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Evaluating the Effectiveness of Leadership Training on Crisis Management in Public Secondary Schools Using the PPRR Model: A Case Study of Larkana Division

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Abstract
This study explores the effectiveness of leadership training in managing crises through the Prevention, Preparedness, Response, and Recovery (PPRR) model in public secondary schools in the Larkana Division, Sindh, Pakistan. Using a mixed-methods approach, data were collected from 100 headmasters/mistresses via surveys and semi-structured interviews. Findings showed the Prevention phase scored the highest, reflecting moderate success in fostering community engagement and risk identification. However, there was observed a tremendous shortfall in the Preparedness and Recovery because mostly leadership training and resources limited in those regions. District disparities were found between Larkana, Shikarpur, Jacobabad and Kashmore. Statistical results further proved that trained leaders showed improved capabilities during all PPRR phases. The study highlights the need for leadership development programs and fair resource allocation to develop crisis management skills. Recommendations include introducing systematic training and addressing district-level disparities to ensure educational resilience.

Keywords: Crisis management, Leadership training, PPRR model, Educational resilience, Public secondary schools

Introduction
Educational institutions play a very important role in shaping societies by equipping individuals with the knowledge and skills required for personal growth and societal development (Ahmed, 2023). However, the dynamic and often unpredictable nature of the educational landscape has exposed schools to numerous crises, ranging from natural disasters to socioeconomic challenges, policy shifts, and even public health emergencies such as the COVID-19 pandemic. The quality of school heads is majorly what decides the effectiveness of crisis management in schools (Moeini & Masoumi, 2020). Public

secondary schools are particularly significant areas where school heads play a key role in crisis management, particularly in developing regions such as Larkana Division in Sindh, Pakistan, in reducing the impact of a crisis on students, teachers, and the surrounding community (Ahmed, & Imran, 2024).

Crisis management in schools encompasses a PPNN model of prevention, preparedness, response, and recovery (Sultana, Ahmed, & Imran, 2024). The PPNN model offers a systematic approach to crisis management, thereby enabling schools to cope with crises better, remain resilient, and ensure that disruption to learning is minimized. As noted by Reynolds and Seeger (2005), effective crisis management not only necessitates logistical and operational preparation but also leadership skills in promoting trust, good communication, and mobilization of resources. In this regard, heads of schools are widely anticipated as change agents who should pilot their institutions through times of crisis, keeping the focus on welfare and academic performance (Khoso, et al., 2024).

The Larkana Division of Sindh faces unique challenges in educational crisis management, given its socioeconomic dynamics, resource constraints, and administrative inefficiencies (Imran, Zaidi, & Rehan, 2024). The region is home to a diverse population, with public secondary schools serving as critical hubs for education and community engagement (Thomas, Khan, & Ahmad, 2022). Although schools play a key role in managing crises, lack of systematic leadership training and poor incorporation of crisis management practices into their daily activities characterize this region. Research indicates that leaders are best prepared to provide early warnings on possible emergencies, respond well to emergencies, and ensure continued education if there is adequate leadership training on crisis management (Boin et al., 2016).

Significance of Leadership in Crisis Management
Leadership is one of the most important determinants of organizational success, especially in times of crisis. In the education sector, school heads are responsible for creating a safe and supportive environment that is conducive to learning (Mohammad, et al., 2024). This responsibility becomes even more pronounced during crises, where the ability to make timely decisions, communicate effectively, and coordinate resources is essential (Day et al., 2016). School leaders' role in crisis management goes way beyond the operational tasks; it also includes emotional and psychological support to the students, the employees, and the parents. According to Fullan (2003), effective leadership inspired trust in people, enables collaboration, and allows cohesiveness to build within them (Ahmad, et al., 2024).

Crisis management effectiveness in public secondary schools depends on a variety of factors such as resource availability, quality training received by school leaders, and how much crisis management strategies are internalized within the school policies and practices (Rehan, et al., 2024). The PPRR model, which stresses the preventive, preparedness, response, and recovery aspects of crisis management as intertwined stages, would serve as an inclusive approach in meeting these requirements (Imran, et al., 2023). For instance, prevention involves identifying potential risks and implementing measures to mitigate them, while preparedness focuses on developing contingency plans and training personnel to respond effectively to emergencies

(Alexander, 2005). The response phase involves the immediate actions taken during a crisis, and recovery focuses on restoring normalcy and learning from the experience to improve future preparedness.

Challenges in the Larkana Division
There are many difficulties faced by public secondary schools in Larkana Division to deal with educational crises. The major factors include poverty levels, unavailability of resources, and disparities in access to educational facilities in the region (Imran & Akhtar, 2023). Further administrative ineffectiveness and the absence of coordination between the school administrations and the local authority compound the crises effects on the educational setup. For instance, the COVID-19 pandemic has affected many schools in the region due to technological inadequacies and lack of adequate training for teachers and school heads (UNESCO, 2021). Such challenges call for targeted interventions aimed at strengthening crisis management practices in public secondary schools (Phulpoto, Oad, & Imran, 2024).

School heads in Larkana are deprived of proper training, which becomes one of the major barriers in effective crisis management. Most of the school leaders are not well-educated in the field of crisis management; rather, they have to rely on their personal experience and intuition while dealing with the situation. This training gap hampers their evidence-based strategies and coordination. Research has shown that leadership training can significantly enhance the capacity of school heads to manage crises, leading to better outcomes for students and staff (Smith & Riley, 2012). By equipping school leaders with the knowledge and skills needed to address crises, policymakers can improve the resilience of educational institutions in the region.

Rationale for the Study
The present study aims to bridge the critical gap in research on educational crisis management in the Larkana Division. Although many studies have discussed the role of leadership in educational settings, less attention has been given to the specific challenges school heads face while managing crises in resource-constrained environments (Hussain, et al., 2023). The goal of this study is to assess the efficiency of leaders' training in improving crisis management practice in public secondary schools, with a special focus on the PPRR model. With the use of school heads' experiences in Larkana, the study intended to give insight into factors that impact the success of such crisis management initiatives and suggest ways of enhancing leadership capability in this region.

This research supported broader literature in crisis management by underpinning the importance of contextual factors in forming leadership practices; as Spillane et al. (2004) have argued, leadership is a distributed process and is consequently influenced by the social, cultural, and institutional contexts through which it occurs (Oad, Zaidi, & Phulpoto, 2023). For the purpose of designing training programs and policy interventions that are helpful in public secondary schools in Larkana, understanding these contextual factors is of paramount importance.

This requires strong leadership and systemic approaches for effective management of educational crises. The PPRR model gives valuable guidelines on addressing crises in schools, underlining the preventive measures, preparedness, response, and recovery process. Given that schools within Larkana Division face significant challenges, developing school heads' leadership capacity would further enhance their practice in managing crisis situations. This study aims to contribute to this effort by evaluating the effectiveness of leadership training and identifying strategies for enhancing the resilience of public secondary schools in the region.

Objectives of the Study
1. To explore the role of headmasters/mistresses in crisis prevention, preparedness, response, and recovery (PPRR) in public secondary schools of Larkana division.
2. To examine the impact of leadership training on the efficiency of educational crisis management in secondary schools.

Literature Review
The role of leadership in educational crisis management has gained much attention in recent years, especially in the context of unforeseen global events such as the COVID-19 pandemic (Imran, Zaidi, & Khanzada, 2023). This literature review looks at the effectiveness of leadership training in crisis management within public secondary schools, focusing on the Prevention, Preparedness, Response, and Recovery (PPRR) model.

Leadership in Educational Crisis Management
Effective leadership is key to the passage of educational institutions through crises. Samawi (2021) conducted a study on educational crisis management and its association with the use of distance learning methods in secondary schools during the COVID-19 pandemic. The results revealed that school leaders play a significant role in helping the school transition to remote learning and ensure that learning continues (Imran, Zaidi, & Rehan, 2024). It is thus crucial for leaders to have crisis management skills to be able to effectively respond to such unprecedented events.
Similar is the case with Celik et al. (2022) as they researched how educational leaders use social media during the pandemic. The results indicated that active communication and participation via Twitter, for example, are crucial to disseminate information and maintain connectivity with the school community (Imran, Sultana, & Ahmed, 2023). It reflects the necessity of adaptability and technological skillfulness in contemporary educational leadership (Ali, et al., 2023).
In a qualitative study focusing on the practices of secondary school leadership during the pandemic, this study found prevalent academic, financial, and socio-emotional challenges that confront school leaders (Khan, Hussain & Ahmad, 2023). Among others, the findings revealed the adoption of crisis leadership attributes as outlined in the established models but pointed out the inadequate representation of inclusiveness and equity in leadership approaches in times of crisis.

The PPRR Model in Educational Settings
The PPRR model that includes Prevention, Preparedness, Response, and Recovery is one of the broad frameworks for crisis management. Crisis management in education is guided on developing strong strategies that ensure safety, reduce risk, and protect the school community during crises. The guide is divided into sections such as risk assessment, communication plans, and recovery processes.
Another study, which examined the response measures adopted by school leaders at the beginning of the COVID-19 crisis, concluded that proper application of the PPRR phases would help reduce the effects that this pandemic had on educational facilities (Hafeez, Iqbal, & Imran, 2021). The research recommended preparedness and proactive responses to such situations to be effectively managed.

Impact of Leadership Training on Crisis Management
Critical success factor in building a crisis management capability is considered as leadership training. Balasubramanian and Fernandes's study found out that during the COVID-19 pandemic crisis leadership model had really worked (2022). A comprehensive program should be included as part of a training plan so that they acquire the ability to handle any situation (Ahmed, Ahmed & Buriro, 2023).
A study on post-COVID educational leadership highlighted the emerging models and styles necessary for the new era. The research indicated that the traditional approaches of leadership may not be enough to deal with the crisis of the modern world, and there is a need for innovative training programs focusing on adaptability, resilience, and strategic thinking (Imran, et al., 2023).
In Saudi Arabian universities, cross-sectional studies on crisis management plans indicate that there exist crucial challenges and obstacles in these institutions. The evaluation suggested that specific training for leadership is required to deal with respective challenges in education institutions and to improve readiness for a crisis situation.

Challenges in Implementing Effective Crisis Management
Despite the acknowledged critical role of leadership in crisis management, several impediments exist towards effective implementation. According to a report issued by the National Governors Association in 2023, there exist five phases for a crisis management life cycle within schools: mitigation/prevention, preparedness, response, recovery, and learning. The report indicates that inadequacy of training and scarce resources are primary barriers to the effective management of crises in the educational sector (Ahmad, Sewani, & Ali, 2021).

NATIONAL GOVERNORS ASSOCIATION
In addition, a study on the crisis management measures adopted by school leaders at the beginning of the COVID-19 pandemic revealed that most leaders were not prepared for the magnitude of the crisis. The study called for continuous professional development and comprehensive crisis management plans to be in place to improve preparedness.

In Bangladesh, a qualitative study explored the kinds of problems secondary school leaders encountered during the pandemic. Significant academic, financial, and socio-emotional challenges have emerged through this kind of research, indicating that training programs for leadership should account for such diversified issues.

Emerging Trends and Future Directions
The COVID-19 pandemic has catalyzed a re-evaluation of leadership practices in educational institutions. Recent literature indicates a trend towards more adaptive and resilient leadership models. Emerging models and styles of post-COVID educational leadership are discussed, focusing on flexibility, innovation, and emotional intelligence. The research supports the development of leadership programs with these elements in mind to better prepare leaders for future crises.

In addition, the role of technology in crisis management has come to the fore. Digital communication, learning continuity, and resource management are becoming integral parts of crisis management. A study of social media uses during the pandemic revealed that social media, in particular Twitter, is effective for maintaining engagement and disseminating information. This is a trend which calls for a leadership training program that includes elements of digital literacy and technology integration.

In this way, the recent literature underlines the importance of mental health and well-being. School leaders are now not only required to manage operational crises but also have to cater to the psychological and emotional needs of students and staff. This holistic approach to crisis management requires training programs that equip leaders with competencies in empathy, counseling, and community building.

Methodology
This study employs a descriptive research design with a mixed-methods approach, combining quantitative and qualitative techniques to explore the role of leadership in crisis management within public secondary schools of Larkana Division, Sindh, Pakistan. The study focuses on the implementation of the Prevention, Preparedness, Response, and Recovery (PPRR) model, examining how leadership training influences crisis management effectiveness.

Data were collected through structured surveys and semi-structured interviews, targeting headmasters/mistresses as key participants due to their critical role in educational leadership. The survey instrument consisted of Likert-scale questions addressing PPRR components, while interviews provided deeper insights into participants' challenges and strategies in managing crises.

The population includes public secondary school leaders from five districts in Larkana Division: Larkana, Shikarpur, Jacobabad, Kashmore, and Qambar Shahdadkot. Using stratified random sampling, a sample of 100 participants was selected, proportionally representing each district. Additionally, 05 participants were chosen for qualitative interviews. Quantitative data were analyzed using SPSS, employing descriptive and inferential statistics such as t-tests and ANOVA to identify patterns and relationships. Qualitative data from interviews were transcribed and analyzed using thematic analysis with NVivo software to extract recurring themes. Ethical considerations, including

informed consent, confidentiality, and voluntary participation, were rigorously adhered to throughout the study to ensure validity and reliability.

Analysis of the Study

Table 1: Demographics of the Participant

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	60	60%
	Female	40	40%
Age Group (Years)	30–40	30	30%
	40–50	50	50%
	50–60	20	20%
Experience (Years)	1–10	20	20%
	11–20	55	55%
	21+	25	25%
Leadership Training	Yes	40	40%
	No	60	60%

Table 1 indicates that the majority of the respondents are male, 60%, which reflects a male-dominated leadership structure in public secondary schools. Half of the respondents are between 40–50 years of age, which reflects mid-level professional maturity. Most respondents, 55%, have 11–20 years of experience, which reflects a significant level of expertise in educational management. Only 40% of the respondents have received formal leadership training, which reflects a gap in professional development opportunities that could impact crisis management capabilities.

Table 2: Average Scores for PPRR Model Phases

PPRR Phase	Average Score (Mean)	Standard Deviation (SD)
Prevention	4.2	0.7
Preparedness	3.8	0.6
Response	4.0	0.8
Recovery	3.7	0.9

Table 2 shows that the highest average score is in the Prevention phase, which means that schools are relatively proactive in addressing potential crises by engaging parents, staff, and the community. The Preparedness phase scores moderately at 3.8, which means there are gaps in safety planning and staff training for handling crises. The

Response phase scores 4.0, showing that schools can respond reasonably well to crises, though further improvements are needed. The lowest score goes to the Recovery phase, 3.7, which is reflective of problems in restoring normalcy and also post-crisis evaluations and psychological support.

Table 3: Comparison of PPRR Scores by Leadership Training (t-Test Results)

PPRR Phase	Trained Leaders (Mean)	Untrained Leaders (Mean)	t-Value	p-Value
Prevention	4.5	4.0	2.45	0.015
Preparedness	4.2	3.6	3.12	0.002
Response	4.3	3.8	2.78	0.008
Recovery	4.1	3.4	3.89	0.001

Table 3 indicates that across all phases of PPRR, participants with leadership training scored significantly higher than those who were not trained ($p < 0.05$). The biggest gaps occur in the Preparedness and Recovery phases, where trained leaders score 4.2 and 4.1, respectively, whereas untrained leaders scored 3.6 and 3.4, respectively. This therefore means that the training is of great importance for proactive crisis management and post-crisis recovery efforts.

Table 4: ANOVA Results by District

District	Prevention (Mean)	Preparedness (Mean)	Response (Mean)	Recovery (Mean)	F-Value	p-Value
Larkana	4.4	4.0	4.3	4.0	4.62	0.004
Shikarpur	4.3	3.9	4.1	3.8		
Jacobabad	3.8	3.5	3.6	3.4		
Kashmore	3.7	3.4	3.5	3.2		
Qambar Shahdadkot	4.1	3.7	4.0	3.7		

Schools in Larkana and Shikarpur are better in all the phases of PPRR, especially in Prevention (4.4 and 4.3) and Response (4.3 and 4.1). Schools in Jacobabad and Kashmore are significantly behind in all phases, especially in Preparedness (3.5 and 3.4) and Recovery (3.4 and 3.2). This shows that there is a requirement for focused interventions in these districts. The F-value is highly significant at 4.62 and p-value at 0.004, which shows that the district-wise differences in crisis management are statistically significant.

Themes Identified
Challenges in Crisis Management
- ✓ Lack of funding and resources: Participants frequently mentioned insufficient budgets as a barrier to implementing comprehensive crisis management plans.
- ✓ Limited training: A recurring theme was the absence of formal leadership training, which hindered the ability of school heads to anticipate and respond to crises effectively.

Strengths in Crisis Management
- ✓ Strong community involvement: Schools with higher prevention scores highlighted collaborative efforts with parents and local authorities to manage crises.
- ✓ Responsive leadership: Participants with training demonstrated greater confidence in managing emergencies and mobilizing resources.

Recommendations for Improvement
- ✓ Introduce systematic leadership training programs tailored to the PPRR model.
- ✓ Allocate dedicated budgets for crisis management activities, including preventive measures and recovery programs.
- ✓ Leverage technology for communication, planning, and monitoring during crises.

Key Insights from Interviews
Participants emphasized the importance of regular professional development workshops to equip school heads with the necessary skills for crisis management. Psychological support for students and staff was identified as a critical yet overlooked component of recovery. Schools in resource-constrained districts expressed a need for greater government intervention to address disparities in infrastructure and funding.

Interpretation of Findings
The analysis reveals a mixed level of preparedness and effectiveness in crisis management across public secondary schools in the Larkana Division. Schools perform relatively well in prevention and response phases but face significant challenges in preparedness and recovery due to resource limitations and insufficient leadership training. District-wide disparities indicate the need for targeted interventions, particularly in underserved areas like Jacobabad and Kashmore.

Impact of Leadership Training
The statistical results and qualitative findings collectively highlight the positive impact of leadership training on crisis management. Trained leaders scored higher across all PPRR phases, demonstrating better preparedness, decision-making, and recovery efforts. This underscores the necessity of formalized training programs for school leaders.

Policy Implications: Policymakers should focus on:
1. Expanding access to leadership training tailored to crisis management.

2. Ensuring equitable resource distribution across districts.
3. Establishing a standardized framework for implementing the PPRR model in schools.

Findings of the Study

Based on the findings of this study, insights derived to report the role of leadership and crisis management practices in public secondary schools in the Larkana Division, Sindh, Pakistan were: A vast majority 60% had no formal training in leadership, and this impacted largely on practicing effective crisis management practices. In fact, most leaders (55%) had 11–20 years of experience, implying that the schools are being led by experienced persons but with outdated skills. The Prevention phase obtained the highest score (mean: 4.2), suggesting that schools are relatively proactive in terms of identification of risk and community engagement. The Preparedness phase (mean: 3.8) and Recovery phase (mean: 3.7) received the lowest scores, revealing potential shortcomings in safety planning, staff training, and after-crisis recovery. There were district-level disparities where Larkana and Shikarpur strongly performed when compared to Jacobabad and Kashmore. Participants with formal leadership training scored significantly higher in all phases of PPRR (p < 0.05), with higher scores during the Preparedness (mean: 4.2 vs. 3.6) and Recovery (mean: 4.1 vs. 3.4) phases. This reflects the effectiveness of training on proactive crisis management and recovery activities. Schools in Jacobabad and Kashmore have found it relatively more difficult to apply the PPRR model as the mean score is below 3.5 for both Preparedness and Recovery phases. Schools of Larkana and Shikarpur performed better, indicating healthier leadership and better resource availability.

Discussion of the Study

The findings are in line with the literature that emphasizes the importance of leadership in educational crisis management. Studies, such as Reynolds and Seeger (2021), have shown that effective crisis management is based on proactive prevention and preparedness, which are areas where schools in this study were weak. The higher scores in the Prevention phase indicate that schools are trying to create community collaboration and risk identification, which is in line with the findings of Samawi (2021). However, the low scores in the Preparedness and Recovery phases indicate systemic gaps in safety planning and post-crisis evaluations. Similar findings were reported by Smith and Riley (2020), who argued that a lack of structured leadership training limits the ability of schools to address these critical areas. The significant impact of leadership training on PPRR scores underscores the importance of professional development programs for school leaders. This is in line with the studies of Balasubramanian and Fernandes (2022), which revealed that trained leaders are more capable of executing comprehensive crisis management strategies.

The district-level disparities further point to the role of resource allocation and policy implementation. Schools in Jacobabad and Kashmore, with lower scores, reflect resource constraints and limited government support. These findings align with UNESCO's (2021) reports on resource disparities in educational institutions in developing regions.

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Conclusion of the Study

This present study illustrates that crisis management practices in the public secondary schools are mainly supported by effective leadership operations. The schools in the Larkana Division have improved in the Prevention stage. There still exist challenges in Preparedness and Recovery with the support from effective leadership training that has emerged as an important factor in crisis management effectiveness. Trained leaders outperform their untrained counterparts in all phases of PPRR.

The findings underline the need for targeted interventions toward district-level disparities. Resource-poor districts, such as Jacobabad and Kashmore, also need more support from the government and leadership development programs to upgrade their crisis management capabilities. On the whole, the study suggests that school leaders must be empowered with the relevant skills and resources to handle crisis situations effectively while ensuring continuity of education.

Future Research Directions

Expand research areas to include multiple other divisions of Sindh or around the country in order to understand variations at different geographical levels in managing crisis. Compare urban and rural studies analyzing how infrastructural facilities and access to resources influence leadership performance. Analyze the long-term impact of leader development programs in terms of crisis management effectiveness to assess its sustainability. Analyze recovery patterns of schools from any crisis, such as a natural disaster or public health emergency, over time.

Investigate the role of technology in enhancing crisis preparedness and response, especially in resource-constrained areas. Investigate the impact of digital tools, such as early warning systems and communication platforms, on crisis management outcomes. Assess the role of psychological support programs for students and staff in post-crisis recovery. Explore the inclusion of emotional intelligence training in leadership development programs. Examine government policy effectiveness and the provision of funds towards the management of education crisis. Assess public-private partnership as an avenue in alleviating school-level disparities in terms of resources.

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