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Research Article

Typhoon Kristine And Student Resilience: Socio-Economic Impacts on College Learners in Iriga City, Camarines Sur

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Abstract:

The study titled "Typhoon Kristine and Student Resilience: Socio-Economic Impacts on College Learners in Camarines Sur" examined the socio-economic impact of Typhoon Kristine on college students at the University of Saint Anthony. The Philippines is highly disaster-prone, especially to typhoons that affect the economic and educational sectors. Typhoon Kristine caused severe damage nationwide, disrupting the education of millions of students. This study aimed to understand how the typhoon affected students' education, financial stability, and resilience.

A descriptive survey method was employed with 267 college students from various year levels participating. The survey found that 64% were severely affected by structural damages and loss of property, while 55.4% experienced slight decreases in family income and 25.5% significant declines. Many students reported financial hardships, using savings for educational and daily expenses, and transportation difficulties. Despite these challenges, 92.5% of respondents expressed their intention to continue their studies.

The results highlight the urgent need for targeted financial aid, mental health support, and transportation assistance for students affected by natural disasters. The study implies that educational institutions and local governments should strengthen disaster preparedness and resilience-building programs to safeguard students' continuous learning and well-being. Supporting student resilience through community engagement and policy interventions is essential to mitigate the long-term socio-economic consequences of disasters on education in vulnerable regions.

This research contributes valuable insights to disaster risk management strategies, emphasizing that beyond infrastructure recovery, addressing students' socio-economic needs is crucial for sustaining educational attainment post-disaster.

Keywords: Typhoon Kristine, Student Resilience, Socio-Economic Impact, College Learners

Introduction

Natural disasters pose significant threats to global development, disrupting mental health, socio-economic stability, and educational systems. The Philippines, ranked as the world's most disaster-prone country in the 2023 World Risk Index, experiences approximately 20 typhoons annually that disproportionately affect vulnerable populations (Legarda, 2024). Among these vulnerable groups, college students face unique challenges as disasters disrupt their educational pathways, financial stability, and long-term career prospects.

Typhoon Kristine (Trami) recently affected the Bicol region, including Iriga City in Camarines Sur, causing significant losses in lives, property, and economic resources. Despite national and local policies addressing disaster risk reduction, there is limited literature on the socio-economic impacts of such disasters on college students in provincial areas such as Iriga City. This gap necessitates a focused inquiry into how Typhoon Kristine affected students at the University of Saint Anthony, particularly in terms of financial losses, property damage, logistical disruptions, and their consequences on educational continuity.

This study aims to: (1) examine the socio-economic challenges brought by Typhoon Kristine to college students; (2) investigate how these challenges, such as income loss, property damages, and disrupted transportation, affected academic progress; (3) explore differences across year levels; and (4) identify the support mechanisms and coping strategies students perceive as essential.

Methodology

This study employed a descriptive survey research design to evaluate the socio-economic impact of Typhoon Kristine among college students at the College of Health Care Education, University of Saint Anthony, Iriga City, Camarines Sur. A descriptive survey design was appropriate for systematically collecting quantitative data about characteristics, experiences, and perceptions of the target population without manipulating variables.

The study population comprised 797 students enrolled across four-year levels at the College of Health Care Education (First Year: 125; Second Year: 59; Third Year: 49; Fourth Year: 34). Using Slovin's Formula with a 5% margin of error, the required sample size was calculated as 267 respondents. Proportionate stratified sampling was employed to ensure representation across year levels,

yielding the following distribution: (First Year: 373; Second Year: 177; Third Year: 147; Fourth Year: 100). This sample size was statistically sufficient to generalize findings to the total population. Data analysis involved descriptive statistics to summarize socio-economic impacts, cross-tabulations and chi-square tests to examine relationships between variables such as financial loss and academic intentions, and analysis of variance (ANOVA) to compare impacts across year levels, using SPSS software. A pilot test with 20 students (not included in the final sample) confirmed the instrument's reliability (Cronbach's alpha = 0.87) and comprehensibility. Ethical considerations included obtaining informed consent from participants, obtaining school permission, and ensuring confidentiality and voluntary participation. Limitations include potential self-reporting bias and non-response bias, which were mitigated through anonymous responses and follow-up reminders.

Results

Respondent's Year Level. Figure 1 shows the distribution of respondents across different year levels. It shows that nearly half of the respondents (46.80%) are first-year students, followed by 22.21% from the second year, 18.44% from the third year, and 12.55% from the fourth year. It provides a comprehensive perspective on how Typhoon Kristine has impacted students at various stages of their academic journey. This diversity in responses allows for a more nuanced understanding of the socio-economic effects experienced by first-year students, who may be facing unique challenges as they transition into college life, compared to upperclassmen who may have different responsibilities and experiences.

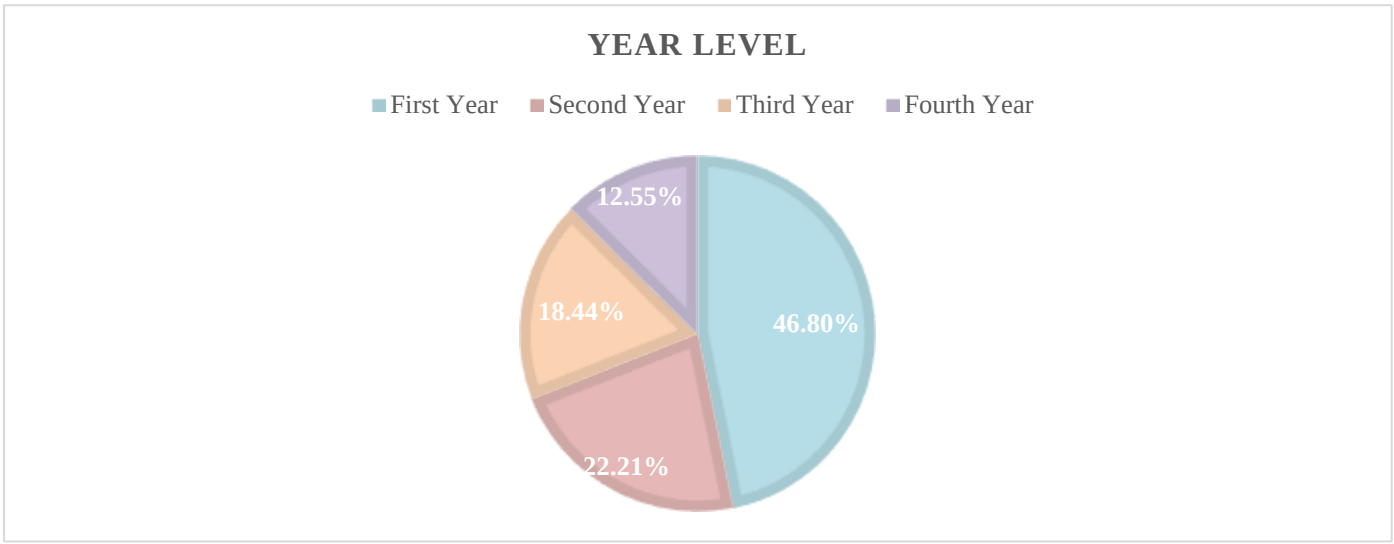

Figure 1. Distribution of Respondents by Year Level

By including a broad range of year levels, the study can analyze trends and differences in socio-economic impacts based on academic progression. This demographic information is vital for tailoring interventions and support mechanisms that address the specific needs of each year level, ultimately contributing to more effective disaster preparedness and recovery strategies within the educational perspective.

Financial Impact Levels on Student Families. The survey results indicate a profound impact of Typhoon Kristine on the respondents as shown in Figure 2, with 56% reporting severe effects characterized by structural damages and losses to personal property. This level of devastation suggests that many students are not only dealing with the immediate aftermath of the typhoon but also facing significant disruptions in their living

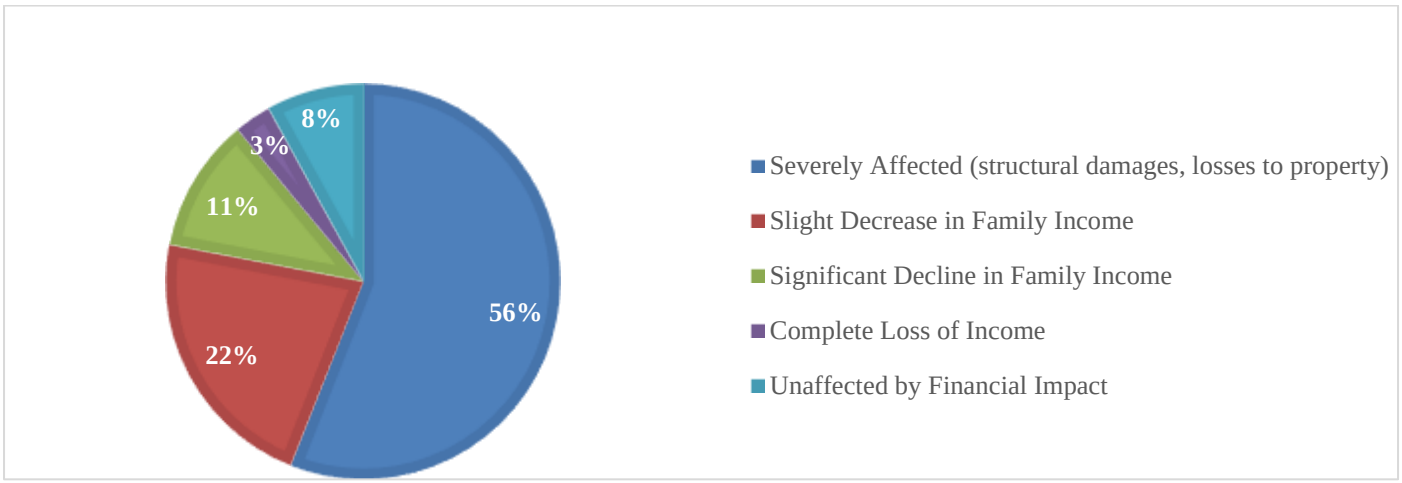

Figure 2. Financial Impact Levels on Student Families

conditions. The loss of essential items such as appliances, furniture, learning materials, and personal vehicles can greatly hinder students' ability to study effectively and maintain a stable home environment. This situation can lead to increased stress and anxiety, potentially affecting their academic performance and overall mental health.

In addition to physical damages, the survey highlights notable economic repercussions. A combined 36% of respondents experienced income decline (22% slight decrease, 11% significant decline, 3% complete loss), indicating that many families are struggling to maintain their financial stability following the disaster. This could limit their ability to support their children's education. The 3% who suffered a complete loss of income face particularly severe financial hardship, which may further exacerbate their challenges in accessing education and basic necessities.

Conversely, 8% of respondents reported being unaffected financially, suggesting that a small portion of the student population may have more stable circumstances or alternative support systems in place.

This severe impact on personal property and financial stability highlights the urgent need for financial support programs tailored for affected students, such as scholarships and emergency funds, to alleviate immediate financial burdens. This suggests that with appropriate support systems in place, students can overcome significant obstacles. Therefore, educational institutions should also focus on community engagement initiatives that foster a supportive environment for affected students, while long-term resilience planning should incorporate disaster preparedness training to ensure continuity of education during future emergencies.

Financial and Logistical Challenges Faced by Respondents. Figure 3 reveal that 60.3% of respondents faced difficulties in meeting financial obligations, leading them to utilize their savings for educational fees and daily living expenses. This highlights a precarious financial situation for many students who are depleting their emergency funds to maintain their education.

Additionally, 60.7% reported transportation problems due to the typhoon, which could hinder their ability to attend classes and access essential services. Damaged roads, destroyed vehicles, and disrupted public transportation systems create significant barriers to educational access.

Despite these substantial challenges, an encouraging 92.5% expressed their intention to continue their studies in the upcoming semester. This remarkable statistic reflects student resilience and a strong commitment to education as a means of improving their socio-economic circumstances in the long run.

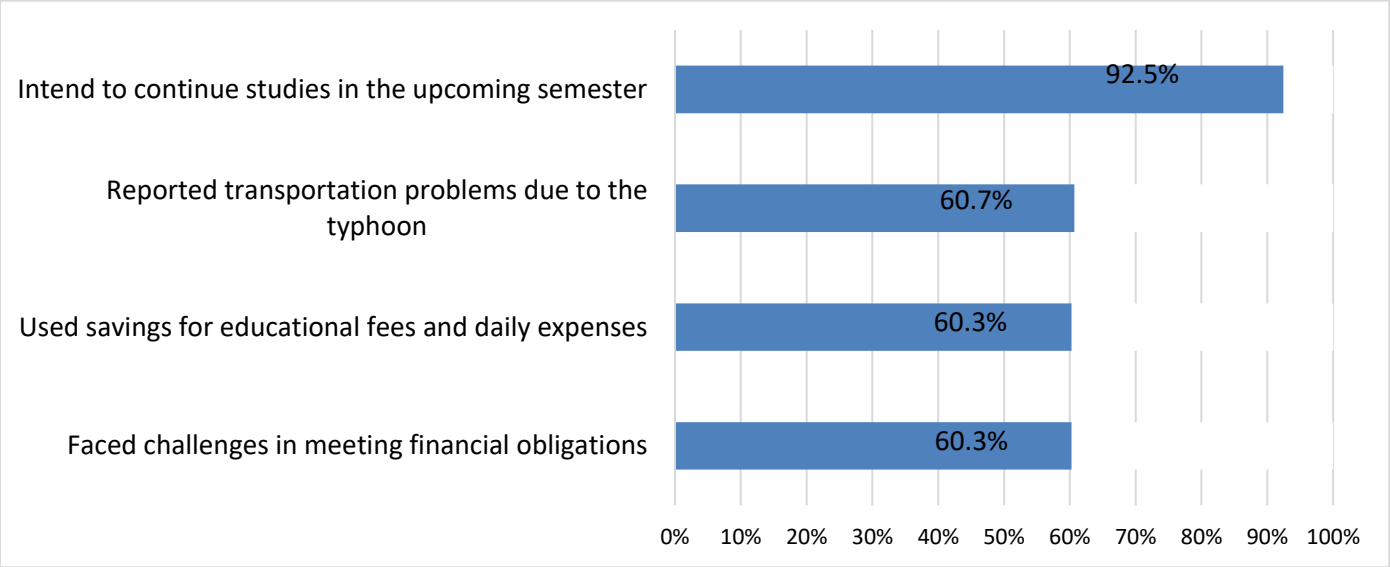

Figure 3. Financial and Logistical Challenges Faced by Respondents

Socio-Economic Indicators of Affected Students. Table 1 provides comprehensive breakdown of economic and housing stability measures among respondents.

These indicators reveal that 45.2% of students experienced significant disruption to their primary living environments through home damage. The predominance of dual-income households (48.5%) suggests that income loss affects family stability substantially. The heavy reliance on family-only financial support (68.4%) indicates limited safety nets.

Table 1. Socio-Economic Indicators of Affected Students

Indicator	Percentage (%)
Housing Status	
Own home with structural damage	45.2
Rented accommodation affected	34.0
No housing damage reported	20.8
Total	**100.0**
Employment Status of Family	

Both parents employed before typhoon	48.5
Single parent employed	38.3
Both parents unemployed/retired	13.2
Total	**100.0**
Financial Support Sources	
Family only	68.4
Scholarships/grants	18.9
Part-time work	3.2
Loans	8.5
Total	**100.0**

Educational Disruptions Due to Typhoon Kristine. Table 2 shows that the widespread nature of educational disruptions is evident, with 78.4% missing at least 1-2 weeks of instruction. The fact that 69.2% reported falling behind in coursework demonstrates cascading academic impacts, even as 92.5% remain committed to continuing their studies.

Table 2. Educational Disruptions Due to Typhoon Kristine

Type of Disruption	Percentage Affected (%)
Missed classes (1-2 weeks)	78.4
Missed classes (3+ weeks)	15.3
Learning materials lost/damaged	52.7
Electronic devices damaged	34.1
Unable to access online learning resources	41.8
Fell behind in coursework	69.2
Withdrew from one or more courses	8.4
Total	**100.0**

ANOVA results revealed no statistically significant differences across year levels in terms of severity of financial impact ($F(3,263) = 1.87$, $p = 0.135$) or intention to continue studies ($\chi^2 = 4.23$, $p = 0.238$). This suggests that Typhoon Kristine's impacts were relatively uniform across academic progression stages.

Chi-square analysis revealed significant associations between income loss severity and financial difficulties ($\chi^2 = 45.67$, $p < 0.001$), property damage extent and educational disruptions ($\chi^2 = 38.92$, $p < 0.001$) and transportation problems and class attendance ($\chi^2 = 52.14$, $p < 0.001$) as presented in Table 3.

Table 3. Relationship between Variables

Variables	x^2	p-value	Interpretation
Income loss severity and financial difficulties	45.67	< 0.001	**Significant**
Property damage extent and educational disruptions	38.92	< 0.001	**Significant**
Transportation problems and class attendance	52.14	< 0.001	**Significant**

However, no significant relationship was found between severity of impacts and intention to continue studies ($\chi^2 = 6.23$, $p = 0.101$), indicating that student resilience remained strong regardless of impact severity.

Discussion

The findings reveal profound socio-economic impacts of Typhoon Kristine on college students, with 64% experiencing severe effects including structural damage and property loss. The 36% experiencing income decline represents substantial threats to educational continuity, as families struggle to maintain support for students' academic expenses while addressing immediate disaster recovery needs.

These findings align with existing literature on disaster impacts. Wang (2024) similarly documented how natural disasters create financial restrictions and psychological stress that threaten educational attainment. Strobl (2019) demonstrated that typhoons create lasting disruptions extending beyond immediate physical damage. The current study extends this literature by quantifying specific impacts on provincial college students, a population underrepresented in disaster research.

The finding that 60.3% of students faced financial difficulties requiring use of savings is particularly concerning, as it indicates depletion of emergency resources that serve as buffers against future shocks. This aligns with Ragma et al.'s (2020) findings that financial instability directly undermines academic performance.

Transportation challenges affected 60.7% of respondents, representing a critical but often overlooked dimension of disaster impact

on education. Damaged infrastructure creates fundamental barriers to educational access that require targeted solutions in disaster response plans.

The widespread educational disruptions with 78.4% missing 1-2 weeks of classes and 69.2% falling behind in coursework demonstrate how disasters create cascading academic challenges. Missing instruction creates knowledge gaps that require additional time and resources to remediate.

The most striking finding is that 92.5% of students expressed intention to continue their studies despite facing severe challenges. This remarkable resilience suggests that educational commitment serves as a powerful protective factor, consistent with resilience framework predictions (Norris et al., 2008).

The findings support key propositions of disaster vulnerability theory and social vulnerability theory. Students with lower socio-economic status demonstrated higher sensitivity to disaster impacts. The strong educational commitment despite adversity highlights the importance of resilience frameworks in understanding disaster outcomes.

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For Policy and Practical Implications, For Higher Education Institutions- establish emergency financial aid programs, develop flexible academic policies, create transportation support programs and expand mental health and counseling services. For Local Government Units - prioritize rapid infrastructure repair, coordinate with universities on disaster response and provide targeted assistance to families supporting college students. For Disaster Risk Management Bodies -integrate educational continuity into disaster frameworks, develop student-specific vulnerability assessments, and create dedicated funding for education sector recovery. For Social Welfare Agencies- expand assistance programs to include educational expenses, fast-track processing for students facing enrollment deadline, provide targeted support to vulnerable households.

Future research should conduct longitudinal studies tracking students over multiple semesters, employ mixed-methods designs combining surveys with interviews, compare disaster-affected and non-affected cohorts, investigate protective factors explaining resilience, examine effectiveness of specific institutional interventions and explore cross-cultural comparisons.

Conclusions

This study provides compelling evidence of the profound socio-economic impacts of Typhoon Kristine on college students at the University of Saint Anthony. With 64% experiencing severe property damage and 36% facing income decline, the typhoon created substantial threats to students' educational continuity. Financial difficulties, transportation barriers, and educational disruptions affected the majority of respondents.

Despite these severe adversities, 92.5% of students expressed intention to continue their studies, demonstrating extraordinary resilience and commitment to education. This resilience represents a valuable foundation for targeted interventions to ensure students not only persist but thrive.

The study's contributions inform evidence-based policy and practice. Educational institutions must develop comprehensive disaster preparedness frameworks addressing students' multidimensional needs. Local governments must prioritize rapid infrastructure recovery and integrate educational continuity into disaster response plans. Social welfare agencies must expand assistance programs to include educational expenses.

Beyond immediate disaster response, this study underscores the imperative of building long-term resilience in educational systems. As climate change intensifies typhoon frequency and severity, resilience-building becomes increasingly urgent to safeguard educational attainment for vulnerable student populations.

This research emphasizes that disaster recovery must extend beyond physical infrastructure to address human dimensions of resilience. Supporting students through disasters protects human potential, preserves educational pathways to upward mobility, and ensures that natural disasters do not perpetuate cycles of poverty and vulnerability.

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