"Understanding Disaster Preparedness: A Knowledge Assessment Among Agriculture Students at Teerthanker Mahaveer University, Moradabad, U.P."

Prof. Vijimol[1], Prof Libin Joseph[1], Ms.Haritha M Nair[2], Mr.Gaurav Kumar[3], Ms.Bibha Kumari[3], Ms. Pooja jha[4]

[1]Professor, Teerthanker Mahaveer College of Nursing, Teerthanker Mahaveer University (Up) India.
[2]Associate Professor, Teerthanker Mahaveer College of Nursing, Teerthanker Mahaveer University (Up) India.
[3]Assistant Professor, Teerthanker Mahaveer College of Nursing, Teerthanker Mahaveer University (Up) India.
[4]P.G Tutor, Teerthanker Mahaveer College of Nursing, Teerthanker Mahaveer University (Up) India.

Corresponding Author
Prof. Vijimol
Professor Cum HOD of OBG
Teerthanker Mahaveer College of Nursing
Teerthanker Mahaveer University (Up) India
vijimolg.nursing@tmu.ac.in
8894126177

Abstract

Background: Disasters, both natural and man-made, pose significant challenges globally, impacting communities' health, safety, and infrastructure. University students, particularly those in specialized fields like agriculture, play a crucial role in disaster preparedness and management. This study investigates the knowledge levels of agriculture students regarding disaster management and explores the influence of demographic variables on their understanding.

Objective: The objectives were to assess the knowledge of disaster management among agriculture students and examine the relationship between their knowledge levels and selected demographic variables.

Methods: A descriptive study design was employed, involving 60 agriculture students from Teerthanker Mahaveer University, Moradabad. Data were collected using a structured knowledge questionnaire, divided into two sections: demographic information and knowledge assessment.

Results: The findings revealed that 36.7% of students demonstrated good knowledge, 33.3% had average knowledge, and 30% showed poor knowledge regarding disaster management. Key demographic factors, such as educational qualification and type of family, significantly influenced knowledge levels, while age and gender showed no significant correlation.

Conclusion: The study highlights a need for targeted educational interventions to enhance disaster management knowledge among agriculture students, emphasizing their critical role during disaster responses. Structured training programs and integration of disaster management topics into academic curricula could significantly improve preparedness and competency in handling emergencies.

I. Introduction

Disasters, whether natural or man-made, have become a recurring global phenomenon, significantly affecting communities, economies, and ecosystems. Their unpredictability and rapid onset often result in extensive damage to lives, infrastructure, and resources. In many instances, they create an environment of uncertainty and urgency, demanding immediate and effective responses. This highlights the critical importance of disaster management as a structured approach to mitigate the impacts of such crises.

The term "disaster" originates from the Latin word "dis" (away, bad) and "aster" (star), signifying catastrophic events linked to unfortunate circumstances. Disasters can be broadly categorized into natural disasters, such as earthquakes, floods, and cyclones, and man-made disasters, including industrial accidents, deforestation, and terrorism. Regardless of their type, disasters share common traits like unpredictability, urgency, and the potential for widespread devastation.

In the context of developing countries, the consequences of disasters are often magnified due to limited resources, inadequate infrastructure, and insufficient preparedness. Agriculture students, as future professionals in a field that is deeply impacted by environmental and man-made disasters, play a pivotal role in disaster risk reduction and management. Their preparedness and knowledge in this domain can greatly influence mitigation and recovery efforts.

This study, conducted among agriculture students at Teerthanker Mahaveer University, Moradabad, aims to assess their knowledge of disaster management and identify demographic factors that influence their understanding. By doing so, the research seeks to uncover gaps in knowledge and provide insights into improving disaster preparedness education, fostering resilience in the face of emergencies.

II. Methodology and Materials

The **methodology** section provides a structured approach for conducting the study to assess the knowledge regarding disaster management among agriculture students at Teerthanker Mahaveer University, Moradabad. It includes the research design, sample population, sampling method, tools for data collection, and the procedure for data analysis.

Research Design

The study utilized a **descriptive research design**, which is appropriate for examining the current knowledge levels of disaster management among the selected population without manipulating any variables.

Population

The target population included agriculture students enrolled at the College of Agriculture Science, Teerthanker Mahaveer University, Moradabad.

Sample and Sampling Technique

A **purposive sampling technique** was employed to select 60 agriculture students. This method was chosen based on the researcher's judgment to ensure the inclusion of participants who could provide relevant data for the study.

- **Inclusion Criteria:**
  - Students willing to participate.
  - Students who could comprehend Hindi or English.
  - Students present at the time of data collection.
- **Exclusion Criteria:**
  - Students unwilling to participate.
  - Students absent during the data collection period.

Tools for Data Collection

Data collection was conducted using a **structured knowledge questionnaire**, divided into two sections:

1. **Section I:** Demographic data, including:
   - Age
   - Gender
   - Educational qualification
   - Source of information
   - Type of family
2. **Section II:** Knowledge assessment consisting of 20 multiple-choice questions related to disaster

management. The questionnaire covered topics such as disaster types, phases, preparedness measures, and roles during disaster management.

Validity and Reliability of the Tool

- **Content Validity:** The questionnaire was reviewed and validated by experts in the nursing and disaster management fields.
- **Reliability:** The tool's reliability was established using the KR-20 method, yielding a reliability coefficient of 0.70, indicating acceptable internal consistency.

Data Collection Procedure

1. Permission was obtained from the institutional authorities.
2. A pilot study was conducted with 10 students to ensure the feasibility of the main study.
3. The structured questionnaire was administered to 60 students after obtaining informed consent.
4. Data collection was completed in a single session, ensuring consistency and minimizing response bias.

Plan for Data Analysis

The collected data were analyzed using both descriptive and inferential statistics:

- **Descriptive Statistics:** Frequency, percentages, mean, and standard deviation were used to summarize the demographic data and knowledge scores.
- **Inferential Statistics:** Chi-square tests were applied to determine the association between knowledge levels and demographic variables.

Ethical Considerations

- Informed consent was obtained from all participants.
- Anonymity and confidentiality of the participants' information were maintained.
- Participation was voluntary, with the right to withdraw at any time during the study.

This methodological framework ensures a systematic approach to understanding the knowledge levels of agriculture students regarding disaster management and lays the foundation for deriving meaningful conclusions.

III. Results

The results section presents the findings of the study, analyzed using descriptive and inferential statistics. It includes demographic characteristics of the participants, knowledge levels regarding disaster management, and associations between knowledge levels and selected demographic variables.

1. Demographic Characteristics of Participants

A total of 60 agriculture students participated in the study. The demographic distribution is summarized in the table below.

Demographic Variable	Frequency (n)	Percentage (%)
Age		
17–20 years	9	15%
21–23 years	27	45%
24–25 years	14	23%
Above 25 years	10	16%
Gender		
Male	31	51.7%
Female	29	48.3%
Educational Qualification		
B.Sc. Agriculture 1st Year	38	63.3%
B.Sc. Agriculture 2nd Year	16	26.7%
B.Sc. Agriculture 3rd Year	4	6.7%
B.Sc. Agriculture 4th Year	2	3.3%
Source of Information		
Social Media	31	51.7%
Family Members	15	25%
Friends/Peers	12	20%
Books and Magazines	2	3.3%

2. Knowledge Levels Regarding Disaster Management

The level of knowledge among participants was categorized as good, average, and poor based on their scores. The distribution is shown in the table and graph below:

Knowledge Level	Score Range	Frequency (n)	Percentage (%)
Good Knowledge	16–20	22	36.7%
Average Knowledge	10–15	20	33.3%
Poor Knowledge	0–9	18	30%

3. Association Between Knowledge Levels and Demographic Variables

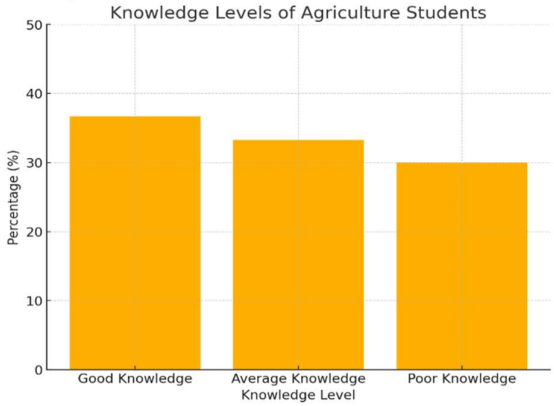
The association between knowledge levels and selected demographic variables was analyzed using the chi-square test. Significant associations were found for educational qualification, source of information, and type of family. No significant associations were found for age or gender.

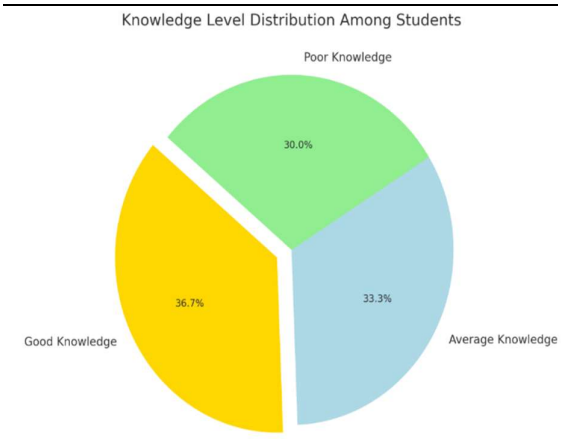
Demographic Variable	Chi-Square Value	p-Value	Significance
Age	5.79	0.452	Not Significant
Gender	0.14	0.106	Not Significant
Educational Qualification	13.08	0.042	Significant
Source of Information	16.56	0.011	Significant
Type of Family	14.44	0.006	Significant

Interpretation

1. **Knowledge Levels:**
   - A significant proportion of students (36.7%) demonstrated good knowledge of disaster management, indicating some awareness but room for improvement.
   - Around 30% of students showed poor knowledge, emphasizing the need for educational interventions.
2. **Demographic Influence:**
   - Students' educational qualification, source of information, and type of family were significantly associated with knowledge levels.
   - Social media emerged as the most common source of information (51.7%), suggesting its potential for educational outreach.

This analysis underscores the importance of incorporating disaster management into academic curricula and utilizing diverse information channels to enhance awareness among students.





IV. Detailed Explanation of Findings

1. Knowledge Levels of Agriculture Students

The study assessed the knowledge levels of agriculture students in disaster management, categorizing their performance into three levels: good, average, and poor.

- **Good Knowledge (36.7%):**
  - Students in this category demonstrated a comprehensive understanding of disaster management concepts, preparedness measures, and response strategies.
  - Their high scores suggest familiarity with key elements of disaster response, including risk reduction, emergency actions, and post-disaster recovery.
- **Average Knowledge (33.3%):**
  - Students with average knowledge had partial awareness of disaster management but lacked depth in understanding critical details.
  - They likely know basic concepts but might struggle with practical applications during disaster situations.
- **Poor Knowledge (30%):**
  - This group showed limited or no understanding of disaster management concepts.
  - Their lack of awareness represents a significant gap that could impede effective response during emergencies.

The findings reveal that while a substantial proportion (36.7%) of students possess good knowledge, a combined 63.3% (average and poor knowledge groups) require additional education and training to enhance their competency.

2. Demographic Influence on Knowledge Levels

The study examined the relationship between students' demographic variables and their knowledge levels, finding significant associations with some factors:

- **Educational Qualification:**
  - A statistically significant association was observed between educational level and knowledge. Students in higher years of study tended to have better knowledge, likely due to increased exposure to relevant topics.
  - First-year students (63.3% of the sample) generally scored lower, indicating that knowledge improves with academic progression.
- **Source of Information:**
  - Social media (51.7%) emerged as the most common source of information, followed by family members (25%) and peers (20%).
  - Students who accessed information through reliable sources such as books and training showed higher knowledge levels, suggesting the importance of credible educational materials.
- **Type of Family:**
  - Students from nuclear families (46%) showed slightly better knowledge than those from joint families (45%). This could be linked to individual learning environments and access to resources.
- **Age and Gender:**
  - These factors showed no significant association with knowledge levels, indicating that knowledge gaps exist across all age groups and genders equally.

3. Key Observations

- **Strengths:**
  - A notable 36.7% of students demonstrated good knowledge, indicating the potential for peer-led learning or using these students as ambassadors for disaster preparedness education.
- **Gaps:**
  - The high percentage of students with average (33.3%) and poor (30%) knowledge highlights the need for targeted interventions, particularly among first-year students and those reliant on less credible sources of information.
- **Role of Social Media:**
  - With over half the students citing social media as their primary

source of information, leveraging these platforms for educational campaigns could be highly effective in bridging knowledge gaps.

4. Implications

The findings suggest the following actions to enhance disaster management knowledge among agriculture students:

1. **Integrating Disaster Management into the Curriculum:**
   - Adding structured courses or modules on disaster management can provide students with foundational knowledge and practical skills.
2. **Educational Workshops and Training:**
   - Organizing workshops, seminars, and simulations can give students hands-on experience in disaster preparedness and response.
3. **Leveraging Social Media for Awareness:**
   - Developing educational content tailored for social media platforms can effectively reach students and improve knowledge dissemination.
4. **Targeted Interventions for Low-Performing Groups:**
   - First-year students and those with poor knowledge scores should receive focused support, including remedial sessions and access to resources.

The study highlights both strengths and areas for improvement in disaster management knowledge among agriculture students. While a significant proportion of students have a good understanding, gaps remain that require immediate attention. By addressing these through educational reforms and innovative awareness campaigns, students can be better equipped to handle disasters effectively, benefiting both their academic growth and societal resilience.

V. Discussion

The discussion section interprets the findings of the study, compares them with existing literature, and highlights their implications. It also provides insights into the strengths and limitations of the study, offering recommendations for future research and practice.

1. Interpretation of Findings

The study assessed the knowledge of disaster management among agriculture students and found a wide variation in their understanding:

- **Good Knowledge (36.7%):**
  - This reflects that a subset of students possesses a strong foundation in disaster management concepts. These students may have benefited from prior exposure to relevant topics through formal education, personal interest, or credible information sources like books or structured courses.
- **Average Knowledge (33.3%) and Poor Knowledge (30%):**
  - The high percentage of students in these categories suggests significant gaps in disaster preparedness education. Many students may lack structured learning opportunities or access to quality resources. This underlines the need for formal integration of disaster management topics into the academic curriculum.

2. Comparison with Existing Literature

The findings align with previous research on disaster management knowledge among students:

- A study by **Catherine et al. (2019)** found that disaster preparedness knowledge among healthcare professionals was moderate, similar to the current study's findings for agriculture students.
- **Sudip Bhattacharya et al. (2019)** emphasized the impact of educational interventions, where knowledge levels improved significantly after training programs. This suggests that the

observed gaps in this study could be addressed through targeted educational initiatives.

Additionally, studies conducted by **Rajesh et al. (2011)** and **Fatma Abdelalim (2014)** indicated that demographic factors like educational qualification significantly influence disaster management knowledge. This supports the current study's findings that higher educational levels correlate with better knowledge.

3. Implications for Education and Practice

The study underscores critical areas for intervention:

- **Curriculum Enhancement:**
  - Disaster management topics should be formally incorporated into agriculture education. This could include theoretical classes, practical workshops, and simulation exercises.
- **Social Media as a Tool for Education:**
  - With over half the students citing social media as their primary information source, leveraging these platforms for disaster preparedness campaigns could significantly improve knowledge dissemination.
- **Early Education:**
  - Targeting first-year students with introductory disaster management courses could lay a strong foundation, ensuring better preparedness as they progress academically.

4. Strengths of the Study

- **Focused Population:**
  - The study specifically targeted agriculture students, a unique group directly impacted by environmental disasters, making the findings highly relevant.
- **Structured Tool:**
  - The use of a validated and reliable questionnaire ensured the accuracy and consistency of data collection.

5. Limitations of the Study

- **Sample Size:**
  - The study was limited to 60 students, which may not fully represent the broader population of agriculture students.
- **Geographic Scope:**
  - Conducted in a single university, the findings may not generalize to other institutions or regions with different educational or socio-economic contexts.
- **Self-Reported Data:**
  - The reliance on self-reported questionnaires may introduce response bias, where participants overestimate or underestimate their knowledge.

6. Recommendations for Future Research

- **Broader Studies:**
  - Conduct research across multiple institutions and regions to validate findings and enhance generalizability.
- **Longitudinal Studies:**
  - Assess knowledge improvements over time following educational interventions or training programs.
- **Focus on Practical Skills:**
  - Future studies could evaluate not just knowledge but also practical disaster response skills among students.

The study highlights significant gaps in disaster management knowledge among agriculture students, particularly in early academic years. While a subset of students demonstrated good understanding, the overall results underscore the urgent need for structured education and targeted interventions. By addressing these gaps, educational institutions can empower future professionals to contribute effectively to disaster preparedness and management. This is critical not only for academic growth but

also for societal resilience in the face of increasing global disasters.

VI. Conclusion

This study aimed to assess the knowledge of disaster management among agriculture students at Teerthanker Mahaveer University, Moradabad, and examine the influence of demographic variables on their knowledge levels. The findings provide valuable insights into the current state of disaster preparedness among this specialized group.

Key Findings

1. **Knowledge Levels:**
   - A notable 36.7% of students demonstrated good knowledge of disaster management, indicating a solid understanding of key concepts and practices.
   - However, 63.3% of students (average and poor knowledge combined) showed gaps in their understanding, emphasizing the need for targeted educational interventions.
2. **Demographic Influence:**
   - Educational qualification, source of information, and type of family were significantly associated with knowledge levels.
   - Age and gender did not significantly influence knowledge, indicating uniform knowledge gaps across these variables.
3. **Information Sources:**
   - Social media was identified as the primary source of information for over half the participants, suggesting its potential as an educational tool for disaster management awareness.

Implications

The study underscores the need to:

- **Integrate disaster management topics** into the academic curriculum for agriculture students, ensuring systematic knowledge acquisition.
- **Leverage social media** and other widely used platforms to disseminate accurate and actionable information on disaster preparedness.
- **Develop targeted training programs** focusing on practical disaster management skills, especially for students with average or poor knowledge.

Strengths and Limitations

- The study successfully identified knowledge gaps and their association with key demographic factors, offering actionable insights.
- Limitations include a relatively small sample size and geographic scope, which may limit the generalizability of findings.

While a portion of agriculture students possesses good knowledge of disaster management, significant gaps remain that could hinder effective responses to emergencies. By addressing these gaps through structured education, targeted training, and innovative awareness campaigns, institutions can empower future professionals to contribute meaningfully to disaster preparedness and resilience. This is particularly critical in agriculture, a field intrinsically linked to environmental stability and disaster impacts.

VII. Recommendations for Future Actions

1. **Integrate Disaster Management into Curricula:**
   - Incorporate structured courses and practical training on disaster preparedness into the academic programs for agriculture students.
2. **Conduct Awareness Campaigns:**
   - Utilize social media and other widely accessed platforms to disseminate accurate and engaging information about disaster management.
3. **Organize Training Programs:**
   - Develop workshops and simulation exercises to improve practical disaster response skills among students.
4. **Target Early-Year Students:**
   - Focus on first-year students with foundational training to build a

strong knowledge base early in their academic journey.

5. **Expand Research Scope:**
   - Conduct multi-institutional studies to understand broader trends and validate findings across diverse populations.
6. **Strengthen Community Engagement:**
   - Encourage collaboration between universities and local disaster management agencies for hands-on learning experiences.

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