Research Article

Illness Perceptions and Their Impact on Surgery-Specific Anxiety in Patients Undergoing Open-Heart Surgery

🆔 Serdar Sever, 🆔 Zehra Üzel, 🆔 Esra Aydemir, 🆔 Cavidan Duyğun

Department of Nursing, Faculty of Health Sciences, Uşak University, Uşak, Türkiye

Abstract

Aim: This study aimed to examine the relationship between illness perceptions and surgery-specific anxiety in patients scheduled for open-heart surgery and to identify the key predictors of surgery-specific anxiety.

Material and Methods: A descriptive and correlational design was employed. The study was conducted between January and September 2025. A total of 120 patients scheduled for elective coronary artery bypass grafting (CABG) or heart valve surgery were included using convenience sampling. Data were collected via a personal information form, Illness Perception Questionnaire (IPQ), and Anxiety Specific to Surgery Questionnaire (ASSQ). Descriptive statistics, Pearson's correlation, and multiple linear regression analyses were employed.

Results: The mean age of participants was found to be 62.3±10.4, and 67.5% were male. The mean ASSQ score was 29.4±5.9, indicating moderate-to-high surgery-specific anxiety. The multivariate analysis found that emotional representations (β=0.60, p<0.001) were the strongest positive predictor of anxiety, whereas treatment control (β=-0.95, p<0.001) significantly reduced anxiety levels. Gender (male: β=-1.92, p=0.029) and marital status (single: β=-2.54, p=0.049) were also associated with lower anxiety. The final model explained 49.7% of the variance in surgery-specific anxiety (R²=0.497).

Conclusion: Illness perceptions, particularly emotional distress and treatment control beliefs are key determinants of surgery-specific anxiety in patients awaiting open-heart surgery. These findings emphasize the need for preoperative psychological assessment and targeted interventions that reduce illness-related emotional burden and strengthen patients' sense of control. Integrating such strategies into routine preoperative care may help alleviate anxiety and improve recovery outcomes.

Keywords: Thoracic Surgery, Attitude to Health, Preoperative Care, Anxiety, Regression Analysis

INTRODUCTION

Cardiovascular disease (CVD) continues to be the leading cause of morbidity and mortality worldwide. According to the World Health Organization, approximately 20 million people died in 2022 due to CVD (1). In the advanced stages of these diseases, surgical procedures, especially open-heart surgery, often become mandatory to extend life expectancy and improve quality of life (2). However, open-heart surgery is a high-risk intervention that carries not only physiological but also psychological burdens (3).

Among psychological factors seen in the preoperative period, anxiety is the most prominent. A systematic review and meta-analysis in low- and middle-income countries reported that around 56% of all surgical patients experience preoperative anxiety (4). However, considering patients undergoing cardiac surgery, this prevalence was reported to be 40-80% (5). Previous studies have shown that high levels of preoperative anxiety have an adverse impact on surgical and postoperative outcomes such as pain intensity, analgesic use, length of hospital stays, and risk of complications (3,6–9).

Corresponding Author: Serdar Sever, Department of Nursing, Faculty of Health Sciences, Uşak University, Uşak, Türkiye
E-mail: serdar.sever@usak.edu.tr

Illness perception is how patients conceptualize their illness in terms of its timeline, consequences, controllability, recurrence, coherence, and emotional impact. According to Leventhal's "Common-Sense Model," individuals' beliefs and perceptions about their illness directly shape their coping strategies and adherence to treatment (10). Patients with CVD show that their illness perceptions are associated with a wide range of clinical and psychological outcomes, such as mortality and recurrent cardiac events (11), overall health status (12), self-efficacy and adherence to prescribed treatments (13), as well as engagement in healthy lifestyle behaviors (14).

Expectations related to perceived personal control, which is a subdimension of the illness perception, appear to be associated with patients' postoperative outcomes. For instance, higher levels of preoperative perceived control have been shown to be associated with better quality of life after coronary artery bypass graft (CABG) surgery (15), and similar findings have also been reported for heart transplant recipients (16). Moreover, the "PSY-HEART" trial demonstrated that a brief, expectation-focused cognitive-behavioral intervention delivered prior to CABG surgery led to significant improvements in disability and quality of life six months after the procedure (17). These findings highlight that illness perceptions are not fixed but modifiable, underscoring the importance of understanding the specific components of illness perception and their relationship to preoperative anxiety.

Most studies assess general anxiety or broad preoperative anxiety but do not focus specifically on surgery-specific anxiety in open-heart surgery and how individual illness perception subdomains differentially predict it. Understanding these associations in this high-risk surgical context is important for designing targeted psychological interventions. Furthermore, the findings are expected to inform tailored preoperative psychological preparation, enabling clinicians and nurses to identify patients at higher risk of anxiety.

MATERIAL AND METHODS

The study was prepared in compliance with STROBE guidelines to enhance methodological rigor and reporting reliability (18).

Study design, setting, and sample

This research employed a descriptive and correlational design to examine how patients' illness perceptions influenced their surgery-specific anxiety prior to undergoing open-heart surgery. The study was conducted between 10th of January 2025 and 16th of September 2025, in the cardiovascular surgery ward and intensive care unit of a public hospital in western Türkiye. Patients scheduled for open-heart surgery are typically admitted one to two days before their operation. When beds are unavailable in the ward or closer monitoring is required, patients are admitted directly to the intensive care unit. The study population comprised individuals awaiting open-heart surgery at the hospital. From this population, the sample included patients who met the eligibility criteria, provided informed consent, and had been admitted at least one day prior to their scheduled procedure.

In this study, the required number of participants was calculated with G*Power version 3.1.9.7. Using parameters of a correlation coefficient of 0.3, a significance threshold of 0.05, and a desired power of 95%, the analysis indicated a minimum of 111 participants (19). A convenience sampling approach was adopted, and the final cohort consisted of 120 patients who met the inclusion criteria.

Inclusion and exclusion criteria

Patients were eligible if they: were 18 years or older, scheduled for elective coronary artery bypass grafting (CABG) or heart valve surgery, literate in Turkish, undergoing open-heart surgery for the first time, and had provided voluntary informed consent. Patients were excluded if they were scheduled for open-heart surgery due to heart transplantation, trauma, or tumor, or if they failed to complete the study questionnaires.

Data collection tools

For data collection, three tools were utilized: a personal information form to record socio-demographic and clinical characteristics, the Illness Perception Questionnaire (IPQ) to assess patients' cognitive representations of illness, and the Anxiety Specific to Surgery Questionnaire (ASSQ) to evaluate surgery-related anxiety.

Patient Information Form

A personal information form was developed based on the literature to collect patients' socio-demographic and illness-related data (3,20). The form consisted of 13 items, including socio-demographic questions (e.g., age, gender, income), health behaviors, and disease-related items addressing previous surgery, illness duration, family history of open-heart surgery, and presence of chronic conditions.

The Illness Perception Questionnaire (IPQ)

The IPQ was originally developed by Weinman et al. in 1996 (21), and revised by Moss-Morris et al. in 2002 (22). Its Turkish adaptation and psychometric validation were conducted by Kocaman et al. in 2007 (23). The IPQ comprises three major domains: Identity, beliefs about illness, and causal attributions. The identity dimension evaluates how patients associate specific symptoms with their illness, covering 14 core symptoms

such as pain, sore throat, nausea, breathlessness, weight loss, fatigue, joint stiffness, eye irritation, wheezing, headaches, gastrointestinal complaints, sleep problems, dizziness, and loss of strength.

The opinions about the illness dimension is composed of seven subscales: timeline (acute/chronic), timeline cyclical, consequences, personal control, treatment control, illness coherence, and emotional representations. These subscales capture different aspects of patients' beliefs about their condition. Timeline and consequences reflect perceptions regarding the duration and seriousness of the illness and its potential impact on physical, social, and psychological functioning. Personal control assesses the individual's sense of control over the course of the illness, while treatment control measures confidence in the effectiveness of treatment. Illness coherence indicates how well the patient understands their condition, and emotional representations evaluate the emotional responses associated with the illness.

Causal attributions dimension explores patients' beliefs regarding the causes of their illness. Causal attributions subscales include psychological attributions, risk factors, immunity, accident or chance. Psychological attributions reflect the belief that illness stems from factors such as stress, emotional distress, or personality characteristics. Risk factors encompass lifestyle and health-related behaviors such as smoking, diet, and family history. Immunity represents the perception that a weakened immune system or reduced bodily resistance has contributed to the development of the disease. Accident denotes the attribution of illness to unexpected injuries or external events, while chance refers to the belief that illness occurs randomly, through coincidence, bad luck, or fate. The IPQ does not produce a total score, and each subdimension is analyzed separately. Reliability studies have demonstrated acceptable internal consistency across subscales, with Cronbach's alpha values generally ranging between 0.65 and 0.85 in different populations (22,23). In the present study, Cronbach's alpha coefficients for the IPQ subscales ranged from 0.60 to 0.94, while the overall scale demonstrated an alpha coefficient of 0.79, indicating acceptable to good internal consistency.

Anxiety Specific to the Surgery Questionnaire (ASSQ)

The ASSQ was developed by Karanci and Dirik in 2003 to assess anxiety levels among adult patients undergoing surgery. The scale consists of 10 items designed to evaluate concerns related to pain, fear of death during surgery, and anxiety about potential complications and postoperative complications. Responses are summed to yield a total score ranging from 10 to 50, with the higher scores indicating higher surgery-related anxiety. In this scale, item 8 is reverse-scored before inclusion in the total. In the original study, the Cronbach's alpha coefficient was reported as 0.79, while in the present study, the internal consistency was found to be 0.80, indicating good reliability.

Data collection process

Eligible patients were approached in their rooms one day prior to surgery, either in the cardiovascular surgery ward or in the intensive care unit. The researcher provided both verbal and written information about the study, after which written informed consent was obtained from each participant. Questionnaires were administered in the patient rooms on the ward and in designated areas of the intensive care unit. Completion of the questionnaires took approximately 15–20 minutes. All patients completed the ASSQ approximately 24 hours before surgery, ensuring standardized timing across participants.

Statistical analysis

Data were analyzed using IBM SPSS Statistics version 28.0 (IBM Corp., Armonk, NY, USA). The distribution of variables was assessed through skewness and kurtosis statistics to evaluate normality. As the scale scores showed an approximately normal distribution, parametric tests were applied. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize participants' socio-demographic characteristics and scale scores. Between-group differences were examined using independent samples t-tests, while Pearson correlation analyses were employed to explore relationships between IPQ subscales and ASSQ scores. To identify factors associated with surgery-specific anxiety, a multiple linear regression model was constructed. Variables found to be statistically significant in preliminary analyses were entered into the regression, and a backward elimination method was used to derive the final model.

Assumptions of regression analysis, including normality of residuals, multicollinearity, and others, were met. A p-value <0.05 was considered statistically significant throughout the analyses. Variables such as history of prior surgery and disease duration were examined in preliminary analyses; however, as they were not significantly associated with surgery-specific anxiety, they were not retained in the final regression model.

Ethical considerations

The study was carried out in compliance with the principles of the Declaration of Helsinki. Ethical approval was granted by the Uşak University Non-Interventional Clinical Research Ethics Committee (09 January 2025; Decision No: 524-524-02), and institutional permission was obtained from the hospital admin-

istration (18 December 2024; Approval No: E-45786011-799-262851280). All participants were informed about the study and provided written consent prior to data collection.

RESULTS

In total, there were 120 CABG patients included in the study. The mean age of the patients was 62.33±10.43, and 67.5% were male. Most participants were partnered (88.3%), had less than a high school education (80.8%), and resided in provincial centers (53.3%). More than two-thirds (71.7%) were not working, and 51.7% reported income equal to their expenses. Regarding health-related factors, 48.3% were smokers, 14.2% consumed alcohol, and 69.2% reported having at least one chronic disease. In addition, 65.8% had a history of previous surgery, 80.8% reported illness duration ≤10 years, and 45.8% had a family history of open-heart surgery (Table 1). The mean ASSQ score of the total sample was 29.43±5.93. Female patients, partnered individuals, and non-smokers had significantly higher surgery-specific anxiety scores (p<0.05).

Table 1. Baseline characteristics of patients and their association with surgery-specific anxiety (n=120)

Demographic and illness characteristics		n	%	ASSQ scores (mean±SD)	P value
Gender	Female	39	32.5	30.97±5.06	0.033
	Male	81	67.5	28.68±6.19	
Marital status	Partnered	106	88.3	29.83±5.66	0.039
	Single	14	11.7	26.36±7.17	
Education status	Less than high school	97	80.8	29.54±6.03	0.675
	High school and above	23	19.2	28.96±5.55	
Living place	Province	64	53.3	28.95±5.91	0.382
	District	29	24.2	29.17±6.04	
	Village	27	22.5	30.81±5.86	
Working status	Yes	34	28.3	28.82±5.94	0.487
	No	86	71.7	29.66±5.94	
Income	less than expenses	31	25.8	29.48±6.46	0.992
	equals expenses	62	51.7	29.45±6.12	
	more than expenses	27	22.5	29.30±4.98	
Smoking status	Yes	58	48.3	28.03±6.14	0.012
	No	62	51.7	30.73±5.46	
Alcohol use	Yes	17	14.2	27.76±5.94	0.214
	No	103	85.8	29.70±5.90	
Chronic disease	Yes	83	69.2	30.10±5.61	0.063
	No	37	30.8	27.92±6.40	
History of a prior surgery	Yes	79	65.8	29.13±5.85	0.446
	No	41	34.2	30.00±6.11	
Duration of disease	≤10 years	97	80.8	29.26±6.05	0.528
	>10 years	23	19.2	30.13±5.42	
Family history of open-heart surgery	Yes	55	45.8	29.44±6.12	0.985
		65	54.2	29.42±5.80	
Age:		120	mean±SD: 62.33±10.43	r: 0.135	0.142
ASSQ total		120	mean±SD: 29.43±5.93		

ASSQ, Anxiety Specific to Surgery Questionnaire; SD, standard deviation. Between-group comparisons were performed using independent samples t-tests, except for age, which was analyzed using correlation analysis.

Regarding illness identity, the most frequently reported symptoms since the onset of illness were fatigue (83.3%), pain (73.3%), breathlessness (70.0%), loss of strength (70.0%), and dizziness (69.2%). Patients most commonly attributed pain (71.7%), fatigue (63.3%), loss of strength (59.2%), and dizziness (55.0%) to their illness (Table 2).

The mean scores of the IPQ subscales are presented in Table 3. Among the opinions on the illness dimension, the highest scores were observed in the consequences (19.68±2.82) and personal control (21.66±4.05) subscales, while treatment control (19.15±2.26) and illness coherence (18.41±3.34) were moderately high. Emotional representations also had a high mean score (19.03±4.24), indicating a notable emotional impact of illness. For the causal attributions dimension, the highest scores were in risk factors (18.90±3.78) and psychological attributions (15.98±3.77), whereas accident or chance (4.15±1.02) had the lowest mean.

Based on correlation analyses, there were significant relationships between anxiety specific to surgery and several illness perception subscales (Table 4). Higher anxiety scores were posi-

tively correlated with timeline (acute/chronic) (r=0.457, p<0.001), consequences (r=0.337, p<0.001), emotional representations (r=0.569, p<0.001), timeline cyclical (r=0.219, p=0.016), and psychological attributions (r=0.270, p=0.003). In contrast, negative correlations were observed with personal control (r=-0.351, p<0.001), treatment control (r=-0.494, p<0.001), and illness coherence (r=-0.222, p=0.015). No significant relationships were found with identity, risk factors, immunity, or accident/chance.

Table 2. Illness Perception Questionnaire's Illness-identity subdimension related to illness symptoms (n=120)

Symptoms	Present since beginning Yes n (%)	Related to illness Yes n (%)
Pain	88 (73.3)	74 (61.7)
Sore throat	31 (25.8)	16 (13.3)
Nausea	23 (19.2)	24 (20)
Breathlessness	84 (70)	58 (48.3)
Weight loss	60 (50)	57 (47.5)
Fatigue	100 (83.3)	76 (63.3)
Stiff joints	60 (50)	45 (37.5)
Sore eyes	26 (21.7)	20 (16.7)
Wheezing	78 (65)	54 (45)
Headaches	67 (55.8)	45 (37.5)
Upset stomach	39 (32.5)	30 (25)
Sleep difficulties	80 (66.7)	59 (49.2)
Dizziness	83 (69.2)	66 (55)
Loss of strength	84 (70)	71 (59.2)

Table 3. Distribution of Patients' Mean Scores on the Illness Perception Questionnaire (n=120)

Illness Perception Questionnaire	Subscale	Min Max	Mean ± SD
	Identity	0-14	5.79±4.32
Opinions on the illness	Timeline (acute/chronic)	6-24	17.14±4.69
	Timeline cyclical	8-16	13.68±1.51
	Consequences	9-24	19.68±2.82
	Personal control	12-27	21.66±4.05
	Treatment control	14-25	19.15±2.26
	Emotional representations	6-24	19.03±4.24
	Illness coherence	10-25	18.41±3.34
Causal attributions	Psychological attributions	9-24	15.98±3.77
	Risk factors	7-36	18.90±3.78
	Immunity	3-10	7.22±1.53
	Accident or chance	2-6	4.15±1.02

Table 4. Relationship Between Anxiety Specific to Surgery and Illness Perception (n=120).

Variable	r	p
Identity	0.089	0.333
Timeline (acute/chronic)	0.457	<0.001
Timeline cyclical	0.219	0.016
Consequences	0.337	<0.001
Personal control	-0.351	<0.001
Treatment control	-0.494	<0.001
Emotional representations	0.569	<0.001
Illness coherence	-0.222	0.015
Psychological attributions	0.270	0.003
Risk factors	-0.105	0.254
Immunity	0.048	0.601
Accident or chance	0.120	0.191
Pearson correlation analysis was performed.		

Multiple linear regression analysis was conducted to investigate the factors associated with surgery-specific anxiety (Table 5). The final model was statistically significant (F(6,113)= 18.613, p<0.001), explaining 49.7% of the variance in ASSQ scores (R²=0.497). Higher emotional representation scores (β=0.60, 95% CI: 0.39–0.80, p<0.001) and lower treatment control scores (β=-0.95, 95% CI: -1.33 to -0.57, p<0.001) were statistically significant determinants of anxiety. Additionally, male gender (β=-1.92, 95% CI: -3.63 to -0.20, p=0.029) and being single (β=-2.54, 95% CI: -5.06 to -0.01, p=0.049) were also other factors associated with lower anxiety scores.

Table 5. Impact of Patients' Illness Perception on Anxiety Specific to Surgery (n=120)

Independent variable	B (95% CI)	SE	p
Treatment control	-0.95 (-1.33, -0.57)	0.19	<0.001
Emotional representations	0.60 (0.39, 0.80)	0.10	<0.001
Timeline cyclical	0.51 (-0.03, 1.06)	0.27	0.064
Immunity	-0.46 (-0.98, 0.07)	0.27	0.089
Gender (male)	-1.92 (-3.63, -0.20)	0.87	0.029
Marital status (single)	-2.54 (-5.06, -0.01)	1.27	0.049
Intercept	38.61 (24.55, 52.67)	7.10	<0.001

R= 0.705. R2=0.497. Adjusted R2= 0.470.
B, regression coefficient; SE, standard error; CI, confidence interval.

DISCUSSION

This study sought to investigate the association between illness perceptions and their subdimensions with surgery-specific anxiety among patients awaiting open-heart surgery, and to determine the main predictors of surgery-specific anxiety. In this cohort of adults awaiting open-heart surgery, higher surgery-specific anxiety was associated with more threatening illness representations, particularly greater emotional representations, whereas higher treatment control was associated with lower anxiety. These patterns align with contemporary evidence that cognitive–emotional appraisals of illness, per the Common-Sense Model, are robust correlates of anxiety across medical populations, including patients with CVD. A recent study in adults with congenital heart disease showed that illness perceptions explained unique variance in anxiety beyond clinical covariates, underscoring the modifiability of these cognitions (24). Our finding that timeline (acute/chronic) and timeline cyclical beliefs correlate positively with anxiety is consistent with reports that perceiving illness as persistent/recurring is linked to higher distress, while beliefs in treatment efficacy are protective in patients with cervical dystonia (25). Notably, among IPQ dimensions, emotional representations emerged as one of the strongest predictors of anxiety in our regression, dovetailing with trial evidence that emotion-focused expectations before surgery shape postoperative adjustment and symptom

reports (17). Clinically, these data support preoperative conversations that explicitly target expectations and perceived control, rather than generic information-loading (17,26).

The clinical importance of preoperative anxiety in cardiac surgery is well documented. A prospective study in cardiac surgery linked higher preoperative anxiety with greater postoperative opioid requirements, reinforcing anxiety as a modifiable driver of pain trajectories (6). Beyond analgesia, a recent meta-analysis across surgeries indicates that preoperative anxiety relates to adverse perioperative outcomes, including complications and longer length of stay, highlighting the value of systematic screening and targeted interventions (27).

Regarding interventions, a meta-analysis showed that preoperative education alleviates anxiety in patients scheduled for CABG surgery (28). Previous trials have found that preoperative education reduces anxiety and emphasized optimizing patients' expectations and perceived control as active ingredients. A clinical trial demonstrated that individualized preoperative education lowered the incidence of postoperative delirium in patients undergoing cardiac surgery (29). Consistently, a retrospective cohort in cardiovascular surgery found that a nurse-led preoperative orientation was independently associated with lower postoperative delirium and shorter hospital stays, potentially via anxiety reduction (30). That said, not all information-heavy interventions are beneficial. When untailored to patients' coping styles, conventional education may paradoxically elevate anxiety, which underscores the need for personalized, control-enhancing designs (31).

In the present study, female patients, those with partners, and non-smokers reported significantly higher levels of surgery-specific anxiety. This pattern is consistent with evidence showing that women awaiting cardiac surgery frequently experience greater preoperative anxiety than men, likely due to heightened emotional responsiveness and increased appraisal of surgical threat (5,32–34). Patients with partners may also experience increased anxiety because cardiac illness places substantial emotional and practical demands on couples. A recent study shows that relationship quality is closely associated with anxiety symptoms in both cardiac patients and their spouses, highlighting the strong interdependence of partners' emotional states (35). Additionally, another study indicates that partners of individuals with CVD often experience considerable stress, emotional burden, and reductions in mental well-being, particularly when managing complex care needs (36). Moreover, patients may worry about overburdening their partners, disruptions in shared responsibilities, or anticipated caregiving demands during postoperative recovery, which can increase their preoperative anxiety. The finding that non-smokers exhibited higher anxiety than smokers may reflect greater health awareness and lower physiological habituation to stress, whereas long-term smokers may experience transient anxiolytic effects of nicotine that blunt acute anxiety responses (37,38). These results highlight the importance of incorporating sociodemographic and lifestyle characteristics into preoperative anxiety assessment and tailoring psychosocial support accordingly.

Our results also cohere with epidemiologic estimates, meta-analytic data show high preoperative anxiety prevalence in surgical candidates, including in cardiac cohorts and in low and middle-income country contexts, implying substantial unmet need for scalable interventions (4,32). Interventions that down-regulate emotional threat appraisals and up-shift perceived treatment/personal control may reduce surgery-specific anxiety in this population. Practically, brief nurse-delivered sessions that normalize postoperative sensations, align expectations, rehearse coping/relaxation, and clarify the efficacy and limits of treatments appear reasonable first-line options (9,30). Given that "more information" is not invariably better, tailoring the interventions to the patient's coping style and literacy is crucial (31).

Limitations

There are some limitations to our study. Its correlational design does not permit causal conclusions regarding the association between illness perceptions and surgery-specific anxiety. In addition, the data were collected from a single public hospital, which may limit the generalizability of the findings to other patients and settings. Although relevant clinical variables such as previous surgical experience and disease duration were assessed, they were not included in the final regression model due to lack of statistical significance. Nevertheless, unmeasured factors such as coping styles, and social support quality may have influenced anxiety levels. Future multi-center studies with larger samples incorporating a broader range of psychosocial and clinical variables are warranted.

CONCLUSION

Our study has shown the specific subdimensions of illness perception questionnaires that are significant determinants of surgery-specific anxiety among patients awaiting open-heart surgery. In particular, increased emotional representations were associated with greater anxiety, while stronger beliefs in treatment control emerged as a protective factor. Together with demographic characteristics, these factors explained nearly half of the variance in surgery-specific anxiety scores, underscoring the importance of cognitive–emotional illness representations in shaping psychological responses to surgery.

The findings highlight the importance of routine preoperative assessment of illness perceptions. Identifying patients with high emotional burden and low perceived control may enable timely and targeted interventions to reduce surgery-specific anxiety and provide psychosocial support for preoperative preparation. Evidence-based strategies such as expectation-focused counseling, structured preoperative education, and nurse-led psychosocial interventions could be integrated into routine care to address these modifiable risk factors.

Author Contributions

SS conceptualized and designed the study. Data collection was carried out by ZÜ, EA, and CD, while SS performed the statistical analyses. SS, ZÜ, EA, and CD contributed to data analysis and interpretation. SS also provided overall supervision and coordinated the project. All authors were actively involved in drafting or critically revising the manuscript, and they collectively accept responsibility for the accuracy and integrity of the work, addressing any concerns related to its content.

Acknowledgements

The authors gratefully acknowledge all participants for their valuable contributions to this study.

Disclosure Statement

The authors declare no conflicts of interest.

Ethics Statement

The study adhered to the principles of the Declaration of Helsinki and received ethical approval from the Usak University Non-Interventional Clinical Research Ethics Committee (09 January 2025; Decision No: 524-524-02).

Data Availability Statement

Data underlying the findings of this study can be obtained from the corresponding author upon reasonable request.

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