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Risk Perception and Disaster Awareness as Predictors of Disaster Preparedness among College Students

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Abstract : The primary purpose of this study is to determine whether risk perception and disaster awareness predict students' disaster preparedness. Simple random sampling was used, which included 236 students. Through non-experimental quantitative descriptive-correlational research technique, validated questionnaire, Mean, Pearson-Product Moment Correlation Coefficient (Pearson-r) and Simple Linear Regression; results showed that risk perception and disaster awareness among students were high or oftentimes manifested while the level of disaster preparedness was very high or always manifested. The results also revealed that risk perception and disaster awareness were significantly correlated with disaster preparedness. Additionally, only disaster awareness predicts disaster preparedness, which emphasizes the importance of education and information dissemination in improving disaster preparedness. Therefore, the researchers concluded that efforts to increase disaster awareness through educational programs, public service announcements, or school drills could lead to better preparedness and potentially save lives and resources when disasters occur. It was recommended that future researchers may conduct studies to evaluate the effectiveness of existing disaster preparedness policies.

IndexTerms **- Risk perception, disaster awareness, disaster preparedness, college students**

I. INTRODUCTION

Numerous catastrophes and disasters occur all around the world. It is a calamity that happens unexpectedly. With this, disaster preparedness is essential for reducing the adverse effects of natural disasters on humans. According to Bradley and Bautista (2010), disaster preparedness refers to taking steps to make sure the tools required to execute a successful response are available in advance of a crisis or can be swiftly acquired when needed.

"School preparation program" is the term used by the school community to describe the incorporation of a disaster preparedness program. There is an immediate need for this program, especially for schools located in areas that are prone to disasters (Sajow et al., 2020). Fathoni (2018) stated that the following conditions are met by schools: emergency systems, infrastructure, support from early warning systems, knowledge and preparation, logistical accessibility, student safety and comfort, emergency systems, and an emergency management plan that can be used before, during, and after a disaster. In disaster preparedness behavior, risk perception evaluates the uncertainty around the calamity by an individual (Bourque et al., 2012). It is a subjective assessment of danger rather than reality (Xu et al., 2016). Additionally, disaster awareness is essential in college students' preparedness for disasters. It is the extent of knowledge about disaster (Nipa et al., 2023). With this, it is recognized that schools are essential in raising parents' and kids' awareness (Natividad, 2019).

In a study conducted by Jaradat et al. (2015), disasters impact students by interfering with campus activities, interrupting classes, and causing damage to educational facilities. National public health is concerned about this readiness for disasters. Unfortunately, it is anticipated that the likelihood of people and communities being impacted by a natural catastrophe will only rise. Disaster preparedness is crucial to prevent disaster. In recent years, universities have started understanding the need to prepare for disasters and the accompanying hazards. However, despite rising awareness, many colleges and institutions need more effective planning, response, and mitigation plans (Safapour et al., 2021).

One of the nations' most vulnerable to natural disasters worldwide is the Philippines (Emergency Events Database, 2017). A study of undergraduate students at Large Midwest University found that students with advanced knowledge of disaster preparedness, a high-risk perception of experiencing a disaster, and a high level of self-efficacy in their ability to prepare for a disaster all had higher levels of disaster preparedness than students with only basic knowledge, a low-risk perception, and low levels of self-efficacy (Goddard, 2017). Students from Manila Adventist College's School of Nursing conducted a research that demonstrated how well-prepared and highly aware of calamities college students are. The correlation between preparation and disaster awareness is statistically significant.

However, at a Midwestern University, it was discovered that although students were aware of the hazards, they needed to take more steps to better prepare for a disaster (Lovekamp & McMahon, 2011). Additionally, prior research on disaster awareness revealed mixed results; with nursing students reporting a high level of awareness (Cho, 2018) whereas low level for students in higher education (Ozkazanc & Yuksel, 2015).

This study anchored the theory of psychometric Paradigm by Slovic, Fischhoff, and Lichtenstein. According to Slovic et al.'s (2000) proposal, people should base their risk assessments on psychological traits like dread, controllability, and voluntariness. Based on these aspects, people have varied perspectives on dangers, which affect their total risk perception and subsequent behavior. Also, the psychometric paradigm states that people assess a hazard's riskiness based on the combination of several (perceived) risk characteristics, such as the fact that the risk's severity cannot be controlled, that it instills fear in others, and that it could have global catastrophic effects. According to Van der Weerd et al. (2011), a high-risk perception might impact a community's willingness to embrace preventative measures.

Another theory used in this study is Community-Based Disaster Risk Reduction (CBDRR): CBDRR entails educating and preparing local communities for disasters. Shaw (2012) stated that when communities are actively involved in risk-reduction activities, they are more likely to act. With this, CBDRM should be included in people's routines to preserve habits by doing emergency exercises. Teams based in the community continue to lead CBDRM, raise awareness often, and public gatherings (Ogawa et al., 2005; Ranghieri & Ishiwatari, 2014).

The Protective Action Decision Model (PADM) was also used in this study; it is a multi-stage concept that draws upon research on how people respond to environmental hazards and calamities. The PADM integrates messages that social sources provide through communication channels to those who are at risk with information gathered from environmental and social signals (Lindell & Perry, 2012).

The variables of this study are risk perception, disaster awareness, and disaster preparedness. According to Von Kotze (1999), disaster risk is the possibility of losing people's lives, health, and means of subsistence, property, and services within a community within a given time frame. Disaster risk refers to the potential harm produced by a hazard in a vulnerable community; the impact of a danger on communities varies depending on its size.

Disaster risk perception assesses an individual's assessment of a disaster's hazards and other consequences (Mamon et al., 2017). Also, disaster awareness assesses a respondent's level of awareness about catastrophes (Mamon et al., 2017). Disaster preparedness refers to actions taken to enhance life safety in the event of a disaster, such as using safety precautions during an earthquake, leaking hazardous materials, or defending against a terrorist attack (Cabuga, 2023).

This study aims to determine whether risk perception or disaster awareness best predicts disaster preparedness among college students. In the local setting, only a few studies are found in the context of risk perception and disaster awareness as predictors of disaster preparedness. The researchers observe an insufficiency of knowledge regarding disaster preparedness, particularly among college students in a selected institution, which is necessary to address for disaster preparation to protect everyone's safety.

Thus, this study can lead to a fresh comprehension. The results of this study may help the community, educators, and even families by highlighting the significance of risk perception and disaster knowledge in disaster preparedness. This study will also assist students in becoming ready for emergencies.

This study aimed to determine whether risk perception and disaster awareness predicts disaster preparedness among college students. Specifically, it pursues to answer the address the following objectives: (1) to determine the level of risk perception among college students, (2) to determine the level of disaster awareness among college students, (3) to determine the level of disaster preparedness among college students, (4) to determine the significant relationship of risk perception and disaster awareness towards disaster preparedness; and (5) to determine whether risk perception and disaster awareness predict disaster preparedness.

II. RESEARCH METHODOLOGY

Research Respondents

The research respondents of the study are college students from the Teacher Education and Business Administration Education Departments in a private higher education institution in Island Garden City of Samal during the school year 2023-2024. The respondents were chosen using simple random sampling. The researchers used the Raosoft online sample size calculator with a margin of error of 5% and a confidence level of 95% to determine the total number of respondents. The total population of the institution involved is 606. Additionally, the sample size of 236 was obtained using the online sample size calculator. Various studies mentioned that a sample size between 30 and 500 at a 5% significance level is generally sufficient for many researchers (Delice, 2010) cited in Morales et al. (2024) and if parametric tests are to be employed, 30 – 500 subjects would be the necessary sample size (Bacala et al., 2024; Ross, 2020; Yıldırım & Şimşek, 2006; Baykul, 1999). The study was conducted at UM Peñaplata College, a non-sectarian private higher education institution in Island Garden City of Samal.

Materials and Instrument

This study utilized a three-part adapted questionnaire, which was validated by an expert panel. The three adapted questionnaires measured risk perception about disaster, disaster awareness, and disaster preparedness. Further, the instruments used in measuring risk perception (3 items) and disaster awareness (4 items) were adapted from Mamon et al. (2017) while for disaster preparedness (5 items); it was adapted from Cabuga et al. (2023). The instrument utilized a five-point Likert type scale (from Very Low to Very High). Overall, the questionnaire has a validation rating of 4.71 or Excellent.

Design and Procedure

This study utilized a non-experimental quantitative, descriptive-correlational technique of research to determine the level of risk perception, disaster awareness, and disaster preparedness among college students. The relationship between the two variables was also sought. Descriptive correlational design is used in research to discover the link between variables and offer static descriptions of occurrences. It seeks to explain the relationship between two or more variables without making

assumptions about causality and effect (McBurney & White, 2009). In addition, correlational studies are non-experimental, meaning the researcher does not manipulate or control variables (Cherry, 2023 cited in Monteroso et al., 2024).

The researchers sought approval from the Dean of College, after the approval, the letter was sent to the Department Program Heads prior to the administration of the research instruments. Consent was also sought from the respondents for voluntary participation. Respondents were given ample time to complete the tool. Retrieval on the said instrument was done immediately after the respondents answered the tool completely. After gathering the necessary data, these were tabulated, subjected to statistical treatment, and interpreted accordingly.

Statistical Treatment

The following statistical tools were utilized for a more comprehensive interpretation and analysis of the data.

Mean was utilized to determine the levels of risk perception, disaster awareness, and disaster of preparedness among college students.

Pearson Product-Moment Correlation Coefficient (Pearson-r) was used to determine the significant relationship of risk perception and disaster awareness towards disaster preparedness.

Simple Linear Regression was utilized to determine the potential impact of risk perception and disaster awareness on the disaster preparedness of the students, with the purpose of establishing whether these factors have a statistically significant influence.

Ethical Considerations

This section presents the ethical considerations that the researchers observed. Ethical considerations promote mutual respect and fairness, which are necessary for collaborative work. It ensures that no one acts in a harmful way to society or individuals and prevents researchers and organizations from indulging in inhuman conduct. Thus, the researchers ensured the scientific integrity of the procedure through compliance with these elements, to wit: voluntary participation, privacy and confidentiality, recruitment, risks, benefits, safety, plagiarism, fabrication, falsification, conflict of interest, deceit, permission from the organization, and authorship.

III. RESULTS AND DISCUSSION

Risk Perception of Students

As seen in Table 1, the overall mean score (M= 3.50, SD= 0.72) of disaster risk perception was described as high or oftentimes manifested. This result could be attributed to the high level of its factors in terms of the statements "*I am sure that large-scale disasters will definitely happen in the next 10 years"* (M= 3.61, SD= 0.98), "*I think my locality is safe from all type of disasters"* (M= 3.42, SD= 0.95), and "*I think my house/building is well designed to withstand an earthquake"* (M=3.45, SD= 1.02). This implies that students with a high perception of disaster risk are likely to be more concerned about potential risks, consequences, and threats of a disaster in their community. These findings support the study of Bodas et al. (2015) that risk perception, as it relates to disaster preparedness, comprises knowledge, attitudes, and beliefs about the possibility, seriousness, intrusiveness of the danger, and other elements that may influence an individual's assessment of the risk associated with a particular hazard.

This also implies that due to various factors such as the quality of construction, adherence to building codes, or previous experiences with earthquakes, recent events, media coverage, personal experiences, etc., students generally have confidence in the structural integrity of their homes or buildings in the event of an earthquake. This relates to the statement of Bollettino et al. (2018) that most Filipinos (70 percent) cited their experience with previous disasters as the reason for being prepared for future disasters. Filipinos are more careful and strategic in securing their welfare and safety. Following many tragic disasters in the next ten years, governments have started to rapidly focus on Disaster Risk Reduction (DRR) (Nipa et al., 2018).

In addition, China launched the Earthquake Rural Housing Safety Project Policy (ERHSPP) to lower earthquake losses in 2004. This policy primarily encourages rural residents to build earthquake-resistant structures in their self-built homes by offering earthquake-resistant housing drawings, training construction craftsmen, and providing subsidies (Wu et al., 2020). According to Frazier et al. (2013), the first people to respond to a crisis are almost always neighbors and local peers. As a result, the best places to focus disaster preparedness efforts are communities.

Table 1 Risk Perception of Students

	Statements	*SD*	*M*
1.	I am sure that large-scale disasters will definitely happen in the next 10 years.	.98	3.61
2.	I think my locality is safe from all types of disasters.	.95	3.42
3.	I think my house/building is well designed to withstand an earthquake.	1.02	3.45
	Overall Mean	.72	3.50

Disaster Awareness of Students

As presented in Table 2, the overall mean score (M= 3.90, SD= 0.67) of disaster awareness was described as high or oftentimes manifested. This result could be attributed to the high level of its factors in terms of the statements "*I actively participate for disaster awareness campaigns"* (M=3.89, SD= 0.89), "*I am prepared with emergency kits and bags in case of disaster" (*M=3.63, SD= 0.93), "*I prioritize awareness in the local, regional, and national level"* (M= 3.96, SD= 0.80) and lastly, "*I am aware of the importance of building or infrastructure retrofitting"* (M= 4.12, SD= 0. 78). This implies that students with high disaster awareness are better equipped to recognize potential threats before they escalate into significant

emergencies. This awareness can help students take proactive measures and respond effectively in emergencies. These findings corroborate the study of Özgüven (2006) that when individuals become more aware of the potential hazards posed by disasters, they will develop protective and preventive behaviors that reduce damage and loss of life and property. This also entail that the students are generally actively involved in a disaster awareness campaign, such as commitment to community and the impact of previous disaster experiences, or the desire for disaster awareness skills.

Also, this suggests that students are aware of hazards, accident prevention, and mitigation. Students are also aware of the importance of their building or infrastructure retrofitting; this could be due to various factors such as enhanced resilience against natural disasters and adaptation to changing needs and technologies. According to Finnis et al. (2010), awareness and comprehension of security concerns and measures have improved among young people who have taken part in different risk management and risk reduction campaigns. The vital way to lessen the effects of disasters is to have a thorough preparedness strategy for the nation and to encourage citizens to provide a disaster survival kit. According to a 2009 national survey conducted in the United States, American families have disaster emergency kits ready (Federal Emergency Management Agency, 2009).

Hargono et al. (2023) mentioned that the majority of respondents (72.3%) strongly agreed that disaster awareness should be prioritized at the district/city, regional, and national levels. Shrestha et al. (2012) added that when retrofitting is appropriately done, it may be highly cost-effective, based on a study done after the Save the Children's retrofitting project was completed. Retrofitting projects are more successful in educating the public about the dangers of disasters and ways to lower their risk.

Table 2 Level of Disaster Awareness of Students

	Statements	*SD*	*M*
1.	I actively participate for disaster awareness campaigns.	.89	3.89
2.	I am prepared with emergency kits and bags in case of disaster.	.93	3.63
3.	I prioritize awareness in the local, regional, and national level.	.80	3.96
4.	I am aware on the importance of building or infrastructure retrofitting	.78	4.12
	Overall Mean	.67	3.90

Disaster Preparedness of Students

As displayed in Table 3, disaster preparedness's overall mean score (M= 4.30, SD=0.56) was described as very high or always manifested. This result could be attributed to the attributed to the very high level responses to the statements, to wit: *"I am aware that teachers know what to do when disaster occurs today"* (M=4.29, SD= 0.73), *"I am aware that the school has a plan before and after a disaster"* (M= 4.35, SD= 0.69), *"I know the school is ready to provide assistance before and after a disaster"* (M= 4.32, SD= 0.69), and *"I recognize the importance of making conversation about disaster with family members, relatives, neighbors, friends, and classmate"* (M= 4.43, SD=0.75). Only the statement "*I know what to do when a disaster occurs today* got a mean (M= 4.12, SD=0.80) which was described as high or oftentimes manifested. This implies that when students are well prepared, it can help minimize loss of life, reduce damage to property, and expedite recovery efforts. These findings support the study of Rahmayanti et al. (2020), which states that an individual's level of preparedness for a disaster can be determined by the information, skills, and talents they have gained via education and experiences used in emergencies. This also suggests that the students know what to do when a disaster occurs today. This could be due to various factors such as having prior knowledge, attending regular drills and training, and even the school and parental involvement. This result contradicts a previous study that documented that higher education students have low disaster awareness (Ozkazanc & Yuksel, 2015).

Table 3 Disaster Preparedness of Students, n=236

	Statements	*SD*	*M*
1.	I know what to do when disaster occurs today.	.80	4.12
2.	I am aware that teachers know what to do when disaster occurs today.	.73	4.29
3.	I am aware that the school has a plan before and after a disaster.	.69	4.35
4.	I know the school is ready to provide assistance before and after a disaster.	.69	4.32
5.	I recognize the importance of making conversation about disaster with family members, relatives, neighbors, friends, and classmates.	.75	4.43
	Overall Mean	.56	4.30

The results also further entail that due to various factors such as attending seminars, undergoing training and preparation, and having visible preparedness; students are confidently prepared and know what to do when a disaster occurs. This relates to the study of Tekin & Dikmenli (2021), which examined prospective classroom teachers or class masters and revealed that their awareness of disaster education is vital. In addition, it correlates with Ventura and Madrigal's (2020) findings, whereby public high school students exhibit exceptional understanding of and practice for disaster preparation prior to, during, and following natural calamities. Schools are essential for safeguarding children and youth in disaster settings, according to Mutch (2018). Regular people need to be able to communicate effectively in order to understand the many hazards they face, discuss solutions, and take action to reduce those risks. Additionally, community members might be a great supply of risk data for analysts and a source of innovative risk management techniques (Robinson, 2017).

Significance of the Relationship of Disaster Risk Perception and Awareness towards Disaster Preparedness of Students

The findings from Table 4 indicate a statistically significant correlation between risk perception and disaster preparedness. The data revealed an overall computed r-value of .235 and a p-value of less than .05. This suggests that as the risk perception increases, the level of disaster preparedness also increases or vice versa. On the other hand, the table below also revealed that disaster awareness is significantly associated with disaster preparedness (r=0.532, p<.001). This implies that an increase in one's awareness is linked to an increase in their preparedness for such events. It resulted that risk perception has a weak relationship with disaster preparedness but still significant. This still mean that individuals who perceive a higher risk are more likely to prepare for disasters. Conversely, those who perceive lower risk might be less likely to prepare. Various studies (Ng, 2023, 2022; Espina & Teng-Calleja, 2015) provided empirical evidence supporting the correlation between risk perception and disaster preparedness.

Disaster awareness also has a moderate and significant relationship with disaster preparedness. In other words, the more aware students are about the potential risks and impacts of disasters, the more likely they are to take actions to prepare for such events. The result was supported by the study of Rogayan and Dollete (2020) who found that there was a moderate correlation between disaster awareness and disaster preparedness. Asio (2021) also discovered a linear link between disaster awareness and preparedness, stating that respondents are aware of the crisis and follow disaster preparedness guidelines to a modest extent.

Table 4 Significance of the Relationship of Disaster Risk Perception and Awareness towards Disaster Preparedness of Students

Variables	Disaster Preparedness
Disaster Risk Perception	.235* (<.001)
Disaster Awareness	.532* (<.001)

**p<.05 – Significant*

Regression Analysis of the Influence of Risk Perception and Disaster Awareness on Disaster Preparedness

Table 5 presents the results of the regression analysis, examining risk perception and disaster awareness as predictors of students' disaster preparedness. The findings indicate that of the variables examined; only disaster awareness predicts disaster preparedness of the students as evidenced by a p-value of <.001. Further, the statistical analysis revealed that risk perception does not predict disaster preparedness of the students, as indicated by a p-value of .711 (p>.05). Moreover, the coefficient of determination (R-square) of .277 indicates that the model can explain 27.7% of the variation in disaster preparedness of the students. The coefficient of 72.3% might be attributed to factors that are already outside the scope of the study.

This result is related to the study of Suryaratri et al. (2020), who stated that disaster awareness contributes to disaster preparedness significantly. This implies that the level of disaster awareness among college students is a determining factor for their preparedness on disasters. In addition, there was a linear link between disaster awareness and readiness, meaning that the more people are aware of the catastrophes, the more prepared they are (Suryaratri et al., 2020).

However, a study found that the link between risk perception and disaster preparedness has not been consistently reported in the literature. The mixed findings could be attributed to how risk perception and disaster preparedness are operationalized (Yong et al., 2017). The study also of Ao et al. (2021) did not find a consistent relationship between risk perception and disaster preparedness. It is important to emphasize that these findings did not mean that risk perception is unimportant. Rather, they suggest that other factors may also play a significant role in disaster preparedness. For instance, individuals must first believe that the hazard si valid before any actions can occur. Therefore, effective risk communication and management require an understanding of how individuals perceive risks (Yong et al., 2017).

Table 5 Regression Analysis of the Influence of Risk Perception and Disaster Awareness on Disaster Preparedness

Variables	Disaster Preparedness		
	β	t	Sig.
Constant	2.523	12.427	<.001
Risk Perception	.018	.371	.711
Disaster Awareness	.440	8.606	<.001*
R		.532	
R^2		.277	
F		46.034	
p		<.001*	

IV. CONCLUSION AND RECOMMENDATION

Conclusion

The study revealed that college students exhibit a high level of disaster risk perception, indicating that their awareness of potential risks and threats in their community is consistently high. This suggests that the students are highly perceptive of disaster risks. Similarly, the study shows that these students also possess a high level of disaster awareness, suggesting they are well-prepared and informed about future disaster events.

Additionally, the findings revealed a significant relationship between risk perception and disaster preparedness. This means that students who perceive higher risks are more likely to be better prepared for disasters. In other words, students who understand and acknowledge potential dangers are more likely to take necessary precautions and measures to mitigate the impact of such events. Moreover, there is a significant relationship between disaster awareness and disaster preparedness. This suggests that as awareness about disasters increases, the level of preparedness for such events also tends to rise, and vice versa. This indicates that those well-informed about potential disasters are more likely to take the necessary steps to prepare for them.

Furthermore, the data revealed that disaster awareness is the strongest predictor of disaster preparedness. This underscores the critical role of education and information dissemination in enhancing disaster preparedness. It suggests that efforts to increase disaster awareness—such as educational programs, public service announcements, and school drills—could improve preparedness and save lives and resources when disasters occur.

Recommendation

The school administration is recommended to intensify educational and promotional programs to be addressed and implemented in school to enhance and reach the very high level of students' risk perception for disaster preparedness. Additionally, the school, together with the help of teachers, is highly encouraged to promote the importance of disaster preparedness to students through conducting drills and practices. Therefore, students are encouraged to join and engage in any disaster preparedness seminars. Furthermore, future researchers are encouraged to conduct this kind of research in a community prone to disasters and with high records of disaster exposure. It is also recommended to include other factors that may influence disaster preparedness of community members. Moreover, an experimental research design is also recommended for this study to systematically and scientifically provide more definitive conclusions about the causal relationships among the variables of the research hypothesis. Lastly, future researchers may conduct studies to evaluate the effectiveness of existing disaster preparedness policies. This can help identify areas of improvement and provide evidence-based recommendations for policy revisions.

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