

EGU21-9380

<https://doi.org/10.5194/egusphere-egu21-9380>

EGU General Assembly 2021

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Extreme events, risk perception, communication, and adaptation in the context of climate change: the case of an Andean community in Peru

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Abstract:

Introduction and theoretical background: The increase in extreme events as a result of climate change has serious consequences for the world (Bevacqua, Yu, & Zhang, 2018; Clark et al., 1998), with higher impacts on Andean communities, which are more vulnerable to its effects due to the scarce resources they have to cope with its effects. The study on local risk perception, as a strategy that allows people to be more aware of the hazard and therefore be more willing to deal with the eventuality of the hazard (Lopez and Marvan, 2018). Our study analyses experience with extreme events: severe storms, avalanches, droughts and floods. Furthermore, we analyze how experiences with extreme weather can be related to risk perception, communication, and adaptive behaviours.

Methods: After a thorough pilot. We selected two interviewers, from the same community. To comply with COVID-19 health protocols, the questionnaire was implemented online. All questions were presented in a closed format. The total number of participants (N=200) belonged to the Phinaya community located at the bottom of the Quelccaya glacier (5650 mamsl). All gave their consent to participate voluntarily in the study.

Results: 86% indicated having experienced drought or water shortage in the last 5 years between 1 and more than 3 times, 14% did not. Then 59% indicated that they had experienced storms between 1 and more than 3 times in the last 5 years, 41% indicated that they had not experienced any. Regarding floods, 21.5% indicated that they had experienced them, while 78.5% had not. 34.9% indicated that they had experienced avalanches. 97.5% said they were very concerned about climate change. 82% received information on storms, 90% received information on droughts, 82% received information on floods, 51% received information on avalanches. There is a relationship between people who have had experiences with severe storms and those who have experienced landslides and avalanches. Regarding the perception of risk, we found differences between men and women. No clear relationship was identified between risk perception and extreme events. It is observed that communications about droughts influenced negatively on risk perception, the other

extreme events did not show significant relations. Finally, with respect to adaptation behaviours, we found a positive relationship between experiences with storms, and perceptions of risk of climate change, greater perception of risk, greater willingness to develop adaptive behaviours.

Conclusions: Most people have been exposed to more than one type of extreme events such as droughts and storms. This study contributes to a better understanding of the relationships between public perception of climate change in Andean communities and corroborates the important role of communication and adaptive behaviors in the context of risk perceptions.