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Assessing school safety against natural and human-made hazards: A case study of Gilgit city, Pakistan

Awais Ali Khan[1], Irfan Ahmad Rana[2*], and Fawad Ahmed Najam[3]

[1] Department of Urban and Regional Planning, School of Civil and Environmental Engineering, National University of Engineering and Technology (NUST), Islamabad, 44000, Pakistan; ✉ awais890@yahoo.com
[2] Department of Urban and Regional Planning, School of Civil and Environmental Engineering, National University of Engineering and Technology (NUST), Islamabad, 44000, Pakistan; ✉ irfanrana90@hotmail.com ; iarana@nit.nust.edu.pk
[3] NUST Institute of Civil Engineering, School of Civil and Environmental Engineering, National University of Engineering and Technology (NUST), Islamabad, 44000, Pakistan; ✉ fawad@nice.nust.edu.pk

ABSTRACT

Background: School-going children belong to a vulnerable group of society. Natural and human-made hazards pose a great threat to school-children. This calls for making schools resilient against external threats. Therefore, it is imperative to assess school safety that reflects ground realities, and so that appropriate preparedness measures can be taken. Despite being prone to natural and human-made hazards, limited studies are available on school safety in developing countries, especially Pakistan**.**

Objectives: This study aims to assess current preparedness levels of schools in Gilgit, Pakistan, and identify institutional challenges for effective disaster risk reduction.

Methods: An emergency preparedness checklist was developed through a rigorous literature review. Indicators were classified into building and construction, planning and design, and awareness and supply component. Eleven high schools were surveyed and evaluated based on the checklist. 18 key informant interviews from school principals and government officials were conducted to identify challenges faced in ensuring school emergency preparedness. Descriptive statistics and content analysis were employed to determine the level of preparedness and institutional challenges, respectively.

Results: Results have shown that school emergency preparedness is inadequate. Proper building design and construction is lacking. School administrations are unaware of the Pakistan School Safety Framework. Limited information is posted in schools which can cause problems in the safe evacuation of students. Moreover, life-saving and rescue equipment is not available in the surveyed schools.

Conclusions: This study has proposed a comprehensive safety checklist, customized for assessing emergency preparedness of schools. Using the proposed checklist, emergency preparedness can be evaluated for different tiers of schools. The proposed checklist can be used in streamlining the Pakistan School Safety framework and related policies.

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1. INTRODUCTION

Children are considered one of the most vulnerable sections in disaster and often perceived as passive (UNISDR, 2007). For the proper wellbeing of students, it is imperative to make schools safer against natural hazards (Tipler et al., 2017). Disaster impacts on school buildings and surroundings can leave children physically and mentally affected (Mudavanhu, 2014). Schools and children are considered

***CONTACT** Irfan Ahmad Rana ✉ iarana@nit.nust.edu.pk

vulnerable in a disaster situation(Öcal & Topkaya, 2011), because they are physically and emotionally more sensitive. A school must be considered a special facility with different emergency management requirements (Lindell & Hwang, 2008). Schools can play a critical role in keeping students safe by bridging communities and socio-political institutions to enhance their abilities to deal with natural hazards (ADPC, 2010). For the schools to keep on operating in a natural hazard situation, it is necessary to make the schools capable of handling emergencies and building the capacity of students. If schools fail to handle the situation properly, the educational process will be disturbed, and students will have to bear the brunt

The damages caused by natural hazards to schools can be minimized by learning lessons from the past occurrences. All over the world, approximately one billion students go to primary and secondary schools. Out of these, 875 million school-children live in high seismic risk zones (Hancilar et al., 2014). In the past several years, child mortality rates have increased due to disasters (Hancilar et al., 2014). Each year, around half a million school-aged children are evacuated from schools, primarily due to floods and storm surges (Ersoy & Kocak, 2016). Taiwan's Chi-Chi Earthquake of 1999 destroyed 43 schools, whereas 700 schools were severely damaged. Due to the 2001 Gujrat earthquake (M 7.7) in India, it was estimated that around 11,600 schools were damaged (Naja & Baytiyeh, 2015). Ersoy and Kocak (2016) Reviewed school losses in the 1999 Izmit earthquake (M 7.7) in Turkey and found that around 43 school buildings were completely destroyed, whereas 377 schools were damaged. There is limited research about nature and the level of preparedness in schools, with most studies have been in UK, USA and France (Tipler et al., 2017). As a result, disaster preparedness and awareness has become vital for school-going children, for ensuring their survival and well-being.

Pakistan has experienced similar school emergencies. In the 2005 Kashmir earthquake (M 7.6), 7489 schools were damaged, causing the death of 1700 school-going children (Shah et al., 2018; Wisner, 2006). It has been reported that around 10,348 schools were damaged in the country due to the devastating floods of 2010. Out of which 9368 were primary schools. 5.6% of educational institutions were affected by floods in KPK, Pakistan (Khan & Ali, 2014). Terrorism in the country has exposed schools to human-made disasters (Pakistan School Safety Framework, 2017). In 2016, a reprehensible terrorist attack on Army Public School left 132 children dead (Malik et al., 2017). Terrorist attacks and school massacres, especially on girl schools, show the vulnerability of such institutions. School children are powerful symbolic targets and can provoke strong emotional reactions from the public (Biberman & Zahid, 2019). Survivors of such disasters also have to face often post-traumatic stress disorders (Newman et al., 2014). However, despite these recent events, the school administrations have not undertaken appropriate measures to improve school emergency preparedness for future events (Shah et al., 2020). These multi-fold exposure and vulnerability call for child-centered disaster risk reduction, a key priority for countries like Pakistan (National Disaster Management Authority, 2017). Pakistan has a framework that outlines such governmental priorities. The objective of formulating the Pakistan School Safety Framework (PSSF) is the provision of guidance about policy at multiple administrative levels (National Disaster Management Authority, 2017). As of yet, adequate emergency preparedness activities sufficient measures are not taken to view the preparation for an emergency that may arise due to the occurrence of a natural hazard (Fahad & Jing, 2018). Similarly, poor risk perceptions and gender differences among school students might affect preparedness and response activities (Khan et al. 2020a; Khan et al. 2020b). Thus, this study revisits school emergency preparedness in a multi-hazard environment and identifies institutional challenges for effective disaster risk reduction

Since children spend more than two-thirds of their total day-time in schools, it becomes more obligatory to make them safe from any potential hazard (Asian Disaster Preparedness Center, 2010). Schools have a responsibility to keep students safe during any disaster. Schools should promote a culture of preparedness by keeping students aware and prepared (Asian Disaster Preparedness Center, 2010). This can be done by maintaining a school environment that is protective in nature (Fahad & Jing, 2018).

This implies that students should be well-educated about the dangers of natural hazards in schools. Disaster education should be made part of school curricula. Such safety factors shape an environment where individuals develop responsive behavior towards disasters (Tipler et al., 2017). This can only be done if local institutions, school administrations, and students collectively prepare schools for an emergency.

There is no consistent methodology for assessing school emergency preparedness. These methodologies are continuously evolving due to the multifaceted nature of school emergency planning (Zantal-Wiener & Horwood, 2010). Checklists can help evaluate school preparedness efforts (Tipler et al., 2017). Previous studies show that various global and country-specific initiatives for school protection have been taken to view the type of specific hazard more prevalent in study areas. Mechanisms and regulations have been developed for evaluating the preparedness of schools. There can be multiple ways to approach school preparedness from an administrative and managerial point of view. In the USA, there have been efforts to measure the preparedness level of individual schools (Kano et al., 2007). They researched school preparedness in 157 public schools in California. Kubicek et al. (2008) Focused on the impact of parental behaviours that can influence preparedness issues of children in schools. Zantal-Wiener and Horwood (2010) Developed a comprehensive framework for evaluating the readiness of US schools against disasters. A study in Saudi Arabia stresses preparing schools for natural hazards, recommending that spending should be on school buildings to make them seismic resilient and deemed a wise investment (Momani & Salmi, 2012). A study by Boon et al. (2012) focused on the school emergency preparedness with reference to students with disabilities. Giardina et al. (2013) Studied the impact of the Haiti earthquake on schools' infrastructural facilities. Tanner and Doberstein (2015) Assessed the emergency preparedness of university students at Waterloo University, Canada. Johnston et al. (2016) Measured tsunami-related preparedness in schools of Wellington, New Zealand. In the case of Turkey, Bandecchi et al. (2019) found that the students' behaviours play an important role in determining the level of emergency preparedness in schools. A study in Pakistan focused on school emergency preparedness in flood-prone areas (Shah et al., 2018). However, these studies were limited in covering school emergency preparedness in a multi-hazard environment

For school emergency preparedness, various aspects of school must be considered. For effective disaster risk reduction, *planning and design* of building structures can play an important role (Momani & Salmi, 2012; Parsizadeh & Ghafory-Ashtiany, 2010). Retrofitting can make buildings earthquake safe (Tipler et al., 2017). Seismic resilient designs needed to be prepared for schools to make their buildings safe from earthquakes (Hosseini & Izadkhah, 2006). Construction following building codes would make it resilient (Momani & Salmi, 2012). Regular maintenance and assessments are needed for realizing any potential damage to the exposed building (Alexander, 2002). Similarly, regular maintenance of infrastructural amenities like water supply and electricity lines must be done. In case of occurrence of natural hazards, it is necessary to move to a higher or some other place away from wires (Morss et al., 2016) or the system has to be shut off (MacDonald et al., 2017). In the case of flood, electrical system components like live wires, etc. must be put above flood water level (Lindell & Hwang, 2008). Proper evacuation is another vital component of emergency preparedness. Proper signage and maps must be present, pointing to evacuation routes (Shah et al., 2018). The exit ways needed to be kept protected and clear (Alexander, 2002; Tipler et al., 2017). Similarly, identifying assembly points and areas is a crucial component of school disaster preparedness (Oreta, 2010). Open spaces are also important because the students can regroup safely and wait for help to come (Alexander, 2002). The schools should have open spaces located away from the buildings (National Disaster Management Authority, 2017).

Awareness and drills are also important for ensuring student's safety in an emergency. Their presence should be highlighted through colored arrows, and their usage should be taught to children during drills (Alexander, 2002). Regular drills can provide learning exercises for students to enhance their capacities (Johnston et al., 2016; Tipler et al., 2017). These drills of awareness activities must also be evaluated on

the basis of their effectiveness (Johnson et al., 2014). In the assessment studies, accessibility to nearby police/security personnel is considered critical infrastructure (Momani & Salmi, 2012), especially in terror attacks on schools. The presence of proper *equipment* in schools could fundamentally save lives. First-aid-kits are very crucial for managing risks to immediate physical injuries (MacDonald et al., 2017). There should be the availability of all-terrain stretchers (National Disaster Management Authority, 2017), as they are crucial for moving the injured (Alexander, 2002). Fire extinguishers, torches, ropes, and flashlights are life-saving equipment in emergencies (Alexander, 2002). Thus, these measures are important for effective school disaster risk reduction.

The Hyogo Framework for Action (HFA) identified education as a tool to mitigate disasters (Muzenda-Mudavanhu et al., 2016). UNISDR (2017) and UNICEF proposed four aspects of ensuring school safety: student protection, infrastructural investment, educational continuity, and culture of resilience. Hosseini and Izadkhah (2006) Proposed a framework for Iran regarding the protection of schools against earthquakes. Regarding the construction and design of school buildings, this study also referred to the work of California Safety Commission. In Pakistan, Pakistan School Safety Framework (PSSF) was introduced for making schools safe in a comprehensive way, so that they could be implemented at different administrative jurisdictions (National Disaster Management Authority, 2017). As of now, this framework has limited legal binding, limiting its effectiveness. This study, henceforth, delves into various administrative, policy, and implementation aspects of school preparedness by developing a framework to gauge the school preparedness.

2. METHODS

2.1 Study design

This study used a case study research design.

2.2 Setting

Pakistan has been severely affected by a series of disasters in the last twenty years' time (Fahad & Jing, 2018). The region of Pakistan is prone to both geophysical and hydro-meteorological hazards. According to Gilgit Baltistan Disaster Management Authority (GBDMA), Gilgit city is prone to multiple natural hazards (NDMA, 2012). Gilgit is the capital of administrative territory Gilgit-Baltistan, Pakistan (Khan et al., 2020). Its coordinates are 35°55′15″N 74°18′30″E. The district also houses major governmental offices, legislative assembly, and judicial fora. This lies in the conjunction of the Himalaya, Hindu Kush, and Karakoram mountain ranges which are the largest mountain ranges of the world. The city is situated in an area formed by the confluence of Indus, Hunza, and Gilgit rivers (Figure 1). The Karakoram Highway (KKH) is a major road that connects it to the rest of Pakistan, with huge tourism potential (Karim et al., 2012).

According to the Census of 2017, the population of Gilgit District is 285,100 with an area of 4046 sq. km Seven of ten young women age 15-20 are educated. Primary school-aged children that are enrolled in schools are 91 percent, out of which 89 percent could complete the primary level of education. About 86 girls are attending education for 100 boys (Pakistan Bureau of Statistics, 2017).

2.3 Data collection and analyses

The data collection was done from schools based on the willingness and availability of school principals in 2019. A total of 15 schools were randomly selected. The government and private both types of schools were approached. Some school administrations were reluctant to participate in studies without prior approval from the Gilgit-Baltistan Directorate of Education (GBDOE). Therefore, some samples were dropped because of incomplete responses or non-availability of school principals. Due to these constraints, data of only 11 of the schools were used in further analysis. The survey incorporated both qualitative and quantitative data. The quantitative questions (Yes or No) were collected using a checklist

(see Table 1). The qualitative part of the survey consisted of the ten key informant interviews from school principals, officials of Gilgit-Baltistan Directorate of Education (GBDOE), and Gilgit-Baltistan Disaster Management Authority (GBDMA). The questions from school principals focused on past damages by disasters, maintenance issues, drills and training, knowledge about school safety frameworks, and challenges faced in school emergencies. Whereas, questions for government officials were focused on school building plan approvals, implementation of the Pakistan school safety framework, early warning systems, and issues faced for effective school disaster risk reduction. Data was analysed through descriptive statistics and content analyses. Data from key informant interviews was extracted using repetitive and valid inferences, and classified under a particular theme or challenges faced by the school administrations and government officials.

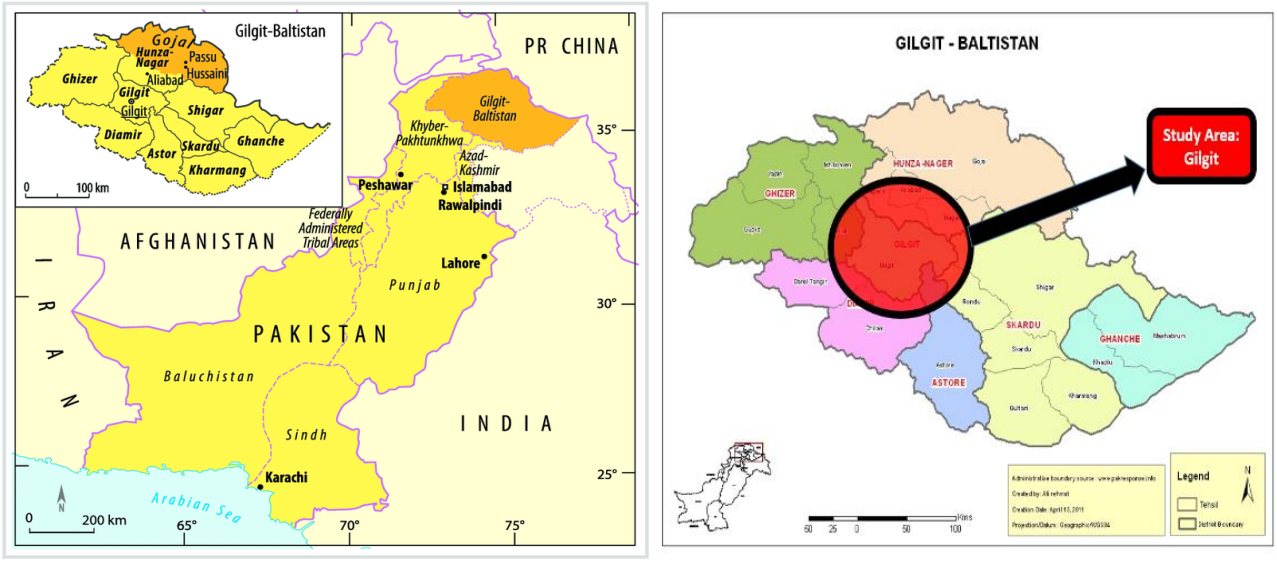

Figure 1 Study area map of Gilgit, Pakistan

2.4 Indicators for school safety evaluation

Indicators were selected using a rigorous literature review. A total of 25 school emergency indicators were identified. These indicators were grouped into building construction and maintenance, planning design and circulation, drills and awareness activities, and equipment (Table 1). Each response to the indicator was recorded in a dichotomous form (Yes and No).

Table 1: Indicators for Evaluation of School Safety

Indicator	Empirical Evidence from Studies
Building Construction and Maintenance	
1 Building impacted by the previous	(Momani & Salmi, 2012; Tipler et al., 2017)
2 Regular building maintenance	(CRED, 2015; Mutch, 2014)
3 Electric systems in check	(Lindell & Hwang, 2008; MacDonald et al., 2017)
4 Safety during building construction	(Momani & Salmi, 2012; Mudavanhu, 2014)
5 Approved building plan	(Hosseini & Izadkhah, 2006; Momani & Salmi, 2012)
6 Fastening of non-structural elements to	(Hosseini & Izadkhah, 2006; Momani & Salmi, 2012)
Planning, Design, and Circulation	
1 Open spaces nearby buildings	(Alexander, 2002; Johnson et al., 2014; National Disaster
2 Evacuation plans	(Johnston et al., 2016; Tipler et al., 2017)

3	Signposted assembly points	(Alexander, 2002; National Disaster Management Authority,
4	Disability-friendly assembly points and	(National Disaster Management Authority, 2017)
5	Outward opening of classroom doors	(Johnson et al., 2014)
6	Dual classroom exits	(Alexander, 2002; Tipler et al., 2017)
7	Clear exit pathways	(Alexander, 2002; Tipler et al., 2017)
Drills and Awareness Activities		
1	Conduction of mock drills	(Johnston et al., 2016; Wisner, 2006)
2	Awareness regarding regulatory	(Johnson et al., 2014; Johnston et al., 2016; Wisner, 2006)
3	Presence of nearby security posts	(Momani & Salmi, 2012)
Equipment		
1	Fire extinguishers	(Biberman & Zahid, 2019; Hosseini & Izadkhah, 2006)
2	Keeping in check flammable material	(Alexander, 2002; Momani & Salmi, 2012)
3	First aid boxes	(Hosseini & Izadkhah, 2006; MacDonald et al., 2017; Shah et al.,
4	Stretchers	(Asian Disaster Preparedness Center, 2010)
5	Torches	(MacDonald et al., 2017)
6	Ladders	(National Disaster Management Authority, 2017)
7	Thick ropes	(National Disaster Management Authority, 2017)
8	Closed-circuit televisions (CCTVs)	(National Disaster Management Authority, 2017)
9	Temporary shelters	(Alexander, 2002; NDMA, 2017)

Source: Desk Review

3. RESULTS

3.1 Building construction and maintenance

Survey has shown that only two schools were impacted by past disasters, while the rest reported having no impact (Figure 2). Retrofitting and repairing may be difficult for schools, as governments have scare resources (Ersoy & Kocak, 2016). However, four-fifths of school buildings were reported to have gone to regular maintenance. Electric systems needed to be checked and kept safe to avoid any unfortunate incidence, i.e., fire, electrocution, etc. Almost 90% of principals reported that they regularly check electrical systems of the school buildings. While a school building is constructed, the safety requirements need to be adequately ensured. Half of the school buildings reported having followed requirements of safety and hazard-resistant construction. Around 55% of the school buildings reported having fastened non-structural elements to resist their lateral movement.

3.2 Planning design and circulation

Around 90% of school buildings had open spaces surrounding them, which can help in the evacuation of students (Figure 3). School evacuation plans help inappropriate emergency planning and management (Momani & Salmi, 2012; Tipler et al., 2017). Only 36% of schools reported having evacuation plans. Around 54% of schools had emergency signs in classes, routes, and doors. Only 18% of the school buildings considered their assembly areas as disability-friendly. In selected schools, almost 64% had doors open in an outward direction. Similarly, only 45% of school had dual exits (including doors and windows) in classrooms. Around 81% of school reported having kept exit-pathways.

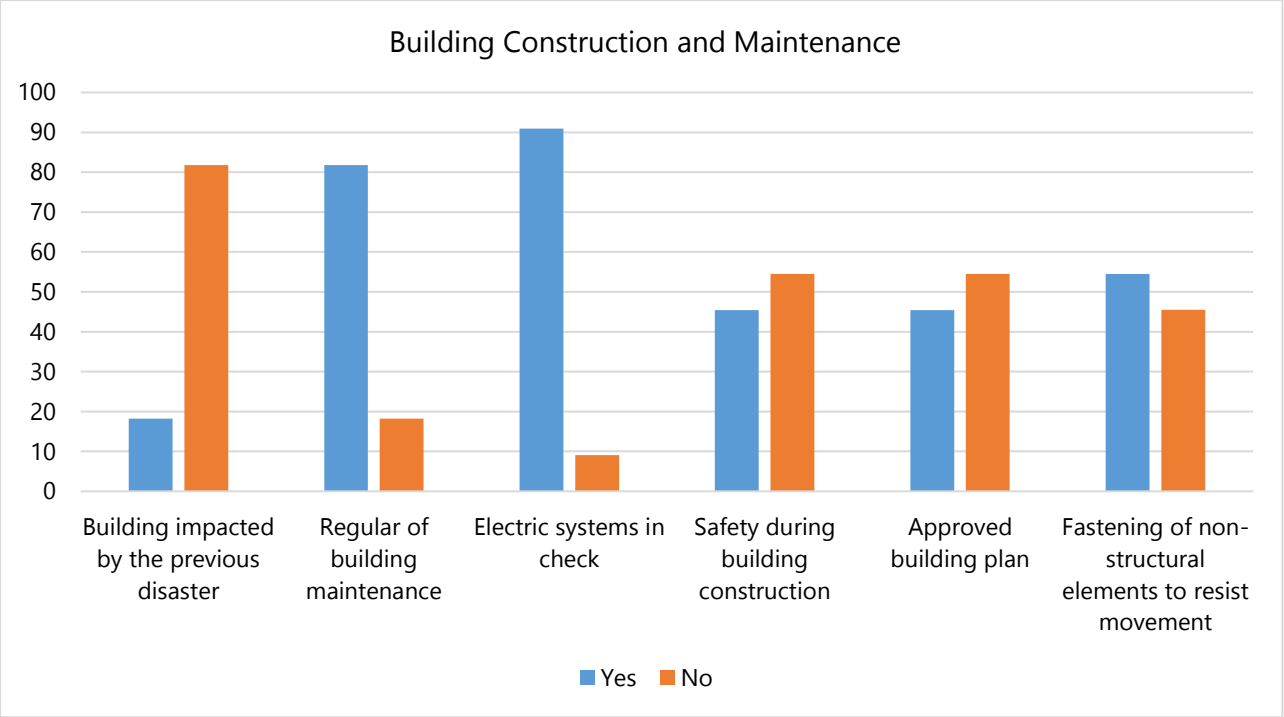

Figure 2 Building Construction and Maintenance in surveyed schools of Gilgit city, Pakistan

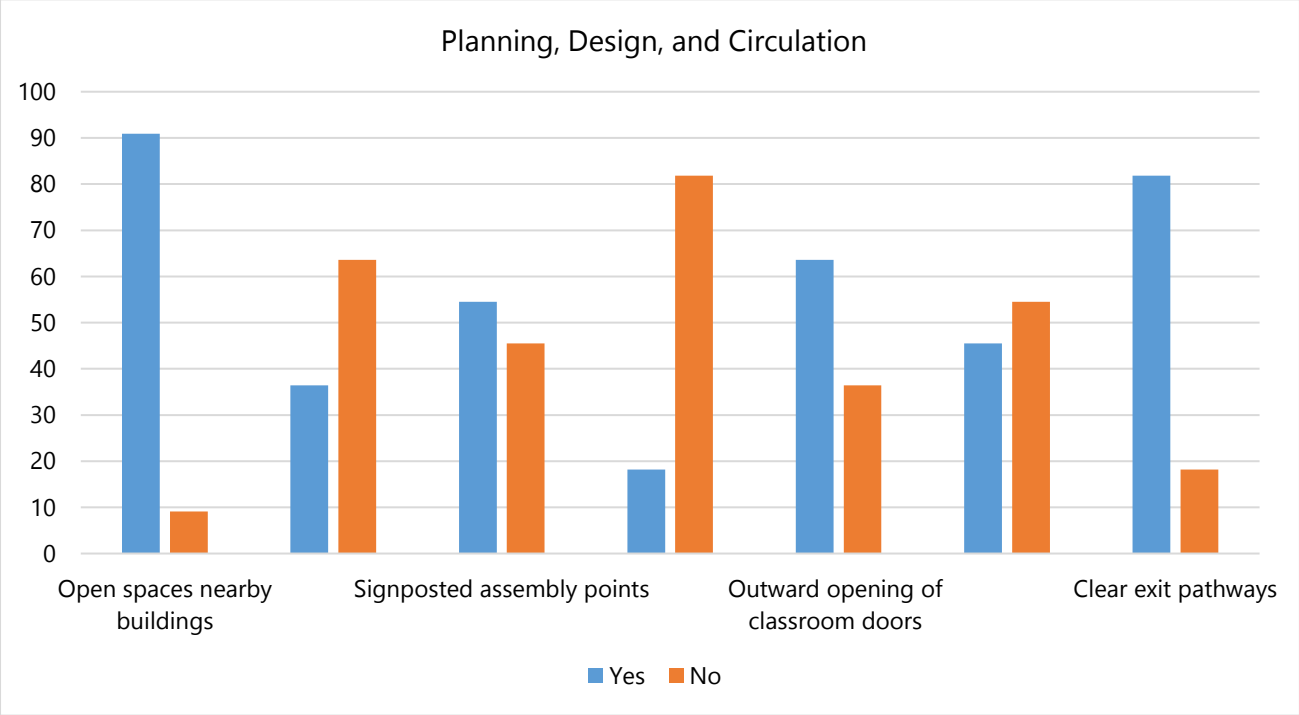

Figure 3 Planning, Design, and Circulation in surveyed schools of Gilgit city, Pakistan

3.3 Drills and awareness activities

Drills and awareness activities are also part and parcel of school disaster management and school preparedness. The drills should be well developed and practiced (Johnston et al., 2016). The schools and relevant public institutions should make sure that drills are conducted in schools. Drills are necessary to be conducted regularly for students' capacity building so that they do not panic in an emergency.

Around half of the schools reported having students conducted drills, showing a lack of school preparedness. The school's administration and line departments need to be aware and well-versed about the regulatory frameworks that enforce the standards and procedures for school safety. Only 35% of schools' administrations were aware of frameworks governing schools' safety (Figure 4). The development of security plans should be made at accessible locations near schools. Around 45% of school administrations were aware of security posts near schools, and more than half were unaware.

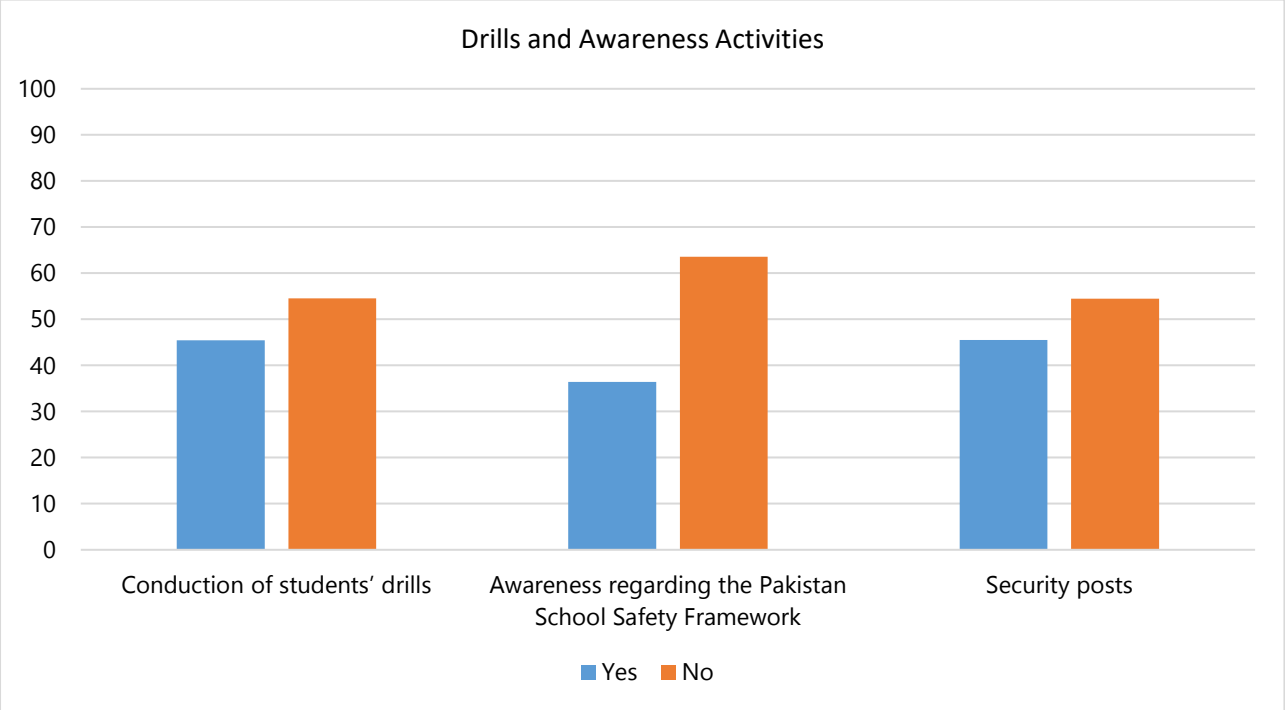

Figure 4 Drills and Awareness Activities in surveyed schools of Gilgit city, Pakistan

3.4 Equipment

Only 36% of the schools reported having fire extinguishers on-premises (Figure 5). About 63% reported that flammable materials inside the building are checked regularly. First aid boxes are kept for basic emergency treatment. Around 82% of schools reported having first aid boxes. Around two-thirds of schools reported to have torches or flashlights. Ladders should also be kept in school preparedness inventory (National Disaster Management Authority, 2017). Ladders can be of great use to evacuate students from the upper floors. Only 64% of schools reported having ladders. Ropes are for fastening, lifting things, and injured people. Only 36% of the schools had ropes, showing a lack of preparedness. For security purposes, around 72% of schools had CCTVs. A shelter may be of use to give a protective environment (Alexander, 2002). Only around 45% of schools reported having temporary shelters.

3.5 Challenges of school safety in Pakistan

Key-informant interviews and content analysis revealed challenges faced by schools regarding emergency preparedness. Under common thematic areas, the similar responses and challenges were grouped to form broader categories, i.e., lack of awareness, poor building and construction, inadequate planning and design, and limited supplies and aid. Moreover, through content analysis, a framework was developed, delineating working relationships of relevant entities that derive their mandate from statuary frameworks of disaster management in Pakistan (Figure 6).

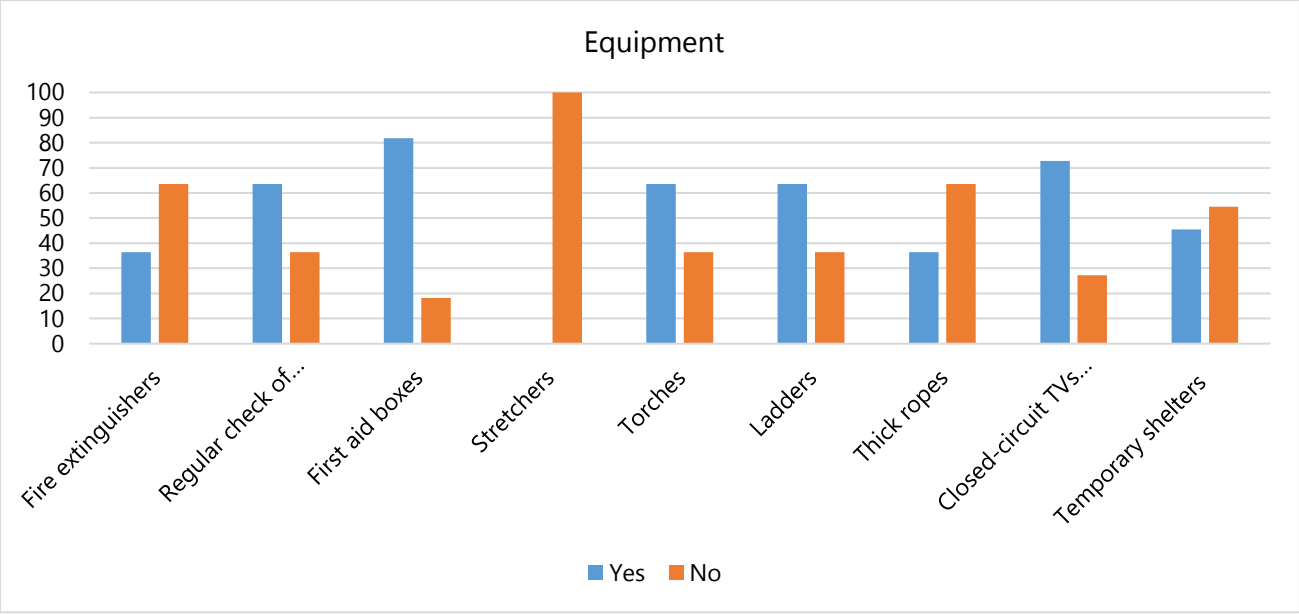

Figure 5 Equipment in surveyed schools of Gilgit city, Pakistan

Table 2 School safety preparedness

	Indicator	Yes (%)	No (%)
		f=11	
Building Construction and Maintenance			
1	Building impacted by the previous disaster	18.2	81.8
2	Regular of building maintenance	81.8	18.2
3	Electric systems in check	90.9	9.1
4	Safety during building construction	45.46	54.54
5	Approved building plan	45.46	54.54
6	Fastening of non-structural elements to resist movement	54.5	45.5
Planning, Design, and Circulation			
1	Open spaces nearby buildings	90.9	9.1
2	Evacuation plans	36.4	63.6
3	Signposted assembly points	54.5	45.5
4	Disability-friendly assembly points and evacuation routes	18.2	81.8
6	Outward opening of classroom doors	63.6	36.4
7	Dual classroom exits	45.5	54.5
8	Clear exit pathways	81.8	18.2
Drills and Awareness Activities			
1	Conduction of students' drills	45.46	54.54
2	Awareness regarding the Pakistan School Safety Framework	36.4	63.6
3	Security posts	45.5	54.5
Equipment			
1	Fire extinguishers	36.4	63.6

2	Regular check of flammable material	63.6	36.4
3	First aid boxes	81.8	18.2
4	Stretchers	0	100
5	Torches	63.6	36.4
6	Ladders	63.6	36.4
7	Thick ropes	36.4	63.6
8	Closed-circuit TVs (CCTVs)	72.7	27.3
9	Temporary shelters	45.5	54.5

Source: Field Survey, 2019

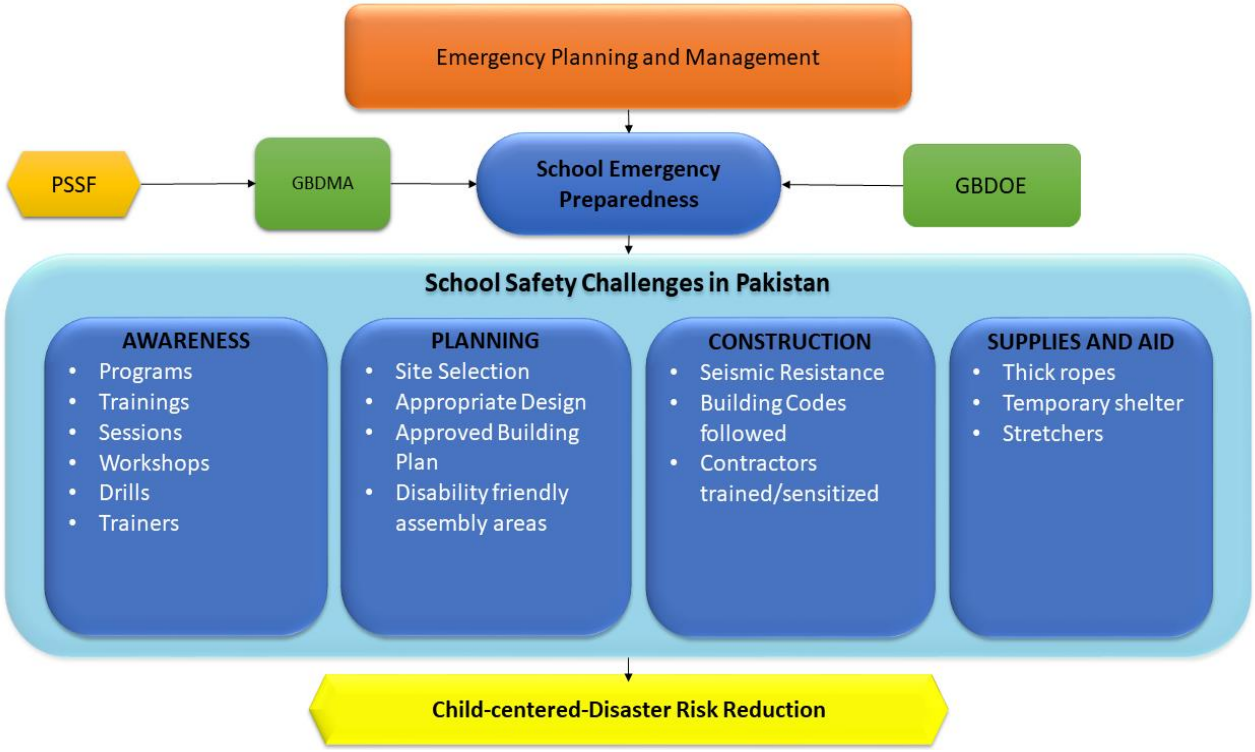

Figure 6 School safety challenges in Gilgit city, Pakistan

4. DISCUSSION

Disasters that occur due to natural hazards can cause infrastructural damage to buildings of educational institutions. These damages may result in fatalities and severe injuries to the occupants. The structural design of school buildings and construction practices should explicitly consider the natural hazard and vulnerability profile of an area. The exposure of a school building to any past disasters may have a significant degrading effect on the physical stability and remaining lifetime of the building.

In Pakistan, many private school buildings are not designed and constructed using code provisions for school safety. Instead, the occupancy of several residential buildings is changed at later stages to convert them into commercial buildings or schools. The structural and non-structural safety requirements are generally not met during this conversion. This results in an increased vulnerability of such buildings against disasters. Another factor that exacerbates school vulnerability is the violation of getting building permits from concerned local authorities. Only half of the school buildings were reported to be constructed after approval of building plans. Moreover, the non-structural elements (building content,

equipment, furniture, etc.) need to be fastened to the load-bearing structural components. They can be shaken by powerful wind gusts or earthquake motions, resulting in fatal damage or injuries to the school students

The presence of open spaces nearby schools is crucial to take shelter or evacuation. Where buildings are at risk, the plan should designate an open or vacant space nearby buildings that can be resorted to in an emergency, which can be used as a regrouping or assembly point (Alexander, 2002). In case of emergency, students are supposed to evacuate and gather at a suitable assembly point. Those assembly points needed to be highlighted with visible and legible signs (Alexander, 2002; NDMA, 2017). Likewise, the assembly points accessed by the avenues and routes also needed to be highlighted with visible and legible signs. Moreover, these assembly areas must be easily accessible for disabled and injured. In the case of a natural hazard, fear about building's collapse may instigate students to run outside the building (Johnson et al., 2014). More than one classroom doors (with panic bar), and opening outwards, can be life-saving in an emergency. Although the separate exits or windows can also be used for emergency exits, classrooms must be designed, keeping in view of potential hazards. Moreover, evacuation routes and exits must be kept clear, at all times.

In the emergency, it is crucial to have the necessary equipment and aiding materials. School safety is achieved when schools have the necessary supplies to cope with disasters. In case of such occurrence, there is a higher probability of fires in the buildings. Schools need to maintain, test and refill fire-extinguishers and at-least some trained teachers should be able to use them when required. Inflammable material needs to be in check So that fires do not erupt. These fire eruptions from inflammable material can then cause further damages (Momani & Salmi, 2012). Stretchers are needed in case of moving an injured person in an unwanted situation. Alarmingly, none of the schools reported having a single stretcher. Torches and flashlights can be used to navigate way during darkness in case of disruption of the electric lighting system

Training and knowledge imparted to children make them capable of facing the impacts of disasters. Majority of respondents affirmed that there is a lack of awareness campaigns and mock drills in schools. They opined that by increasing the number of drills and training, the vulnerabilities of students could be significantly reduced. Awareness programs and emergency drills should be scheduled regularly, for students, faculty, and school administrations. Although the National Disaster Management Authority (NDMA) of Pakistan calls for regular training programs to build capacities, no permanent trainers visit schools on a rotational basis. The education department was adamant that are planned for each October, but the unavailability of disaster experts and trainers posed a challenge for regular annual drills. Local NGOs often conduct workshops for teachers in effective teaching methods and can be used for imparting disaster preparedness knowledge to them.

As per policy, the identification and selection of a new school site must be done after a proper risk assessment of natural hazards (National Disaster Management Authority, 2017). However, in most cases, schools were constructed on residential plots, without proper approval from the competent authorities. Illegal land use conversion shows that the original building was designed for residential purposes and not commercial, hence increasing disaster risk for students. Moreover, many schools were situated near the hilly mountains, increasing landslide risk. Secondly, several school buildings were not constructed using seismic safety guidelines and codes as per local institutions

Rapid response requires fast communication from schools with emergency management departments. Conveyance of early warning system for schools was not defined, with varying responses. The coordination between the schools and relevant departments exists, but it does not cater to the requirement posed by natural hazards. None of the schools had disaster management committees, which could be responsible for emergency preparedness in their schools. Although, the NDMA has made it mandatory for schools to have emergency supplies, no proper check and order are maintained for

ensuring such regulations. This will enhance the state of readiness to face a disaster. This highlights that risk communication and warning systems need to be strengthened, and coordination linkages should be established across the sectors.

The Pakistan School Safety Framework (PSSF) is relatively new, which calls for ensuring school safety against human-made and natural hazards (National Disaster Management Authority, 2017). However, awareness about safety policies to students, faculty, and relevant professionals was limited. The officials of the Gilgit Baltistan Disaster Management Authority and the Education Department did not know of the existence of such guidelines. Lack of coordination among line departments of disaster management authorities could be attributed to no knowledge about PSSF at the local level. Although the proposed frameworks highlight roles and responsibilities and prepare emergency plans, there is no legal binding for schools. Only a few principals were aware of PSSF, and they were executing only bits and pieces of it. These few schools used PSSF, under the direction of NDMA, as a pilot project. Thus, proper sensitization about its significance, operationalization, and evaluation is needed direly.

5. CONCLUSION

This study has explored current emergency preparedness and the safety challenges of existing schools in Gilgit, Pakistan. It is observed that the lack of communication and equipment is a severe issue in schools. Moreover, the absence of school safety committees and control cells implies the non-seriousness of school administrations in the study area. There is no clear responsibility for risk communication to students and schools. Although the PSSF is launched by the government, its implementation and follow-up are uncertain as standing operating procedures (SOPs) are not followed in true letter and spirit. The study calls for improving coordination among disaster management institutions, NGOs, and education departments at all administrative levels, with a more proactive approach. Moreover, regular awareness campaigns and drills must be ensured. Planning and building services should also be executed strictly in accordance with building codes. It may take a decade before the potential of school safety can be fully realized. This study has proposed a comprehensive checklist, customized for assessing emergency preparedness of schools. Using the proposed checklist, emergency preparedness can be evaluated for different tiers of schools and different developing countries. This study also has its limitations. By evaluating a few schools, the assessment and challenges identified cannot be generalized for the whole country. More research is needed for identifying factors influencing school emergency preparedness and the role of school administrations, local institutions, and students for effective disaster risk reduction. Different urban or rural settings, as well as prior experiences, can influence preparedness against external threats. This baseline study advocates that more research is needed to improve school emergency preparedness and contingency planning in compliance with the Pakistan School Safety Framework and related policies.

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