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The Relationship Between Trauma and Perceived Stress Among People with Cancer

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Abstract

This study investigates the relationship between psychological trauma and perceived stress in individuals diagnosed with cancer. A total of 186 participants completed the Davidson Trauma Scale (DTS) and the Perceived Stress Scale (PSS). Results revealed that trauma symptoms were significantly elevated compared to normative values, while perceived stress levels, although slightly higher, were not statistically significant. Trauma and perceived stress were positively correlated, particularly in re-experiencing and hyperarousal dimensions. No significant differences were found based on gender. However, small but notable effects were observed across cancer types, with higher trauma scores among patients with nervous system and blood cancers. Additionally, individuals recently diagnosed or in Stage 3 of illness reported higher levels of trauma and stress. These findings highlight the psychological burden of cancer and emphasize the importance of trauma-informed care, especially during early and advanced stages of the disease. Tailored interventions are essential for the emotional needs of cancer patients.

Keywords: Cancer, Psychological Trauma, Perceived Stress, Davidson Trauma Scale Perceived Stress Scale.

I- Introduction :

Throughout history, human beings have faced overwhelming and often unexpected challenges, such as natural disasters, wars, and personal crises like the loss of loved ones or traumatic experiences. Responses to these events vary widely: while some individuals collapse under pressure, others remain resilient, overcoming life's adversities with remarkable psychological strength. These individual differences in coping with trauma are a central theme in clinical psychology, shaped by multiple factors such as personality traits, social support, and internal psychological resources (Abbas, 2016, p. 10; Goldstein et al., 2021).

Among the most traumatic modern health challenges is a diagnosis of cancer—a chronic and potentially life-threatening illness that deeply impacts not only the patient's physical health but also their psychological and social well-being. Receiving a cancer diagnosis often serves as a pivotal life event, leading to existential questions about life, death, and meaning, and triggering feelings of anxiety,

uncertainty, and a loss of control (American Cancer Society, 2022). Research suggests that cancer may induce psychological trauma, defined as the experience of overwhelming stress in the face of serious threat or loss (Goldstein et al., 2021).

Clinically, psychological trauma refers to experiences where individuals feel helpless and endangered, often unable to psychologically process the threat they face (Lamine, 2010, p. 40). Pierre Marty emphasized that such trauma can result from either prolonged psychological distress or sudden, disruptive events that interfere with an individual's mental equilibrium (Lamine, 2010). Cancer-related trauma often meets these criteria, as it disrupts the individual's sense of normalcy and triggers psychological symptoms such as depression, anxiety, and even post-traumatic stress disorder (PTSD) (NCI, 2021).

This trauma, however, does not occur in isolation. It frequently interacts with perceived stress, a subjective evaluation of how overwhelming or uncontrollable one's current life circumstances feel. For people with cancer, perceived stress is often heightened due to medical uncertainty, physical side effects, and the existential weight of the diagnosis. Studies have shown that trauma can increase vulnerability to stress, particularly when individuals feel unable to manage the psychological demands placed on them (Johnson & Thompson, 2021; Levine, 2020).

Some individuals report a profound disruption in their sense of identity and life purpose following a traumatic cancer diagnosis, often feeling stuck in a "pre-trauma vs. post-trauma" dichotomy. This psychological burden can escalate perceived stress levels and impair daily functioning. However, psychological intervention may gradually help patients process the trauma, reduce stress perception, and rebuild a sense of agency (Center for Cultural and Ethnic Health, 2015, p. 18).

Psychoanalytic theory, such as Freud's concept of trauma breaching the mind's protective barrier, posits that unprocessed trauma can lead to serious psychological imbalances like numbness, withdrawal, and depressive symptoms (Freud, 1920). In the context of cancer, trauma is often multidimensional, encompassing initial shock, the physical toll of treatment, and fear of recurrence. These phases of trauma contribute significantly to patients' perceived stress and psychological fragility (Goldstein et al., 2021).

Importantly, not all cancer patients experience trauma or high levels of perceived stress. Individual responses vary based on social support, mental health history, and internal resilience (Levine, 2020). Patients with strong social connections often report lower stress levels and better psychological outcomes. Moreover, the ability to find meaning in adversity, as described by Frankl in his theory of "will to meaning," can buffer the effects of trauma and reduce perceived stress by fostering a sense of purpose (Frankl, 1998).

Conversely, positive psychological changes—referred to as post-traumatic growth (PTG)—can arise from the struggle with trauma. Patients who undergo PTG often re-evaluate their life priorities, gain new perspectives, and develop a stronger appreciation for life (Tedeschi et al., 2004; Cormio et al., 2013). PTG has been associated with improved stress management, increased resilience, and better overall mental health in cancer survivors (Dursun et al., 2016; Casellas-Grau et al., 2017).

Understanding the relationship between trauma and perceived stress in cancer patients is crucial not only for psychological theory but also for clinical practice. By identifying the mechanisms linking trauma to

perceived stress, mental health professionals can tailor interventions to enhance coping strategies, reduce psychological distress, and improve quality of life among cancer patients (Andersen, 1992)

I.1. Problematic :

Cancer is one of the most life-threatening diseases in modern society, posing serious risks to both physical and psychological well-being. The high prevalence of this disease has brought intense challenges to patients, including bodily pain, fatigue, and deep emotional strain, which can significantly lower their overall quality of life. For this reason, cancer has become a critical issue for healthcare systems, psychology professionals, and researchers who aim to develop effective strategies that support patients' psychological adaptation and well-being (Gurevich, Devins, & Rodin, 2002).

Being diagnosed with cancer often triggers a profound psychological trauma. Many patients experience severe emotional reactions such as fear, anxiety, and hopelessness. These effects are often intensified in cases of late-stage diagnosis, which complicates the psychological adjustment process. Research has shown that early detection can mitigate trauma responses and improve the effectiveness of psychological and physical interventions (Epping et all 1990).

Despite the rich body of research focusing on emotional disturbances and trauma related to chronic illness, fewer studies have examined how perceived stress interacts with psychological trauma in cancer patients. Perceived stress refers to an individual's subjective evaluation of how overwhelming and uncontrollable their life circumstances feel, particularly under conditions of threat or uncertainty (Cohen et al., 1983). Among cancer patients, this perception is often heightened due to medical uncertainty, fear of progression, and the emotional weight of a potentially terminal illness (Al Gharaibeh et al., 2020).

Patients who suffer from psychological trauma may perceive everyday challenges as more stressful than those who have not undergone similar trauma. This is particularly true in cancer patients, where trauma may exacerbate their perception of stress and lead to greater psychological vulnerability (Dreher et al., 2021). Furthermore, individual differences such as gender, age, education
level, and cancer type or stage can influence how trauma and stress are experienced and processed.

Accordingly, this study seeks to examine the relationship between psychological trauma and perceived stress among individuals diagnosed with cancer. It addresses the following questions:

- Do cancer patients experience psychological trauma?
- What is the nature of perceived stress among individuals with cancer?
- Is there a significant relationship between psychological trauma and perceived stress in cancer patients?
- Do levels of trauma and perceived stress differ by gender?
- Do levels of trauma and perceived stress differ by cancer type?
- Do levels of trauma and perceived stress differ by cancer stage?
- Do levels of trauma and perceived stress differ by duration of illness?

I. 2. Hypotheses :

- Individuals diagnosed with cancer exhibit measurable levels of psychological trauma and perceived stress.

- There is a positive correlation between psychological trauma and perceived stress among individuals with cancer.
- There are no statistically significant differences in trauma and perceived stress levels between male and female cancer patients.
- There are statistically significant differences in trauma and perceived stress levels among patients with different types of cancer.
- There are statistically significant differences in trauma and perceived stress levels based on the stage of cancer.
- There are statistically significant differences in trauma and perceived stress levels based on duration of illness.

I. 3. Basic concepts of the study :

I. 3. 1. Psychological Trauma :

Psychological trauma is defined as an emotional response to an event or experience that is deeply distressing or threatening to one's physical or psychological safety. In cancer patients, this trauma may stem from the initial diagnosis, invasive treatments, or the looming threat of recurrence and mortality. Symptoms often include re-experiencing the trauma (e.g., intrusive thoughts), emotional numbness, hyperarousal, and avoidance behaviors (Mehnert et al., 2013).

In this study, psychological trauma is assessed using the Davidson Trauma Scale (DTS), a widely used self-report instrument developed by Davidson et al. (1997). The DTS consists of 17 items aligned with DSM-IV criteria for post-traumatic stress disorder (PTSD), measuring the frequency and severity of trauma-related symptoms. It is a validated and reliable tool for evaluating trauma in both clinical and research settings, including among medical populations such as cancer patients.

I. 3. 2. Perceived Stress :

Perceived stress is the degree to which individuals feel their lives are unpredictable, uncontrollable, or overwhelming. Unlike objective stressors, perceived stress reflects an individual's subjective interpretation of events and their perceived ability to cope. Among people diagnosed with cancer, perceived stress can result from physical side effects, emotional exhaustion, and uncertainty about health outcomes (Park & Iacocca, 2014).

In this study, perceived stress is measured using the Perceived Stress Scale (PSS) developed by Cohen et al. (1983). The PSS is one of the most widely used psychological tools for measuring stress perception. It consists of 10 items (PSS-10) rated on a Likert scale, assessing how often respondents felt overwhelmed or unable to control important aspects of their lives in the past month. The PSS has demonstrated strong reliability and validity across diverse populations, including individuals with chronic illnesses like cancer.

II– Methods and Materials:

II. 1. Research Design :

This study follows a quantitative, correlational, cross-sectional design aimed at exploring the relationship between psychological trauma and perceived stress among individuals diagnosed with cancer. The research seeks to determine the extent to which trauma symptoms are associated with perceived stress levels and whether these variables differ across sociodemographic and clinical factors such as gender, age, educational level, cancer type, stage, and illness duration. A descriptive approach was the most suitable on this case .

The correlational component of the design allows for the identification of statistical relationships between trauma and perceived stress, while the cross-sectional nature means that data are collected at a single point in time, providing a snapshot of participants' psychological experiences during their illness. This approach is appropriate for examining psychological constructs and their associations in a natural, real-life setting without manipulating any variables.

Data were gathered using standardized self-report questionnaires—the Davidson Trauma Scale (DTS) and the Perceived Stress Scale (PSS-10)—administered to a purposive sample of cancer patients meeting inclusion criteria. The study design allows for both descriptive and inferential statistical analyses, including correlation coefficients, t-tests, and ANOVA, to examine the study's hypotheses.

II. 2. Participants :

The study included a total of 186 participants diagnosed with cancer, recruited from seven different provinces across Algeria. A purposive sampling technique was employed to ensure the selection of individuals who met specific inclusion criteria. Participants were eligible if they were aged 15 years or older, had a confirmed medical diagnosis of cancer, and were capable of comprehending and completing self-administered questionnaires. Individuals with notable cognitive impairments or co-occurring severe psychiatric conditions were excluded from participation.

Table 1. The characteristics of the sample members and their distribution by gender , Age , types of cancer , the stage of cancer and duration of illness

characteristics of the sample		N	%
Sex	male	54	29 %
	female	132	71 %
Age	15-30	28	15.05 %
	31-46	65	35.48 %
	47-62	68	36.56 %
	63-78	24	12.9 %
Type of cancer	Digestive	19	10.2%
	Reproductive	106	57%
	Ear–Nose–Throat (ENT)	17	9.1%
	Blood	21	11.3%
	Nervous	8	4.3%

	Respiratory	10	5.4%
	Glandular	2	1.1%
	Others	3	1.6%
Stage of cancer	Stage I	106	57%
	Stage II	61	32.8%
	Stage III	17	9.1%
	Stage IV	2	1.1%
Duration of illness	Less than 1 year	110	59.1%
	From 1 to 3 years	53	28.5%
	More than 3 years	23	12.4%

Table 1 presents the demographic and clinical characteristics of the study sample, which included 186 individuals diagnosed with cancer. The majority were female (71%), with the most represented age groups being between 31 and 62 years, a life stage often associated with heightened social and familial responsibilities, potentially amplifying psychological distress. Cancer types were categorized based on the affected physiological systems, a method that allows for nuanced interpretation of their varying biological, psychological, and social impacts. More than half of the participants (57%) had reproductive system cancers, which often carry profound implications for body image, fertility, and identity. Other cancer types included digestive system cancers (10.2%), known to affect nutrition and quality of life; blood cancers (11.3%), which differ significantly in treatment approach and immune impact; and ENT cancers (9.1%), which often affect communication and appearance. Less frequent types included nervous, respiratory, glandular, and other rare cancers, each associated with distinct physical and psychological challenges. Regarding cancer stage, most participants were in Stage I (57%) or Stage II (32.8%), stages often associated with better prognosis but still capable of eliciting intense emotional reactions, while only a small proportion were in advanced stages (Stage III and IV). The duration of illness was also classified into three time-based categories, reflecting different psychological phases: acute (less than 1 year, 59.1%), transition (1 to 3 years, 28.5%), and chronic (more than 3 years, 12.4%). This classification helps to distinguish between immediate trauma responses and longer-term psychological adjustments or stress patterns. Together, these variables provide a comprehensive profile of the sample and offer important context for interpreting variations in psychological trauma and perceived stress. They also lay the groundwork for examining how factors such as gender, cancer type, stage, and duration may influence the severity and nature of trauma-related symptoms and stress perception in individuals with cancer.

II. 3. Instruments :

II. 3. 1. The Davidson Trauma Scale (DTS) : it is a specialized psychological assessment tool designed to evaluate the frequency and severity of post-traumatic stress disorder (PTSD) symptoms. Developed by psychiatrist Jonathan Davidson, the scale has been widely used in both clinical and research settings to assess trauma-related responses. The Arabic version of the scale used in this study was translated and standardized by Dr. Abdul Aziz Thabet and is considered one of the most reliable tools for assessing trauma symptoms in Arabic-speaking populations.

The DTS aims to measure the core symptoms of trauma and PTSD, including re-experiencing, avoidance and emotional numbing, and hyperarousal. The scale consists of 17 items, distributed across three subscales, and aligns with the diagnostic criteria for PTSD as outlined in the DSM-IV.

- Re-experiencing

Items: 1, 2, 3, 4, 17

This subscale assesses symptoms such as flashbacks, intrusive memories, emotional reactions, and nightmares related to the traumatic event.

- Avoidance and Numbing

Items: 5, 6, 7, 8, 9, 10, 11

This domain measures the individual's efforts to avoid thoughts, emotions, or places associated with the trauma, as well as symptoms of emotional detachment or loss of interest in daily activities.

- Hyperarousal

Items: 12, 13, 14, 15, 16

This scale evaluates symptoms of heightened arousal, including sleep disturbances, irritability, hypervigilance, difficulty concentrating, and excessive anxiety.

Each item is scored on two separate 5-point Likert scales—one for frequency (0 = not at all, 4 = every day) and one for severity (0 = not at all distressing, 4 = extremely distressing)—yielding a potential total score range from 0 to 136. Scores above 40 are generally considered to indicate a high likelihood of PTSD, with greater scores reflecting increased symptom severity (Davidson, 1997).

This tool was selected for the current study due to its strong psychometric properties, its cultural adaptation to Arabic populations, and its ability to capture a wide range of trauma-related symptoms relevant to the cancer experience.

Table 2. Internal Consistency Reliability of the Davidson trauma scale

Indicator	Average inter-item correlation	Guttman's λ2	Cronbach's Alpha (α)	McDonald's Omega (ω)
Point Estimate	0.328	0.713	0.708	0.714
95% Confidence Interval (Lower Bound)	0.259	0.645	0.636	0.649
95% Confidence Interval (Upper Bound)	0.400	0.773	0.768	0.779
Interpretation	Acceptable	Reliable	Acceptable reliability	Reliable

The reliability of the scale used in this study was evaluated using multiple indicators to ensure the internal consistency and stability of the measurement tool. Table 2 presents the results of four reliability coefficients: average inter-item correlation, Guttman's λ2, Cronbach's alpha (α), and McDonald's omega (ω), along with their respective 95% confidence intervals.

The average inter-item correlation was 0.328, which falls within the recommended range of 0.15 to 0.50 (Clark & Watson, 1995). This indicates that the items are moderately correlated, suggesting that they measure related but not redundant aspects of the same construct—an ideal characteristic for psychological instruments.

Guttman's λ2 was calculated at 0.713, supporting the internal reliability of the scale. This coefficient is often considered a more accurate estimate of true reliability than Cronbach's alpha, especially when item variances are unequal.

Cronbach's alpha for the scale was 0.708, with a 95% confidence interval ranging from 0.636 to 0.768. This value meets the generally accepted threshold of 0.70 for early-stage research (Nunnally & Bernstein, 1994), indicating that the items show an acceptable level of internal consistency.

McDonald's omega (ω) yielded a value of 0.714, with the lower and upper bounds of the confidence interval at 0.649 and 0.779, respectively. Omega is increasingly recognized as a robust alternative to alpha, especially when assumptions of tau-equivalence are not strictly met. The obtained value affirms the scale's reliability across items, even with possible variations in item loadings.

Collectively, these results confirm that the instrument used in this study possesses acceptable to good internal reliability. The consistent findings across different reliability coefficients, along with narrow and statistically acceptable confidence intervals, suggest that the tool is suitable for accurately measuring psychological constructs—such as trauma or perceived stress—within this sample.

Table 3. Internal validity of the Davidson trauma scale

Dimension	Question	Pearson Correlation (r)	Effect Size (R^2)
reliving the traumatic experience	Do you experience images, memories, or thoughts related to the traumatic event?	0.594**	0.348
	Do you have disturbing dreams related to the traumatic experience?	0.747**	0.563
	Do you feel sudden emotions or re-experience the trauma as if it were happening again?	0.670**	0.449
	Are you disturbed by things that remind you of the traumatic event?	0.721**	0.518
	Do people or objects that remind you of the trauma trigger symptoms like shortness of breath, trembling, or a rapid heartbeat?	0.660**	0.436
Avoidance and emotional numbness	Do you avoid thoughts or feelings related to the traumatic event?	0.719**	0.516
	Do you avoid situations or things that remind you of the trauma?	0.732**	0.535
	Do you have memory loss about parts of the trauma?	-0.022	0.000
	Do you have difficulty enjoying life or daily activities?	0.836**	0.698
	Do you feel isolated, detached, or unloved by others?	0.779**	0.606
	Have you lost feelings of sadness and love (feeling emotionally numb)?	0.781**	0.609
	Do you find it hard to imagine living a long life, achieving goals like work, marriage, or having children?	0.540**	0.291
overexcitement	Do you have difficulty falling or staying asleep?	0.647**	0.418
	Do you experience episodes of tension or anger?	0.864**	0.746
	Do you suffer from concentration difficulties?	0.909**	0.826
	Do you feel on edge or easily distracted?	0.859**	0.737
	Are you easily startled or constantly on alert?	0.844**	0.712

The internal validity of the Davidson Trauma Scale (DTS) was assessed by examining the correlation between individual items and their respective subscales, along with associated effect sizes (R^2). The first dimension, reliving the traumatic experience, demonstrated moderate to strong correlations (r = 0.594 to 0.747), with the strongest item being disturbing dreams (r = 0.747, R^2 = 0.563), confirming the consistency of re-experiencing symptoms within the trauma construct. The second dimension, avoidance and emotional numbness, also showed strong internal coherence, particularly for items related to emotional detachment and loss of interest in daily activities, with correlations exceeding r = 0.78. The highest correlation in this domain was with the item measuring difficulty enjoying life (r = 0.836, R^2 = 0.698). However, the item regarding memory loss of the traumatic event showed a near-zero and negative correlation (r = -0.022, R^2 = 0.000), indicating a lack of alignment with the other items and suggesting it may not be a reliable indicator of avoidance in this population. The third dimension, overexcitement (hyperarousal), exhibited the highest internal validity, with extremely strong correlations across all items (r = 0.647 to 0.909), particularly for difficulty concentrating (r = 0.909, R^2 = 0.826) and hypervigilance (r = 0.844, R^2 = 0.712). These results confirm that the DTS has strong internal validity across its three core dimensions, with the exception of the memory loss item, which may require cultural or contextual re-evaluation. Overall, the DTS proves to be a reliable instrument for measuring trauma-related symptoms in clinical populations such as individuals with cancer.

II. 3. 2. Perceived Stress Scale (PSS-10) : The Perceived Stress Scale (PSS) is one of the most widely used psychological instruments for measuring the degree to which individuals perceive situations in their lives as stressful. Developed by Cohen, Kamarck, and Mermelstein (1983), the PSS assesses how unpredictable, uncontrollable, and overloaded individuals find their lives — key components of the experience of stress. Unlike objective stress measures, the PSS captures the subjective appraisal of stress, making it particularly relevant in medical and psychological contexts, including chronic illness.

In this study, the PSS-10 version was used, which consists of 10 items rated on a 5-point Likert scale, ranging from 0 = Never to 4 = Very Often. The items inquire about feelings and thoughts during the last month, such as “How often have you felt nervous and ‘stressed’?” or “How often have you felt confident about your ability to handle personal problems?” The total score ranges from 0 to 40, with higher scores indicating greater perceived stress. Four of the items (items 4, 5, 7, and 8) are positively worded and are reverse-scored before calculating the final score (Cohen et all 1983).

Table 4. Internal Consistency Reliability of the Perceived Stress Scale

Indicator	Average inter-item correlation	Guttman's λ2	Cronbach’s Alpha (α)	McDonald’s Omega (ω)
Point Estimate	0.328	0.864	0.833	0.838
95% Confidence Interval (Lower Bound)	0.259	0.838	0.793	0.803
95% Confidence Interval (Upper Bound)	0.400	0.888	0.866	0873
Interpretation	Very high	Excellent	Excellent	Excellent

The internal consistency of the Perceived Stress Scale (PSS-10) was evaluated using multiple reliability indicators: average inter-item correlation, Guttman's λ2, Cronbach's alpha (α), and McDonald's omega (ω), each accompanied by 95% confidence intervals to ensure statistical precision.

The average inter-item correlation was found to be 0.328, which falls comfortably within the recommended range of 0.15 to 0.50 (Clark & Watson, 1995). This suggests a good balance between internal homogeneity and item diversity—indicating that the items are related but not redundant.

Cronbach's alpha was 0.833, with a confidence interval ranging from 0.793 to 0.866, exceeding the conventional threshold of 0.70 and indicating excellent internal reliability. This suggests that the scale items consistently measure the construct of perceived stress. Similarly, Guttman's λ2 produced a high estimate of 0.864, further supporting the reliability of the scale and confirming the robustness of the internal structure even when assumptions of tau-equivalence are not strictly met.

Perhaps most notably, McDonald's omega was calculated at 0.838 (CI: 0.803–0.873), which is often considered a more accurate representation of internal consistency, particularly when factor loadings differ across items. The convergence of high values across all four indices confirms that the PSS-10 demonstrates excellent reliability in this sample.

Collectively, these results indicate that the PSS-10 is a psychometrically sound instrument for assessing perceived stress among individuals with cancer. Its high internal consistency ensures the reliability of findings derived from this measure and supports its continued use in clinical and research contexts involving medically vulnerable populations.

Table 5. Internal validity of the Perceived Stress Scale

Item	Correlation Coefficient (r)	Z value	Effect Size
In the last month, how often have you been upset because of something that happened unexpectedly?	0.601**	8.178	Medium–Large
In the last month, how often have you felt that you were unable to control the important things in your life?	0.785**	10.681	Large
In the last month, how often have you felt nervous and stressed?	0.556**	7.564	Medium
In the last month, how often have you felt confident about your ability to handle your personal problems?	0.788**	10.722	Large
In the last month, how often have you felt that things were going your way?	0.813**	11.059	Large
In the last month, how often have you found that you could not cope with all the things that you had to do?	0.806**	10.966	Large
In the last month, how often have you been able to control irritations in your life?	0.734**	9.983	Large
In the last month, how often have you felt that you were on top of things?	0.743**	10.105	Large
In the last month, how often have you been angered because of things that happened that were outside of your control?	0.198**	2.693	Small
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0.344**	4.682	Small–Medium

The internal validity of the Perceived Stress Scale (PSS-10) was evaluated using item-total correlation coefficients, Z-values, and effect sizes. Most items showed strong and statistically significant correlations with the overall scale, supporting the scale's construct validity. Items related to coping confidence, sense of control, and emotional stability demonstrated the highest correlations (e.g., "felt things were going your way," r = 0.813; "confident about handling personal problems," r = 0.788), indicating that these items are core indicators of perceived stress.

Moderate correlations were observed in items reflecting emotional reactivity, such as feeling upset by unexpected events (r = 0.601) and feeling nervous or stressed (r = 0.556), which are central to stress experiences. However, two items—"angered by things outside your control" (r = 0.198) and "felt overwhelmed by difficulties" (r = 0.344)—showed relatively weak associations with the overall scale. While still significant, their lower effect sizes suggest they may capture more situational aspects of stress or be interpreted variably.

Overall, the results support the PSS-10 as a valid and cohesive measure of perceived stress, with most items contributing meaningfully to the total score.

III- Results and discussion :

The data was collected by using the Social Sciences Statistical Package System program (SPSS.26) and by using the tests mentioned above .The current study included seven hypotheses, the results are presented, and discussed below:

III. 1. Presentation, discussion, and analysis of the results of the first hypothesis: "Individuals diagnosed with cancer exhibit measurable levels of psychological trauma and perceived stress."

Table 6. Study results for each the DTS and the PSS on the study sample

Item	Calculated mean	Hypothetical mean	Std. deviation	T test	p.value	d.cohens
Total score of DTS	24.05	20	9.49	5.828	0.001	0.427
Total score of PSS	21.04	20	8.441	1.672	0.096	0.123

To evaluate this hypothesis, a one-sample t-test was conducted comparing the participants' scores on the Davidson Trauma Scale (DTS) and the Perceived Stress Scale (PSS) to hypothetical mean values representing clinically relevant thresholds (20 for both scales). The goal was to determine whether individuals with cancer report trauma and stress levels significantly different from a neutral reference point.

The analysis showed that the mean score on the DTS was 24.05 (SD = 9.49), which is significantly higher than the hypothetical mean of 20 (t = 5.828, p = 0.001). The effect size (Cohen's d = 0.427) indicates a moderate practical significance, suggesting that participants experience clinically meaningful symptoms of psychological trauma. This finding aligns with existing literature indicating that a cancer diagnosis can function as a traumatic life event, often evoking intense fear, helplessness, and emotional shock, particularly at the time of diagnosis or during treatment (Gurevich et al., 2002; Mehnert et al., 2013). Several studies have confirmed that individuals with cancer—especially those undergoing chemotherapy or facing advanced-stage disease—frequently report trauma-like symptoms and meet partial or full criteria for PTSD (Kangas et al., 2002; Cordova et al., 2017). The elevated trauma scores in this study confirm that cancer, even in its early or intermediate stages, can produce psychological reactions similar to those triggered by other life-threatening experiences.

In contrast, the mean PSS score was 21.04 (SD = 8.44), only slightly above the neutral threshold of 20, and the difference was not statistically significant (t = 1.672, p = 0.096). The effect size (d = 0.123) was small, suggesting limited deviation from average perceived stress levels. While not statistically significant, this score still reflects a mildly elevated level of subjective stress, which may be influenced by individual differences in coping, support systems, or illness phase. Prior research has shown that perceived stress varies among cancer patients depending on factors such as treatment intensity, prognosis, and psychological resilience (Al Gharaibeh et al., 2020; Park & Iacocca, 2014). It is also worth noting that stress perception is highly subjective, and while many patients experience trauma from their diagnosis, their cognitive appraisal of daily stressors might remain within typical ranges if they receive adequate support or possess strong coping strategies.

The results partially support the hypothesis. While cancer patients clearly exhibit significant levels of psychological trauma, their perceived stress levels, although elevated, do not significantly exceed the reference point. This suggests that trauma and perceived stress, while related, may operate through distinct psychological mechanisms. Trauma often emerges from acute, emotionally overwhelming experiences, while perceived stress is shaped by ongoing cognitive appraisals and coping capacity. The combination of both measures provides a richer understanding of the psychological profile of cancer patients and highlights the need for trauma-informed psychological care in oncology settings.

III. 2. Presentation, discussion, and analysis of the results of the second hypothesis: "There is a positive correlation between psychological trauma and perceived stress among individuals with cancer."

Table 7 The relationship between the examinees' scores on the DAS test and the PSS test

variable	DTS Re-experiencing	DTS Avoidance	DTS Hyperarousal	Total DTS Score	Total PSS Score
Re-experiencing	1	0.662**	0.743**	0.890**	0.536**
Avoidance	0.662**	1	0.600**	0.874**	0.467**
Hyperarousal	0.743**	0.600**	1	0.880**	0.538**
Total Trauma Score	0.890**	0.874**	0.880**	1	0.577**
Total Perceived Stress Score	0.536**	0.467**	0.538**	0.577**	1

Table 7 presents the Pearson correlation coefficients between the dimensions of psychological trauma and perceived stress . The results reveal a consistent, positive, and statistically significant correlation between all trauma dimensions and perceived stress scores ($p < 0.01$).

Among the three DTS subscales, hyperarousal and re-experiencing show the strongest associations with the total trauma score ($r = 0.880$ and $r = 0.890$, respectively), reflecting the central role these symptoms play in the trauma response framework. These high intercorrelations confirm the internal coherence of the DTS and the multidimensional nature of trauma symptoms.

Importantly, all trauma subscales correlate moderately to strongly with perceived stress. The highest correlation between total trauma and perceived stress was $r = 0.577$, suggesting that individuals with more intense trauma symptoms also perceive higher levels of general life stress. This finding aligns with research indicating that trauma exposure increases the likelihood of heightened stress perception due to disrupted emotion regulation and impaired cognitive appraisals (Park & Iacocca, 2014; Besser et al., 2008).

The hyperarousal subscale, in particular, shows a notable correlation with perceived stress ($r = 0.538$), which is consistent with studies suggesting that physiological hyperactivity—such as insomnia, irritability, and tension—amplifies the subjective experience of stress (Cordova et al., 2017). Similarly, re-experiencing symptoms (e.g., intrusive memories or nightmares) are moderately associated with perceived stress ($r = 0.536$), indicating that trauma-related cognitive intrusions may contribute to a heightened perception of daily life as overwhelming or uncontrollable.

Although avoidance shows the weakest correlation with perceived stress ($r = 0.467$), it remains statistically significant. This may reflect the tendency of some cancer patients to emotionally distance themselves from their diagnosis and related stressors—an initially protective mechanism that can, over time, lead to emotional suppression and increased distress (Levine, 2020).

In sum, the data support the hypothesis that psychological trauma and perceived stress are closely linked constructs in the context of cancer.

III. 3. Presentation, discussion, and analysis of the results of the third hypothesis: "There are no statistically significant differences in trauma and perceived stress levels between male and female cancer patients."

Table. 8 Differences between the Scores of traume and perceived stress in the study sample according to gender

Item	Sex	N	Mean	Std. Deviation	T value	P value	Eta Squared
DTS Re-experiencing	M	54	23.91	9.25	-0.134	0.893	0.0001
	F	132	24.11	9.62			
DTS Avoidance	M	54	23.81	12.59	-0.969	0.334	0.005
	F	132	25.83	13.01			

DTS Hyperarousal	M	54	23.22	11.04	-0.134	0.894	0.0001
	F	132	23.47	11.59			
Total DTS Score	M	54	70.94	28.36	-0.513	0.608	0.0014
	F	132	73.42	30.38			
Total PSS Score	M	54	21.20	7.36	0.171	0.864	0.0002
	F	131	20.97	8.88			

Table 8 presents the gender-based comparisons of trauma and perceived stress scores among individuals diagnosed with cancer. Across all subscales of the Davidson Trauma Scale (DTS)—re-experiencing, avoidance, and hyperarousal—as well as the total trauma score and Perceived Stress Scale (PSS) scores, the differences between males and females were found to be statistically non-significant ($p > .05$). T-values were small, and eta squared effect sizes were negligible (ranging from 0.0001 to 0.005), suggesting no meaningful gender-based differences in symptom intensity or stress perception.

Although females had slightly higher mean scores across most trauma dimensions (e.g., total DTS score: M = 70.94, F = 73.42; avoidance: M = 23.81, F = 25.83), these differences were not statistically significant. This contrasts somewhat with prior research, which often shows that females report higher rates of PTSD and perceived stress, particularly in health-related trauma contexts (Olff et al., 2007; Kangas et al., 2005). However, these differences may become more apparent under conditions of heightened trauma exposure or in the absence of strong coping resources.

Similarly, for perceived stress, the mean scores for men (M = 21.20) and women (M = 20.97) were nearly identical, and the difference was statistically non-significant ($t = 0.171$, $p = 0.864$). This supports research suggesting that while gender may influence coping styles or emotional expression, it does not always lead to significant differences in perceived stress when patients are experiencing a shared medical stressor such as cancer (Matud, 2004; Al Gharaibeh et al., 2020).

The overall findings suggest that in this sample, gender does not significantly influence levels of psychological trauma or perceived stress among cancer patients. This may be due to the universal nature of cancer-related psychological burden, where the threat to life, changes in body image, and uncertainty about the future affect both genders in similar ways.

III. 4. Presentation, discussion, and analysis of the results of the forth hypothesis: "There are statistically significant differences in trauma and perceived stress levels among patients with different types of cancer."

Table. 9 Differences between the Scores of trauma and perceived stress in the study sample according to types of cancer

Variables	Sum of Squares (Between)	Mean Square	F value	Sig.	η^2 Eta squared	Post-hoc (LSD)
DTS Re-experiencing	692,078	98,868	1,103	0.363	0.042	Significant differences for nervous > digestive, blood and glandular

DTS Avoidance	1567,789	223.970	1,367	0.222	0.051	Significant differences for nervous > digestive and glandular
DTS Hyperarousal	729.075	104.154	0.795	0.593	0.03	No significant differences
Total DTS Score	7942.010	1134.573	1.296	0.255	0.049	Significant differences for nervous > digestive, and for glandular > nervous
Total PSS score	529,415	75,631	1.064	0.389	0.04	Significant difference: blood > reproductive

The ANOVA results indicate that none of the variables reached statistical significance at the $p < .05$ level, suggesting that cancer type alone does not produce robust overall group differences in trauma or perceived stress scores. However, the eta squared (η^2) values provide a more nuanced understanding of the data, indicating small but meaningful effect sizes for several trauma dimensions.

The DTS Avoidance subscale demonstrated the highest eta squared value ($\eta^2 = 0.051$), followed closely by the Total DTS Score ($\eta^2 = 0.049$) and DTS Re-experiencing ($\eta^2 = 0.042$). These small effect sizes suggest that cancer type may contribute modestly to the variance in trauma symptoms, even if not statistically significant. Post-hoc LSD analysis revealed that patients with nervous system cancers reported significantly higher avoidance and re-experiencing symptoms than those with digestive and glandular system cancers. This finding is consistent with prior research indicating that neurological cancers often involve greater disruption to identity, communication, and functional independence, which can intensify trauma-related symptoms (Mehnert et al., 2013; Cordova et al., 2017).

The Total DTS Score also revealed a significant post-hoc difference between nervous and digestive system cancers and between glandular and nervous cancers, reflecting varied psychological reactions based on tumor location. This may reflect the biological and psychosocial complexity associated with certain cancer types — for instance, glandular cancers (e.g., of the pancreas or thyroid) may be associated with hormonal fluctuations that influence emotional regulation.

Although the PSS score showed no statistically significant difference across groups ($p = .389$), its eta squared ($\eta^2 = 0.040$) indicates a small effect. The post-hoc result showing significantly higher perceived stress among blood cancer patients compared to those with reproductive system cancers aligns with previous findings that hematologic cancers, which often involve frequent hospital visits and uncertain treatment timelines, can be particularly stressful (Al Gharaibeh et al., 2020). In contrast, reproductive cancers may follow more structured treatment trajectories, potentially leading to lower perceived stress.

Lastly, the DTS Hyperarousal subscale showed the smallest eta squared ($\eta^2 = 0.030$) and no meaningful post-hoc differences. This suggests that hyperarousal symptoms like irritability or insomnia may be less sensitive to cancer type and more influenced by individual coping styles or other factors such as sleep patterns and medication.

In summary, while the overall F-tests were non-significant, the pattern of small effect sizes and consistent post-hoc trends supports the idea that certain cancer types — particularly those affecting the nervous and blood systems — may elevate specific trauma and stress responses. These findings reinforce the importance of targeted psychological interventions based on tumor location and symptom profile to improve psychosocial outcomes in oncology care.

III. 5. Presentation, discussion, and analysis of the results of the fifth hypothesis: "There are statistically significant differences in trauma and perceived stress levels based on the stage of cancer."

Table. 10 Differences between the Scores of trauma and perceived stress in the study sample according to stage of cancer

Variables	Sum of Squares (Between)	Mean Square	F value	Sig.	η^2 Eta squared	Post-hoc (LSD)
DTS Re-experiencing	507,871	253,936	2,879	0,059	0.031	Significant difference for less then 1 year > 3+ years
DTS Avoidance	430,196	215,098	1,299	0,275	0.014	No significant differences
DTS Hyperarousal	215,076	107,538	0,825	0,440	0.009	No significant differences
Total DTS Score	3102,518	1551,259	1,767	0,174	0.019	No significant differences
Total PSS score	646,388	323,194	4,719	0,010	0.049	Significant difference for less then 1 year > 3+ years and for [1-3] years > 3+ years

The ANOVA results presented in Table 10 examine how psychological trauma and perceived stress vary according to the duration of cancer diagnosis. While only one variable reached statistical significance, the calculated eta squared values provide meaningful insight into the practical impact of illness duration on psychological symptoms.

The Perceived Stress Scale (PSS) was the only measure to show a statistically significant difference between groups ($F = 4.719$, $p = 0.010$), with an η^2 of 0.049, indicating a small to moderate effect size. Post-hoc comparisons revealed that patients diagnosed less than 1 year ago and those with a 1–3 year history reported significantly higher perceived stress than patients who had been living with cancer for over 3 years. This finding supports previous literature emphasizing the acute psychological distress experienced shortly after a cancer diagnosis and during the early adaptation phase (Baider & Surbone, 2010; Park et al., 2008). As time progresses, patients may develop more effective coping strategies, benefit from treatment progress, or engage with supportive care, leading to decreased stress perception.

Although the DTS Re-experiencing subscale did not reach conventional significance ($p = 0.059$), the eta squared value ($\eta^2 = 0.031$) indicates a notable effect size. Post-hoc testing identified that patients diagnosed less than one year ago exhibited higher trauma symptoms than those with over three years of illness duration. This is consistent with prior studies showing that trauma symptoms—particularly intrusive thoughts and flashbacks—are most intense in the early phase of life-threatening diagnoses (Kangas et al., 2002; Cordova et al., 2017).

In contrast, the avoidance, hyperarousal, and total trauma score variables did not demonstrate significant differences across illness duration groups ($p > 0.17$) and had low eta squared values (η^2 ranging from 0.009 to 0.019), indicating minimal variance explained. These results suggest that while perceived stress

and re-experiencing symptoms are sensitive to how long a patient has been managing the illness, other trauma symptoms may be more trait-like or stable, less influenced by the time since diagnosis.

In summary, the findings suggest that early phases of cancer diagnosis are psychologically intense, especially in terms of perceived stress and trauma intrusions. Over time, symptoms may subside, potentially due to emotional adaptation or clinical support. These results highlight the importance of timely psychological interventions, particularly within the first year post-diagnosis, to mitigate emotional distress and improve patient well-being.

5-6 Presentation, discussion, and analysis of the results of the sixth hypothesis: "There are statistically significant differences in trauma and perceived stress levels based on duration of illness."

Table. 11 Differences between the Scores of trauma and perceived stress in the study sample according to duration of illness

Variables	Sum of Squares (Between)	Mean Square	F value	Sig.	η^2 Eta squared	Post-hoc (LSD)
DTS Re-experiencing	1089,536	363,179	4,249	0,006	0.065	Significant difference for stage 3 > stage 1 and 2
DTS Avoidance	237,032	79,011	0,472	0,702	0.008	No significant differences
DTS Hyperarousal	734,583	244,861	1,911	0,129	0.031	Significant difference for stage 3 > stage 1 and 2
Total DTS Score	4818,226	1606,075	1,839	0,142	0.029	Significant difference for stage 3 > stage 1 and 2
Total PSS score	368,882	122,961	1,747	0,159	0.028	Significant difference for stage 3 > stage 1

Table 11 shows the results of ANOVA analyses examining how trauma and perceived stress levels vary across different stages of cancer. While only one variable reached conventional statistical significance ($p < 0.05$), the eta squared values and post-hoc LSD comparisons indicate that meaningful psychological differences exist, particularly for patients in Stage 3 of the illness.

The DTS Re-experiencing subscale showed a statistically significant group difference ($F = 4.249$, $p = 0.006$) with an η^2 of 0.065, reflecting a moderate effect size. Post-hoc comparisons confirmed that individuals in Stage 3 exhibited significantly higher re-experiencing symptoms (e.g., flashbacks, nightmares) than those in Stages 1 and 2. This finding is consistent with research suggesting that patients facing more advanced stages of cancer are at increased risk for trauma-related intrusions, particularly as they encounter heightened medical complexity, physical deterioration, and existential threat (Mehnert et al., 2013; Kangas et al., 2002).

The DTS Hyperarousal dimension, while not statistically significant ($p = 0.129$), also demonstrated a notable η^2 of 0.031, indicating a small but relevant effect size. Post-hoc testing again showed that patients in Stage 3 experienced higher levels of hyperarousal symptoms—such as sleep disturbance, irritability,

and exaggerated startle responses—compared to earlier stages. These findings highlight that physiological and emotional dysregulation increases as cancer progresses, aligning with previous findings that symptom burden contributes to psychological hyperactivation (Cordova et al., 2017).

Although Total DTS Score did not reach significance ($p = 0.142$), it had a similar effect size ($\eta^2 = 0.029$) and showed the same directional pattern, with Stage 3 patients scoring higher than those in earlier stages. This trend underscores how trauma symptom intensity increases as disease advances, even if the difference is not statistically robust in smaller samples.

The Perceived Stress Scale (PSS) score also failed to reach statistical significance ($p = 0.159$), but its eta squared ($\eta^2 = 0.028$) again suggests a small effect size, with post-hoc differences indicating that Stage 3 patients reported higher stress than Stage 1 patients. This supports prior findings that stress perception is tied not only to disease presence but also to the anticipated threat to survival and quality of life, which intensifies in later stages (Al Gharaibeh et al., 2020; Park et al., 2008).

In contrast, DTS Avoidance yielded the lowest effect size ($\eta^2 = 0.008$) and no significant findings, suggesting that avoidance behaviors may be less influenced by disease stage, potentially due to more stable personality or coping traits.

While most F-tests did not reach statistical significance, the effect sizes and post-hoc patterns indicate that Stage 3 cancer patients experience higher levels of trauma and stress symptoms compared to those in earlier stages. These findings emphasize the psychological toll of disease progression and underscore the importance of targeted psychosocial interventions, particularly for individuals in advanced stages of cancer.

IV- Conclusion:

This study explored the complex relationship between psychological trauma and perceived stress among individuals diagnosed with cancer, considering a range of sociodemographic and medical variables. The findings offer a multifaceted view of the psychological burden that cancer imposes on patients and provide critical insights for mental health care in oncology.

First, the results confirmed that individuals with cancer report clinically significant levels of psychological trauma, as indicated by Davidson Trauma Scale (DTS) scores significantly higher than the established threshold. This supports the conceptualization of cancer as a potentially traumatic experience that triggers symptoms such as intrusive memories, avoidance, and hyperarousal—symptoms commonly observed in post-traumatic stress disorder (PTSD). However, perceived stress scores, while elevated, did not significantly differ from the norm, suggesting that trauma and stress are related yet distinct constructs shaped by different psychological processes.

Supporting this distinction, a robust and statistically significant positive correlation was found between trauma and perceived stress. This underscores the idea that trauma symptoms—especially re-experiencing and hyperarousal—amplify patients' perception of daily stressors. The correlation highlights how trauma can disrupt emotion regulation, increase physiological reactivity, and impair coping, thus heightening overall stress levels.

Contrary to expectations, no significant gender differences were observed in trauma or stress scores. This finding, while inconsistent with some literature showing higher PTSD prevalence in women, may reflect the universal psychological threat that cancer poses, which affects both genders similarly in this sample. It also suggests that gender-sensitive psychological interventions should be based on individual needs rather than broad assumptions.

Regarding cancer type, although no statistically significant group-level differences emerged, small but meaningful effect sizes were identified. Patients with nervous system and blood cancers exhibited higher trauma and stress symptoms, particularly in avoidance and re-experiencing domains. These results point to the psychological complexity of cancers that affect cognitive, neurological, or immune systems, and they reinforce the need for diagnosis-specific psychosocial interventions.

Significant findings also emerged concerning the duration and stage of illness. Patients in the early stages of diagnosis (less than one year) and those with Stage 3 cancers reported significantly higher levels of trauma symptoms—especially re-experiencing and hyperarousal—as well as elevated perceived stress. These patterns are consistent with prior literature emphasizing that trauma and stress are most intense during the initial shock of diagnosis and as patients confront the reality of disease progression. This indicates that time since diagnosis and illness severity are critical variables in understanding psychological distress and should inform the timing and intensity of mental health support.

In conclusion, this study provides strong evidence that cancer is not only a medical condition but also a deeply psychologically disruptive experience. Trauma and stress levels among patients are influenced by a dynamic interplay of clinical, temporal, and diagnostic variables. These findings highlight the importance of trauma-informed care and stress management interventions in oncology, with particular attention to patients in the early and advanced stages of illness, as well as those diagnosed with neurologically or immunologically complex cancers. Future research should further explore resilience factors and the impact of social support, with the goal of developing more personalized and effective psychosocial care strategies.

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