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Identifying the Challenges of COVID-19 Crisis Management in the Education System (Case Study: Khoy County)

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A B S T R A C T

Objective: This study aims to identify and analyze the key challenges of COVID-19 pandemic crisis management in the education system of Khoy County.

Methods and Materials: A mixed-methods design was employed, combining qualitative content analysis with quantitative survey analysis. In the qualitative phase, semi-structured interviews were conducted with 24 stakeholders, including education administrators, crisis management officials, school principals, teachers, students, parents, and experts, until theoretical saturation was reached. Interview data were analyzed through open, axial, and selective coding using MAXQDA software. In the quantitative phase, a researcher-developed questionnaire was administered to 384 respondents selected using Cochran's formula. Face validity and reliability (Cronbach's alpha) were confirmed. Quantitative data were analyzed using SPSS, with the Friedman ranking test applied to examine differences in the prioritization of crisis management challenges.

Findings: The Friedman test results indicated no statistically significant difference among the identified crisis management challenges ($\chi^2 = 5.374$, df = 4, p = 0.251). Mean ranks showed minimal variation across dimensions, with educational inequality and the digital divide ranking highest (mean rank = 3.14) and psychological and social pressures ranking lowest (mean rank = 2.89). The lack of significant differences demonstrates that respondents perceived all crisis management challenges as uniformly critical, confirming the homogeneity and systemic nature of the problems rather than the dominance of any single dimension.

Conclusion: The findings indicate that crisis management failure in the education system of Khoy County is systemic and structural, arising from the simultaneous interaction of managerial incapacity, infrastructural weaknesses, educational inequality, inefficiency of online education, and psychological pressures. The absence of differentiated priorities suggests that effective improvement requires comprehensive, integrated, and simultaneous interventions across all dimensions rather than fragmented or selective approaches.

Keywords: *Crisis management, COVID-19 pandemic, education system, challenges, Khoy County.*

1 Introduction

The unprecedented scale and duration of crises affecting educational systems in recent decades have transformed crisis management from a peripheral administrative concern into a central strategic function of educational governance. Schools and educational organizations are no longer insulated institutions operating in relatively stable environments; rather, they are increasingly exposed to complex, overlapping, and prolonged crises ranging from natural disasters and political instability to public health emergencies and socio-economic disruptions (Gainey, 2010; United States Agency International, 2010). Among these, the COVID-19 pandemic stands out as a global systemic shock that simultaneously disrupted instructional delivery, organizational routines, leadership practices, stakeholder relationships, and the psychological well-being of educational communities. This crisis exposed not only operational vulnerabilities but also deep structural and managerial weaknesses within education systems, particularly in their preparedness, adaptability, and capacity for integrated crisis response (Chatzipanagiotou & Katsarou, 2023; Nickerson & Sulkowski, 2021).

Crisis management in education is conceptually distinct from routine school administration. While daily management focuses on maintaining stability and incremental improvement, crisis management requires anticipatory planning, rapid decision-making under uncertainty, cross-sectoral coordination, and the ability to sustain core educational functions amid severe disruption (Elbedour et al., 2020). Early scholarship on crisis management in public school systems emphasized preparedness planning, clear communication structures, and role clarification as essential components for minimizing harm and ensuring continuity (Gainey, 2010). However, subsequent research has demonstrated that many educational organizations continue to adopt reactive, fragmented, and short-term responses to crises, often treating them as exceptional events rather than as predictable and recurring features of the organizational environment (Redding & Walberg, 2012; United States Agency International, 2010).

The COVID-19 pandemic fundamentally challenged these traditional approaches by transforming crisis conditions into a prolonged and evolving context rather than a time-limited emergency. Schools were forced to shift rapidly from face-to-face instruction to online and hybrid modalities, frequently without adequate technological infrastructure, professional capacity, or policy guidance (Hidayat et al., 2020; Salimi & Fardin, 2020). This abrupt transition highlighted the centrality of crisis management capabilities in determining whether education systems could maintain instructional quality, equity, and organizational coherence during sustained disruption. Research conducted across diverse national contexts has consistently shown that the effectiveness of educational responses to the pandemic was closely tied to leadership quality, institutional learning capacity, and the existence of coherent crisis management strategies (Al-Janabi et al., 2022; Jabeen et al., 2022; Mazhabi, 2025).

One of the most significant insights emerging from recent literature is that crises in education are rarely singular or isolated phenomena. Instead, they manifest as multi-layered systems of challenges in which infrastructural, managerial, pedagogical, and psychosocial dimensions interact and reinforce one another (Nickerson & Sulkowski, 2021). Technological deficiencies, such as unreliable internet access or lack of digital devices, do not merely impede online instruction; they amplify educational inequality, increase dropout risks, and place disproportionate burdens on disadvantaged communities (Gharari et al., 2020; Redding & Walberg, 2012). Similarly, weak crisis governance structures exacerbate uncertainty, delay decision-making, and undermine trust among teachers, students, and families, thereby intensifying psychological stress and reducing organizational resilience (Ben, 2025; Elbedour et al., 2020).

Educational inequality and the digital divide emerged as defining features of the COVID-19 crisis, particularly in regions with pre-existing socio-economic disparities. Studies have documented how students from rural areas, low-income families, and marginalized communities faced significant barriers to accessing online education, resulting in learning loss, disengagement, and, in some cases, permanent dropout (Gharari et al., 2020; Redding & Walberg, 2012). These outcomes reveal that crisis management in education cannot be reduced to technical solutions alone; rather, it must be grounded in equity-oriented planning that recognizes education as a public good rather than a commodity contingent on household resources (Chatzipanagiotou & Katsarou, 2023; United States Agency International, 2010).

Leadership and managerial capacity have been repeatedly identified as decisive factors shaping educational responses to crisis situations. Empirical studies demonstrate that school systems characterized by participatory leadership, distributed decision-making, and organizational learning are

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better positioned to adapt to uncertainty and sustain educational continuity (Al-Janabi et al., 2022; Mazhabi, 2025). Conversely, centralized, rigid, and bureaucratic management models tend to produce delayed responses, inconsistent policies, and poor coordination across organizational levels, thereby magnifying the negative impacts of crises (Ben, 2025; Jabeen et al., 2022). The pandemic thus functioned as a stress test for educational leadership, revealing the extent to which managerial systems were prepared for complexity, ambiguity, and rapid change.

Beyond structural and managerial challenges, the COVID-19 crisis also generated profound psychological and social consequences within educational communities. Students experienced heightened anxiety, social isolation, and uncertainty about academic progression, while teachers faced increased workloads, role ambiguity, and emotional exhaustion associated with adapting to unfamiliar instructional modes (Javaheri et al., 2022; Nickerson & Sulkowski, 2021). Families, particularly those with limited educational or technological resources, encountered additional stress as they were compelled to assume greater responsibility for supporting learning at home (Gharari et al., 2020). These psychosocial pressures, when insufficiently addressed, undermined motivation, reduced instructional effectiveness, and further constrained the capacity of education systems to function under crisis conditions (Ben, 2025; Elbedour et al., 2020).

The inefficiency of emergency online education represents another critical dimension of crisis management failure in many educational contexts. While digital platforms enabled a degree of instructional continuity, numerous studies have reported weaknesses in content quality, assessment practices, teacher preparedness, and pedagogical coherence (Hidayat et al., 2020; Salimi & Fardin, 2020). The rapid shift to online instruction often occurred without systematic professional development or clear instructional frameworks, resulting in inconsistent teaching practices and uneven learning outcomes (Jabeen et al., 2022). These shortcomings underscore the importance of viewing online education not as a temporary substitute but as an integral component of crisis-resilient educational systems requiring long-term planning and capacity building (Chatzipanagiotou & Katsarou, 2023).

Comparative and international studies further suggest that crisis management challenges in education exhibit both universal patterns and context-specific manifestations. Research conducted in Europe, the Middle East, and Asia highlights common issues such as infrastructural inadequacy, leadership constraints, and equity gaps, while also emphasizing the influence of local governance structures, cultural norms, and resource distributions (Al-Janabi et al., 2022; Hidayat et al., 2020; Kedačić-Buzina & Klarin, 2024). These findings reinforce the need for localized empirical research that captures the specific configurations of challenges faced by individual education systems, rather than relying solely on generalized models of crisis management.

Despite the growing body of international literature, there remains a relative scarcity of in-depth, mixed-methods studies that systematically integrate qualitative insights from educational stakeholders with quantitative assessments of crisis management challenges at the local level. Many existing studies focus either on leadership perspectives or on student experiences in isolation, thereby limiting their capacity to explain how different dimensions of crisis management interact within a single educational system (Chatzipanagiotou & Katsarou, 2023; Javaheri et al., 2022). Addressing this gap requires research designs capable of capturing the complexity of crisis phenomena and identifying core structural drivers underlying observable challenges (Ben, 2025; Kedačić-Buzina & Klarin, 2024).

In this regard, examining crisis management within local education systems offers valuable insights into how global crises are mediated by institutional arrangements, resource constraints, and managerial practices. The case of local education systems operating under conditions of limited infrastructure, socio-economic inequality, and centralized governance is particularly instructive, as it illuminates the cumulative effects of structural vulnerability and managerial incapacity during prolonged crises (Gharari et al., 2020; Mazhabi, 2025). Understanding these dynamics is essential for developing evidence-based strategies aimed at enhancing educational resilience and preventing the recurrence of similar failures in future crises (Redding & Walberg, 2012; United States Agency International, 2010).

Accordingly, this study seeks to contribute to the literature on educational crisis management by providing a comprehensive, mixed-methods analysis of the challenges associated with managing the COVID-19 pandemic within a local education system, integrating perspectives on infrastructure, equity, leadership, psychosocial well-being, and online education in order to identify the core factors underlying systemic crisis management failure and to inform more resilient, equity-oriented, and integrated governance approaches; therefore, the aim of this study is to identify and analyze the key challenges of COVID-19 pandemic crisis

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management in the education system of Khoy County and to explain how these challenges interact to produce an inability to manage educational crises in an integrated manner.

2 Methods and Materials

This study was conducted based on a mixed-methods approach (quantitative–qualitative). In terms of purpose, the research is applied, and in terms of nature and method, it is classified as exploratory–analytical research. A content analysis approach was used for the qualitative component of the study. Data were collected using field methods, including semi-structured interviews for the qualitative section and a questionnaire for the quantitative section. Accordingly, the required data were gathered through semi-structured interviews with the sample population—comprising education administrators, crisis management organization managers, researchers, school principals, teachers, students, experts, and specialists in the field of crisis management—due to their relevance to the research topic. After data collection, theoretical coding at three levels (open (concepts), axial, and selective (core)) was conducted using MAXQDA software for data analysis. Open and axial coding were applied to identify concepts and axial categories. In the open coding stage, the interviews were carefully analyzed to identify and extract initial concepts. These concepts were recorded as initial codes with the aim of identifying all ideas and themes present in the interviews without any prior assumptions. In the axial coding stage, the initial concepts were organized into axial categories. At this stage, relationships among concepts were examined, and main and subcategories were identified. These categories functioned as the main axes of analysis and assisted the researcher in achieving a deeper understanding of the data structure. Finally, in the selective coding stage, the researcher focused on the axial categories and selected a core category as the central theme of the study, analyzing other categories in relation to this core category. This process led to the development of a comprehensive theoretical framework that explains the relationships among categories and concepts and contributes to the explanation of the phenomenon under study (selective coding). To ensure validity, two methods were used: member checking and consultation with academic experts. Specifically, after analyzing the findings, interviewees were asked to review the extracted codes and provide feedback regarding their accuracy. The statistical population of the study included education administrators, crisis management organization managers, researchers, school principals, teachers, students, and experts and specialists in crisis management. The primary criterion for sampling in qualitative research is the quality of the sample rather than its quantity. Accordingly, the researcher sought to enhance data quality by selecting knowledgeable and expert participants. In this regard, the sample size was expanded until theoretical saturation was reached—that is, until identical responses were obtained from interviewees regarding the identification of challenges. In this study, saturation was achieved after conducting interviews with 24 participants. Purposive sampling was used, and the snowball sampling technique was employed to identify individuals relevant to crisis management in general and educational crisis management in particular. In the quantitative section, 384 questionnaires were distributed among the sample population using Cochran's formula.

In the qualitative section, content validity (participant review) was used to confirm validity, and reliability was assessed using the Lincoln and Guba criteria (credibility, transferability, dependability, and confirmability). To establish validity, steps such as summarizing and presenting findings, sending results to participants, requesting direct feedback, and revising based on feedback were followed. After initial coding and theme extraction, a clear and comprehensible summary of each interview's results was prepared. These summaries were sent to the interviewees, who were asked to provide their opinions. Based on the feedback received, codes deemed inaccurate by participants were revised, omitted information was added, and sections with which participants disagreed were modified or removed. To enhance credibility, the data were analyzed in multiple stages, and at each stage, interpretations were reviewed with participants to ensure consistency with their lived experiences. To increase transferability, detailed information regarding the number of participants, their professional characteristics, and organizational context was provided, enabling readers to assess whether the findings could be generalized to similar contexts. To ensure that the findings were derived from the data rather than the researcher's personal interpretations, comprehensive documentation of the data analysis process and the creation of an audit trail (including multiple versions of coding, reasons for code selection or removal, field and analytical notes, and communications with participants) were employed. To enhance confirmability, all stages of analysis (open, axial, and selective coding) were systematically documented to demonstrate how each concept was derived from the interviews and to ensure full traceability. In the

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quantitative section, questionnaire validity was confirmed using face validity, and reliability was assessed using Cronbach's alpha. Quantitative data analysis was conducted using SPSS software.

3 Findings and Results

The findings are presented in both qualitative and quantitative forms to answer the research questions. As explained earlier, based on the main research question, the exploratory nature of the topic, and the collection of data through interviews, a qualitative method was selected to address the primary research question. In this section, an overall picture of the data is provided using qualitative content analysis and interview coding in MAXQDA software. For this purpose, 24 individuals were interviewed, with a total interview duration of 650 minutes. The interviewees included crisis management experts and stakeholders in the education system, selected from among education administrators, crisis management organization managers, researchers, school principals, teachers, students, experts, and specialists in the field of crisis management. At the beginning of each interview, a general explanation of the research topic and objectives was provided, followed by questions related to the subject.

Table 1

Descriptive Characteristics of the Interviewees

Position	Education Level	Position	Education Level
School Principal	Master's Degree	Education Department Staff	Bachelor's Degree
School Principal	Bachelor's Degree	Education Department Staff	Master's Degree
School Principal	Bachelor's Degree	Crisis Management Staff	Bachelor's Degree
School Principal	PhD	Crisis Management Staff	Bachelor's Degree
Education Administration	PhD	Crisis Management Deputy	Master's Degree
Education Administration	Master's Degree	Crisis Management Organization Management	PhD
Education Deputy	PhD	Crisis Management Researcher	PhD
Education Deputy	PhD	Students' Parents	Bachelor's Degree
Education Teacher	Master's Degree	Students' Parents	Master's Degree
Education Teacher	Bachelor's Degree	Student	High School Diploma
Education Teacher	Bachelor's Degree	Student	High School Diploma
Education Teacher	Master's Degree	Student	High School Diploma

After transcribing the interviews and extracting the overall narratives, qualitative content analysis was conducted to code the data and extract concepts and categories. A notable point in explaining the diagrams is that MAXQDA software, through its visual data representation capabilities, assists readers by illustrating relationships among core, main, and subcategories and indicating the degree of influence of each through the thickness of connecting lines. In fact, in the diagrams, the greater the influence of a subcategory in explaining its main category, the thicker the connecting line.

Based on the interview results, the researcher coded five axial categories from the interview texts: weaknesses in infrastructure and educational technology, educational inequality and the digital divide, managerial incapacity and lack of crisis planning, psychological and social pressures, and inefficiency of online education. It should be noted that all extracted concepts and codes are entirely grounded in the interview texts and fully reflect the interviewees' perspectives. The tables and figures presented below display the results of open, axial, and selective coding. According to the findings presented in Figure 1, the interviewees identified the challenges of managing the COVID-19 pandemic crisis in the education system of Khoy as falling into five general categories: weaknesses in infrastructure and educational technology, educational inequality and the digital divide, managerial incapacity and lack of crisis planning, psychological and social pressures, and inefficiency of online education.

Among the identified barriers and challenges, managerial incapacity and the lack of crisis management planning (including the absence of plans, weak coordination, policy

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deficiencies, and lack of protocols) play a more prominent role than other challenges in managing the COVID-19 pandemic crisis in the education system of Khoy. Therefore, from the interviewees' perspective, addressing challenges related to managerial incapacity and the lack of crisis planning should be considered a priority in managing crises during the COVID-19 pandemic. In the area of crisis management barriers and challenges, a total of 22 barriers or challenges were identified under managerial incapacity and lack of crisis planning, which should be taken into account in crisis management planning during events such as the COVID-19 pandemic. To further clarify the situation, Figure 1 presents the status of other barriers and challenges along with their associated concepts.

Weaknesses in infrastructure and educational technology, as one of the subcategories, indicate the inability of the education system to provide the necessary tools and technologies for crisis management. Shortages of equipment, internet connectivity problems, and the absence of rapid-response technology teams have all contributed to weak crisis management. These issues have not only hindered the provision of high-quality education but have also increased inequality in access to education. This infrastructural weakness represents the most fundamental challenge in crisis management and has directly affected other categories.

Educational inequality and the digital divide, as consequences of infrastructural weaknesses, refer to the unequal distribution of educational opportunities. Students from disadvantaged backgrounds and rural areas have been deprived of online education due to lack of equipment and limited internet access. This inequality has increased economic and social pressure on families and deepened the digital divide. This category indicates that crisis management cannot be successful without attention to educational equity.

Psychological and social pressures constitute another consequence of the crisis and arise directly from weak crisis management and educational inequality. The stress experienced by students, teachers, and families has increased due to excessive homework loads, inadequate parental training, and economic and psychological pressures. These pressures have not only reduced educational quality but have also threatened the mental health of the educational community.

The inefficiency of online education, as another subcategory, points to the education system's heavy reliance on face-to-face instruction prior to the crisis. The absence of clear procedures, weaknesses in content quality, and lack of professional training for teachers in online instruction indicate the education system's unpreparedness for confronting crises. This inefficiency has increased confusion among teachers and students and led to a decline in educational quality.

Managerial incapacity and the lack of crisis management planning, as one of the main factors, constitute the root of many other problems. The absence of preparedness drills, weak managerial skills in crisis management, and lack of pre-established plans have prevented the education system from responding effectively to the crisis. This managerial incapacity has also disrupted inter-organizational coordination and adequate supervision.

The relationship between the subcategories and the main category clearly shows that infrastructural weaknesses, educational inequality, psychological pressures, inefficiency of online education, and managerial incapacity all directly or indirectly stem from the inability to manage crises in an integrated manner. These categories are interconnected in a chain-like manner, with each exacerbating the others. For example, infrastructural weaknesses lead to educational inequality, which in turn increases psychological pressures. Ultimately, the lack of effective planning and management has transformed these issues into more complex crises.

The presented diagram indicates that the inability of Iran's education system to manage crises in an integrated manner was the root of many problems during the COVID-19 pandemic. Infrastructural weaknesses, educational inequality, psychological pressures, inefficiency of online education, and managerial incapacity are all interconnected in a chain-like fashion and have intensified the crisis. This analysis emphasizes that successful management of future crises requires special attention to strengthening infrastructure, reducing inequalities, and enhancing managerial skills.

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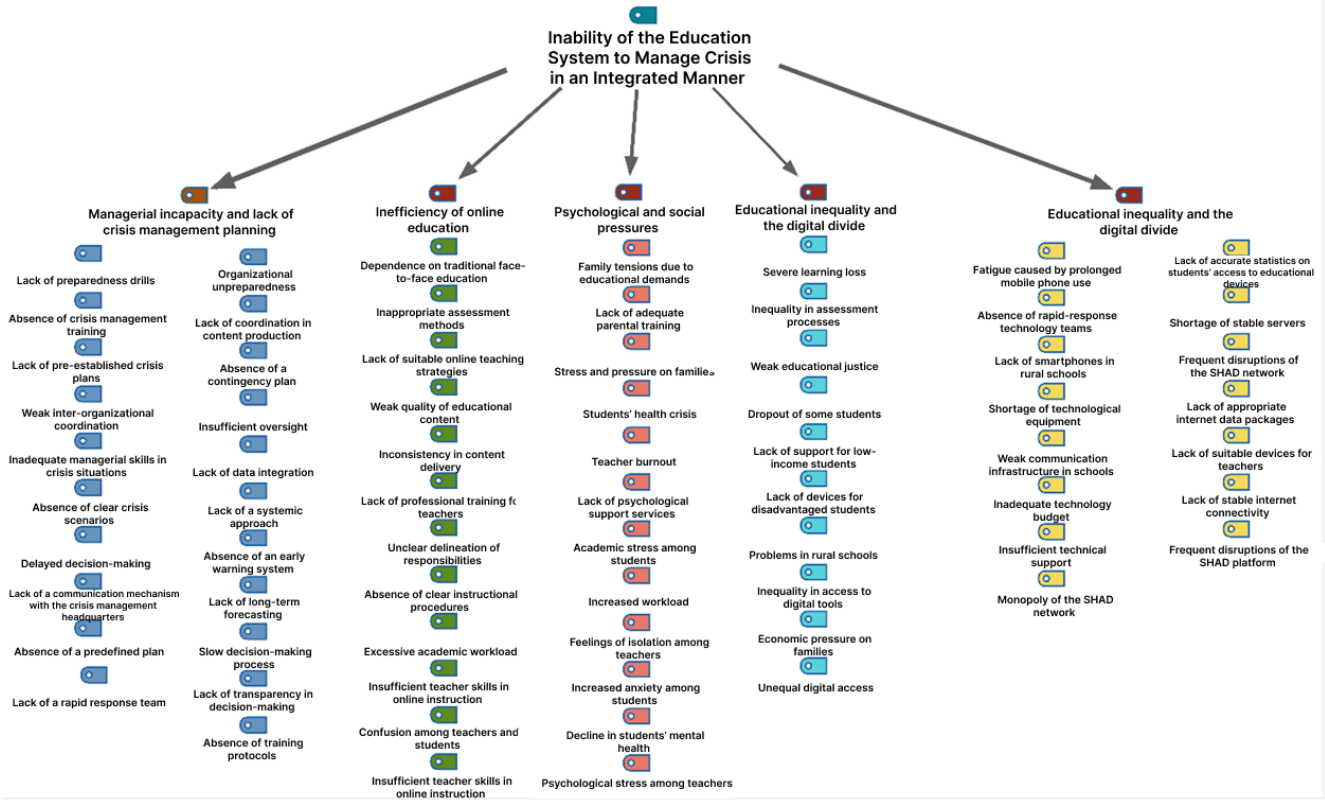
Figure 1

Challenges of Managing the COVID-19 Pandemic Crisis in the Education System of Khoy



The analysis of the research findings indicates that crisis management arising from the COVID-19 pandemic within the education system of Khoy County faced multi-layered and interwoven challenges, the primary root of which can be traced to structural incapacity and the absence of crisis-oriented strategic planning. This managerial weakness, as the core category, functioned as a root cause that either generated or reinforced the other categories. Specifically, the lack of a pre-formulated plan, weak inter-organizational coordination, and the absence of clear protocols resulted in reactive responses and confusion in confronting the crisis. This lack of planning placed the aggravation of digital infrastructural weaknesses (such as the absence of stable internet connectivity and sufficient equipment) on the agenda not as an isolated issue, but as a vulnerability revealed in the absence of planning and optimal resource allocation. Therefore, the relationship among these categories was not unidirectional; rather, it formed a vicious cycle. Managerial incapacity prevented the provision of adequate infrastructure, and the lack of infrastructure, in turn, practically undermined any planning for integrated education.

Subsequently, the combination of managerial and infrastructural weaknesses directly intensified the deep gap in educational equity and the widespread psychosocial pressures. Inequality in access to digital learning tools—stemming from an inequitable distribution of resources in the absence of an equity-oriented plan—caused compounded deprivation among students in rural and underprivileged areas and effectively transformed "education" into a commodity dependent on families' socioeconomic capital. This educational deprivation, together with the intrinsic inefficiency of the online education delivered (due to the lack of appropriate content and insufficiently trained teachers), imposed substantial psychological strain on three groups: students, teachers, and parents. Stress arising from ambiguity in the teaching–learning process, fear of academic lag, and social isolation threatened the mental health of the educational community. These consequences show that the crisis was not merely an educational crisis, but evolved into a social crisis with psychological and economic dimensions—one whose management exceeded the capacity of a passive and unprepared education system. It can be argued that the experience of Khoy County reflects the failure of a centralized, inflexible, and reactive management model in confronting large-scale shocks. Prioritizing the removal of managerial barriers, as also confirmed by participants, requires a transition from routine

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administration toward resilient governance and scenario-based planning. This transition necessitates institutionalizing realistic monitoring and evaluation systems, establishing crisis think tanks with the participation of local stakeholders, and making long-term investments in technological infrastructure and human resources. Accordingly, the main lesson of this crisis for Khoy County and similar systems is that educational resilience is achieved only through strategic planning, de-routinizing the managerial structure, and ensuring equitable resource distribution during periods of stability so that, in times of crisis, the system responds not passively but proactively and grounded in local data.

The results derived from qualitative content analysis of the interviews and their coding, as presented in Table 2, showed that from the interviewees' perspective, the barriers and challenges of managing the COVID-19 pandemic crisis in the education system of Khoy comprised, in total, five axial categories with 70 concepts. The sample population typically holds diverse perspectives regarding the crisis-management challenges of the COVID-19 pandemic and their impact on the policies and programs of Khoy's education system. The core (selective) category—namely, the education system's inability to manage the pandemic crisis in an integrated manner—emerged from the overlap of multiple axial categories, each representing a dimension of structural inefficiency. Examining the frequency of concepts shows that the highest volumes of references to managerial, infrastructural, psychological, and educational weaknesses all convey a single message: the education system, in confronting the pandemic crisis, lacked cohesion, planning, tools, and rapid-response capacity. This core category is not grounded in a single dimension; rather, it is the product of the simultaneous and intertwined effects of a set of deficiencies that disrupted the crisis-management trajectory and contributed to the formation of a secondary crisis—an educational crisis.

The first axial category, "weaknesses in infrastructure and educational technology," has a very high total number of references (more than 150), making it one of the most determinant factors shaping the core category. The high frequency of concepts such as "internet problems," "repeated disruptions in SHAD," "server shortages," "lack of equipment," "ineffective technical support," and "insufficient readiness of the SHAD network" indicates that the country's technological infrastructure was not designed, even at a minimal level, for crisis-oriented education. This infrastructural weakness meant that the education system was practically unable to fulfill its role in integrated crisis management, because without effective tools, the capacity for sound decision-making, oversight, and coordination declines. In this sense, technological incapacity constitutes the most fundamental element of the system's overall failure.

The second axial category, "educational inequality and the digital divide," is described through a set of concepts related to poverty, lack of devices, difficulties in deprived areas, dropout, weaknesses in educational equity, and academic decline. This category is a direct consequence of infrastructural weaknesses and inadequate support structures. Online education implemented without attention to equity effectively widened learning gaps and prevented the education system from delivering inclusive services. The high frequency of concepts such as "inequality of access," "problems in rural schools," "lack of support for disadvantaged students," and "academic decline" indicates that the pandemic crisis not only failed in integrated management but also became a driver that intensified the cycle of educational deprivation. Therefore, the digital divide is a key element in the emergence of the core category.

The third axial category, "managerial incapacity and lack of crisis management planning," encompasses one of the heaviest clusters of concepts. This category highlights upstream structural deficiencies, and the frequency of concepts such as "absence of a pre-determined plan," "lack of crisis scenarios," "lack of organizational coordination," "absence of protocols," "lack of training in crisis-management skills," and "organizational unpreparedness" indicates that the education organization lacked the capacity for analysis, preparedness, and risk management at the macro decision-making level. These managerial weaknesses not only caused decision delays and misalignment across different levels, but also left other axial categories—such as infrastructure, online education, and psychological support—without effective leadership. As a result, this category constitutes the central component in the process through which the core category formed.

The fourth axial category, "psychological and social pressures," plays the role of a hidden yet highly consequential factor. The high frequency of concepts such as "student anxiety," "teachers' psychological pressure," "family stress," "mental health crisis," and "lack of psychological support" shows that crisis management was not limited to tools and planning; rather, failure in psychosocial support itself developed into a secondary crisis

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that reduced the system's capacity for effective functioning. Teacher burnout, declining student motivation, and families' inability to manage the pressure associated with assignments and online education created a vicious cycle, resulting in reduced quality even in those segments of education that were not technically constrained. Thus, psychological pressures were among the factors that weakened the system's operational capacity for integrated crisis management.

The fifth axial category, "inefficiency of online education," completes the picture of the core category. By emphasizing concepts such as "lack of online teaching skills," "low content quality," "absence of assessment criteria," "teacher confusion," "heavy dependence on face-to-face instruction," and "lack of a clear procedure," this category indicates that even if adequate infrastructure had been available, the education system would still have struggled to implement virtual education effectively due to insufficient professional preparation of teachers and weak pedagogical strategies. This educational inefficiency amplified the effects of other categories—including psychological pressure, managerial weakness, and the digital divide—and ultimately rendered the system incapable of integrated crisis management. In this way, inefficient online education was not only an outcome but also one of the key factors contributing to the formation of the core category.

Qualitative data analysis showed that the "education system's inability to manage the pandemic crisis in an integrated manner" resulted from a multi-layered interaction among infrastructural weaknesses, educational inequality, managerial incapacity, psychological pressures, and the inefficiency of online education. Weak technological infrastructure—including problems with the SHAD network, internet connectivity, lack of equipment, and technical miscoordination—constituted the most fundamental barrier to transforming face-to-face education into an effective alternative mode and, in practice, reduced the system's capacity to implement decisions and steer crisis response. Simultaneously, the digital divide and educational inequality caused a substantial proportion of students—especially in deprived areas—to exit the educational cycle entirely or experience severe academic decline. This situation not only intensified the educational crisis, but also imposed heavy psychosocial burdens on students, teachers, and families, reducing their capacity to adapt to the new conditions. Alongside these factors, serious managerial shortcomings—such as the absence of a crisis management plan, lack of alternative scenarios, absence of educational protocols, weak inter-organizational coordination, and organizational unpreparedness—left the education system without the cohesion needed for a structural response to the crisis. This managerial weakness further complicated the implementation of online education and, due to the lack of professional teacher training, absence of clear assessment standards, and weak content quality, disrupted the effectiveness of the teaching–learning process. Overall, the interaction of these five axial categories demonstrates that the pandemic crisis was not merely an external challenge, but a major test that exposed deep structural, managerial, and educational gaps in the education system—gaps that, together with organizational unpreparedness for crisis management, led to a systematic inability to manage the crisis in an integrated manner.

Table 2

Results of Coding the Challenges of COVID-19 Pandemic Crisis Management in the Education System of Khoy

Axial Categories	Concepts	Number of References
Weaknesses in infrastructure and educational technology (concepts related to equipment, internet, platform, technical capability, and technological readiness)	Insufficient readiness of the SHAD network	15
	Internet problems	16
	Lack of appropriate devices/smartphones for teachers	10
	Lack of suitable internet data packages	9
	Frequent disruptions of the SHAD network	15
	Shortage of stable servers	13
	Lack of accurate statistics on students' equipment	9
	Monopoly of the SHAD network	7
	Ineffective technical support	10
	Insufficient technology budget	8
	Weak school communication infrastructure	13

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	Shortage of technology equipment	12
	Lack of smartphones in rural schools	11
	Absence of rapid-response technology teams	8
	Fatigue due to prolonged mobile phone use	10
Educational inequality and the digital divide (issues related to discrimination, lack of access, deprived areas, and differences in family capacity)	Inequality in digital access	14
	Families' economic pressure	10
	Educational inequality	11
	Problems in rural schools	12
	Lack of smartphones for disadvantaged students	10
	Lack of support for disadvantaged students	11
	Dropout of some students	8
	Lack of educational equity	11
	Weakness of equity in assessment	9
	Severe academic decline	12
Managerial incapacity and lack of crisis management planning (including lack of plans, weak coordination, policy deficiencies, and lack of protocols)	Absence of a pre-established plan	17
	Lack of communication mechanisms with the crisis headquarters	9
	Delayed receipt of information	10
	Lack of crisis-management scenarios	14
	Weak managerial skills in crisis management	10
	Lack of coordination among organizations	11
	Undefined responsibilities	11
	Lack of training in crisis-management skills	10
	Absence of preparedness drills	6
	Lack of a rapid-response team (managerial domain)	8
	Absence of educational protocols	12
	Lack of transparency in decision-making	8
	Slow decision-making	7
	Lack of long-term forecasting	10
	Lack of an early warning system	6
	Lack of a systemic perspective	8
	Lack of data integration	7
	Lack of sufficient oversight	7
	Absence of compensatory/remedial plans	7
	Lack of coordination in content production	8
	Organizational unpreparedness	14
Psychological and social pressures (concepts related to the mental health of teachers, students, and families)	Teachers' psychological strain	12
	Students' psychological strain	11
	Students' anxiety	12
	Teachers' feelings of loneliness	8
	Increased workload pressure	10
	Students' stress	12
	Lack of psychological support	10
	Teachers' health crisis	7
	Students' health crisis	8
	Parents' objections (family stress)	8
	Lack of adequate training for parents	9
	Family pressure due to excessive assignments	9
Inefficiency of online education (instructional skills, content, assessment, and the teaching–learning process)	Lack of teachers' skills for online instruction	18
	Teachers' confusion	12
	Weak online instruction by some teachers	11
	Excessive volume of assignments	9
	Lack of clear assessment criteria	9

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Unclear responsibilities (educational domain)	11
Lack of professional teacher training	13
Lack of coordination in content	8
Weak content quality	10
Lack of a clear procedure for online education	13
Inappropriate assessments	10
Heavy reliance on face-to-face instruction prior to the crisis	11

Content analysis of the interviews and their coding showed that COVID-19 pandemic crisis management in the education system of Khoy faced multi-layered challenges. These challenges were categorized into five axial categories: weaknesses in infrastructure and educational technology, educational inequality and the digital divide, managerial incapacity, psychological and social pressures, and inefficiency of online education. The core category, "the inability of the education system to manage the crisis in an integrated manner," was identified as the result of overlap among these categories. This analysis indicates that the COVID-19 crisis was not only an external challenge, but also a test that revealed structural and managerial deficiencies in the education system.

Weaknesses in infrastructure and educational technology represent one of the most important challenges and, with more than 150 references, were identified as a key factor shaping the core category. Problems such as frequent disruptions of the SHAD network, equipment shortages, and ineffective technical support indicate that the country's technological infrastructure was not designed for crisis-oriented education. This infrastructural weakness reduced the system's capacity for effective decision-making and coordination and played a central role in the failure of crisis management.

Educational inequality and the digital divide were a direct consequence of infrastructural weaknesses and were described through concepts such as poverty, dropout, and lack of educational equity. Online education implemented without attention to equity increased learning gaps, and a substantial proportion of students—especially in deprived areas—fell out of the educational cycle. This situation not only intensified the educational crisis, but also reinforced the cycle of educational deprivation.

Managerial incapacity and the lack of crisis management planning constitute another axial category emphasizing upstream structural deficiencies. Concepts such as the absence of a pre-established plan, weak inter-organizational coordination, and organizational unpreparedness indicate that the education system lacked the capacity for analysis and risk management. This managerial weakness also disrupted the implementation of other categories, such as online education and psychological support.

Psychological and social pressures, as a hidden but important factor, played a key role in weakening the system's operational capacity. Student anxiety, teacher stress, and family pressure are among the concepts indicating that failure in psychological support generated a secondary crisis. These pressures reduced motivation and educational quality and created a vicious cycle.

The inefficiency of online education, reflected in concepts such as weak teacher skills, low-quality content, and lack of assessment criteria, completes the picture of the core category. This inefficiency amplified the effects of other categories and rendered the system incapable of integrated crisis management. Overall, the interaction of these five axial categories shows that the COVID-19 crisis served as a test that exposed deep structural and managerial gaps within the education system.

To answer the question of how the challenges of COVID-19 crisis management in the education system of Khoy County are prioritized, the Friedman ranking test was used. Based on the results of this test, it becomes clear which challenges have higher priority. The final rank of each indicator, along with its weighted mean, was reported. According to the results presented in Table 3, the test significance level was 0.251, which is greater than the error level (0.05). The chi-square value (5.374) is greater than the degrees of freedom (4), but the difference is not large enough to be considered statistically significant. It can therefore be concluded that there is no meaningful difference among the crisis-management challenges in the education system of Khoy County, and that the challenges (educational inequality and the digital divide, inefficiency of education and online education, managerial incapacity and lack of crisis planning, weaknesses in infrastructure and technology, and psychological and social pressures) do not differ in priority.

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Table 3

Friedman Ranking Test

N	Chi-square	Degrees of Freedom	Significance Level
384	5.374	4	0.251

The ranking of each COVID-19 crisis management challenge in the education system of Khoy County is presented in Table 4. Among the examined challenges, educational inequality and the digital divide ranked first with a mean rank of 3.14, while psychological and social pressures ranked fifth with a mean rank of 2.89. The status of the remaining challenges is also presented in Table 4. Overall, the results of this test indicate that there is no significant difference among the COVID-19 crisis management challenges in the education system of Khoy County, and the assumption that the challenges have different priorities is rejected. This finding is clearly reflected in the mean ranks of the challenges, as there are no substantial differences among them. The results indicate that, statistically, respondents did not differentiate among the various components of crisis management. In other words, all components were evaluated as homogeneous and similar from the participants' perspective. Given that the highest mean rank (3.14 for the digital divide) and the lowest mean rank (2.89 for psychological pressures) differ only slightly and that the test also indicates non-significance, a uniform perception of challenges is evident. It can therefore be concluded that all crisis management components are equally problematic, and none of the components was evaluated as significantly better or worse than the others. The status of crisis management in the education system of Khoy County was evaluated as uniformly unfavorable across all dimensions (educational inequality and the digital divide, inefficiency of education and online education, managerial incapacity and lack of crisis planning, weaknesses in infrastructure and technology, and psychological and social pressures). Based on these results, improvement requires simultaneous intervention across all dimensions, as no single area is significantly better than the others. Since there is no statistically significant difference among the components, it is not possible to determine a clear intervention priority based solely on these data. Additional criteria (such as cost, ease of implementation, or impact) may be required for prioritization. Moreover, this uniformity indicates that crisis management problems are systemic and structural rather than limited to one or two domains.

Table 4

Prioritization of COVID-19 Crisis Management Challenges in the Education System of Khoy County

Challenges	Mean Rank	Rank
Educational inequality and the digital divide	3.14	1
Inefficiency of education and online education	3.02	2
Managerial incapacity and lack of crisis planning	2.99	3
Weaknesses in infrastructure and technology	2.95	4
Psychological and social pressures	2.89	5

The findings of the Friedman ranking test showed that there is no statistically significant difference among the COVID-19 crisis management challenges in the education system of Khoy County. From the respondents' perspective, the various crisis management challenges (educational inequality and the digital divide, inefficiency of online education, managerial incapacity, infrastructural weaknesses, and psychological pressures) were evaluated as homogeneous and uniform. In other words, none of these challenges was assessed as significantly better or worse than the others. This indicates that crisis management problems in the education system of Khoy County are systemic and structural and are not confined to one or two areas. Based on the findings, it can be stated that improving crisis management requires simultaneous intervention across all dimensions. Since no area has a significantly higher priority, other criteria such as cost, feasibility, or effectiveness may be used to determine intervention priorities. Furthermore, this uniformity indicates that the education system lacked the necessary cohesion and preparedness in confronting the crisis. To address these challenges, it is recommended that a comprehensive and integrated plan be developed to

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strengthen technological infrastructure, reduce the digital divide, provide crisis management skills training for administrators and teachers, and deliver psychological support to students and teachers. These measures can enhance the system's capacity to manage future crises and prevent the recurrence of similar problems.

4 Discussion

The findings of this study demonstrate that crisis management during the COVID-19 pandemic in the education system of Khoy County was characterized by a complex, multi-layered configuration of challenges whose effects were cumulative rather than isolated. The results clearly indicate that the core problem was not a single operational failure, but a systemic inability to manage the crisis in an integrated manner. This finding aligns with the growing body of literature emphasizing that educational crises, particularly long-term and large-scale disruptions such as pandemics, expose underlying structural and managerial weaknesses rather than merely creating temporary disruptions (Chatzipanagiotou & Katsarou, 2023; Nickerson & Sulkowski, 2021). In the present study, weaknesses in infrastructure and educational technology, managerial incapacity and lack of crisis planning, educational inequality and the digital divide, psychological and social pressures, and inefficiency of online education were not experienced independently; instead, they interacted dynamically, reinforcing one another and producing a vicious cycle of organizational fragility.

One of the most salient results concerns the central role of infrastructural weakness, particularly technological infrastructure, which emerged as the most frequently referenced category in the qualitative analysis. This finding is consistent with prior studies showing that inadequate digital infrastructure significantly constrains educational systems' ability to respond effectively to crises that require rapid transitions to remote or hybrid learning (Hidayat et al., 2020; Salimi & Fardin, 2020). The lack of stable internet access, insufficient devices, and limited technical support observed in Khoy County mirrors challenges reported in diverse national contexts, suggesting that crisis-oriented educational infrastructure remains underdeveloped in many systems (Kedačić-Buzina & Klarin, 2024). Importantly, the findings indicate that infrastructural weakness did not merely disrupt instruction, but also undermined decision-making, coordination, and monitoring processes, thereby constraining the overall governance capacity of the education system. This supports the argument that infrastructure should be understood not only as a technical asset, but as a foundational component of crisis governance (United States Agency International, 2010).

Closely linked to infrastructural limitations was the pronounced educational inequality and digital divide experienced during the pandemic. The study shows that unequal access to devices, connectivity, and supportive learning environments disproportionately affected students from rural and socio-economically disadvantaged backgrounds, resulting in learning loss and, in some cases, dropout. These findings strongly align with earlier research highlighting that crises tend to exacerbate pre-existing inequalities unless explicit equity-focused strategies are embedded within crisis management frameworks (Gharari et al., 2020; Redding & Walberg, 2012). The results reinforce the notion that online education, when implemented without attention to distributive justice, can transform education into a function of family resources rather than a guaranteed public service. This outcome echoes international evidence demonstrating that crisis responses lacking equity considerations risk deepening social stratification and undermining the legitimacy of educational institutions (Chatzipanagiotou & Katsarou, 2023; United States Agency International, 2010).

Managerial incapacity and the absence of systematic crisis planning constituted another central dimension of the findings. Participants consistently emphasized the lack of pre-established crisis scenarios, weak inter-organizational coordination, delayed decision-making, and insufficient crisis-related training for administrators. These results are in line with empirical studies suggesting that many education systems continue to rely on reactive and ad hoc approaches to crisis management, despite longstanding recommendations for proactive and scenario-based planning (Elbedour et al., 2020; Gainey, 2010). Research in school systems across different regions has shown that leadership preparedness, clarity of roles, and coordination mechanisms are decisive factors in determining whether crisis responses are coherent or fragmented (Al-Janabi et al., 2022; Jabeen et al., 2022). The present findings extend this literature by illustrating how managerial weakness functions as a catalytic factor that amplifies infrastructural deficits, weakens online education delivery, and leaves psychosocial needs unaddressed.

The study also highlights the often-underestimated role of psychological and social pressures in shaping crisis outcomes. Elevated levels of anxiety among students,

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emotional exhaustion among teachers, and stress among families were reported as significant challenges that directly affected educational quality and organizational functioning. These findings are consistent with research framing the COVID-19 pandemic as a long-term psychosocial crisis for educational communities rather than a purely instructional disruption (Elbedour et al., 2020; Nickerson & Sulkowski, 2021). The results suggest that insufficient psychological support not only harmed individual well-being but also reduced the system's adaptive capacity by eroding motivation, engagement, and trust. Similar patterns have been observed in international studies showing that neglecting mental health considerations during crises leads to secondary crises that further destabilize educational organizations (Ben, 2025; Javaheri et al., 2022).

Inefficiency in online education delivery emerged as another critical factor completing the picture of integrated crisis management failure. Despite the rapid deployment of virtual platforms, the study found widespread deficiencies in teachers' digital pedagogical skills, content quality, assessment practices, and instructional coherence. These findings corroborate previous research indicating that emergency remote teaching should not be conflated with well-designed online education, as the former often lacks pedagogical depth and institutional support (Hidayat et al., 2020; Salimi & Fardin, 2020). Moreover, studies have emphasized that without sustained professional development and clear instructional frameworks, online education may exacerbate confusion and workload rather than enhancing learning continuity (Chatzipanagiotou & Katsarou, 2023; Jabeen et al., 2022). The present results further show that inefficiencies in online education interacted with psychological stressors and managerial shortcomings, collectively undermining the effectiveness of crisis responses.

A particularly important contribution of this study lies in its demonstration that none of the identified challenges significantly outweighed the others in terms of perceived priority, as evidenced by the Friedman test results. This uniformity suggests that stakeholders experienced the crisis as a holistic systemic failure rather than as a set of isolated problems. This finding supports theoretical perspectives that conceptualize crisis management as an interdependent system in which weaknesses in one domain rapidly propagate across others (Kedačić-Buzina & Klarin, 2024; Nickerson & Sulkowski, 2021). Similar conclusions have been drawn in comparative studies emphasizing that partial or sector-specific interventions are insufficient for addressing complex educational crises (Al-Janabi et al., 2022; Ben, 2025). Consequently, the results underscore the need for integrated, system-level approaches that simultaneously address infrastructure, leadership, equity, pedagogy, and psychosocial support.

5 Conclusion

Overall, the discussion of findings suggests that the COVID-19 pandemic served as a stress test that exposed latent vulnerabilities within the education system of Khoy County. The observed challenges are not unique to this context, but rather reflect broader patterns documented across national and international studies on educational crisis management (Chatzipanagiotou & Katsarou, 2023; Gainey, 2010; United States Agency International, 2010). However, the localized analysis provided by this study highlights how global crises manifest through context-specific configurations of structural constraints, governance practices, and resource distributions. By identifying managerial incapacity as the core category linking multiple dimensions of crisis failure, the findings reinforce calls for a shift from reactive administration toward resilient, learning-oriented governance models in education (Al-Janabi et al., 2022; Mazhabi, 2025).

The limitations of this study should be acknowledged. First, although the mixed-methods design provided rich insights into the crisis management challenges, the findings are based on a single local education system, which may limit the generalizability of results to other regions with different governance structures or resource conditions. Second, the qualitative component relied on participants' perceptions and retrospective accounts, which may be influenced by recall bias or personal experiences during the pandemic. Third, while the quantitative analysis captured perceived priorities among challenges, it did not directly measure objective performance indicators such as learning outcomes or long-term dropout rates.

Future research is recommended to extend this line of inquiry through comparative studies across multiple regions or countries in order to identify both common and context-specific patterns of educational crisis management. Longitudinal designs would be particularly valuable for examining how crisis responses evolve over time and how early management decisions influence long-term educational resilience. Additionally, future studies could integrate objective indicators of educational performance with stakeholder perceptions to provide a more

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comprehensive assessment of crisis management effectiveness.

From a practical perspective, the findings suggest that improving crisis management in education requires simultaneous and coordinated interventions across all major dimensions identified in this study. Policymakers and educational leaders should prioritize the development of comprehensive crisis management frameworks that integrate infrastructural investment, equity-oriented resource allocation, leadership training, psychosocial support mechanisms, and systematic professional development for online education. Establishing clear protocols, conducting regular preparedness drills, and fostering collaborative decision-making structures can enhance organizational readiness. By adopting an integrated and proactive approach, education systems can strengthen their capacity to respond effectively to future crises and reduce the risk of systemic failure.

Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

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In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

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In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were observed.

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