

4.4. Socioeconomic and subjective social status

Low socioeconomic status (SES) is an independent risk factor for CVD.⁷⁴ Subjective social status (SSS), which refers to the 'individual's perception of his or her own position in the social hierarchy',⁷⁵ is also an important mediator of CVD risk. Risk appears to be mediated through lifestyle pathways, however, it is increased via delayed or poor CVD management.⁷⁶ Whilst healthcare professionals may be limited in their ability to address these factors, there remains a need to advocate for social policies to address inequalities in SES for those with such a remit.

4.5. Perceived discrimination

Lifetime discrimination (experiences of unfair treatment in various life domains) and everyday discrimination (frequency of day-to-day occurrences of perceived unfair treatment), and related features like social stigmatization, have been linked to CVD.⁷⁷ Multiple studies have demonstrated that lifetime discrimination increases CVD risk or all-cause mortality even after adjustment for important confounders.^{77–80} The strength of the evidence suggests that discrimination is important, thus people describing discrimination in the clinical setting should be appropriately counselled in terms of prevention of health hazards.

4.6. Mental stress through impaired social relationships

There are multiple avenues through which mental stress can drive CVD risk and prognosis. Important categories of mental stress are summarized below.

4.6.1. Adverse childhood experiences

Adverse childhood experiences (ACEs) are broadly defined as 'childhood events, varying in severity and often chronic, occurring in a child's family or social environment that cause harm or distress, thereby disrupting the child's physical or psychological health and development'.⁸¹ These events include physical, sexual, or emotional abuse, neglect, caregiver mental illness, and domestic violence.⁸¹ Several studies comparing adults with and without ACEs exposure have shown higher incidence of CVD, type 2 diabetes mellitus, depression, and all-cause mortality.^{82–86} Healthcare professionals must be aware of the relationship between ACEs and CVD, and if described during clinical interview they should raise awareness to the potential health ramifications and refer these individuals to the appropriate preventative services.

4.6.2. Partnership violence

Intimate partner violence is associated with a greater prevalence of mental health conditions,⁸⁷ and appears to be an additional stressor that directly and indirectly impacts women's CV health. However, the findings across studies are inconsistent.⁸⁸ Although the evidence is more limited in males, experiences of intimate partner violence, whether as victim or perpetrator, have been linked to increased CVD risk.⁸⁹

4.6.3. Loneliness and social isolation

Loneliness is defined as a 'subjective negative experience that results from inadequate meaningful connections, where "inadequate" refers to the discrepancy or unmet need between an individual's preferred and actual experience'.⁹⁰ Social isolation whilst conceptually similar is defined as 'an objective "lack" or "absence" of social contact or

relationships'.⁹¹ Evidence from meta-analyses and population-based cohort studies have determined that both loneliness and social isolation are associated with increased CVD risk.^{92,93} Healthcare professionals should be aware of the potential impact these experiences have on CVD risk. Social prescribing may be a potential intervention to improve social isolation and loneliness as discussed in Section 5.

4.7. Mental health conditions and personality traits as risk factors for cardiovascular disease

4.7.1. Depression

The WHO defines depressive disorder as a common mental condition that involves a low mood or loss of pleasure or interest in activities for long periods of time.⁹⁴ Common symptoms are feelings of sadness, emptiness, hopelessness, having trouble concentrating, losing interest in things that one used to enjoy, feeling worthless, guilt, and experiencing disrupted sleep.⁹⁴ Depressive mood is a normal reaction to severe adverse life events and problems (i.e. divorce, job loss). Diagnostic criteria for depressive disorders are shown in [Supplementary data online, Table S1](#). The prevalence of depression is estimated to be 4.4% in the general population (in total, 322 million globally) posing a significant public health challenge.⁹⁴ Depression has been shown to be as strong a CV risk factor as traditional somatic risk factors.^{95,96} Large observational and case-control studies demonstrate that depression is independently associated with incident CVD, all-cause mortality, and combined CVD/mortality outcome, with hazard ratios (HRs) or ORs ranging from 1.14 to 1.55.^{56,97} Meta-analyses have shown depression to confer increased risk for incident HF, new-onset and recurring atrial fibrillation (AF), ventricular tachycardia/fibrillation, and sudden cardiac death (SCD).^{98–101}

4.7.2. Anxiety

Anxiety is an emotion characterized by worrying that may be accompanied by non-specific physical and psychological symptoms such as restlessness, fatigue, difficulty concentrating, irritability, muscle tension, or sleep disturbances.¹⁰² If it is intense and sudden, anxiety may present as a panic attack, with palpitations, shortness of breath, dizziness, chest pain, lightheadedness, or a dying sensation lasting several minutes.¹⁰³ Fear and anxiety are closely related phenomena, but differ in terms of their orientation in time. Anxiety is 'future-oriented' (i.e. perceived/anticipated threats), whilst fear is a reaction to a perceived imminent threat in the present.¹⁰⁴

Anxiety or fear-related disorders are characterized by excessive fear and anxiety that cause distress or impairment in functioning. These disorders include generalized anxiety, panic disorder, agoraphobia, specific phobia, social anxiety disorder, separation anxiety, selective mutism, and other related disorders. Multiple studies and meta-analyses have shown that anxiety and anxiety disorders (together or individually) are associated with increased risk of CVD and/or CV mortality.^{105–109} The relationship between anxiety and arrhythmias or HF is less clear with mixed findings.^{100,109–111} Panic disorders and panic attacks have also been associated with incident CVD events.¹¹² Overall, evidence suggests that the link between anxiety or fear and CVD risk is sufficient that healthcare professionals should be aware of the relationship and consider early screening as clinically indicated. Diagnostic criteria for anxiety and fear-related disorders can be found in [Supplementary data online, Table S2](#).