality of life. Therefore, interventions such as acceptance-based behavioral approach might be very useful in reducing experiential avoidance and posttraumatic stress disorder symptoms severity. In addition, resilience enhancement therapies could be very critical in reducing distress and promoting psychological resilience and quality of life of cancer patients.

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1. Introduction

Cancer is a significant public health issue and a substantial barrier to increased global life expectancy (Sung et al., 2021; World Health Organization, 2020). In Africa, cancer has long been predicted to cause a mortality rate of about one million by 2030 (Sylla & Wild, 2012). The continent was estimated to have contributed approximately 5.7% (1,100,100) of incidents and 7.2% (712,800) of mortality rates to the global cancer burden in 2020 (Sung et al., 2021). In sub-Saharan Africa (SSA), cancer as a disease is expected to rise by about 85% and Nigeria has the highest cancer disease burden in SSA Africa, with approximately 128,000 new cancer cases estimated to occur annually, and about 79,542 cancer-related deaths estimated each year (Ezenkwa et al., 2024). Cancer diagnoses could be accompanied by symptoms such as persistent pain sensation, limited functioning, and physical and psychological trauma that are secondary to the proposed treatment and disease prognosis (Chen et al., 2023; De Vincenzo et al., 2022). For many, cancer can be experienced as a traumatic, life-threatening event. Cancer patients may navigate a complex landscape of emotions and experiences leading to decreased dispositional optimism, increased depressive symptoms and psychological adjustment problems (Akıncı et al., 2021; De Vincenzo et al., 2022; Guerra et al., 2024; Rahnea-Nita et al., 2019). More so, the uncertainties, fear of cancer recurrence, poor emotion regulation abilities, and the awareness of a protracted period of cancer treatment regimen, together, constitute important sources of psychological disturbances affecting the health-related quality of life (HRQoL) (Dixit et al., 2024; Guerra et al., 2024; Muhamed et al., 2023). HRQoL is a multidimensional construct that assesses patients' subjective evaluation of their health status, including their physical, psychological and social functioning to a disease and its treatment (Muhamed et al., 2023). It is considered a significant indicator of patients' reported outcomes that is critical for evaluating the overall treatment benefit and general functioning of patients during their lives (Chen et al., 2023). Research revealed that HRQoL is associated with increased resilience, hope and posttraumatic growth (Caldiroli et al., 2025; Ofei et al., 2023) and decreased experience of death anxiety, psychological distress and depression (Aliche et al., 2023; Papadopoulou et al., 2022) among individuals diagnosed with chronic disease. Therefore, the assessment and promotion of HRQoL of cancer patients should constitute a major goal for researchers and clinicians (Dixit et al., 2024); and identifying the risk and protective factors of HRQoL should be the first line of research.

One psychological problem that is easily developed following a diagnosis of cancer is posttraumatic stress disorder symptoms (PTSD) (Capaldi et al., 2024; Cordova et al., 2017). The sudden and unexpected nature of the diagnosis, coupled with the life-threatening implications of the disease and its treatment modalities, can evoke intense emotional responses characterised

by fear, helplessness and PTSD (Akıncı et al., 2021; Brown et al., 2020). So, living with a life-threatening illness like cancer entails a continuous onslaught of stressors and threats, rather than a single acute event, further exacerbating psychological distress and symptoms of PTSD (Ranieri et al., 2023). Cancer patients with increased symptoms of PTSD may experience unpleasant intrusive memories of their illness, avoidance of things that remind them of the chronic nature of their health condition, alterations in arousal and reactivity, and negative alterations in cognition and mood (Amedu, 2024; Unseld et al., 2019).

Indeed, research has revealed a prevalence rate of PTSD ranging from 5% to 35% among cancer patients (Aliche & Idemudia, 2024; Brown et al., 2020). Cordova et al. (2017) in a systematic literature review on prevalence of PTSD in cancer patients found that PTSD varies between 0% and 32.3% mainly as regards the disease phase, the stage of disease, and the instruments adopted to detect prevalence. Furthermore, a meta-analysis has reported a lifetime prevalence of cancer-related PTSD as 12.6% (7.4% to 20.7%) (Arnaboldi et al., 2017), and other researchers (Abbey et al., 2015) have found that an additional 10% - 20% of patients might experience subsyndromal degrees of PTSD. PTSD symptoms can lead to poor health outcomes, including decreased use of follow-up care, poor treatment adherence, reduced life satisfaction (Gori et al., 2023; Springer et al., 2023), and, importantly, impaired HRQoL (Cherifi et al., 2023). However, other researchers found that PTSD is associated with only the physical domain of HRQoL (Li et al., 2018). Due to the inconsistent findings on the relationship between PTSD symptoms and mental health outcomes, some researchers have attempted to find possible factors that may have been contributing to these results. It has been suggested that the association between PTSD and health outcomes may be moderated by the kind of coping strategy utilized such as mature defense mechanism (Gori et al., 2023) and experiential avoidance (EA); and that the PTSD-health outcomes may further be mediated by a protective factor such as psychological resilience (Castiglioni et al., 2023; Lee et al., 2020). Therefore, the current study aimed to examine the relationship between PTSD, EA, resilience and HRQoL among cancer patients.

EA reflects an individual's unwillingness to remain in contact with unpleasant experiences including body sensations, thoughts, emotions and memories associated with their health conditions and may act towards altering these unpleasant experiences or events that evoke them, including all forms of avoidance and escape (Coutinho et al., 2021). In modern cognitive behavioral intervention such as Acceptance and Commitment Therapy (ACT), EA is perceived as a core psychopathological process. According to ACT, engaging in EA may help to decrease and alleviate emotional distress in the short term, but could paradoxically reinforce and exacerbate the strength and frequency of unpleasant experiences and concomitant distress especially when it is being used consistently over a long period of time (González-Fernández &

Fernández-Rodríguez, 2019). EA is common among cancer patients (Davis et al., 2023); and emerging research has revealed that EA impacts negatively on mental health and HRQoL (Aliche et al., 2023; Coutinho et al., 2021) and increased symptoms of PTSD (Aliche et al., 2021; Patel et al., 2023). There is robust evidence supporting the moderating role of EA in the association of PTSD and health outcome (Kashdan & Kane, 2011; Patel et al., 2023). The current study examines whether EA would moderate the association between PTSD and HRQoL among cancer patients.

Moreover, resilience refers to the maintenance of adaptive and healthy functioning or the ability of an individual to bounce back in the aftermath of a stressful life experience (Chen et al., 2023). Highly resilient individuals have a greater capacity to endure emotional distress that may arise following a life crisis (Castiglioni et al., 2023) and over three-fourths of people who experienced trauma are resilient (Shalev et al., 2017). Cancer patients with higher resilience experienced positive psychological adaptation to cancer diagnosis (Tu, 2022) improved HRQoL (Chen et al., 2023; Mohlin et al., 2020) and decreased symptoms of PTSD (Dhungana et al., 2022; Mikutta et al., 2022). In the process of coping with a trauma arising from a chronic disease, resilience may play a mediating role in the relationship between PTSD and health outcome. Previous studies revealed that resilience mediated the relationship between PTSD and posttraumatic growth among accident victims (Lee et al., 2020) the relationship between PTSD symptoms and eating problems among women victims of sexual assault (Fergerson & Brausch, 2022) and the effect of PTSD symptoms on cognitive processing of traumatic memories (Castiglioni et al., 2023). These studies together indicate that resilience may serve as an important protective factor in the aftermath of a traumatic life event. It is not clear whether resilience would mediate the link between PTSD and HRQoL among cancer patients.

As far as it is known in literature, little is known about the role of EA and resilience in the association of PTSD and HRQoL among cancer patients. Empirical evidence from a collectivist culture such as Nigeria would help to inform effective intervention to promote HRQoL of cancer patients. Therefore, this research is aimed at examining (1) the association between PTSD and HRQoL among cancer patients (2) whether EA would moderate the association between PTSD and HRQoL among cancer patients; and (3) whether resilience would mediate the link between PTSD and HRQoL among cancer patients.

1.1 Study hypotheses

We hypothesized that:

(1) PTSD symptoms would be associated with HRQoL among cancer patients;

(2) EA would moderate the relationship between PTSD symptoms and HRQoL among cancer patients;

(3) Resilience would mediate the relationship between PTSD symptoms and HRQoL among cancer patients.

2. Materials and Methods

2.1 Participants

A total of 251 cancer patients including 98 (39%) males, and 153 (61%) females, selected from the oncology unit of the University of Nigeria Teaching hospital, Ituku-ozola, Nigeria, was involved in the present study. The eligibility criteria for inclusion included (1) adult >18 years (2) must be diagnosed of cancer disease (3) must be an outpatient who has completed the intensive treatment (e.g., surgery, radiotherapy) and are visiting the hospital for routine check-up (4) must be mentally sound enough to respond to the psychological instrument (5) must be able to read and understand English language at least at the secondary school level (6) must not be taken any antipsychotic medication as at the period of this study. The procedure adopted in the current research was reviewed and approved by a standard research ethical committee.

2.2 Ethical Approval and Study Procedure

The current study protocol was approval by the Research Ethics committee of the University of Nigerian Teaching hospital Ituku-Ozala, Enugu state, South-East region, Nigeria (Ethics Clearance Number: NHRC/48, 7 September 2023). After the ethical approval, the first author alongside 2 trained research assistants, who were also trained psychologists, approached cancer patients at the oncology outpatient unit of the hospital while they were waiting to consult with their doctors. The cancer patients were educated on the main objectives of the study including the confidentiality of their responses. They were informed that participation was voluntary, submission of a signed informed consent form was compulsory and that anyone can choose to withdraw at any stage of the study without any implications. Those who were available, willing, and signed the informed consent form were recruited. Those who made the inclusion criteria were given the psychological instrument. The participants completed the tests independently, but the research assistants were always present in the room until completion for any clarification by the participants. It took approximately 17 munites for the participants to complete the psychological tests. Out of 260 questionnaires distributed, 251 were properly completed, returned and were used for data analysis. At the end, participants were debriefed to gather feedback and insights that would be valuable for future improvements. This study was conducted within a period of two months (November 2023 to December 2023). The socio-demographic and clinical characteristics of the samples are presented in table 1 below.

Table 1.

Sociodemographic and clinical data of sample

Age, *N* (*SD*)	**Range 21 – 72**	**43.22 (10.93)**
Gender (%)	Male	98 (39%)
	Female	153 (61%)
Marital status (%)	Single	14 (5.6%)
	Married	201 (80.1%)
	Divorse	19 (7.6%)
	Widow (er)	17 (6.7%)
Education (%)	Secondary	100 (39.8%)
	Tertiary	151 (60.2%)
Religion (%)	Christianity	245 (97.6%)
	Muslem	6 (2.4%)
Employment status (%)	Employed	141 (56.2%)
	Unemployed	110 (43.8%)
Kinds of cancer	Colon	19 (7.6%)
	Prostrate	50 (19.9%)
	Liver	20 (7.9%)
	Gastric	21 (8.4%)
	Breast	61 (24.3%)
	Others	80 (31.9%)
Family history of cancer	Yes	21 (8.4%)
	No	230 (91.6%)

2. 3 Materials

2. 3. 1. Socio-demographic and clinical characteristics

As presented in Table 1, two types of participants' information were collected: the demographics and clinical variables. Demographic data were age, gender, marital status, education, religion, and employment status. Clinical data were related to types of cancer and family history of cancer respectively.

2.3.2. Posttraumatic Stress Disorder Symptoms Checklist for DSM 5 (PCL-5)

PTSD symptoms severity was measured using the 20 items PTSD Checklist for DSM 5 (PCL-5) (Weathers et al., 2013). The scale is a widely used self-report measure that assesses the presence and severity of PTSD symptoms based on DSM-5 diagnostic criteria through the following four subscales: intrusion (5 items), avoidance (2 items), alterations in arousal and reactivity (6 items), and negative alteration in cognitions and mood (7 items). The items are rated on a 5-point Likert-type scale ranging from 0 = (not at all) to 4 (extremely) and the cumulative scores ranged from 0 to 80 with a preliminary cut-off score of 33 being

recommended for clinical concern for PTSD (Weathers et al., 2013). The PCL-5 has demonstrated strong reliability and validity in various studies across cultures (Aliche & Idemudia, 2024; Meneghini et al., 2023; Weathers et al., 2013). While helpful for screening and monitoring, the PCL-5 should not be used as the sole basis for a PTSD diagnosis; clinical judgment and other assessment methods including structured interviews are essential. In this study, the PTSD total score was used and an internal consistency reliability coefficient value of 0.80 was obtained.

2.3.3. Acceptance and Action Questionnaire 11 (AAQ-11)

EA was measured with the Acceptance and Action Questionnaire 11 (AAQ-11) (Bond et al., 2011). The AAQ-II is a seven-item self-report measure widely used to assess experiential avoidance or the tendency to avoid aversive internal experiences, including negative emotions, thoughts, and memories. It was developed to address the limitations of the original AAQ, specifically its poor internal consistency. The AAQ-11 was created by a group of experts in Acceptance and Commitment Therapy (ACT), who generated items reflecting the influence of private events on goal-directed behaviours. The initial 10-item scale of AAQ-11 was refined to a 7-item version after psychometric analysis. The items (e.g., My painful memories prevent me from having a fulfilling life) are scored on a 7-point Likert scale ranging from 1 = (never true) to 7 (always true), and higher score indicating greater EA. The scale was developed using 2,816 participants across six samples and results indicate a satisfactory structure, reliability, and validity of this measure. The mean alpha coefficient is .84 (.78-.88), and the 3- and 12-month test-retest reliability is .81 and .79, respectively. Results indicate that AAQ-II scores concurrently, longitudinally, and incrementally predict a range of mental health outcomes. The AAQ-II also demonstrates appropriate discriminant validity. The AAQ-II appears to measure the same concept as the AAQ-I (r=.97) but with better psychometric consistency (Bond et al., 2011) There is evidence of good validity and reliability of AAQ among Nigerian population with a chronic illness (Aliche et al., 2023). The present study obtained an internal consistency reliability coefficient of 0.82.

2.3.4 Resilience Scale (RS)

Psychological resilience was measured using the 14-item resilience scale (RS; Wagnild & Young, 1993). It is a shortened version of the original 25-item Resilience Scale (RS-25). The RS-14 is designed to assess five core characteristics of resilience: meaningfulness of life, perseverance, self-reliance, equanimity, and existential aloneness. The RS-14 was created to provide a more concise measure of resilience while retaining the key elements of the original RS-25. The items are scored on a 7-point Likert scale ranging from (1) Strongly disagree to (7) Strongly agree, with total scores ranged from 14 to 98 and higher score indicating greater resilience ability. The

RS has excellent psychometric properties with reliability coefficient (Cronbach's alpha) of 0.91 observed in a wide range of studies; concurrent validity observed with morality (0.31), life satisfaction (0.37), self-reported health status (0.30), depression (-0.41) and the longer 25-item resilience scale (0.97) (Wagnild & Young, 1993). The RS-14 has been validated and used across various cultural contexts and populations, including displaced people, cancer patients, and psychiatric patients. In essence, the RS-14 provides a valuable tool for researchers and practitioners interested in assessing and understanding resilience in various populations and contexts. The inventory has also shown adequate reliability and validity index among Nigerian population (Aliche et al., 2019). The present study obtained Cronbach's alpha reliability coefficient of 0.80.

2.3.5 Functional Assessment of Cancer Therapy-General (FACT-G)

HRQoL was measured using the 27-items Functional Assessment of Cancer Therapy-General (FACT-G) (Cella et al., 1993). This scale was developed to measure four domains of HRQoL in cancer patients: Physical wellbeing (7 items, e.g., I have a lack of energy), Social/family wellbeing (7 items, e.g., My family has accepted my illness), Emotional wellbeing (6 items; e.g., I feel sad) and Functional wellbeing (7 items; I am able to enjoy life). Original development and validation involved 854 patients with cancer and 15 oncology specialists. An initial pool of 370 overlapping items for breast, lung, and colorectal cancer was generated by open-ended interviews with patients experienced with the symptoms of cancer and oncology professionals. Using pre-selected criteria, items were reduced to a 38-item general version. Factor and scaling analyses of these 38 items on 545 patients with mixed cancer diagnoses resulted in the 27-item FACT-General (FACT-G). Coefficients of reliability and validity were uniformly high with alpha coefficient reliability value ranged from 0.70 to 0.82. The scale's ability to discriminate patients on the basis of stage of disease, performance status rating (PSR), and hospitalization status supports its sensitivity. It has also demonstrated sensitivity to change over time. Items are scored on a 5-point Likert scale ranging from 0 = (not at all) to 4 = (very much). Scores of the items are aggregated with higher score representing improved HRQoL (Cella et al., 1993). The present study obtained alpha reliability coefficient value of 0.81 for the full scale

2.4 Analytical plan

This study adopted a cross-sectional design, in that, data were collected from participants at a single period. Then, a preliminary analysis was conducted using descriptive statistics. Specifically, descriptive was used to calculate the Mean and Standard Deviation (SD) of age, PTSD, EA, resilience and HRQoL. Frequency was used to calculate the number and percentage in gender, marital status, educational status, religion, employment status, kinds of cancer, and

family history of cancer. Person's r correlation was performed to investigate possible correlation between posttraumatic stress disorders symptoms, experiential avoidance, resilience and HRQoL (both the total scores and the four subscales) controlling for the socio-demographics and clinical data. Then, the hypothesized model was tested by using the PROCESS macro-program (Hayes, 2018). The moderation model (Model 1) was implemented, by investigating the moderation of experiential avoidance in the association between total score of posttraumatic stress disorders symptoms and quality of life total score. The conditional indirect effect was analyzed following the Johnson-Neyman procedure (1936), by evaluating the conditional effects of post-traumatic stress disorders symptoms at three levels of experiential avoidance, i.e., -1SD, Mean, +1 SD. Then, the mediation model (Model 4) was implemented, by exploring the mediating role of resilience in the relationship between PTSD and HRQoL. The 95% confidence interval (CI) was calculated using the 5,000 bootstrapped samples, and significant results were obtained if the 95 precent confidence interval did not include zero in between straddles. The SPSS statistical software (version 25) was used to analysis the data collected. The results on the mean, standard deviation and correlation among the study variables are present in the table below and the level of significance adopted in this study was $p < 0.05$

3. Results

Table 2.

Mean, Standard deviation and correlations among the study variables

	Variables	1	2	3	4	5	6	7	M	SD
1	PTSD	-							40.75	15.09
2	EA	.12	-						38.32	6.53
3	Resilience	-.49***	-.14*	-					66.64	16.77
4	PWB	-.53***	-.10	.55***	-				18.89	6.20
5	SWB	-.54***	-.14*	.67***	.69***	-			19.41	6.15
6	EWB	-.58***	-.10	.65***	.58***	.62***	-		19.09	4.93
7	FWB	-.59***	-.20**	.70***	.72***	.70***	78***	-	21.06	5.10
8	HRQoL	-.64***	-.15*	.73***	.89***	.88***	.84***	.91***	61.43	15.50

Note: *p < .05; **p < .01; ***p < .001; PTSD = posttraumatic stress disorder symptoms; EA = Experiential avoidance; PWB = physical wellbeing; SWB = Social wellbeing; EWB = Emotional wellbeing; FWB = Functional wellbeing; HRQoL – Health-related quality of life total score.

Result in Table 2 showed that PTSD was negatively correlated with resilience (r = -.49, p <.001), PWB (r = -.53, p <.001), SWB (r = -.54, p <.001), EWB (r = -.58, p <.001), FWB (r -.59, p < .001) and HRQoL (r = -. 64, p <.001). EA was negatively correlated with resilience (-.14, p <.05), SWB (r = -.14, p <.05), FWB (r = -.20, p < .01) and HRQoL (r = -.15, p <.05). Resilience was positive correlated with PWB (r = .55, p <.001), SWB (r = .67, p <.001), EWB (r = .65, p <.001), FWB (r = 70, p <.001) and HRQoL (r = .73, p <.001). The PWB, SWB, EWB, FWB, and HRQoL were positively correlated with each other (r = 58 to 91, p < .001).

3.1 Moderation analysis

Table 2.

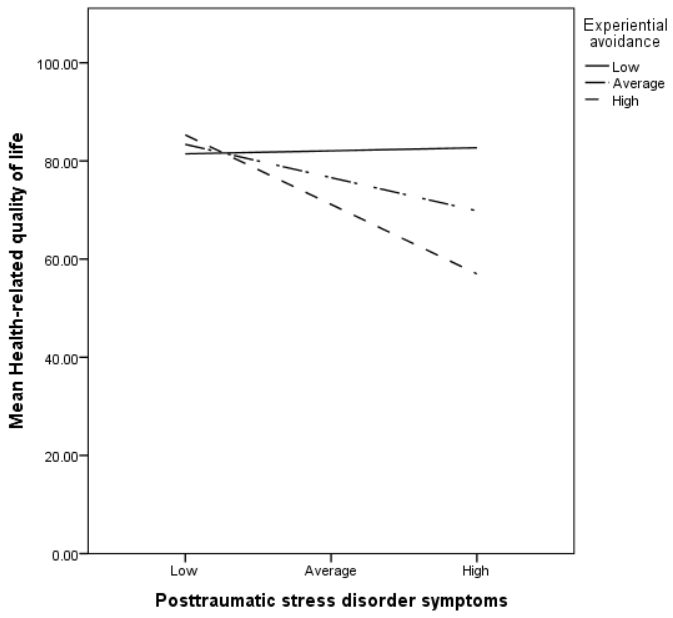
Hayes PROCESS results of EA moderating the relationship between PTSD and HRQoL

Variables	B	SE	T	*p*	95%CI
PTSD	-.45	.10	-4.38	.008	[-.65, -.25]
Experiential avoidance (EA)	-.84	.18	-4.73	.000	[-1.18,-.49]
PTSD x EA	-.08	.02	-5.54	.000	[-.11, -.05]

To test the moderation hypothesis, the PTSD symptoms total score was entered as the independent variable, the EA was entered as a moderator, and the HRQoL total score was considered as dependent variable. We preferred the overall HRQoL scores instead of the dimensions in the mediation and moderation analysis due to the high correlation of the dimensions as shown in Table 1. Results of the moderating role of EA in the relationship between PTSD and HRQoL are shown in Table 2. And Figure 1. We found that PTSD was negatively associated with HRQoL (B = -.45, p = .008). EA was negatively associated with HRQoL (B = -.84, p = .000) and moderated the association between PTSD and HRQoL (B = -.08, p = .000). The interaction slope (Figure 1) revealing that higher PTSD was associated with poor HRQoL only for cancer patients with average (B = -.45, SE = .10, t = -4.39, p = .000) and high levels of EA (B = -.94, SE = .08, t = -11.50, p = .000), but not among patients with low EA (B = .04, SE = .17, t = .23, p = .815). Therefore, when cancer patients reported low levels of EA, PTSD was not associated with poor HRQoL (See Figure 1 below).

Figure 1.

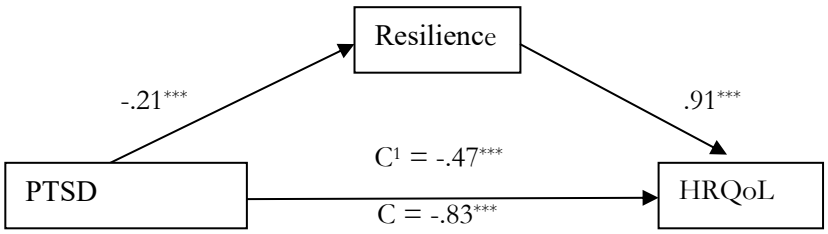
Graphical representation of the moderating role of experiential avoidance in the association between PTSD symptoms and quality of life



3.2 Mediation analysis

Figure 2.

Graphical representation of the mediation effect of resilience in the association between PTSD symptoms and quality of life



To determine whether resilience mediates the relationship between PTSD and HRQoL, a simple mediation analysis was conducted (See Figure 2). Results showed that PTSD negatively predicted resilience (B = -.21, SE = .022, t = -8.99, p = .000), and resilience positively predicted HRQol (B = .91, SE = .14, t = 12.49, p = .000). PTSD negatively predicted HRQoL (B = -.83, SE = .06, t = -13.11, p = .000). However, when the mediator (resilience) was introduced to the model, the magnitude of the associated between PTSD and HRQoL reduced, but remained significant (B = -.47, SE = .06, t = -8.32, p = .000). This suggests that resilience partially mediated the relationship between PTSD and HRQoL [indirect effect = -.35, SE = .09, 95%CI: -.56, -.18] such that increased PTSD symptoms predicted reduced resilience, which in turn predicted lower HRQoL. The indirect effect is statistically significant as the 95%CI did not include zero.

4. Discussion

The current study examined the moderating role of EA in the relationship between PTSD and HRQoL. We further explored whether resilience would mediate the relationship between PTSD and HRQoL among cancer patients. Results revealed that PTSD was directly and significantly associated with poor HRQoL among cancer patients which is congruent with previous research (Cherifi et al., 2023; Li et al., 2018). Cancer patients with PTSD may have a maladaptive view and appraisal of their health condition such that it hinders them from recognizing and utilizing available psychological resources needed to cope with the chronic illness. This unhealthy thought pattern may impact on their attitudes towards treatment adherence, thereby resulting in worse prognosis and impaired HRQoL (Cherifi et al., 2023). Crucially, we found that EA moderates the relationship between PTSD and HRQoL such that PTSD was associated with impaired HRQoL among cancer patients with average and high levels of EA but not among those with low levels of EA. This result agrees with previous studies that found significant interaction effect of EA and PTSD on mental health outcome (Bordieri et al., 2014; Patel et al.,

2023). This finding has extended the oncology literature by revealing that a greater tendency to avoid unpleasant emotions, sensations and events that are related to cancer diagnosis (EA) interacts with symptoms of PTSD to worsen the health and wellbeing of cancer patients. Specifically, poor HRQoL among cancer patients was found to be contingent upon greater PTSD symptoms severity and average and/or high levels of EA, indicating that the combined effect of the experience of PTSD symptoms severity and higher EA leads to poor HRQoL. Cancer patients who reported PTSD symptoms and low levels of EA did not experience poor HRQoL, suggesting that lower EA was protective against the negative impact of PTSD on HRQoL. Therefore, EA is the most important factor that determines whether PTSD would lead to poor HRQoL among cancer patients. Based on these findings, the knowledge that higher EA exacerbates symptoms of PTSD (Patel et al., 2023) reduces the chance of experiencing growth, better quality of life and the tendency to find meaning in life following traumatic experience (Coutinho et al., 2021; Kashdan et al., 2021), interventions to promote HRQoL of cancer patients should focus on decreasing PTSD symptoms severity and EA. The ACT that focuses on decreasing EA by facilitating psychological flexibility might be a promising intervention approach to promote HRQoL among cancer patients (González-Fernández & Fernández-Rodríguez, 2019).

The current study also found that resilience mediated the relationship between PTSD and HRQoL among cancer patients. This finding corroborates with previous research which found that resilience mediated the connection from PTSD to mental health outcome (Castiglioni et al., 2023; Fergerson & Brausch, 2022). This may suggest that resilience mitigates the dangerous effect of PTSD symptoms on HRQoL of cancer patients. Resilience is a protective factor that promotes positive adaptation to life stressors and improves HRQoL of cancer patients (Chen et al., 2023; Mohlin al., 2020). Individuals with high resilience ability are less likely to engage in avoidance coping strategy, intrusive thought of their health condition, or experience alteration in mood and cognition that characterized PTSD (Dhungana et al., 2022). Rather, resilient people have the capacity to withstand and process negative emotions in an adaptive manner which potentially helps to facilitate the process of healing and recovery. Although cancer diagnosis and treatment may trigger feeling of uncertainties and death-related thoughts which may exacerbate symptoms of PTSD, resilience has the capacity to mitigate cancer-related distress and can facilitate healthy processing of trauma memories (Fergerson & Brausch, 2022) counteracting negative brooding, fostering positive feelings, and promoting meaning making that in turn improves HRQoL (Chen et al., 2023; Tu, 2022).

Similarly, individuals with high PTSD symptoms may have a higher tendency of focusing more on past events and experiences than in the present or future; but resilience, a protective and

modifiable factor, is more concerned about future-oriented issues (Castiglioni et al., 2023). This may suggest that cancer patients with high resilience have greater ability to move on from the past and to focus on future goals. Therefore, the mediating effect of resilience in the association of PTSD on physical, social, emotional and functional wellbeing components of HRQoL among cancer patients has also reinforce previous findings on the capacity of resilience in reducing emotional valence and negative feelings associated with a chronic illness; such that intrusive memories are experienced less frequently, enhanced positive emotion dominates the mind, and adaptive coping with chronic illness is improved (Caldiroli et al., 2025; Castiglioni et al., 2023; Mohlin et al., 2020).Thus, this mediation effect of resilience holds clinical implications for intervention following cancer diagnosis. Beyond the reduction of PTSD symptoms severity, resilience-based psychotherapeutic interventions for cancer patients who have experienced symptoms of PTSD following cancer diagnosis may help improve HRQoL. For instance, enhancing certain positive attributes such as cognitive reappraisal and flexibility, purpose in life, positive emotions, meaning making, and the ability to harness social support may help reinforce resilience coping and promote HRQoL (Horn & Feder, 2018). Evidence has shown that the integration of these components in various evidence-based psychotherapeutic interventions for traumatized population has yielded clinical benefits and enhanced therapeutic effectiveness (Schnyder & Cloitre, 2015). Therefore, clinical psychologists working with oncology patients have a crucial role to play in equipping the patients with resilience skills through resilience enhancement therapies. Together, these results underscore the significance of enhancing resilience aspects of therapy for cancer patients with greater symptoms of PTSD.

This study has certain limitations that deserve to be mentioned. While the findings of this study have contributed to literature on chronic illness, the cross-sectional design used in this study may prevent us from drawing conclusions on causal relationship among the variables. The exclusive use of self-report measure may introduce social desirability and common method bias. The participants used in this study only included cancer patients drawn from a single healthcare institution in South-East Nigeria. We could not collect data on other clinical characteristics such as common comorbidities e.g., hypertension, ulcer, among others. Future studies should address all these issues by considering a larger sample size, a longitudinal research design, and a comparative study with other clinical population in order to improve outcome. This will help to expand our knowledge on how resilience may act as mechanism between PTSD and HRQoL; and further expand our understanding on how EA may interact with PTSD to influence HRQoL. In addition, other psychosocial factors such as mindfulness, intolerance of uncertainty, cancer recurrence and distress tolerance need to be examined as potential moderators or mediators to determine their contribution to HRQoL and wellbeing.

5. Conclusion

This study examined the moderating role of EA and the mediating role of resilience in the relationship between PTSD and HRQoL among cancer patients. First, we found a significant moderation effect of EA in the association between PTSD and HRQoL among cancer patients, such that high PTSD symptoms severity was associated with impaired HRQoL only for cancer patients with average and high EA but not those with low EA. This implies that lower EA is protective against the impact of PTSD on HRQoL among cancer patients. In addition, we found that resilience mediated the association between PTSD and HRQoL domains. These findings suggest that greater resilience is associated with lower PTSD symptom severity and improved HRQoL in cancer patients. Interventions for cancer patients should be holistic incorporating the services of doctors, nurses, clinical psychologists and other healthcare professionals. This intervention may begin with a proper screening of patients for PTSD symptoms severity, EA, resilience and HRQoL. Thereafter, psychological interventions such as acceptance and commitment therapy that reduce EA may be helpful in decreasing symptoms of PTSD, whereas therapies that are aimed at enhancing resilience coping may help improve HRQoL among cancer patients.

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Ethical approval

All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study proposal was approved by the Research Ethics Committee of the University of Nigeria Teaching hospital, Ituku-ozala, Enugu State, South-East region, Nigeria (Ethics Clearance Number: NHRC/48, 7 September 2023). Participants were fully informed about the study protocol and provided verbal and written informed consent before participating

Informed Consent Statement

Informed consent was obtained from all participants for being included in the study.

Data Availability Statement

The datasets generated and analysed during the current study are available from the corresponding author on reasonable request.

Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any potential conflict of interest.

Authors' Contribution

Conceptualization, C. J. A. and E. S. I. Methodology, C. J. A. Software, C. J. A. Validity, C. J. A. Formal analysis, C. J. A. Investigation, C. J. A. Resources, C. J. A. and E. S. I. Data curation, C. J. A. Writing--- original draft preparation, C. J. A. Writing-review and editing, C. J. A. and E. S. I. Visualizing, E. S. I. Supervision, C. J. A. and E. S. I. Funding acquisition, E. S. I. All authors have read and agreed to the published version of the manuscript.

References

1. Abbey, G., Thompson, S. B., Hickish, T., & Heathcote, D. (2015). A meta-analysis of prevalence rates and moderating factors for cancer-related post-traumatic stress disorder. *Psych-oncology*, *24*(4), 371-381. https://doi.org/10.1002/pon.3654
2. Akıncı, İ., Akyüz-Yılmaz, C., & Bozo, Ö. (2021). Dispositional Optimism and Well-being in Cancer Patients: The Role of Cancer-Related Self-Efficacy. *Mediterranean Journal of Clinical Psychology,* 9(3). https://doi.org/10.13129/2282-1619/mjcp-3229
3. Aliche, C. J., & Idemudia, E. S. (2024). Role of distress tolerance, meaning in life and social support in the relationship between posttraumatic stress symptoms (PTSS) and posttraumatic growth (PTG) among Nigerian cancer patients. *Journal of Psychology in Africa*, *34*(4), 367–372. https://doi.org/10.1080/14330237.2024.2371718
4. Aliche, C. J., Ifeagwazi, C. M., & Ezaka, E. S. (2023). Moderating role of meaning in life in the relationship of death anxiety, experiential avoidance and health-related quality of life among type 2 diabetes patients. *South African Journal of Psychology*, *53*(4), 533–547. https://doi.org/10.1177/00812463231186328
5. Aliche, C. J., Ifeagwazi, C. M., Mefoh, P. C., Eze, J. E., & Chukwuorji, J. C. (2021). Experiential avoidance mediates the relations between mindfulness and PTSD symptoms severity in terrorist attack survivors. *Nordic Psychology, 73*(2), 191–207. https://doi.org/10.1080/19012276.2020.1852953
6. Aliche, J. C., Ifeagwazi, C. M., Onyishi, I. E., & Mefoh, P. C. (2019). Presence of meaning in life mediates the relations between social support, posttraumatic growth, and resilience in young adult survivors of a terror attack. *Journal of Loss and Trauma, 24*(8), 736–749. https://doi.org/10.1080/15325024.2019.1624416
7. Amedu, A. N. (2024). Addressing trauma, post-traumatic stress disorder, and post-traumatic growth in breast cancer patients. *World Journal of Experimental Medicine,* 14(3), 95565. https://doi.org/10.5493/wjem.v14.i3.95565
8. Arnaboldi, P., Riva, S., Crico, C., & Pravettoni, G. (2017). A systematic literature review exploring the prevalence of post-traumatic stress disorder and the role played by stress and traumatic stress in breast cancer diagnosis and trajectory. *Breast Cancer (Dove Med Press),* 9, 473–485. https://doi:10.2147/BCTT.S111101
9. Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., Waltz, T., & Zettle, R. D. (2011). Preliminary psychometric properties of the acceptance and action questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy*, *42*(4), 676–688. https://doi.org/10.1016/j.beth.2011.03.007
10. Bordieri, M. J., Tull, M. T., McDermott, M. J., & Gratz, K. L. (2014). The moderating role of experiential avoidance in the relationship between posttraumatic stress disorder symptom severity and cannabis dependence. *Journal of Contextual Behavioral Science,* 3(4), 273-278. https://doi:10.1016/j.jcbs.2014.08.005
11. Brown, L. C., Murphy, A. R., Lalonde, C. S., Subhedar, P. D., Miller, A. H., & Stevens, J. S. (2020). Posttraumatic stress disorder and breast cancer: Risk factors and the role of inflammation and endocrine function. *Cancer*, *126*(14), 3181–3191. https://doi.org/10.1002/cncr.32934

12. Caldiroli, C. L., Sarandacchi, S., Tomasuolo, M., Diso, D., Castiglioni, M., & Procaccia, R. (2025). Resilience as a mediator of quality of life in cancer patients in healthcare services. *Scientific Report*, 15(1), 8599. https://doi.org/10.1038/s41598-025-93008-2
13. Capaldi, J. M., Shabanian, J., Finster, L. B., Asher, A., Wertheimer, J. C., Zebrack, B. J., Shirazipour, C. H. (2024). Post-traumatic stress symptoms, post-traumatic stress disorder, and post-traumatic growth among cancer survivors: a systematic scoping review of interventions. *Health Psychol Review*, 18(1), 41-74. https://doi.org/10.1080/17437199.2022.2162947
14. Castiglioni, M., Caldiroli, C. L., Manzoni, G. M., & Procaccia, R. (2023). Does resilience mediate the association between mental health symptoms and linguistic markers of trauma processing? Analyzing the narratives of women survivors of intimate partner violence. *Frontiers in Psychology, 13*. https://doi.org/10.3389/fpsyg.2023.1211022
15. Cella, D. F., Tulsky, D. S., Gray, G., Sarafian, B., Linn, E., Bonomi, A., Silberman, M., Yellen, S. B., Wincout, P., & Bonomi, P. (1993). The functional assessment of cancer therapy scale: development and validation of the general measure. *Journal of Clinical Oncology*, 11(3), 570-579. https://doi.org/101200/JCO1993113570
16. Chen, C., Sun, X., Liu, Z., Jiao, M., Wei, W., & Hu, Y. (2023). The relationship between resilience and quality of life in advanced cancer survivors: multiple mediating effects of social support and spirituality. *Frontiers in Public Health,* 11, 1207097. https://doi:10.3389/fpubh.2023.1207097
17. Cherifi, F., Gernier, F., Jardin, F., Lefevre-Arbogast, S., Bastien, E., Lequesne, J., Rigal, O., Quilan, F., Clarisse, B., Grellard, J-M., Binarelli, G., Fernette, M., Lange, M., Richard, D., Morel, A., Griffon, B., Pepin, L-F., Leconte, A., Faveyrial, A. … & Joly, F. (2023). Post-traumatic stress disorder symptoms and quality of life among older patients with cancer during the COVID-19 pandemic. *Journal of Geriatric Oncology*, *14*(8), 101634. https://doi:10.1016/j.jgo.2023.101634
18. Cordova, M. J., Riba, M. B., & Spiegel, D. (2017). Post-traumatic stress disorder and cancer. *Lancet Psychiatry,* 4(4), 330-338. https://doi.org/10.1016/S2215-0366(17)30014-7
19. Coutinho, M., Trindade, I. A., & Ferreira, C. (2021). Experiential avoidance committed action and quality of life: Differences between college students with and without chronic illness. *Journal of Health Psychology*, *26*(7), 1035-1045. https://doi:10.1177/1359105319860167
20. Davis, S., Serfaty, M., Low, J., Armstrong, M., Kupeli, N., & Lanceley, A. (2023). Experiential avoidance in advanced cancer: a mixed-methods systematic review. *International Journal of Behavioral Medicine, 30*(5), 585-604. https://doi:10.1007/s12529-022-10131-4
21. De Vincenzo, F., Cosentino, C., Quinto, R. M., Di Leo, S., Contardi, A., Guidotti, S., Iani, L., Pruneti, C. (2022). Psychological adjustment and heart rate variability in ovarian cancer survivors. *Mediterranean Journal of Clinical Psychology*, 10(1). https://doi.org/10.13129/2282-1619/mjcp-3318
22. Dhungana, S., Koirala, R., Ojha, S. P., & Thapa, S. B. (2022). Resilience and its association with post-traumatic stress disorder, anxiety, and depression symptoms in the aftermath of trauma: a cross-sectional study from Nepal. *SSM-Mental Health*, *2*, 100135. https://doi.org/10.1016/j.ssmmh.2022.100135

23. Dixit, J., Gupta, N., Kataki, A., Roy, P., Mehra, N., Kumar, L., Singh, A., Malhotra, P., Gupta, D., Goyal, A., Rajsekar, K., Krishnamurthy, M. N., Gupta, S., & Prinja, S. (2024). Health-related quality of life and its determinants among cancer patients: evidence from 12,148 patients of Indian database. *Health and Quality of Life Outcomes*, *22*(1), 26. https://doi.org/10.1186/s12955-024-02227-0

24. Ezenkwa, U. S., Lawan, A. I., Garbati, M. A., Suleiman, D. E., Katagum, D. A., Kabir, A., Adamu, A. I., Modu, A. K., Olanrewaju, O. D., Dachi, R. A., Abdullahi, Y. M., Alkali, M., Bojude, D. A., Usman, H. A., Omotoso, A., Schlumbrecht, M., George, S. H. L & Audu, B. M. (2024). Emerging cancer disease burden in a rural sub-Saharan African population: northeast Nigeria in focus. *Frontiers in Oncology*, 14, 1380615. https://doi.org/10.3389/fonc.2024.1380615

25. Fergerson, A. K., & Brausch, A.M. (2022). Resilience mediates the relationship between PTSD symptoms and disordered eating in college women who have experienced sexual victimization. *Journal of Interpersonal Violence*, *37*(1-2), NP1013-NP1030. https://doi:10.1177/0886260520918581

26. González-Fernández, S., & Fernández-Rodríguez, C. (2019). Acceptance and commitment therapy in cancer: review of applications and findings. *Behavioral Medicine*, 45(3), 255-69. https://doi.org/10.1080/08964289.2018.1452713

27. Gori, A., Topino, E., Musetti, A., Tulli, G., Craparo, G., Cacioppo, M., & Janiri, L. (2023). Investigating the association between post-traumatic stress symptoms and satisfaction with life: Avoidance is significantly related to life satisfaction with the moderation of Mature defense mechanisms. *Mediterranean Journal of Clinical Psychology, 11*(2). https://doi.org/10.13129/2282-1619/mjcp-3689

28. Guerra, F., Cilli, E., Cogodi, E., & Ranieri, J. (2024). Emotional traits, self-care and emotional regulation in young early-stage breast cancer women: an observational study on survivorship psychological adaptation. *Mediterranean Journal of Clinical Psychology*, 12(2). https://doi.org/10.13129/2282-1619/mjcp-4225

29. Hayes, A. F. (2018). Partial, conditional, and moderated mediation: Quantification, inference, and interpretation. *Communication Monographs*, *85*(1), 4–40. https://doi.org/10.1080/03637751.2017.1352100

30. Horn, S. R., & Feder, A. (2018). Understanding Resilience and Preventing and Treating PTSD. *Harvard Review of Psychiatry*, 26, 158–174. https://doi.org/10.1097/HRP.0000000000000194

31. Johnson, P. O., & Neyman, J. (1936). Tests of certain linear hypotheses and their application to some educational problems. *Statistical Research Memoirs, 1,* 57–93.

32. Kashdan, T. B., & Kane, J. Q. (2011). Post-traumatic distress and the presence of post-traumatic growth and meaning in life: experiential avoidance as a moderator. *Personality and Individual Differences, 50*(1), 84-89. https://doi.org/10.1016/j.paid.2010.08.028

33. Lee, D., Yu, E. S., & Kim, N. H. (2020). Resilience as a mediator in the relationship between posttraumatic stress and posttraumatic growth among adult accident or crime victims: the moderated mediating effect of childhood trauma. *European Journal of Psychotraumatology, 11*(1), 1704563. https://doi:10.1080/20008198.2019.1704563

34. Li, G., Wang, L., Cao, C., Fang, R., Liu, P., Luo, S., Zhang, J., Hall, B. J., & Elhai, J. D. (2018). DSM-5 posttraumatic stress symptom dimensions and health-related quality of life among Chinese earthquake survivors. *European Journal of Psychotraumatology, 9*(1), 1468710. https://doi:10.1080/20008198.2018.1468710

35. Meneghini, A. M., Poletti, S., Morandini, S., Muss, D. (2023). The Effectiveness of the Rewind Technique in Treating PTSD Symptoms of Intrusiveness and Avoidance in Violence Survivors. *Mediterranean Journal of Clinical Psychology* 11(3). https://doi.org/10.13129/2282-1619/mjcp-3809
36. Mikutta, C., Schmid, J. J., & Ehlert, U. (2022). Resilience and post-traumatic stress disorder in the Swiss alpine rescue association. *Frontiers in Psychiatry, 13,* 780498. https://doi.org/10.3389/fpsyt.2022.780498
37. Mohlin, Å., Axelsson, U., Bendahl, P. O., Borrebaeck, C., Hegardt, C., Johnsson, P., Halberg, I. R., & Rydén, L. (2020). Psychological resilience and health-related quality of life in Swedish women with newly diagnosed breast cancer. *Cancer Management and Research*, 12041-12051. https://doi:10.2147/CMAR.S268774
38. Muhamed, A. N., Bogale, S. K., & Netere, H. B. (2023). Quality of life and associated factors among adult cancer patients undergoing chemotherapy treatment at Amhara National, Regional State, Ethiopia, 2021. *SAGE Open Nursing, 9*. https://doi.org/10.1177/23779608231174866
39. Ofei, S. D., Teye-Kwadjo, E., Amankwah-Poku, M., Gyasi-Gyamerah, A. A., Akotia, C. S., Osafo, J., Roomaney, R., & Kagee, A. (2023). Determinants of Post-Traumatic Growth and Quality of Life in Ghanaian Breast Cancer Survivors. *Cancer Investigation,* 41(4), 379-393. https://doi.org/10.1080/07357907.2023.2181636
40. Papadopoulou, A., Govina, O., Tsatsou, I., Mantzorou, M., Mantoudi, A., Tsiou, C., & Adamakidou, T. (2022). Quality of life, distress, anxiety and depression of ambulatory cancer patients receiving chemotherapy. *Medical Pharmacy Report*, 95(4), 418-429. https://doi.org/10.15386/mpr-2458
41. Patel, T. A., Blakey, S. M., Halverson, T. F., Mann, A. J., Calhoun, P. S., Beckham, J. C., Pugh, M. J., & Kimbrel, N. A. (2023). Experiential avoidance, posttraumatic stress disorder, and self-injurious thoughts and behaviors: A moderation analysis in a national veteran sample. *International Journal of Cognitive Therapy, 16*(3), 340-355. https://doi.org/10.1007/s41811-023-00164-2
42. Rahnea-Nita, R. A., Paunica, S., Motofei, C., & Rahnea-Nita, G. (2019). Assessment of anxiety and depression in patients with advanced gynaecological cancer. *Mediterranean Journal of Clinical Psychology,* 7(2). https://doi.org/10.6092/2282-1619/2019.7.2214
43. Ranieri, J., Guerra, F., Cilli, E., Brancati, F., & Di Giacomo, D. (2023). BRCA genetic result disclosure for women with Breast Cancer: influence of +/- predisposition genetic mutation. *Mediterranean Journal of Clinical Psychology* 11(2). https://doi.org/10.13129/2282-1619/mjcp-3805
44. Schnyder, U., & Cloitre, M. (2015). *Evidence based treatments for trauma-related psychological disorders: A practical guide for clinicians*. Switzerland: Springer International Publishing.
45. Shalev, A., Liberzon, I., & Marmar, C. (2017). Posttraumatic stress disorder. *The New England Journal of Medicine,* 376, 2459–2469. https://doi:10.1056/NEJMra1612499
46. Springer, F., Kuba, K., Ernst, J., Friedrich, M., Glaesmer, H., Platzbecker, U., Vucinic, V., Heyne, S., Mehnert-Theuerkauf, A., & Esser, P. (2023). Symptoms of posttraumatic stress disorder and adjustment disorder in hematological cancer patients with different treatment regimes. *Acta Oncology, 62*(9), 1110-1117. https://doi:10.1080/0284186X.2023.2239477

47. Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (2021). Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: a cancer journal for clinicians*, *71*(3), 209-249. https://doi:10.3322/caac.21660
48. Sylla, B. S., & Wild, C. P. (2012). A million Africans a year dying from cancer by 2030: What can cancer research and control offer to the continent? *International Journal of Cancer*, 130, 245–50. https://doi.org/10.1002/ijc.26333
49. Tu, P. C. (2022). The effects of trait resilience and rumination on psychological adaptation to breast cancer. *Health Psychology Open*, *9*(2). https://doi:10.1177/20551029221140765
50. Unseld, M., Krammer, K., Lubowitzki, S., Jachs, M., Baumann, L., Vyssoki, B., Riedel, J., Puhr, H., Zehentgruber, S., Prager, G., Masel, E. K., Preusser, M., Jaeger, U., & Gaiger, A. (2019). Screening for post-traumatic stress disorders in 1017 cancer patients and correlation with anxiety, depression, and distress. *Psychooncology*, *28*(12), 2382-2388. https://doi:10.1002/pon.5239
51. Wagnild, G., & Young, H. (1993). Development and psychometric evaluation of the resilience scale. *Journal of Nursing Measurement, 1*(2), 165-178.
52. Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). *The PTSD Checklist for DSM-5 (PCL-5)*. Scale available from the National Center for PTSD at www.ptsd.va.gov
53. World Health Organization (2020). *Cancer country profle.* https://www.who.int/cancer/countryprofles

DOI: 10.13129/2282-1619/mjcp-4859