

A Study of Perfectionism and Perceived Stress Among Cardiovascular Patients and Healthy Individuals

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ABSTRACT

This study aimed to explore the difference and relation between perfectionism and perceived stress among cardiovascular patients and healthy individuals. For the present study, a total sample of 140 individuals was selected from Dharwad and Vijayapura districts of Karnataka, India. The sample consisted of 70 individuals with cardiovascular disorders, and the remaining sample consisted of healthy individuals. To evaluate the study's hypotheses, the data were subjected to statistical procedures, including paired t-tests and bivariate correlation analyses. The results indicate that cardiovascular patients have higher levels of perfectionism and perceived stress than healthy individuals. There is no significant relationship between perfectionism and perceived stress among cardiovascular patients and healthy individuals.

Keywords: *Perfectionism, perceived stress, cardiovascular patients, healthy individuals, excessive expectations*

The cardiovascular system serves as a life-sustaining system, works as a highly developed network controlled by many subsystems under the influence of the central and peripheral autonomic nervous systems and numerous humoral factors (Berntson et al., 2017). Its main function is to supply necessary nutrients and oxygen to the body cells and remove waste products of metabolism. Circulation of the blood is sustained by a dynamic balance of controlling inputs, such as sympathetic and parasympathetic activity, balance of fluids, electrolytes, hormonal glands' messages, function of the kidneys, and pharmacological drugs (Chaudhry et al., 2021). Cardiovascular disease is a wide range of conditions that affect different areas of cardiac function, including the heart muscle, valves, coronary arteries, and electrical rhythm. Each aspect plays a crucial role in sustaining overall cardiovascular health. Lifestyle changes, drug treatment, and surgery are some of the management measures that can relieve symptoms and slow disease progression (Hall, Guyton & Hall, 2016). Coronary artery disease (CAD) and Arrhythmia are the two main categories of heart disease.

Coronary heart disease (CHD) or coronary artery disease (CAD) is one of the most common types of cardiovascular disease and is a leading cause of death worldwide, impacting both

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Received: July 25, 2025; Revision Received: August 12, 2025; Accepted: August 16, 2025

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developing and developed countries (Feigin et al., 2017). It has been estimated that CAD accounts for about 32.7% of all cardiovascular diseases and accounts for 2.2% of the overall global disease burden (Shahjehan & Bhutta, 2021). Described as an inflammatory atherosclerotic disease (Rahman et al., 2022), CAD is the narrowing or obstruction of coronary arteries, which compromises the supply of oxygen and blood to the cardiac muscle and can result in severe cardiac dysfunction. There are several types of CAD. These include myocardial ischemia and reperfusion, angina pectoris, stable or typical angina, Prinzmetal's variant angina, unstable or crescendo angina, myocardial infarction (MI) and coronary sclerosis or atherosclerosis (Rahman et al., 2022). Cardiac arrhythmias are simply irregularities in heart rhythm, either too slow (bradycardia) or too fast (tachycardia) to function properly. Even subtle changes in the dynamics or morphology of the electrocardiogram (ECG) may trigger arrhythmic episodes, which can result in symptoms of chest pain, breathlessness, and fatigue as well as, in extreme situations, loss of consciousness owing to reduced cardiac output (Anwar et al., 2018). Apart from arrhythmias and coronary artery disease, other cardiovascular ailments are also serious, leading to negative consequences in individuals. These include heart failure, cor pulmonale, hypertension, valve and inflammatory heart diseases, rheumatic heart disease, stroke, cardiomyopathy, peripheral arterial disease (PAD), and congenital heart defects (Mohan, 2018).

Perfectionism:

As per the Merriam-Webster Dictionary, perfectionism is 'the belief that moral excellence is the ultimate state of personal excellence'. It is an inclination to see anything short of perfection as insufficient. The American Psychological Association (APA) also defines perfectionism as 'the tendency to set unrealistically high or perfect performance standards for one's and/or others, often more than the circumstances reasonably demand'. Hence, a perfectionist is one who always expects perfect results and expects themselves and often others to perform at the optimal level. Perfectionism has been defined differently by different scholars with changing conceptions. Hollender (1965) first defined it as an adaptive personality trait entailing unrealistic expectations for uniformly high-level performance in all situations. Burns (1980) highlighted its compulsive aspect, observing that perfectionists tend to set unrealizable standards, measure self-worth by accomplishment, and continually reach for accomplishment despite personal sacrifice. Flett, Hewitt and Dyck (1989) theorized perfectionism as a chronic neurotic style, while Frost et al., (1990) described it as the adoption of unrealistically high personal standards, commonly involving an excessive and judgmental self-assessment process.

Perfectionism is usually viewed negatively by psychological literature because of its linkage with a host of maladaptive outcomes (Pacht, 1984). It is seen as a multidimensional personality characteristic characterized by the seeking of very high standards for performance, accompanied by a process of self-criticism. This orientation may have strong effects on a wide range of aspects of mental health and impact functioning across educational, career, and personal areas. Perfectionistic tendencies have been found to have effects on psychological health and physical health, including cardiovascular function. Perfectionism has been found to lead to maladaptive health behaviors like poor eating habits and lack of exercise that increase the risk for cardiovascular disease (Rice et al., 2013). Perfectionism has been related to increased cortisol levels, a biological indicator related to increased stress and risk for negative cardiovascular outcomes. In a longitudinal study, McGregor, Lattimore, and Harlow (2020) indicated that persons with high perfectionistic

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standards showed an increased probability of acquiring metabolic syndrome, which is a collection of conditions that heavily increase cardiovascular disease risk. Their research indicates that perfectionism-engendered dysregulation of metabolic processes is an important psychological factor in physical health susceptibility.

Stress:

The word 'stress' comes from the Latin term 'stringere', which means "to draw tight." It is defined in a broad sense as an unpleasant emotional condition that is followed by consistent changes in biochemical, physiological, cognitive, and behavioral aspects, with the goal of either changing the stressor or adjusting to its effects. Likewise, Auerbach and Grambling (1998) explain stress as 'an aversive emotional and physiological state arising in contexts perceived as harmful or threatening to one's well-being'. Feldman (2019) explains stress as 'a psychological response to events that pose a threat or challenge to an individual'. Stress is defined as a multifaceted negative process involving emotional, cognitive, behavioral, and physiological reactions that arise as an individual's attempt to adapt to or cope with stress-provoking stimuli (Bernstein et al., 2008). Hans Selye originally described the concept "stress" in terms of the body's physiological reactions and eventually broadened the term to encompass psychological perceptions and responses directed at coping with everyday challenges. Whereas stress can improve performance by encouraging people to respond to needs and perform optimally, the chronic activation of the state of heightened arousal can exact a heavy psychological and physiological price.

Stress can also be generated internally by the physical needs of the body, like effort, rapid temperature changes, or hazards of occupation and externally from socio-cultural and environmental conditions that are resistant to regulation and adaptation (Morgan et al., 2012). Provocation of an ischemic response with mental stress represents a serious risk factor for future cardiac events. Myocardial ischemia induced by mental stress adversely affects the prognosis in patients with coronary artery disease (CAD) and is related to heightened disease severity over time (Jiang et al., 1996; Legault et al., 1995). Psychosocial stress is usually defined as an imbalance or discordance in the psychosocial setting that may cause increased activation of the sympathetic nervous system, consequently leading to endothelial dysfunction (Kamarck et al., 1998; Kaplan et al., 1996). Those who had high chronic stress were shown to be at increased risk for developing hypertension and other cardiovascular diseases (Hamer & Steptoe, 2012). Increased levels of stress were correlated with increased progression of these diseases, highlighting the importance of psychological health in cardiovascular disease control. Furthermore, early childhood exposure to chronic stress was related to increased inflammation in adulthood, a known risk factor for cardiovascular disease (Miller & Chen, 2010).

Connection between Perfectionism and Stress

Individuals with maladaptive perfection tendencies typically create more stress for themselves due to how they frame achievements and failures (Hewitt & Flett, 1993). For example, both adaptive and maladaptive perfectionists tend to have higher personal standards, which can encourage them to label more circumstances as failures. They are more likely than non-perfectionists to punish themselves for these perceived failures. This pattern not only lowers their general satisfaction with performance but also decreases the potential for self-reinforcement after performances perceived as satisfactory (Hewitt & Flett, 1993). Socially prescribed perfectionism has universally been associated with high levels of stress among university students (Chang, 2006; Chang & Rand, 2000). In the research conducted

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by Flynn (1994), he discovered the effect of self-oriented perfectionism by exposing subjects with high and low levels of this characteristic to achievement-related stress tasks. The outcome revealed that participants with high levels of self-oriented perfectionism were characterized by longer physiological stress recovery from the task completion compared to those who did not possess self-oriented perfectionism, and they recovered faster.

Hewitt et al., (2002) found similar results, stating that self-oriented perfectionism increases stress vulnerability by increasing the number of experiences of stress and prolonging the duration of physiological and emotional reactions to stress. Maladaptive perfectionism is related to reduced cardiovascular reactivity to acute psychological stress (Albert, Rice, & Caffee, 2014). Perfectionists not only indicate higher levels of stress but also present enhanced and longer-lasting physiological arousal in reaction to stressors (Hewitt et al., 2002). Wirtz et al., (2007) observed perfectionism to account for a 18% variance of cortisol responses controlled by the hypothalamic–pituitary–adrenal (HPA) axis. The HPA axis regulates many vital bodily functions via an intricate feedback system, such as circadian rhythm, digestion, immune response, and stress reactivity (Smith & Vale, 2006). Cortisol is one of the main hormones regulated by the HPA axis, and it is central to the stress response. Though cortisol aids in recovery through encouragement of homeostasis after exposure to stress, overproduction or long-term release may be harmful, for instance, causing immune suppression and circadian rhythm disruption (Randall, 2010). This blunted physiological reaction, combined with increased negative affect, could increase risk for cardiac events in highly gifted persons with high levels of maladaptive perfectionism (Gullette et al., 1997; Sloan et al., 1994).

The present study:

Research focused on perfectionism and stress has been carried out mainly on adults and students. There are minimal studies on the relation between perfectionism and stress in cardiovascular patients, and no study has ever addressed the differences of these variables among cardiovascular patients and healthy controls. To bridge this research gap, the current study investigated the correlation between perfectionism and stress among cardiovascular patients as well as the variability of these variables among cardiovascular patients and healthy populations by subjecting the following hypotheses to testing.

1. Cardiovascular patients have significantly higher perfectionism than healthy individuals.
2. Cardiovascular patients have significantly higher perceived stress than healthy individuals.
3. Perfectionism and perceived stress are positively and significantly related to each other.

METHOD

Participants and procedure:

For the present study, a total sample of 140 individuals was selected from Dharwad and Vijayapura districts of Karnataka, India. The sample consisted of 70 individuals with cardiovascular disorders, and the remaining sample consisted of healthy individuals. The individuals with cardiovascular disorders were selected from both private and Government Hospitals. Whereas healthy individuals were selected from door-to-door visits in the cities mentioned above. Participants' data were collected with their informed consent, and they were assured of the confidentiality of their responses. Participation was entirely voluntary. The sample selection criteria have been mentioned below.

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Sample Selection Criteria

Inclusion Criteria:

1. Patients with cardiovascular disease within the age group of 40 to 60 years were included.
2. For the healthy individuals group, those who did not have any cardiac issues or other physical health problems were included.

Exclusion Criteria:

1. Patients with congenital heart disease from infancy or childhood were excluded.
2. Patients with cardiovascular disease with other chronic illnesses, such as arthritis, asthma, were excluded.

Measures used:

- **Demographic details:** A self-report questionnaire was employed to collect demographic details including age, gender, domicile, educational background, order of birth, marital status, religion and profession.
- **Frost Perfectionism Scale (1983):** The Frost Multidimensional Perfectionism Scale (FMPS) is a 35-item self-report instrument designed to assess four dimensions of perfectionism: concern over mistakes and doubts about actions, perceived parental expectations and evaluations, high personal standards, and an emphasis on precision, order, and organization. Responses are rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), yielding total scores between 35 and 175. The Cronbach's alpha coefficient in our sample reported $\alpha = 0.88$.
- **Perceived Stress Scale (1983):** The Perceived Stress Scale-10 (PSS-10), developed by Cohen et al., (1983), consists of 10 items designed to assess the degree to which individuals perceive their lives as unpredictable, uncontrollable, and overwhelming. Responses are rated on a 5-point Likert scale ranging from 0 ("Never") to 4 ("Very often"). Total scores range from 0 to 56, with higher scores reflecting greater levels of perceived stress. Positively worded items are reverse-scored, and the total score is calculated by summing across all items. The Cronbach's alpha coefficient in our sample reported $\alpha = 0.80$.

Statistical Analyses:

The data went through examination, coding, and scoring, followed by statistical analysis conducted using SPSS version 25. Subsequently, the dataset was screened for any anomalies. Scoring of the relevant scales was carried out following the procedures outlined in the respective manuals. To test the study's hypotheses, the resulting scores were analyzed using statistical techniques, including the paired t-test and bivariate correlations.

RESULTS AND DISCUSSION

Table 01: Mean, standard deviation and 't' value on perfectionism for cardiovascular patients (n=66) and healthy individuals (n=66).

Variable	Sample	Mean	SD	't' value
Concern over mistakes and doubts about actions	Cardiovascular patients	34.30	6.53	16.64***
	Healthy individuals	18.80	3.09	
Excessive concern with parents' expectations and evaluation	Cardiovascular patients	27.77	3.99	17.08***
	Healthy individuals	17.16	3.31	
Excessively high personal	Cardiovascular patients	22.27	4.02	12.52***

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Variable	Sample	Mean	SD	't' value
standards	Healthy individuals	14.30	2.58	
Concern with precision, order and organization	Cardiovascular patients	24.81	3.02	4.85***
	Healthy individuals	22.60	2.41	
Perfectionism	Cardiovascular patients	110.48	8.94	22.23***
	Healthy individuals	75.77	7.71	

*** = significant at 0.001 level

Table 01 depicts mean, standard deviation and 't' value of cardiovascular patients and healthy individuals on perfectionism and its dimensions. On the first dimension 'concern over mistakes and doubts about actions', the mean score for cardiovascular patients is 34.30 and standard deviation is 6.53 and the mean score for healthy individuals is 18.80 and standard deviation is 3.09. The obtained 't' value is 16.64, which is very highly significant at 0.001 level. This indicates that cardiovascular patients have higher concern over mistakes and doubts about actions than healthy individuals.

On the second dimension, 'excessive concern with parents' expectations and evaluation', cardiovascular patients reported a much higher mean score ($M = 27.77$, $SD = 3.99$) than healthy controls ($M = 17.16$, $SD = 3.31$). The t-value of 17.08 was very highly significant ($p < .001$), showing that cardiovascular patients report much higher concern about parental expectations and evaluations.

For the third dimension, 'excessively high personal standards', the mean score for cardiovascular patients was 22.27 ($SD = 4.02$), while healthy participants had a mean of 14.30 ($SD = 2.58$). The computed t-value of 12.52 was very highly significant at the 0.001 level, which implies that cardiovascular patients also have significantly higher personal standards.

For the fourth dimension, 'concern with precision, order, and organization' patients with cardiovascular disease had a mean score of 24.81 ($SD = 3.02$) and healthy subjects scored a mean of 22.60 ($SD = 2.41$). The t-value of 4.85 was very highly significant at the 0.001 level, which showed higher concern for order and organization in the cardiovascular patient group.

Lastly, regarding the overall perfectionism score encompassing the above-specified dimensions, patients of cardiovascular conditions reported significantly higher mean score ($M = 110.48$, $SD = 8.94$) than healthy patients ($M = 75.77$, $SD = 7.71$). The t-value of 22.23 was highly significant ($p < .001$), highlighting that patients with cardiovascular diseases show much higher overall levels of perfectionism.

The results of present study (table 01) align with the earlier findings of significant difference in perfectionism between cardiovascular patients and healthy individuals (Flett et al., 2016; Fry & Debats, 2009). A study conducted by Akbari, Afkhami and Barghandan (2015) also found negative perfectionism higher among cardiovascular patients in comparison with healthy individuals. The researchers found happiness and positive perfectionism scores to be lower among cardiovascular patients. In the study of Flett et al., (2016), the researchers found high levels of perfectionism among patients with coronary heart disease. In their study, they found higher levels of self-oriented perfectionism and other-oriented

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perfectionism among cardiovascular patients which correlate consecutively with the dimensions of Frost Perfectionism Scale (1983), such as excessively high personal standards and order and organization.

A long-term study conducted among older adults by Fry and Debats, (2009) reveals that those who have greater levels of perfectionism are likely to have high mortality rate than older adults with adequate levels of perfectionism. The study further concluded that high perfectionism rates among individuals lead to the emergence of chronic diseases among them namely coronary heart disease and hypertension. Higher levels of trait and self-presentational perfectionism among patients with anorexics can be found in the studies of Cockell et al., (2002). The results also support the study conducted by Munir and Arshad (2018) among patients with depression and anxiety and found high levels of maladaptive perfectionism among them.

Our study's results also align with the study examined by Albert, Rice, and Caffee, (2014) in which they found maladaptive perfectionism to be associated with a blunted cardiovascular response to acute psychological stressors. This is due to the variations in cortisol activity found by Wirtz et al., (2007). They further demonstrated that perfectionism independently explained 18% of the variability in cortisol levels, a primary hormone regulated by the hypothalamic–pituitary–adrenal (HPA) axis. This neuroendocrine system orchestrates numerous critical bodily functions—including circadian rhythms, immune responses, digestion, and stress regulation—via intricate feedback loops (Smith & Vale, 2006). In the study of Esmaili, Dehghani and Chabokinezhad (2016), researchers found negative perfectionism to be higher among the people with cardiovascular disease than the healthy individuals and there was a significant difference between these two groups. The results of our study are not consistent with the study conducted by Zahra and Besharat (2010), in which they found higher levels of perfectionism among healthy individuals.

Table 02: Mean, standard deviation and 't' value on perceived stress for cardiovascular patients (n=66) and healthy individuals (n=66).

Variable	Sample	Mean	SD	't' value
Perceived stress	Cardiovascular patients	23.46	6.53	20.10***
	Healthy individuals	10.43	3.03	

*** = significant at 0.001 level

Table 02 presents the mean scores, standard deviations, and t-value for cardiovascular patients and healthy subjects on the perceived stress measure. Cardiovascular patients had significantly higher mean scores (M = 23.46, SD = 6.53) compared to healthy subjects (M = 10.43, SD = 3.03). The t-value obtained was 20.10, which is highly significant (p < .001). The findings indicate that cardiovascular patients report significantly more stress compared to their healthy counterparts.

The results of present study are consistent with the findings of earlier studies (Mohan & Singh, 2016; Kurd et al., 2013). Mohan, Deepa and Shanti Rani (2001) found the evidence of link between life stress and coronary artery disease in their study. They noticed significant differences between cardiovascular groups and healthy controls on life events stress and daily hassles. Mohan and Singh (2014) found higher levels of stress among cardiovascular patients. Their study also revealed the relations of stress with Type A personality and hostile behavior.

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The study of Rissam, Kishore and Trehan (2001) also revealed that patients with greater levels of stress had significant increments in coronary heart disease. It concluded that high experiences of stress were associated with coronary heart disease, whereas low stress was associated with normal cardiac health. Gullette, Blumenthal and Babyak (1997) investigated the impact of mental stress on the occurrence of daily life ischemia, aiming to assess the relative risk associated with specific emotional triggers among ischemic patients. The study concluded that experiencing psychological stress such as feelings of tension, frustration, and sadness can double the likelihood of myocardial ischemia.

The results of this study also align with the inter-heart study conducted by Yusuf, Hawken and Ounpuu (2004) highlighted the influence of psychological disorders on the development of coronary artery disease, emphasizing the significant role of psychosocial stress including conditions such as depression. The study further found the rank of psychosocial stress, third among the leading risk factors for cardiovascular disease. These findings underscore a strong association between negative emotional states in the form of increased stress and the occurrence of cardiovascular events.

Table 03: Correlation coefficient for the scores of perfectionism and perceived stress for cardiovascular patients (n=66).

Variables	Perfectionism	Perceived Stress
Perfectionism	1	-0.08
Perceived Stress		1

The correlation table shows that there is no significant relationship between perfectionism and perceived stress among cardiovascular patients. The results (table 03) do not align with the findings of Albert, Rice and Caffee (2016) in which they explored how perfectionism influences blood pressure responses during repeated mental arithmetic stress tasks. The early findings indicate that students who exhibit higher levels of perfectionism may be more vulnerable to stress-related physiological issues, particularly in environments where stress is at persistent levels.

The results of this study also do not align with the biological reactivity findings of various researchers among patients with cardiovascular vulnerability. Perfectionists not only report greater perceived stress but also demonstrate increased and sustained physiological arousal when faced with stressors (Hewitt et al., 2002). Cortisol, a principal hormone regulated by the hypothalamic–pituitary–adrenal (HPA) axis, plays a vital role in managing the body’s stress response. Although cortisol supports the restoration of homeostasis after stress exposure, chronically elevated or prolonged cortisol secretion can have harmful consequences, including immune suppression and disturbances to circadian rhythms (Randall, 2010). Among intellectually gifted individuals with high levels of maladaptive perfectionism, this dysregulated physiological reactivity—coupled with intensified negative affect—may heighten vulnerability to cardiovascular events (Gullette et al., 1997; Sloan et al., 1994).

Table 04: Correlation coefficient for the scores of perfectionism and perceived stress for healthy individuals.

Variables	Perfectionism	Perceived Stress
Perfectionism	1	-0.12
Perceived Stress		1

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The correlation table shows that there is no significant relationship between perfectionism and perceived stress among healthy individuals. The results (table 04) are in line with the findings of study conducted by Sachdeva and Pandey (2022) in which they found no correlation between perfectionism and stress among undergraduate students. Xing and Cheong (2020) explored the multidimensional nature of perfectionism in relation to perceived stress and mindsets among undergraduate students. Their findings revealed that maladaptive perfectionism was significantly associated with increased perceived stress. In contrast, adaptive perfectionism showed no significant relationship with perceived stress.

Our results are against the results of study conducted by Hamblin (2018) and Finley (2020). Hamblin (2018) conducted a study involving 150 undergraduate healthy students and found a significant positive relationship among the three key variables: stress, anxiety, and perfectionism. Their study also revealed that perfectionism serves as a mediator in the relationship between stress and anxiety among college students. Finley (2020) investigated the relationship between perfectionism, perceived stress, and coping styles among nursing students. The study found a strong association between perfectionism and perceived stress, and it also revealed that higher levels of perfectionism were linked to the use of maladaptive coping strategies, such as denial, venting, self-blame, and behavioral disengagement.

Our results are in contrast with the findings of Craiovan (2013) and Schwenke (2012). The researcher conducted a study aimed at examining the relationships among perfectionism, perceived stress, burnout, and psychopathological symptoms in medical personnel. The findings indicated that perfectionistic tendencies were positively and significantly correlated with perceived stress, burnout, and psychopathological symptoms among medical professionals. Schwenke (2012) investigated the interplay between perfectionism, stress, coping resources, and burnout among sign language interpreters. The results indicated that stress serves as a mediating factor in the association between maladaptive perfectionism and burnout within this professional group meaning that the researchers have found positive correlation between perfectionism and stress. Socially prescribed perfectionism has been consistently associated with higher levels of stress in university student populations in the studies of Chang (2006) and Chang and Rand (2000).

CONCLUSION

It can be concluded that cardiovascular patients have higher levels of perfectionism than healthy individuals. Cardiovascular patients have greater perceived stress than healthy individuals. There is no significant relationship between perfectionism and perceived stress among cardiovascular patients and healthy individuals.

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Acknowledgment

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Yadahalli, S.H. & Shivakumara, K. (2025). A Study of Perfectionism and Perceived Stress Among Cardiovascular Patients and Healthy Individuals. *International Journal of Indian Psychology*, 13(3), 2086-2098. DIP:18.01.190.20251303, DOI:10.25215/1303.190