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THE WEIGHT OF MORTALITY: MARITAL STATUS AND EDUCATION AS CORRELATES OF DEATH ANXIETY IN CORONARY HEART DISEASE

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Abstract

Death anxiety is a clinically relevant psychological concern among individuals with chronic illness, yet evidence from South Asian cardiac populations remains limited. This study examined death anxiety among patients with coronary heart disease (CHD) compared with healthy comparison participants in Pakistan and investigated differences according to gender, marital status, and educational status. A cross-sectional comparative design was used with 150 participants, comprising 75 patients with CHD and 75 healthy comparison participants recruited through convenience sampling from two hospitals in Punjab, Pakistan. Participants completed the Urdu version of the 20-item Thorson–Powell Death Anxiety Scale. Independent-samples t tests were used to compare death anxiety across CHD status and sociodemographic groups, while a one-way analysis of variance examined differences across socioeconomic-status groups. CHD patients reported slightly higher death anxiety (M = 14.88, SD = 3.69) than healthy comparison participants (M = 13.81, SD = 4.50), but the difference was not statistically significant, t(148) = 1.59, p = .114, d = 0.26. Death anxiety also did not differ significantly by gender, t(147) = −0.48, p = .631, d = −0.09. In contrast, married participants reported significantly higher death anxiety than unmarried participants, t(148) = 2.76, p = .007, d = 0.48, while non-educated participants reported significantly higher death anxiety than educated participants, t(148) = −2.45, p = .016, d = −0.49. Socioeconomic status was not significantly associated with death anxiety, F(2, 147) = 0.96, p = .386, η^2 = .013. Within this sample, statistically significant differences in death anxiety were observed by marital and educational status. No statistically significant differences were detected by CHD status or gender. The findings highlight the importance of considering relational and educational context when assessing death anxiety among cardiac patients and support further research using larger, representative, and longitudinal sampl

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INTRODUCTION

Death anxiety, often referred to as thanatophobia, is the apprehension, dread, and emotional discomfort that arise when individuals confront the awareness of their own mortality. Although fear of death is a near-universal human experience, its intensity varies considerably across individuals and populations, shaped by age, gender, religiosity, and cultural context. Two theoretical frameworks have been particularly influential in explaining this variability. Terror Management Theory proposes that awareness of death generates existential anxiety, which individuals manage by investing in cultural worldviews and self-esteem that function as psychological buffers against the terror of mortality (Pyszczynski et al., 1999). Meaning Management Theory complements this view by proposing that death acceptance is achieved not primarily through defense, but through the active construction of personal meaning (Wong, 2008). Together, these perspectives frame death anxiety as a central and theoretically well-grounded determinant of psychological well-being, rather than a peripheral or purely existential concern.

In clinical populations, death anxiety takes on particular relevance, as chronic and life-threatening illness heightens awareness of mortality. Cardiovascular disease remains the leading cause of death worldwide, responsible for an estimated 19.8 million deaths in 2022, or approximately one in three deaths globally (World Health Organization, 2025). Coronary heart disease (CHD), one of the most common and consequential forms of cardiovascular disease, has been consistently linked to psychological distress, including anxiety and existential fear. Patients with CHD face not only physical limitations but also recurring reminders of mortality, such as chest pain, hospitalization, and the risk of sudden cardiac events. A recent systematic review and meta-analysis found that cardiac patients report consistently moderate levels of death anxiety, with demographic and psychosocial variables emerging as significant correlates across studies (Mollaei et al., 2025). Consistent with this, research comparing patients with myocardial infarction, cancer, and healthy controls found that cardiac patients reported the highest levels of death anxiety of the three groups (Şahan et al., 2018).

Socio-demographic factors appear to associate with death anxiety among cardiac and clinical populations more broadly. Age-related patterns have been linked to the process of life review, with Butler (1963) arguing that reconciling past experience with impending mortality is a normative task of later life that shapes how death-related distress is either resolved or intensified. Gender differences have also been widely documented: in a large study testing hypotheses about death anxiety across the adult lifespan, Thorson and Powell (1988) found that women reported significantly higher death anxiety than men, and that older adults reported significantly lower death anxiety than younger adults, patterns the authors linked to differing concerns about bodily pain, decomposition, and loss of personal control. Marital status has also emerged as a relevant associate; in a recent study of elderly patients managing chronic illness, death anxiety differed significantly by marital status, pointing to the role that relational bonds and caregiving responsibilities play in shaping how mortality is experienced (Batı et al., 2024). Higher educational attainment has been associated with lower levels of death anxiety in some prior literature, with higher education associated with greater access to coping resources, health literacy, and frameworks for making sense of illness and mortality (Kastenbaum & Moreman, 2018).

The interplay between psychological factors and health outcomes underscores that death anxiety is more than an abstract existential concern. It has been characterized as a transdiagnostic construct that contributes to the severity and maintenance of psychopathology, including maladaptive coping and heightened distress across clinical populations (Iverach et al., 2014). Anxiety more broadly has also been implicated as a factor associated with worse outcomes and morbidity risk specifically within coronary heart disease populations (Tully et al., 2014).

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Encouragingly, this distress appears modifiable: a recent network meta-analysis of randomized controlled trials found that psychosocial interventions, including cognitive-behavioral and meaning-centered approaches, produced meaningful reductions in death anxiety across patient populations (Lu et al., 2024). Despite this, the role of socio-demographic factors in shaping death anxiety among CHD patients remains underexplored in South Asian populations, where cultural norms, religious beliefs, and social structures may alter how mortality is experienced.

There is limited evidence examining whether demographic correlates of death anxiety observed in international and nonclinical samples extend to Pakistani patients with coronary heart disease, particularly with respect to marital and educational status. The most frequently cited Pakistani study in this area, Suhail and Akram (2002), examined the roles of gender, age, and religiosity in a general community sample and found that women, older participants, and less religious individuals reported greater fear of death, broadly replicating patterns from Western, predominantly Christian samples within an Eastern, Muslim cultural context. However, this study is now more than two decades old, was not conducted with a clinical cardiac population, and did not examine marital status or education as associated variables. Given that Pakistan's religious framework, family structures, and healthcare access differ substantially from the contexts in which most cardiac-focused death anxiety research has been conducted, it remains unclear whether the roles of marital status and education observed elsewhere generalize to Pakistani cardiac patients.

The present study examined death anxiety among patients with coronary heart disease (CHD) compared with healthy comparison participants in Pakistan. Specifically, the study assessed whether death anxiety differed according to CHD status, gender, marital status, and educational status. In addition, differences in death anxiety across socioeconomic-status groups were examined. Given the limited empirical evidence from Pakistan, the study aimed to provide context-specific evidence regarding demographic differences in death anxiety among individuals with and without CHD.

Objectives

The present study aimed to:

- Compare death anxiety levels between patients with CHD and healthy comparison participants.
- Examine differences in death anxiety according to gender.
- Examine differences in death anxiety according to marital status.
- Examine differences in death anxiety according to educational status.

Hypotheses

1. Patients with CHD will report higher levels of death anxiety than healthy comparison participants.
2. Female participants will report higher levels of death anxiety than male participants.
3. Married participants will report higher death anxiety than unmarried participants.
4. Educated participants will report lower levels of death anxiety compared to uneducated participants.

Literature Review

Death anxiety, the fear and distress that arise when confronting one's own mortality, is grounded in two influential theoretical accounts. Terror Management Theory holds that awareness of death generates existential anxiety, buffered by investment in cultural worldviews and self-esteem (Pyszczynski et al., 1999), while Meaning Management Theory frames death acceptance as achieved through the active construction of personal meaning (Wong, 2008). Beyond its existential relevance, death anxiety functions as a transdiagnostic construct: a recent meta-analysis of 104 studies found it moderately associated with mental illness symptoms overall, and more strongly so in clinical samples (Menzies et al., 2024; Iverach et al., 2014).

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Death anxiety is heightened by ongoing mortality salience, as seen in cardiac patients who face recurrent symptoms, hospitalizations, and objective medical risk. A recent meta-analysis found cardiac patients report consistently elevated death anxiety (Mollaei et al., 2025), with patients experiencing myocardial infarction reporting higher levels than both cancer patients and healthy controls (Şahan et al., 2018). This sensitivity to threat is not limited to illness: pooled death anxiety scores rose from 51% to 62% across the first two years of the COVID-19 pandemic (Patra et al., 2025), underscoring that death anxiety is a modifiable state rather than a fixed trait. Instruments validated for medically ill populations, such as the Death and Dying Distress Scale (Krause et al., 2015), improve on generic community measures like the Revised Death Anxiety Scale (Thorson & Powell, 1992) for detecting clinically meaningful distress in such samples.

Socio-demographic moderators map onto these theoretical accounts. Women report significantly higher death anxiety than men, and older adults report significantly lower death anxiety than younger adults (Thorson & Powell, 1988), consistent with cumulative, habituating confrontation with mortality across the lifespan. Marital status appears to function as a relational buffer against mortality salience, with death anxiety differing significantly by marital status among chronically ill elderly patients (Batı et al., 2024), while education aligns with Meaning Management Theory's emphasis on coping resources, as higher educational attainment is linked to greater health literacy and stronger frameworks for making sense of illness and mortality (Kastenbaum & Moreman, 2018). These moderators are particularly relevant in cardiac samples, where they plausibly shape coping and treatment adherence.

Death anxiety is also modifiable: a meta-analysis of 15 randomized controlled trials found psychosocial interventions produced small-to-medium reductions overall, with cognitive behavioral therapy markedly outperforming other approaches (Menzies et al., 2018), though high-quality trials specifically within cardiology remain scarce. Research in Pakistan is similarly limited: the most cited Pakistani study (Suhail & Akram, 2002) examined gender, age, and religiosity in a general community sample over two decades ago, without a clinical cardiac population or attention to marital status and education. This gap justifies the present study of death anxiety among patients with coronary heart disease in Pakistan and the roles of gender, marital status, and education.

Method

Research Design

This study used a cross-sectional, comparative survey design to examine death anxiety among patients with coronary heart disease (CHD) relative to a healthy comparison group, and to test gender, marital status, and education as correlates (Creswell & Creswell, 2018). Group differences were tested using independent-samples *t* tests and one-way ANOVA.

Participants

The sample comprised 150 participants: 75 CHD patients and 75 healthy comparison individuals with no diagnosed cardiac condition. CHD patients were recruited from the Department of Cardiology at Nishtar Hospital, Multan, and District Headquarter Hospital, Vehari. Inclusion criteria were a confirmed CHD diagnosis (or its absence, for the comparison group), age 30–70 years, ability to read or understand Urdu, and willingness to provide informed consent; participants with severe psychiatric illness, cognitive impairment, or medical instability were excluded. The healthy comparison participants were recruited from the local community and were screened to confirm the absence of diagnosed cardiovascular disease. A priori power analysis (G*Power 3.1; Faul et al., 2007) indicated a minimum of 64 participants per group was needed to detect a medium effect (Cohen's d = 0.50, α = .05, power = .80); the achieved sample of 75 per group exceeded this. The majority of participants were male (n = 107, 71.3%).

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Sampling Procedure

Non-probability convenience sampling was used for both groups. Patients were approached in cardiology outpatient and inpatient settings and screened against the inclusion/exclusion criteria before invitation to participate.

Instruments

Death anxiety was measured using the 20-item Thorson–Powell Death Anxiety Scale (TPDAS; Thorson & Powell, 1992; dichotomous scoring, range 0–20, higher scores indicating greater death anxiety), administered in Urdu. The Urdu version of the scale was developed using a standard forward-backward translation method with bilingual experts. A researcher-developed demographic form collected age, gender, education, marital status, socioeconomic status, and residential status.

Procedure

Approvals were obtained from concerned authorities. After screening, eligible participants gave written informed consent and completed the TPDAS and demographic form in Urdu, independently or with items read aloud for those with limited literacy (15–20 minutes). Data collection spanned four weeks.

Ethical Considerations

The study followed the ethical principles of the Declaration of Helsinki (World Medical Association, 2013). No identifying information was recorded, participation was voluntary with the right to withdraw at any stage, and participants showing distress were offered information about hospital psychological support services.

Results

Prior to hypothesis testing, data were screened for missing values and outliers. One participant did not report gender, yielding $n = 149$ for gender-based analyses against the full sample of $N = 150$; this is noted as a footnote to Table 1. Descriptive statistics for the full sample are presented in Table 1.

Table 1 Descriptive Statistics for the Full Sample (N = 150)

Variable	*n*	%
Gender		
Male	107	71.3
Female	42	28
Education		
Educated	118	78.7
Non-educated	32	21.3
Marital Status		
Married	99	66
Unmarried	51	34
Socioeconomic Status		
Upper class	15	10
Middle class	127	84.7
Lower class	8	5.3
Residential Status		
Urban	84	56
Rural	66	44
Group		
CHD	75	50
Healthy comparison	75	50

Note. One participant did not report gender (n = 149 for the gender variable). CHD = coronary heart disease.

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Table 2 presents independent-samples *t* test comparisons of death anxiety scores across CHD status and each socio-demographic grouping. Consistent with Hypothesis 1, CHD patients reported slightly higher death anxiety (M = 14.88, SD = 3.69) than the healthy comparison group (M = 13.81, SD = 4.50), though this difference did not reach statistical significance, $t(148) = 1.59$, $p = .114$, $d = 0.26$, 95% CI [−0.26, 2.39].

Contrary to Hypothesis 2, death anxiety did not differ significantly between male (M = 14.28, SD = 3.96) and female participants (M = 14.64, SD = 4.56), $t(147) = -0.48$, $p = .631$, $d = -0.09$.

Consistent with Hypothesis 3, married participants (M = 15.00, SD = 3.91) reported significantly higher death anxiety than unmarried participants (M = 13.08, SD = 4.30), $t(148) = 2.76$, $p = .007$, $d = 0.48$, a small-to-moderate effect. Consistent with Hypothesis 4, non-educated participants (M = 15.91, SD = 3.65) reported significantly higher death anxiety than educated participants (M = 13.92, SD = 4.17), $t(148) = -2.45$, $p = .016$, $d = -0.49$.

Table 2 Independent-Samples t Test Comparisons of Death Anxiety Scores

Comparison	n_1	M_1	SD_1	n_2	M_2	SD_2	t	df	p	d	95% CI
CHD vs. Healthy	75	14.88	3.69	75	13.81	4.50	1.59	148	.114	0.26	[-0.26, 2.39]
Male vs. Female	107	14.28	3.96	42	14.64	4.56	-0.48	147	.631	-0.09	[-1.85, 1.13]
Married vs. Unmarried	99	15.00	3.91	51	13.08	4.30	2.76	148	.007	0.48	[0.54, 3.30]
Educated vs. Non-educated	118	13.92	4.17	32	15.91	3.65	-2.45	148	.016	-0.49	[-3.58, -0.38]

Note. M = mean; SD = standard deviation; d = Cohen's d; 95% CI = 95% confidence interval for the mean difference.

Table 3 One-Way ANOVA: Effect of Socioeconomic Status on Death Anxiety

Source	SS	df	MS	F	p
Between groups	32.74	2	16.37	0.96	.386
Within groups	2513.23	147	17.10		

Note. SS = sum of squares; MS = mean square; η^2 = eta squared. The analysis included three socioeconomic status groups (N = 150).

A one-way ANOVA was conducted to examine whether death anxiety differed across socioeconomic status groups. The analysis showed that the differences in death anxiety among the groups were not statistically significant, $F(2, 147) = 0.96$, $p = .386$, $\eta^2 = .013$. The effect size was small, with socioeconomic status accounting for approximately 1.3% of the variance in death anxiety scores. Thus, the findings did not provide evidence of significant differences in death anxiety across socioeconomic status groups in this sample. Because group-specific means and standard deviations were not available in the source data, the direction and magnitude of differences among the individual socioeconomic groups cannot be interpreted further.

Discussion

The present study examined death anxiety among patients with coronary heart disease (CHD) compared to a healthy comparison group, and explored differences across gender, marital status, and education. The findings provide a nuanced picture of how psychological

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and socio-demographic factors shape fear of death in a South Asian clinical context.

Although CHD patients reported slightly higher death anxiety than healthy participants, the difference did not reach statistical significance. This contrasts with prior evidence suggesting that cardiac illness heightens mortality-related distress (Mollaei et al., 2025; Şahan et al., 2018) and that death anxiety functions as a transdiagnostic construct closely tied to illness-related distress more broadly (Iverach et al., 2014). Several explanations may account for this null result. Several explanations are possible. Cardiac patients may develop coping or acceptance responses that attenuate conscious death-related distress; however, coping style, religiosity, and illness perceptions were not assessed in the present study. These interpretations should therefore be considered tentative and examined directly in future research. It is also possible that the healthy comparison group's own death anxiety was elevated by generalized post-pandemic mortality salience, consistent with evidence that death anxiety rose substantially across community samples during and after COVID-19 (Patra et al., 2025), narrowing the gap between clinical and non-clinical participants.

The non-significant gender difference in death anxiety also diverges from much of the prior literature, which commonly finds higher death anxiety among women (Schumaker et al., 1988; Thorson & Powell, 1988). One plausible explanation is that the pronounced gender imbalance in the present sample (more than 70% male) limited statistical power to detect a true difference. Cultural norms may also have contributed: in many South Asian contexts, men are primary earners and face strong societal expectations tied to financial and family responsibility, which may make them comparably vulnerable to mortality-related fear when illness threatens their functional role. This may partly explain why gender differences well-documented in Western samples did not replicate clearly here.

A significant effect of marital status emerged, with married participants reporting higher death anxiety than unmarried individuals. This is broadly consistent with evidence that death anxiety varies significantly by marital status among individuals managing chronic illness (Batı et al., 2024), and may reflect the attachment- and caregiving-related concerns that accompany marriage — worry about the impact of one's death on a spouse's or children's financial and emotional stability. In collectivist cultures such as Pakistan, where family bonds are central to identity, death anxiety may be closely tied to relational fears rather than purely individual existential concerns.The findings suggest that family relationships may warrant consideration in future psychosocial assessment and intervention research involving cardiac patients.

Education was also a significant factor, with non-educated participants reporting higher death anxiety than educated participants. This is consistent with the view that higher educational attainment provides greater access to coping resources, health literacy, and frameworks for making sense of illness and mortality (Kastenbaum & Moreman, 2018). Education may increase access to accurate health information and promote problem-focused coping. Lower educational attainment may be associated with differences in health literacy, access to health information, or coping resources; however, these mechanisms were not directly examined in the present study. In Pakistan, educational level often corresponds closely with socioeconomic status and healthcare access, suggesting that structural inequality may indirectly shape death anxiety through unequal exposure to information and support — a possibility consistent with, though not directly tested by, the non-significant socioeconomic status finding reported above.

Together, these findings reinforce that death anxiety is not merely an individual psychological phenomenon but is shaped by cultural, educational, and relational context. The pattern observed here is broadly consistent with Terror Management Theory (Pyszczynski et al., 1999), which holds that awareness of death activates cultural worldviews and self-esteem defenses that buffer existential fear, and with Meaning Management Theory (Wong, 2008),

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which emphasizes that meaning-making, social bonds, and acceptance mediate the impact of mortality salience. The absence of a significant CHD healthy group difference further suggests that health status alone may not predict death anxiety. One possibility is that culturally shaped religious and family frameworks may influence responses to mortality; however, these factors were not directly assessed in the present study (Suhail & Akram, 2002).

Clinically, these findings suggest that psychological screening for death anxiety should be integrated into cardiac care, particularly among married and less-educated participants, who reported higher death anxiety scores in this sample. Hospital-based psychoeducation could focus on meaning-making, spiritual coping, and health literacy, and family-based, culturally sensitive interventions may prove more effective than purely individual approaches, given the relational and collective character of death anxiety observed here.

Limitations

Several methodological limitations should be acknowledged. The use of convenience sampling limits the generalizability of findings beyond the two recruitment sites. The pronounced gender imbalance in the sample reduced statistical power to detect true gender differences, and should be addressed through targeted recruitment in future work. Death anxiety was measured using the Thorson–Powell Death Anxiety Scale, which, while well-validated internationally, may not fully capture the medically oriented or existential dimensions of death anxiety most relevant to chronic illness. Future studies could employ multidimensional, medically oriented measures such as the Death Anxiety Inventory (Tomás-Sábado & Gómez-Benito, 2005) or the Death and Dying Distress Scale (Krause et al., 2015), both of which offer stronger sensitivity in clinical populations. The cross-sectional design also precludes causal interpretation; longitudinal designs are needed to clarify whether illness severity or treatment adherence influence death anxiety over time. Finally, potential confounding factors such as religiosity, social support, and comorbid depression were not measured or statistically controlled, and may partly account for the relational and cultural patterns discussed above.

Future Directions

Future research should employ larger, gender-balanced samples and incorporate direct measures of religious belief, social connectedness, and illness perception to more precisely test the cultural moderators. Mixed-methods designs combining quantitative assessment with qualitative interviews could capture the lived meaning of death anxiety among cardiac patients more directly than self-report scales alone. Intervention research is also needed to test whether cognitive-behavioral, meaning-centered, or spiritually integrated therapies can reduce death anxiety and improve treatment adherence and quality of life in Pakistani cardiac populations specifically, given that existing evidence for such interventions comes almost entirely from Western clinical samples.

Conclusion

The present study found that death anxiety did not differ significantly between patients with coronary heart disease and healthy comparison participants or between male and female participants. However, significant differences were observed according to marital and educational status, with higher death anxiety among married and non-educated participants. Socioeconomic status was not significantly associated with death anxiety. These findings suggest that demographic and social characteristics may be relevant when assessing death anxiety in Pakistani populations. However, the cross-sectional design, convenience sampling, and imbalance in some demographic groups limit causal interpretation and generalizability. Future research should examine these associations using larger and more representative samples and should consider additional psychological and social factors that may contribute to death anxiety.

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