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AWARENESS, KNOWLEDGE, AND ATTITUDE ON THE IMPLEMENTATION OF DISASTER RISK REDUCTION AND MANAGEMENT(DRRM) PROGRAMS

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ABSTRACT

This study examined the levels of awareness, knowledge, and attitude of residents toward Disaster Risk Reduction and Management (DRRM) implementation in the First District of Bohol, specifically concerning fire, earthquake, and typhoon hazards. It further assessed whether significant differences exist in respondents' perceptions relative to their demographic profiles (age, gender, civil status, educational attainment, and municipality of residence), as well as the interrelationships among the core variables. Utilizing a quantitative descriptive-correlational research design, data were gathered from 400 respondents spanning Tagbilaran City and thirteen (13) municipalities within the district. Eligible participants were aged 20 to 59 years and had resided in their locality for at least one year. Most respondents were aged 25–29 years (36.50%), male (53.25%), and female (46.75%) mostly single (74.50%), and were college graduates (65.75%). In terms of municipality, the largest proportion of respondents came from Tagbilaran City (22.75%), followed by Dauis (11.50%) and Tubigon (10.50%). A researcher-adapted, expert-validated, and pilot-tested questionnaire served as the primary data collection instrument. Descriptive results revealed that respondents possessed a high level of awareness regarding DRRM implementation across fire, earthquake, and typhoon hazards. They also demonstrated extensive knowledge of disaster preparedness and response, coupled with a very positive attitude toward prevailing DRRM programs. Inferential analysis confirmed that significant differences in awareness, knowledge, and attitude were associated with age, civil status, educational attainment, and municipality, while gender showed no statistically significant variation. Moreover, significant positive relationships were documented among the three variables, with awareness and knowledge, awareness and attitude, and knowledge and attitude showing strong positive associations. The findings indicate that disaster awareness, practical knowledge, and attitudes toward DRRM are closely interconnected. Consequently, an integrated, community-based DRRM approach is important in strengthening localized disaster preparedness and resilience. Based on these empirical findings, a strategic action plan is recommended to enhance continuous risk communication, practical emergency training, preparedness activities, and grassroots community participation.

Keywords: *Disaster Risk Reduction and Management, awareness, knowledge, attitude, disaster preparedness, fire, earthquake, typhoon, First District of Bohol*

1. INTRODUCTION

The Philippines is highly exposed to typhoons, earthquakes, floods, and fires, which makes Disaster Risk Reduction and Management (DRRM) a core responsibility of local government units under Republic Act 10121 [1] and the Sendai Framework [2]. The presence of DRRM programs, however, does not guarantee that residents are aware of them, understand what to do, or are willing to take part. The First District of Bohol, which has 14 localities with varied geographic and hazard contexts, experienced the 2013 earthquake and Typhoon Odette, and Bureau of Fire Protection data show recurring fire incidents, with Tagbilaran City recording the most in the province from 2019 to 2023 [3].

The study draws on Protection Motivation Theory [4], Social Learning Theory [5], and the community-based DRRM approach, which holds that preparedness depends on how people perceive risk, learn from others, and take part in community activities. Philippine studies report moderate-to-high DRRM knowledge and positive attitudes among residents [6], favorable views of municipal DRRM programs [7], and limited hazard understanding in some communities [8]. Evidence on how awareness, knowledge, and attitude toward fire, earthquake, and typhoon programs vary across demographic groups at the district level in Bohol remains limited. This study provides that baseline.

2. OBJECTIVES

The study determined (1) the demographic profile of the respondents; (2) their levels of awareness, (3) knowledge, and (4) attitudes toward DRRM programs for fire, earthquake, and typhoon; (5) whether these differ by age, gender, civil status, educational attainment, and locality; and (6) whether awareness, knowledge, and attitude are significantly related. The null hypotheses were tested at $\alpha = .05$.

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3. METHODOLOGY

A quantitative descriptive-correlational design was used. Respondents were residents aged 18–60 who had lived in their locality for at least one year. Personnel directly implementing DRRM (DRRM officers, barangay DRRM committee members, fire brigade members, and DRRM volunteers) were excluded so that the study captured how DRRM measures are received by the people they serve. The instrument was a researcher-adapted questionnaire with a demographic section and 90 items (30 each for awareness, knowledge, and attitude; 10 each for fire, earthquake, and typhoon) rated on a four-point scale. Means of 3.25–4.00 were interpreted as Highly Aware, Highly Knowledgeable, or Very Positive Attitude. Six DRRM experts rated item relevance (I-CVI = 1.00 for all 90 items; S-CVI/Ave = S-CVI/UA = 1.00). A pilot test with 30 non-sample residents in a locality excluded from the main study yielded Cronbach's alpha of .981–.989 (awareness), .969–.985 (knowledge), and .992–.998 (attitude). Permission was secured from the university, local chief executives, and barangay chairpersons, and each respondent signed an informed consent form in line with the Data Privacy Act of 2012.

4. SAMPLING DESIGN

The sample size was computed with Slovin's formula (95% confidence, 5% margin of error) from a district population of 459,353 (2020 Census), giving 399.65, rounded to 400. Respondents were allocated proportionally to each locality's population share. Of the 400 respondents, 358 (89.50%) were ordinary barangay residents and household representatives, 22 were LGU employees, 12 were barangay officials not involved in DRRM, and 8 were LGU officials. Because the last three groups together made up only 10.50% of the sample, they were not compared, and the results mainly reflect the views of ordinary residents.

5. STATISTICAL DESIGN

Data were processed with jamovi 2.3. Frequency, percentage, mean, and standard deviation described the profile and the three variables. The independent-samples t-test (Welch-adjusted where variances were unequal) tested differences by gender. One-way ANOVA with the Games–Howell post hoc test [9] tested differences by age, civil status, educational attainment, and locality. Pearson r tested the relationships among the variables.

6. GEOGRAPHICAL AREA

The study was conducted in the First District of Bohol, Philippines, which covers Tagbilaran City and 13 municipalities (labeled Municipality A to N in this paper). The district is exposed to typhoons, flooding, earthquakes, and fire.

7. RESULTS

Table 1 shows the profile. Most respondents were male (53.25%), single (74.50%), and college graduates (65.75%), and the largest age group was 25–29 years (36.50%). The sample is therefore young and highly educated.

Table 1. Profile of respondents (n = 400)

Variable	Category	f	%
Age (years)	20–24	80	20.00
	25–29	146	36.50
	30–34	77	19.25
	35–39	37	9.25
	40–44	22	5.50
	45–59	38	9.50
Gender	Male	213	53.25
	Female	187	46.75
Civil status	Single	298	74.50
	Married	83	20.75
	Live-in, separated, or widowed	19	4.75
Education	College graduate	263	65.75
	College level	74	18.50
	Below college (high school, elementary, vocational)	62	15.50
	Master's degree	1	0.25
Locality	Municipality A (largest)	91	22.75
	Municipality M (smallest)	6	1.50

Note. Thirteen other localities had 8–46 respondents each (proportional allocation).

Levels of awareness, knowledge, and attitude. As shown in Table 2, respondents were Highly Aware (M = 3.55, SD = 0.52), Highly Knowledgeable (M = 3.46, SD = 0.50), and held Very Positive Attitudes (M = 3.65, SD = 0.44). Attitude was highest and knowledge lowest. Fire had the lowest mean in awareness and in knowledge (3.41, the lowest of the nine composites). The lowest

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knowledge items concerned knowing the safest evacuation route in a fire (3.30), the proper action when an evacuation order is issued (3.30), and preventing electrical fires (3.31). Respondents therefore reported knowing what to prepare better than what to do and where to go.

Table 2. Level of awareness, knowledge, and attitude (weighted mean)

Variable	Fire	Earthquake	Typhoon	Overall M (SD)
Awareness	3.51	3.58	3.55	3.55 (0.52) – Highly Aware
Knowledge	3.41	3.46	3.51	3.46 (0.50) – Highly Knowledgeable
Attitude	3.63	3.66	3.66	3.65 (0.44) – Very Positive

Note. All values fall within 3.25–4.00 on the four-point scale.

Differences by profile. Table 3 shows no significant differences by gender, but significant differences ($p < .001$) by age, civil status, educational attainment, and locality. Games–Howell tests showed that residents aged 25–34 scored higher than those aged 40 and above (awareness M = 3.75 for ages 25–29 versus 2.81 for ages 50–54); single respondents scored higher than married and widowed respondents (awareness M = 3.64 versus 3.37 and 1.77); and college graduates scored higher than respondents with college-level, high school, and elementary education (awareness M = 3.74 versus 2.06 for elementary level). By locality, Municipality A scored higher than Municipalities N and J in awareness and attitude and higher than Municipality F in knowledge; Municipality L scored higher than Municipality N in awareness and than Municipality F in knowledge. Only seven of 91 pairwise comparisons per outcome were significant, so locality differences were small compared with age, civil status, and education. The widowed (n = 2) and separated (n = 6) groups are too small for firm conclusions.

Table 3. Differences in awareness, knowledge, and attitude by profile

Grouping	Test (df)	Awareness	Knowledge	Attitude
Age	F (7, 392)	16.854*	12.870*	14.393*
Civil status	F (4, 395)	18.957*	16.020*	15.144*
Education	F (8, 391)	39.698*	36.593*	29.527*
Locality	F (13, 386)	3.515*	3.403*	3.633*
Gender	t (Welch)	−1.514 (.131)	−0.542 (.588)	−0.876 (.382)

*Note. * $p < .001$. Gender p-values are in parentheses; the male and female means differed by no more than 0.08.*

Relationships. Awareness and knowledge ($r = .860$), awareness and attitude ($r = .875$), and knowledge and attitude ($r = .849$) were strongly and positively correlated (all $p < .001$), so all three null hypotheses of no relationship were rejected (Table 4).

Table 4. Pearson correlations among the variables

Variable pair	r	p	Decision
Awareness and knowledge	.860	< .001	Significant
Awareness and attitude	.875	< .001	Significant
Knowledge and attitude	.849	< .001	Significant

Discussion. High levels across the three variables agree with Philippine studies that report positive attitudes toward DRRM [6][7]. Attitude exceeds knowledge, so willingness appears to be ahead of practical know-how, which supports attention to appropriate educational strategies for the target population [10]. The age, civil status, and education gaps indicate that general campaigns reach some groups better than others. The demographic differences contrast with a smaller study of 60 residents in one community that found no demographic effect on DRRM knowledge [11]. The very strong correlations should not be read as causal; they are also larger than those in an earlier Philippine study [6], possibly because the same respondents rated all three scales. Awareness and knowledge were self-reported, so the results show perceived rather than tested knowledge and do not measure drill participation, program effectiveness, or actual preparedness behavior.

8. SUGGESTIONS

(1) Shift fire programs from general information to practical training, such as evacuation route mapping, fire-extinguisher and electrical-safety demonstrations, and drills with feedback. (2) Tailor communication and training to older residents, widowed, separated, and married residents, and those with elementary or high school education, using face-to-face and accessible formats alongside digital media for younger residents. (3) Give priority support to the localities whose residents scored lower (Municipalities N, J, and F). (4) Use residents' very positive attitudes to build regular barangay drills, household emergency planning, and volunteer networks. (5) Strengthen residents' knowledge of official information sources, forecast monitoring, evacuation routes, and emergency supplies. These points are the basis of the strategic action plan proposed in the thesis.

9. CONCLUSION

Residents of the First District of Bohol reported high awareness and knowledge and very positive attitudes toward DRRM programs for fire, earthquake, and typhoon, and the three were strongly related. The levels were not uniform: they differed by age,

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civil status, educational attainment, and locality but not by gender. Knowledge, especially of fire evacuation and prevention procedures, was the weakest area. DRRM efforts should therefore move from awareness-raising toward skills-based, targeted programs.

10. AREA FOR FURTHER RESEARCH

Future studies may add tested knowledge and observed preparedness behavior, measure exposure to and participation in specific programs, use larger samples of older and less-educated residents, and compare residents with DRRM personnel.

11. REFERENCES

1. *Republic of the Philippines (2010), "Republic Act No. 10121: Philippine Disaster Risk Reduction and Management Act of 2010," Official Gazette of the Republic of the Philippines.*
2. *United Nations Office for Disaster Risk Reduction (2015), "Sendai Framework for Disaster Risk Reduction 2015–2030," United Nations.*
3. *Provincial Planning and Development Office–Bohol (n.d.), "Bohol Provincial Development and Physical Framework Plan (PDPFP) 2025–2038: Development administration sector, justice and safety sub-sector," Provincial Government of Bohol.*
4. *Rogers R. W. (1983), "Cognitive and physiological processes in fear appeals and attitude change: A revised theory of protection motivation," in J. Cacioppo & R. Petty (Eds.), Social Psychophysiology: A Sourcebook, Guilford Press, New York, p.p: 153–176.*
5. *Bandura A. (1977), "Social Learning Theory," Prentice Hall, Englewood Cliffs.*
6. *Centeno E. G., Daya R. A., & Muya G. R. (2022), "Communication and risk reduction behaviors of residents in selected disaster-prone communities in the Philippines," Journal of Interdisciplinary Perspectives.*
7. *Maraña J. V., Oreta M. C., Espiritu M., & Segui G. (2025), "The impacts of municipal Disaster Risk Reduction Management programs to the residents of selected barangays of Quezon, Quezon," Psychology and Education: A Multidisciplinary Journal, 47(1).*
8. *Toyado D. M., & Azanza P. A. T. (2025), "Cognisance of geologic hazards among Catandunganons: Promoting disaster-resilient communities," Jàmbá: Journal of Disaster Risk Studies, 17(1).*
9. *Games P. A., & Howell J. F. (1976), "Pairwise multiple comparison procedures with unequal n's and/or variances: A Monte Carlo study," Journal of Educational Statistics, 1(2), p.p: 113–125.*
10. *Aghaei N., Seyedin H., & Sanaeinasab H. (2018), "Strategies for disaster risk reduction education: A systematic review," Journal of Education and Health Promotion, 7, Article 98.*
11. *Soriano G. (2019), "Disaster Risk Reduction Knowledge among local people in a selected community in the Philippines," Journal of Health and Caring Sciences, 1(2), p.p: 92–99.*