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School Leaders' Well-Being during Times of Crisis: Insights from a Quantitative Study in Kazakhstan

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Abstract: Amidst increasing global pressures on school leaders, particularly during crises when unforeseen situations necessitate prompt and decisive action from them, understanding the multi-faceted dimensions of their well-being is essential for ensuring effective leadership and maintaining educational quality. This study examines the well-being of school leaders during crises by analysing survey responses from 1299 school leaders in Kazakhstan. Employing a well-being framework comprising dispositional, relational, and contextual dimensions, various predictors were assessed within each dimension. Gender biases (dispositional), challenges such as managing conflicts with parents (relational), and limited school autonomy and digital infrastructure (contextual) were identified as factors negatively impacting school leaders' well-being. Notably, gender significantly influences well-being, particularly impacting female school leaders. School location and medium of instruction are not associated with well-being, implying the pervasive impact of remote schooling on school leaders' well-being. Findings underscore the importance of integrating crisis management courses in professional development, implementing policy initiatives to handle contextual factors like equitable resource distribution and increased school autonomy, promoting self-care practices, and advocating for gender perspectives in institutional policies to bolster support for women school leaders.

Keywords: school leader; well-being; Kazakhstan; crisis; predictors; gender; survey; dispositional factors; relational factors; contextual factors

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1. Introduction

Effective school leadership is at the heart of education quality [1], making it crucial to ensure and support the well-being of school leaders [2]. As the workload of school leaders intensifies globally, especially during crises, it significantly impacts their well-being. Despite its significance, there remains a gap in understanding the diverse dimensions of school leaders' well-being [2], particularly in crises. A crisis context signifies an unexpected situation demanding immediate and resolute action from organizational leaders [3–5]. Crises can stem from human-induced factors like war, conflict, displacement, genocide, civil unrest, terrorism, and industrial disputes or natural calamities such as floods, earthquakes, tornadoes, hurricanes, droughts, and pandemics. The distinction between the two types of crisis categories often blurs, as human actions can influence natural disasters [6]. Crises vary in duration and complexity, necessitating a tailored response from policymakers and educational leaders to safeguard the right to education and the well-being of students, teachers and school leaders [7]. In this study, the term crises specifically refers to the COVID-19 pandemic, which is described as a complex crisis due to its scale, duration, and multidimensional impacts on the economy, society, and education in both the short and long term [8].

Studying the well-being of school leaders and the factors influencing their well-being during the pandemic is crucial for understanding how leading schools amidst crises impacts school leaders' well-being and resilience. Such investigations are pivotal for creating

tailored interventions to support school leaders during and after crises, given the lasting impact of COVID-19 on the education sector and the necessity for sustainable strategies to bolster school leaders' well-being, job satisfaction, and effectiveness and develop a resilient school leadership workforce [1].

While empirical studies on school leadership styles, challenges and coping strategies during school closures are emerging [9–12], studies investigating how school leaders' well-being was impacted by work intensification during COVID-19 school colures, reopening, and, in some cases, re-closure is limited both globally [13] and in Kazakhstan, the country focus of the current study. School leadership during times of crisis compound the existing stresses school leaders experience, requiring swift amendments to the provision of schooling and prompt decision-making in the context of stress, ambiguity, and without available information over a long time [3,14]. Even under 'normal' circumstances, school leadership is demanding, but navigating crises and post-crisis situations significantly amplifies the stress [15], as evidenced by a recent review of the global literature on education provision during COVID-19 [16].

This paper aims to examine the effects of distance schooling on the well-being of school leaders in Kazakhstan in the context of COVID-19 related school closures and to identify the factors that influence their well-being. It is noteworthy that schools in Kazakhstan operated in distance mode for two academic years [17]. As a post-Soviet country with an upper-middle-income status, Kazakhstan is situated at a unique intersection of Eastern and Western cultures, contributing to the broader relevance of the study's conclusions. Like developed economies in the Global North, Kazakhstan boasts universal school enrolment rates, a highly feminised teaching workforce, the disproportionate representation of men in school leadership positions [18] and the implementation of top-down education reforms and policies within an increasingly neoliberal climate [19]. Despite the above similarities, as a post-Soviet Central Asian country, Kazakhstan strives to catch up with the 'modern' world, with education policies borrowed from the West and introduced in quick succession, putting enormous pressure on school leaders [20,21]. The country's highly hierarchical, collectivistic, and risk-averse culture [22], mirrored in its centralised, hierarchical, and micro-managed education system [23], emphasises a strong need for structure and regulations, further distinguishing it from Western societies.

2. Literature Review: School Leaders' Well-Being during COVID-19 School Closures

2.1. Impact on School Leaders' Well-Being

Recent studies highlight the significant challenges to well-being encountered by school leaders during the pandemic. An overwhelming majority of school leaders in Hong Kong (90% of 1130) experienced stress due to work intensity [13]. A comparison of Australian school leaders' well-being in 2019 (n = 1936) and 2020 (n = 1801) showed a slight increase in stress, depressive symptoms, and burnout in 2020 [24]. An increase in COVID-19-related stress was also reported among Flemish school leaders (n = 981) [25]. Likewise, several studies using a variety of research designs examining the well-being of American school leaders revealed heightened work-related stress and anxiety among school leaders [26–29]. These intensified pressures resulted in school leaders in diverse contexts experiencing negative impacts on their physical, emotional, and mental well-being [30–33]. At the same time, school leaders often deprioritised their own well-being and self-care [30,32], viewing sacrifice as an inherent aspect of their role [34].

2.2. Stressors Faced by School Leaders

School closures during COVID-19 intensified existing stressors for school leaders and introduced new challenges.

2.2.1. High Workload

Studies associate perceived intensification of work with poor well-being scores [13,35]. Australian school leaders reported the sheer quantity of work as a major stressor in 2020,

with over 64.5% of 1801 respondents working over 50 h a week [24]. Most Canadian school leaders (n = 41) highlighted the rapid changes in COVID-19 policies for enforcing health measures added to their responsibilities, intensifying their already challenging workload and creating a relentless pace of work with minimal downtime [36].

2.2.2. Policy Communication and Consultations

Unclear and inconsistent communication from the central government regarding safety protocols, school closure, and distance education added to the workload of school leaders [3,25]. Conversely, too frequent policy updates from officials overwhelmed school leaders, who struggled to keep up with the constant flow of information [36]. Top-down communication and the lack of consultation with school leaders also led to high job demands and stress levels for them [3].

2.2.3. Job Clarity

Australian school leaders reported that their access to timely information was hindered in 2020, leading to less predictability in their jobs and unclear roles and work tasks [24]. In the rapidly changing pandemic, clear and timely guidelines were seldom provided, with school leaders often given short deadlines to implement policy changes regarding safety protocols and modes of instruction. Understandably, high levels of work pressure amidst a lack of job clarity over time led school leaders to feel highly stressed in Norway (n = 15) [37].

2.2.4. Care Work

School leaders were expected to offer emotional support to their school community whilst dealing with significant stress and complexity [38]. The care work involved in tending to the socio-emotional needs of teachers and school staff, explaining shifting academic policies and procedures to parents, and connecting them with resources has been found to increase the emotional burden and burnout of school leaders [28,39].

2.2.5. Ensuring Equity

During the pandemic, school leaders faced concerns about how existing inequities in digital infrastructure and literacy would further disadvantage certain learners. Globally, school leaders rushed to provide access to digital resources and distance learning while also addressing basic student and family needs such as food pickup and delivery [40,41]. While equity-oriented school leadership is pivotal during crises [42], it increases the workload and emotional labour of school leaders [43].

2.2.6. Parental Support and Tensions

During school closures, schools depended on parental involvement and cooperation in digital education, but not all parents were able to meet these expectations [17]. This increased involvement of parents also led to tensions, adding to school leaders' stress [37].

2.2.7. Lack of Targeted Support

Despite an increase in the intensity of stressors, studies report limited availability of targeted support and resources for school leaders [34,35].

2.3. Socio-Demographics Associated with School Leaders' Well-Being

Leaders' background characteristics, such as gender, age and length of service, are crucial factors shaping their response to a crisis context and their well-being [15].

2.3.1. Gender & Motherhood

The literature often overlooks the variations in school leaders' well-being based on socio-demographic characteristics such as gender or parenthood e [29]. However, studies that do analyse gender differences predominantly find that female school leaders

report higher stress levels and workload intensification compared to their male counterparts [13,27,28,32,44]. Furthermore, female school leaders felt more stressed by the care work involved in ensuring the well-being of students, teachers and parents [28].

With school closures, the boundary between work and home disappeared, transforming working from home to living at work, which was particularly hard for school leaders who were mothers [27,37]. School closures increased the stress levels of mothers, as they often struggled to find a balance between their roles as mothers and school leaders, resulting in difficulty in managing both in the way they desired [27]. Most women school leaders reported they could not find the time for self-care, associating poor self-care as part and parcel of being a mother and a school leader, suggesting the impact of gender on school leaders' well-being.

School principals must exhibit resilience by responding, reacting, and working cohesively and proactively during times of crisis [45]. Interestingly, male school leaders in Hong Kong and Mainland China had a higher resilience score than female school leaders. While Bellemans et al. found that school leaders with high self-efficacy reported lower burnout, female school leaders scored lower on self-efficacy than male school leaders [25]. Likewise, female school leaders expressed a higher level of self-doubt in their ability to effectively manage school leadership challenges during the pandemic [35]. Conversely, some studies did not report any significant gender differences in the stressors school leaders faced, such as Alexander [34].

2.3.2. Age and Experience

While pre-COVID studies indicate that the principal's age may affect their perceived levels of stress [46], Lau et al. observed no significant association between school leaders' perceived level of stress and their age during school closures in Hong Kong [13]. Resilience as a mechanism for dealing with stress can vary by years of experience [47], although the evidence is not conclusive [13]. While school leaders' self-confidence in managing challenges was essential during the pandemic, inexperienced school leaders tended to be more self-critical of their school leadership capabilities [35], and the detrimental effects of school leadership stress during COVID-19 were less significant for older school leaders [31]. Experienced female school leaders, in particular, felt more adept at navigating the challenges of COVID-19.

2.4. Work-Related Factors Supporting School Leaders' Well-Being

Both relational factors, such as supportive and collaborative relationships with supervisors, teachers and peers and dispositional factors, such as professional development in online leadership and distributed leadership styles, can positively impact school leaders' well-being [15].

2.4.1. Supportive Work Environment

Australian school leaders reported receiving more social support from their supervisors in 2020, which was found to have a positive impact on their psychological well-being [24]. Additionally, studies observe that mutual support across the school leadership networks [29,48] and trust among the communities [49] were crucial mechanisms for a supportive work environment conducive to promoting well-being [38].

2.4.2. Professional Development

While several studies highlight the significance of the professional development and education of school leaders for crisis management [38,45,49], existing studies have not investigated the impact of professional development opportunities on school leaders' well-being.

2.4.3. Distributed and Collaborative School Leadership

Effective school leadership styles for managing remote schooling and addressing workload stressors include distributed and collaborative school leadership [50,51]. Delegat-

ing authority and establishing structures that harness the school leadership capabilities of multiple teachers was seen to support school leaders' well-being [52] and help navigate the uncertainties of COVID-19 [3,10]. The shift to virtual schooling necessitated a move away from top-down autocratic methods. School leaders either expanded existing distributed school leadership structures or shifted from an authoritarian to a more collaborative school leadership model [3], although not all school leaders embraced distributed school leadership [50]. Australian school leaders [38,53] and their English counterparts [36] highlighted the importance of shared school leadership practices in fostering engagement, motivation, and collaborative school cultures. With the transition to online education, shared governance practices gained traction among school leaders [42], fostering a sense of belonging, building consensus and promoting school leaders' well-being [49].

In substantive terms, the literature indicates that school leaders experienced increased stress levels, depressive symptoms, and burnout. Stressors during the pandemic included high workload, unclear and inconsistent communication, job clarity issues, and the emotional labour of supporting teachers, parents, and students. Female school leaders, especially mothers, reported higher stress levels. However, high self-efficacy and resilience were identified as protective factors. A supportive work environment, distributed and collaborative school leadership, and social support were found to be beneficial for school leaders' well-being.

In methodological terms, we make four observations. Firstly, most studies consist of small-scale qualitative inquiries e.g., [27,29,37,38,43,44], except for Hayes and colleagues, whose qualitative study included 120 school leaders [30]. This trend is understandable due to the rapid disruption caused by the global COVID-19 pandemic and the pressing need for evidence to inform policy initiatives. The complexities of developing and validating questionnaires and incorporating a large number of participants into research designs are arguably challenging in such circumstances. Engaging busy school leaders in research is a difficult task even during normal times, and with the added burdens from the pandemic, their participation may have become even more demanding. Even quantitative studies are often based on small sample sizes with the exception of a few studies, for example, Arnold and colleagues' (n = 1801) [24] and Leksy and colleagues' (n = 1899) [31]. Secondly, the majority of studies rely on convenience sampling, although Schultz employed a probability sample (n = 458). Thirdly, the majority of quantitative studies have utilised well-being instruments predating the COVID-19 pandemic e.g., [32,34], potentially missing key elements pertinent to school leaders' well-being during the pandemic. Finally, many quantitative studies have overlooked important factors linked to school leaders' well-being. For instance, while Marchant et al. [32] failed to explore these factors, other researchers like Alexander [34] = addressed only socio-demographic factors such as gender and experience level but omitted crucial aspects like leadership style, professional development opportunities, and digital infrastructure within schools. It is evident, as highlighted in Doyol Fosco et al.'s recommendation that further investigation is needed to understand how demographics and other factors influence educational leaders' well-being [28].

3. Conceptual Framework

This study adapts Mutch's framework on crisis school leadership characteristics, which incorporates dispositional, relational, and contextual dimensions [10,54]. The dispositional dimension refers to the personal qualities, experiences, values, beliefs, skills, and expertise that school leaders bring to the event. The relational dimension involves building strong relationships, fostering collaboration, and developing a sense of community. The contextual dimension pertains to school leaders' understanding of the context, decision-making, and visions for the future, as well as contextual features of the school, such as its location or governance structures [54]. While Mutch's framework has primarily been utilised in qualitative studies, we expand upon it by conducting an in-depth quantitative investigation to explore the impact of dispositional, relational, and contextual factors on school leaders' well-being. We argue that the three sets of factors are interrelated and shape school leaders'

well-being. By expanding Mutch's framework [54], we aim to enhance its capabilities and gain valuable descriptive and insightful characteristics that can predict school leaders' well-being in a crisis context.

In our adapted framework, dispositional factors that affect school leaders' well-being in times of crisis and remote schooling include gender, experience as a leader, and leadership style involving teacher autonomy in matters of curriculum and choice of digital platforms (Figure 1).

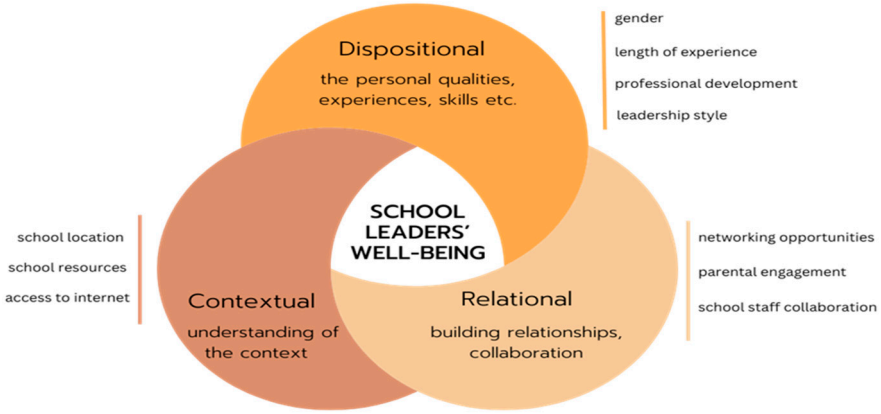

Figure 1. Conceptual framework of school leaders' well-being in crisis contexts. Source: Adapted from Mutch [54].

Relational qualities of school leaders in crisis emphasise caring school leadership. Relational factors include communication, networking opportunities, and collaboration with stakeholders, including students, school staff, parents, and government.

Situational or contextual factors focus on understanding the contexts, addressing the community's needs and equity-oriented school leadership in crisis contexts. It also includes how contextual factors, such as school autonomy and location, impact school leaders' well-being.

4. Study Context

4.1. School System

In 2020–2021, there were 7440 schools in Kazakhstan, with 96.4% being state-funded, 3.4% being non-state or private, and 0.3% not disclosing their source of funding [55]. The vast majority of state-funded schools are called 'mainstream' schools. Additionally, around 134 state-funded schools comprise selective schools for gifted students [56]. These schools enjoy greater autonomy and richer human and material resources.

The majority of schools (71%) are located in rural areas [57]. Kazakhstan is the 9th largest country, but it has a low population density, except in large metropolitan cities. Therefore, rural schools tend to be small, while urban schools are much larger and often operate in multiple shifts [17].

Schools are classified based on the medium of instruction (MoI). In 2020, 51.2% of schools offered instruction in Kazakh, 17.3% offered instruction in Russian, and 31.1% were considered 'mixed schools' where students from different language backgrounds share the same building but are taught separately [58]. Schools using other languages as the medium of instruction accounted for 0.28%.

4.2. School Leaders and Leadership

In Kazakhstan, the school principal, known as the 'school director', is appointed by regional educational authorities or the Ministry of Education through a competitive process. The majority of school directors (91.5%) hold a bachelor's degree or an equivalent qualification [59]. School leaders, particularly in rural areas, have limited training opportunities in school leadership and management before appointment, resulting in reliance

on informal or apprenticeship models to learn school leadership [23]. Additionally, the highly centralised and hierarchical education system in Kazakhstan significantly restricts school leaders' autonomy and their ability to practice distributed school leadership [22]. Furthermore, they are challenged by managerial accountability [60,61]. School leaders predominantly spend time managing day-to-day operations and enforcing discipline and regulations [62].

Based on TALIS 2018 data, the average Kazakhstani school leader is 48 years old and has 22 years of teaching experience [59]. While women make up 80% of teachers, they only constitute 53% of school directors, indicating their underrepresentation in school leadership [63]. Although the gender gap in school leadership in Kazakhstan has not been studied, women school leaders in higher education encounter challenges balancing work and personal life due to the dual responsibilities of caregiving and academic pursuits [64].

While studies on school leadership perspectives during distance schooling are limited [9], nearly all schools (97%) shifted to remote and online learning without proper groundwork or infrastructure in place, alongside notable disparities in digital resources [65,66]. Educators voiced worries about constrained autonomy in academic matters and the complexities of managing online and in-person classes simultaneously, as some students, including children of key workers and those taking high-stakes external examinations, were permitted to attend school in person [67].

5. Methodology

5.1. Study Aim and Research Questions

This study aimed to investigate the impact of distance schooling during the COVID-19 pandemic on school leaders' well-being and to identify key dispositional, relational, and contextual factors influencing their well-being. The study addresses the following research questions:

1. How are the dispositional, relational, and contextual factors derived from the conceptual framework distributed among the participating school leaders?
2. What do the well-being scores of school leaders reveal about the effects of distance schooling on their overall well-being?
3. Which dispositional, relational, and contextual factors are significant predictors of school leaders' well-being scores?

5.2. Research Design

To address the study aims and questions, we used an online descriptive cross-sectional survey design. As the study aimed to investigate school leaders' well-being during the COVID-19 pandemic, the survey design was suitable. This approach allows to "gather data at a particular point in time with the intention of describing the nature of existing conditions, or identifying standards against which existing conditions can be compared, or determining the relationships that exist between specific events" [68], p. 205. Furthermore, an online survey design was a cost-effective and efficient method to collect the viewpoints and experiences of numerous school leaders dispersed across a geographical territory as large as Western Europe within a limited time [69].

5.3. Research Instrument

The survey was comprised of three sections (Appendix A). Section 1 collected socio-demographic data. Section 2 focused on the school's adaptation to online education, including the practices and views of school leaders. Section 3 aimed to assess the overall well-being of school leaders in the context of the pandemic. Respondents were primarily asked to choose from given options, with a few questions allowing for additional answers if needed.

The validity of the survey was ensured in several steps. First, survey development was guided by a qualitative study that sought the perspectives of Kazakhstani teachers, parents and students on school closures [67] and the emerging literature on leading schools

under lockdown. The preliminary qualitative study improved the survey's content validity by aligning it with the participants' context. Creswell and Plano Clark endorse this strategy to ensure that instruments tailored to specific cultures are perceived as relevant by the target group [70]. This cultural alignment enhanced the content validity of the survey.

The next step comprised translating the English survey into Kazakh and Russian. The translation was collaboratively handled by the research team members, who were proficient in all three languages. Issues during translation were resolved through Telegram chats and emails with the primary author. Following Behr and Shishido's guidelines, the process began with adaptive translation to retain conceptual meaning across languages, followed by a "backward" translation to check for discrepancies [71]. Peer reviews were also conducted, and the final versions were compared to ensure consistency.

The survey was piloted with a select group of deputy school leaders engaged in a blended post-graduate program at our institution. This step facilitated the utilisation of the expert validation method, which is known for its effectiveness in assessing the construct relevance and structure of a survey. This method helps in identifying issues with item clarity, language, and complexity [72]. Accordingly, we consulted deputy school leaders. By sharing the survey with these experts and discussing their feedback, we gained valuable insights that guided the refinement of the survey items. Furthermore, valuable input on the survey questionnaire was gathered through online consultations with two experts in the field, as listed in the Acknowledgement Section.

The reliability of scales can provide insights into the validity of those scales [73]. The scale reported in the paper, namely, the survey items on agreement with school leaders' well-being had Cronbach's Alpha at an acceptable level ($\alpha = 0.726$).

In summary, despite the lack of formal validation, as data collection occurred during school closures, the survey's qualitative validity was upheld through adaptive translation, peer reviews, and expert insights from Kazakhstani deputy school leaders.

5.4. Data Collection

The data was collected using a customised survey administered online in Qualtrics. The initial step in data collection involved coordinating with regional educational departments. After obtaining ethical approval and permission from education authorities, the departments distributed the survey link to school leaders. In Kazakhstan, regional educational departments maintain WhatsApp group chats with all school leaders in their respective regions, and the survey link was shared through these groups. Each school leader within these groups had access to the survey link. A description of the study and information about voluntary participation accompanied the link. Ethical concerns emerging from data collection are addressed in Section 5.7.

5.5. Sample

The survey link was distributed to all school leaders in Kazakhstan, reflecting our focus on the entire school leadership population. In other words, we did not select our sample. Instead, the sample was self-selecting. This methodology aligns with approaches employed in previous studies, such as those by Leksey and colleagues in Poland [31] and Alexander and colleagues in the US [34]. In addition to our aim of comprehensively exploring the experiences of a broad spectrum of school leaders, targeting all school leaders was crucial because existing studies have reported challenges in using the random sampling method in the education sector in Kazakhstan e.g., [74]. These challenges might have led existing studies like those by Hernandez-Torrano and colleagues [75] and Polat and colleagues [76] to omit their sampling methods.

While the survey was available to all school leaders, only 1299 leaders completed it, representing 17.5% of schools in Kazakhstan. Furthermore, the sample of responding school leaders is distributed across all 17 regional educational authorities. However, not all respondents fully completed the survey, resulting in a sample range from 650 to 1299. The percentages in tables and figures were rounded and may not sum to 100%. Although

the respondents were from all 17 administrative divisions in Kazakhstan, the self-selecting nature of school leaders limits the generalisability of the findings.

5.6. Data Analysis

Survey data was exported from Qualtrics into SPSS version 27.0 for statistical analyses. Univariate, bivariate, and multivariate analyses were employed to answer the research questions of the study. To address the first research question on how the dispositional, relational, and contextual factors, derived from the conceptual framework, are distributed among the participating school leaders, we conducted descriptive analysis, and we also assessed the normality of variables as recommended by Tabachnik and Fidell [77]. It should be noted that some categorical, ordinal variables measuring the level of agreement on a 4-point Likert scale were transformed into dichotomous variables (Yes/No).

The second research question on assessing well-being was explored by using exploratory factor analysis with well-being items. School leaders' well-being was measured by four items related to work-life balance and physical and mental well-being. Utilising principal axis factoring (PAF) with Varimax rotation and a listwise approach for missing data, we aimed to identify underlying factors. According to Holmes Finch, PAF is a commonly preferred technique for factor extraction, known for its proficiency in accurately determining the factor structure across different contexts [78].

The third research question was answered by using multiple standard regression analysis to identify the dispositional, relational, and contextual factors that might explain the variation in school leaders' well-being scores and their level of contribution to this variation [77]. Before running this analysis, we conducted a bivariate analysis to explore the relationship between two variables, with the choice of test depending on the level of measurement and the normality of the distribution. These tests are reported in Appendix B and include One-way ANOVA, Mann-Whitney U test, Spearman Rho, and Kruskal Wallis test.

5.7. Research Ethics

After approval from our institutional research ethics committee, the survey was launched online in compliance with ethical standards concerning informed consent, anonymity, and confidentiality. Following this, an email was sent to regional education authorities, articulating the study's goals and ethical considerations and requesting them to share the survey link with school leaders, a procedure also employed in other studies e.g., [31,34,79]. The link was disseminated to education authorities for two crucial reasons. Firstly, to secure permission for school access, which is a protracted process in Kazakhstan, necessitating extensive paperwork, negotiations, and permissions from multiple entities [80]. Secondly, due to the absence of a comprehensive school database or direct means of contact, especially as schools were conducting classes remotely. Despite these circumstances, there was no pressure on school leaders to participate, as engagement remained voluntary (see Appendix A). By preserving participant anonymity, the survey assured that both education authorities and researchers remained ignorant of participants' identities, providing flexibility for respondents to complete the survey at their convenience. Considering the culture of censorship of research in Kazakhstan [80], the online survey served as a secure channel for participants to express their views and share their experiences. Participants were solely required to respond to the consent question, with the survey refraining from collecting any identifying information, allowing respondents to skip questions if preferred.

6. Results

Sections 6.1–6.3 provide insights into the first research question by outlining the distribution of dispositional, relational, and contextual factors among the school leaders in the study. In Section 6.4, the focus shifts to the second research question, analysing and interpreting the well-being scores of the school leaders. Lastly, Section 6.5 deals with the final research question, exploring and discussing the significant predictors of school leaders' well-being scores.

6.1. Dispositional Factors

Dispositional factors encompassed gender, school leadership experience, professional development opportunities and school leadership style (Table 1).

Table 1. Descriptive statistics for dispositional factors.

Variable	Number	Percentage
Gender		
Female	1013	78.0
Male	286	22.0
Leadership experience—Year of experience—M = 6.2		
Professional development		
Yes	824	78.0
No	233	22.0
School leaders' perceptions of teacher autonomy: freedom to use online tools, platform		
Yes	796	71.4
No	319	28.6
School leaders' perceptions of teacher autonomy: freedom to modify curriculum		
Yes	789	75.9
No	251	24.1

- *Gender*: Most school leaders completing the survey were women (78%), considerably higher than the OECD (2019) data (53%). Only 22% of respondents were men.
- *School leadership experience*: On average, respondents had about 6 years of school leadership experience (M = 6.2).
- *Professional development*: Most school leaders (78%) had received online specialised training for managing schools during the online/blended education setup.
- *School leadership style*: School leaders were surveyed on the autonomy of teachers in selecting online platforms and modifying the curriculum for distance learning. A majority (71.4%) indicated that their teachers could select preferred online tools freely. Additionally, most school leaders (75.9%) affirmed they had the flexibility to modify the curriculum. These findings suggest a school leadership style favouring teacher autonomy, aligning with a distributed school leadership framework.

6.2. Relational Factors

Relational factors encompass caring leadership involving parental communication and networking opportunities (Table 2).

Table 2. Descriptive statistics for relational factors.

Variable	Number	Percentage
Workload intensity		
Yes	828	70.4
No	348	29.6
Increase in parental complaints		
Yes	469	44.8
No	565	55.2
Dealing too often with angry parents		
Yes	398	39.0
No	622	61.0
Networking with other schools		
Not a limitation	426	46.0
Minor limitation	407	44.0
Major limitation	93	10.0

- *Workload intensity*: School leaders displayed parental care through regular communication, yet this heightened their workload significantly. A majority of school leaders

(82%) reported an increased workload due to parental involvement compared to pre-pandemic levels, with some dedicating an extra four hours daily (23%) (Figure 2). Gender disparities were noted in the time allocated to parental engagement, with female school leaders dedicating more time than their male counterparts (Mann-Whitney U = 98,984.5, $p < 0.001$, z = −4.048).

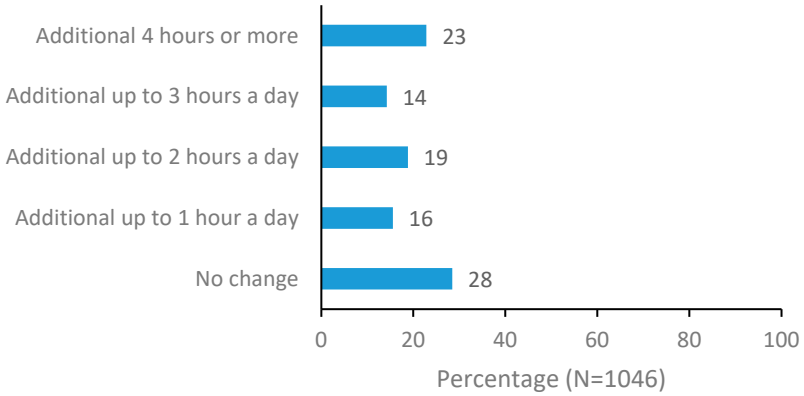

Figure 2. Increase in workload related to parental engagement during school closures.

- *Parental complaints*: Since emerging literature indicated that Kazakhstani parents expressed strong dissatisfaction with distance schooling [17,66], the surveyed school leaders were asked about parental complaints and managing challenging interactions with parents. Findings showed that 44.8% of school leaders agreed on a notable rise in parental complaints during remote schooling. Additionally, 39% of the 1020 school leaders agreed they had to handle angry parents too frequently.
- *Networking with other school leaders*: In the centralised Kazakhstani school sector, school leaders were queried about how restricted networking opportunities affected them. Results revealed that while 46% of the responding school leaders did not face significant networking obstacles, a notable 44% encountered minor limitations, with a minority (10%) experiencing major constraints. These challenges may have affected their capacity to engage and learn from their peers in crisis school leadership.

6.3. Contextual Factors

Contextual factors included school location and medium of instruction (Table 3), as well as school digital resources (Table 4).

Table 3. Descriptive statistics for contextual variables—school type, location, and medium of instruction.

Variable	Number	Percentage
School type		
Public schools	1240	98.0
Selective schools	15	1.0
Private schools	11	1.0
School location		
Urban	521	41.5
Semi-urban	110	8.8
Rural	624	49.7
Medium of instruction		
Kazakh	686	53.4
Russian	234	18.2
Mixed/both Kazakh & Russian	344	26.8
Other	21	1.6

Table 4. Descriptive statistics for contextual factors—Autonomy, digital infrastructure and perceptions of inequality.

Variable	Number	Percentage
Lack of school autonomy		
Not a limitation	356	39.8
Minor limitation	427	47.8
Major limitation	111	12.4
Digital infrastructure		
Students' lack of internet connectivity		
Not a limitation	237	24.3
Minor limitation	452	46.4
Major limitation	286	29.3
Students' poor internet connectivity		
Not a limitation	174	18.0
Minor limitation	488	50.5
Major limitation	305	31.5
Students' access to digital devices		
Not a limitation	277	29.0
Minor limitation	445	46.5
Major limitation	234	24.5
Teachers' internet connectivity		
Not a limitation	369	38.7
Minor limitation	356	37.4
Major limitation	228	23.9
Teachers' poor internet connectivity		
Not a limitation	308	32.3
Minor limitation	408	42.8
Major limitation	237	24.9
Teachers' access to digital devices		
Not a limitation	410	43.0
Minor limitation	346	36.3
Major limitation	197	20.7
School's access to digital platforms		
Not a limitation	351	37.9
Minor limitation	412	44.4
Major limitation	164	17.7
Widening inequality		
Yes	522	51.4
No	493	48.6

- *School type*: Public schools made up 98% of the participating schools, while selective and private schools each comprised only 1%. Due to the unequal distribution of school types, the school type variable was not used in inferential analyses.
- *School location*: Approximately half of the school leaders were in charge of rural schools, 41% oversaw urban schools, and the remaining 9% led semi-urban institutions, classified as locations within an hour's drive from the city.
- *Medium of instruction*: Approximately 53.4% of the responding school leaders led schools using Kazakh MoI, followed by mixed MoI (26.8%) and Russian MoI (18.2%).
- *School autonomy*: The majority (60.2%) of school leaders indicated that their school's autonomy or their ability to make educational decisions during the pandemic was either a minor limitation (47.8%) or a major constraint (12.4%) in effectively leading schools (Table 4).
- *Digital infrastructure*: The schools' digital environment was measured by asking school leaders to indicate the extent to which different factors such as internet connectivity

and access to digital devices were a school leadership challenge with three response categories: not a limitation, minor limitation and major limitation (Table 4).

- *Students' Internet connectivity*: Out of 975 responding school leaders, approximately 75.7% reported that the lack of Internet access for students presented either a minor limitation (46.4%) or a major limitation (29.3%). Similarly, around 82.0% noted that students' poor internet connectivity resulted in either a minor limitation (50.5%) or a major limitation (31.5%).
- *Students' access to digital devices*: Approximately 71.0% of school leaders noted that a shortage of digital devices for students resulted in either a minor limitation (46.5%) or a major limitation (24.5%).
- *Teachers' Internet connectivity*: Approximately 67.61.3% of school leaders reported that the lack of Internet access for teachers presented either a minor limitation (37.4%) or a major limitation (23.9%). Similarly, around 67.7% of school leaders noted that teachers' poor internet connectivity resulted in either a minor limitation (42.8%) or a major limitation (24.9%).
- *Teachers' access to digital devices*: Approximately 57.0% of school leaders noted that a shortage of digital devices for teachers resulted in either a minor limitation (36.3%) or a major limitation (20.7%).
- *Access to digital platforms*: Approximately 62.1% of school leaders stated that the absence of access to licensed e-platforms like Zoom posed either a minor limitation (44.4%) or a major limitation (17.7%).
- *Widening inequality*: Considering international [16] and national [17] concerns regarding the digital divide during distance schooling, school leaders were questioned about whether remote schooling had exacerbated educational inequality among schools. Nearly half (51.4%) of the surveyed school leaders affirmed that distance schooling had widened educational disparities in their schools.

6.4. School Leaders' Well-Being Measurement

School leaders' well-being was gauged through four specific items (Table 5). These items include: 1. Increased workload due to school closures; 2. Stress related to adhering to COVID-19 government regulations; 3. Challenges in preparing timetables for both online and offline lessons simultaneously; and 4. Experiencing frequent headaches. Collectively, these items encompass facets such as occupational stress and physical and mental well-being, specifically within the context of the pandemic.

Table 5. Descriptive statistics and pattern coefficients for school leaders on well-being.

Well-Being Statements	Descriptive Statistics		h^2	Factor Score
	Mean	SD		
1. School closures have increased my workload.	2.48	0.883	0.210	0.184
2. Ensuring my school complies with government regulations related to COVID-19 has been very stressful.	2.50	0.766	0.293	0.277
3. Preparing teaching timetables simultaneously for online and offline lessons is challenging	2.27	0.760	0.354	0.420
4. I get frequent headaches.	2.53	0.748	0.273	0.257
Total number				672
Total mean score				2.44
Eigenvalue				2.219
% Variance				55.465
KMO				0.754
Bartlett's test				<0.001
Cronbach's Alpha				0.726

Our exploratory factor analysis using Principal Axis Factoring with Varimax rotation and listwise option for handling missing values unveiled a single retained factor (Table 5).

Statistical tests, such as Bartlett's sphericity and Kaiser-Meyer-Olkin (KMO) measure, deemed the four items suitable for factor analysis (KMO = 0.754; Bartlett's $\chi^2(6) = 532.442$, $p < 0.001$). Furthermore, the internal consistency reliability estimate for the well-being factor showed acceptable values ($\alpha = 0.726$) (Table 5).

School leaders responded to well-being items using a rating scale from strongly agree (1) to strongly disagree (4). Lower mean scores reflect a greater consensus on experiencing negative or poor well-being. Specifically, they concurred that their workload had intensified, complying with COVID-19 protocols was stressful, managing diverse school timetables was challenging, and they suffered from frequent headaches. In other words, school leaders acknowledged feeling stressed, indicating an impact on their overall well-being.

6.5. Predictors' of School Leaders' Well-Being

Initially, a bivariate test was conducted to explore the relationships between mental well-being and variables linked to dispositional, relational, and contextual factors (Appendix B). Factor scores were saved for further analysis to predict school leaders' mental well-being using dispositional, relational, and contextual variables, which demonstrated a significant correlation with the school leaders' well-being factor score (see Table 6).

Multiple linear regression analyses were performed with predictor variables against school leaders' well-being factor scores. Model 1 contained all correlated predictors, while Model 2 was limited to significant variables (Table 7). Both models were statistically significant ($p < 0.001$). We discuss and interpret the findings from Model 2.

Model 2 ($F = 10.721$; $p < 0.001$) explained around 15% of the variance in school leaders' well-being (Table 7). Assumptions regarding multicollinearity were met, as predictor variables were not highly correlated (all correlations < 0.8), and tolerance statistics ranged from 0.619 to 0.980 with VIF values under 10. In terms of case-wise diagnostics, 4 cases (0.8% of $n = 491$) displayed standardised residual values exceeding 2.

The only statistically significant dispositional variable was gender, which negatively predicted school leaders' well-being. In line with previous studies on school leaders' well-being in crisis contexts, this study suggests that female school leaders ($\beta = -0.139$, $p = 0.002$) tended to have poorer well-being than male school leaders.

As for relational variables, working with angry parents negatively predicted school leaders' well-being. In other words, those school leaders who agreed that they worked too often with angry parents ($\beta = -0.155$, $p = 0.002$) during remote schooling tended to have worse mental well-being than those who did not.

Table 6. Predictor variables for multiple regression analysis with well-being factor.

Conceptual Framework Factors	Predictors	Measurement Level	Coding
Dispositional	Gender	Binary category	0 if male 1 if female
Relational	Increase in workload due to parental engagement Increase in parental complaints Working with angry parents too often	Recorded, binary	0 if male 1 if female
Contextual	School autonomy limitation No internet access for teachers Poor internet connection for teachers Shortage of digital devices for teachers Access to digital platforms	Nominal with 3 categories: not a limitation minor limitation a major limitation	Not a limitation—reference
	Widening educational inequality during remote schooling	Binary category	0 if no 1 if yes

Among contextual variables, school leaders facing both minor ($\beta = -0.125$, $p = 0.021$) and major limitations ($\beta = -0.193$, $p < 0.001$) in school autonomy exhibited poorer well-

being compared to those encountering no limitations. In essence, restricted school autonomy was a negative predictor of school leaders' well-being.

Moreover, specific variables assessing the digital divide were negative predictors of school leaders' well-being scores. Notably, the variable "No internet access for teachers" emerged as significant in the model. School leaders indicating either minor ($\beta = -0.119$, $p = 0.028$) or major limitations ($\beta = -0.113$, $p = 0.043$) in terms of internet access for teachers tended to report lower levels of overall well-being.

Table 7. Multiple linear regression analysis of individual-level predictors and leaders' well-being.

Predictors	R^2	β
Model 1	0.141 ***	
Gender Male (0) vs. Female (1)		−0.151 ***
School autonomy Not a limitation (0) vs. Minor limitation (1)		−0.112
School autonomy Not a limitation (0) vs. Major limitation (1)		−0.186 **
Increase in parental engagement No (0) vs. Yes (1)		−0.026
Increase in parental complaints No (0) vs. Yes (1)		−0.093
Working with angry parents No (0) vs. Yes (1)		−0.141 **
Widening inequality, No (0) vs. Yes (1)		−0.068
No internet access for teachers: Not a limitation (0) vs. Minor limitation (1)		−0.071
No internet access for teachers: Not a limitation (0) vs. Major limitation (1)		−0.177
Poor internet access for teachers Not a limitation (0) vs. Minor limitation (1)		−0.016
Poor internet access for teachers Not a limitation (0) vs. Major limitation (1)		−0.118
Shortage of digital devices for teachers: Not a limitation (0) vs. Minor limitation (1)		−0.068
Shortage of digital devices for teachers: Not a limitation (0) vs. Major limitation (1)		−0.060
Access to digital platforms: Not a limitation (0) vs. Minor limitation (1)		−0.004
Access to platforms: Not a limitation (0) vs. Major limitation (1)		0.008
Model 2	0.150 ***	
Gender Male (0) vs. Female (1)		−0.139 **
School autonomy: Not a limitation (0) vs. Minor limitation (1)		−0.125 *
School autonomy: Not a limitation (0) vs. Major limitation (1)		−0.193 ***
Increase in parental complaints No (0) vs. Yes (1)		−0.088
Working with angry parents No (0) vs. Yes (1)		−0.155 **
Widening inequality, No (0) vs. Yes (1)		−0.070
No internet access for teachers Not a limitation (0) vs. Major limitation (1)		−0.113 *
Shortage of digital devices for teachers: Not a limitation (0) vs. Minor limitation (1)		−0.119 *

Note. * ≤ 0.05; ** $p \leq 0.01$; *** $p \leq 0.001$.

7. Discussion

This study examined and identified the predictors of school leaders' well-being in times of crisis. By applying a qualitative framework of dispositional, relational, and contextual factors to school leaders' well-being in crisis situations [15,54], the study expands our understanding of the situated nature of school leaders' well-being. Initially originating from a small-scale qualitative study, we adapted this framework within a larger quantitative design to gather data from a more extensive sample. The analysis offered sheds light on ways to improve and support school leaders' overall well-being in challenging circumstances such as the COVID-19 related school closures.

Gender is a crucial dispositional variable that significantly affects school leaders' well-being, particularly in crisis contexts. Studies conducted amidst the pandemic emphasise the disproportionate impact on female school leaders, including the current study [27,28]. Chen linked heightened stress levels among females to lower resilience levels in female school leaders [45]. Instead, we argue that the problem stems from gender norms that allocate caregiving duties to women at home [27,28] and expect greater nurturing qualities from female school leaders in the school environment [81]. Existing literature reports the length of school leadership experience typically correlates positively with school leaders' well-being [31,35,47]. Nonetheless, the current study did not find school leadership experience to be a significant predictor in this regard. While this finding warrants further investigation,

it might be attributed to the centralised organisation of the education sector in Kazakhstan and a lack of prior training in school leadership and management [22,23].

In terms of relational factors, parental engagement and interactions were prominent. Our study contributes to the existing literature by revealing a distinct finding that school leaders' well-being is not solely linked to workload intensity but rather to the challenges posed by interactions with angry parents. While previous research has focused on workload intensity concerning parental communications, our study sheds new light on this aspect. School leaders in our study exhibited a strong commitment to fostering community, care, and collaboration, aligning with prior studies [35,37], indicating elevated communication levels with parents during the pandemic. Interestingly, this heightened parental engagement did not emerge as a significant predictor of school leaders' well-being, unlike the prevalent belief in the literature. Rather, our findings underscore that managing challenging interactions with angry parents significantly and negatively impacts school leaders' well-being.

Despite the expectation that networking with fellow school leaders (relational factor) would enhance well-being, it did not emerge as a significant predictor of school leaders' well-being in this study. Exploring this aspect further through qualitative research could offer deeper insights into the effectiveness of such collaborations. Notably, disparities in school leaders' access to collaborative networks were not too pronounced, with 46% of respondents not perceiving a lack of peer collaboration as a notable challenge in managing schools online.

School autonomy emerged as a significant contextual predictor of school leaders' well-being. A majority of school leaders indicated constraints in their decision-making autonomy, which was found to have a negative impact on their well-being.

The present study has broadened our understanding of the relationship between support factors and school leadership well-being. Previous research had not examined the impact of school leadership's access to professional development to leading schools online, although it was commonly assumed that such training would positively affect school leaders' well-being [45]. In this study, both the availability of professional development opportunities and their potential influence on school leaders' well-being were assessed, with results showing no significant association. Rather than negating the importance of professional development, we posit that this lack of correlation may be attributable to the centralised nature of schools in Kazakhstan, as a lack of school autonomy was experienced by most school leaders, which adversely influenced their well-being. Furthermore, factors such as school location and the medium of instruction did not emerge as predictors of school leaders' well-being, underscoring the pervasive influence of crises on school leadership well-being.

During the COVID-19 crisis, contextual aspects of equity-focused school leadership revealed school leaders' attentiveness to the digital divide. Nearly half of the school leaders acknowledged that the pandemic exacerbated educational disparities. While this perception of widening educational inequality was associated with school leaders' well-being, it did not emerge as a significant predictor in the Regression model (see Appendix B) for significant correlations). Moreover, reports on the challenges faced during remote schooling reflected widespread limitations experienced by many school leaders, similar to studies conducted in a range of contexts [41–43]. Particularly, issues of internet connectivity for teachers, along with insufficient digital devices and access to platforms like Zoom, were notably associated with school leaders' well-being. Lack of internet access for teachers emerged as a significant and negative predictor of school leaders' well-being.

7.1. Implications

The study offers several implications for enhancing school leaders' well-being, particularly in navigating crises. With the rising frequency of environmental and health emergencies, it is increasingly vital to integrate crisis management training into school leaders' professional development programs. This training should include dispositional

aspects like school leadership styles and relational school leadership, such as managing difficult interactions with stakeholders and cultivating caring school leadership practices.

Furthermore, policy initiatives are essential to improve contextual factors that contribute to school leaders' well-being. Our results indicate that by ensuring equitable allocation of resources to schools, policies can tackle the digital divide, foster social justice, and promote school leaders' well-being. Additionally, enhancing school leaders' autonomy can play a pivotal role in enhancing their well-being, as well as improving school outcomes.

While the current study did not delve into school leaders' self-care practices, existing research indicates that school leaders frequently overlook their self-care needs due to their demanding schedules [24,32,82]. Self-care is crucial for school leaders to effectively manage their stress levels and provide support to others. While physical exercise such as walks and bike rides can support physical and mental well-being, school leaders could create space for community-building and informal networking with other school leaders for advice, self-care support, mindfulness and resilience [30,45]. Incorporating mindfulness practices can help school leaders engage with students and teachers dealing with trauma or stress [83,84]. Even though mindfulness is typically seen as an individual practice, dedicating time during the school day to practice mindfulness can promote these techniques among school leaders, teachers, and students.

Finally, our findings suggest the critical need for institutional policies and practices to adopt a gender perspective in addressing the structural challenges faced by women school leaders and promoting their well-being. This transformation will entail changing gender norms that traditionally link caregiving to women and challenging the gendered expectations placed on school leaders.

7.2. Strengths and Limitations

This study's contributions lie in extending Mutch's framework [15,54]. By progressing from qualitative to quantitative analysis, the research broadens our understanding of school leadership during crises and elucidates the impact of dispositional, relational, and contextual factors on school leaders' well-being. Furthermore, it fills the gap in the existing literature by investigating the multiple personal, school-related and organisational factors that influence school leaders' well-being. The analysis not only contributes to our comprehension of the nuanced nature of school leaders' well-being but also illuminates strategies to enhance and support their overall well-being in challenging circumstances as well as under "normal" situations.

The study's limitations stem from its non-probability sample, which limits its generalisability, and the lack of qualitative data to offer nuanced explanations. Furthermore, the well-being scale specifically focuses on the unique crisis context of the COVID-19 pandemic.

8. Conclusions

In conclusion, the analysis of school leaders' experiences of leading schools during crises revealed significant factors through dispositional, relational, and contextual lenses, aiding in the synthesis of literature and study findings. Gender dynamics, challenges involving parental interactions, restricted school autonomy, and limited internet access for teachers emerge as crucial stressors for school leaders in Kazakhstan facing crises. This study sheds light on the gendered effects on school leaders' well-being, challenges assumptions about the impact of school leadership experience, underscores the importance of autonomy, and prompts further exploration investigation into the advantages of networking. The findings deepen our understanding of support factors and school leadership well-being, emphasising the need to address disparities and enhance equity-focused school leadership to aid school leaders during crises.

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Institutional Review Board Statement: The study was approved by the Nazarbayev University Institutional Research Ethics Committee (NU-IREC) (No. 411/20052021). The survey was completely anonymous.

Informed Consent Statement: All respondents provided written informed consent before completing the survey.

Data Availability Statement: Data cannot be shared publicly because the authors' Institutional Research Ethics Committee has prohibited the public availability of data.

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Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A. School Leader Survey

Cover Page

Dear School Principal

We are a team of researchers from Blinded University studying how the COVID-19 pandemic impacts equitable education in Kazakhstan by exploring parents', teachers' and school leaders' voices and experiences. As a school leader in Kazakhstan, we invite you to complete our "School Leader Survey", which aims to understand school leadership perspectives, experiences, and challenges regarding distance/online learning and how schools plan and prepare for the future. Additionally, we are interested in understanding the impact of the pandemic on school leaders' wellbeing. We also hope that the questions asked will give you a valuable opportunity to reflect on the issues of equitable education in the time of COVID-19 and enable the research team to develop policy and practice recommendations for promoting equitable quality education for all, especially for marginalised populations.

This survey comprises three sections. Section 1 asks about socio-demographic data, which will help us find any trends in school leaders' responses. Section 2 asks how the school managed the shift to online education and your experience and views on online education. Section 3 aims to understand the impact of the pandemic on your broader well-being. Most questions require you to choose an option from given choices, and a small number of questions need an answer in your own words. If you feel uncomfortable answering a question, you can complete the survey at a later time or skip the question altogether.

This survey is anonymous, which means that even the researchers will not be able to link a completed survey to the respondent. Therefore, if you decide to withdraw your responses later, it would not be possible for the research team to remove your answers from the data set. All your answers will be held securely and anonymously. The data will be used to produce research publications in which all results will be presented in an aggregated and anonymised form. Your answers will NOT be used to identify you or your·school.

Thank you for participating.

Yours sincerely,

Principal Investigator's name and email [Research team leader]

By clicking "I agree" below, you indicate that you are at least 18 years old, have read and understood this consent form, agree to participate in this research study voluntarily, and give us consent to use your data.

- I Agree
- I Disagree

Display the Survey only: If the response = I Agree.

Section 1: Socio-demographics

1. Your gender:

i. Female
ii. Male
iii. Other

Display This Question: If Your gender: = Other
If you selected "Other", please specify your gender.

2. Since the beginning of the pandemic in March 2020, have you been the Principal/Deputy Director of a:

i. Mainstream school
ii. Selective school (NIS, Bilim—Innovation School etc.)
iii. Private school
iv. Other

Display This Question: If Since the beginning of the pandemic in March 2020, I have been the Principal/Deputy Director of a = Other
If you chose "Other", please write your school type.

3. For **how long** you have been the Principal/ Deputy Director in the school when the pandemic began?

4. In which **oblast/city** is your school located? Top-down menu

i. Akmola Oblast
ii. Aktobe Oblast
iii. Almaty City
iv. Almaty Oblast
v. Atyrau Oblast
vi. East Kazakhstan Oblast
vii. Karaganda Oblast
viii. Kostanay Oblast
ix. Kyzylorda Oblast
x. Mangystau Oblast
xi. North Kazakhstan Oblast
xii. Nur-Sultan City
xiii. Pavlodar Oblast
xiv. Shymkent City
xv. South Kazakhstan Oblast
xvi. West Kazakhstan Oblast
xvii. Zhambyl Oblast

5. The location of your school is:

i. Urban = In a city
ii. Semi-urban = Outside a city but less than an hour by car (close to a city but not in it)
iii. Rural = In a village more than an hour's drive by car (far from a city)

6. The **medium of instruction** in your school is:

i. Kazakh medium
ii. Russian medium
iii. Mixed/both Kazakh & Russian
iv. Other

Display This Question: If The medium of instruction in your school is: = Other
If you selected "Other", please specify the medium of instruction in your school.

Section 2: School and online education

1. When schools were closed due to the pandemic, how often did you communicate with parents?

i. As needed
ii. Once or twice a term
iii. Once a month
iv. Twice a month
v. Weekly
vi. More than once a week
vii. Daily

2. How would you estimate your workload related to parental engagement during school closures?

i. No change
ii. Additional up to 1 h a day
iii. Additional up to 2 h a day
iv. Additional up to 3 h a day
v. Additional 4 h or more.

3. Please indicate the extent of your agreement/ disagreement with the following statements

		1. Strongly disagree	2. Disagree	3. Agree	4. Strongly agree
1.	During online/blended education, in my school, teachers have the freedom to use online platforms that work best for them/students.				
2.	As a school principal/vice-principal, I have attended professional development programmes to help me with managing schools during online/blended education.				
3.	During online/blended education, my teachers had the freedom to revise the curriculum and distribute the time needed across curriculum content.				
4.	Online education has resulted in a substantial increase in parental complaints.				
5.	I have to deal with angry parents too often.				
6.	Online education has widened educational inequality across schools.				

4. Please indicate the extent to which each of the following conditions limited education provision during school closures/online education.

		Not a limitation	Minor limitation	Major limitation
1.	No internet access for students			
2.	Poor Internet connectivity for students			
3.	Lack of digital devices for students			
4.	No internet access for teachers			
5.	Poor Internet connectivity for teachers			
6.	Not enough digital devices for teachers			
7.	Limited opportunities to network and learn from other principals			
8.	Licensed subscription to e-platforms that support interactive lessons (e.g., Zoom) was not provided.			
9.	Lack of school autonomy, i.e., Lack of ability to make educational decisions during the pandemic			

Section 3: School Closures and wellbeing

1. Please indicate the extent of your agreement with each of the following statements that aim to **measure your wellbeing** in the context of **the pandemic and online/blended education**. If you have no children, please select 'Not applicable' against the last two statements (No. 14 and No. 15).

		1. Strongly disagree	2. Disagree	3. Agree	4. Strongly agree
1.	School closures have increased my workload.				
2.	Ensuring my school complies with government regulations related to COVID-19 has been very stressful.				
3.	Preparing teaching timetables simultaneously for online and offline lessons is challenging.				
4.	I get frequent headaches.				

THANK YOU FOR YOUR PARTICIPATION

Note: Questions include all those reported in the paper.

Appendix B

Table A1. Correlation among the set of dispositional, relational and contextual variables and the factor score on school leaders' well-being.

Conceptual Framework Factors	Variable	Type of Variable	Test	*p* Value
Dispositional	Gender	Binary	Mann-Whitney U	$p = 0.0.049$
	School leadership experience	Continuous	Spearman Rho	$p = 0.619$
	School leadership style 1 Autonomy in selecting plat-forms	Binary	Mann-Whitney U	$p = 0.204$
	School leadership style 2 Freedom to modify curriculum	Binary	Mann-Whitney U	$p = 0.280$
Relational	School autonomy limitation	Categorical, with 3 categories	One way ANOVA	$p < 0.001$
	Workload intensity	Re-coded, bi-nary	Mann-Whitney U	$p < 0.001$
	Parental complaints	Re-coded, bi-nary	Mann-Whitney U	$p < 0.001$
	Working with angry parents	Re-coded, binary	Mann-Whitney U	$p < 0.001$
Contextual	School location	Categorical, with 3 categories	Kruskal Wallis	$p = 0.235$
	Medium of instruction	Categorical, with 3 categories	Kruskal Wallis	$p = 0.057$
	Professional development	Re-coded, binary	Mann-Whitney U	$p = 0.474$
	Digital infrastructure 4 teachers' access to the internet	Categorical, with 3 categories	Kruskal Wallis	$p < 0.001$
	Digital infrastructure 5 Teachers' internet connectivity	Categorical, with 3 categories	Kruskal Wallis	$p < 0.001$
	Digital infrastructure 6 Teachers' access to digital de-vices	Categorical, with 3 categories	Kruskal Wallis	$p < 0.001$
	Digital infrastructure 7 School access to digital platforms	Categorical, with 3 categories	Kruskal Wallis	$p < 0.001$
	Widening inequality	Re-coded, binary	Mann-Whitney U	$p < 0.001$

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