

A PSYCHO-SOCIAL STUDY ON TSUNAMI AFFECTED CHILDREN

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in partial fulfillment of the requirement
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By

RATHEESHKUMAR K. S.

Candidate Code: 04 115 008



DEPARTMENT OF SOCIAL WORK

LOYOLA COLLEGE OF SOCIAL SCIENCES

Sreekariyam P. O. Thiruvananthapuram – 695 017

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**A PSYCHO-SOCIAL STUDY ON TSUNAMI
AFFECTED CHILDREN**

Dedicated to

The child survivors of 2004 Tsunami

CERTIFICATE

This is to certify that, this dissertation titled “**A psycho-social Study on Tsunami Affected Children**” is a record of genuine work done by **Mr. Ratheeshkumar K. S.**, IV Semester Student of Master of Social Work (Medical and Psychiatric Social Work) course of this college, under my supervision and guidance and it is hereby approved for submission.

Mrs. Shakila K. P.
Faculty Supervisor
Department of Social Work,
Loyola College of Social Sciences,
Thiruvananthapuram.

Recommended for forwarding
To the University

Forwarded to the
University of Kerala

Mr. T. S. Thomas
Head,
Department of Social Work
Loyola College of Social Sciences,
Thiruvananthapuram.

Dr. M. K. George SJ.
Principal
Loyola College of Social Sciences,
Thiruvananthapuram.

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CHAPTER I
INTRODUCTION

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INTRODUCTION

Synopsis

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“It wasn’t just a wave. It was a living, fighting and malevolent force. It was out to kill”

1.1 INTRODUCTION

We live in a world where there are sources of potential harm or situations with potential to cause loss around us. We could be living close to a coastal line that is prone to cyclones, Tsunamis, or the mountainous regions vulnerable to earthquake. On the other hand, we may be living close to an industry, which could be dangerous, or there may be communal tension prevailing in the area we live in. These life-threatening events may cause lots of physical, psychological, economical and social impact on society.

“Be an act of God” or “an act of man” a wide spectrum of disasters play havoc in the present world. On 26th December 2004, the world faced one of the worst Tsunamis that crushed the life of mankind in 12 countries around the globe.

India, especially the coastal areas of south India and Andaman Nicobar Islands were to face the cure bits of the giant waves. Tsunami, the killer wave came in fraction of seconds lasting for few minutes taking away with it the lives, livelihoods destroying the fabric of life leaving behind a trail of destruction. The states of Tamilnadu, Kerala, Andra Pradesh, and the Union Territories of Pondicherry, Andaman and Nicobar Islands were the worst affected. The official estimates issued by the Ministry of Home Affairs say that the death toll due to Tsunami has

crossed 10,000. According to the latest report released by the Home Ministry, Tamilnadu accounted for the largest number of human casualty where 7,923 people lost their lives. The total loss accounting in Tamilnadu for the loss of houses, livelihood and other infrastructure estimated were Rs.47 billion, Rs.13 billion in Kerala, and Rs.5 billion in Pondichery and Rs.3.4 billion in Andra Pradesh.

1.2 STATEMENT OF THE PROBLEM

India is vulnerable to different kinds of disaster. Natural disasters are quite frequent in different parts of the country be it earthquake, Tsunami, cyclone, flood, drought or landslides. These disasters are quite devastating and life threatening for the people affected by these traumatic situations.

Tsunami is one of the worst disasters that India faced in the post independence period. The killer waves snatched away the lives of thousands in India all over the southern hemisphere. The count rose up to 2.5 million with many other countries in south East Asia. India is one of the worst affected countries of the Indian Ocean Tsunami of 26th December 2004. The states of Tamil Nadu, Andra Pradesh, Kerala and the Union Territories of Pondicherry, Andaman and Nicobar Islands were severely affected.

Tsunami has imposed a lot of hurdles in the life of the survivors. Children are the worst victims of this disaster as they lost their natural nurturing environment. The effect on the children has greater significance as their normal development is crushed by the tidal surger. In addition a whole generation of children will grow up with multiple difficulties in family and society. The relationships are severely

hampered as the nurturing environment in the family, school and peer group are disrupted.

So this study tries to find out the psychological and social impact of Tsunami on survived children of Azheekal, Sathikulangara and Arattupuzha villages of Kollam district in Kerala.

1.3 RELEVANCE AND SCOPE

Tsunami and its disruption is a new devastating event in Kerala. We have only learned the theoretical framework of Tsunami from textbooks. But research in psychosocial impact of Tsunami on survived children is a new arena. It is important to study the psychosocial impact of Tsunami on affected children because children are considered as vulnerable to any disaster. Only by knowing the psychosocial impact of Tsunami, they can overcome the negative effects on their life.

1.4 REVIEW OF LITERATURE

1.4.1 Introduction to Disasters

Epidemiological studies show that disaster is not a rare event. Between 1967 and 1991, disasters around the world killed 7 million people and affected 3 billion (**Cater, Revel, SAPI & Walker, 1993**). During this period, an average 117 million people living in developing countries were affected by disasters. (Each year, as compared to about 700,000 in developed countries a striking ratio of 166:1). In recognition of the human cost of disasters, the **United Nations General Assembly** designated the 1990's as the decade of natural disaster reduction (**World Health Organisation, 1988**).

1.4.2 Defining disaster

A disaster is a very complex, multi-dimensional phenomenon. There is however, no consensus on a scientific definition of the term. There are in fact more than 40 different definitions of disaster in the literature (**Korver, 1987**). Common to most definitions and those of medicine, psychology and sociology, is that they stress that a disaster is a severe destruction, which greatly exceeds the coping capacity of the affected community. Thus, the coping capacity and the psychosocial resources of a community are essential in defining when a destructive event is to be seen as a disaster (**Weisæth, 1995**). The **WHO** defines “a disaster as any occurrence that causes damage, ecological disruption, loss of human life, or deterioration of health and health services on a scale sufficient to warrant an extra ordinary response from outside the affected community or area”

Current interpretations of disasters can be summarized in terms of:

- Death rates
- Number of people injured or affected
- Destruction / dislocation from home, family, neighbourhood or community
- Effects of disaster on the community – economic and social
- Whether the community is destroyed or irreversibly damaged (**Raphael, 1993**)

1.4.3 Classification of disasters

According to (Figley, et al) disasters can be classified as:-

Disaster classification

NATURAL		HUMAN-MADE
EARTH	Avalanches Earthquakes Erosions Eruptions Toxic mineral deposits	Ecological irresponsibility Road and train accidents Ecological neglect Outer space debris fallout Radioactive pollution Toxic waste disposal
AIR	Blizzards Cyclones Dust storms Hurricanes Meteorite / planetary activity Thermal shifts Tornadoes	Aircraft accidents Hijackings Spacecraft accidents Acid rain Radioactive cloud and soot Urban smog
FIRE	Lightning Bushfires	Fire-setting
WATER	Drought Floods Storms Tsunamis	Maritime accidents

1.4.3.1 Natural Disasters

Natural disasters include flood, tidal wave, storm, cyclone, hurricane, tornado, Tsunami, earthquake, volcanic eruption, and landslide, avalanche, drought, and forest and bush fires. Traditionally

these disasters are seen as unavoidable. Although early warning systems are developed to various degrees, the impact can be extremely powerful and may cause substantial destruction, social disruption and many secondary stressors, such as loss of both home and income (**Weisæth, 1995**).

1.4.3.2 Human-Made Disasters

Human-made disasters are caused by human failures or accidents, or are due to human malevolence, violence or war. They may include fire in large buildings and cities, collapse of man-made structures (bridges, mines, dams, buildings, roads), transport system accidents (ship, railway, airplane, motor transport), technological disasters (explosions, toxic, chemical, nuclear), and specific acts of human malevolence (mass shootings, bombings).

Natural versus human-made disaster responses

Studies show that while there is no singular pattern of psychological consequences to disasters, typically the very early responses following disaster impact will be similar for both natural and human-made disasters (**Burkle, 1996**).

Studies of natural disasters tend to show decreases in all types of symptoms over the first two years (**North, Smith & Spitznagel, 1997**). For example, **Stein glass and Gerrity (1990)** examined 39 tornado survivors and 76 flood survivors at 4 and 16 months after the disasters. Rates of active PTSD ascertained by structured interview in the flood sample dropped from 15% at baseline to 5% at follow-up

Examples from human-made disaster studies

Although human-made disasters also show decreases in symptoms, these decreases seem to take much longer to occur and levels may never return to ‘normal’ (**Green & Lindy, 1994**).

The longest follow-up study of disaster was conducted after the 1972 Buffalo Creek Dam collapse, which caused a devastating flood. **Grace et al (1993)** conducted a 14-year follow-up of the survivors, which included 121 (32%) of the original sample participating in the study. They found that while symptoms and diagnoses had decreased significantly over time, many individuals were still affected; for example, 28% met criteria for PTSD (**Grace et al, 1993**). **Davidson, Fleming & Baum (1986)** showed mental and physical health effects of exposure to the Three Mile Island nuclear leak for up to 5 years, and **Holen (1993)** showed the impact of an oil rig collapse in the North Sea, which killed many co-workers of the survivors, on medical and psychiatric visits for 8 years, the period of the study.

Who are affected by disasters

A way of classifying those affected by disaster has been proposed by **Taylor & Frazer (1981)**. This has been summarised below:

Primary victims: Those in the front line who have experienced maximum exposure to the catastrophic event.

Secondary victims: Grieving relatives and friends of the primary victims.

Third-level victims: Rescue and recovery personnel who might ‘need help to maintain their functional efficiency during

any operation and to cope with traumatic psychological effects afterwards?.

Fourth-level victims: The community involved in the disaster, including those who converge, who altruistically offer help, who share the grief and loss, or who are in some way responsible.

Fifth-level victims: People who even though not directly involved with the disaster, may still experience states of distress or disturbance.

Sixth-level victims: Those who, but for chance, would have been primary victims themselves, who persuaded others to the course that made them victims, or who are in some way indirectly or vicariously involved.

1.4.4 Phases of disaster

According to (**Raphael, 1993**) phases of disaster are: -

- Preparation and Planning
- Threat and warning
- Impact
- Immediate post-disaster period
- Recovery phase

1.4.4.1 Preparation and planning

Disaster plans embody the collective knowledge and risk assessment for any particular region. This reflects an attitude of risk

appraisal and management that can decrease the possibility of exposure in the event of a disaster. Studies have examined the effect of this preparation on outcome and have shown that training is a predictor of post-disaster adjustment (McFarlane, 1995).

1.4.4.2 Threat and warning

Threat and warning refer to the time before a disaster when there may be either a general recognition that such a disaster could occur (threat) or a specific warning that a disaster is approaching (warning). (Raphael, 1993).

- Naturally people are anxious when a disaster threatens, especially if they have had no previous experience with one. It is true to say that under-response, i.e. inadequate anxiety and failure to protect the self, is more often a problem than over-response.
- Common sources of anxiety include the threat to one's own life and the safety and well being of others, such as partners and children for example. Wherever possible it is important to keep families together, especially children with parents, or to identify where they may meet after the impact are over.
- Some disasters have little or no warning. The impact is virtually immediate. Those affected may not realise what has happened, and the shock and confusion may be greater in such circumstances.

1.4.4.3 Impact

The impact phase of disasters is extremely variable according to the type of event. There is also great variability within events. One house can be destroyed while the one next door is left unscathed. There is a

need to compare the different types of disaster and identify the differing role of the components of threat, exposure, loss and dislocation in the patterns of adjustment (**McFarlane, 1995**).

Damage and destruction of homes and community are likely in any major disaster affecting areas of human habitation, and there may also be severe threat to human life. People's actions are usually geared to protection of the self and others, especially children, family members and those who are in any way weak and helpless. Several important issues arise with respect to impact (**Raphael, 1993**):

- People often experience the 'illusion of centrality', especially if they are isolated from others. They may feel as though the disaster is happening just to them and may not realize that others have also been affected.
- Altruism is frequent and people often place their own lives at risk to help or save others, sometimes-even people who are strangers to them.
- The shock of impact especially if very sudden and unexpected may temporarily paralyse the individual's response. It may also add feelings of helplessness and powerlessness, and the individual may need to come to terms with these after it has passed.
- Some people respond in a way that is disorganized, stunned and may not be able to respond appropriately to protect themselves. Such disorganized or alternatively apathetic behaviour may be transient or may extend into the post-disaster period, so that people are found wandering helpless in the devastation afterwards. Other people may

be slightly disorganized, or lose a sense of time, but most will act purposely and appropriately.

These reactions may reflect cognitive distortions in responses to the severe disaster stressors and may for some indicate a level of dissociation.

1.4.4.4 Immediate post-disaster period: recoil and rescue

This is the phase where there is recoil from the impact and the initial rescue activities commence. Initial mental health effects may appear e.g. people show confusion, are stunned or demonstrate high anxiety levels. During this phase there is also an attempt to build up a picture of what has occurred and to re-establish contact with family and community. The effectiveness of the provision of basic services such as shelter, food and water by a range of authorities is another factor that can determine the stressfulness of a disaster. These activities are obviously essential for survival but also have a powerful symbolic value in that they are critical to re-establishing the individual's sense of safety with the containment of threat. This is a period when many survivors will have contact with a range of disaster rescue workers and authorities. These encounters can play an important role in containing the distress of those affected by disaster and should be documented (**McFarlane, 1995**).

According to **Raphael, 1993**

- This phase is characterised by the arrival or convergence of a large number of people external to the community who enter the disaster area for a number of reasons, both official and unofficial. There may be the wish to help, concern for those affected or anxiety for family

members who may be at the site. As well there is the natural curiosity about death and destruction. While people converging intend to be helpful, they may create further problems, for instance, they may congest the site; disrupt communication; or develop problems themselves; or they may respond in an overly dramatic way, exaggerating problems or become angry that their help is not needed. Managing or preventing this convergence is important in overall response at this time.

- Emotional reactions to the stressors of the disaster impact and aftermath may now start to appear, although these will be variable and depend on the individual's perceptions and experience of the different stressor elements noted earlier. Necessary activities of the rescue phase may mean these reactions are delayed, appearing more, as recovery processes get under way. Reactions may include, numbness, denial or shock; traumatic stress reactions such as flashbacks and nightmares; grief reactions to loss; anger, despair, sadness and hopelessness. Conversely, relief and survival may lead to feelings of elation, which may be difficult to accept in the face of the destruction the disaster has wrought.
- Active roles are very important for those affected during the disaster, as playing a part in rescue and later recovery may help to undo the feelings of powerlessness and helplessness that may have occurred during impact.

1.4.4.5 Recovery phase

The recovery phase is the prolonged period of return to community and individual adjustment or equilibrium. It commences as

rescue is completed and individuals and communities face the task of bringing their lives and activities back to normal (**Raphael, 1993**). Active involvement in and ownership of the recovery process is essential for members of the affected community, both as individuals and as a group. When others take over, control funds, or seem to demand ongoing helplessness and gratitude, it is likely that disorganization and helplessness will predominate – continuing into a ‘second disaster’.

Disaster stressors

Stressors are defined as events or conditions that elicit physical or psychosocial reactions in a particular individual under specific conditions (**Cohen, 1998**).

Disasters usually include multiple stressors that can have differential effects on survivors (**Ursano et al, 1996**). Examples include threat to life, exposure to death and the dead, bereavement, loss of property, stigmatisation, injury, fatigue, physiological disruption (sleep, food, and water deprivation), dislocation, separation, loss of community, work etc (**Ignacio & Perlas, 1994**).

- Encounter with death and destruction (either the personal threat to life of massive shocking mutilating and gruesome deaths of others), is likely to be associated with posttraumatic stress reactions.
 - The higher one’s perceived risk of death or injury, the more likely one is to suffer an adverse psychological response.
 - Exposure to the dead or mutilated, especially the deaths of children, increases the risk of adverse psychological outcomes in

the general population, as well in trained rescue personnel and hospital workers, although these professional groups may be somewhat protected through training and preparation.

- Loss of loved ones
 - The death of a family member or friend is a powerful stressor that gives rise to bereavement issues.. The bereaved individual may experience a combination of traumatic stress and bereavement reactions.
- Other personal losses (e.g. loss of personal and valued items or loss of related items such as home, community, social network and work).
- Dislocation and relocation following evacuation and loss of community, home or family.
 - Individuals' responses to a disaster are also affected by the degree to which the disaster disrupts their community. The community serves as the person's physical and emotional support system. The larger the scale of the disaster, the greater the potential disruption to the community (**Ursano et al, 1995**).
- Physical harm or injury (e.g. crush injuries, burns, illnesses in the aftermath of disaster).
- Receipt of intentional harm or injury
 - As evidenced in the Oklahoma City bombing, perpetrating deliberate injury or death is seen as especially heinous and provokes strong emotions.

- Causing death or severe harm to another
 - Technological disasters (e.g. plane crash, Chernobyl) are often caused by human error. The effects of natural disasters may be worsened by people as well
 - Two key terms typically used to describe this type of harm are omission, which refers to negligence on the part of those causing harm; and commission, which refers to malevolence and violence.
- Witnessing or learning of violence to a loved one.
 - Observing or hearing of violence to a loved one can cause traumatic stress reactions..
- 'Responsibility' stressors
 - This is where the person or persons may feel that their actions or inactions contributed to the disaster. For instance, as a leader who made particular decisions or whose function was inadequate.

1.4.5 Psychosocial Reactions of disasters

In recent years disaster research has seen dramatic increases in the study of psychological and social effects of disaster. In general, this developing literature suggests that mild to moderate stress reactions in the emergency and acute phases of disaster are highly prevalent, and that the majority of people recover fully within six to sixteen months (**Baum & Fleming, 1993; Green & Lindy, 1994; Steinglass & Gerrity, 1990**).

After a disaster most survivors will show some signs of emotional distress as an immediate or acute-phase reaction. However,

for the great majority of survivors, reactions will be transient, meaning a normal response to an abnormal event, and will be managed through people's use of existing coping strategies, support networks and material resources (**Burkle, 1996; Young et al, 1998**).

Mild to moderate stress reactions in the emergency and early post-impact phases of disaster are highly prevalent because survivors (and their families, community members and rescue workers) accurately recognise the grave danger in disaster (**Young et al, 1998**). Although stress reactions may seem 'extreme', and cause distress, they generally do not become chronic problems. Most people recover fully from even moderate stress reactions within 6 to 16 months (**Baum and Fleming, 1993; Green et al, 1994; La Greca et al, 1996; Steinglass and Gerrity, 1990**).

Anger

Anger is a very common response after a traumatic experience. Anger responses are particularly prevalent in victims of violent crime. Research indicates that anger responses to trauma memories will not benefit markedly from exposure because these individuals do not experience elevated fear relative to their anger.

Bereavement/grief

Grief is a very common condition after a traumatic event when a loss has occurred (**Raphael & Martinek, 1997**). Moreover, posttraumatic stress and grief interact to compound the clinical presentation (**Goenjian et al, 1995**). The use of exposure in the acute trauma phase should be exercised cautiously, if at all, with people who present with grief issues. Acute grief reactions may also be characterised

by intrusive symptoms, numbing, and a degree of avoidance as described above, but these phenomena differ from those of traumatic stress reactions. The bereavement process requires time, however, and it may not be appropriate to provide the acutely grieving client with exposure when she or he is coming to terms with loss. Recognising the need for people to proceed through the grieving process often involves not overburdening clients with exposure in the acute phase.

Catastrophic belief

Repeated exposure may not benefit clients who interpret their memories in a catastrophic or overly negative way. Issues of guilt, responsibility, and blame may be particularly prevalent in these cases.

Ambivalence / low motivation

Clients may not participate in exposure because of poor motivation to cooperate in this approach. They may require the rationale for exposure to be revisited and the client's motivation for treatment to be re-evaluated. **(Bryant & Harvey, 2000).**

The acutely traumatised client presents with one of the following problems:

- Extreme anxiety
- Panic attacks
- Marked dissociation
- Borderline personality disorder
- Psychotic illness

- Anger as a primary trauma response
- Unresolved prior traumas (e.g. refugees)
- Severe depression or suicide risk
- Complex co morbidity
- Substance abuse
- Marked ongoing stressors (e.g. medical procedures)
- Acute bereavement

In cases where exposure is contraindicated, other techniques, including anxiety management, cognitive therapy or pharmacological intervention may be effective (**Bryant & Harvey, 2000**).

Responses of different sections of the society

Responses of individual

The psychosocial stress of disaster will often result in specific responses in survivors and those affected by the event. These stress reactions seem to follow common patterns that are defined by complex feelings, thoughts and behaviours.

The main emotional effects are; Shock, Anger, Anxiety, fear, Despair, Emotional numbing, Terror, Guilt (about living when others have died), Grief or sadness, Irritability, Helplessness and loss of control, Feelings of insignificance, and Loss of derived pleasure from regular activities (**Young et al, 1998**).

The main physical effects due to disasters are; fatigue, insomnia hyper arousal, sleep disturbance, somatic complaints, headaches, decreased appetite, decreased or increased libido, and startle response **(Young et al, 1998)**.

The main cognitive effects due to disasters are; impaired concentration, impaired decision-making ability, memory impairment, disbelief, confusion, distortion of sense of time, decreased self-esteem, self blame, intrusive thoughts and memories, worry and dissociation **(Young et al, 1998)**.

The main interpersonal effects of disasters are; alienation, social withdrawal, increased conflicts within relationships, school impairment and increased facilitative behaviour **(Young et al, 1998)**.

Positive responses in the aftermath of disaster include, resilience and coping, altruism, e.g. helping save or comfort others, relief and elation at surviving disaster, sense of excitement and greater self-worth, changes in the way they view the future, and feelings of ‘learning about ones strengths’ and ‘growing’ from the experience.

Responses of Families

Families have particular significance in disaster. The stress of the threat or impact can intensify the bonds between members and often the family will respond as one unit – a system.

At the time of threat, families attempt to come together and confront the disaster as a unit with mutual protection and planned course of action. In the immediate post-disaster phase, families as units will be primarily concerned with the rescue and safety of members, but will

then help friends and even strangers Protection of the youngest and most vulnerable members seems foremost. For the longer-term aspects of recovery, family units tend to turn to one another and extended kin for shelter and support, aid, and other resources. Formal organizations such as the Red Cross, the Salvation Army and religious groups may also provide support (**Raphael, 1986**).

Factors influencing the recovery of families include bereavement, material losses and extended stresses (**Bolin, 1982; cited in Raphael, 1986**). In Bolin's research, larger families were more vulnerable to stress aspects of the experience, but the older and better educated seemed less vulnerable. Support networks helped mitigate these stresses. Higher income also seemed to make things easier for affected families, as has been noted in other studies and is hardly surprising as such families usually have many more resources to call upon in the face of crisis.

The distress of parents is likely to be a source of upset for children, as is the disturbance of children for parents (**Raphael, 1986**). Children's capacity to deal with disaster is affected by the ability of parents/carers to cope with their own distress and ability to support the child. Marital relationships may be strained and intimacy threatened because of a need to avoid the topic of the disaster or as a result of numbing and distancing reactions. Self-medication, alcohol, and acting out are likely to be further detrimental to family functioning. Stresses of dislocation and relocation are also likely to further affect the recovery of the individual members and the family as a unit (**Raphael, 1986**).

Families may successfully overcome a disaster and are strengthened by networks of support; post-disaster organisation and leadership from within may contribute to such outcomes. **(Raphael, 1993).**

Indigenous people

Indigenous peoples may be adversely affected by disasters as may other groups. Because their communities are often suffering with marginal status, poor physical health and housing, problems of cultural loss and grief, disasters may bring immense further distress and trauma. They may also be dislocated from traditional places of importance to them. As well they are often scapegoat in the post-disaster period, reflecting ongoing community discrimination and too often racism. It is critical that where Aboriginal communities are affected by disaster that their leaders are involved in the development of culturally appropriate recovery and support processes **(Raphael, 1993).**

Responses of Children and Adolescents

When children and their families are involved in natural or human-made disasters they may be exposed to diverse stressors including separation, loss, dislocation and trauma. Even within one event, children's experiences may be different and these may shape their reactions

Following a sniper attack and siege at an elementary school, **Pynoos et al (1987a and 1987b)** found that posttraumatic stress and grief occurred both separately and concurrently. In that primary-school sample, exposure to life threat was most strongly correlated with posttraumatic stress; close relationships with a deceased student were

correlated with grief and with subsequent onset of a depressive episode or adjustment reaction; and worry about a sibling or other significant figure or sudden separation from them were associated with persistent separation anxiety.

High levels of depression were reported by children 18 months following the Armenian earthquake (**Goenjian et al, 1995**). In this incident there was loss and also extreme life threat. A focus solely on posttraumatic stress disorder may therefore overlook other symptoms of distress, such as other anxiety disorders, depression, grief reactions and disruptive behaviour

Prevalence of symptoms following disaster type has varied widely. For example, hurricanes (e.g. 5% - **Shannon et al, 1994**); bushfires (e.g. 13% - **McFarlane, 1987a**); shipping accidents (e.g. 40% - **Yule, 1992**); earthquakes (e.g. 95% near the epicentre – **Goenjian et al, 1995**); and human malevolence (e.g. 90% - **Nader et al, 1990**).

Event-related factors such as the level of exposure and the type of experience, including loss and perceived threat, and study factors such as measures used and the timing of the sample have also been reported with great variability (**American Academy of Child and Adolescent Psychiatry, 1998**).

Terr (1979, 1987) studied child kidnap victims; **Newman (1976)** and **Green et al (1991)** described symptoms in children who had experienced the 1972 Buffalo Creek dam collapse; and **Pynoos et al (1987a, 1987b)** described symptoms in children exposed to a schoolyard gun sniper.

Bradburn (1991) demonstrated a post-trauma syndrome in children experiencing earthquake, and **Pfefferbaum et al (1999)** found posttraumatic stress symptoms in children affected by the Oklahoma bombing with significant rates in bereaved children.

McDermott and Palmer (1999) have suggested that reliance on parental reports of children's distress may not be valid as parents typically under-report internalising symptoms compared with child and adolescent self-report in mental health surveys. Those authors suggested that the disaster context might compound this phenomenon. Children may try to hide their distress so as not to upset parents and parents who are themselves dissociated or otherwise numbed may not be able to identify their children's distress.

Children react to disaster with a variety of psychological, emotional, behavioural and physiological responses. The effects will vary according to the developmental stage of the child, features of the events and responses of parents or other carers and the capacity of the social environment to support the child (**Pynoos, 1995**).

The response to disaster has been correlated with degree of physical and emotional proximity (including bereavement). Threat to life, parental adjustment and family atmosphere contributed to prediction of outcome in the Buffalo Creek dam collapse (**Green et al, 1993**) and children may be adversely affected by media coverage of disaster. (**Nader et al, 1993; Najarian et al, 1996; Shaw et al, 1995**). Displacement, relocation, disruptions to attachment relationships and economic adversity following disaster may also contribute to symptom development (**Laor et al, 1996; Najarian et al, 1996**). Community violence itself has been found to be associated with PTSD symptoms

(Berman et al, 1996). McDermott and Palmer (1999) found that emotional distress six months after the 1994 Sutherland bushfires was associated with trait anxiety, evacuation experience, perceived threat to parents and depressive symptoms. The perception that a parent may have died was more strongly associated with emotional distress at this stage than perceived threat to the child's own life.

Trauma in early infancy may be significant in sensitising the child to effects of any subsequent traumatic events and associated with ongoing maladaptive neuropsychological responses to stress **(Perry et al, 1994, 1995). De Bellis (1994, 1999)** and colleagues have demonstrated changes in the hypothalamic-pituitary-adrenal axis and catecholamine metabolism in sexually abused girls and reduced brain development on MRI scan in maltreated children with a diagnosis of PTSD. There are several existing hypotheses about the mechanisms involved **(Perry, 1996)**. Although the functional implications are not clear, available evidence suggests that maltreatment in infancy and childhood may adversely affect brain development.

Terr (1991) distinguishes between Type I and Type II trauma. In her model, type I refers to sudden, external negative events that may be associated with features such as repetition of traumatic themes in play, hyper alertness and full and detailed memories of the episode. Type II traumas are ongoing, multiple stressors such as chronic physical and sexual abuse. The effects may include denial and psychic numbing, 'forgetting' segments of early life, self-hypnosis and use of dissociation as defensive mechanisms, feelings of rage, and mental changes (particularly in terms of interpersonal trust and relationships) that may disrupt ongoing personality development.

The implications for disaster response and planning are that some children who have experienced early adverse events may be more vulnerable than others to subsequent disasters and persistent disasters such as wars may have different impacts from single incidents. Some of these concepts would also be consistent with **Rutter's (1985)** work on the interactive developmental processes involved in risk and protective factors over time.

A study of 119 children of Mozambican refugees aged 6 to 12 years revealed that they had experienced a total of 362 traumatic events. In ninety-eight of the events, the children had been the victim. They had witnessed or knew of 264 events of which 103 had involved members of their families. As a result of these experiences, 49% reported nightmares, 57% fear for their own safety, 72% fear of the safety of their family and 52% disinterest in normal daily activities (**S. Fozzard, 1995**).

In a UNICEF sponsored study of eighty four former child combatants in Liberia, 100% were exposed to combat, 61% had been forced to separate from their parents, 73% had someone close to them killed, 83% had witnessed killing, 96% witnessed human brutality. 71% had themselves been a victim of violence when the children are asked about the psychological effects of their experiences, 88% continue to think about it, 83% become scared / upset when they think about it, 81% feel they relive the experience, 72% often dream about it and 90% actively try to forget the event. Fears social problems and dreams are worst according to this study (**N. Dubrow and J. Muldoon, 1995**).

The effect of violent trauma can persist throughout one's life if one doesn't deal with the trauma. Children can hold on to anger,

frustration, rage and guilt for some time not knowing exactly what to do with it or how to express it. **(R. Pynoos and K. Nadar, 1988).**

A study conducted by the National Centre for Post-Traumatic Stress Disorder (PTSD) examined 177 articles covering 80 different disasters **(Norris, Byrke, Diaz and Kaniasty, 2001)**. The study found the school age children are significantly more likely than adults to show severe impairment following a disaster (62% and 39% respect). This findings demonstrates the rising awareness concerning children's post-disaster vulnerability.

After experiencing a disaster, children have been found to demonstrate negative cognitive effects in areas such as memory, learning and school performance **(Gardner, 1971, Pynoos Nadar, 1988)** as well as an increased risk for later development of psychopathology **(Schwartz & Perry, 1994, Vander Kolk, 1989)**. One of the most important post-disaster coping tools is a social support system **(Vernberg, La Greca, Silverman & Prinstein, 1996)**.

Although individual responses to traumatic life threatening events differ from child to child depending on a number of factors, such as age, prior experience and available support system the consistency of core response is clear; heightened anxiety, generalized fear, and loss of self-esteem. Some children respond with self-blame and feelings of self blame. Still other children develop angry, hostile, behaviour patterns and act out their aggression **(J. Garbarino K., Kostelny and N. Dubrow, 1991)**.

Thus children are more vulnerable to Tsunami like any other natural disasters. The psychological and social impact of Tsunami in children is same as any other natural or man-made disaster.

Predictors of Responses

A variety of factors will influence the child's response to disaster, symptom development, duration and recovery. Overall, girls may be more symptomatic than boys (**Giaconia et al, 1995; Green et al, 1991**), but this is confounded by differential responses of adults to girls and boys, pre-existing conditions and prior exposure to trauma. Younger children may be more vulnerable to parental distress and disruptions to family relationships following trauma and several studies document an association between child and parent symptomatology (**Laor et al, 1996; McFarlane, 1987a; Sack et al, 1995; Sullivan et al, 1991**). **McFarlane (1987a)** found that separation from parents immediately after a bushfire, ongoing maternal preoccupation with the event and altered family functioning were more predictive of symptom development in children than exposure or loss. Exclusion of children from family processes in well-intentioned attempts to 'protect' them from distress may therefore be counterproductive.

1.4.6 Risk and Protective factors

Most studies in the disaster literature have attempted to determine which subgroups of individuals are most at risk for developing disaster-related symptoms, diagnoses or other outcomes. Such information suggests the processes by which these events may lead to the various outcomes, and may be useful in targeting interventions to those most in need (**Green, 1995**).

The greater the perceived life threat, and the greater the sensory exposure, i.e. the more one sees distressing sights, smells distressing odours, hear distressing sounds, or is physically injured, the more likely posttraumatic stress will manifest (**Holloway & Fullerton, 1994; Jones, 1985; Ursano & McCarroll, 1990; Young et al, 1998**). For example, the number of dead and injured and the sight and smell of dead bodies were among the most stressful aspects of the Granville, Australia rail disaster (**Raphael, 1986**). Often those exposed to death and the dead, experience an aversion to meat or a need to wash frequently. Usually these symptoms abate over several weeks or months.

Certain types of exposure place survivors at high risk for a range of post-disaster problems:

- Exposure to mass destruction or death (**Goenjian et al, 1994; Ursano, Fullerton, Kao & Bhartiya, 1995**),
- Toxic contamination (**Baum & Fleming, 1993; Di Giovanni, 1999**),
- Sudden or violent death of a loved one (**Livingston et al, 1992; Joseph, Yule & Williams, 1994**), and
- Loss of home or community (**Bland et al, 1996; Keane et al, 1994**).

Other risk factors

Gender

Studies on the relationship between gender and outcome following disaster have been mixed, although when differences are

found, more symptoms are usually reported in women and girls.. For example, PTSD, anxiety or depression, which are most commonly researched after disaster, are generally more prevalent in women in the general population (**Kessler et al, 1994**).

Prior disaster exposure and previous exposure to other traumatic events

McFarlane (1989) conducted a long-term study of psychiatric morbidity in fire fighters exposed to the Ash Wednesday bushfires in South Australia in 1983. Twenty-nine months after the bushfires, 21% of the 459 fire fighters were still experiencing recurrent imagery that interfered with their lives. Repeated exposure to disaster trauma may put first responders such as fire-fighters and police officers at a Particular increased risk of developing psychiatric morbidity (**Breslau et al, 1991; McFarlane, 1989**).

However, while increased vulnerability may be one outcome of previous exposure to traumatic events, several studies have also reported on the ‘stress inoculation’ effect of prior exposure and a strengthening of protective factors through successful mastery of previous traumatic events (**Ursano et al, 1996**).

Age

The most thorough study of age differences following disaster was conducted by **Thompson and colleagues (1993)**. These investigators studied the effects of a hurricane in the US on an adult population and found that younger adults exhibited the most distress in the absence of disaster, but middle-aged people did so in its presence. Children are at particular risk during times of disaster (**Ursano et al, 1995**). Often community leaders and teachers notice how wonderfully

quiet children are being and are thankful, given their own level of distress. However, the inhibition of children's normal activity is an indicator of their degree of stress. Sometimes children's distress may be more evident. For example, following the earthquake in Armenia in 1988, primary school children jumped out of first floor windows whenever a large truck rolled by and shook the ground (**Gordon & Wraith, 1993**).

Relationship status

Research on factors associated with the recovery environment indicate that relationship status is important in understanding recovery (**Green & Lindy, 1994**). Single parents are at higher risk for losing access to emotional support following disaster, and access to such support at a moderate level seems to mediate distress.

Post-disaster stresses

Exposure to post-disaster major life stressors such as community and personal disruptions, marital stress or divorce, job loss and financial losses (**Bland et al, 1996; Joseph et al, 1994; Koopman et al, 1994**) has also been associated with adjustment problems.

Pre-existing psychopathology

Pre-existing psychological problems have been shown to predict disaster-related distress in a number of studies (**North et al, 1999**).

Several factors present in the acute-phase recovery environment have been found to aggravate stress reactions and therefore increase survivors' risk of developing negative outcomes (**Emergency Management Australia, 1999**). These include:

- Lack of emotional and social support
- Presence of other stressors such as fatigue, cold, hunger, fear, uncertainty, loss, dislocation, and other psychologically stressful experiences
- Difficulties at the scene
- Lack of information about the nature and reasons for the event
- Lack of, or interference with, self-determination and self-management
- Treatment in an authoritarian or impersonal manner
- Lack of follow-up support in the weeks following the exposure
- Protective factors that may mitigate negative effects include:
 - Social support
 - Higher income and education
 - Successful mastery of past disasters and traumatic events
 - Limitation or reduction of exposure to any of the aggravating factors listed above

- Provision of information about expectations and availability of recovery services
- Care, concern and understanding on the part of the recovery services personnel
- Provision of regular and appropriate information concerning the emergency and reasons for action (**Emergency Management Australia, 1999**).

1.4.7 Mental Health Outcomes

Most of the initial reactions of shock, surprise, anger, helplessness and confusion that characterise feelings and behaviours will subside over time. More than 90% of adults do not experience a major mental health disorder after exposure to a disaster, and of those that do, most experience full psychological recovery in 12 to 24 months (**Freedly & Kilpatrick, 1994; Freedly, Saladin & Kilpatrick et al, 1994**). For a small number of survivors however, stress reactions will be more enduring. There is as noted above a higher likelihood of elevated stress levels after human-made disasters. They may persist long after the disaster impact, and this may lead to various forms of mental illnesses, behavioural changes or alterations in physical health (**Burkle, 1996**).

Numerous long-term community studies also support findings of elevated rates of symptoms of depression, posttraumatic stress and other anxiety disorders in exposed communities (**e.g. Bromet et al, 1982; Drew et al, 1987; Shore et al, 1989**).

1.4.8 Psychiatric Responses to Disaster

Possible Responses

- Acute stress disorder
- Posttraumatic stress disorder
- Major depression
- Generalised anxiety disorder
- Substance abuse
- Psychological factors affecting physical disease (in the injured)
- Organic disorders secondary to head injury, toxic exposure, infection and dehydration
- Adjustment disorder
- Bereavement complications
- Family violence
- Child and spouse abuse.

A few of the most commonly researched disorders will be discussed briefly using examples from the literature.

Posttraumatic stress disorder

It is important to note that PTSD is not the normal response to a threatening experience. For example, **Riggs, Rothbaum & Foa (1995)** reported that 70% of women and 50% of men who were assaulted were diagnosed with PTSD an average of 19 days post trauma. However, at 4-

months post trauma the rate of PTSD had dropped to 21% for women and zero for men.

PTSD is probably the most commonly studied diagnosis after disaster. It requires that symptoms be present for at least one month post trauma, and may have its onset of symptoms immediately, soon after the event, or it may be delayed. The clinical picture can be a dramatic one, with mental confusion, massive anxiety, and repetitive intrusive memories and dreams of the disaster event (**Burkle, 1996**). The intrusive thoughts are the most frequent symptoms, followed by exaggerated startle responses. Hyper arousal reactions with acute PTSD have been linked to the severity of stress exposure in 80% of adults; reactions appear immediately or within hours (DSM-IV, APA, 1994).

PTSD, in its fully developed form, may be co morbid with many other problems, including addictive and self-destructive behaviours, psychotic breaks, extreme self-doubt, paranoia and paranoid fears, excessive obedience, fear of intimacy, severe depression, and a pervading sense of helplessness, hopelessness and despair.

Although there has been a (**Bryant & Harvey, 2000**) great number of studies reporting PTSD after disasters, prevalence rates have been so variable that they range from 0% to 100%. This variability may be attributed to type of trauma, sample selection and use of different assessment tools; which typically range from clinical interviews to standardised assessment instruments, and self-report measures (**Bryant & Harvey, 2000**).

A study conducted by **North and colleagues (1999)** found that nearly half of their sample of 182 survivors assessed six months after the

Oklahoma City bombing, had an active post-disaster psychiatric disorder and full criteria for PTSD were met by one third of the sample (34%). Indeed, PTSD symptoms were nearly universal, especially symptoms of intrusive experience and hyper arousal

Bereavement and bereavement complications

Bereavement – the response to loss – has long been seen as one of the most stressful of life’s experiences, leading to distress and the complex effects referred to as grief. Recovery from, or adjustment to, this common experience is usual for most people, however some are at risk for pathological outcomes. In situations of traumatic or catastrophic loss the bereaved person may demonstrate both traumatic stress reaction phenomena and bereavement phenomena, with either predominating or appearing intermittently (**Raphael, 1997**).

Reactions of loss, mourning, and grieving are concepts of particular use in disaster work. Although a discussion of loss usually focuses upon death, loss that results from post-disaster experience may thus include (**Cohen, 1998**):

- Loss by death of loved one, family or friend
- Property destruction
- Sudden unemployment
- Impaired physical, social, or psychological capacities and processes

The reaction to the loss of a loved one by death is the paradigm of bereavement. The phenomena that follow have been widely described and researched (**Jacobs, 1993; Middleton et al, 1998; Parkes, 1972**). It is generally agreed that there may be an initial and usually brief period of shock, numbness and disbelief, and to a degree, denial. While this period may be more prolonged if there is the additional impact of psychological trauma (see below), it is usually brief. This initial period usually gives way to intense separation distress or anxiety. The bereaved person is highly aroused, seeking for or scanning the environment for the lost person on higher alert. There may be searching behaviours, particularly if it is not certain that the person is dead, or the body has not been identified. In a disaster setting the bereaved person may place himself or herself at further risk through agitated searching behaviours. There is also likely to be a sense of anger, protest and abandonment – anger that may be recognised as irrational by the bereaved person but nevertheless amounts to anger towards the deceased for not being there and for being amongst those who died. Anger is also directed towards those who may be seen as having caused or been associated with the death, who are alive when the deceased is not.

The complex emotions of anxiety, protest, distress, sadness and anger are usually referred to as grief. The acute distress phase usually settles in the early few weeks or months after the loss, but emotions and preoccupations may occur over the first year or years that follow.

Risk factors for complications of bereavement have been identified by a number of researchers (**Parkes & Weiss, 1983; Raphael, 1977; Raphael & Minkov, 1999; Vachon et al, 1980**). These include:

- Perceived lack of social support

- Other concurrent crises or stressors
- High levels of ambivalence in relation to the deceased
- An extremely dependent relationship
- Circumstances of death which are unexpected, untimely, sudden or shocking

Studies of traumatic bereavement have identified traumatic circumstances of the death as a risk factor for adverse mental health outcome (**Raphael, 1977; Parkes & Weiss, 1983**). **Lundin's (1984)** studies of sudden and unexpected bereavement found increased morbidity compared with those where bereavement was expected. Unexpected loss resulted in more pronounced psychiatric symptoms especially anxiety, which was more difficult to resolve. The phenomena identified at long-term follow-up included high levels of numbing and avoidance and could be interpreted as reflecting traumatic stress effects.

Depression

Depression can also be a significant problem after a disaster, especially when the individual has suffered marked losses. It is worth noting that the incidence of depression following disaster can be very high (17%-45%; **Palinkas et al, 1993**). Co morbidity of PTSD and depression is also very common (35%-68%; **Blanchard et al, 1998**), and acute depression is a strong predictor of severity of subsequent impairment (**Blanchard et al, 1998; Freedman et al, 1999**). It should also be noted that there is prospective evidence that acute depression can follow a distinct course following disaster that is independent of PTSD (**Shalev et al, 1998**).

Studies have found that those who have:

- i) High levels of intrusion and avoidance in the first week after a community disaster,
- ii) Are closest to the dead,
- iii) Have lower levels of social support, and / or
- iv) Have been community members the longest, may be at higher risk of depression. (**Fullerton et al, 1992**).

Those with pre-existing depression and vulnerability to it may be at greater risk (**e.g. Shore et al, 1986**). Shore and colleagues found that among women with prior depression or generalised anxiety, the recurrence of symptoms of depression, anxiety or posttraumatic stress after the 1980 Mt St Helen's volcanic eruption was significantly greater than among the control subjects taken from a nearby unaffected community. In addition, a history of depression and/or generalised anxiety disorder in the 18 months following the 1979 Three Mile Island nuclear accident led to subsequent higher symptom levels before the restart of the reactor in 1985 (**Dew et al, 1987**). This study also included a control group.

North and colleagues (1999) assessed a sample of survivors 6 months after the Oklahoma City Bombing and found that after PTSD, major depression was the most commonly associated disorder (22%), and most pre-existing depression recurred or persisted in the period after the bombing. They also found that 11% met criteria for anxiety disorders (eg. panic disorder, generalised anxiety disorder). Similarly, **Smith et al (1990)** found that depression was the most common post-

disaster diagnosis after the 1987 plane crash into the Ramada Hotel in Indianapolis, with more than 40% of study participants meeting diagnostic criteria.

Other psychiatric morbidity

Other disorders that may be seen post-disaster include, generalized anxiety disorder, substance abuse and adjustment disorders. These may be relatively common in the 6-12 months following a disaster and may reflect survivors' reactions to their injuries, ongoing stressors, and attributions of the cause of disaster (**Ursano et al, 1995**).

1.4.9 Tsunami

'Tsunami' is a Japanese term which means 'harbour waves'. Tsunamis are large ocean waves generated by major Earthquakes beneath the ocean floor or landslides on to the ocean. Tsunamis caused by nearby earthquakes may reach the coast with in minutes. When the waves enter shallow water, they may rise to several feet or, in rare cases, ten of feet, striking the coast with devastating force. People on the beach or in low coastal areas need to be aware that a Tsunami would arrive within minutes after a severe earthquake. The Tsunami danger period can continue for many hours after a major earthquake.

Tsunamis also may be generated by large earthquakes far away on other areas of the ocean. Waves caused by these earthquakes travel at hundreds of miles per hour, reaching the coast several hours after the earthquake (**Kumar, Aravind, 2005**).

1.4.10 Types Of Tsunamis

a. *Tele Tsunamis*

These Tsunamis are originating more than 1000 km from the affected sea. They are the major Tsunami type. Only two historical Tele Tsunamis are known to have affected Caribbean both occurred off the coast of Portugal.

b. *Land Slide Tsunamis*

Tsunamis generated by landslide are usually but not always triggered by earthquake. They can have devastating effects locally, but the effects are limited to a small area. As the source of a landslide is normally near shore the warning time is usually short (only a few minutes).

c. *Volcanic Tsunamis*

It is created by a Volcanic explosions, caldera collapse and land sliding.

d. *Tectonic Tsunamis*

These are produced when one portion of the sea floor moves vertically with respect to an adjacent portion. This usually occurs in subduction zones where oceanic plate move beneath lighter continental material.

1.4.11 History of Tsunamis From 1995

Tsunamis are not newborn phenomena. These are happening all over the world. The following table gives brief details about the Tsunamis in the world.

Date	Location	Damage and Effect
May 13, 1995	Greece	Earth-quakes caused ship to move in harbor near Geneva-Kozani. No run up reported on land.
June 15, 1995	Gulf of Corinth Greece	Tsunami had a height of 0.4 to 0.5 m at Eratini. Probably a landslide Tsunami.
Nov 22, 1995	Aqaba, Jordan	Possible Tsunami from Egypt earthquake.
Dec, 31, 1995	Western Corinthos Gulf	Heights of 1.5 to 2m at Aeghio city. Flooded cultivated areas. Road destroyed.
May 14, 1995	Flores, sea, Indonesia	Homes and fishing boats destroyed.
Jul 30, 1995	Northern Chile	1,31,000 damage
Oct 9, 1995	Jalsur, Mexico	Extensive damage in Manzanillo bay
Jan 1, 1996	Sulawesi, Indonesia	Tsunami damaged 5,045 house, 9 killed.
Feb 17, 1996	Irian jaya, Indonesia	Killed 10, destroyed 15 houses and 2 boats.

Feb 21, 1996	North coast of Peru	12 killed
July 9, 1996	Tobago, Vehezuel	Large wave observed.
April 21, 1997	Santha Cruz, Islanas	7 houses washed away.
Dec 26, 1997	White River Valley, Montserrat	Eruption generated a Tsunami that was 3m at old road bay.
Jul 17, 1998	NW coast of Papua New Guinea	2,182 killed
Aug 17, 1999	Izmit Bay, Turkey	Several coastal villages incurred damage. 150 deaths.
Nov 6, 1999	Vanuata	Basic maslelli village destroyed, 5 killed.
Jun 18, 2000	South Indian ocean	30 cm Tsunamis in the cocos islands.
Nov 16, 2000	New Ireland DNG	Tsunami damage on seashore of New Ireland.
Jun 23, 2001	Southern coast of Peru	Tsunami swept over the town of Camana, 96 killed.

1.4.12 December 26, 2004 Tsunami

On Dec, 26th 2004, at 6.28 am, a violent rupture on the sea floor along a 10,000 km fault line triggered a quake of magnitude 9 on the west coast of northern Sumatra in Indonesia. This resulted in the ocean bed rising more than 10 meters and displacing overlaying water generally a massive Tsunami traveling at speed up to 700 km / hr.

The Tsunami struck Indonesia, Thailand, Maldives, Malasia, Myanmar, Singapore, Srilanka, Bangladesh, Somalia, Kenya, Tanzania, Seychelles and the South Eastern Coast of India killing and affecting thousands of people. In India, Tamilnadu, Andamen and Nicobar islands, Pondicherry, Andra Pradesh and parts of Kerala were devastated by the Tsunami. A total of 2,260 km of coastal line besides Nicobar islands were affected. More than 2,83,100 people were killed, 14,100 are documented to be missing around 1,126,900 people were displaced by earthquake and subsequent Tsunami. In India, approximately 15,704 people lost their lives. 157, 393 dwelling units in 897 villages have been damaged. Tamil Nadu accounted for the largest number of human casualties where 7,923 people lost their lives. The total loss accounting in Tamil Nadu for the loss of houses, livelihood and other infrastructure estimated were Rs. 47 billion. In Kerala 169 lives lost and Rs. 13 billion estimated as the loses, Rs. 5 billion loses in Pondichery as Rs. 3.4 Andhra Pradesh. The Azeekal village of the Kollam district of Kerala lost 141 lives.

The tragedy of the Tsunami is the tragedy of the children lost, children who have become orphans, children who have lost one parent, children who have lost familiar environment (peers, school, neighbourhood). Out of total deaths, about 37-39% is children below the

age of 14 years. Of 1.5 million children who lost their parents in the Tsunami, a larger number is in South India.

1.4.13 Impact of the Tsunami On Children

The Tsunami that affected thousands of lives including that of children was unexpected and sudden leaving children confused, shocked and frightened. In a moment, their whole world was disrupted. Some children were orphaned, some lost one parent, some lost their siblings and some had to adjust to a displaced life as they lost their homes. Some of the children live on the camps with little or no possession and do not know when they can go back to their places and the adults around them are not in a position to provide much solace or comfort as they themselves are victims of the killer waves. The normal daily routine is disrupted and often there is no regular school, making it all the more difficult for the children to restore back to normal life.

Given below are the impacts of the Tsunami on the children. (Sekhar, et.al, 2005).

Loss

1. Loss of relationships

This can be with parents / siblings / caregivers like grand parents, other relatives, teachers, friends, neighbours or pet. Loss of relationship can be due to death of a person, displacement, and absence since the person is away in a hospital or may still be missing.

2. *Loss of physical parts or injuries*

3. *Loss of familiar environment*

Home, school, ground, trees, religious places, market area, etc. Having to move out of their surroundings especially into camps / rented accommodation with no friends or not going to school is profoundly disturbing to children.

Reactions seen in the children of school age (6-12) years

- Physical complaints – headache, stomach aches, giddiness.
- Aggressive behaviour at home or school.
- Bed Wetting
- Change in appetite
- Inability to sleep, nightmares
- Sadness and apathy
- Disobedience
- Disruptive behaviour
- Understand loss and becomes anxious
- Withdrawal – do not mix with friends
- Fear of recurrence, fear of darkness, separation from parents, imaginary fear.
- Difficulty in following routines.
- Fight with siblings, parents, friends.

- Disinterest or difficulty in school work - disturb others, worrying, remain tense, indiscipline, refusal to go to school, poor concentration.
- Feel guilty and responsible for the loss

Research studies on the impact of Tsunami on children are not available. The impact of the children in any natural disasters or man made disasters are more or less same.

1.5 RESEARCH SETTING

This study is conducted at three different Tsunami affected coastal villages including Azheekal, Arattupuzha and Sakthikulangara of Kollam district in Kerala. Azheekal is considered as the worst Tsunami affected area in Kerala. There lost 141 lives.

1.6 CHAPTERISATION

This research thesis is mainly divided into 4 chapters. The first chapter deals with introduction; statement of the problem, relevance and scope of study, literature review, research setting and chapterisation. The second chapter deals with the research methodology. The third chapter deals with the Data analysis and interpretation done according to the 3 objectives of the study, and the fourth chapter deals with the findings, suggestions and conclusion.

CHAPTER II

RESEARCH METHODOLOGY

CHAPTER II

RESEARCH METHODOLOGY

Synopsis

- 2.1 Title of the study
- 2.2 Research Design
- 2.3 General Objective
- 2.4 Specific Objectives
- 2.5 Variables
 - 2.5.1 Independent
 - 2.5.2 Dependent
- 2.6 Definition of concepts
- 2.7 Hypothesis
- 2.8 Universe of study
- 2.9 Unit of study
- 2.10 Pilot Study
- 2.11 Sampling method
- 2.12 Tools of Data Collection
- 2.13 Method of Data Collection
- 2.14 Pre-test
- 2.15 Analysis and Interpretation of data
- 2.16 Statistical techniques used

2.1 TITLE OF THE STUDY

“A Psychosocial study on Tsunami affected children”

2.2 RESEARCH DESIGN

Explorative design

2.3 GENERAL OBJECTIVE

To study the psychosocial impact of Tsunami on affected children.

2.4 SPECIFIC OBJECTIVES

- a. To find the socio-demographic profile of the Tsunami affected children.
- b. To study the psychological impact of Tsunami on affected children.
- c. To understand the social impact of Tsunami

2.5 VARIABLES

2.5.1 Independent

Gender, Tsunami

2.5.2 Dependent

Psychological impact

2.6 DEFINITION OF CONCEPTS

Psychological Study

Theoretical Definition

(Barker, Robert, L., *Social Work Dictionary*) The social worker's process of acquiring the relevant information needed to decide and develop a rational plan for helping the client. This information may include the client's description of problem, corroboration from other sources (such as medical records, school and personnel files, letters, telephone, communication and direct meetings with the client's family members and other who know the client) psychosocial history taking; information about the client's cultural and sub-cultural groups; information about the specific environment in which the client lives and information about the various resources that might be used to help the client. The information obtained in the psychosocial study is used in arriving at the psychosocial assessment.

Operational Definition

It is a process of acquiring relevant information which aim to understand and influence the relationship between Tsunami affected children and their social worlds, drawing on various synthesis of psychological, psychotherapeutic and sociological theory and practice with special reference to Kollam district.

Tsunami

Theoretical Definition

(Agnes, Michael ed., *Webster's New World College Dictionary*)

A huge sea wave caused by a great disturbance under an ocean, as a strong earthquake or volcanic eruption.

Operational Definition

A huge sea wave caused by earthquake and led to the displacement of the plates under sea, which hit on 26, December 2004, in Kerala. In this study it concerns the sea coast of Kollam.

Children

Theoretical Definition

(**Oxford Dictionary**) Young human beings who are not yet an adult

Operational Definition

Young human beings between 6 years and 12 years old, who were affected by the Tsunami which hit on 26, December 2004 in sea coast of Kollam district of Kerala.

2.7 HYPOTHESIS

- a. Psychological impact and gender are directly related.

2.8 UNIVERSE OF STUDY

All children of Kollam district who were affected by the Indian Ocean Tsunami of December 26, 2004.

2.9 UNIT OF STUDY

Child affected by Tsunami.

2.10 PILOT STUDY

The researcher conducted a pilot study by visiting the Azheekal coastal village and took classes for the Tsunami affected children. This visit helped him to understand the feasibility of the study. This was in June 2005.

2.11 SAMPLING METHOD

Multi stage area sampling.

The researcher took Kollam district as it is considered as the district in Kerala most devastated by Tsunami. Then he divided the district into several Tsunami affected village clusters. From these clusters, he selected 3 Tsunami affected villages. From these 3 villages, he randomly selected the unit of affected children.

2.12 TOOLS OF DATA COLLECTION

Semi-structured interview schedule was designed by the researcher on the basis of the objectives.

This semi-structured interview schedule has 3 sections.

Section 1: Socio-demographic profile of the respondents.

This section has two parts. The first part deals with the personal profile of the respondents. This includes eight questions. The second part deals with the respondent's first experience at the time of Tsunami and losses of his dear and near ones in Tsunami.

Section 2: Psychological impact of the respondents.

This section deals with the psychological impact due to the Tsunami. This has four parts. The first part deals with the experiences of the respondent at the time of the Tsunami, the second part deals with the emotional reactions of the respondents after Tsunami, the third part deals with the emotional changes after Tsunami and the fourth part deals with the behavioural reactions of the respondents after Tsunami.

Section 3: Social impact

This section deals with the social impact of the Tsunami. Eleven questions are included in this part.

2.13 METHOD OF DATA COLLECTION

Structured interview.

2.14 PRE-TEST

The researcher conducted a pre-test with a sample size of 10 to assess the validity and feasibility of interview schedule at Azheekal.

2.15 ANALYSIS AND INTERPRETATION OF DATA

In order to study the association, between independent variables and dependent variables, qualitative variables were quantified by giving scores to the responses using Statistical Package for Social Sciences (SPSS). Separate scoring for negative and positive questions were given.

2.16 STATISTICAL TECHNIQUES USED

Chi-square test was used to test the hypothesis to find the relation between two variables. Statistical Package for Social Sciences (SPSS) was used to compute, tabulate and correlate the data.

CHAPTER III

DATA ANALYSIS & INTERPRETATION

CHAPTER III

ANALYSIS AND INTERPRETATIONS

Synopsis

Section 3.1 Socio-demographic profile of the respondents.

Section 3.2 Psychological impact of Tsunami on affected children

Section 3.3 Social impact of Tsunami on affected children.

This study focuses on the psychological and social impact of Tsunami on affected children. The analysis and the interpretation have been grouped under the following sub-headings.

Section 3.1 Socio-demographic profile of the respondents

Section 3.2 Psychological impact of Tsunami on affected children

Section 3.3 Social impact of Tsunami on affected children.

3.1 SOCIO-DEMOGRAPHIC PROFILE OF THE RESPONDENTS

This includes the data relating to age, gender, religion, family type, class in which the respondent is studying, education of the parents of respondents, occupation of the parents of respondents, activity of the respondent at the time of Tsunami, respondent's feelings regarding Tsunami and the loss of his / her near and dear ones in Tsunami.

Table 3.1.1

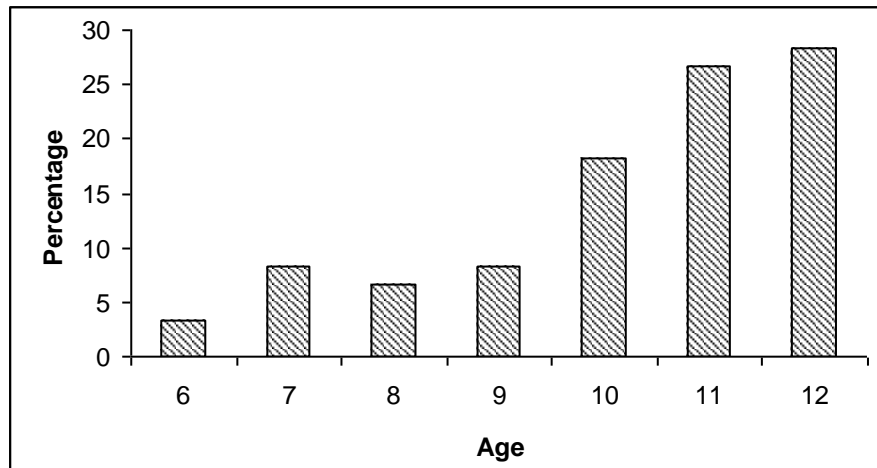
Age-wise distribution of the respondents

Age	Frequency	Percent
6	2	3.3
7	5	8.3
8	4	6.7
9	5	8.3
10	11	18.3
11	16	26.7
12	17	28.3
Total	60	100.0

Considering the age group of the respondents, 28.3% of children are 12 years, 26.7% are 11 years, and 3.3% have 6 years i.e., around 50% of the respondent are either 11 or 12 years of age.

Diagram No. 1

Age-wise distribution of the respondents



The respondents of the study are the children aged 6-12 (late childhood) (Elizabeth Hurlock, 1959). Children's response to traumatic life-threatening events differ from child to child depending on a number of factors, such as age, prior experiences, sex and available social support – the consistency of core response is clear: heightened anxiety, generalized fear, and loss of self esteem (**J. Garbarino, K. Kostelny and N. Dubrow, 1991**).

Table 3.1.2

Gender-wise distribution of the respondents

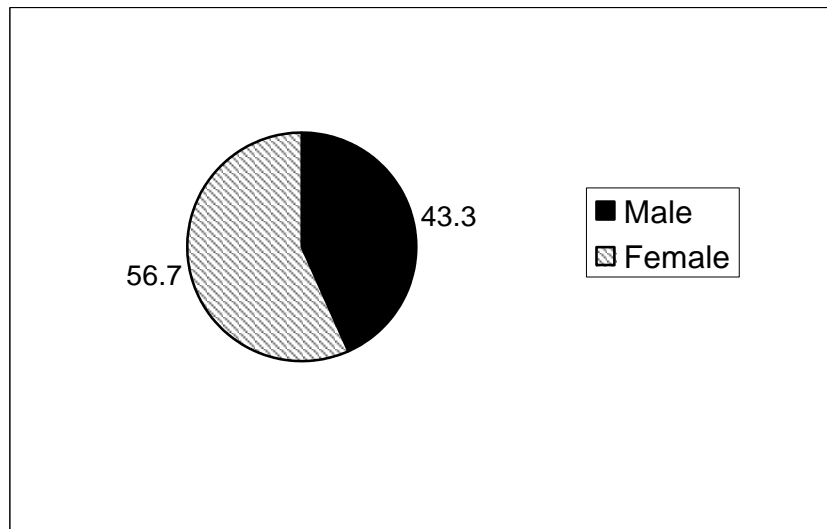
Gender	Frequency	Percent
Male	26	43.3
Female	34	56.7
Total	60	100.0

Considering the gender-wise distribution of the respondents, it is clear from the table that 56.7% are females and 43.5% are males.

Kerala has a large proportion of women than men in general, as well as coastal areas. Hence there were more child survivors than male survivors.

Diagram No. 2

Gender-wise distribution of the respondents



Studies on the relationship between gender and outcome following disaster have been mixed, although when differences are found, more symptoms are usually reported in women and girls. For example, PTSD, anxiety, and depression which are most commonly researched after disaster, are generally more prevalent in women on the general population (**Kessler et al, 1994**).

Table 3.1.3

Religion-wise distribution of the respondents

Religion	Frequency	Percent
Christian	30	50.1
Hindu	29	48.3
Muslim	1	1.7
Total	60	100.0

This table indicates the religion wise distribution of the respondents. It is found that 50% of the respondents were Christians, 48.3% Hindus and 1.7% Muslims.

Table 3.1.4

Family type distribution of the respondents

Family type	Frequency	Percent
Nuclear	49	81.7
Joint family	9	15.0
Extended family	2	3.3
Total	60	100.0

Considering the family type of the respondents it was found that majority (81.7%) of the respondents have a nuclear family set up and only 9% have joint family system.

The family type of the respondent helps to identify the family influence on the survived children and the support system.

Table 3.1.5

Education wise distribution of the respondents' parents

Parents education	Father	Mother
Illiterate	1 (1.7%)	3 (5%)
Primary	20 (33.3%)	15 (25%)
High school	8 (13.3%)	11 (18.3%)
SSLC	29 (48.3%)	26 (43.3%)
Higher Secondary	1 (1.7%)	2 (3.3%)
UG / PG	1 (1.7%)	2 (3.3%)
Total	60 (100%)	60 (100%)

This table shows the educational qualification of the parents of the respondents. It is clear from the table that 48.3% of the fathers and 43.3% of mothers of the respondents have SSLC qualification. 1.7% of the fathers of the respondents and 5% of the mothers of the respondents are illiterate.

Most of the fathers stopped their studies after SSLC and went to the sea for fishing for their livelihood. (Refer Table No. 3.1.6). Most of the mothers stopped their studies after SSLC because of the poor economic condition of the family.

Table 3.1.6

Occupation of the respondents' parents

Occupation	Father	Mother
Fishing	48 (71.7%)	-
Unemployed	1 (1.7%)	-
House wife	-	38 (63.3%)
Govt. servant	-	4 (6.7%)
Fish selling	-	9 (15%)
Business	2 (3.3%)	-
Others	14 (23.3%)	9 (15%)
Total	60 (100%)	60 (100%)

This table shows the occupation of the respondents' parents. It is clear from the table that 71.7% of the respondents' fathers are fishermen. There are 63.3% of the respondents mothers are housewives.

This reveals that most of the respondents' family depends on fishing for their livelihood because it is their traditional job.

Table 3.1.7

Respondents by classes

Class	Frequency	Percentage
2	3	5
3	8	13.3
4	5	8.3
5	10	16.7
6	22	36.7
7	12	20
Total	60	100.0

This table shows the class in which the respondents are studying. 36.7% of the respondents study in 6th standard. Most of them are studying in their age appropriate class.

Table 3.1.8

Respondents by place at the time of Tsunami

Place	Frequency	Percentage
Church	6	10
House	45	75
Relatives house	2	3.3
Seashore	6	10
Boat	1	1.7
Total	60	100

This table shows the place where the respondents were at the time of Tsunami. It shows that 75% of the respondents were in their house at

the outbreak of Tsunami. Only 1.7% of the respondents were in boats at the time of Tsunami.

December 26, 2004 was a Sunday when the Tsunami hit the coastal area of India. So majority of the children were in their houses because it was a holiday. The experiences of the children those who were in their house at the time of Tsunami were numbness, excessive crying, fear, shock and panic (refer table 3.2.1). There is no doubt that Tsunami was a “new horrible experience” for the respondents. They went through these experiences because the safety of their life was threatened. The respondents who were at church were participating in holy mass.

Table 3.1.9

Activities indulged in by the respondents at the time of Tsunami

Activity	Frequency	Percentage
Playing	20	33.3
Eating	16	26.7
Reading	8	13.3
Praying	6	10.0
Bathing	7	11.7
Working	1	1.7
Boating	1	1.7
Sweeping	1	1.7
Total	60	100

This table shows the activities done by the respondents at the time of Tsunami hit. It shows that 33.3% of the respondents were playing, 1.7% of the respondents were boating.

It is clear that children like playing because most of the children come under play age. So they devote more time to play. The school child has less time available for play than he had before he entered the school. So they play on holidays (Dec 27, 2004 was a Sunday). The first experience of the children who were playing at the time of Tsunami was crying; then came disorientation and fear.

Table 3.1.10

Respondents' feelings regarding Tsunami

Feeling	Frequency	Percentage
Fear	42	70
Suspicion	13	21.7
Anxiety	5	8.3
Total	60	100

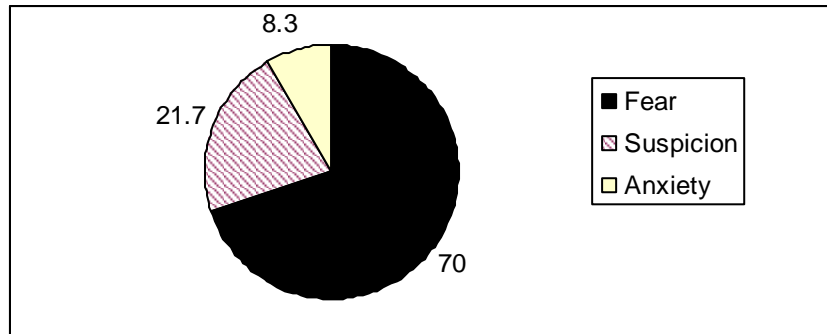
Considering the feelings of the respondents regarding Tsunami, 70% of respondents felt fear, 21.7% felt suspicion and 8.3% felt anxiety regarding Tsunami.

It is clear that Tsunami created a lot of havoc. Their belief in sea Goddess was lost and they believe they are living in a Tsunami prone area. So, threat to life as in the form of insecurity created the feeling of fear in majority of the respondents.

There was suspicion in 21.7% of the respondents because they believe that this disaster occurred because of the deeds of the mankind. Anxiety is generated by threat.

Diagram 3

Respondents' feelings regarding Tsunami



According to a study conducted by S. Fozzard, 1995, among 119 children of Mozambian refugees aged 6 to 12 years, 57% revealed the fear for their own safety relating to war. In another study conducted by J.Garbarino, K. Kosteiny and N. Dubrow (1991) relating to war found out the response of children of war victims: generalized fear, heightened anxiety and avoidance of self esteem.

Table 3.1.11

Respondents by the loss of family members and close friends

Loss	Yes	No	Total
Loss of family members in Tsunami	16 (26.7%)	44 (73.3%)	60 (100%)
Loss of close friends in Tsunami	23 (38.3%)	37 (61.7%)	60 (100%)

This table shows the personal losses incurred to the respondents due to Tsunami. It is clear from the table that (38.3%) of the respondents lost their close friends and 26.7% lost their family members including siblings and other relatives (in the family) including uncle, aunt, grandfather, grandmother, etc. due to the Tsunami.

This Tsunami was one of the most horrible Tsunamis in the world has ever witnessed. Most of the giggling children running on to the beaches to snatch the teeming fish left stranded when the earthquake sucked the waves from the shores – only to be hurled to their deaths when the Tsunami roared back again a short time later. Most of the children were simply too tiny to outrun the water, which engulfed their villages and coastal communities. So more close friends of the respondents lost than their adult family members in Tsunami.

Table 3.1.12

Respondents by physical injury suffered

Suffering of physical injury	Frequency	Percentage
Yes	22	36.7
No	38	63.3
Total	60	100.0

This table shows the physical injury suffered by the respondents due to Tsunami. There are 36.7% of the respondents who suffered from physical injury. Most of the physical injuries are wounds on legs and hands. 63.3% of the respondents have no injury. When the unexpected Tsunami came, they had to run for their lives. It was their hurried escape that most of the injuries was caused.

3.2. PSYCHOLOGICAL IMPACT

This section deals with the experience of respondents at the time of Tsunami, emotional reactions after Tsunami, emotional changes after Tsunami, behavioural reactions after Tsunami and other psychological impact of Tsunami on affected children.

Table 3.2.1

Experiences at the time of Tsunami

Experiences	Yes	No	Total
Shock and panic	57 (95%)	3 (5%)	60 (100%)
Fear	59 (98.3%)	1 (1.7%)	60 (100%)
Numbness	39 (65%)	21 (35%)	60 (100%)
Disorientation and wandering	45 (75%)	15 (25%)	60 (100%)
Tension	58 (96.7%)	2 (3.3%)	60 (100%)
Excessive crying	49 (81.7%)	11 (18.3%)	60 (100%)

This table shows the various experiences happened in respondents. There are 98.3% of the respondents who felt fear, 96.7% who felt tension, 95% who felt shock, 81.7% who cried, 75% who felt disorientation and 65% who felt numbness at the time of Tsunami.

There is no doubt that Tsunami was a new terrible experience for the respondents. So the first experience was fear regarding the safety of life. (Refer table 3.1.10) Because of this fear they felt tension.

A disaster like the Tsunami disrupts the process of interaction. The child has with his / her environment. It leads to displacement where in the child loses his familiar environment (home, school, peers, etc.). This creates the sense of panic and confusion. (**Tsunami Information Manual, NIMHANS, 2005**).

Table 3.2.2

Emotional reactions

Emotional reaction	Yes	No	Total
Guilt	48 (80%)	12 (20%)	60 (100%)
Helplessness	47 (78.5%)	13 (21.7%)	60 (100%)
Sadness	57 (95%)	3 (5%)	60 (100%)
Hopelessness	44 (73.3%)	15 (26.7%)	60 (100%)
Suicidal thoughts	6 (10%)	54 (90%)	60 (100%)

Considering the emotional reactions children felt after Tsunami, sadness (97%), guilt (80%), helplessness (78.3%), hopelessness (73.3%) and suicidal thoughts 10% are the common reactions.

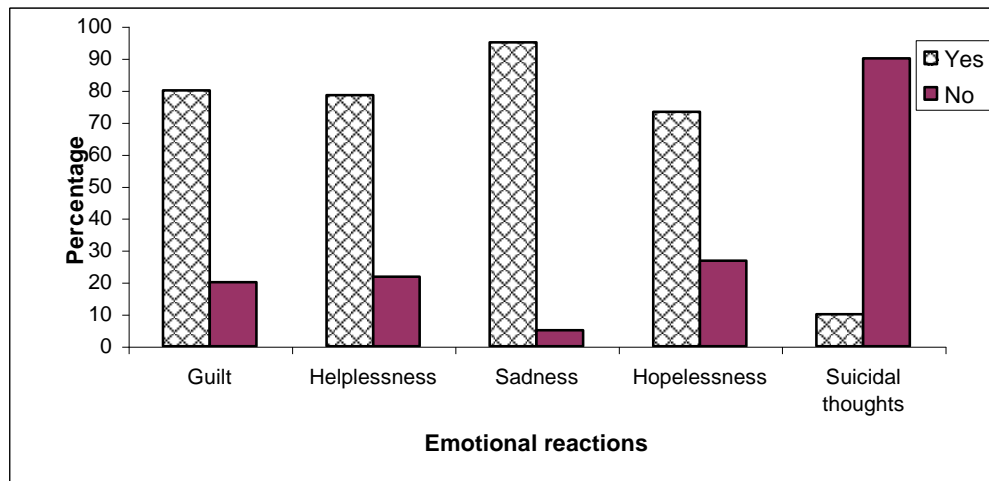
School age children have the ability to understand what the Tsunami has done to the people and the environment. This makes them sad about the family members being killed in the Tsunami and worried about dear and near one's who are injured. Children at this age are very attached to parents, siblings, friends and their environment. Thus a loss of any of the aforementioned people or situations causes a great amount of distress to children and it leads to sadness.

The children felt guilt because of the loss incurred during the Tsunami and the thought that he/she was helpless to safeguard what he/she lost. So there is only a slight difference between guilt (80%) and

helplessness (78.3%). This guilt is mainly because of the feeling that he / she was survived when others have died. Some felt guilty that they could not even see the dead bodies of their beloved one's.

Diagram 4

Emotional reactions



After a disaster like Tsunami children show emotional reactions. These are normal reactions to an abnormal event in their life. Children of different age groups react differently as they perceive the event differently. These reactions are temporary for most children and some support and attention would help them to overcome the trauma and reach normal level of functioning (NIMHANS, 2005).

According to a study conducted by (Young et al, 1998) the common reactions to a disaster includes shock, anger, guilt, helplessness and loss of control, despair, etc.

Table 3.2.3

Emotional changes after Tsunami

Emotional change	Yes	No	Total
State of insecurity	39 (65%)	21 (35%)	60 (100%)
Vigilance to changes in sea	53 (88.3%)	7 (11.7%)	60 (100%)
Repeated nightmares	53 (88.3%)	7 (11.7%)	60 (100%)

This table indicates the respondents' emotional changes after Tsunami. Considering this 88.3% of respondents had repeated nightmares and high vigilance to any changes in sea.

Tsunami was a new phenomenon for the children. So they don't know much about the Tsunami. So they are hyper vigilant and misinterpret any changes in the sea as Tsunami.

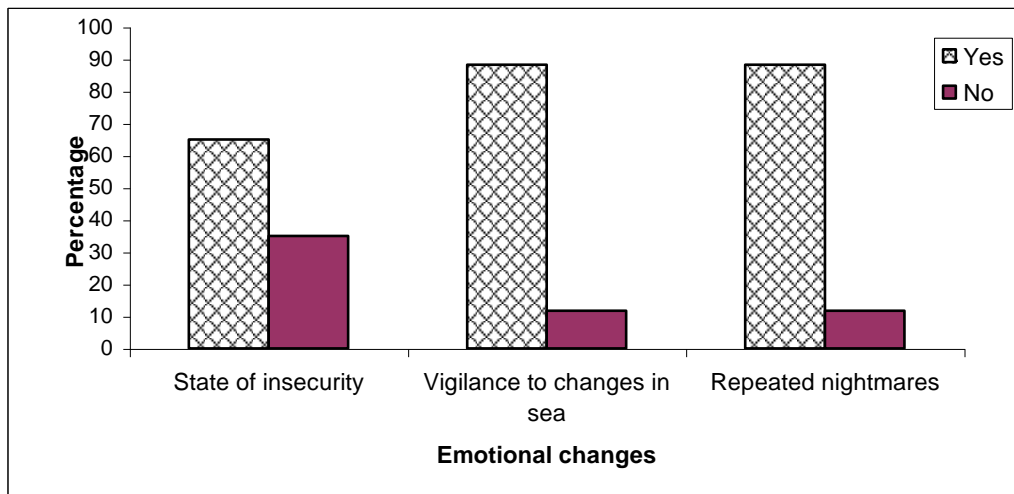
A traumatic event creates thoughts in their mind. So when they are sleeping those thoughts in the mind reappear as a nightmare and cause acute distress to the child.

The Tsunami was very unexpected and sudden, leaving the children confused and frightened. The memories of the event and additional horror stories of others leave the very distressed and lost. This was another cause of nightmares. The children also find it difficult to protect them and feel very insecure without adult caregivers. It should be clear by adding a case of nightmares.

11 year old Jose (fictious name) had to run for his life when the Tsunami struck his village. He saw houses and cattle being washed away. He was in the midst of a chaotic situation with people running away, shouting for help, since then, Jose has not been able to sleep properly. At nights he gets nightmares of sea waves gushing in houses being washed away and people from his neighbourhood being swept away. He walks up in the middle of the night terrified with the images in his head, and is unable to go back to sleep.

Diagram 5

Emotional changes after Tsunami



A study of 119 children Mozambian refugees ages 6-12 years reveals that 49 percent have nightmares (S. Fozzard, 1995). In a UNICEF sponsored study of 84 child combatants in Liberia, reveals that 72% often dream about the traumatic event.

Table 3.2.4

Behavioural reactions after Tsunami

Behavioural reactions	Yes	No	Total
Lack of concentration	46 (76.7%)	14 (23.3%)	60 (100%)
Sleeplessness	36 (60%)	24 (40%)	60 (100%)
Bed wetting	29 (48.3%)	37 (61.7%)	60 (100%)
Irritability	23 (38.3%)	37 (61.7%)	60 (100%)
Disobedience	14 (23.3%)	46 (76.7%)	60 (100%)
Aggressive behaviour	18 (30%)	42 (70%)	60 (100%)
Fear of darkness	44 (73.3%)	16 (26.7%)	60 (100%)
Separation anxiety	51 (85%)	9 (15%)	60 (100%)

This table shows the behavioural reactions of the respondents after Tsunami. Considering the behavioural reactions 85% of the respondents felt separation anxiety, 76.7% felt lack of correlation 73.3% felt fear of darkness and 60% felt sleeplessness after Tsunami.

When they separate from their parents their thoughts will be about their parents and homes. Even if they are in school, they think about their houses because all respondents were from coastal area and they afraid if the Tsunami will come again. This also creates trouble in concentration.

Children view their world from the perspective of stability and availability of dependable caretakers. If this is disturbed, they feel anxious and restless. They feel helpless and fearful in the face of a disaster, especially; they are separated from the parents. So they feel separation anxiety. The another cause of separation anxiety is the imagination of future without lost person. This can be substantiated by a case.

8 year old Kiran (fictious name) was a lively child. The unexpected Tsunami destroyed Kiran’s house. He and his family members had to run for their life. Following the disaster, Kiran refuses to leave his parents especially his mother even for a short while. He always clings to his mother, does not allow her to carryout household chores and thrusts that mother always sits beside him. Kiran is very fearful to go near the seashore because he believes that Tsunami may occur again. He doesn’t mix with his friends and refuses to go out to play with his fellow mates.

Table 3.2.5

Other psychological impact

Psychological impact	Yes	No	Total
Difficulty in following daily routines	27 (45%)	33 (55%)	60 (100%)
Frequent quarrels with siblings	17 (28.3%)	43 (71.7%)	60 (100%)
Low interest in social activities	24 (40%)	36 (60%)	60 (100%)
Refusal to attend school	21 (35%)	39 (65%)	60 (100%)
Refusal to go to beach	38 (63.3%)	22 (36.7%)	60 (100%)

It is clear from the table that only 63.3% of respondents refuse to go to the beach and other impacts have only less than 50%.

Majority of the respondents (63.3%) refuse to go to beach because of their horrible traumatic experience is relation to the sea. So for escaping from further Tsunami they do not like to go to beach. It should be substantiated with a case.

10 year old Maneesh (fictious name) was very fond of playing on the seashore with his friends. He would jump around in the seawater, splash water on his friends. After witnessing the fearful image of the sea, which washed away his house, he is terrified to go near the sea. His heart beats fast when he pours water on his body during bath. It reminds him of the destructive Tsunami waves, which washed away everything on their way.

Cross Tabulation.

Table 3.2.6

Fear at the time of Tsunami and nightmares

Fear at the time of Tsunami	Repeated nightmares after Tsunami		
	Yes	No	Total
Yes	52 (88.14%)	7 (11.86%)	59 (100.0%)
No	1 (100.0%)	0 (0.0%)	1 (100.0%)
Total	53 (88.33%)	7 (11.67%)	60 (100%)

This table shows the relation between fear at the time of Tsunami and nightmares. It is clear from the table that 88.16% (52) children out of 59 children having fear at the time of Tsunami, further developed nightmares and one who had no fear at the time of Tsunami further developed repeated nightmares.

So fear at the time of Tsunami and nightmares after Tsunami are related. Those who had fear at the time of Tsunami, think about this terrible event when they were in sleep. So this makes nightmares.

Table 3.2.7

Excessive crying and Behavioural reactions

Excessive crying	Behavioural reaction		
	Yes	No	Total
Yes	36 (73.5%)	13 (26.5%)	49 (100%)
No	5 (45.5%)	6 (54.5%)	11 (100%)
Total	41 (68.3%)	19 (31.7%)	60 (100%)

This table shows the respondents' experience of excessive crying at the time of Tsunami and the behavioural reactions after Tsunami.

Considering this table out of 60 respondent 49 respondents cried excessively at the time of Tsunami. Out of this 49, 36 (73.5%) have behavioral reactions after Tsunami, and only 13 (26.5%) have no behavioural reactions after Tsunami. Out of 60, 11 respondents did not cry excessively at the time of Tsunami. Out of this, 5 (45.5%) have

behavioral reactions after Tsunami and 6 (54.5%) have no behavioural reactions after Tsunami.

Out of 60, 41 (68.3%) have behavioural problems after Tsunami and only 19 (31.7%) have no behavioural problems after Tsunami.

So the affected children have the possibility of having behavioural reactions after Tsunami. (Refer table 3.2.4). Among them those who experienced excessive crying have the possibility of more behavioural reactions because this excessive crying negatively affected their coping capacity.

Table 3.2.8

shock and panic x emotional reactions after Tsunami

Shock and panic	Emotional reactions		
	Yes	No	Total
Yes	48 (84.2%)	9 (15.8%)	57 (100%)
No	2 (66.7%)	1 (33.1%)	3 (100%)
Total	50 (83.3%)	10 (16.7%)	60 (100%)

This table shows the relationship between shock and panic at the time of Tsunami and their emotional reactions (refer table 3.2.2) after Tsunami.

Table 3.2.8 shows out of 57 respondents who had shock and panic at the time of Tsunami, 48 (84.2%) had emotional reactions after Tsunami, while 9 (15.8%) of those who did not have shock and panic at

the time of Tsunami, have emotional reactions after Tsunami. Out of 3 respondents 2 (66.7%) of them who had no shock and panic at the time of Tsunami have emotional reactions after Tsunami while 1 (33.1%) had no emotional reactions after Tsunami. It is clear from the table that out of 60, 50 (83.3%) have emotional reactions after Tsunami.

It is clear from the table that one's experiences at the time of Tsunami have a relationship with his emotional reactions after Tsunami. The main reason is that experience at the time of Tsunami affects the coping mechanism of the children.

3.3 SOCIAL IMPACT

This section deals with the losses mainly houses and property and the stay of respondents after Tsunami mainly relating to relief camp, social supports system, and social problems prevailing in the society after Tsunami. A good social support is necessary for the Tsunami affected children for preventing them from further psychological and social breakdown.

Table 3.3.1

Loss of houses of respondents

Loss of houses	Frequency	Percentage
Yes	59	98.3
No	1	1.7
Total	60	100

This table indicates that 98.3% of the respondents' family lost their houses either fully or partially. Only 1.7% of the respondents' house were not damaged.

Tsunamis create lots of destruction to the affected mankind according to its intensity.

Table 3.3.2

The stay of respondents after Tsunami

Stay of respondents	Frequency	Percentage
In relatives house	20	33.3
In neighbours house	1	1.7
In relief camp	39	65.0
Total	60	100.0

Considering the table, 65% of the respondents were in relief camps after Tsunami, 33.3% were in relatives' house and 1.7% was in neighbours' house.

After the disaster the affected moved to relief camp. The reason of migration was because of the fear of Tsunami recurring. Some moved to camps for acquiring the relief material, and for the easy recovery of compensation. Even houses which were not much damaged were deserted because of rumours of Tsunami.

Table 3.3.3

Conditions in relief camp

Conditions	Yes	No	Total
Difficulty in living temporary shelters	27 (69.23%)	12 (30.76%)	60 (100%)
Poor sanitation in relief camp	29 (74.35%)	10 (25.64%)	60 (100%)
Lack of proper environment to study	38 (97.45%)	9 (2.56%)	60 (100%)

This table shows the conditions of respondents when they were in relief camp. Out of 60 respondents, 39 were in relief camps. Considering this, 97.45% of the respondents complained of lack of proper environment to study in relief camp, 74.35% complained of poor sanitation and 69.23% felt difficulty in living in temporary shelters.

In relief camp the people face lots of problem in relation to the losses incurred. The narrow space of the camp and too much people in one relief camp creates totals of nuisance. So the children felt a lack of proper environment to study.

The increased number of alcoholics (see table 3.3.6) created lots of nuisance in the camp. They had to hear lots of abusive language and witness fight in the relief camp.

Table 3.3.4
Social support system to the respondents

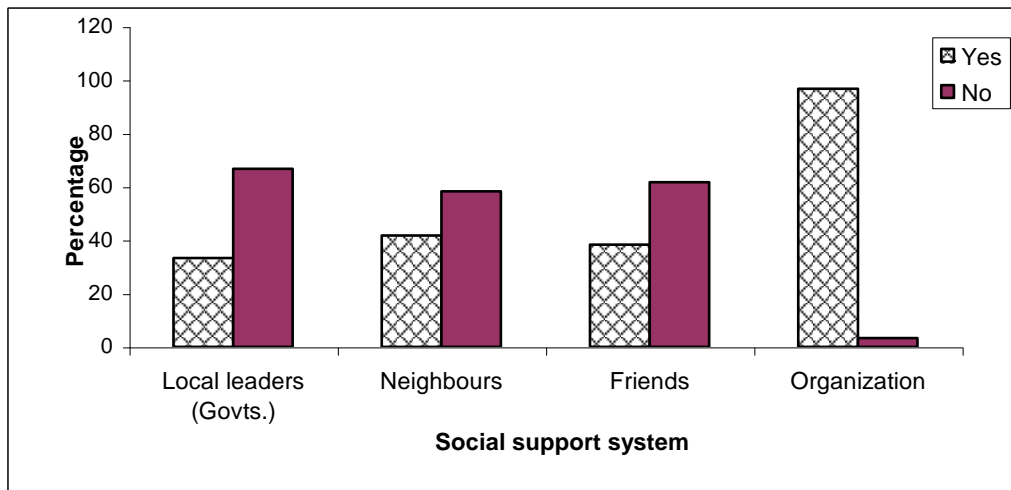
Social support system	Yes	No	Total
Local leaders	20 (33.3%)	40 (66.7%)	60 (100%)
Neighbours	25 (41.7%)	35 (58.3%)	60 (100%)
Friends	23 (38.3%)	37 (61.7%)	60 (100%)
Organisation	58 (96.7%)	2 (3.3%)	60 (100%)

A proper social support is necessary for either reducing the impact of the Tsunami or preventing further breakdown due to the impact.

It is clear from the table that 96.7% of the respondent got social support in rescue and rehabilitative phases of the Tsunami, 41.7% of the respondents got support from neighbours and 38.31% got support from the friends.

Diagram 6

Social support system to the respondents



When a disaster like Tsunami comes lots of non-governmental organizations and voluntary organisations come for rescue and rehabilitation of the affected. The NGOs likes OXFARM, Quilon Social Service Society (QSSS), Helpage India, Amrtia Charital society have been doing significant work in rescue phase itself. The rebuilding process is being continued by these NGOs.

Social support from friends and families were less because they were equally affected.

Table 3.3.5

Distribution of relief material based on class or caste

Distribution of relief material	Frequency	Percentage
Yes	8	13.3
No	52	86.7
Total	60	100.0

It is clear from the table that 86.7% of the respondents said the distribution of relief material is not based on caste or class.

There was no discrimination in the distribution of relief material based on caste or class. It is clear that in a huge disaster like Tsunami the fellow beings show empathy and generosity towards affected people.

Even though relief material is distributed in the camp – it makes most of the children feel like beggars.

Table 3.3.6

Social problems in the Tsunami affected society

Social problems	Yes	No	Total
Robbery and house breaking	41 (68.3%)	19 (31.7%)	60 (100%)
Increased alcoholism	49 (81.7%)	11 (18.3%)	60 (100%)

The table shows increased social problems in the society after Tsunami. It is clear from the table that 81.7% of the respondents feel increased alcoholism in the society and 68.3% feel increased robbery and house breaking after Tsunami. There is no marked difference between these two social problems.

Increased alcoholism is either because of the losses in Tsunami or the fear of rumour that Tsunami will come again. The people (male) depend on alcohol to forget their pain due to Tsunami.

Table 3.3.7

Loss of property in Tsunami

Loss of property	Yes	No	Total
Loss of home	59 (98.3%)	1 (1.7%)	60 (100%)
Loss of livelihood	34 (56.7%)	26 (43.3%)	60 (100%)
Loss of cloths	38 (63.3%)	22 (36.7%)	60 (100%)
Loss of jewels	12 (20%)	48 (80%)	60 (100%)
Loss of cash	8 (13.3%)	52 (86.7%)	60 (100%)
Loss of home appliances	26 (43.3%)	34 (56.7%)	60 (100%)
Loss of documents	22 (36.7)	38 (63.3%)	60 (100%)
Loss of ration card	12 (20%)	48 (80%)	60 (100%)
Loss of certificates	6 (10%)	56 (90%)	60 (100%)
Loss of ID card	7 (11.7%)	53 (88.3%)	60 (100%)
Loss of employment	25 (41.7%)	35 (58.3%)	60 (100%)

This table shows 98.3% of the respondents lost their house either fully or partially, 63.3% lost their cloths, 56.6% lost their livelihood in the form of boats and nets.

A Tsunami like natural disaster is not preventable by human beings. The devastation is seen both in life and property.

Table 3.3.8

Physical injury of the family members of the respondents

Physical injury	Frequency	Percentage
Yes	33	55
No	27	45
Total	60	100

This table indicates that 55% of the respondents’ family members suffered physical injury due to Tsunami.

Most of these injuries were in foot, or hands incurring during their escaping episode from Tsunami.

Chi-square test

Gender psychological impact

The researcher used chi-square test to test the hypothesis – “psychological impact and gender are directly related”.

Ho Psychological impact and gender are not directly related.

Table 3.3.9
Gender psychological impact

		Severe	Moderate	Total
Gender	Male	8	18	26
	Female	20	14	34
	Total	28	32	60

$$X^2 = 4.65$$

$$\text{Degree of freedom} = (c-1)(r-1) = (2-1)(2-1) = 1$$

The table value of x^2 for one degree of freedom at 5% level of significance is **3.841**. The calculated x^2 value is more than the table value. So the null hypothesis is rejected. It can conclude that there is difference between males and females considering psychological impact.

It is clear from the table that females have more psychological impact than males. Females are considered as the vulnerable group in general population. Among females, girl children have more vulnerable.

A variety of factors will influence the child's response to disasters, symptom development, duration and recovery. Overall, girls may be more symptomatic than boys (**Gianconia et al, 1995, Green et al, 1999**). Pre-existing conclusions are responsible for this.

Studies on the relationships between gender and outcome following disaster have been mixed, although when differences are found, more symptoms are usually reported in women and girls, for example PTSD symptoms, anxiety and depressive symptoms which are most commonly researched after disaster are generally more prevalent in women in general population (**Kessler et al, 1994**).

CHAPTER IV

FINDINGS, LIMITATIONS

SUGGESTION & CONCLUSION

CHAPTER IV
FINDINGS, LIMITATIONS, SUGGESTIONS AND
CONCLUSION

Synopsis

- 4.1 Major Findings of the study
- 4.2 Limitation of the study
- 4.3 Suggestions
- 4.4 Conclusion

This chapter deals with the major findings of the study, limitations faced at the time of study, suggestions to improve the conditions of the affected children and conclusion.

4.1 MAJOR FINDINGS OF THE STUDY

Section I Socio-demographic profile of the respondents

- ❖ 28.3% of the respondents are 12 of age.
- ❖ 56.7% of the respondents were females.
- ❖ 50% of the respondents were Christians.
- ❖ 81.7% of the respondents were from nuclear family.
- ❖ 48.3% of the respondent's fathers had Secondary School Leaving Certificate (SSLC) education.
- ❖ 43.3% of the respondents' mothers had SSLC education.
- ❖ 71.7% of the respondents' father had fishing as their occupation.
- ❖ 63.3% of the respondents' mothers were housewives.
- ❖ 36.7% of the respondents were studying in 6th standard.

II Experience at the time of occurrence of Tsunami

- ❖ 75% of the respondents were in house at the time of Tsunami.
- ❖ 33.3% of the respondents were playing at the time of Tsunami.
- ❖ 70% of the respondents' have fear when they think about Tsunami.

- ❖ 26.7% of the respondents lost their family members in Tsunami.
38.3% of the respondents lost their friends in Tsunami.
- ❖ 37.7% of the respondents had physical injury due to Tsunami.

Section II Psychological impact of Tsunami

Findings

- ❖ 98.3% of the respondents felt fear at the time of Tsunami.
- ❖ 95% of the respondents have sadness as emotional reaction after Tsunami.
- ❖ 88.3% of the respondents had repeated nightmares, and high vigilance to changes in sea.
- ❖ 85% of the respondents had separation anxiety after Tsunami.
- ❖ 63.3% of the respondents refused to go to beach.
- ❖ Out of 59 of the respondent who felt fear at the time of Tsunami 98.1% (52) had repeated nightmares after Tsunami.
- ❖ Out of 49 respondents who cried excessively at the time of Tsunami, 73.5% (36) had behavioural problems after Tsunami.
- ❖ Out of 57 respondents who felt shock and panic at the time of Tsunami, 84.2% (48) had emotional problems after Tsunami.
- ❖ Females had more psychological impact (34) when compared to males (26).

Section III Social impact of Tsunami

Findings

- ❖ 98.3% of the respondents lost their houses either fully or partially.
- ❖ 65.0% of the respondents were in relief camp after Tsunami.
- ❖ 97.4% of the respondents complained of lack of proper environment to study in relief camp.
- ❖ 96.7% of the respondents got social support from organizations, especially non-governmental organisations, religious organisations and voluntary organisations.
- ❖ 86.7% of the respondents felt, there was no discrimination in the distribution of relief material based on caste or class.
- ❖ 81.7% of the respondents complained of increased alcoholism in the society after Tsunami.
- ❖ 63.3% of the respondents lost their clothing and 56.6% lost their livelihood in Tsunami.

4.2 LIMITATIONS OF THE STUDY

A number of limitations faced by the researcher when he was conducting this research. They are:

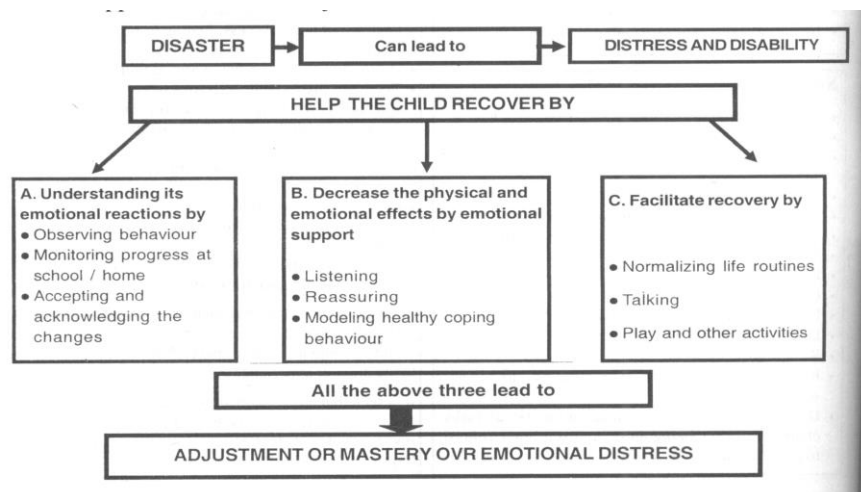
- The respondents were children age group of 5-12, so they were unable to identify the emotions that they were experiencing.

- The data collection was conducted only in November 2005, (11 months after the Tsunami). So the psychological impact may be affected with this time tag.
- The researcher got only a limited time to conduct the study (time constraints).
- The people of the area were exhausted and bored by too much surveys and studies.
- Unavailability of reliable scales is another limitation.

4.3 SUGGESTIONS

The most important step in psychosocial care and recovery process is to recognise that psychosocial care is essential for all of the population experiencing a disaster. People differ only in terms of the degree of support needed.

How to support a child's recovery from a traumatic event?



Suggestions to Parents / Relatives

- Be available listen and talk to them.
- Hug and hold them close
- Help to reestablish life routines
- Help in meeting their basic needs
- Ensure that they have playtime
- Involve them in house work
- Keep a watch on their behaviour
- Monitor their school work
- Seek support of other people-school or other agencies.

Suggestions to School Teachers

- Help the child talk about the issue
- Do not ridicule the child for regressive behaviours
- Give extra attention to new children in your class make them comfortable
- Monitor the academic progress
- Keep interacting with the family
- Enhance the self-esteem of children.

Suggestions to Caregivers from Outside

- Enable the parents to their children
- Support the families in caring for their child
- Set up group initiatives
- Be available to the child and listen and talk with the child
- Help with the referral links.

4.4 CONCLUSION

This study mainly dealt with the psychological and social impact of the Tsunami affected children. It was discovered that lots of pain was experienced by the survivors. This study could not include all the aspects relating to the affected children. Rather than dwell in a state of despair, most of the survivors wanted to get on with their lives. Let us pray that another Tsunami will not threatened mankind.

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APPENDICES

APPENDIX 1

Interview schedule

“A Psychosocial study on tsunami affected children”

PART I

I. SOCIO DEMOGRAPHIC PROFILE

1. Name (optional) :
2. Age :
3. Gender : 1. Male 2.Female
4. Religion : 1. Hindu 2. Christian 3. Muslim 4. Others
5. Family Type : 1. Nuclear 2. Joint 3. Extended
6. Place of Residence : 1. Urban 2. Rural 3.Coastal 4. Slum
7. Family profile

Sl. No	Name	Relation with Child	Gender	Age	Education	Present Occupation	Marital Status

- Gender : 1. Male 2. Female.
- Education : 1. Illiterate 2. Primary 3.High School 4. S.S.L.C
5. Higher Secondary 6. Graduation/Post graduation.
- Occupation : 1. Unemployed 2. Fishing 3. Government 4. Business 5. Study
6. Agriculture 7. Others.
- Marital Status : 1.Unmarried 2. Married 3. Divorced 4. Separated 5.widow.
8. Are you attending school? 1. Yes 2.No

If yes, which class?

If no, current status? 1.Occupation 2.Dropout

II. EXPERIENCES AT THE TIME OF OCCURRENCE OF TSUNAMI

9. Where were you at the time of tsunami in your village?

10. Did you witness tsunami? 1. Yes 2. No

11. What were you doing at that moment?

12. What was your feeling?

13. Did you have loss of any family member in tsunami? 1. Yes 2.No

If yes, a) Father b) Mother c) Siblings d) Others

Total No. 1,2, 3, 4 or more

14. Did you have loss of any close friend in tsunami? 1. Yes 2. No

Total No. 1, 2, 3, 4 or more

15. Did you suffer any physical injury due to tsunami? 1. Yes 2.No

If yes, specify

PSYCHOLOGICAL IMPACT

Tick the experiences relevant to you at the time of tsunami

16. I had felt

- A. Shock and panic
- B. Fear
- C. Numbness
- D. Disorientation and wandering
- E. Tension
- F. Excessive cry
- G. Any other

Tick the emotional reactions relating to you after tsunami

17. I had the feeling of

- A. Guilt regarding the losses in tsunami
- B. Sadness
- C. Helplessness

- D. Hopelessness
- E. Suicidal thoughts
- F. State of insecurity
- G. Vigilance to any change in the sea
- H. Repeated nightmares
- I. Any other

Tick the behavioral reactions relevant to you after tsunami

18. I had

- A. Lack of concentration
- B. Sleeplessness
- C. Irritability
- D. Any other

SOCIAL IMPACT

19. Did you loss your house in tsunami? 1. Yes 2. No 3.Partial

If yes, where did you stay after tsunami?

- a) In relatives house b) In neighbor's house c) In friends house d) In relief camp e)

Other

Tick the experiences relevant to you

20. If in relief camp,

- A. Difficulties in living in temporary shelters
- B. Poor sanitation facilities
- C. Lack of proper environment to study

21. Was there any change in your role in your family after tsunami? 1. Yes 2. No

If yes, specify

22. Who were the people locally supported you?

- 1) Local leaders 2) Neighbors 3) Friends 4) Others

23. Did you feel the distribution of relief materials based on caste or class?

1 Yes 2.No 3 extend

Tick the anti-social activities prevailed in your society after tsunami

24. There were

- A. Robbery and house breaking
- B. Increased alcoholism
- C. Any other

PART II

(To the mother/ father/nearest adult relative of the child)

25. Did any one of your family members suffer physical injury in tsunami?

1. Yes 2. No

If yes, specify

26. Did you lose any property in tsunami? 1. Yes 2. No

If yes, A) house B) livelihood C) cloths D) jewels E) cash F) others

27. Did your family lose any documents? 1. Yes 2. No

If yes, A) ration card B) certificates C) identity cards D) other valuable documents

28. Did you or any your family member lose employment due to tsunami? 1. Yes

2)No.

If yes, what his/her current occupation

Tick the behavioral reactions relating to your child after tsunami

29. My child had been

- A. Bed-wetting
- B. Disobedience
- C. Difficulty in following daily routine

- D. Frequent quarrels with siblings, parents, friends, neighbors,
- E. Low interest in social activities
- F. Aggressive behavior
- G. Fear of darkness
- H. Refusal to attend school
- I. Refusal to go to beach
- J. Separation anxiety
- K. Any other

APPENDIX 2

χ^2 – Test (Chi-Square Test)

χ^2 –test is a statistical test which tests the significance of difference between a set of observed frequencies and a set of corresponding theoretical frequencies obtained from a sample drawn from the population without any assumption about the distribution of the population. This test was developed by Prof. Karl Pearson in 1990.

Testing Independence of Attributes Procedure

1. Lay down the null hypothesis that the two attributes are independent (i.e., they are not associated).
2. Find the value of χ^2 by the formula $\chi^2 = \sum \frac{(O - E)^2}{E}$ where 'O' refers to the observed frequencies and 'E' refers to the expected frequencies (Expected frequency is calculated $\frac{\text{row total} \times \text{column total}}{\text{grand total}}$).
3. Decide the level of significance and degree of freedom. Degree of freedom = (r-1) x (c-1) where 'r' is the number of rows, and 'c' is the number of columns.
4. Obtain the table value for the degree of freedom and level of significance.
5. Take decisions either to accept or to reject the null hypothesis. If the calculated value is less than the table value accept the null hypothesis. Otherwise reject it.

Example

Gender psychological impact	Severe	Moderate	Total
Gender			
Male	8	18	26
Female	20	14	34
Total	28	32	60

H0 = Psychological impact and gender are not directly related.

Observed frequency	Expected frequency	O ₁ -E ₁	(O ₁ -E ₁) ²	(O ₁ -E ₁) ² / E ₁
8	$\frac{28 \times 26}{60} = 12.13$	-4.13	17.06	1.41
18	$\frac{26 \times 32}{60} = 13.87$	4.13	17.06	1.23
20	$\frac{28 \times 34}{60} = 15.87$	4.13	17.06	1.07
14	$\frac{32 \times 34}{60} = 18.13$	-4.13	17.06	0.94
$\sum \frac{(O - E)^2}{E}$				4.65

$$\chi^2 = \sum \frac{(O_1 - E_1)^2}{E^1} = 4.65$$

$$\begin{aligned} \text{Degree of freedom} &= (C - 1) (r - 1) \\ &= (2 - 1) (2 - 1) = 1 \end{aligned}$$

The table value for one degree of freedom at 5% level of significance is 3.841. The calculated χ^2 value is more the table value. So the null hypothesis is rejected i.e. gender and psychological impact are directly related.