

The Mediating Effect of Perceived Self-Efficacy on the Relationship between Social Support and Disaster Risk Preparedness among College Students

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Abstract:- As the nature of disasters evolves to include various hazards beyond natural calamities, understanding how students prepare for such risks becomes increasingly important. This study investigated the mediating effect of perceived efficacy on the relationship between social support and disaster risk preparedness among college students. The data were obtained from three hundred eighty-five college students who were chosen through a stratified random sampling technique. The study employed correlational research design, and Structural Equation Modeling (SEM) through WarpPLS software. Other statistical techniques were also utilized including the mean, standard deviation, correlation, regression coefficients, and standardized path coefficients. The results revealed that the student's level of perceived self-efficacy, social support, and disaster risk preparedness exhibited highly significant relationships between one another. It was found out that the path coefficients among variables were similarly highly significant, yet differed on their respective path strengths. It also showed that all paths in the mediation model were statistically significant, and that the created model exhibited a considerable fit and reliability. Furthermore, perceived self-efficacy in the model was found to mediate the relationship between the two other variables, indicating that social support enhances students' confidence in their ability to manage disaster-related risks, which in turn boosts their preparedness levels. These findings emphasized the importance of promoting a supportive social environment and enhancing self-efficacy to improve disaster preparedness among college students.

Keywords:- Behavioral Response, Engagement, Resilience, Risk Perception, Social Influence.

I. INTRODUCTION

In the past decade, much research has concentrated on exploring the dynamics of disaster risk preparedness in large communities. The increasing frequency and intensity of both

natural and man-made disasters have emphasized the urgent need for strong disaster preparedness, especially for vulnerable communities at the local level (Flaubert et al., 2021). For instance, community resilience has been explored to understand how disasters affect communities, driving the implementation of measures to reduce risks (Tariq et al., 2021). Community resilience generally reflects a community's adaptive capacity to overcome disasters, considering social support systems (Guo et al., 2023). However, it remains unclear how factors like individual capacity and social support interact to influence disaster risk preparedness, especially among diverse student populations with varying levels of self-efficacy. Particularly, this has led to a practical interest in examining the link between the students' social support (SS) and disaster risk preparedness (DRP) through understanding the mediating effect of perceived self-efficacy (PSE) on this connection.

In achieving the 2030 Sustainable Development Goals, disaster preparedness serves as an essential strategy that empowers students and young people through the education system. This approach enhances their resilience and effectiveness in disaster risk reduction, contributing to future sustainability (Wang et al., 2023). Disaster preparedness education plays a crucial role in raising awareness about potential risks associated with disasters (Anggaryani, 2021). It equips individuals and communities with the knowledge and skills necessary to mitigate the possible risks of such disasters, to respond efficiently during emergencies, and to fortify resilience against future calamities.

The ultimate aim of disaster education extends beyond simply enriching knowledge and awareness; it also encompasses the imperative of translating that knowledge into informed decisions and actions aimed at safeguarding against possible large-scale disasters (Kamil et al., 2020), especially inside the campus where most college students have their classes in two or more story-buildings or have their application practices within laboratories, which are considered to be the fundamental parts of most universities (Fatemi et al., 2022).

Meanwhile, many students are still not aware of the wide range of available information that can help them fully prepare and respond appropriately to unexpected disasters. Hence, it is necessary to carry out diverse roles and responsibilities with social support coming from the academic community or even outside communities that can help enhance the preparedness of students at every level (Rasia et al., 2022).

Social support encompasses a range of social interactions and resources that individuals perceive as well as receive in times of need. Students can access social support through both formal and informal avenues. Formal social support enables individuals to seek external assistance from authoritative figures or formal organizations, while informal support stems from interactions within familiar networks, such as immediate family, close friends, and neighbors (Yu et al., 2022). Herein, formal social support can be through teacher and staff support and school-based emergency response plans implemented by the school. The school community can implement numerous initiatives, either directly or indirectly, to enhance disaster preparedness. As an integral component of society, schools play a significant part in shaping community response and readiness for disasters through education with the interventions of teachers (Kamil et al., 2020). Their influence extends beyond the classroom, serving as catalysts for fostering resilience and equipping individuals with the necessary knowledge and skills to effectively navigate emergencies. It is also essential for the district and administrative team to provide support and collaborate closely with educators, creating a strong sense of accountability and recognition of the importance of ensuring that implementation takes place effectively (Nofzinger, 2022).

Moreover, informal social support, particularly from family, crucially strengthens students' disaster preparedness by providing a sense of safety and stability during times of crisis, helping them cope with challenges and navigate uncertainty more effectively. Efficient disaster education centered around families enables parents to impart disaster-related knowledge and self-protection skills to their children, alleviating emotional distress and behavioral issues and teaching them effective coping strategies for managing negative emotions arising from disasters (Li & Zhou, 2021). By receiving support from these various sources, students develop a stronger sense of self-efficacy, which empowers them to effectively navigate through stressful situations.

Self-efficacy pertains to an individual's evaluation of their capability or competence to accomplish a task, reach a goal, or create something. Youths with higher self-efficacy levels demonstrate greater readiness to handle disasters, exhibit a strong belief in their capacity to engage in disaster preparedness activities, and are more confident in responding to emergencies (Mariam et al., 2021). This heightened belief fosters youths' responsiveness to disaster emergencies through proactive disaster preparedness measures. It further plays a crucial role in enhancing individuals' resilience to disasters, which underscores the importance of social support in disaster preparedness among students, as fostering a supportive environment can contribute to building their self-efficacy and, consequently, their ability to effectively respond to and cope with disasters (Mizrak & Turan, 2023). Disaster education

increases students' awareness of potential risks and enhances their perceived self-efficacy to withstand external threats. This includes empowering students to take proactive measures to protect themselves, which are crucial components of individual preparedness (Wang et al., 2023).

Despite extensive research on disaster risk preparedness, an apparent knowledge gap was identified in the prior research concerning disaster readiness and social support systems. In addition, the prior research did not address the Subject of students' level of perceived self-efficacy, which mediates the two variables. Further exploration of college students' perceived self-efficacy is necessary to clarify how personal beliefs influence the relationship between social support and disaster risk preparedness. This exploration can empower students to effectively respond to emergencies both on and off campus with adaptive strategies. Overall, this research study has a notable knowledge gap (Miles, 2017).

Particularly, the current study explored the effect of perceived self-efficacy and social support on disaster risk preparedness at a selected tertiary school in Ozamiz City during the second semester of SY 2023-2024 to develop more comprehensive approaches to promoting disaster resilience among college students. Furthermore, this study offers valuable insights that can contribute to the development of the entire academic community to make broader efforts in enhancing disaster preparedness to fully ensure the safety and well-being of every student, teacher, and other staff.

II. METHODOLOGY

This quantitative study used a correlational design. It is a type of design that explores the relationships between two or more variables without the manipulation or control of the researchers (Bhandari, 2023). Correlational research is non-experimental research that measures two or more variables to determine their statistical relationship, whether it is strong or weak, positive or negative, or no correlation at all (Cherry, 2023). The correlational research design is appropriate for this study, as it measures and analyzes the strength and direction of certain connections between perceived self-efficacy, social support, and disaster risk preparedness without intervening or manipulating these variables. Additionally, the researchers utilized Structural Equation Modeling (SEM) to further analyze the relationships among the variables, and test the proposed model. It is chosen for its capability to analyze complex relationships among constructs and indicators (Hair et al., 2021). SEM is appropriate to utilize in this study, as it also includes examining distinct indirect-effect pathways for different IV-DV relationships, as well as the mediation models (Zyphur et al., 2023).

The study was carried out in a selected tertiary school institution in the province of Misamis Occidental. It is a private, non-sectarian educational institution situated in Ozamiz City, which comprises thirteen (13) undergraduate and graduate colleges with 29 different programs, as well as the Basic education program spanning from Nursery to Senior High School. The respondents of the study were 385 college students at a selected tertiary school in Ozamiz City, who were

determined using a standard sample size calculator. The study employed a stratified random sampling technique to ensure a representative sample of the student population within the university. Within each stratum of the divided population, students were randomly selected to participate in the study. The selection of the respondents was based on the following criteria: (1) college students who are enrolled in the SY 2023-2024 and (2) students who gave their full agreement to participate in the study. Before commencing the surveys, the researchers ensured that all criteria were followed.

Furthermore, the study used the following tools in analyzing the data gathered with the use of WarpPLS Software: (1) Mean and Standard Deviation were used to determine the college students' level of perceived self-efficacy, the social support they received from various forms, and their levels of disaster risk preparedness; (2) Correlation between Latent variables was used to measure the linear relationship between pairs of variables, such as (a) students' level of gained social support and their level of perceived self-efficacy (SS to PSE), (b) students' level of perceived self-efficacy and their level of disaster risk preparedness (PSE to DRP), and (c) students' level of gained social support and their level of disaster risk preparedness (SS to DRP); (3) Standardized Path Coefficient was used to represent the strength and direction of relationships between latent variables, reflecting the direct and indirect effects among the variables, whether the indirect effect (mediated pathway) is statistically significant or not; and (4) Model Fit and Quality Indices were also used to evaluate the adequacy or appropriateness of the SEM model with regard to the gathered data and to further assess the statistical significance of relationships within the model.

III. RESULTS AND DISCUSSION

➤ *Students' Level of Perceived Self-Efficacy*

Table 1 presents the overall mean and standard deviation of the perceived self-efficacy among college students, consisting of ten indicators that measure the students' belief about their ability to prepare and respond to potential disasters. In particular, with a mean of 3.44 and a standard deviation of

0.67, the overall perceived self-efficacy was extremely high, indicating that students typically have higher levels of confidence when it comes to preparation and response practices necessary in emergencies or disasters. Conversely, out of the ten indicators, the data revealed one distinct finding, which showed a 'high' level of perceived self-efficacy when it comes to performing basic first aid procedures. This indicates that students have moderate confidence in their ability to administer first aid in specific situations, while other indicators secured a response indicating a 'very confident' level of one's perceived self-efficacy. This finding is supported by one study, which states that most teenagers thought they were almost equipped for disaster preparedness, but only a small percentage said they were actually prepared (Mariam et al., 2021).

Perceived self-efficacy is crucial as it can instill in students the belief that they can trust themselves and handle such challenges as potential disasters (Hamann et al., 2020). Students with high self-efficacy tend to be more motivated, persistent, and resilient in their endeavors (Wang et al., 2021). When individuals feel confident in their ability to complete a particular action, they approach it with greater calm and thoughtfulness, enabling them to organize and carry out the actions needed to achieve specific goals (Hitches et al., 2022). Hence, students believe in their own capacity to execute readiness tasks, such as performing basic first aid procedures, implementing evacuation plans, and preparing for the necessities when it comes to potential disasters (Chen & Cong, 2023).

The levels of perceived self-efficacy among college students emphasize the essential role of confidence and resilience that equip individuals to effectively prepare and react to challenges. The overall level of perceived self-efficacy indicated that the students generally feel quite confident in their selves, as the mean is closer to 4. When students perceive great confidence in themselves and can handle emergencies, they are more likely to exhibit a positive attitude and mitigative efforts, especially during potential disasters. Good confidence can thereby influence one's ability to respond to and manage emergencies or disasters successfully.

Table 1 Students' Level of Perceived Self-Efficacy (n=385)

Variable	Mean	Standard Deviation	Remarks
Perceived Self-Efficacy	3.44	0.66	Very High

- *Note: 3.25-4.0 (Very High); 2.50-3.24 (High); 1.75-2.49 (Low), 1.0-1.74 (Very Low)*

➤ *Students' Level of Gained Social Support*

The students' level of gained social support was measured across formal and informal social support, as well as informational support (Table 2). The data showed that the overall students' level of social support was generally very high ($M = 3.41$; $SD = 0.67$). As students receive social support socially, it is anticipated to impact their increased knowledge about potential disasters. The data suggested that students have very high remarks across all components of social support, including formal social support ($M = 3.39$; $SD = 0.69$), informal social support ($M = 3.48$; $SD = 0.64$), and informational support ($M = 3.36$; $SD = 0.66$).

All components of social support highlight a remarkable level that possessed very high remarks. Among the three forms assessed, students gained the highest level of support through informal social channels, signifying that students are highly satisfied with the support they received from their personal relationships and social networks, such as their families, friends, and peers when it comes to disaster challenges. Students tend to view that they are very much satisfied if the assistance or support is from familiar individuals with whom they feel comfortable. Furthermore, formal social support followed closely with informational support, showing comparable influence on disaster preparedness, highlighting their collective significance in shaping individual readiness.

In social settings, social support involves interactions that provide individuals with both evident and practical assistance when necessary. Typically, social support can be accessed via formal channels (Yu et al., 2022). It can be through structured reports, official announcements, or even lectures provided at schools. In addition, informational support is also an essential source of support that influences the students' readiness based on the quality and type of information they receive. A study revealed that information dissemination through various media and formats, including weather reports and maps, has been a key element of mass communication campaigns designed to influence public behavior, intentions, and preparedness for disaster hazards (Abunyewah et al., 2020). Notably, this emphasizes the crucial role of employing effective communication strategies to increase public awareness and encourage preventative actions in disaster risk management. Moreover, Diaz (2021) pointed out that the significant impact

of a strong social support network during natural disasters can lead to enhancing students' resilience and ability to cope effectively.

Collectively, all three components of social support help individuals enhance resilience and receive assistance from other people through advice and meaningful information about certain matters. Students with great social support systems may be equipped with adequate guidance and knowledge, which will aid them in responding to possible situations successfully. The data obtained shows that the students are generally satisfied with the social support they have received from various components in terms of formal, informal, and information support. Thus, having a reliable network of social support can make a significant difference in an individual's overall well-being and success.

Table 2 Students' Level of Gained Social Support (n=385)

Constructs	Mean	Standard Deviation	Remarks
Formal Social Support (FSS)	3.39	0.68	Very High
Informal Social Support (IFSS)	3.48	0.64	Very High
Informational Support (INFS)	3.36	0.66	Very High
Overall SS	3.41	0.66	Very High

- Note: 3.25-4.0 (Very High); 2.50-3.24 (High); 1.75-2.49 (Low), 1.0-1.74 (Very Low)

➤ Students' Level of Disaster Risk Preparedness

Table 3 shows the mean and standard deviation of the student's level of disaster risk preparedness in terms of disaster awareness (DA), response planning (RPln), and resource preparedness (RPrp). Among the three components of DRP, disaster awareness has the highest placement (M = 3.43; SD = 0.65), followed by response planning with a mean of 3.40 and standard deviation of 0.68, and lastly, resource preparedness (M = 3.37; SD = 0.65). The overall level of disaster risk preparedness among college students (M = 3.40; SD = 0.66) revealed a 'very high' remark in which its average is closer to 4, with a standard deviation of 0.66, indicating a relatively low variability to the mean.

The data showed that most of the college students have higher levels of disaster risk preparedness. This influence is rooted in their background knowledge of becoming aware of the potential disasters that may occur and how they can handle disaster situations effectively, considering the knowledge, practices, and resources they have. Herein, the three components of disaster risk preparedness are interrelated as evidenced by their closed mean values, indicating that students are well-informed, adequately prepared for response planning, and equipped with the knowledge on how to access and use resources for effective preparedness.

Sufficient knowledge about disaster preparedness is a key to effectively managing disasters. It can be introduced through a formal approach in schools, where well-informed mitigation and preparedness planning, facilitated by effective learning, are expected to reduce risks. To minimize potential damage, it is important to ensure that accurate and reliable disaster risk information is both available and accessible through efficient knowledge sharing (Kamil et al., 2020). Students who are aware of potential disasters or emergencies are likely to possess a high degree of knowledge regarding disaster awareness and other preparedness measures (Devianti & Anggaryani, 2022). This may include tactics like proactive planning, participation in relevant training, and leveraging available resources, which could help control disaster risk management (Malonecio, 2023).

Continuous disaster risk preparedness among students remains crucial despite their perceived high remarks on disaster awareness, response planning, and resource preparedness. While students generally demonstrate commendable disaster awareness, response planning, and resource preparedness, there is a continuous need for additional support and assistance. This suggests that ongoing efforts to expand knowledge, apply proactive strategies, and maintain readiness are crucial. By emphasizing continuous learning and preparedness, sustained efforts can strengthen individuals' resilience and contribute to overall safety and readiness in managing disaster situations effectively.

Table 3 Students' Level of Disaster Risk Preparedness (n=385)

Constructs	Mean	Standard Deviation	Remarks
Disaster Awareness (DA)	3.43	0.64	Very High
Response Planning (RPln)	3.40	0.67	Very High
Resource Preparedness (RPrp)	3.37	0.65	Very High
Overall DRP	3.40	0.65	Very High

- *Note: 3.25-4.0 (Very High); 2.50-3.24 (High); 1.75-2.49 (Low), 1.0-1.74 (Very Low)*

➤ *Significant Relationship between the Students' Level of Gained Social Support and their Perceived Self-Efficacy*

Using Warp PLS software, both the p-value and r-value (correlation coefficients) of the latent variables were obtained and used to determine the significance of the relationship between the student's level of social support and their level of perceived self-efficacy (Table 4). The data revealed that both formal social support ($r = 0.52$; $p = <0.001$) and informal social support ($r = 0.52$; $p = <0.001$) were moderate, indicating that these correlations were statistically highly significant concerning students' level of perceived self-efficacy. Similarly, there was also a moderate positive correlation between informational support and perceived self-efficacy ($r = 0.52$; $p = <0.001$), suggesting that this correlation was statistically highly significant.

All three components of social support had a substantial impact on students' level of perceived self-efficacy. The valuable support provided by teachers and faculty through academic programs and institutional resources (formal); by families, friends, and peers through consistent encouragement (informal); and from reliable sources of information through credible platforms used (informational) likely contributed to the increase in students' level of perceived self-efficacy. This emphasizes the importance of a comprehensive support

network in fostering students' confidence and belief in their capabilities to manage potential emergencies.

The findings align with the previous study that had also demonstrated the positive impact of social support on students' self-efficacy. According to the study, perceived social support was significantly related to the emotional and behavioral aspects of the students, and this relationship was influenced by resilience and self-efficacy (Lu et al., 2021). Additionally, social support can directly and effectively affect one's confidence and work productivity, which in turn improves psychological well-being (Xie et al., 2020). As individuals receive social support from their entourage, it tends to have a positive association with their perceived confidence (Villegas et al., 2024).

A strong connection between social support and perceived self-efficacy strengthens resilience, enhances emergency communication, and offers effective recovery capabilities among individuals. The association of formal and informal social support, as well as informational support, on perceived self-efficacy displays a very high level of confidence among college students. This implies that meaningful efforts aimed at enhancing social support structures could potentially improve students' beliefs and their overall capabilities to handle potential disasters. Such initiatives are crucial for promoting a supportive environment that improves resilience and personal growth.

Table 4 Test of Relationship between the Students' Level of Gained Social Support and their Perceived Self-Efficacy

Variables	r-value	p-value	Remarks
Formal Social Support and Perceived Self-Efficacy	0.52	<0.001	Highly Significant
Informal Social Support and Perceived Self-Efficacy	0.46	<0.001	Highly Significant
Informational Support and Perceived Self-Efficacy	0.52	<0.001	Highly Significant

- *Note: ** $p < 0.01$ (Highly Significant); * $p < 0.05$ (Significant); $p > 0.05$ (Not significant)*

➤ *Significant Relationship between the Students' Level of Perceived Self-Efficacy and their Level of Disaster Risk Preparedness*

Using Warp PLS software, both the p-value and r-value (correlation coefficients) of the latent variables were obtained and used to determine the significance of the relationship between the student's level of perceived self-efficacy and their level of disaster risk preparedness (Table 5). The data showed that the three components of disaster risk preparedness (DA, RPln, RPrp) and the level of perceived self-efficacy among college students are all statistically highly significant, having p-values less than 0.001. Specifically, the three constructs of DRP namely: disaster awareness ($r = 0.52$), response planning ($r = 0.45$), and resource preparedness ($r = 0.46$) had having moderate positive correlation with perceived self-efficacy.

The results indicated a significant relationship between students' level of perceived self-efficacy and their level of disaster risk preparedness. Higher levels of perceived self-efficacy are associated with better disaster awareness, response planning, and greater resource preparedness among college students. These findings emphasize the importance of one's

confidence and belief about potential disasters to effectively improve disaster risk preparedness.

In connection with the obtained results, studies have supported the relationship between the two mentioned variables. Perceived self-efficacy tends to have a crucial role in motivating citizens to prepare for disasters (Appleby et al., 2021). This process typically begins with the adoption of easy-to-implement behaviors and progresses through communication-focused activities, where sharing knowledge and experiences fosters a sense of responsibility for others. Consequently, this increased sense of responsibility can lead to greater participation in skills training and more complex preparedness measures. Moreover, self-efficacy has also served as an essential foundation for disaster preparedness. People are more likely to develop intentions to prepare for such events if they have confidence in their ability to perform the necessary actions effectively (Wang et al., 2021). Likewise, perceived self-efficacy motivates communities and individuals to increasingly develop disaster knowledge to foresee and effectively respond to the impact of potential or hazard events. It further showed that strong self-efficacy also encourages intentions for disaster preparedness, actual behaviors, and specific protective actions during emergencies, such as emergency evacuations (Malonecio, 2023).

A key strategy in improving disaster risk preparedness is the improvement of one's level of perceived self-efficacy. Educational and training programs that focus on building confidence and practical skills related to disaster response could be particularly effective. Such programs include exercises or drills that offer hands-on experience, seminar sessions that provide practical knowledge, and courses integrated into the curriculum to reinforce these skills

consistently. Other than that, consistent encouragement and good monitoring from parents, families, and even friends may tend to increase the students' self-efficacy, which could further drive them to engage in disaster risk preparedness. Therefore, increasing students' beliefs and confidence in their abilities to handle situations could significantly improve their disaster awareness, response planning, and resource preparedness.

Table 5 Test of Relationship between the Students' Level of Perceived Self-Efficacy and their Level of Disaster Risk Preparedness

Variables	r-value	p-value	Remarks
Perceived Self-Efficacy and Disaster Awareness	0.52	<0.001	Highly Significant
Perceived Self-Efficacy and Response Planning	0.45	<0.001	Highly Significant
Perceived Self-Efficacy and Resource Preparedness	0.46	<0.001	Highly Significant

- Note: $**p < 0.01$ (Highly Significant); $*p < 0.05$ (Significant); $p > 0.05$ (Not significant)

➤ *Significant Relationship between the Students' Level of Gained Social Support and their Level of Disaster Risk Preparedness*

Using Warp PLS software, both the p-value and r-value (correlation coefficients) of the latent variables were obtained and used to determine the significance of the relationship between the student's level of social support and their level of disaster risk preparedness (Table 6). As shown in the table, the analysis includes three constructs of social support, namely: formal, informal, and informational in which each was examined in relation to another three constructs of disaster risk preparedness such as disaster awareness, response planning, and resource preparedness.

For formal social support (FSS), the correlations with disaster awareness ($r = 0.42$), response planning ($r = 0.48$), and resource preparedness ($r = 0.46$) indicate moderate positive strength relationships. Each of these correlations is highly significant ($p < 0.001$), suggesting that institutional and structured support systems moderately enhance students' preparedness for potential disasters or emergencies.

According to a study, disaster education has proven to be an effective approach for addressing frequent disaster risks and implementing timely disaster prevention and relief measures (Zhang et al., 2022). While prompt responses and effective governance play crucial roles in averting such consequences, students' preparedness emerges as a primary solution for minimizing losses in the aftermath of disasters (Hamed, 2020). Moreover, well-coordinated assistance from schools, families, and local communities can positively influence the response of individuals, reducing damage and overall impacts (Shah et al., 2020).

Another association of variables that had a significant relationship is between informal social support and the components of disaster risk preparedness. Herein, informal social support demonstrated similar patterns, with moderate strength correlations for disaster awareness ($r = 0.45$), response planning ($r = 0.40$), and resource preparedness ($r = 0.51$). All these correlations indicated statistically highly significant relationships ($p < 0.001$) towards informal social support,

emphasizing the crucial role of personal and community networks in preparing students for disasters.

One of the key factors in mitigating social vulnerability to disasters is the availability and functionality of informal social support structures (Nahkur et al., 2021). For instance, the findings backed up the idea that the impact brought about by family, friends, peers, or others is significant among students, as they can provide emotional and physical comfort in expressing individual love and care (Mideksa et al., 2021). With such connections, assistance from family and peers enables students to gain increased awareness, leading to greater disaster preparedness for potential emergencies (Suryaratri et al., 2020).

Furthermore, informational support (INFS) exhibits the strongest relationships among the three components of social support with disaster risk preparedness (DRP). Notably, there is a significant relationship between INFS and all three components of disaster risk preparedness (DA, RPln, RPrp). In each association of variables, INFS possessed a moderate positive correlation with disaster awareness ($r = 0.58$), response planning ($r = 0.59$), and resource preparedness ($r = 0.63$). Herein, the relationship between informational support and resource preparedness is particularly strong. All these correlations were also highly significant ($p < 0.001$), underscoring the critical impact of access to information on improving students' preparedness for disasters.

A study revealed that hazard impacts can be minimized through effective communication utilizing information technology, which integrates telecommunications, computers, software, and data storage for accessing and transmitting information (Mohan & Mittal, 2020). It is supported by another study that found that information and communication technology (ICT) holds the potential to greatly improve disaster preparedness, response, and recovery efforts by facilitating efficient, convenient, and precise interventions (Oluwaseyi & Stilinski, 2024). By explicitly linking communication platforms like social media with disaster resilience, an individual can be well-informed about the recent details about the current situation in their respective places, such as at either household, schools, or even at the workplace (Lam et al., 2023).

Overall, social support plays a crucial part in enhancing disaster risk preparedness among college students. The data

suggests that the value of comprehensive social support systems from families, friends, peers, teachers, and others can provide encouragement, assistance, and lesson integration, as well as facilitate collective planning for better response. This

support can empower students to further strengthen their ability to navigate emergencies confidently. Consequently, students are likely to become more resilient individuals who are well-prepared to handle various disaster scenarios and others.

Table 6 Test of Relationship between the Students' Level of Gained Social Support and their Level of Disaster Risk Preparedness

Variables	r-value	p-value	Remarks
Formal Social Support and Disaster Awareness	0.42	<0.001	Highly Significant
Formal Social Support and Response Planning	0.48	<0.001	Highly Significant
Formal Social Support and Resource Preparedness	0.46	<0.001	Highly Significant
Informal Social Support and Disaster Awareness	0.45	<0.001	Highly Significant
Informal Social Support and Response Planning	0.40	<0.001	Highly Significant
Informal Social Support and Resource Preparedness	0.51	<0.001	Highly Significant
Informational Support and Disaster Awareness	0.58	<0.001	Highly Significant
Informational Support and Response Planning	0.59	<0.001	Highly Significant
Informational Support and Resource Preparedness	0.63	<0.001	Highly Significant

- Note: ** $p < 0.01$ (Highly Significant); * $p < 0.05$ (Significant); $p > 0.05$ (Not significant)

➤ *Structural Equation Modeling (SEM) Analysis: Path Coefficients of Social Support, Perceived Self-Efficacy, and Disaster Risk Preparedness among College Students*

SEM Analysis was done to statistically obtain the values of path coefficients among the latent variables in this study. It was used to understand and examine complex relationships among variables, such as the levels of social support (SS), perceived self-efficacy (PSE), and disaster risk preparedness among college students. Specifically, path coefficients are standardized estimates that indicate the strength and direction of the relationships between variables, which are further shown in Table 7 below.

The data in the table reveals significant insights into the relationships among various components of social support, perceived self-efficacy, and disaster risk preparedness. Formal social support (FSS) has a weak but highly significant impact on response planning ($\beta = 0.17$; $p = < 0.001$). However, its association towards disaster awareness ($\beta = 0.07$; $p = 0.085$) and resource preparedness ($\beta = 0.05$; $p = 0.162$) both displayed very weak path coefficients, indicating results that FSS does not significantly affect students' level of disaster risk preparedness.

As path coefficients of FSS displayed a 'very weak' influence on both DA and RPrp, this suggests that formal social support does not have a meaningful impact on students' disaster awareness and preparation of resources. If students do not see the relevance of the provided information and resources from academic or other structured support at school, they may not engage with or act upon it. According to a study, many universities and schools still lack adequate planning, response, and mitigation strategies as effective interventions for disaster risk preparedness (Patel et al., 2023). Moreover, the path between FSS and RPln displayed a weak path but was determined to be statistically highly significant. This indicates that formal social support has a small or limited effect on response planning yet confirms that the relationship between the two variables exists and is real.

The second set of paths involves informal social support (IFSS) towards its influence on the three components of disaster risk preparedness (DA, RPln, RPrp). Both paths, including IFSS to DA ($\beta = 0.13$; $p = < 0.004$) and IFSS to RPrp ($\beta = 0.23$; $p = < 0.001$), showed weak path relationships, which were interpreted distinctively as significant and highly significant, respectively. However, the path from IFSS to RPln has a very weak path coefficient ($\beta = 0.07$), which was statistically not significant as its p-value is greater than 0.05 ($p = 0.084$).

Similarly, as the path coefficients of IFSS displayed a 'weak' influence on both DA and RPrp, this suggests that informal social support has a limited impact on students' disaster awareness and resource preparation. The support arising from families, friends, and other peers may have minimal impact on one's awareness and resource preparation. This suggests that the assistance provided by families and friends may vary slightly depending on the student's level of disaster risk preparedness.

In terms of informational support (INFS) influence, its path to DA is moderate ($\beta = 0.35$) and highly significant ($p < 0.001$), indicating a moderate positive relationship. The paths from INFS to RPln and RPrp were also highly significant, with coefficients of 0.42 and 0.44, respectively, showing moderate positive relationships. Thus, the data revealed that informational support (INFS) plays a vital role in improving all three components of disaster risk preparedness (DA, RPln, RPrp), which could mean that its moderate path coefficients and high significance levels emphasize the importance of effective communication and information dissemination about disasters among the college students.

Moreover, the path coefficients between the influence of various forms of social support (FSS, IFSS, INFS) towards perceived self-efficacy (PSE) have resulted in weak positive path relationships, yet they all possessed high significance levels as their p-values were less than 0.001. Specifically, the path from FSS to PSE showed a value of $\beta = 0.37$, IFSS to PSE has 0.17 (β), and INFS to PSE has 0.29 (β). Hence, the obtained data indicate that the various forms of social support are all essential factors in increasing students' self-efficacy, even

though the effects of social support were viewed as weak but positive.

Additionally, the table also depicted the path coefficients between perceived self-efficacy (PSE) and the three components of disaster risk preparedness (DA, RPln, RPrp), wherein it indicated a highly significant remark ($p = <0.001$), and two of them were statistically significant having p-values less than 0.05. All paths among the mentioned variables possessed weak positive coefficients: PSE to DA has a value of $\beta = 0.25$; PSE to RPln has $\beta = 0.12$; and PSE to RPrp has $\beta = 0.11$. These obtained data could mean that an increase in perceived self-efficacy was associated with an increased level of the three components of DRP, but notably, the effect is not strong.

Furthermore, the overall level of social support (SS) has strong positive path coefficients towards both perceived self-efficacy (PSE) and disaster risk preparedness (DRP), while the path from perceived self-efficacy (PSE) to disaster risk preparedness (DRP) possessed a weak positive coefficient. All of the variable pairs were statistically highly significant ($p = <0.001$) and were viewed as having direct paths since perceived self-efficacy was not accounted to mediate any of the paths. Specifically, SS to PSE has a value of $\beta = 0.61$; PSE to DRP has $\beta = 0.21$, and SS to DRP has $\beta = 0.57$. Lastly, the only path

that had an indirect effect was the relationship between SS, PSE, and DRP. Herein, the PSE was accounted to act as the mediator between the relationship of SS and DRP. This path has a weak positive coefficient ($\beta = 0.13$) and was statistically highly significant with a p-value less than 0.001.

The path coefficients among the latent variables revealed varying strengths and significance. These findings imply that initiatives aimed at strengthening disaster risk preparedness should prioritize strategies and other relevant measures that enhance both social support and perceived self-efficacy, as these variables are closely associated and collectively contribute to better preparedness outcomes. In a similar way, the findings of this study have been supported by one article, wherein it also used a path analysis to determine the path coefficients about the relationship between risk perception and disaster preparedness. According to Hu et al., (2022), the findings indicate that the willingness to participate in adaptive behavior is significantly influenced by individual coping assessments, and that the risk attitude component included in the extended model has a considerable impact on the motivation to prepare for emergencies. Hence, the study's findings also have significant values and applications for promoting multilevel involvement in risk management in regions vulnerable to geological hazards.

Table 7 Path Coefficients among the Latent Variables

Path	Path Coefficient (β)	Path Coefficient Strength	p-value	Interpretation
FSS $\rightarrow$ DA	0.07	Very Weak	0.085	Not Significant
FSS $\rightarrow$ RPln	0.17	Weak	<0.001	Highly Significant
FSS $\rightarrow$ RPrp	0.05	Very Weak	0.162	Not Significant
IFSS $\rightarrow$ DA	0.13	Weak	0.004	Significant
IFSS $\rightarrow$ RPln	0.07	Very Weak	0.084	Not Significant
IFSS $\rightarrow$ RPrp	0.23	Weak	<0.001	Highly Significant
INFS $\rightarrow$ DA	0.35	Moderate	<0.001	Highly Significant
INFS $\rightarrow$ RPln	0.42	Moderate	<0.001	Highly Significant
INFS $\rightarrow$ RPrp	0.44	Moderate	<0.001	Highly Significant
FSS $\rightarrow$ PSE	0.27	Weak	<0.001	Highly Significant
IFSS $\rightarrow$ PSE	0.17	Weak	<0.001	Highly Significant
INFS $\rightarrow$ PSE	0.29	Weak	<0.001	Highly Significant
PSE $\rightarrow$ DA	0.25	Weak	<0.001	Highly Significant
PSE $\rightarrow$ RPln	0.12	Weak	0.009	Significant
PSE $\rightarrow$ RPrp	0.11	Weak	0.015	Significant
<i>Combined Paths for SS and DRP with 3 constructs each:</i>				
SS $\rightarrow$ PSE (direct)	0.61	Strong	<0.001	Highly Significant
PSE $\rightarrow$ DRP (direct)	0.21	Weak	<0.001	Highly Significant
SS $\rightarrow$ DRP (direct)	0.57	Strong	<0.001	Highly Significant
SS $\rightarrow$ PSE $\rightarrow$ DRP (indirect)	0.13	Weak	<0.001	Highly Significant

- Note: Path Coefficient Strength: $\beta > 0.70$ (Very Strong); 0.50-0.70 (Strong); 0.30-0.50 (Moderate); 0.10-0.30 (Weak); $\beta < 0.10$ (Very Weak) Probability Strength Scale: ** $p < 0.01$ (Highly Significant); * $p < 0.05$ (Significant); $p > 0.05$ (Not Significant)

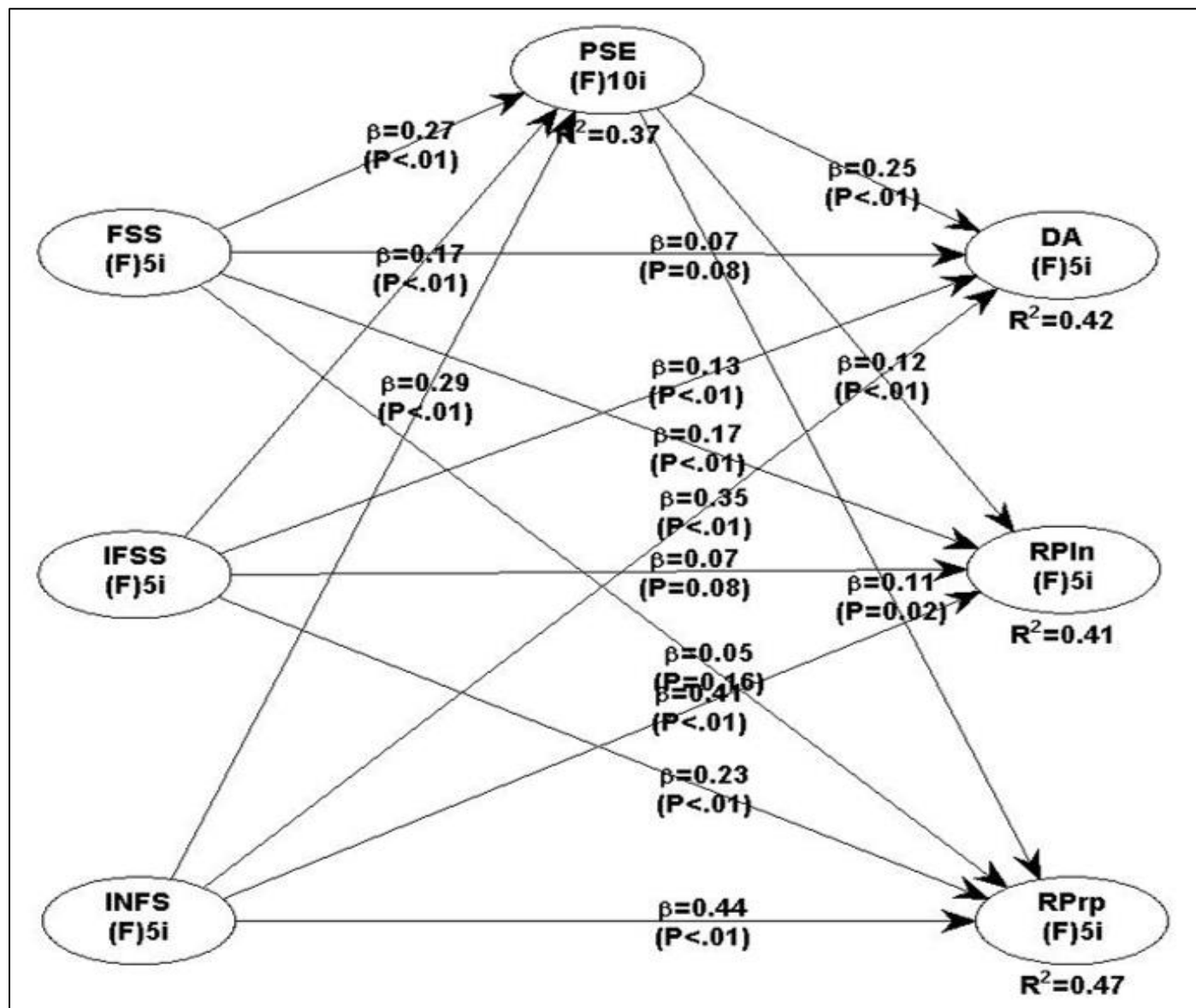


Fig 1 A Model showing the Path Coefficients among the Latent Variables

Fig. 1 represents a path diagram, commonly used in structural equation modeling (SEM), showing relationships between various latent variables. Each path is labeled with standardized regression coefficients (β) and their statistical significance (p-values).

➤ Parameter Estimates of the Mediation Model

In this study, parameter estimates were obtained through SEM analysis. This refers to the numerical values assigned to the model's parameters, representing the relationships and influences among the variables. As depicted in Table 8, the researchers listed the direct, indirect, and total effects among the respective paths of variables, their path coefficients, standard errors, and p-values, as well as their respective effect sizes. Specifically, standard errors represent the estimated standard deviation of a parameter estimate (Gelman, 2023). Conversely, effect sizes offer crucial information on the predictive power of the independent variable regarding the dependent variable (Serdar et al., 2021).

In Table 8, the data showed the direct effects of latent variables, which include paths a, b, and c's, wherein perceived self-efficacy was not considered among any of the paths. Herein, path a denoted the influence of social (SS) towards perceived self-efficacy (PSE) with $\beta = 0.61$, a standard error of 0. and a large effect size of 0.38. Path b indicated the influence of perceived self-efficacy (PSE) towards disaster risk preparedness (DRP), having a path coefficient of 0.21 with a standard error of 0.050 and a medium effect size of 0.11. Another path included in the table is path c' from SS to DRP, which is not mediated by PSE and, therefore, represents a direct path. It has a path coefficient of 0.57, a standard error of 0.047, and a large effect size of 0.39. All three paths mentioned were statistically significant as their p-values are less than 0.001. The researchers also found that hypotheses 1 to 3 were supported by the values obtained from paths a, b, and c.

Moreover, the table below also revealed a significant indirect effect from SS to PSE to DRP ($ab = 0.13$; $p = < 0.001$), indicating that perceived self-efficacy (PSE) partially mediates the relationship between social support (SS) and disaster risk

preparedness (DRP). This finding suggests that higher levels of social support are associated with increased perceived self-efficacy, which in turn enhances students' readiness and proactive behaviors in preparing for potential disasters. The standard error of the indirect effect was 0.036, which suggests that it is significantly precise and reliable, given that its value is relatively small. On one hand, the effect size (0.32) of the indirect effect can be considered slightly weak to the moderate impact of SS on DRP through PSE as its mediator. It suggests that changes in social support are likely to result in a noticeable increase in perceived self-efficacy, which subsequently contributes significantly to improvements in disaster risk preparedness. Indeed, all of the four paths of variable pairs are statistically significant and thereby support the hypotheses.

Furthermore, the obtained total effect for path c is 0.70, which includes both direct and indirect effects. It was found that its standard error is 0.031 with a p-value less than 0.001 and a medium effect size of 0.48. This total effect of 0.70 implies that for every unit increase in SS, DRP increases by 0.70 units on average. The small standard error indicates a precise estimation, while its medium effect size highlights the practical importance of SS in improving disaster preparedness. These findings indicate a statistically significant direct influence of social support on disaster risk preparedness. In addition to the results discussed, perceived self-efficacy

partially mediates the relationship between social support (SS) and disaster risk preparedness (DRP). Partial mediation occurs when the effect of the independent variable on the dependent variable decreases once the mediator is taken into account (Baron & Kenny, 1986). Hence, an association of latent variables is supported in this study by partial mediation, as the social support (IV) influence on the disaster risk preparedness (DV), reducing 0.13 after the perceived self-efficacy (mediator) was controlled.

The associations between and among paths involving direct effects were observed on paths a, b, and c's, which indicate the immediate impact of one variable on another, whereas the indirect effect was revealed on path SS → PSE → DRP, which occurs through one intervening variable. These links can serve as guides for practical interventions that could help enhance the students' disaster resilience, which primarily considers encouraging consistent social support from varying components, as well as empowering one's self-efficacy through meaningful actions relevant to disaster preparedness. Through understanding these pathways, students and other people involved could develop more effective strategies to boost their confidence and recognize all steadfast support from all possible connections, which collectively improve students' level of disaster preparedness.

Table 8 Parameter Estimates of the Mediation Model: Direct, Indirect and Total Effects, Path Coefficients (β), Standard Error, p-values, Effect Sizes

Path	Path Coefficient (β)	Standard Error	p-value	Effect size	Interpretation
Direct effects:					
Path a: SS → PSE	0.61	0.047	<0.001	0.38	Significant, H2 is supported
Path b: PSE → DRP	0.21	0.050	<0.001	0.11	Significant, H3 is supported
Path c': SS → DRP	0.57	0.047	<0.001	0.48	Significant, H1 is supported
Indirect effect:					
SS → PSE → DRP	0.13 (path ab)	0.036	<0.001	0.32	Significant, H4 is supported
Total Effect (path c):	0.70 (path c' + ab)	0.031	<0.001	0.48	Significant

- Note: Standard error: small SE values indicate high level of precision and path is statistically significant; large SE values indicate less precision and path might be insignificant.

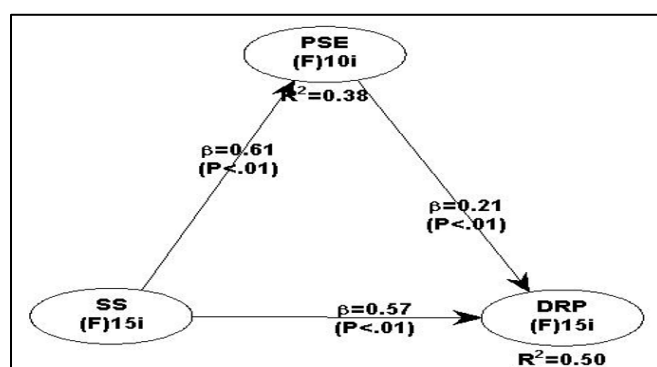


Fig 2 A model showing the overall paths with their respective path coefficient and p-values.

Fig. 2 represents a path diagram used in structural equation modeling (SEM) to illustrate the relationships between three latent variables, namely: social support (IV), perceived self-efficacy (mediator), and disaster risk preparedness (DV).

➤ Model Fit and Quality Indices

One of the key steps in SEM model validation is investigating the overall goodness-of-fit index that provides support for how perfectly our proposed model captures the data. The data should align with the model that is the focus of the study to accurately have a good representation of reality (Schuberth & Rademaker, 2023). Model fit and quality indices are essential for assessing the adequacy and validity of a statistical model, indicating how well it describes the data and predicts outcomes. The table below presents a variety of these indices and their values, p-values, criteria, and remarks, which provide an overview of how our model displays a distinct connection among variables.

The average path coefficient (APC) is 0.463 with a p-value less than 0.001, indicating a significant path coefficient given that the p-value is well below the 0.05 criterion. This shows that the constructs in the model have strong links with one another. With a p-value less than 0.001 and an average R-squared (ARS) value of 0.440, the model explains an important proportion of the variance in the dependent variables. Likewise, the model's explanatory power is maintained even after correcting for the number of predictors, as evidenced by the average adjusted R-squared (AARS) of 0.438 and a p-value below 0.001.

The average block variance inflation factor (AVIF) is 1.537, and the average full collinearity VIF (AFVIF) is 1.953, both significantly below the acceptable threshold of 5, with ideal values being less than or equal to 3.3. This suggests that the model does not take multicollinearity into account, which improves the regression coefficients' reliability. On one hand, the value of the Tenenhaus GoF (Goodness of Fit) is 0.445, which is classified as large as it exceeds the 0.36 threshold. This thereby implies a generally good fit for the model.

The value for Simpson's paradox ratio (SPR) is 1.000, which reveals that no such occurrence of certain paradoxes is viewed in the model. Herein, the trend observed within several groups reverses when the groups are combined. The SPR value reflects consistent model interactions and satisfies the ideal requirement of 1. Additionally, the R-squared contribution ratio (RSCR) is 1.000, meeting the requisite one ideal condition. This indicates that the predictors consistently account for positive variation. In the same way, the value for the statistical suppression ratio (SSR) is 1.000, showing an acceptable remark with no problems with suppressor variables influencing the model. Finally, the direction of causality between pairs of variables appears to be consistent and dependable, as indicated by the nonlinear bivariate causality direction ratio (NLBCDR), which is 1.000 and meets the acceptable criteria of 0.7.

Overall, the values and criteria presented in the table below revealed that the model exhibits significant path coefficients, substantial explanatory power, minimal multicollinearity, and overall good fit and reliability. These indices collectively confirm the model's robustness and validity in explaining and predicting the outcomes of interest.

Table 9 Model Fit and Quality Indices

	Value	p-value	Criteria	Remark
Average path coefficient (APC)	0.463	<0.001	P should be less than 0.05	Significant
Average R-squared (ARS)	0.440	<0.001	P should be less than 0.05	Significant
Average adjusted R-squared (AARS)	0.438	<0.001	P should be less than 0.05	Significant
Average block VIF (AVIF)	1.537	NA	Acceptable if ≤ 5 ; ideally ≤ 3.3	Ideally
Average full collinearity VIF (AFVIF)	1.953	NA	Acceptable if ≤ 5 ; ideally ≤ 3.3	Ideally
Tenenhaus GoF (GoF)	0.445	NA	Small ≥ 0.1 , medium ≥ 0.25 , large ≥ 0.36	Large
Simpson's paradox ratio (SPR)	1.000	NA	Acceptable if ≥ 0.7 ; ideally = 1	Acceptable
R-squared contribution ratio (RSCR)	1.000	NA	Acceptable if ≥ 0.9 ; ideally = 1	Acceptable
Statistical suppression ratio (SSR)	1.000	NA	Acceptable if ≥ 0.7	Acceptable
Nonlinear bivariate causality direction ratio (NLBCDR)	1.000	NA	Acceptable if ≥ 0.7	Acceptable

IV. CONCLUSION

This study determined the mediating effect of perceived self-efficacy on the relationship between social support and disaster risk preparedness among college students. The findings of the study indicate a statistically significant direct influence of social support on disaster risk preparedness. In addition to the results discussed, perceived self-efficacy partially mediates the relationship between social support (SS) and disaster risk preparedness (DRP). Based on the findings, the following conclusions were made:

- Students have a strong belief in their ability to handle and respond effectively to disaster situations.
- Students' high levels of formal, informal, and informational support significantly contributed to their sense of preparedness in disaster situations, reinforcing their capacity to manage potential emergencies effectively.
- Students have a very high level of disaster risk preparedness, demonstrating strong disaster awareness, effective response planning, and thorough resource preparedness.

- Students with high levels of social support gained through formal instructions, encouragement, and shared information relevant to disasters significantly enhance their beliefs as well-informed individuals.
- Higher levels of perceived self-efficacy are associated with better disaster awareness, response planning, and resource preparedness among college students.
- Students with high levels of social support gained through its different components significantly empower students to further strengthen their abilities to navigate potential disasters effectively.
- All three direct paths and the indirect path through PSE as a mediator showed high significance. Students with strong social support networks not only directly enhance DRP but also benefit indirectly through increased PSE.
- The mediating effect of PSE on the relationship between SS and DRP among college students indicates that social support influences disaster risk preparedness partly through its impact on one's perceived confidence in one's ability to handle and prepare for disasters.

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