



Early onset of cardiovascular illnesses as a result of psychological stress -the current scenario.

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Abstract: Stress is an external imbalance that stimulates the body when the external danger is not eliminated, causing physical and mental damage that can lead to the destruction of life. This 21st century is too capitalistic and challenging for all individuals it may be due to drastic lifestyle changes, financial status leading to long working hours, workload pressure, and irregular sleep patterns which all lead an individual to develop psychological stress. Some studies show that age between 25 and 45 has a higher risk for mental illnesses. In this 21st century cardiovascular risks are more common due to psychological stress irrespective of age. General screening for conventional risk factors right from a young age may increase awareness and help in promoting lifestyle changes that can prevent cardiovascular diseases at the initial stages. Here presenting a case 35-year-old male diagnosed with risk of cardiovascular disease.

Index Terms: psychological stress,cardiovascular disease,young age, atherosclerosis.

Introduction:

Stress is an external imbalance that stimulates the body when the external danger is not eliminated, causing physical and mental damage that can lead to the destruction of life. Lazarus, an American psychologist, states that stress is an external demand beyond what the individual, the social system, or the body's organizational system can bear.¹ The current century is known as the "stress era" due to the high levels of stress in daily living. This 21st century is too capitalistic and challenging for all individuals, it may be due to drastic lifestyle changes, financial status leading to long working hours, workload pressure, and irregular sleep patterns which all lead an individual to develop psychological stress. Minimal amounts of stress may be Sensible, advantageous, and even healthy beyond that this psychological stress leads to many non communicable diseases like hypertension,cardiovascular diseases, and cerebrovascular diseases and finally leads to an increase in mortality and Morbidity rate². A higher prevalence of psychological distress with the increasing age (7.4% in the age 18–29 years, 10.58% in the age 30–49 years, and 14.08% in the age 50–65 years). However, these results are in contrast to some studies showing that age between 25 and 45 has a higher risk for mental illnesses³.Psychological and mental stress has been implicated as a significant risk factor in both the acceleration of atherosclerosis and a trigger for acute CVD events⁴.In accordance with the World Health Organization, India accounts for one-fifth of these deaths worldwide, especially in the younger population. The results of the Global Burden of Disease study state an age-standardized CVD death rate of 272 per 100000 population in India which is much higher than the global average of 235. Mortality associated with CAD in Asian Indians is 20–50% higher than any other population⁵. Hence, all efforts are required to be proactively taken to clearly understand the role of risk factors in the emerging epidemic and for their effective control.General screening for conventional risk factors right from a younger age may increase awareness; and help in promoting lifestyle changes that can prevent or slow the cardiovascular diseases at initial stages⁶.

Atherosclerosis is a chronic disease that can develop at an early age therefore, increasing attention is being paid to the contributions of adverse life circumstances that affect its risk and prevalence⁷. CVD is primarily caused by atherosclerosis, a chronic inflammatory disease of the arterial wall of large- to medium-sized arteries. Endothelial dysfunction is one of the earliest manifestations of atherosclerosis, contributing to its development and progression. Dyslipidemia, inflammation, obesity, hypertension, diabetes, hereditary vulnerability, and a variety of behavioral factors such as smoking, alcohol intake, and physical inactivity are all traditional risk factors for atherosclerosis⁸. Psychosocial factors such as job stress, anxiety, depression, and personality qualities are usually ignored. Here is the instance of X, a 35-year-old male who is in danger of cardiovascular disease at a young age.



Case presentation: Here is the instance of X, a 35-year-old male who was a software professional for 7 years working in 2 different shifts (day shift and night shift) working for 9 to 10 hours per day. Came to the department of physiotherapy complaining of mild chest pain on and off while working. The following data was collected from the individual initially.

Demographic data:

Name: X

Age: 35

Gender: Male

Date of assessment: 10-04-2024

Occupation: Software employee.

Duration of work (sleep quality): 9-10 hours/day (2 types of shifts)

Socioeconomic status: low

Height: 5.7

Weight: 60 kgs

BMI:20.9(Normal weight)

Personal habits: nonsmoker and nonalcoholic

Diet: mixed

Family history: no relevant family h/o

Cardiovascular parameters:

Heart rate: 89 beats/min.

Systolic blood pressure:130mmhg.

Diastolic blood pressure:100mmhg.

Respiratory rate:20 breaths/min.

Saturation of oxygen(spo2):95%

After a detailed assessment, we ruled for the risk factors no other risk factors were positive. Then the individual was given Ryff's 18-item scale of psychological well-being a widely-used scale that is designed to measure six dimensions of psychological well-being. Carol Ryff has a study on physiological well-being and psychological well-being. It is a self-report scale in which respondents read the questions and select a response by themselves. The scoring of this scale is from 1 to 7. Higher scores mean higher levels of psychological well-being. The instrument assesses six dimensions of psychological well-being: Self-acceptance, Positive Relationship with Others, Autonomy, Environmental Mastery, Purpose in Life, and Personal Growth. It took roughly three to five minutes to complete the questionnaire and the reading level between sixth and eighth grade. The scoring of this scale is from 1 to 7. Higher scores mean higher levels of psychological well-being⁹.

Discussion: According to our findings, the individual scored less in the questionnaire which determines lower levels of psychological well being along with that individual has long working hours, inconsistent sleep patterns, comes from a low-income family, works additional hours, spends a lot of time on screens, has a sedentary lifestyle, and is under a lot of pressure about the future endeavor. In terms of personality traits, he is not a socially active guy, but he is reserved and ambitious, challenging himself for future endeavors. Not being able to unwind without feeling guilty, Drive is quite competitive, with much daily planning which leads him to psychological stress. Research says that relationship between psychological well-being and cardiovascular disease in younger aged individuals¹⁰. Although stress is considered a routine characteristic of modern life, if stress becomes continuous and increasing, most individuals show problematic signs and symptoms that may endanger their health and even their surrounding people and societies. However, it has also been suggested that psychological stress in general has a direct atherogenic effect¹¹.

Amrut Swami et.al 2023 compared people who worked 35–40 hours per week, those who worked more than 55 hours per week had a 13% higher risk of having a heart attack and a 33% higher risk of having a stroke and Compared to workers who work less than 40 hours, the mental health scores among workers who work almost more than 50 to 60 hours per week worsens by up to 2.4 points. Employees who are working long hours (at least 55 to 60 per week) and who have high job expectations and stressful days of work (defined as "usually having too much work") are at higher risk of depression.¹².

Franziska Reiss et.al 2019 low Socioeconomic status relates to a higher burden in different areas of everyday life and exposure to stressful life situations. Studies concluded that negative life events and other stressors are related to socioeconomic position and lower parental education and lower household income were associated with higher stress levels irrespective of adolescent's gender¹³.

Xiang Qian Lao et.al 2018 Short sleep may trigger low-grade inflammation and lead to an increase in stress response in the hypothalamic-pituitary-adrenal axis, which may result in elevated blood pressure, interrupted blood flow, and increased risk of cardiovascular disease¹⁴.

Laura D. Kubzansky et.al 2018 Psychological well-being influences health outcomes. Self-regulation entails making appropriate cognitive, affective, and behavioral reactions in daily life and about bigger goals. These skills enable adaptive adaptation to life's challenges. Using adaptive emotion regulation strategies (e.g., cognitive reappraisal) rather than maladaptive ones (e.g., suppressing emotion expression) leads to decreased inflammation and better CVH outcomes. Having high levels of psychological well-being may also help buffer against the harmful effects of stress.¹⁵

Jean M. Twenge et.al 2018 show a negative association between screen time and psychological well-being among children and adolescents. Across a diverse array of well-being measures, including measures of self-control, relationships with caregivers, emotional stability, diagnoses of anxiety and depression, and mental health treatment, psychological well-being was progressively lower from 1 h a day of screen time to 7 or more hours a day of screen time, particularly among adolescents. The significant association between screen time and well-being may have important clinical implications for the mental and physical health of children and adolescents and for developing guidelines for specific screen time limits for older children and adolescents¹⁶. Psychosocial stress primarily activates the hypothalamic pituitary adrenocortical axis and sympathetic nervous system, which can trigger pathophysiological mechanisms that include inflammation, hemostasis, and altered metabolic and cardiac autonomic control. The behavioral and pathophysiological processes that operate between psychological distress and CVD events provide the key to understanding and treating psychological distress that aims to reduce CVD risk. These variables can be thought of as the "causes of the cause" in clinical and research work that starts with the assumption that psychological distress can cause an increase in CVD risk. Because the mediating variables are many and varied, the relative contribution of behavioral and pathophysiological processes in accounting for the distress–CVD link must be reliably established¹⁷. Although the specific biological mechanisms by which chronic stress increases cardiovascular disease risk remain unclear. However, chronic low-grade inflammatory load appears as a possible link because chronic stress exacerbates this load and leads to early progression of atherosclerosis and thrombotic complications. Inflammation plays a key role in the overall atherosclerotic step¹⁸. Lastly, the person is advised to get screened for cardiovascular disease right away immediately. Other recommendations included leading a healthy lifestyle with a balanced diet, frequent exercise, sound sleep habits, and reduced screen time. There are numerous techniques to stress management that can reduce individuals' suffering and improve their quality of life.

Conclusion: In this 21st century, cardiovascular risks are more common due to PSYCHOLOGICAL stress irrespective of age. The number of incident cases of CVD increased by 77% globally from 31.3 million cases in 1990 to 55.5 million in 2019. A higher prevalence of psychological distress with the increasing age (7.4% in the age 18–29 years, 10.58% in the age 30–49 years, and 14.08% in the age 50–65 years). However, these results are in contrast to some studies showing that age between 25 and 45 has a higher risk for mental illnesses. Mortality associated with CAD in Asian Indians is 20–50% higher than any other population. General screening for conventional risk factors right from a younger age may increase awareness; and help in promoting lifestyle changes that can prevent or slow atherogenesis. A healthy lifestyle with a balanced diet, regular exercise, good sleeping practices, and less screen time were among the other suggestions. Numerous stress-reduction strategies can lessen people's suffering and enhance their quality of life.

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