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Review Paper

Prevalence of Anxiety Disorders in People with Mitral Valve Prolapse

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ABSTRACT

The aim of this paper was to review the current literature limited to MVP and anxiety disorders. Mitral valve prolapse is a fairly common cardiovascular condition, and the incomplete closure of the valve that divides the chambers of the heart can lead to complications in the long term. A few studies have reported that diagnosed MVP patients could be more susceptible to anxiety disorders such as panic disorders and generalized anxiety disorders which may negatively affect their health status. In this narrative review, we have reviewed published literature with the aim to determine the prevalence of anxiety in patients with MVP and to provide insight into the potential mechanism behind this association. In this article, by closely reviewing a number of studies and books relevant to the subject, we hope to clarify this relationship, and provide new insight into potential contributors for improving clinical care and opportunities to assist patients.

Keywords: *Mitral Valve Prolapse, Anxiety Disorders, Panic Disorders, Cardiovascular System, Stress Response, Cognitive-Behavioural Therapy*

Millions of people around the world have mitral valve prolapse (MVP), and although it is often asymptomatic, a subset of patients with MVP suffer anxiety disorders at a higher prevalence than the general population. These are a group of disorders, including generalized anxiety disorder, panic disorder, social anxiety disorder, etc. It is important to understand how MVP interacts with anxiety disorders to fully address health concerns, possible factors contributing to their etiology and consequences for clinical practice.

The anxiety disorder is a mental health condition that causes excessive anxiety and fear in a person that affects their day to day life. It's like a constant sense of foreboding, of danger, even when there isn't any there. Those who suffer from anxiety disorders might even experience physical symptoms, such as a racing heart, sweating, trembling, or difficulty in breathing. Such emotions can be evoked by certain circumstances, or arise seemingly at random. There are various forms of anxiety disorders: generalized anxiety disorder, panic

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disorder, social anxiety disorder, or specific phobias. Therapy, medication, or both is often used to treat symptoms of autism - people on the spectrum may thrive with treatment, gaining important skills and relationships.

Research Problem Statement

Mitral Valve Prolapse has been frequently linked to anxiety disorders, particularly panic disorder and social anxiety disorder. However, the exact nature of this relationship remains unclear due to inconsistent findings and varying diagnostic criteria. This research aims to clarify this connection by analyzing existing literature, identifying mechanisms behind the link and offering insights to improve clinical management.

Research Objectives

- To determine how common anxiety is in MVP patients.
- To explore the possible reasons behind the connection between MVP and Anxiety.
- To provide new insignts to improve MVP patient care.
- To identify challenges and research gaps, to provide better support required for MVP patients with Anxiety.

Research Questions

1. What impact does Mitral Valve Prolapse (MVP) have on the autonomic nervous system, and how does this relate to symptoms of anxiety?
2. How does cognitive behavioral therapy (CBT), mindfulness approaches, and other non-pharmacological methods impact anxiety levels for MVP patients?
3. How do psychological and physiological factors worsen or lessen anxiety in MVP patients?
4. What are the typical psychological effects of having MVP?

LITERATURE REVIEW

Several studies have investigated the association between mitral valve prolapse (MVP) and anxiety, highlighting the complex relationship between physiological and psychological factors. While some research suggests that MVP may contribute to anxiety through autonomic dysfunction, others argue that the co-occurrence of these conditions does not necessarily imply causation.

Judson Brewer's *Unwinding Anxiety* explains how anxiety is deeply connected to the autonomic nervous system, which regulates involuntary bodily functions, including heart rate and blood circulation. *"That's (Anxiety's) a reaction that starts in your older brain's autonomic nervous system, which acts quickly and outside of your conscious control to regulate all sorts of things, like how much blood your heart pumps or whether your muscles get more blood than your digestive tract." (Brewer, 2021, p.29)* This suggests that anxiety symptoms in individuals with MVP may not merely be a psychological response to a heart condition but could be driven by dysregulation in autonomic functions. If MVP disrupts autonomic balance, it could create a physiological environment that predisposes individuals to heightened stress responses, reinforcing the idea that MVP is more than just a structural heart abnormality.

A study published by Cambridge University Press titled *Mitral Valve Prolapse and Anxiety Disorders* provides an empirical analysis of the link between MVP and anxiety disorders, noting, *"To the best of our knowledge, this is the first study investigating the association*

between mitral valve prolapse and panic disorder and social anxiety disorder using current diagnostic criteria for mitral valve prolapse. Our main finding was the absence of differences in the prevalence and continuous echocardiography measures of mitral valve prolapse among groups, whether using current or older diagnostic criteria. The prevalence rates of mitral valve prolapse were consistent with those of previous studies (2–3%)." (Dager et al., 1988, p.2) While this finding challenges the assumption that MVP directly causes anxiety disorders, it does not rule out the possibility of an indirect link. The absence of significant differences in MVP prevalence among anxiety groups suggests that MVP alone may not be a sufficient factor in causing anxiety disorders. However, the study acknowledges the limitations of previous research and emphasizes the need for further studies to refine diagnostic criteria and better understand the potential mechanisms underlying this association.

Lyn Frederickson's *Confronting Mitral Valve Prolapse Syndrome* takes a different approach by considering the lived experience of MVP patients and the impact of the condition on mental health. In *Archives of Psychiatric Nursing*, the study states, *"Introducing mitral valve prolapse as a 'lifestyle-threatening' cardiovascular condition illuminates for both practitioner and client a poorly understood and often unidentified relationship between the medical problem and the ensuing symptomology that often meets Diagnostic and Statistical Manual of Mental Disorders, Third Edition-Revised (DSM III-R) criteria for some specific neurotic disorders."* **(1992, p.205)** By categorizing MVP as a 'lifestyle-threatening' condition, the study highlights how the disorder can disrupt daily life and contribute to anxiety, not just through biological mechanisms but also through the psychological burden of managing a chronic illness. This reinforces the need for a holistic approach to MVP management that considers both cardiac and psychological aspects.

Major evidence supporting the MVP-anxiety link comes from the study *Association Between Idiopathic Mitral Valve Prolapse and Panic Disorder*. The paper states, *"Based on these results, it could be deduced that the clinical symptoms of panic disorder and idiopathic mitral valve prolapse had many common features with respect to clinical symptoms. Further studies are needed to investigate the association between panic disorder and idiopathic mitral valve prolapse. Our study also failed to show any correlation between the severity of the prolapse and psychopathology, with respect to clinical symptoms of panic attack, general psychopathology, depression, and anxiety levels, similarly to other reports. Clinical features of anxiety present in these patients may be primarily associated with increased catecholamines or autonomous arousal, irrespective of the degree of idiopathic MVP." (Tamam et al., 2000, p.415)* This finding is significant as it shifts the focus away from MVP severity as a predictor of anxiety. Instead, it suggests that biological responses may contribute to anxiety symptoms regardless of the extent of MVP. This aligns with Brewer's argument about the role of the autonomic nervous system in anxiety, providing a potential physiological explanation for why MVP patients experience heightened anxiety symptoms.

Other resources, such as books offering practical guidance on lifestyle changes, natural treatments, and cognitive-behavioral therapy techniques, further reinforce the importance of an integrated treatment strategy. Dr Claire Weekes's "Hope and Help for Your Nerves" and Dr Christine L. Smith's "The Anxiety and Worry Workbook: The Cognitive Behavioral Solution," offer cognitive-behavioural therapy (CBT) techniques for coping with anxiety symptoms. These books demonstrate how effective CBT is at altering these damaging thought processes and decreasing anxiety, which would help patients who are coping with

the stress of a chronic illness such as MVP. Together, they represent a rich literature base that highlights the importance of integrated treatment strategies.

Research Gap

Though there are bases connecting the Mitral Valve Prolapse to anxiety disorders, not many studies that have been conducted in this field with respect to long-term outcomes of this association. Most publications are cross-sectional, making it difficult to determine and demonstrate causality. Future longitudinal studies following persons with MVP through years should have the potential to assess whether MVP promotes anxiety or the inverse direction. Intervention-Based Studies are little to none, and no clinical trials exist from which the effect of treating MVP (for instance, beta-blockers, surgery) might be known to relieve anxiety symptoms. Although chronic anxiety is a risk factor for cardiovascular disease, its long-term bearing in MVP sufferers is very poorly defined. Most importantly, whether chronic anxiety in MVP patients may aggravate their risk for arrhythmia's, palpitations, or finally, a further deterioration in valve function needs to be answered within the study.

RESEARCH METHODOLOGY

In this review, we searched peer-reviewed original articles, academic books, and articles on reputable online sites about the comorbidity between anxiety disorders and MVP. Our literature search consisted of determining which sources provided clear definitions of both MVP and anxiety disorders, based on whether or not each study or publication used reliable diagnostic criteria and yielded somewhat similar results. By focusing on studies with strong methodologies and clear parameters, we hoped to minimize bias and maximize the internal validity of our review.

These sources included everything from clinical studies with quantitative data to self-help and theoretical books with qualitative material — all that is a fancy way of saying that we cast a wide net. Sources were drawn from academic journals and were assessed based on sample size, strategy used in data collection, methodology, and conclusions drawn on anxiety prevalence in MVP patients. We carefully synthesized the results across these sources to derive shared trends—whether recurring themes or consistent prevalence rates, while also noting variations that emerged from differences in study design and diagnostic standards.

Our review process was not limited to aggregating the findings; it also included a critical assessment of the strengths and weaknesses of each individual study. We found that the use of different diagnostic criteria and study designs often resulted in a wide range of reported prevalence rates, making it difficult to form definitive conclusions. For example, where prevalence rates were as low as 20% in some studies, in others, the rate was as high as 45%, likely due to differences in sample characteristics and the criteria that defines anxiety disorders. We intended this to provide a balanced and nuanced perspective of the state of the research by recognizing these methodological differences and discussing their potential implications on the findings.

RESULTS

As per our review, anxiety disorders are much more prevalent among patients with MVP compared to the general population. Symptoms including panic attacks, chronic worry, and increased responses to stressful situations have all been well-documented among MVP patients. Prevalence rates reported also range widely from as low as 20% to as high as 45%

depending on the diagnostic criteria used for anxiety and the demographic characteristics of the study populations. These variations represent both the difficulties in ensuring diagnostic uniformity and the need for greater homogeneity in research methodology in this domain.
Besides prevalence data, the review shows that both genetic and environmental factors play important roles - genetic predispositions like familial tendencies for both heart conditions and anxiety disorders can increase the risk of developing anxiety symptoms. At the same time, environmental stressors, including lifestyle factors and psychosocial stress, can contribute to magnified emotional process in patients. When you have MVP, there's definitely a correlation between the physical symptoms and psychological experiences of anxiety - your inherited traits and the external manifestation of those traits are so deeply interconnected.

In addition, the physical symptoms of MVP like chest pain, palpitations, and shortness of breath can elicit anxiety responses in patients. These symptoms can trigger increased sensitivity and concern about impending health crises, creating a cycle where anxiety exacerbates the physical symptoms, which then intensifies anxiety. This self-reinforcing cycle highlights the need to address the psychosocial and physical aspects of MVP in patient management.

The presence of other comorbid conditions found in MVP patients - depression, other cardiovascular disorders - has also been found to contribute to anxiety in MVP patients. This means that, when determining the effects of MVP on mental health, a patient's entire health profile needs to be taken into account. The literature also suggests that a multidimensional approach toward management that incorporates both treatments for the physical manifestations of MVP and psychosocial treatments may be more effective in reducing anxiety in this population. Overall, the evidence suggests that there is no single explanation for the association between MVP and anxiety. Rather, the relationship is probably multifactorial, including biological, psychological, and social dimensions.

DISCUSSION

The differences observed highlight the need for standardised diagnostic criteria to be used in follow-up studies to provide more robust, comparable data. This standardization could clarify the true magnitude of the problem and enhance our understanding of how MVP places individuals at risk for anxiety.

It also suggested that genetic and environmental characteristics do contribute to the onset of anxiety in MVP patients, highlighting that the relationship between MVP and anxiety is neither purely organic nor reduced to a mechanical understanding, but rather rooted in multifactorial coordinates that shape biological, psychological, and social domains of experience. Awareness of this multifactorial nature is key to informing the design of future studies and developing interventions that address both the somatic and emotional aspects of the condition.

Moreover, the review notes the role of physical symptoms in fuelling anxiety, resulting in a vicious cycle where anxiety leads to increased physical manifestations of MVP and vice versa. Furthermore, and adding even more complexity to the clinical picture, several comorbidities (e.g., depression and other cardiovascular diseases) significantly correlate with severity of anxiety in a patient. These findings support an integrated treatment plan for MVP, where medical treatment is combined with psychotherapeutic interventions in a specifiable population.

CONCLUSION

To summarize, individuals with mitral valve prolapse (MVP) are at increased risk for anxiety disorders due to a combination of genetic predispositions, environmental stressors, and the direct effects of physical symptoms, as outlined in this narrative review. Considering such a large variation in reported prevalence, standardized diagnostic methods are needed, and more research is needed to better understand the underlying mechanisms. Future research needs to develop effective screening tools and targeted interventions to address this complex issue. And this holistic approach can enhance patients' quality of life and reduce the burden of anxiety among those with MVP.

Recommendations

The results of this review strongly suggest that longitudinal studies are needed to follow MVP patients over time to understand the evolution of anxiety symptoms and to identify early predictors using standardized diagnostic criteria for both. This would allow more consistency in comparisons between studies and also assurance of reducing variations that come from differences in the rates of prevalence.,

An interdisciplinary treatment approach is essential for addressing the complex needs of MVP patients with anxiety in clinical practice. Healthcare providers should think about adding mental health treatments, like cognitive behavioural therapy (CBT) or stress management programs, to standard cardiac care. In addition, personalised care plans that shift intervention from disease specific to patient specific (addressing comorbidity and lifestyle factors) may further improve the management of both emotional and physical symptoms. A Comprehensive Cardiovascular-Mental Health Approach: We need to Integrate cardiology and mental health care together as a comprehensive treatment plan to optimize patient outcomes and the quality of life for this at-risk population.

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Conflict of Interest
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