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Original Research Article

Conceptual model for STP on knowledge, attitude and practice regarding disaster preparedness and triage

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ABSTRACT

Disaster is a natural or man-made event that negatively affects life, property, livelihood or industry. Disaster preparedness and planning is an inter-sectoral exercise. It is the responsibility of the health care professionals to stimulate and co-ordinate. In December 30th 2012 last thane cyclone which left 7 persons dead in Pondicherry and several homeless. Conceptual frameworks act like a map that gives coherence to empirical inquiry. It is a set of coherent ideas or concepts organized in a manner that makes them easy to communicate to others.

The objectives of the study were to assess the knowledge, attitude and practice of women before and after STP, to find the effectiveness of STP and associate pretest knowledge, attitude and practice scores with selected demographic variables and develop the conceptual model.

A one group pre-test and post-test research design was used with non randomized quota sampling technique. Data collection was done using a structured interview to assess the level of knowledge, attitude and practice regarding disaster preparedness and triage.

The mean score obtained for overall knowledge was 5.4 SD 0.4 which shows the subjects had poor knowledge on disaster preparedness and triage. The mean score for pre-test attitude is 3.2 and SD 4.3 which shows unfavourable attitude towards disaster preparedness and triage. Wilcoxon signed rank test was computed for knowledge and attitude, pre-test and post-test. The obtained Z value -4.716, -4.410 were significant at P<0.001 level of significant respectively. The obtained mean and SD for knowledge on practice was mean 4.3 SD 1.9 in pre-test and mean 4.7 and SD 0.7 in post-test which was not statistically significant (Z= -1.301, P= 0.191).

The findings led to the conceptual framework based on Modified General System Theory by J W Kenny.

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1. Introduction

*“A great calamity is as old as the trilobites an hour after it happened” Oliver Wendell Holmes, Sr.*¹

Disaster is a natural or man-made event that negatively affect life, property, livelihood or industry. It often results in permanent changes to human societies ie ecosystem and environment. Disasters are highly destructive events that cause suffering, deprivation, hardship and even death

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due to direct injury, disease. It also causes interruption of commerce and business and the partial or total destruction of critical infrastructure such as home, hospital and other buildings, roads, bridges, power illness etc.²

The term disaster owes its origin to the French word DESASTRE, where DES means bad or evil and ASTRE means star-combined, it implies “bad or evil star”. Generally, disaster are of two types:- natural and manmade. Natural disasters are flood, cyclone, drought, earthquake, cold wave, thunderstorm, heat waves,

mudslides, volcano, tsunamis and storm. Manmade disaster includes epidemic deforestation, pollution: chemical and environmental pollution, wars, road-train accidents, riots, food poisoning, industrial disaster, crisis, etc.³

Disaster is a sudden, calamity bringing great damage, loss destruction and devastation to life and property. The damage caused by disaster varies with the geographical location, climate and the type of the earth surface degree of vulnerability & is immeasurable. This has an influence on the mental, socio-economic, political and cultural state of the affected area. It completely disrupts the normal day to day life, like food, shelter, health, etc.⁴

Impact of natural disasters can be reduced through pre disaster activities for mitigating risk; and such activities are among the most crucial aspects of disaster risk reduction to consider in forming a coordinated strategy or plan. Natural hazard mitigation is an important issue policy because monetary losses from natural disaster are reaching catastrophic proportions and are expected to increase. This is particularly relevant, in the case of recurrent natural hazards, such as cyclones and floods in vulnerable locations where action to reduce damage can be more effective than relieve and recovery. The burden of natural disasters falls most heavily upon developing nations where over 95% of disaster related events occur.⁵

In India, 60% of the land is prone to earthquake 12% is susceptible to floods and 8% is vulnerable to cyclones. In the year 2004, in the Union Territory of Pondicherry about 107 deaths occurred and 30,000 people were rendered homeless. In December 30th 2012 last thane cyclone which left 7 persons dead in Pondicherry and several homeless.⁵

In order for each country to prepare for any kind of disaster, it must inform citizens about the different types of disaster. The local residents should be made aware of how they can effectively participate in preparing for a disaster, mitigating potential impact of a disaster and the recovery process after a disaster. For this one effective way is by conducting education and public awareness programme at the local community level. In disaster preparedness the emphasis should be given on public awareness, participation and development of self reliance. The identification of hazards and management of action are best carried out with the involvement of the community. So priority goes to educating the community in order to cope with disaster situation.

Public awareness measures in disaster preparedness includes a process of educating and empowering the population through sharing knowledge and information about the various types of disaster and their potential risks as far as possible so that people act appropriately when a disaster occurs. Disaster management is a key programme in any nation to prepare and face any emergency situation of natural and manmade events. Disaster management includes disaster preparedness, planning, preventing, mitigating or

responding to a disaster. Disaster preparedness and planning is an inter-sectoral exercise. It is the responsibility of the health care professionals to stimulate and co-ordinate.⁵

Conceptual framework provides a certain frame of reference for clinical practice, research and education. Conceptual framework is the conceptual underpinning of the study. Conceptual framework (theoretical framework) is a type of intermediate theory that has the potential to connect all aspects of inquiry starting from Problem definition to data analysis. Conceptual frameworks act as a map that gives coherence to empirical inquiry. It is a set of coherent ideas or concepts organized in a manner that makes them easy to communicate to others. Hence the researcher wanted to find the effectiveness of STP and develop the conceptual model on disaster preparedness.⁶

2. Objectives

1. To assess the knowledge, attitude and practice of the women regarding disaster preparedness and triage before and after structured teaching programme
2. To find the effectiveness of structured teaching programme
3. To associate the pretest knowledge, attitude and practice scores with selected demographic variables.
4. To develop the conceptual model based on Modified General System Theory by J W Kenny.

3. Materials and Methods

3.1. Research approach

Evaluative approach

3.2. Research design

One group pre-test post-test design

3.3. Target population

Women between the age of 20-50 years

3.4. Accessible population

Women between the age of 20-50 years from urban area, Muthialpet

3.5. Sample size

40 women between the age of 20-50 years in selected area of Muthialpet, Puducherry were included in the study.

3.6. Sampling technique

Sample technique is defined as the process of selecting a group of people on elements with which to conduct the study. In this study, the women were selected by non randomized quota sampling technique by age.

3.7. Sampling Criteria

3.7.1. Inclusion criteria

1. Women aged between 20-50 years.
2. Women of urban community.
3. Women who are available at home during the study period.

3.7.2. Exclusion criteria

1. Severe illness.
2. Disability.

3.8. Description of Tool

3.8.1. Data collection instruments

Structured knowledge, attitude and practice interview technique was used for data collection.

3.9. Development of instrument

A structured knowledge, attitude and practice interview technique was considered to be the most appropriate instrument to elicit response from the participants. The tool was developed after review of literature and consultations of subjects experts.

3.10. Pre testing of the tool

Pre test is the trial administration of a newly developed instrument to identify flaws and assess the time requirement.

The purpose is to verify the clarity and adequacy of the items. The tool was administered to 10 urban women in selected area of Muthialpet who met the inclusion criteria. The time taken to complete the tool was approximately 30-40 minutes. All the terms were clearly understood by the subjects. No modifications were made.

3.11. Description of the final tool

The final tool consisted of 4 parts.

3.11.1. Part 1: Socio demographic variables:

Socio demographic variables included were 9 items such as; age, education, marital status, occupation, membership in any voluntary organization, number of disaster experienced in life time, number of training programmes participated and source of information.

3.11.2. Part 2: Structured knowledge questionnaire regarding disaster preparedness and triage:

It consisted of 15 knowledge questionnaire regarding disaster like earthquake, cyclone and tsunami, its preparedness and triage.

3.11.3. Part 3: Structured attitude questionnaire regarding disaster preparedness and triage:

It consisted of 10 attitude questionnaire regarding disaster.

3.11.4. Part 4: Structured practice questionnaire regarding disaster preparedness and triage:

It consisted of 9 questionnaire regarding disaster preparedness, subjects reaction towards disaster and triage.

3.11.5. Reliability of the tool

Reliability of research instrument is defined as the extent to which the instrument yields the stability, equivalence and homogeneity. In this study split-half method was used. The tools were found to be reliable.

3.12. Data Collection Method

1. Ambedkar Nagar of urban area Muthialpet, Puducherry was selected to conduct the study.
2. Out of 150 women based on inclusion criteria 40 women were selected.
3. Participation information was explained to the participants and consent was obtained.
4. The 40 women were selected non randomized quota sampling
5. Pre-test was conducted using a structured knowledge, attitude and practice questionnaire on disaster preparedness and triage.
6. Next day structured teaching programme was conducted.
7. On the 7th day post-test was conducted.
8. The data collected was compiled for data analysis.
9. Analysis was done to find out the effectiveness of the teaching.

4. Ethical Consideration

1. Formal permission was obtained from HOD Community department and Dean College of Nursing of Pondicherry institute of medical sciences.
2. Written consent was obtained from the study participant who participated in the study.

5. Results

Table 1 reveals that most of the participant 14(35%) were in the age of 41-50 years; 12(30%) were educated; majority of them 31(77.5%) were married; majority of them 30(75%) were not working. It also shows that 22(55%) have experienced 2 disasters in their life. And majority 39 (97.5%) have not attended any training programme and 22(55%) had got information from mass media and no participants was a member of any voluntary organization.

Table 1: Distribution of the socio-demographic variables of women. n=40

S. No	Socio-demographic variables	Frequency	Percentage (%)
1.	Age group (yrs.)		
	20-30	13	32.5
	31-40	13	32.5
2.	41-50	14	35
	Education		
	Illiterate	4	10
	Middle	11	27.5
3.	10 th	12	30
	12 th	7	17.5
	Graduate	6	15
4.	Marital Status		
	Unmarried	8	20
	Married	31	77.5
5.	Divorced/Separated	1	2.5
	Occupation		
	Govt job	2	5
	Private job	7	17.5
6.	Self-employed	1	2.5
	Home maker	30	75
	Number of times experienced with exposure to Disasters		
7.	1	18	45
	2	22	55
	Source of information		
8.	Mass media	22	55
	News Paper/ magazines	18	45

The pretest showed 33(83%) had inadequate level of knowledge, attitude level was unfavorable, 39 (97.5%) and 24(60%) had inadequate level of knowledge on practice. The pre test knowledge and pre test knowledge on practice had highly statistically significant correlation ($\rho=0.577$, $p<0.001$).

In the post test 65% had adequate knowledge and 17% moderately adequate knowledge, 93% had favourable attitude and regarding knowledge on practice 65% were in the moderately adequate category.

There was a high increase in knowledge for the questions on types of disaster natural (65% increase and manmade 30% increase). There was a gain of knowledge, 40% on protection during cyclone, earthquake and tsunami. On the questions on climate change 30% had gain in knowledge. There was 60% gain in knowledge on practice in the area of pre flood management but post flood management it remained the same, 42.5% in pre and post measures of cyclone and 35 % on earthquake management.

Table 2 reveals that the obtained Z value -4.716 by using Wilcoxon Signed Rank test is highly statistically significant at 0.01 level. Table 17 reveals that the obtained Z value -4.140 by using Wilcoxon Signed Rank test is highly statistically significant at 0.01 level. It also reveals that the obtained Z value -1.307 using Wilcoxon Signed Rank test for knowledge on practice is not statistically significant at

Table 2: Effectiveness of structured teaching programme on knowledge, attitude and knowledge on practice regarding disaster management among women. n=40

Variable	Mean Difference	Z Score	P Value
Difference in Knowledge on Disaster Management	3.9	-4.716	<0.001
Difference in Attitude on Disaster Management	4.2	-4.140	<0.001
Difference in Knowledge on Practice Regarding Disaster Management	0.5	-1.307	0.191

0.001 level.

There was no significant association between knowledge, knowledge level on practice and socio demographic variable.

5.1. Development of Conceptual framework according to modified general system theory

The conceptual framework adapted for the study is based on Modified General System Theory by J W Kenny.⁷ According to modified general system theory, it is a science of wholeness and its purpose is to unite scientific thinking across disciplines and which provides frame work for analyzing the whole of any system. The system has a

specific purpose or goal and uses a process to achieve the goal.

The system theory can be resolved into an aggregation of feedback circuit such as input, throughput and output.

5.1.1. Input

It is the process which consists of varying types and amount of matter, material or human energy, information received from the environment. In the present study input refers to the women age between 20-50 of urban area Muthialpet (the participants of the study) comprising with their demographic features including age, education, occupation, marital status, membership in any voluntary agencies, past experience of disaster, number of training programme on disaster management attended and source of information. It also includes the pretest of the participants.

5.1.2. Throughput

It is the process whereby the system transforms, creates and organizes for its ready use. In this study throughput refers to structured teaching program on disaster preparedness and triage. The content included were earthquake, cyclone and tsunami, its preparedness and triage.

5.1.3. Output

It is an energy, information or material that is transformed into the new environment. In this study the improvement in knowledge level from the predetermined level on disaster preparedness and triage is considered as the output.

5.1.4. Feedback

The component of feedback was not studied in the present study.

6. Discussion

The conceptual framework developed was based on General systems theory.

The input was women with 35% in the age group of 31-40 years, 30% educated upto high school, 77.5% married, 75% were not working, 100% were not have any membership, 55% had experienced 2 disasters and 97.5% had not attended any training programme, 55% got information from mass media. Sonopant G Joshi, Kalpana Sawane, Mangesh Jabade (2015)⁸ conducted a study on Effectiveness of Training Manual on Disaster Management in Terms of Knowledge and Self Expressed Practice among Secondary School Teacher in Selected School of Pune City which showed out of 540 teachers' majority 52.6% were between the age group of 35-44 years. Teachers from English medium schools were in majority 57% and 74% of them had not been exposed to any type of first aid of disaster management programme. The findings are similar to the present study, were most of them have not attended any training programme. Mehdi Najafi et al (2017)⁹ report in their study 62.3% of participants were male and the mean age of all participants was 44.14 (SD = 12.53). 71.5% of participants had high school or higher education. 34.5% of participants were currently unemployed (including jobless participants, retired, students and housewives). 54% of participants were owner of their home and most of them (82.5%) living in apartments. The findings are similar in both studies with regard to education, employment status and in the present study people had witnessed disaster but in this study 58.4% had not witnessed disaster. The study results of Rahul Sharma, Vikas Kumar, Dinesh Rajaare¹⁰ based upon the information collected from a total of 754 women belonging to different families in the study residential areas. The age of the women ranged from 21 to 80 years with mean 41.6 ± 12.3 years and 140 (19.7%) had done college graduation or higher studies, the present study also reveals that 35% women were between 31-40 years and 30% had high school education.

Input also includes thepre testin which majority of them had poor knowledge 33(82.5%) on disaster preparedness and triage. The mean score obtained for knowledge before STP was 5.4 SD 0.4 which shows that subjects had poor knowledge on disaster preparedness and triage. The pre test attitude was 39(97.5%) unfavourable. The mean score obtained for attitude was 3.2 with SD 4.3 which show unfavorable attitude regarding disaster preparedness and triage. The knowledge on practice towards disaster preparedness and triage was average 24 (60%). The mean score for knowledge on practice is 4.3 and SD 1.9 which shows average practice regarding disaster preparedness.

The output got was the mean score for knowledge on disaster preparedness was 9.3 and SD 2.1 which shows that subjects had moderately adequate knowledge on disaster

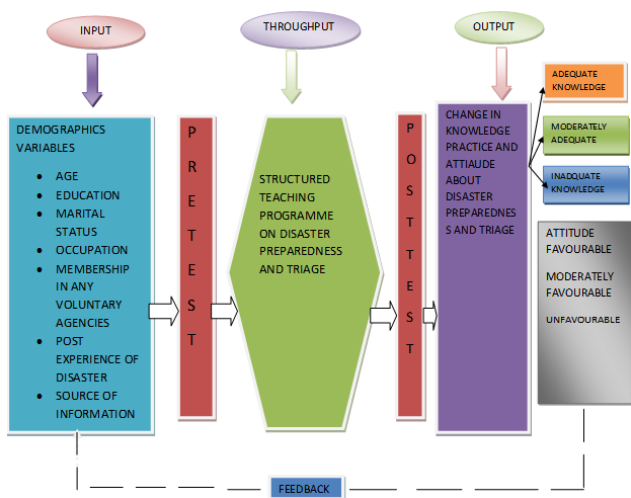


Fig. 1: Conceptual model for the study

preparedness and triage, attitude was moderately favorable: mean score obtained for attitude was 7.3 with SD 2. The mean score for knowledge on practice is 4.7 and SD 0.7 which shows moderately adequate practice regarding disaster preparedness.

The comparison of pre-test and post-test knowledge level on disaster preparedness among women reveals that the overall knowledge mean was 3.9 with SD 3.4 which is highly significant ($Z = -4.716$, $P < 0.001$). Comparison of pre test and post test attitude level on disaster preparedness and triage among women reveals that the overall attitude mean was 4.2 with SD 5 which is highly significant ($Z = -4.140$, $P = < 0.001$). Comparison of pre test and post test knowledge on practice on disaster preparedness and triage among women reveals that the knowledge on practice mean was 0.5 with SD 2 which is not statistically significant ($Z = -1.307$, $P = 0.191$). This indicates that the structured teaching programme was effective. The study is supported by the findings of the following 2 studies.

Priyesh Marskole et al (2018)¹¹ study at Gwalior also gives an outcome that out of 110 students 87.2% (before intervention) and 98.2% (after intervention) had knowledge of disaster management. A study at Ambala, Sanasam Bankimchandra Singh et al (2017)¹² observed that the mean post-test knowledge score (21.66) was significantly higher than the mean pre-test knowledge score (10.06). The computed paired “t” ($t = 37.22$, $p = 0.001$) was found to be significant showing that the gain in knowledge was not by chance and thus improved by planned teaching programme.

The result of the present study shows significant difference in the pre and post test, knowledge, attitude, practice and also there is no association between pre test and post test selected demographic variables which is also supported by the study done by Sonia et al (2016).¹³ The study was to assess the Effectiveness of Structured Education and Awareness Programme on Disaster Preparedness conducted among Inhabitation of a Selected Community at New Delhi. The results of that study shows that the mean post-test knowledge scores (29.87%) of community inhabitants regarding disaster preparedness was higher than their mean pre-test knowledge scores (20.85) with a mean difference of 9.02 and computed ‘z’-value 7.973. There was no significant association between post-test knowledge scores and age, sex, education, occupation and previous experience of disaster of the subjects.

There was a high increase in knowledge for the questions on types of disaster natural disaster 65% increase and manmade disaster 30% increase. There was a gain of knowledge of 40% on protection during cyclone, earthquake and tsunami. On the questions on climate change 30% had gain in knowledge. There was 60% gain in knowledge on practice in the area of pre flood management but post flood management it remained the same, 42.5% in pre and post measures of cyclone and 35% on earthquake management.

The study conducted by Ms. Nahomi Ezhilarasi and Dr. K. Jothy¹⁴ on Knowledge of Disaster Preparedness and Management among Nurses in the Disaster Prone Areas of Kerala also has similar findings were the nurses have shown high increase in post test on category of disaster with higher mean and standard deviation significance of 0.001 and the study shows similar findings for cyclone, floods and landslides.

7. Limitations

1. Data collected was based on the women’s response only by doing interview. Therefore there could be chances for subjectivity.
2. Non -probability quota sampling for age was used hence generalized ability may not be possible.

8. Conclusion

The study concludes that STP is effective in improving KAP on disaster and Modified systems theory of J.W.Kenny can be developed based on the study.

9. Conflicts of Interest

All contributing authors declare no conflicts of interest.

10. Source of Funding

None.

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