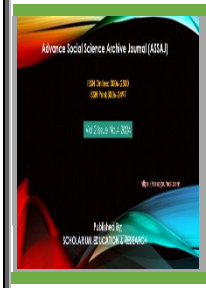

Advance Social Science Archive Journal
Available Online: https://assajournal.com
Vol.2 No.4, Oct-Dec, 2024. Page No. 1211-1220
Print ISSN: 3006-2497 Online ISSN: 3006-2500
Platform & Workflow by: Open Journal Systems

CULTURAL BELIEFS AND THEIR ROLE IN SHAPING RISK PERCEPTION DURING COVID-19

Sumra Sajida Tufail	Department of Disaster Management and Development Studies, University of Balochistan, Quetta, Pakistan
	Email: sumrasajidatufail@gmail.com
Syed Ainuddin	Department of Disaster Management and Development Studies, University of Balochistan, Quetta, Pakistan
Ghulam Murtazaa	Department of Disaster Management and Development Studies, University of Balochistan, Quetta, Pakistan
Farhana Amir Ali	Department of Disaster Management and Development Studies, University of Balochistan, Quetta, Pakistan
Shabana Faiz	Pakistan Study Department, Sardar Bahdur Khan, Women University, Quetta, Balochistan
Imran Khan	Department of Media Studies, University of Balochistan, Quetta, Pakistan

ABSTRACT

This study explores the role of cultural beliefs in shaping risk perception and public responses to COVID-19 in Quetta, Pakistan. Using a mixed-methods approach, data were collected from 323 households across four sub-divisions. The findings reveal that while 79% of respondents acknowledged the existence of COVID-19, variations in perceived severity and preventive behaviors were influenced by cultural and religious beliefs. Many viewed the pandemic as a divine test, affecting their compliance with health measures. Trust in government efforts remained moderate, with concerns over negligence in handling the crisis. The study underscores the need for culturally sensitive public health strategies, including engaging religious leaders, addressing misinformation, and improving trust in institutions. By integrating local beliefs into risk communication, policymakers can enhance community resilience and compliance with health measures. These insights contribute to disaster management frameworks, emphasizing the importance of culturally informed interventions during public health emergencies.

Key words: COVID-19, Risk Perception, Cultural Beliefs, Trust in Government, Quetta

1. Introduction

Biological disasters involve scenarios where diseases, toxins, or pathogenic microorganisms cause large-scale harm to humans, animals and plants. They can arise from epidemics, accidental releases of micro-organisms and bio-terrorism. Biological agents such as viruses, bacteria and fungi pose substantial risks to public health and safety (DDMA, 2008; Jeremias & Martin, 2019). These disasters may occur naturally, accidentally or intentionally with naturally occurring threats being the most prevalent. Biological Disasters accounted for 13% of all major disasters from 2000 to 2015 and are considered a sub-category of natural disasters (Alshehri, 2016). In November 2019,

an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) was reported in the Hubei province of China and got spread around the world. Consequently, on 11th February 2020, the World Health Organization (WHO) officially named the disease "COVID-19." SARS-CoV-2 as primary cause of COVID-19 (Cvetković et al., 2020). On 11th March 2020, WHO declared COVID-19 a pandemic due to its rapid worldwide spread (Acharya & Porwal, 2020; Ahmed et al., 2023; van Loenhout et al., 2021). COVID-19 has affected our societies, from health systems and economies to social and cultural frameworks. In many places, including the city of Quetta, cultural beliefs served as a major catalyst in shaping public perceptions of risk concerning the pandemic and public response to it. (Appleby-Arnold et al., 2018; Kulatunga, 2010; Minguez Garcia, 2020). Risk perception prevails in individual and community understanding as well as action tendency on the occurrence of risks. These perceptions can result from deep-rooted cultural norms in society, religious ideologies, value systems, traditional practices, and social structures. The dimensions of these factors decide the gravity people allocate to any crisis, their likelihood to adopt preventive measures, and their overall confidence in public health initiatives. (Motta Zanin et al., 2020; Samadipour et al., 2020; Schneider et al., 2021; Shreve et al., 2016).

Balochistan, Pakistan's largest province by area but smallest by population, faces unique vulnerabilities. Frequently impacted by natural and human-induced hazards such as floods, earthquakes and droughts (Nasrullah et al., 2015). The province's limited resources and infrastructure exacerbate its challenges. The first case of COVID-19 in Balochistan was reported on March 10th, 2020, in Quetta (Health Department, 2020), with Taftan serving as a key entry point for the virus in Pakistan (Mahmood et al., 2021). By August 5th, 2021. Balochistan had reported 30,087 confirmed cases and 330 deaths (GOP & MNHSR, 2021). Moreover, only 3% of the population in Balochistan was tested for COVID-19, indicating a critical lack of resources for monitoring and managing the pandemic (Badini et al., 2021; NEOC, 2021; Pakistan Bureau of Statistics, 2017). The majority of cases (99%) were locally transmitted while Quetta accounting for the highest proportion (19,826 cases), followed by Kech (2,225) and Khuzdar (1,154) (Healthcare Department Balochistan & WHO, 2023). Despite systemic challenges such as poverty, low literacy rates and inadequate healthcare, Pakistan's relatively slow COVID-19 outbreak compared to other nations was attributed to factors like early response measures, population immunity and environmental conditions (Ilyas et al., 2020). However, addressing the pandemic's impact requires a deeper understanding of the community vulnerabilities that influence its spread and severity (Huynh & Bui, 2024).

Quetta, the capital of Balochistan, is a culturally diverse city where traditions and societal values hold strong significance in daily life. During the COVID-19 outbreak, various cultural beliefs influenced how residents perceived the virus, leading to differences in compliance with preventive behaviors such as mask-wearing, social distancing, and vaccination. Some community respondents observe the pandemic as a serious emergency with a need for urgent action, while others saw it as a test of faith, some kind of conspiracy, or an exaggerated threat. These perceptions, shaped by

cultural and religious narratives, informed individual and collective responses to the pandemic.

The understanding of the interplay between cultural beliefs and how risk is perceived in order to devise effective public health strategies is paramount. Policies and intervention programs that rooted in local cultural values and belief systems have increased chances of acceptance and implementation. The current article examines the interaction of cultural beliefs and risk perception in Quetta city during the COVID-19 pandemic and how these aided or undermined public health responses. With the discussion of these interactions, the study intends to help in the configuration of culturally sensitive disaster management and risk communication.

2. Methodology

In the study, a cross-sectional research design that applied both exploratory and descriptive approaches has been selected to explore Risk Perception, Cultural and Religious Beliefs, Trust in Government and Public Health Institutions in Quetta during the COVID-19 pandemic. Four sub-divisions of Quetta (City, Saddar, Sariab, and Kuchlak) were chosen due to their administrative understanding of the study area for conducting the research. A mixed-methods approach was adopted, combining household surveys for primary data collection using a semi-structured questionnaire and secondary data obtained from government reports and policy documents and international health organizations. Stratified random sampling with proportional allocation was done to ensure representation from all four sub-divisions, and a total of 323 households were surveyed, by Arkin and Colton's formula. Data were analyzed with descriptive statistics using IBM SPSS 21.0. The methodological rigour of the study ensures that it will be reliable and valid while providing insights on how cultural beliefs and risk perceptions of the community interact during pandemics.

3. Respondent's Profile

The study collected data from 323 respondents, representing diverse socio-economic backgrounds across the four sub-divisions of Quetta. The demographic characteristics of the respondents were analyzed to understand how factors such as age, gender, education, occupation, household size influenced risk perception and cultural believes during the COVID-19 pandemic. The sample consisted of both male and female respondents, with 56% male and 44% female participation, ensuring a balanced gender representation. The majority of respondents (45%) fell within the 30–50 years age range, followed by youth (18–29 years) at 30% and older individuals (above 50 years) at 25%. Education levels varied among respondents; 38% had completed secondary education, 27% had higher education, while 35% had only primary or no formal education. Employment trends showed that 40% were engaged in informal employment, 25% were government or private sector employees, 20% were self-employed, and 15% were unemployed or homemakers. The average household size among respondents was 7.97 members per household, reflecting the traditional family structure in Quetta. These demographic insights provide a comprehensive understanding of the community structure in Quetta, helping to contextualize how different social groups perceived and responded to the COVID-19 pandemic.

4. **Understanding Risk Perception in Quetta**

The findings indicate that while a majority of respondents 79% acknowledged the existence of the virus, their perception of its severity and their response to preventive measures varied widely. The Table 1 represents the responses of Quetta city and its sub-divisions when they were asked regarding their perception of the severity of COVID-19, the inquired variables are; the perceived severity if they contracted the virus, their sensitivity to COVID-19 and their anxiety level related to the virus. The responses were measured using a 5-point Likert scale, with 1 indicating "Not at all severe" and 5 indicating "Extremely severe." The data includes the mean (M) and standard deviation (SD) for each sub-division and the total for Quetta as a whole.

Table 1 Perception of Susceptibility to Coronavirus COVID-19 and Extent of Anxiety

Variables	Distribution of Respondents									
	sub-division city		sub-division saddar		sub-division Sariab		sub-division Kuchlak		Total (Quetta)	
	M	SD	M	SD	M	SD	M	SD	M	SD
What do you think about the severity of COVID-19	3.49	1.20	3.90	1.06	3.23	1.31	4.00	1.01	3.52	1.22
If you contracted with COVID-19, how severe would it be	3.46	1.20	3.56	1.20	3.35	1.28	3.69	1.19	3.47	1.22
sensitivity to Coronavirus	3.23	1.10	3.39	1.09	3.11	1.20	3.67	.89	3.27	1.12
Anxiety level for COVID-19	3.12	1.18	3.61	1.18	3.12	1.26	3.56	1.29	3.23	1.23
Note: 5-point Likert Scale (1= Not at all severe, 2= not severe, 3= Slightly severe, 4= severe, 5= Extremely severe), N= 323										

Source: (Field Survey, 2022)

In Quetta, respondents reported moderate severity of COVID-19 with mean score of 3.52. The mean score was 3.47 when they were asked about level of severity in case if they contracted the virus, showing similar severity perception. The participants perceived moderate (Mean score=3.27) sensitivity to COVID-19. The mean score for level of anxiety related to COVID-19 was 3.23 which was also moderate.

The response reported in almost all sub-divisions of Quetta was moderate expect sub-division Kuchlak where they reported it sever. For the variable perceived severity of COVID-19 mean score of all sub divisions is (city=3.49, saddar=3.90, sariab= 3.23, Kuchlak=4). The respondents perceived severity in all sub-divisions if they contracted the virus was also reported moderate (city=3.46, saddar=3.56, sariab= 3.35, Kuchlak=3.69). The respondents perceived moderate (city=3.23, saddar=3.39, sariab= 3.11, Kuchlak=3.67) sensitivity to COVID-19. The mean score for level of anxiety related to COVID-19 was also reported as moderate in all sub-divisions (city=3.12, saddar=3.61, sariab=3.12, Kuchlak=3.56). The response was moderate for all variable

but yet data show variation in sub-divisions. These deviations reveal differences in the concerns, knowledge and experiences of the respondents in each sub-division.

The Figure 1 indicates the responses of people of Quetta city and its sub-divisions about their perception of potential risk of COVID-19 infection. Results revealed in Quetta, 43.3% of participants believed that they would probably get infected with COVID-19 if they didn't take precautions, while 27.6% responded with "May be/may be not" to this question. Regarding the risk of COVID-19 infection without vaccination, 27.2% of respondents perceived it as high and 25.7% considered it less risky. When asked about their level of worry about getting affected by COVID-19, 32.8% of respondents reported being worried, while 13.0% expressed being highly worried.

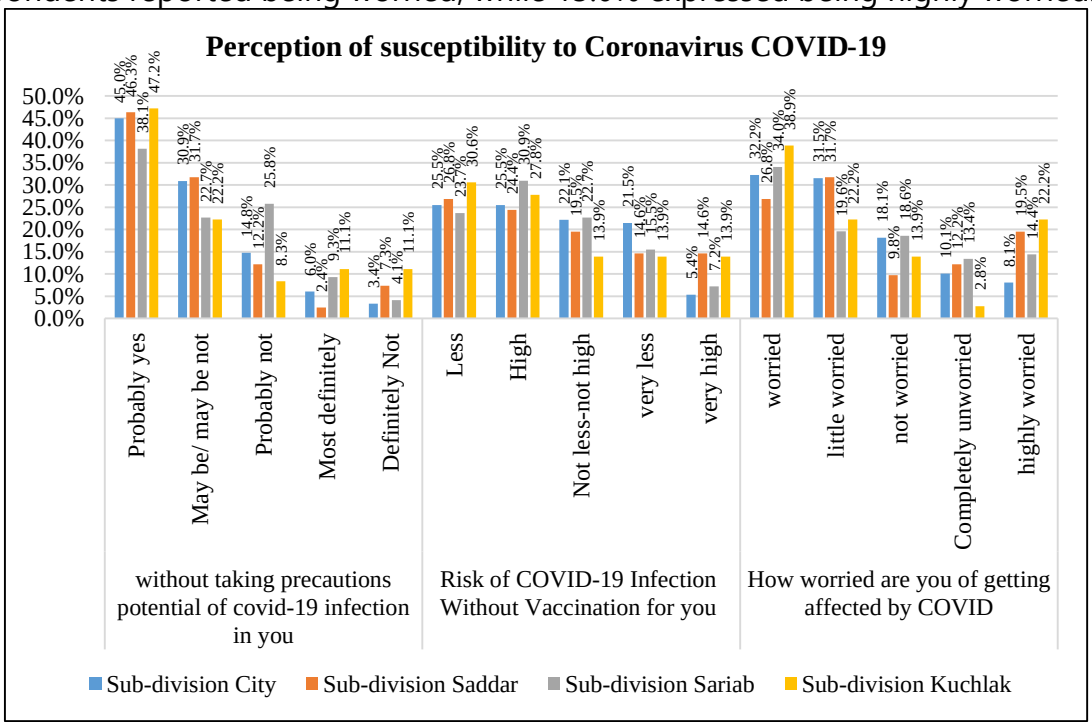

Figure 1 Perception of susceptibility to Coronavirus COVID-19

Source: (Field Survey, 2022)

In city sub-division 45.0%, in Saddar sub-division 46.3%, in Sariab sub-division 38.1% and in Kuchlak sub-division 47.2% respondents believed that they would probably get infected with COVID-19 if they didn't take precautions. 21.5% in city and 14.6% respondents in saddar considered the risk of infection without vaccination as very low, while 30.9% in Sariab and 27.8% in Kuchlak considered it high. Regarding their level of worry, 32.2% of respondents in city sub-division, 26.8% in Saddar, 34.0% in Sariab and 22.2% respondents in Kuchlak reported being worried about getting affected by COVID-19.

5. **The Role of Cultural and Religious Beliefs**

The results of Table 2 represents the responses regarding cultural believes and their relation with disasters. In Quetta, the respondents generally agreed that any incident taking place in the world doesn't occur without the will of Allah (M=4.39). They also believed that disasters like epidemics, floods and earthquakes are indications from Allah (M=4.60) and are ways for examining people's belief and faith in Him (M=4.34). Furthermore, they agreed that disasters can be conferred by Allah as a result of

people's deeds (M=4.19). The response reported in almost all sub-divisions of Quetta was similar. However, there are variations in the strength of agreement across sub-divisions, the Sariab sub-division showing the strongest agreement. They agreed that incidents in the world don't occur without the will of Allah (city=4.38, saddar=4.10, sariab= 4.51, Kuchlak=4.50) and that disasters are indications from Allah (city=4.27, saddar=4.49, sariab= 4.49, Kuchlak=4.36).

Table 2 Relationship between Disasters and Cultural Believes

Variables	Distribution of Respondents									
	sub-division city		sub-division saddar		sub-division Sariab		sub-division Kuchlak		Quetta	
	M	SD	M	SD	M	SD	M	SD	M	SD
Any incident takes place in the world doesn't occurred without the will of Allah	4.38	.80	4.10	1.31	4.51	.80	4.50	.81	4.39	.89
Disaster like epidemics, Floods and earthquakes are indications from Allah	4.82	4.19	4.27	1.07	4.49	.66	4.36	.93	4.60	2.91
Disasters like epidemics, tsunami and flood are ways of Allah for examining our believe and faith on him	4.32	.87	4.46	.80	4.36	.76	4.19	.88	4.34	.83
Disasters like epidemics, tsunami and flood are conferred by Allah as the result of some people's deeds.	4.15	.99	4.41	.77	4.21	.91	4.08	1.02	4.19	.94
Note: 5-point Likert Scale (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree), N= 323										

Source: (Field Survey, 2022)

They also believed that disasters are ways of examining belief and faith (city=4.46, saddar=4.36, sariab= 4.36, Kuchlak=4.19). Additionally, they agreed that disasters can be conferred by Allah as a result of people's deeds (city=4.41, saddar=4.08, sariab=4.21, Kuchlak=4.08).

6. **Trust in Government and Public Health Institutions**

The Table 3 represents the responses of Quetta city and its sub-divisions (city, Saddar, Sariab and Kuchlak) regarding their perceptions of the government negligence, the prevention of COVID-19, administration's response to the pandemic and the government's handling of the economic crisis caused by COVID-19.

Table 3 People's Trust in the Government for Dealing with COVID-19

Variables	Distribution of Respondents									
	sub-division city		sub-division saddar		sub-division Sariab		sub-division Kuchlak		Quetta	
	M	SD	M	SD	M	SD	M	SD	M	SD
The negligence of establishment became the reason of COVID-19 spread	3.78	1.096	3.98	1.235	3.79	1.172	3.67	1.171	3.80	1.143
The COVID prevalence is being prevented to take appropriate actions for people safety by public healthcare, government and local bodies	3.26	1.254	3.27	1.225	3.44	4.342	3.36	1.246	3.33	2.590
The administration is active to save people's lives in COVID-19 pandemic	3.14	1.361	3.22	1.314	2.93	1.235	3.42	1.180	3.12	1.302
Government is keen to handle the economic crisis caused by COVID	3.22	1.340	3.17	1.302	2.94	1.314	3.42	1.204	3.15	1.316
I am satiated with what government is doing to stop the spread of virus	3.22	1.330	3.07	1.330	2.94	1.197	3.36	1.268	3.13	1.287
Note: 5-point Likert Scale (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree), N= 323										

Source: (Field Survey, 2022)

In Quetta, the respondents generally agreed that the negligence of the government became the reason for the spread of COVID-19 (M=3.80). They also expressed a neutral viewpoint regarding the prevention of COVID-19 through appropriate actions by public healthcare, government and local bodies (M=3.33). Furthermore, they held a neutral opinion about the effectiveness of the administration in saving people's lives during the pandemic (M=3.12) and the government's ability to handle the economic crisis caused by COVID-19 (M=3.15). Additionally, they were slightly dissatisfied with the government's efforts to stop the spread of the virus (M=3.13).

The response reported in almost all sub-divisions of Quetta was similar to the total sample. They agreed that the negligence of the government contributed to the spread of COVID-19 (city=3.78, saddar=3.98, sariab= 3.79, Kuchlak=3.67). They expressed a slightly positive viewpoint regarding the prevention of COVID-19 (city=3.27, saddar=3.27, sariab= 3.44, Kuchlak=3.36). They were neutral regarding effectiveness of the administration in saving lives (city =3.22, saddar= 3.22, sariab= 2.93, Kuchlak= 3.42), the government's handling of the economic crisis (city =3.17, saddar= 3.17, sariab= 2.94, Kuchlak= 3.42), and their satisfaction with the government's efforts to

stop the virus spread except in sub-division sariab where the response was slightly negative (city =3.07, saddar= 3.07, sariab= 2.94, Kuchlak= 3.36).

7. Implications for Future Public Health Strategies

Understanding the influence of cultural beliefs on risk perception is crucial for developing effective public health strategies that align with local contexts. The findings from Quetta emphasize the need for culturally sensitive approaches to health communication, risk mitigation, and policy implementation. Key recommendations include:

- **Engaging Religious and Community Leaders** – Since religious beliefs strongly shape public attitudes, involving religious scholars in health campaigns can foster trust and encourage compliance with preventive measures.
- **Addressing Misinformation Through Community-Based Programs** – Public health officials should collaborate with local media, schools, and community centers to ensure accurate and accessible health information reaches the public.
- **Enhancing Trust in Public Institutions** – Transparent and consistent communication from government agencies can strengthen public trust and improve cooperation during health emergencies.
- **Promoting Culturally Responsive Interventions** – Understanding cultural norms and tailoring health messages accordingly can increase the effectiveness and acceptance of public health strategies.

8. Conclusion

This study shows cultural beliefs as a significant determinant in shaping risk perception and responses to COVID-19 in Quetta. While 79% of the respondents believed that the virus existed, its severity and preventive actions were viewed differently by various sub-divisions. The mean perception scores indicated moderate concern, with Kuchlak sub-division showing the highest perceived severity of COVID-19. Perceived susceptibility, levels of anxiety, and trust in government responses also varied, further reflecting the cultural and social factors complicating public behavior during a pandemic.

Majority of respondents affirmed that religious beliefs are strong factors determining risk perception. Disasters, including pandemics, are perceived by many as the act of God's will or the testing of faith. Such belief systems impacted attitudes toward preventive measures, with some viewing these as secondary to spiritual faith. Also, trust in the government and public health institutions remained moderate. Majority believed that negligence of administration allowed the virus to spread but their response to management of the COVID crisis was neutral.

This research emphasizes the need for culturally sensitive public health strategies that integrate community values, religious perspectives, and trust mechanisms. Public health campaigns ought to include religious and community leaders, actively counter misinformation, and enhance governmental openness in communications. The insights derived from this study will help inform Government policies and disaster management authorities develop relevant interventions balancing cultural beliefs with evidence-based health practices. These lessons will make it possible to address future health

emergencies by improving risk communication and preparedness efforts ensure enhanced community compliance and resilience.

References

Acharya, R., & Porwal, A. (2020). A vulnerability index for the management of and response to the COVID-19 epidemic in India: an ecological study. The Lancet Global Health, 8(9), e1142–e1151. https://doi.org/10.1016/S2214-109X(20)30300-4

Ahmed, M. N. Q., Lalin, S. A. A., & Ahmad, S. (2023). Factors affecting knowledge, attitude, and practice of COVID-19: A study among undergraduate university students in Bangladesh. Human Vaccines and Immunotherapeutics, 19(1). https://doi.org/10.1080/21645515.2023.2172923

Alshehri, S. A. (2016). A Proposed Framework for Resilience to Biological Disasters: The Case of MERS-COV Threat in a Transient Mass Gathering Event. Cardiff School of Engineering Cardiff University.

Appleby-Arnold, S., Brockdorff, N., Jakovljev, I., & Zdravković, S. (2018). Applying cultural values to encourage disaster preparedness: Lessons from a low-hazard country. International Journal of Disaster Risk Reduction, 31, 37–44. https://doi.org/10.1016/j.ijdrr.2018.04.015

Badini, A. M., Badini, A., Mengal, N. M., & Nanji, K. (2021). Characteristics of Patients Presenting with COVID-19 from Balochistan Province and Lessons Learnt. Journal of the College of Physicians and Surgeons Pakistan, 31(7), S104–S108. https://doi.org/10.29271/jcpsp.2021.Supp2.S104

Cvetković, V. M., Nikolić, N., Nenadić, U. R., Öcal, A., Noji, E. K., & Zečević, M. (2020). Preparedness and preventive behaviors for a pandemic disaster caused by COVID-19 in Serbia. International Journal of Environmental Research and Public Health, 17(11), 1–23. https://doi.org/10.3390/ijerph17114124

DDMA. (2008). Disaster Risk Management Plan District Quetta, Balochistan. 1–100.

GOP, & MNHSR. (2021). Realtime Pakistan and Worldwide COVID-19 situation. Ministry of National Health Services Regulations & Coordination. https://covid.gov.pk/stats/pakistan

Health Department, G. of B. (2020). Daily Situation Report COVID-19 OPERATION CELL, Health Department, Govt. of Balochistan. https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Fallzahlen.html

Healthcare Department Balochistan, & WHO. (2023). Daily Situation Report Operation Cell Primary & Secondary Healthcare Department Government of Balochistan COVID-19 Provincial Updates Dated : 05-08-2021. 17–19. https://covid.gov.pk/stats/balochistan

Huynh, P. T. A., & Bui, T. T. (2024). Household-level demographic and socio-economic vulnerability in the face of the COVID-19 pandemic in rural Central Vietnam. Research in Globalization, 8(December 2023), 100186. https://doi.org/10.1016/j.resglo.2023.100186

Ilyas, N., Azuine, R. E., & Tamiz, A. (2020). COVID-19 Pandemic in Pakistan. International

Journal of Translational Medical Research and Public Health, 4(1), 37–49. https://doi.org/10.21106/ijtmrph.139

Jeremias, G., & Martin, H. (2019). Bio-Hazard Disaster Risk Governance through Multi-Agency Cooperation. PreventionWeb, 12. https://www.preventionweb.net/files/66058_fjeremiasmartinbiohazarddisasterris.pdf

Kulatunga, U. (2010). Impact of culture towards disaster risk reduction. International Journal of Strategic Property Management, 14(4), 304–313. https://doi.org/10.3846/ijspm.2010.23

Mahmood, H., Riaz, M., Azam, N., Iqbal, Z., & Maroof, S. (2021). Profile of COVID 19 positive patients of Balochistan, Pakistan. Pakistan Journal of Public Health, 10(4), 201–207. https://doi.org/10.32413/pjph.v10i4.681

Minguez Garcia, B. (2020). Resilient cultural heritage: from global to national levels – the case of Bhutan. Disaster Prevention and Management: An International Journal, 29(1), 36–46. https://doi.org/10.1108/DPM-08-2018-0285

Motta Zanin, G., Gentile, E., Parisi, A., & Spasiano, D. (2020). A preliminary evaluation of the public risk perception related to the covid-19 health emergency in italy. International Journal of Environmental Research and Public Health, 17(9). https://doi.org/10.3390/ijerph17093024

Nasrullah, Ainuddin, S., & Kakar, K. M. (2015). Status of Community Resilience in Disaster Prone Districts of Baluchistan, Pakistan. Open Journal of Earthquake Research, 04(04), 126–135. https://doi.org/10.4236/ojer.2015.44012

NEOC. (2021). Ministry of the National Health Services , Regulations & Coordination National Emergency Operations Centre Table-1B : Details of Deaths Due to COVID-19 , Dated 20th May (Data as of 19th May (8 : 00 PM)) Ministry of the National Health Services , Regula. 21, 1–5.

Pakistan Bureau of Statistics. (2017). SALIENT FEATURES OF FINAL RESULTS CENSUS-2017. https://www.pbs.gov.pk/content/final-results-census-2017

Samadipour, E., Ghardashi, F., & Aghaei, N. (2020). Evaluation of Risk Perception of COVID-19 Disease: A Community-Based Participatory Study. Disaster Medicine and Public Health Preparedness, 1–8. https://doi.org/10.1017/dmp.2020.311

Schneider, C. R., Dryhurst, S., Kerr, J., Freeman, A. L. J., Recchia, G., Spiegelhalter, D., & van der Linden, S. (2021). COVID-19 risk perception: a longitudinal analysis of its predictors and associations with health protective behaviours in the United Kingdom. Journal of Risk Research, 24(3–4), 294–313. https://doi.org/10.1080/13669877.2021.1890637

Shreve, C., Begg, C., Fordham, M., & Müller, A. (2016). Operationalizing risk perception and preparedness behavior research for a multi-hazard context. Environmental Hazards, 15(3), 227–245. https://doi.org/10.1080/17477891.2016.1176887

van Loenhout, J. A. F., Vanderplanken, K., Scheen, B., Van den Broucke, S., & Aujoulat, I. (2021). Determinants of adherence to COVID-19 measures among the Belgian population: an application of the protection motivation theory. Archives of Public Health, 79(1), 1–15. https://doi.org/10.1186/s13690-021-00565-9