Material and Methods

The present study was conducted among post disaster victims of Kedarnath flood, June 2013. The samples selected were the Head and Next to Head members of all the houses. A multi-stage probability sampling technique was used to choose the geographical area. "Systematic random sampling with appropriate sampling interval was employed" to assess the base line and end line post traumatic symptoms. Total 2822 samples were included from four block areas and fourteen villages under Ukhimath. The data collection period was 25 months between the period Dec, 2013 to Dec 2015.

Objectives

1. To ascertain the magnitude/prevalence of PTSD among the Disaster victims of the Uttrakahand.

2. To estimate the H-QOL of the Disaster victims.

3. To study association, if any, between variables of PTSD and H-QOL of the victims on follow-up.

4. To study the association between demographic and other variables with Post Traumatic Stress Disorder among Disaster Victims.

5. To study the association between demographic and other variables with H-QOL of Disaster Victims.

6. To undertake a SWOT analysis of the ongoing Disaster preparedness and mitigation measures in the area of coverage.

Operational Definitions

Health related Quality of Life (H-QOL): In this study H-QOL refers to a disaster victims perception of position in their life in the context of health and health promotion in which they live and in relations to their goals, expectations, standards and concerns which was measured by WHO QOL- BREF.

Post Traumatic Stress Disorder (PTSD): In this study PTSD refers to deterioration of psychological health condition of a disaster victim that is triggered by a catastrophic event either directly or indirectly involved in it which was measured by PTSD checklist (PCL-S).

Natural Disaster Victims: In this study natural disaster victim refers to people living in Rudraprayag District, Uttarakhand been directly or indirectly experienced or witnessed the catastrophic event i.e. Cloudburst centered on 16th June 2013.

Conceptual Framework

Conceptualization is a process of forming ideas, which are utilized and forms conceptual framework for development of research design. It helps the nurse researcher to know what data need to be collected and gives direction to an entire research process. The conceptual framework for the study was developed by the investigator itself.

Catastrophic event creates an imbalance between Physical, Psychological, Social and Environmental health among the victims of the Disaster. Well being outcome evaluation after disaster allows to discover the group of disaster victims chance to develop chronic health troubles and occurrence of continual mental problems including post-traumatic strain disease than the others. The present conceptual framework focused to study the impact of catastrophic event on magnitude of PTSD & H-QOL of catastrophic afflicted individuals.

One of the most devastating effects of catastrophic experience can leads to development of Posttraumatic Stress Disorder and it is very common among the disaster victims. The important symptoms of post traumatic stress disorder were intrusive thoughts, nightmares and flashbacks of past traumatic events, avoidance of reminders of the trauma, hyper vigilance and sleep disturbance which was measured by PTSD checklist (PCL-S).

H- QOL of a human being is a state of dynamic interaction between mind, body, societal and ecological health. The 2013 flash flood hit the Uttarakhand had caused shortage of food supplies, electricity, clean water, banking services, and transportation and communication system also, disturbance of these above stated
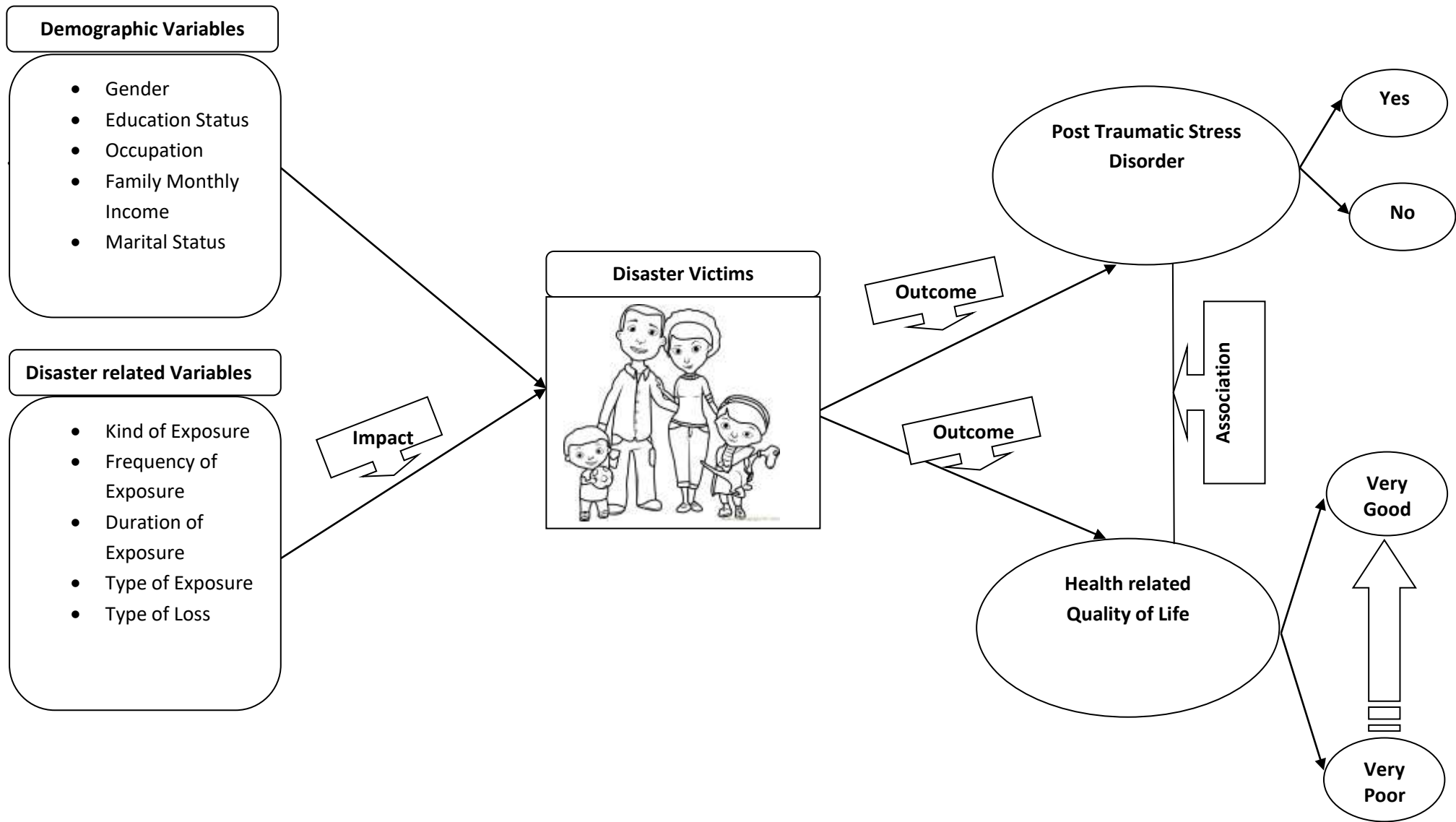
basic services may affect the victims life. In addition, Post Traumatic stress symptoms, which is a due to the psychological response of an individual towards catastrophic events, can have the 'long-term effects' on an individual. Therefore H-QOL of among disaster victims will be decreased which was measured by WHO QOL BREF.

Post traumatic stress symptoms usually have great influence on physical, psychological, social and environmental wellbeing of disaster victims because of its undesirable effect on health which may affect their day to day functioning. Hence, researcher planned to study the scientific association between Post Traumatic Stress Disorder and Health related Quality Life of a Disaster victims

However, the 'catastrophic effects on disaster victims differ from individual' based on Demographic (i.e. Sex, Educational Status, Occupation, Family Monthly Income and Marital Status) and Disaster related variables (i.e. Kind of Exposure, Frequency of Exposure, Duration of Exposure, Type of Exposure and Type of Loss) which was measured by researcher self made questionnaire.

The outcomes of the post Disaster impact have been studied extensively in two different phases. First assessment was done within 06 month of the catastrophic event and second assessment done after the period of 18 month.

The disaster victims who were found to have symptoms of PTSD and reported 'poor' & 'very poor' H-QOL will be advised to undergo counseling or any interventions (not included in the study) which may help them to get better H-QOL & cope with the situational crisis.

Demographic Variables

- Gender
- Education Status
- Occupation
- Family Monthly Income
- Marital Status

Disaster related Variables

- Kind of Exposure
- Frequency of Exposure
- Duration of Exposure
- Type of Exposure
- Type of Loss

Impact

Disaster Victims

Outcome

Post Traumatic Stress Disorder

Yes

No

Association

Outcome

Health related Quality of Life

Very Good

Very Poor

Hypothesis

H$_1$- Post- Traumatic Stress Disorder (PTSD) is significantly associated with the Health related Quality of Life of Post Disaster victims at the level of significance p ≤ 0.05.

H$_{01}$- There is no significant association between Post- Traumatic Stress Disorder (PTSD) and Health related Quality of Life of Post Disaster victims at the level of significance p ≤ 0.05.

Universe of study: Uttarakhand

As a region of mountains, this state has major threat from natural calamities. The recent tragedy, which the state witnessed, was Kedarnath flood in the year 2013. It washed away the largest number of inhabitants and visitors. Approximately One lac ten thousand families was evacuated from the disaster afflicted region. Total fatalities was close to 5000; with missing estimated number of 4,700.The actual toll was expected to be much higher than the observed numerical.

Study Population: Disaster victims of June, 2013 from the Rudraprayag District.

Rudraprayag is a district of Uttarakhand state of northern India. The district occupies an area of 2439 km per square. The district is bound by Uttarkashi District on the north, Chamoli District on the east, Pauri Garhwal District on the south, and Tehri Garhwal District on the south. The district Rudraprayag is located at the

convergence river Alaknanda and Mandakini (Both tributes of river Ganges) in the state of Uttrakhand.

Research Approach

The study design adopted had both Quantitative and Qualitative research as it was most appropriate to attain the data from the Disaster victims. Quantitative component of the study design was used to assess Prevalence of PTSD and post Disaster "H-QOL" among the afflicted. The Qualitative component study design was used to do SWOT analysis on ongoing disaster preparedness and mitigation process. The study was designed keeping in view the objective and expected outcome of the study.

Research Design

A cross-sectional design with prospective follow-up was adopted so the post-traumatic stress symptoms could be measured among Disaster victims. The post-traumatic stress was considered after six months from the event exposure, besides allowing for comparison with the baseline findings.

Setting of the Study

Ukhimath Block, Rudarapryag District, Uttarakhand, India.

S. No	Villages		
1	Trijugi Narayan	8	Banayadi
2	Kalimath	9	Nyalsu
3	Badasu	10	Chandrapuri
4	Jal Talla	11	Gangapur
5	Jal Malla	12	Lamgondi
6	Kotma	13	Devlibranigram
7	Nakot	14	Chaumasi

Sampling Technique

"A multi-stage probability sampling technique was used to choose the geographical area of coverage". "Systematic random sampling with appropriate sampling interval was employed to sample study blocks & villages and calculate study subjects". (Mahalingam V & Roy D, 2017)
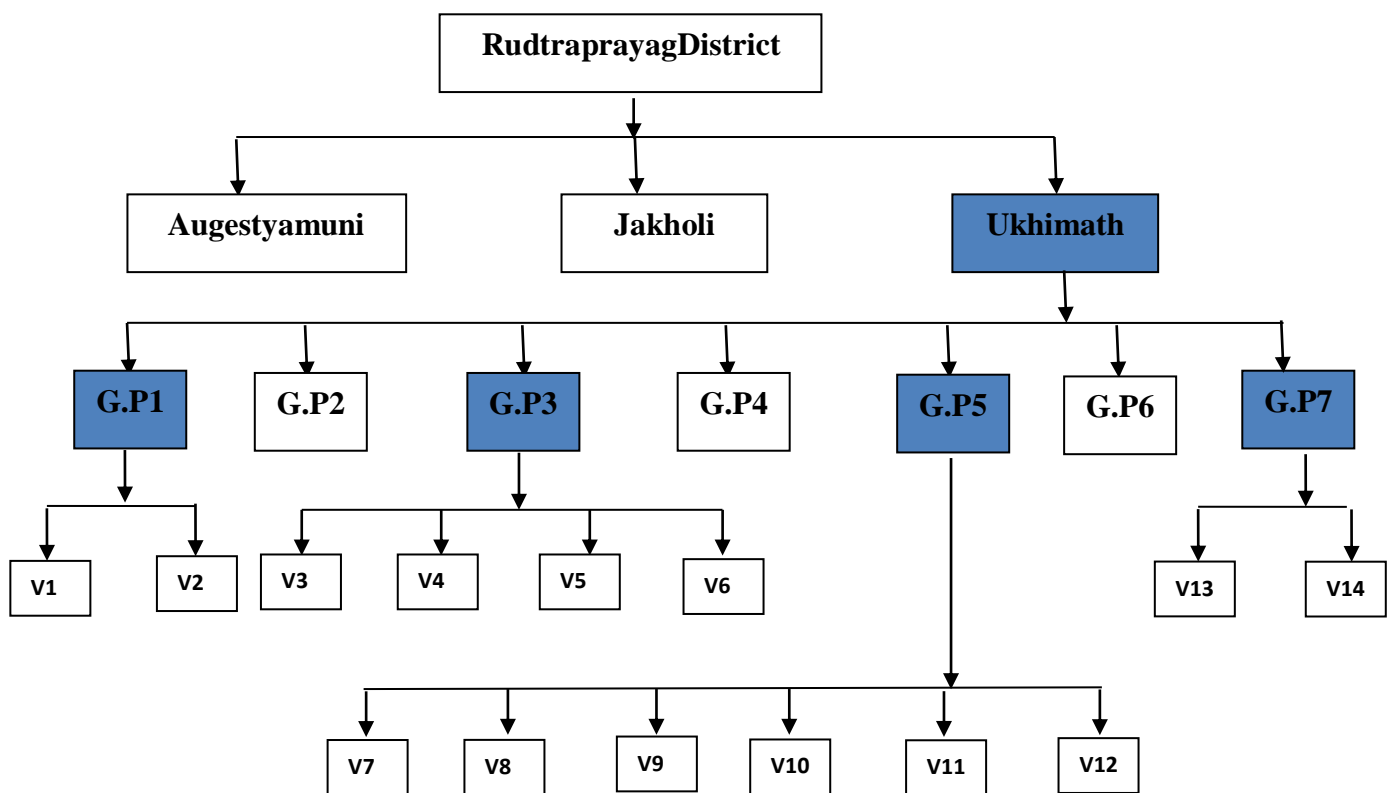
The multistage systemic sampling was used to select the area; the process is depicted as follows;

At stage I: 01 Block (Ukhimath) was sampled from 03 blocks

At stage II: 04 Grampanchayats were sampled from a total of 07 Grampanchyats of the selected Block with a SI of 2 (30%)

At stage III: All the 14 Villages were selected from Sampled 04 Grampanchyats.

Inclusive Criteria

Disaster affected victims who were

1. "Head of the Family".

2. "Next to head in the family".

3. "Any individual directly injured in the disaster or in the family".

4. "Non Alcoholic individuals".

5. "Age > 14 years". (Mahalingam V & Roy D, 2017)

Sample

The samples were the "Head and Next to Head" members "of all the households". The total calculated houses were 1129 and considering 02 per family, the sample size calculated was "2258 i.e. 02×1129". 'Assuming 50% of the selected household's i.e. 564 households" had "at least one injured person"; total sample was calculated to be 2822. (Mahalingam V & Roy D, 2017)

Base Line

The baseline data was collected from 2667 disaster victims at the time of data collection; the exact numbers of inhabitants in the selected region was less than the estimated numbers by the investigator.

End Line

The end line data was collected from 1719 Disaster victims out of 2667 as 948 respondent victims were either unavailable or had withdrawn or migrated to some other areas.

Study Tools/ Instruments

1. PTSD Checklist – Civilian Version (PCL-S) was used to find the magnitude/ prevalence of PTSD among Disaster victims.

Language validity of the tool

"The PTSD scales were translated into the local language (Hindi) by bi-lingual experts with a translation and re-translation method". "The discrepancies were discussed and sorted through consensus". "These were additionally face-validated by bi-lingual psychiatrists". (Mahalingam V & Roy D, 2017)

2. WHOQOL- BREF was used to measure the Health related QOL.

3. Structured, pre-tested instrument to elicit Socio- Demographic and other variables.

An instrument to elicit socio demographic data was developed based on literature review which was used to get details like "Age", "Gender of the participant", "Educational Status", "Occupation", "Family monthly income", "marital status", "Kind of disaster exposed", "Frequency of exposure", "Duration of exposure and type of loss". (Mahalingam V & Roy D, 2017)

SWOT Analysis

SWOT analysis was done under two main categories

1. **Mitigation**
2. **Preparedness**

Mitigation:

Mitigation involved 8 subheadings with sub statements, which included soil conservation, new crop pattern, human settlements, self-constructed houses, roads, warning systems, organizing counter disaster strategy and vulnerability.

Preparedness

Preparedness included 10 sub-statements related to biological needs of disaster victims at the time of emergency which included communication, food, health, water supplies, sanitation, shelter, child care, logistics management, public education and rescue teams.

Data Collection

Study subjects were administered the chosen instruments by household survey to elicit the information related to PTSD, Health related QOL and Socio-Demographic and related data. Data collection was started at six (6th) month post - disaster for baseline observation and at eighteenth (18th) month of post- disaster to assess variation, if any of symptoms of PTSD & indices of H-QOL.

Research Assistants

A total of fifteen (15) ASHA workers were selected who were already staying in the village with disaster victims. For each village, one ASHA worker was assigned to collect the data. These selected ASHA workers formally were formally imparted training on trained in a different sessions. "They were trained in the study process and materials, on how to approach and discuss the study with the participants and in supporting them in the process of going through the questionnaires and explaining the questions when needed by the participants". "Some of the participants, especially those who were elderly or had no formal education, needed help in writing their responses". "Research assistants remained available throughout the data collection process; they provided the study questionnaires to the participants and collected them following completion. 1500 INR were paid for each ASHA worker".
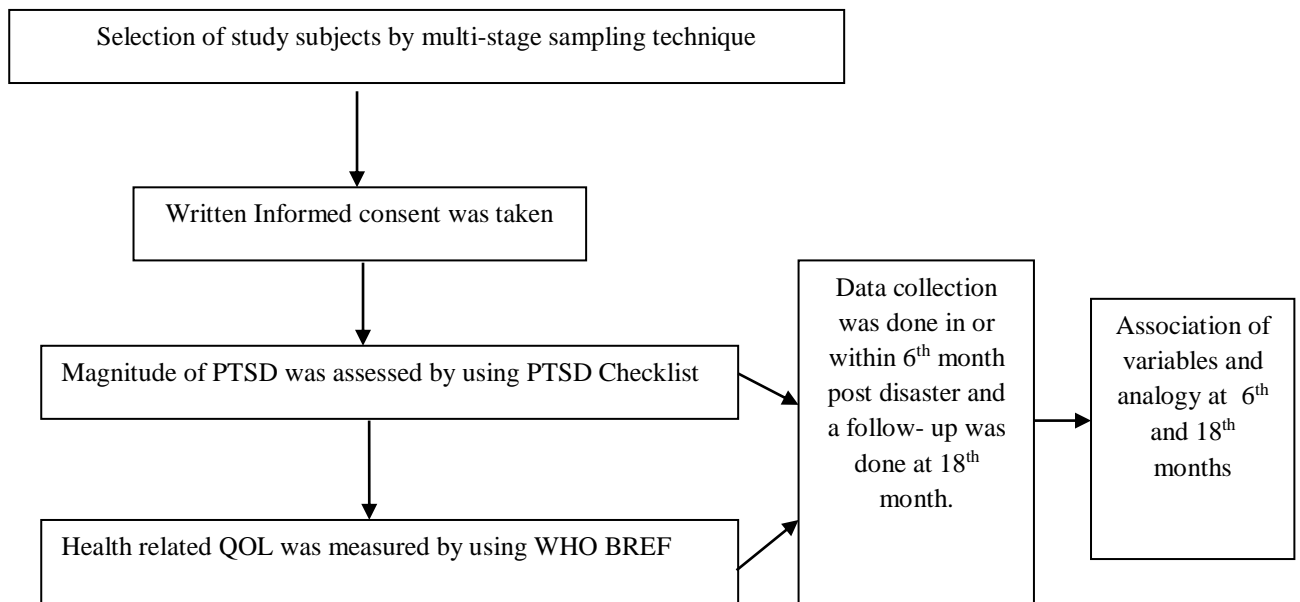
Focus Group Discussions (FGDs) and In Depth Interview's (IDI's)

The qualitative component of the study was based on FGDs and IDIs. Participants of 7 FGDs and 9 IDIs from 14 villages (i.e.Trijugi Narayan, Kalimath, Badasu, Jal Talla, Jal Malla, Kotma, Nakot, Banayadi, Chandrapuri, Gangapur, Lamgondi, Devlibranigram, Nyalsu and Chaumasi) of Ukhimath block of district Rudraprayag were recruited by convenient sampling. Representatives of PRI, teachers, priests, social workers, NGO representatives, government officials, ANMs, AWWs, ASHAs and significant others constituted the respondents.

The FGDs were moderated by skilled moderator. Interpersonal relationship was maintained by the Rapporteur among the participants. All responses of members

were recorded by Recorder and members comprised of 8-16 participants. Duration of discussion was between 60 -90 mins.

Study Protocol

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│     Selection of study subjects by multi-stage sampling      │
│                          technique                           │
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        ┌──────────────────────────────────────┐
        │   Written Informed consent was taken  │
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Magnitude of PTSD was assessed by using PTSD Checklist	Data collection was done in or within 6th month post disaster and a follow- up was done at 18th month.
Health related QOL was measured by using WHO BREF	Association of variables and analogy at 6th and 18th months

Pilot testing

A pilot study was conducted in Guptakashi village, Rudraprayag District to assess the feasibility and practability of the study and to decide the statistical analysis for the researcher. The subjects for pilot study meet the same criteria as the sample for final study. Seventy six disaster victims were interviewed about their PTSD symptoms and H-QOL in within three month of disaster occurrence. The PTSD and H-QOL were analyzed by using descriptive and inferential statistics. The study was found to be feasible.

Ethical Considerations

The purpose of the study was explained and written informed consent was obtained from the study participants.

Analysis

Collected data was analyzed using SPSS version 19. Results obtained were interpreted by using descriptive methods/statistics. Associations among variables were ascertained by application of either parametric or non-parametric tests, depending on data variables at a significance level of 0.05. Content analysis/ Nominal Impression from FGDs and IDIs were done from transcripts/records.