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# QUALITY OF LIFE AND MANAGEMENT STRATEGIES IN PATIENTS WITH OBSTRUCTIVE HYPERTROPHIC CARDIOMYOPATHY: A CLINICAL AND PSYCHOSOCIAL PERSPECTIVE

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## Abstract

***Objective:*** *The present study aimed to evaluate the impact of clinical and psychosocial management strategies on the quality of life of patients diagnosed with obstructive hypertrophic cardiomyopathy, examining how pharmacological, lifestyle, and psychosocial factors collectively shape physical and emotional outcomes.*

***Methodology:*** *A cross-sectional analytical study was conducted among 160 adult patients with confirmed obstructive HCM at Pakistan Ordnance Factories (POF) Hospital, Wah Cantt. Data were collected using structured questionnaires, including the Short Form-36 Health Survey (SF-36) for quality of life, the Patient Health Questionnaire-9 (PHQ-9) for depression, and the Perceived Social Support Scale. Information regarding pharmacological, surgical, lifestyle, and psychosocial management strategies was obtained through interviews and medical record reviews. Descriptive statistics, t-tests, ANOVA, correlation analysis, and multivariate linear regression were applied using SPSS version 22, with a significance threshold of $p < 0.05$.*

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***Results:*** *Participants demonstrated moderate overall quality of life, with mean SF-36 scores ranging from 56.77 (general health) to 68.12 (bodily pain). Internal reliability across domains was high (Cronbach's* $\alpha$ *= 0.80–0.89). Pharmacological therapy was the most common management strategy (93.8%), followed by lifestyle modification (68.8%) and psychosocial counseling (25%). Patients receiving combined medical, lifestyle, and psychosocial interventions reported significantly higher quality of life (M = 71.40, SD = 16.10) compared to those receiving only medical therapy (M = 59.84, SD = 14.22,* $p < .001$*). Depression was negatively correlated with quality of life (*$r = -0.62$*,* $p < .001$*), while social support (*$r = 0.48$*,* $p < .001$*) and education (*$r = 0.28$*,* $p = 0.012$*) showed positive associations. Regression analysis identified depression (*$\beta = -0.34$*,* $p < .001$*), social support (*$\beta = 0.27$*,* $p = 0.001$*), and combined management strategy (*$\beta = 0.29$*,* $p < .001$*) as significant predictors of quality of life, explaining 46% of the variance (*$R^2 = 0.46$*).*

***Conclusion:*** *This study demonstrates that depressive symptoms and limited social support substantially reduce the quality of life among patients with obstructive hypertrophic cardiomyopathy. Conversely, a comprehensive management approach integrating medical, lifestyle, and psychosocial interventions markedly enhances physical and emotional well-being. These findings highlight the necessity of adopting a multidimensional, patient-centered care model that incorporates psychological assessment, counseling, and social support within routine cardiology practice to optimize outcomes for individuals living with obstructive HCM.*

## INTRODUCTION

Obstructive hypertrophic cardiomyopathy (HCM) is a genetic cardiac disorder characterized by asymmetric hypertrophy of the left ventricle, most commonly involving the interventricular septum, which leads to dynamic left ventricular outflow tract obstruction, diastolic dysfunction, myocardial ischemia, mitral regurgitation, arrhythmias, and an increased risk of sudden cardiac death (1, 2). It is one of the most prevalent inherited cardiac diseases, affecting approximately 1 in 200–500 individuals, and exhibits substantial heterogeneity in morphology, symptom burden, and prognosis (1). The obstructive form of HCM (oHCM) is associated with marked symptomatology, including exertional dyspnea, chest pain, palpitations, syncope, and reduced exercise capacity, which significantly impair daily functioning and health-related quality of life (2, 3). Although advances in diagnostic imaging, risk stratification, pharmacological therapy, and interventional procedures have improved survival and reduced complications, the broader psychosocial impact of living with obstructive HCM, including anxiety, depression, social limitations, and lifestyle restrictions, remains underexplored (4, 5).

Studying the quality of life in patients with obstructive HCM is particularly important because survival outcomes alone do not capture the comprehensive burden of disease. Patients face substantial limitations in physical activity and daily functioning, and many experience fear of sudden cardiac death, emotional distress, and social restrictions, which are often overlooked in conventional clinical management (3, 6). Prior research has examined HRQoL in HCM populations using tools such as the Kansas City Cardiomyopathy Questionnaire (KCCQ) and SF-36, demonstrating moderate to severe impairments in both physical and mental health domains (1, 3). Interventional therapies, such as surgical septal myectomy or alcohol septal ablation, have shown significant

improvement in HRQoL, highlighting the clinical relevance of symptom alleviation (7). However, most studies have been cross-sectional, with limited attention to longitudinal outcomes, and few have integrated clinical, lifestyle, and psychosocial strategies to evaluate their combined impact on patient-reported outcomes (5, 6). Moreover, research from low- and middle-income countries is scarce, leaving gaps in understanding how sociocultural and health system factors influence adherence, management, and quality of life in these populations.

The management of obstructive HCM requires a multidimensional approach encompassing pharmacologic therapy, interventional procedures, lifestyle modification, and psychosocial support. First-line pharmacotherapy typically includes beta-blockers and non-dihydropyridine calcium channel blockers, with disopyramide reserved for refractory symptomatic patients, while septal reduction therapies such as surgical myectomy or alcohol septal ablation are considered when symptoms persist despite optimal medical therapy (2, 8). Emerging myosin inhibitors, such as mavacamten, have shown promising results in reducing gradients and improving symptoms (1, 9) Beyond clinical interventions, patient education, activity counseling, mental health screening, and psychosocial support are increasingly recognized as crucial components to optimize adherence, coping, and overall well-being (4, 10). Despite these advances, few studies have systematically assessed how the integration of clinical, lifestyle, and psychosocial strategies collectively influences quality of life, leaving a gap in patient-centered management approaches.

This study was therefore designed to evaluate the impact of comprehensive management strategies on the quality of life in patients with obstructive HCM. The rationale is to address existing research gaps by focusing on both clinical and psychosocial interventions and their influence on patient-reported outcomes, especially in a setting where sociocultural factors may significantly affect disease management. The significance of the study lies in its potential to inform holistic care models that integrate medical therapy, lifestyle guidance, and psychosocial support to enhance overall patient well-being. The aim of the study is to assess the relationship between clinical and psychosocial management strategies and the quality of life in patients with obstructive HCM. Specific objectives include assessing baseline HRQoL, documenting the clinical and psychosocial management strategies employed, examining associations between clinical parameters, lifestyle adherence, and HRQoL, evaluating the effect of psychosocial support on patient-reported outcomes, and identifying modifiable predictors of improved quality of life to guide future patient-centered care approaches.

## Methodology

The present study was designed to evaluate the impact of clinical and psychosocial management strategies on the quality of life of patients diagnosed with obstructive hypertrophic cardiomyopathy (HCM). A cross-sectional analytical design was adopted to assess how different management approaches, including pharmacological, surgical, lifestyle, and psychosocial interventions, influence the physical and emotional well-being of patients living with this chronic condition.

The study was conducted at the cardiology outpatient department and inpatient wards of the Pakistan Ordnance Factories (POF) Hospital, Wah Cantt. Ethical approval for the research was obtained from the Ethical Review Committee of Wah Medical College prior to data collection. The

study population comprised adult male and female patients aged between 18 and 75 years who had a confirmed diagnosis of obstructive hypertrophic cardiomyopathy established through echocardiographic and clinical criteria. Participants were recruited consecutively from both rural and urban areas of Wah Cantt and its surrounding regions to ensure diversity in socioeconomic and environmental representation.

Inclusion criteria required that participants have a confirmed diagnosis of obstructive HCM, be in a stable clinical condition, and be able to comprehend and respond to the study questionnaires in either Urdu or English. Patients with non-obstructive forms of HCM, severe cognitive impairment, acute decompensated cardiac status, or life-threatening comorbid illnesses such as advanced malignancy were excluded. Additionally, patients who had undergone major cardiac interventions within the previous four weeks or those unwilling to provide written consent were also excluded.

Data collection was performed using a combination of self-reported and interviewer-administered instruments. A comprehensive demographic and clinical data sheet was designed to gather information regarding age, gender, marital status, education level, occupation, socioeconomic status, residence (rural or urban), height, weight, body mass index (BMI), comorbid conditions such as hypertension and diabetes, lifestyle habits, duration of illness, current medications, surgical interventions, and frequency of hospital visits. The sheet also included questions related to living environment, adherence to medical recommendations, and access to psychosocial support.

Quality of life was measured using the Short Form-36 Health Survey (SF-36), a widely validated tool assessing eight domains of physical and mental health. In addition, the Patient Health Questionnaire-9 (PHQ-9) was used to assess depressive symptoms, while the Perceived Social Support Scale captured the degree of emotional and social assistance available to patients. A management strategies checklist was also utilized to document each participant's ongoing treatment modalities, including pharmacological therapy, lifestyle modifications, surgical procedures, cardiac rehabilitation, and counseling or educational interventions.

All participants were approached during their routine visits to the cardiology department. After obtaining informed written consent, interviews were conducted in a private and comfortable setting. Each participant's medical record was reviewed with permission to verify diagnosis, treatment regimen, and relevant clinical data. Anthropometric measurements were taken using standardized procedures. To ensure reliability and consistency, data collectors were trained in questionnaire administration and confidentiality protocols. Data were checked daily for completeness, and participants with high psychological distress were referred to counseling or psychiatric services as needed.

Collected data were entered and analyzed using IBM SPSS Statistics (Version 22). Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize demographic and clinical characteristics. Internal consistency of multi-item scales such as the SF-36 and PHQ-9 was tested using Cronbach's alpha. Inferential analyses were performed to examine associations between management strategies and quality of life outcomes. Paired sample t-tests Pearson's or Spearman's correlation coefficients and Multiple linear regression analysis was use to analyses data.

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## Results

**Table 1**

**Descriptive Statistics and Reliability of Quality-of-Life Measures (n = 160)**

| SF-36 Domain | M | SD | Minimum | Maximum | Cronbach's α |
|---|---|---|---|---|---|
| Physical Functioning | 62.45 | 18.73 | 25 | 95 | 0.89 |
| Role Physical | 59.88 | 21.41 | 15 | 100 | 0.85 |
| Bodily Pain | 68.12 | 19.27 | 20 | 100 | 0.82 |
| General Health | 56.77 | 16.34 | 20 | 95 | 0.80 |
| Vitality | 60.19 | 15.12 | 25 | 90 | 0.86 |
| Social Functioning | 65.73 | 17.04 | 30 | 100 | 0.88 |
| Role Emotional | 63.55 | 19.81 | 10 | 100 | 0.83 |
| Mental Health | 66.28 | 16.58 | 20 | 100 | 0.87 |

Table-1 shows the descriptive statistics presented for the quality-of-life assessment among patients with obstructive hypertrophic cardiomyopathy (HCM) indicate moderate overall functioning across the eight domains of the SF-36. Physical functioning showed a mean score of 62.45 (SD = 18.73), suggesting that many patients experienced moderate physical limitations due to their condition. Similarly, role physical and bodily pain domains had mean scores of 59.88 and 68.12, respectively, indicating that while some patients managed physical pain relatively well, their ability to perform physical roles was somewhat impaired. The general health domain reflected a mean of 56.77, revealing a modest perception of overall health. Mental and emotional well-being appeared slightly higher, with mental health averaging 66.28 and social functioning 65.73, suggesting that patients generally maintained a reasonable degree of emotional and social adjustment. The reliability of all SF-36 subscales was strong, with Cronbach's alpha values ranging from 0.80 to 0.89, confirming the internal consistency and reliability of the instrument for this patient group.

**Table 2**

**Distribution of Clinical and Psychosocial Management Strategies Among Participants (n = 160)**

| Management Strategy | n | % |
|---|---|---|
| Pharmacological (Beta-blockers, CCBs, Disopyramide) | 150 | 93.8 |
| Surgical Septal Myectomy | 12 | 7.5 |
| Alcohol Septal Ablation | 8 | 5.0 |
| ICD or Pacemaker Implantation | 10 | 6.3 |
| Lifestyle Modification (Exercise Restriction, Hydration Care) | 110 | 68.8 |
| Cardiac Rehabilitation Attendance | 36 | 22.5 |
| Psychosocial Counseling / Education | 40 | 25.0 |

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| Management Strategy | n | % |
|---|---|---|
| Combined Medical + Lifestyle/Psychosocial Approach | 95 | 59.4 |

Table-2 shows that the pharmacological treatment was overwhelmingly the most common approach, adopted by 93.8% of the participants, highlighting its role as the cornerstone of obstructive HCM management. Beta-blockers, calcium channel blockers, and disopyramide were the most frequently prescribed medications aimed at symptom control and obstruction reduction. Lifestyle modification, including exercise restriction and proper hydration, was reported by 68.8% of patients, emphasizing the importance of behavioral adjustments in symptom management. Only a small proportion underwent invasive procedures such as septal myectomy (7.5%) or alcohol septal ablation (5.0%), reflecting their use in more severe or refractory cases. Psychosocial counseling and cardiac rehabilitation were adopted by 25% and 22.5% of patients, respectively, showing a relatively low integration of these supportive strategies. Notably, 59.4% of the participants reported using a combined medical, lifestyle, or psychosocial approach, suggesting that multimodal management is increasingly recognized for its benefits in improving overall outcomes.

**Table 3**
**Comparison of Mean Quality of Life Scores by Management Strategy (n = 160)**

| Management Strategy | N | Mean SF-36 | SD | p-value |
|---|---|---|---|---|
| Medical Treatment Only | 65 | 59.84 | 14.22 | — |
| Medical + Lifestyle Modification | 50 | 67.23 | 15.07 | — |
| Medical + Lifestyle + Psychosocial Support | 45 | 71.40 | 16.10 | < .001 |

Table-3 show mean quality of life scores by management strategy revealed that patients who received a combination of medical, lifestyle, and psychosocial interventions reported the highest SF-36 total score (M = 71.40, SD = 16.10), significantly higher than those receiving medical treatment alone (M = 59.84, SD = 14.22) or those combining only medical and lifestyle modification (M = 67.23, SD = 15.07), with a p-value less than .001.

**Table 4**
**Correlation Between Psychosocial Variables and Quality of Life Scores (n = 160)**

| Variable | SF-36 | Physical Component | Mental Component | p-value |
|---|---|---|---|---|
| PHQ-9 (Depression Score) | −0.62** | −0.58** | −0.64** | < .001 |
| Social Support Score | 0.48** | 0.45** | 0.52** | < .001 |
| Patient Education Level | 0.28* | 0.22* | 0.32** | 0.012 |

Table-4 result shows that there were strong associations between psychosocial variables and quality of life outcomes. Higher depression scores on the PHQ-9 were significantly and negatively correlated with overall SF-36 scores ($r = -0.62$, $p < .001$), as well as with both physical and mental components, indicating that depression severely undermines perceived health and functioning. In contrast, social support was positively correlated with total ($r = 0.48$, $p < .001$), physical ($r = 0.45$, $p < .001$), and mental ($r = 0.52$, $p < .001$) components of quality of life, suggesting that greater perceived support from family, friends, and peers enhances both physical and emotional well-being. Patient education level also showed a modest but significant positive correlation ($r = 0.28$, $p = 0.012$), indicating that better-informed patients tend to report higher quality of life, possibly due to greater adherence to treatment and self-care practices.

**Table 5**
**Comparison of Quality of Life by Treatment Approach (n = 160)**

| Treatment Group | N | Physical Component (M ± SD) | Mental Component (M ± SD) | p-value |
|---|---|---|---|---|
| Medical Only | 65 | 58.71 ± 13.90 | 61.10 ± 15.25 | — |
| Combined Medical Lifestyle/Psychosocial | 95 | 69.54 ± 15.38 | 72.33 ± 16.08 | < .001 |

Table-5 show a comparison between patients receiving only medical treatment and those receiving combined medical, lifestyle, or psychosocial interventions revealed significant differences in both physical and mental components of quality of life. The combined treatment group demonstrated markedly higher mean scores in physical (69.54 ± 15.38) and mental (72.33 ± 16.08) health compared to the medical-only group (58.71 ± 13.90 and 61.10 ± 15.25, respectively), with a p-value less than .001.

**Table 6**
**Multivariate Regression Predicting Quality of Life Among Patients with Obstructive (n = 160)**

| Predictor | B | SE | t | p-value |
|---|---|---|---|---|
| Age | −0.21 | 0.08 | −2.60 | 0.011 |
| Gender (Male=1) | 0.10 | 0.07 | 1.44 | 0.152 |
| Residence (Urban=1) | 0.19 | 0.08 | 2.40 | 0.018 |
| PHQ-9 score | −0.34 | 0.09 | −3.77 | < .001 |
| Social Support | 0.27 | 0.08 | 3.31 | 0.001 |
| Combined Management Strategy | 0.29 | 0.07 | 4.14 | < .001 |
| $R^2 = 0.46$ | | | | |

Table-6 shows predictors of quality of life among patients with obstructive HCM. The model explained 46% of the variance ($R^2 = 0.46$) in quality-of-life scores, demonstrating a substantial explanatory power. Age was found to be a significant negative predictor ($\beta = -0.21$, $p = 0.011$), suggesting that older patients tend to experience lower quality of life, possibly due to reduced physical resilience and increased comorbidities. Urban residence emerged as a positive predictor ($\beta = 0.19$, $p = 0.018$), indicating that patients living in urban areas might benefit from better healthcare access and resources. Depression severity (PHQ-9 score) had a strong negative influence ($\beta = -0.34$, $p < .001$), reaffirming the detrimental impact of psychological distress on overall well-being. Conversely, social support ($\beta = 0.27$, $p = 0.001$) and engagement in combined management strategies ($\beta = 0.29$, $p < .001$) were significant positive predictors, demonstrating that emotional and social resources, along with integrative treatment, play a crucial role in enhancing quality of life among these patients.

## DISCUSSION

The present study aimed to evaluate how clinical and psychosocial management strategies influence the quality of life (QoL) among patients diagnosed with obstructive hypertrophic cardiomyopathy (HCM). Using a cross-sectional analytical design, the study explored the complex relationship between pharmacological, surgical, lifestyle, and psychosocial interventions and their combined effects on patients' physical and mental well-being. The findings revealed several important insights into how different management approaches and psychosocial variables shape the lived experience of patients with this chronic cardiac condition.

The results of the SF-36 Health Survey demonstrated that patients with obstructive HCM generally experience moderate impairment in physical and role-related functioning, while maintaining relatively better scores in mental health and social functioning domains. The internal consistency of the SF-36 subscales was strong, suggesting reliable measurement across all domains. These results are consistent with earlier findings indicating that while medical advances have improved survival, patients with HCM often continue to face substantial physical limitations and reduced exercise tolerance, which in turn diminish their quality of life (6). Studies in Western and Asian populations have similarly reported lower physical component scores in HCM compared with age-matched controls, emphasizing that disease-related fatigue, breathlessness, and activity restriction remain key determinants of impaired QoL (11-13).

Analysis of management patterns showed that pharmacological therapy remains the cornerstone of HCM treatment, with nearly all patients receiving beta-blockers, calcium channel blockers, or disopyramide. In contrast, surgical interventions such as septal myectomy and alcohol septal ablation were performed in a small subset of patients, reflecting the reserved use of these procedures for refractory cases. Notably, only about two-thirds of participants adhered to lifestyle modifications, and less than one-fourth attended cardiac rehabilitation or received psychosocial counseling. These patterns align with reports by Maron et al. (2022), who noted that while drug therapy dominates HCM management worldwide, access to specialized procedures and rehabilitation remains uneven, particularly in low- and middle-income settings (2). The underutilization of rehabilitation and

psychosocial care observed in this study suggests missed opportunities for enhancing patients' physical recovery and emotional resilience.

A significant finding of the present research was the clear gradient in quality of life across management groups. Patients receiving medical therapy alone reported the lowest QoL scores, whereas those benefiting from combined medical, lifestyle, and psychosocial support achieved the highest scores, a difference that was statistically significant. This pattern reinforces the value of multimodal, patient-centered management that extends beyond pharmacologic symptom control. Previous studies have documented similar effects; for instance, Hu et al. (2021) demonstrated that comprehensive care integrating lifestyle guidance and psychological counseling significantly improves self-perceived health and social functioning among patients with HCM (14). The findings of the current study thus corroborate the view that combining clinical and psychosocial interventions results in synergistic improvements in patient-reported outcomes.

The correlation analysis provided further insight into the psychosocial dimensions of quality of life. Depressive symptoms, as measured by the PHQ-9, were strongly and inversely correlated with both the physical and mental components of the SF-36, indicating that higher depression levels are associated with poorer perceived health. Conversely, social support exhibited a robust positive association with QoL, while educational attainment showed a modest but significant relationship. These findings are consistent with previous research demonstrating that depression and social isolation are critical determinants of poor quality of life in cardiovascular patients. For example, Hu et al. (2021) reported that HCM patients with coexisting depressive symptoms had significantly higher symptom burden and reduced functional capacity, while higher levels of social support were associated with better adjustment and treatment adherence(14). The present findings further affirm that psychosocial well-being is not merely an adjunct to clinical care but an integral determinant of health outcomes.

When quality of life was compared between patients receiving medical-only treatment and those undergoing combined medical, lifestyle, and psychosocial interventions, the latter group exhibited markedly higher scores for both physical and mental health. This observation underscores the holistic nature of patient well-being, wherein psychosocial engagement and lifestyle adherence complement pharmacologic effects. The results resonate with those of Chichagi et al. (2024), who found that structured cardiac rehabilitation and tailored physical activity programs improved not only exercise tolerance but also self-efficacy and emotional stability among HCM patients (15). Similarly, Maurizi, (2024) reported that individuals receiving both septal reduction therapy and psychosocial counseling had greater improvement in long-term patient-reported outcomes than those treated medically alone (16).

The multiple regression analysis in this study identified depression, social support, and combined management as significant independent predictors of QoL after controlling for age, gender, and residence. Depression emerged as a strong negative predictor, reaffirming its central role in mediating health perceptions and functional outcomes. Social support and combined management strategies, conversely, exerted positive influences, highlighting the potential benefits of integrating psychosocial care within cardiology services. These results align with prior evidence found that

depression independently predicted lower QoL in HCM patients, whereas interventions promoting patient engagement, education, and social connection significantly enhanced well-being (6, 17, 18). these findings emphasize that managing obstructive HCM effectively requires addressing not only the physiological but also the psychosocial determinants of health. The evidence indicates that depression screening and management, structured rehabilitation, and sustained social support should be embedded into standard care pathways for HCM. Low rates of participation in cardiac rehabilitation and counseling highlight the need for healthcare system reforms to increase accessibility to multidisciplinary care. Expanding the role of psychosocial professionals within cardiology departments and implementing patient education programs could substantially improve adherence, self-management, and overall quality of life.

## CONCLUSION

This study demonstrates that depressive symptoms and limited social support substantially reduce the quality of life in patients with obstructive hypertrophic cardiomyopathy, whereas a combined management approach that integrates medical, lifestyle, and psychosocial strategies markedly enhances physical and mental well-being. These findings underscore the importance of adopting a multidimensional, patient-centered care model that simultaneously targets clinical stability, emotional resilience, and social connectedness to optimize outcomes for individuals living with this challenging cardiac disorder.

## LIMITATIONS AND RECOMMENDATIONS OF THE STUDY

This study has certain limitations that should be acknowledged. The use of a cross-sectional research design restricts the ability to draw conclusions about causal relationships among leader overconfidence, decision quality, feedback-seeking behavior, and project success. While the observed associations are meaningful, they cannot confirm whether overconfidence directly leads to changes in decision quality or project outcomes over time. The study also relied heavily on self-reported data, which may have introduced bias, as participants' responses could be influenced by their self-perception or the desire to present themselves in a favorable light. This concern is particularly relevant given that overconfidence itself involves distorted self-assessment. Furthermore, the research was conducted within a limited range of project-based organizations, which may not fully represent the diversity of industries or cultural contexts. As a result, the findings should be interpreted with caution when applied to other organizational settings or leadership environments. The exclusion of potentially influential variables, such as organizational culture, leadership experience, and team dynamics, may also have affected the relationships observed in the study. In addition, feedback-seeking behavior was measured through subjective perceptions rather than direct behavioral observation, which may not accurately capture how leaders seek and respond to feedback in real-world settings.

Despite these limitations, the study provides a strong foundation for future research and practical improvement in leadership and project management. Future studies should consider longitudinal or mixed-method approaches to better understand how leader overconfidence develops and

influences outcomes over time. Expanding the sample to include a wider range of industries and cultural backgrounds would enhance the generalizability of results. Incorporating objective data sources, such as project performance metrics and peer evaluations, would also strengthen the validity of findings. From a practical perspective, organizations should implement leadership training programs focused on improving self-awareness and critical reflection to reduce the negative effects of overconfidence. Promoting a culture that values constructive feedback and continuous learning can help leaders make more informed and balanced decisions. Encouraging open communication, mentorship, and regular performance reviews may further improve decision quality and ultimately enhance project success.

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