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Article

Teachers' Perception Towards Responses of COVID-19 Pandemic Management in Gandaki Province of Nepal: A Cross-Sectional Survey

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ABSTRACT

The coronavirus disease 2019 (COVID-19) pandemic has impacted numerous organisations, including those in the health, education, livelihood, and development sectors. The outbreak of COVID-19 resulted in the prolonged closure of many educational institutions. Health and education authorities made concerted efforts to maintain teaching and learning activities in schools. Teachers' perceptions are crucial for the effectiveness of future pandemic response initiatives. Therefore, this study aims to assess teachers' perceptions of the responses to the COVID-19 pandemic. An institution-based cross-sectional study was conducted among teachers in community schools from June 29 to August 28, 2023, in the Gandaki Province of Nepal. The sample size consisted of 732 individuals, selected using a multi-stage cluster sampling method. A pretested questionnaire was self-administered. Data were analysed using the chi-square test and logistic regression at a 5% significance level. This study reveals that 69.7% of teachers held inadequate perceptions regarding efforts to manage the COVID-19 pandemic and reopen schools. Teachers with more experience (B = 0.11; p = 0.57) and those from urban municipalities (B = 0.02; p = 0.26) had a more positive perception of the responses. However, gender, monthly family income, work experience, number of family members, and municipal type were insignificantly associated with teachers' perceptions of the responses to manage the COVID-19 pandemic. This study demonstrates that teachers had an inadequate level of perception regarding responses to COVID-19 pandemic management and the reopening of schools. These results suggest that policymakers and managers in the health and education sectors must develop comprehensive responses to prevent the entry and spread of COVID-19 among teachers, as well as to enhance the resilience of schools and society for future epidemics.

KEYWORDS

Disaster; COVID-19; cross-sectional; perception; responses; teachers.

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1. Introduction

Any disasters shake institutions. Institutions often temporarily adapt their strategies in the aftermath of a disaster. Disaster events, such as epidemics or pandemics, continually provide a "litmus test" for institutional effectiveness, efficiency, and accountability (Cvetković et al., 2022, 2024; Ocal et al., 2020). To foster a positive perception of responses to crises, institutions must comply with disaster management guidelines, including planning, equitable resource distribution, and making disaster management structures more transparent and equitable (Mokhele, 2024).

The outbreak of coronavirus disease 2019 (COVID-19) has affected the lives of millions of people worldwide. All types of organisations, including health and education, had to face the long-term impact of this pandemic. Primarily, these organisations in developing countries found it difficult to cope with the challenges imposed by multiple episodes of the COVID-19 pandemic. Very soon after the outbreak, educational institutions were closed to prevent the entry and spread of COVID-19 among teachers, students, and staff. As a result, millions of students were forced to stay out of their educational institutions. After a few weeks, the concerned authorities in health and education, in particular, made digital and online services to revitalise the teaching and learning process. However, the faculty of business schools were not prepared for online teaching and learning and did not receive adequate logistical support from their institutions (Shrestha & Tamrakar, 2023). However, teachers' experiences of abrupt changes in pedagogical modality and their responses are conspicuously absent in the existing literature (Shrestha et al., 2022). Despite some efforts since the first case was detected in Nepal, the government's responses were insufficient (Rayamajhee et al., 2021) to manage the COVID-19 pandemic.

Generally, communities are not immune to any disasters or disaster-related losses. Reducing loss and enhancing community resilience by shifting the concerned authority's approach from reactive to proactive is crucial. Moreover, the COVID-19 pandemic led to infodemics in the media, a decline in social interaction, isolation, and loss of income, which exacerbated psychological problems, inadequate personal protective equipment, an underprepared health system, unorganised public quarantine centres, and public violations of lockdowns (Bhatt et al., 2020). Different stakeholders made efforts to contain and mitigate the COVID-19 pandemic. The federal, provincial, and local governments coordinated their response to the COVID-19 pandemic by enhancing local public health service delivery, preventing transmission, conducting epidemiological investigations and tracking, mitigating the pandemic's impact on other services, and supporting social and economic relief activities (Mainali et al., 2021). The three-level governments of Nepal play important roles in meeting citizens' demands for basic services (Chaudhari, 2019). The COVID-19 pandemic highlighted the crucial role of sub-national governments in providing uninterrupted services to their citizens. The COVID-19 pandemic led academic institutions to prioritise covering academic courses rather than developing skills in students and preparing them for a better future (Dawadi et al., 2020). The COVID-19 pandemic not only impacted child development, education, and health but also exacerbated inequalities and inequities within the community (Marchant et al., 2021).

During the COVID-19 pandemic in Jordan, more than 80.0% of medical students adopted social isolation strategies, regular hand washing, and enhanced personal hygiene measures as their first line of defence against the virus (Khasawneh et al., 2020). Teachers adopted the online learning process without prior experience (Lie et al., 2020). Different stakeholders, including institutions, teachers, publishers, and parents, joined forces to create digital resources such as textbooks and learning materials, making virtual classrooms possible. Prevention strategies were implemented at both personal and population levels. At a personal level, the use of masks, sanitisers, hand washing, and isolation was followed. However, lack of social interaction, isolation and loss of income were raised as pertinent issues that potentially led to psychological consequences. Institutional quarantine facilities were established at schools, campuses, hostels, hotels, and other accommodation facilities, with the coordination of local governments. Isolation facilities were also organised by provincial governments and various public and private hospitals across the country (Rayamajhee et al., 2021).

The COVID-19 pandemic presented opportunities for teachers and students to learn about information and communication technology (ICT) and explore new approaches to teaching and learning

activities. Additionally, universities and professional organisations provided ICT training at university departments for online classes. During the pandemic, teachers demonstrated their ability to create online learning environments as an alternative to physical classrooms. Despite limited access to and understanding of digital technology, as well as the absence of administrative assistance, teachers and students created an online learning environment (Adhikari & Rana, 2024). However, the study shows an increasing digital gap between rural and urban areas (Gurung & Poudel, 2021). It poses a high risk of discontinuation of effective online learning techniques in post-pandemic circumstances. The COVID-19 pandemic has presented an opportunity for academic institutions, lecturers, and students to integrate contemporary technology into their teaching methods. The high level of enthusiasm among university lecturers for utilising the ICT resources available for online teaching during the pandemic increased their ICT abilities and teaching strategies. Many students were able to strengthen their self-learning skills through online learning.

COVID-19 remains a global pandemic due to its high transmissibility. Government-coordinated efforts across the globe can be containment and mitigation measures. COVID-19 is controlled by early surveillance, testing, contact tracing, and strict quarantine strategies. These strategies can be made effective by the application of digital technologies in pandemic management and response, as highlighted in pandemic planning, surveillance, testing, contact tracing, quarantine, and healthcare (Whitelaw et al., 2020). The Ministry of Health and Population and the Ministry of Education jointly developed infection prevention and control guidelines for educational institutions to build resilience in these institutions for the COVID-19 pandemic in the days to come. Therefore, teachers' perceptions of responses are crucial to adopting and sustaining infection prevention and control measures in school settings in the future. However, teachers' perceptions of responses to the COVID-19 pandemic are relatively scant in Nepal. Therefore, this study aimed to assess teachers' perceptions of responses towards the COVID-19 pandemic and their association with teachers' socio-demographic characteristics.

2. Methodology

This cross-sectional study was conducted from June 29 to August 28, 2023, in community schools of Gandaki Province, Nepal. The total number of teachers in Gandaki Province was 31,888, as reported in the Flash Report 2018/19 of Nepal. The sample size was calculated by $n= z^2 p (1-p)\div e^2$ where n-sample size, confidence interval-95%, percentage of vaccinating population (p) & percentage of not vaccinating population (q) & marginal error (e) = 0.05. For elaboration, the prevalence of full dose vaccination ≥ 18 years on October 31, 2021, dashboard record MoHP (p) = 36.1%= 0.36 & non-vaccination (q) = 1-0.36= 0.64. Therefore, (n_0) = 1.96 ×1.96× 0.36×0.64÷ (0.05)2 = 354. Finite population size of school teachers (N= 31,888) and n_o= 354 correction for proportions, effective sample size formula is n = no/(1+ (no-1)/N) = 354÷ 1.01 = 350.49= 350. The design effect was calculated as 1 + p (no-1). Where intracluster correlation (p) = 0.19 and average size of cluster (n_0) = total of number of teachers ÷ total number of schools in Gandaki province = 31888÷4594= 6.94= 7, design effect = 1+ 0.15 (7-1) = 1+.9= 1.9. The effective sample size (n) = sample size ×design effect = 350×1.9= 665. A 10% non-response rate was assumed, resulting in a sample size of 665 + 66.5 = 732. Moreover, the target populations were in Manang (P1 = 315), Kaski (P2 = 5,562), and Nawalparasi East/Nawalpur (P3 = 3,519). $p = P_1+ P_2+ P_3$, p=5562+315+3519. = 9396 (Flash report, 2018/19). The proportionate sample sizes for Manang, Kaski, and Nawalparasi East district were as follows: Manang (n1) = 732 × 315 ÷ 9396 = 24.29, Kaski (n2) = 732 × 5562 ÷ 9396 = 433.3, and Nawalparasi East district (n3) = 732 × 3519 ÷ 9396 = 274.05. Nepal has three ecological belts (Mountain, Hill, and Terai), which correspondingly represent the Manang, Kaski, and Nawalpur districts. Multi-stage cluster sampling was used. Firstly, rural and urban municipalities were randomly selected. Secondly, wards were randomly selected. Lastly, all teachers from the selected schools were requested to complete the questionnaire.

The questionnaire was prepared based on various existing literature. The questionnaire was reviewed by faculty and health experts. The tool contains background variables and core response items derived from the guidelines, policies, and practices of governments (federal, provincial, and local/municipal). Fifteen item statements on activities (risk communication and community engage-

ment guidelines) from the health and education sectors of government and other stakeholders (development partners, parents) were developed to control the spread of COVID-19. The tool was first developed in English and then translated into the Nepali language. Pilot testing was conducted among 36 teachers from a different study site. Statements were contextualised according to their suggestions. Finally, the instrument was administered in Nepalese language. Data were collected through self-administration during the teachers' leisure periods.

Data were edited, coded, and analysed using descriptive and inferential statistics in the Statistical Package for the Social Sciences (SPSS) version 27.0. The summative score of fifteen-item statements was categorised into adequate (mean and above) and inadequate (below the mean) by the mean value. Chi-square tests and logistic regression were used to identify predictors and assess the extent of their contribution to responses regarding COVID-19 pandemic management and reopening schools, with a p-value of 0.05.

Ethical approval was initially obtained from the School of Education at Kathmandu University. Furthermore, ethical clearance was obtained from the Institutional Review Committee (IRC) of Kathmandu University School of Medical Sciences (IRC-KUSMS) on August 10, 2022. The registration number was 143/ 22. The autonomy and confidentiality of participants were strictly maintained throughout the research process.

3. Results

3.1. Background Characteristics of Respondents

Table 1 shows that 53.7% of teachers were female, and 75.7% of teachers had 20 years or less of teaching experience. Almost an equal number of teachers had families with five or more members (49.1%) and those with fewer than five members (50.9%). Additionally, 83.6% of teachers had a monthly income of 20,000 Rs or above in their families, and 68.9% of teachers were from urban municipalities.

Table 1. Background Characteristics of Respondents (n=737).

Backgrounds	Attributes	Frequency	Percentage
Gender	Male	341	46.3
	Female	396	53.7
Work experience	≤ 20 years	549	75.7
	≥21 years	146	24.3
Number of family members	<5 members	375	50.9
	≥5 members	362	49.1
Monthly family income	<20,000Rs	121	16.4
	≥20,000Rs	616	83.6
Municipal type	Rural	229	31.1
	Urban	408	68.9

3.2. Responses for COVID-19 Pandemic Management

The results show that 87.3% of teachers positively reported enforcement of risk communication and community engagement guidelines to prevent COVID-19; the National Health Education Information and Communication Centre (NHEICC) disseminated information about preventive measures for COVID-19 (97.0%), and the Government of Nepal has implemented COVID-19 infection prevention and control guideline (92.2%). The government adopted a digital/remote or closed-united groups (CUG) strategy to reorganise the education system, including schools. A majority of teachers (89.3%) reported that the government of Nepal implemented the students' learning facilitation guideline-2077, and the government enforced the smart lockdown strategy for school operations through local-level governments/municipalities (83.6%). Due to the spurious distribution of COV-

ID-19 in the community, the Government directed schools to support students' learning through remote or digital media (89.3%). To address the outbreak management of COVID-19 in the future or for long-term management, the government of Nepal has adopted extensive vaccination against COVID-19 for students and teachers in schools aged 12 years and above (89.3%), as shown in Table 2.

Additionally, 87.8% of teachers agreed that municipal had coordinated schools to operate following preventive measures against the COVID-19 pandemic, collaborated with the school management committee to monitor preventive measures (74.9%), supported common goods of COVID-19 (masks, sanitiser, water, and soaps) to schools (87.0%) and community-based organisations had donated common goods of COVID-19 to schools (85.3%). A majority of teachers (80.9%) rated that parents/guardians supported alternative learning activities at school, and municipalities made COVID-19 vaccines accessible to schools (92.8%). However, teachers rated municipalities as having established quarantine centres (53.7%) and isolation centres for the COVID-19 pandemic (38.0%), as shown in Table 2.

Table 2. Statement of Responses towards COVID-19 Pandemic Management.

	Items	Yes n(%)	No n(%)
1	The GON enforced guidelines for risk communication and community engagement.	641(87.0)	96(13.0)
2	NHEICC disseminated information messages about COVID-19 preventive measures through mass media.	715(97.0)	22 (3.0)
3	The GON enforced the COVID-19 infection prevention and control guidelines.	665(90.2)	72(9.8)
4	The GON enforced the Alternative Learning System Facilitation Guideline of 2077.	658(89.3)	79(10.7)
5	The GON executed a smart lockdown strategy for school reoperation.	616 (83.6)	121(16.4)
6	The GON suggested learning through remote or digital media in schools.	658(89.3)	79(10.7)
7	The GON executed a strategy of voluntary vaccination against COVID-19 for teachers and students (12 years and above).	675 (89.3)	79 (10.7)
8	Municipals coordinated schools to re-operate following preventive measures	647(87.8)	90 (12.2)
9	Municipals and SMC jointly monitor COVID-19 preventive measures.	552 (74.9)	185(25.1)
10	Municipals supplied COVID-19 goods (masks, sanitiser, soaps) to schools.	641(87.0)	96(13.0)
11	Community-based organisations supplied COVID-19 goods to schools.	629(85.3)	108(14.7)
12	Parents supported alternative learning activities over traditional school settings.	596(80.9)	141(19.1)
13	Municipal made COVID-19 quarantine at schools.	396 (53.7	341(46.3)
14	Municipalities made COVID-19 isolation centres at schools.	280 (38.0)	457(62.0)
15	Municipalities made COVID-19 vaccines accessible to schools.	684(92.8)	53(7.2)

Note-SMC- school management committee, the government of Nepal, NHEICC- national health education information, communication and centre

3.3. Teachers' Perception of Responses to COVID-19 Pandemic Management

Table 3 depicts that 69.7% of teachers perceived an inadequate response to managing the COVID-19 pandemic and reopening schools.

Table 3. Perceived level of responses to manage the COVID-19 Pandemic.

Perceived level	Number	Per cent
Inadequate	514	69.7
adequate	228	30.3

3.4. Association of perceived responses to Pandemic management with Participants' Variables

Table 4 shows that there is an almost equal number of male (30.5%) and female (30.0%) teachers with an adequate understanding of responses regarding COVID-19 pandemic management. Gender was not significantly related to teachers' perceptions of responses to pandemic management (p = 0.89). Furthermore, perceived adequate responses to COVID-19 pandemic management were lower among those with 20 years or less of work experience (29.5%) than among those with 21 years or more (31.5%). Work experience was insignificantly related to teachers' perceptions of responses to the COVID-19 pandemic ($p = 0.56$). Furthermore, perceived adequate responses to COVID-19 pandemic management were nearly equal among teachers with a family size of five or fewer (30.4%) and those with a family size of five or more (30.1%). Family size was not significantly related to teachers' perceptions of responses to the COVID-19 pandemic ($p = 0.30$). Likewise, perceived adequate responses to COVID-19 management were almost equal among teachers from families with a monthly income below 20,000 Rs (31.4%) and those with an income of 20,000 Rs and above (30.0%). The monthly family income had no significant impact on teachers' perceptions of COVID-19 pandemic management ($p = 0.7$). Teachers' perceived adequate responses to COVID-19 pandemic management were higher among those from urban (31.5%) than rural (27.5%) municipalities. The type of municipality was insignificant ($p = 0.27$) in terms of teachers' perception of efforts in managing the COVID-19 pandemic.

Table 4. Associations of Perceived Responses to Pandemic with Participants' Characteristics.

variables		Inadequate n (%)	Adequate n (%)	X^2	p
Gender	Male	237(69.5)	104(30.5)	0.01	0.89
	Female	277(69.9)	119(30.1)		
Work experience	≤ 20 years	387(70.5)	162(29.5)	0.33	0.56
	≥21 years	120(68.2)	56(31.8)		
Number of family members	<5 number	261(69.6)	114 (30.4)	0.07	0.93
	≥5 number	253(69.9)	109 (30.1)		
Monthly family income	<20,000Rs	83(68.6)	38(31.4)	0.09	0.76
	≥20,000Rs	431(70.0)	185(30.0)		
Municipal type	Urban	348(68.5)	160(31.5)	1.18	0.27
	Rural	166(72.5)	63(27.5)		

3.5. Logistic Regression Analysis on Perceived Responses with Participants' Characteristics

The results show that experienced teachers with 21 years or more of experience were more likely to have a positive perception of responses regarding the COVID-19 pandemic (B = 0.11; odds ratio (OR) = 1.11, p = 0.57). Teachers from urban municipalities were more likely to have unfavourable perceptions (B = 0.02, OR = 1.22; p = 0.26). However, municipal type and teaching experience were insignificant in teachers' perceptions of responses to the COVID-19 pandemic. Moreover, female participants (B = -0.02, OR = 0.98; p = 0.90), monthly family income ≥ 20,000 Rs (B = -0.074, OR = 0.92; p = 0.51), and number of family members (B = -0.007, OR = 0.99; p = 0.93) had negative relation in perception to response about the COVID-19 pandemic management in school. The model of work experience, municipal type, female teachers, teachers with a monthly family income of 20,000 rupees or above, and family members of 5 or more poorly predicted teachers' perceptions of responses regarding COVID-19 pandemic management, as shown in Table 5.

Table 5. Logistic Regression Analysis on Adequate Responses with Background Characteristics

Variables	B	Ex(B)	p
Gender *(female reference male)*	-0.020	0.980	0.908
Work experience *(≥21 reference ≤ 20 years)*	0.111	1.118	0.570
Family size *(≥5referrnce <5 members)*	-0.007	0.993	0.936
Family income *(≥20,000 reference <20,000Rs)*	-0.074	0.929	0.517
Municipal type *(urban reference rural)*	0.206	1.229	0.261
Constant	-0.075	0.417	0.002

4. Discussion

This study reveals that 69.7% of teachers perceived inadequate responses to the management of the COVID-19 pandemic and the reopening of schools. Similarly, a study has shown that resource-limited countries lack testing, tracing, and isolation capacity and are unable to establish quality quarantine centres throughout the nation (Rayamajhee et al., 2021). A comprehensive health literacy campaign, along with assurance of quality care for older adults and individuals with comorbidities, supports the effective management of future pandemics.

Moreover, the present study shows inadequate perceived responses to the COVID-19 pandemic. In case of pandemic conditions of public health, different activities such as enabling parental engagement and support; improving digital competence amongst pupils, teachers and parents; considering opportunities for smaller class sizes and additional staffing; and improving mechanisms of communication between schools and families, and between government and schools (Marchant et al., 2021) support to continue education activities in schools. During the pandemic, a digital divide was observed in the teaching and learning activities of students (Gurung & Poudel, 2021) and teachers. The availability and accessibility of information and communication technologies (ICTs) for online teaching during pandemics, lockdowns, or other challenging conditions, as well as the engagement of students in collaborative learning activities (Adhikari & Rana, 2022), provide alternative ways to sustain academic activities. During the COVID-19 pandemic in Jordan, educational institutions, including medical schools, more frequently utilised social media to disseminate knowledge and conduct routine classes through online messaging plans in the early stages of medical and public health emergencies. (Khasawneh et al, 2020).

The present study shows better response efforts in urban municipalities (B = .206, odds ratio = 1.229, p = 0.261). It might be due to poor coordination between different levels of government, particularly between province and local levels (Chaudhary, 2019 & Mokhele, 2024).). Therefore, local levels are blamed for bypassing the province, as the linkage between them and the province is poor due to insufficient laws and regulations. Moreover, digital services were not effective at all local levels in Nepal.

The study has implications for municipals, families and schools. Municipalities should reform their policies and advocate for effective pandemic management within their territories.to prevent the spread of outbreaks and continue school operations during and after disasters. Furthermore, school-based disaster intervention programs help promote the perception and coping skills of teachers, students, staff, and parents. Under these conditions, school authorities and leaders can enhance disaster education among teachers, students, and parents by communicating effectively about disaster risk and management.

This study is not free from some limitations. This cross-sectional design identifies an association, but it requires precautions to understand causal relationships among variables. The tool was self-administered among teachers. It may increase recall bias or lead to socially desirable reports. Future research should employ a longitudinal design, incorporating other variables, to establish causal relationships.

5. Conclusion

The present study reveals that 69.7% of teachers had an inadequate perception of responses to COVID-19 pandemic management in schools. Interventions from concerned authorities in health, education, and social security during outbreak management help promote teachers' perceptions and inform their preparedness for future disasters, such as the COVID-19 pandemic, in schools. Furthermore, this study suggests that interventions that consider the personal and situational characteristics of schools can help make society and communities resilient to future pandemics. Moreover, this study suggests that policymakers and academicians provide disaster education to in-service and prospective teachers to promote teachers' positive perceptions and practical responses for future pandemics.

This study also suggests that the relevant authority should advocate for continuous training in disaster management, including the use of digital technology, better resource allocation, improved infrastructure, and effective coordination among government agencies and development partners at both national and international levels. Nepalese teachers should enhance their efforts, skill, willingness, and efficiency to exemplify resilience and solidarity in the face of adversity, embodying the spirit of a nation that refuses to bow to the forces of nature.

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