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SOCIOCULTURAL RESILIENCE TO FLASH FLOODS: AN ETHNOGRAPHIC STUDY OF AGRARIAN COMMUNITIES IN KUH-E-SULIMAN RANGE

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ABSTRACT
This study examines the sociocultural resilience to flash floods among the agrarian communities in Kuh-e-Suliman range. The researchers employed an ethnographic research design and used in-depth interviews, focus group discussions and participant observations to collect qualitative data. The study found how the local people act as a social group and use their indigenous knowledge to respond to the flash floods. They mobilize their social capital such as the local networks, alliances and natural resources for ensuring their survival in the face of natural disaster. Sociocultural obligations are religiously followed by the community members at the time of crisis that help them develop resilience against the flash floods.
Keywords: Flash Flood, Coping Strategies, Early Warning System, Local Networks.

INTRODUCTION
This study is conducted to explore the dynamics of cooperation among the community members in agrarian villages of South Punjab and their use of local knowledge to develop sociocultural resilience against flash floods. While a few academic studies (Danso & Addo, 2016; Hooli, 2016) have examined the coping strategies used by the rural people affected by floods in various other societies, there are limited scholarly attempts to understand the resilience of indigenous communities, through socioeconomic cooperation and use of local knowledge, in torrential areas of Pakistan (Ahmad et al., 2016; Looney, 2012).

There are numerous studies conducted across different societies of the world that explain the indigenous ways of coping with natural disasters (Few, 2003; Mertz et al., 2009; Surtiari et al., 2017). Some of those studies have documented how different societies experience disaster and the perceptions of local communities about risk and disaster management practices (Khan, Johar, & Chado, 2017). Similarly, academic scholarship highlights the effects of modern lifestyles that tend to vanish the traditional practices and indigenous knowledge to handle flash floods (Chan & Parker, 1996). Holi (2016) conducted a study in Namibia to understand the indigenous knowledge that is used during socioecological changes and observed how the past events impacted the coping mechanism of local people. A few other studies pointed out how the social capital affects the coping strategies during the flash floods (Leatherman, Zhang & Douglas, 2000). In the same way, dissemination of local knowledge across the stakeholders and established roles and duties in the local culture build the resilience against disasters (Dainty & Bosher 2008). Having discussed this, the current study intends to explore the sociocultural resilience of the local communities in Kuh-e-Suleman range and focuses on how these local strategies are culturally enriched and employ social cooperation at the response time towards the flash floods.

Pakistan has experienced a visible upsurge in flash floods owing to the changing weather patterns. Furthermore, a shift in the monsoonal patterns increased the frequency of flash floods in different regions of Pakistan. Considering the growing natural disasters, the Government of Pakistan has established the National Disaster Management Authority (NDMA) to execute proper plans for the control of the disastrous flooding in various regions. It is important to mention that hill torrents of Southwest

Punjab are extremely vulnerable to flash floods. It is observed that the flash floods of small to large intensity frequently damage the rural areas in the west of Dera Ghazi Khan; one of the major cities of Southwest Punjab, located in the east of hill torrents (Hanif et al., 2013). The main reason of flash floods in these areas is the hill torrents situated nearby the areas including Wadoor, Chachar, Mithawan, SakhiSarwar, Kaha, Sanghar, and Sori Lund. For conducting the present study, the researchers selected three main areas, mentioned above, of Kuh-e-Suleiman range in district Dera Ghazi Khan and intend to document how the local agrarian communities use socioeconomic cooperation and local knowledge to develop resilience against the flash floods.

METHODOLOGY

While the objectives of the present study are exploratory in nature, the researchers employed qualitative methodology based on interpretive approach and inductive reasoning. Specifically, an ethnographic design (Campbell & Lassiter, 2014; Miall, Pawluch & Shaffir, 2005) was used to examine the local culture of agrarian communities in the Kuh-e-Suleiman range in district Dera Ghazi Khan. The researchers used qualitative techniques to select the research sites and methods of data collection and analysis (Mason, 2017). The purposive sampling technique was used to select the research sites for conducting ethnographic fieldwork i.e. Kuh-e-Suleiman Range in district Dera Ghazi Khan that is situated in South Punjab. It is a bordering area of Balochistan and Punjab province. Due to its geographical location, Baloch traditions and culture can easily be observed in the local area. Three sites i.e. Sorri-lound, Wadoor and Sanghar were selected for conducting the present study. There are indigenous farming communities living in all these sites and they rely on torrential water sources for the sustainability of their livelihood and are indulged in seasonal agriculture. For the present study, all three sites are regarded as one unit of analysis because the inhabitants of these sites share living patterns, farming networks and alliances, ways of extending socioeconomic cooperation and coping strategies while tackling flash floods in their respective areas.

Farmers engaged in agriculture were selected for conducting in-depth interviews and focus group discussions. In addition, participant observations were used as another tool for generating qualitative evidence. Three FGDs were conducted in each research site for ensuring cross-verification of the collected information through in-depth interviews and participant observations (Mason, 2017). Apart from the FGDs, six in-depth interviews with the farmers, local leaders and government functionaries in each village were conducted to collect data that provided rich information. This data helped the researchers to understand different emerging themes and data categories. The researchers furthermore participated in the farming activities and social gatherings in public sphere to record their observations and engaged themselves in informal conversations with the local farmers. The researchers followed the ethical considerations while conducting the fieldwork. They lived with the local people in order to develop rapport with them, negotiate access and gain their trust. Local norms and values were observed and local culture was followed in all respects. Before conducting interviews and FGDs, informed consent was taken from the participants and confidentiality was maintained while analyzing the data. The researchers participated in the social gathering of the local community and in their farming activities with the permission of local elders and community members. After conducting fieldwork, data was transcribed and translated, read and re-read several times, to identify codes and themes in the data. Thematic analysis technique was used by the researchers to analyze qualitative data.

FINDINGS

To understand the dynamics of sociocultural resilience of local agrarian communities of Kuh-e-Suliman against the flash floods, the present study explored the local knowledge about coping strategies, early warning system, community integration, basis of socioeconomic cooperation among the natives and the role of local networks and alliances during the flash floods. The local farming communities act as social groups and use the local wisdom while handling the flash floods. Local elders perform their role to detect upcoming floods before the arrival of torrential water in the hill torrents. They inform the entire community about the floods by estimating the intensity and direction of lightning in the sky based on their experience that they gained through farming. The groups consisting of male members are formed on various levels i.e. village level, *biradari* level and tribal level for various activities to be performed during the flood. The networks and alliances are also formed as one of the coping strategies requires laborious work for managing and distribution of flood water for agricultural use.

Use of local wisdom

The present study explored how the local elders transfer their knowledge about tackling the flash flood to the members of younger generations. The local wisdom includes the art of farming, building social ties with others i.e. within and outside their *biradari*, with political and religious leaders and tribal chiefs. The study also found how the experienced farmers share their knowledge with the adults involved in activities of managing water resources during the flash flood. One of the research participant mentioned that:

> *For adults, the best time for learning the art of agriculture is the time of preparing land for farming just before the arrival of flash flood. For this, local knowledge and wisdom is shared in the communal gatherings by the local elders and experienced farmers.*

The study found how the villagers start moving towards their agricultural fields in the monsoon season. On their farming land, they discuss about the expected rains and talk about the chances of arrival of flood water, path of water, level of water and accordingly devise their strategies to cope with the upcoming flood. In order to take precautionary measures, these groups (*toly*) consisting of 6-10 persons are formed and the roles are assigned to the group members (*kum*). The groups are headed by one or two persons (*syanas*) who lead the group to perform their given tasks i.e. preparedness, responsibility to protect small dams (*bandh*) and mud houses, cattle, families and farming land. Similarly, different roles are given to the group members at family, *biradari* and tribal level prior to, during and post flash flood.

Early warning system

The study found that the villagers use different tactics and techniques to cope with flood to minimize the losses and manage the flood water for their agricultural use. It is revealed that the first and the foremost activity performed by the villagers is the monitoring of flood water and its speed and direction. At increased water level, the community members focus on *banh*, bank of hill torrents, and start the repair work, whenever needed, with the purpose to keep themselves safe from the flood. One of the participants explained it as follows:

> *A group of thirty to forty individuals starts patrolling on banh. They monitor it to judge whether it is intact to see off flood or there is a need of repairment and maintenance. This activity is performed collectively by deploying human resource with the involvement of all the shareholders and beneficiaries i.e. land owners and farmers.*

The study found that the local elders meet up on their lands, outside their houses, and discuss about the chances of rain and flood. The message is disseminated among the villagers. The village elders issue early warnings about floods after mutual consultation. The messengers pass on information to the entire farming community. It is found that the village elders detect rains and floods by the directions of wind and clouds and lightening in the sky. The early warnings are issued to the farming communities that requires prompt response for tackling flash flood. The study found that the members from each village and *biradari* rush toward *darrah*, entry point of flood water, and make arrangements to handle the flood and pass on the information to the rest of community members by sending back one or two members to the fellow villagers. Farmers measure the level, speed and direction of water at *darrah* and take further measures to avoid losses and ensure better use of flood water through diverting water towards their land by following the *moondh-pand*, head to tail rule. The study found that the whole activity is based on the local networks that enables the agrarian community to take measures to protect their families, cattle, crops and farming lands.

Socioeconomic cooperation among natives

The study found how the socioeconomic cooperation is extended during the flash flood, conflicts, fights and other uncertain circumstances on the basis of family affiliation, village membership, *biradari* connections and tribal attachment to cope with the crisis among the agrarian community. The central point of socioeconomic cooperation among the natives is the social binding i.e. family, *biradari* and territorial binding, village fellowship, tribal affiliation and territorial grouping. While explaining the dynamics of socioeconomic cooperation, one of the participants mentioned that:

> *We give preference to our family (khandan) over others and if our village fellows receive any threats from the outside (ghair), we unite. We unite to face crisis, i.e. flash floods or any external threat, collectively. We may have issues within our biradari but we stand together*

to cope with such awkward situations. Similar principle is followed by other biradaris despite having severe mutual issues such as land grabbing or conflicts over distribution of water.

In other words, the agrarian communities prefer to protect the common cause at every level i.e. family, village and tribal. Collective prestige is important than personal honor and taking care of *biradari's* pride is important for the natives. During any crisis i.e. flash floods, this principle is followed by the natives to cope with the crisis. It was shared that the community members typically think of their family, *biradari* and tribe on the arrival of flood water. They monitor the water and the whole tribe shares common activities that are necessarily required during the crisis. This socioeconomic cooperation continues till the flow of flood water becomes manageable, which is used for agriculture purposes.

Networks and alliances

The study found that the local farming communities rely on the networks and establish links with the communities living in the hills in the same area. The local people term such relationship as "friends of crisis". The villagers visit the hill friends from time to time and give them a good quantity of wheat as present. In return, the hill friends inform the farming community about the arrival of flood by sending a messenger, so that they could take precautionary measures in time to handle the flood water. The study found how such relationships are reciprocal i.e. information of flood is passed on by the community members living in the hills to their friends belonging to farming community and in return hill community receives wheat and grains as a gift. One of the participants explained this cooperation through networks and alliances as follows:

Information of flood water is passed on through sending a special messenger from one village to another village. Links between two communities i.e. farming community of skirts (damaan) and hill community (Baloch) play vital role in issuing early warnings about upcoming floods and preparations to tackle it.

The study found that the natives do not have any other tools to detect flash flood except mutual bindings and the relationships-based information system.

DISCUSSION

The present study explored the indigenous ways of achieving shared goals among the native agrarian communities of Kuh-e-Suleiman Range in district Dera Ghazi Khan. It is documented how the community members keep themselves integrated through various coping strategies and form networks alongside extending socioeconomic cooperation at the time of crisis. Previously, the academics have explained how the torrents in Kuh-e-Suleiman range generate flash flood frequently in the Dera Ghazi Khan, Rajan Pur, and Layyah districts (Munir & Iqbal, 2016). Furthermore, this has been argued in the literature that the characteristics that enhance resilience among the community members include vibrant leadership and shared goals and values (Buckle, 2000). While the term resilience has frequently been used in the social sciences in various contexts (Brand & Jax, 2007), the present study found unique practices of building sociocultural resilience among the farming communities residing in Kuh-e-Suleiman Range at the time of crisis i.e. flash floods. The empirical evidence found the existence of sociocultural resilience among the natives that refers to the coexistence of farming community with the natural disasters. The local community uses and mobilizes the human resources at the time of crisis. The natives react against the challenge under the local leadership at every level and seek mutual cooperation until the crisis is over. Correspondingly, the literature suggests that the social capital includes the capacity of individuals and groups to build relations of trust and reciprocity, adhere to commonly agreed rules, norms and sanctions, and be able to work together (Duffield et al., 1998; Janssen & Ostrom, 2006).

The present study explored the characteristics of resilience embedded in the local culture and unfolded the survival of local farming communities in the face of natural disasters i.e. flash floods. The roles and responsibilities performed by the members of community under a specific command enable them to cope with floods. The notion of *vangar* reflects mutual cooperation that prevails among the native farming communities and it is embedded in their culture to respond to the call for help. Previously, it has been argued by the academics that how the traditional communities live in groups in the form of conventional networks, which are customary and normative in nature. The local norms, customs, values, beliefs and land use practices formulate the social resilience against natural disasters (Boon, 2014; Dekens, 2007). In the same way, the present study observed the cultural manifestations of resilience toward natural disasters and it is a unique contribution of the present study to the existing literature.

Furthermore, the present study has the potential to open up new avenues for the future researchers to explore complex phenomenon through ethnographic research design. The findings of the study will also help policy makers to focus their attention on the cultural aspects of rural life and local knowledge while designing development projects such as construction of small dams for promoting agriculture in skirts and barren hill areas.

CONCLUSION

Local farming communities in district Dera Ghazi Khan cope with flash floods using their indigenous knowledge and community integration. They detect the upcoming floods and devise coping strategies through their relationships-based information system that can be termed as early warning system. The natives take actions by forming need based local networks and alliances that help them to cope with flash floods. Additionally, they extend socioeconomic cooperation when it is required by their fellow farmers i.e. *vangar*. Using these strategies, the farming communities of Kuh-e-Suleiman range ensure their sustainable livelihood in the face of disastrous changes. The native communities become resilient against the floods because of their culturally embedded ways that support them in coping with floods and other such crisis. The local norms, customs and values help them to achieve their shared goals i.e. to manage flood water for the agricultural use. The assigned roles and responsibilities are performed during the floods as per prevailing norms and customs. The enforcement and observance of the informal laws at the time of crisis is the cultural obligation that leads the local agrarian communities towards enhanced sociocultural resilience to flash flood.

REFERENCES

Ahmad, M., Arshad, M., Cheema, M., & Ahmad, R. (2016). Comparison of available water resources for irrigation in Mithawan hill torrent command area of Dera Ghazi Khan, Pakistan. *Pakistan Journal of Agricultural Sciences*, *53*(1), 233-240.

Boon, H. J. (2014). Disaster resilience in a flood-impacted rural Australian town. *Natural hazards*, *71*(1), 683-701.

Brand, F. S., & Jax, K. (2007). Focusing the meaning (s) of resilience: resilience as a descriptive concept and a boundary object. *Ecology and society*, *12*(1), 23.

Buckle, P., Mars, G., & Smale, S. (2000). New approaches to assessing vulnerability and resilience. *Australian Journal of Emergency Management, The*, *15*(2), 8-14.

Campbell, E., & Lassiter, L. E. (2014). *Doing ethnography today: Theories, methods, exercises*. John Wiley & Sons.

Chan, N. W., & Parker, D. J. (1996). Response to dynamic flood hazard factors in peninsular Malaysia. *Geographical Journal*, 162(3), 313-325.

Dainty, A., & Bosher, L. (2008). Integrating resilience into construction practice. *Hazards and the Built Environment. New York: Routledge*, 357-372.

Danso, S. Y., & Addo, I. Y. (2017). Coping strategies of households affected by flooding: A case study of Sekondi-Takoradi Metropolis in Ghana. *Urban Water Journal*, *14*(5), 539-545.

Dekens, J. (2007). Local Knowledge on Disaster Preparedness: A Framework for Data Collection and Analysis. *Sustainable Mountain Development*, 52 (spring), 20-23.

Duffield, C., Gardner, J. S., Berkes, F., & Singh, R. B. (1998). Local knowledge in the assessment of resource sustainability: case studies in Himachal Pradesh, India, and British Columbia, Canada. *Mountain research and development*, 18(1), 35-49.

Few, R. (2003). Flooding, vulnerability and coping strategies: local responses to a global threat. *Progress in Development Studies*, *3*(1), 43–58. https://doi.org/10.1191/1464993403ps049ra

Hanif, M., Khan, A. H., & Adnan, S. (2013). Latitudinal precipitation characteristics and trends in Pakistan. *Journal of Hydrology*, *492*, 266-272.

Hooli, L. J. (2016). Resilience of the poorest: coping strategies and indigenous knowledge of living with the floods in Northern Namibia. *Regional Environmental Change*, *16*(3), 695–707. https://doi.org/10.1007/s10113-015-0782-5.

Janssen, M., & Ostrom, E. (2006). Resilience, vulnerability, and adaptation: A cross-cutting theme of the International Human Dimensions Programme on Global Environmental Change. *Global Environmental Change*, *16*(3), 237–239. https://doi.org/10.1016/j.gloenvcha.2006.04.003.

Khan, M. G., Johar, F., & Chado, J. (2017). Communities' local knowledge of flood disaster management in Pakistan. *Advanced Science Letters*, *23*(7), 6087-6090.

Leatherman, S. P., Zhang, K., & Douglas, B. C. (2000). Sea level rise shown to drive coastal erosion. *Eos, Transactions American Geophysical Union*, *81*(6), 55-57.

Looney, R. (2012). Economic impacts of the floods in Pakistan. *Contemporary South Asia*, *20*(2), 225-241.

Mason, J. (2017). *Qualitative researching*. Sage.

Mertz, O., Halsnæs, K., Olesen, J. E., & Rasmussen, K. (2009). Adaptation to climate change in developing countries. *Environmental management*, *43*(5), 743-752.

Miall, C. E., Pawluch, D., & Shaffir, W. (Eds.). (2005). *Doing ethnography: Studying everyday life*. Canadian Scholars' Press.

Munir, B. A., & Iqbal, J. (2016). Flash flood water management practices in Dera Ghazi Khan City (Pakistan): remote sensing and GIS prospective. *Natural Hazards: Journal of the International Society for the Prevention and Mitigation of Natural Hazards*, *81*(2), 1303–1321. https://ideas.repec.org/a/spr/nathaz/v81y2016i2d10.1007_s11069-015-2136-5.html

Surtiari, G. A. K., Djalante, R., Setiadi, N. J., & Garschagen, M. (2017). Culture and community resilience to flooding: Case study of the urban coastal community in Jakarta. In *Disaster risk reduction in Indonesia* (pp. 469-493). Springer, Cham.