博士論文

Effect of psychosocial support training by school teachers on improving mental health and hope of school going adolescents in earthquake-affected district in Nepal

（ネパール地震被災地において教師による心理社会的サポートが思春期学童へのメンタルヘルスと希望に及ぼした効果）

ロリナ ディタル

Rolina Dhital

Table of Contents

List of Tables

List of figures

List of appendices

Abbreviations

CHS: Children's Hope Scale

CI: Confidence Interval

CIOMS: Council for International Organizations for Medical Sciences

CONSORT: Consolidated Standards of Reporting Trials

CPSS: Child Post-traumatic Stress disorder Symptom Scale

cRCT: Cluster Randomized Controlled Trial

DSRS: Depression Self-Rating symptom Scale

ERASE-Stress: Enhancing Resiliency Among Students Experiencing-Stress

GEE: Generalized Estimating Equation

IASC: Inter-Agency Standing Committee

MHPSS: Mental Health and Psycho-Social Support

PTSD: Post-Traumatic Stress Disorder

SD: Standard Deviation

WHO: World Health Organization

Abstract

Background

Adolescents can be prone to mental health problems such as post-traumatic stress disorder (PTSD) and depression following disasters. However, hope can help adolescents cope with the challenges better. In a post-earthquake situation in low-income countries, school teachers can provide timely psychosocial support that could improve mental health and hope among adolescents.

Methods

I conducted a cluster randomized controlled trial in 15 schools in Dhading, a severely earthquake-affected district in Nepal. The schools were randomized, as a result, 8 were in the intervention group and 7 in the control group. A total of 1,220 adolescents were recruited at baseline of which 605 adolescents belonged to intervention group and 615 to control group. At 6-month follow-up, a total of 511 adolescents were available from the intervention group and 556 from control group for the study. The intervention focused on training teachers on providing psychosocial support for adolescents. Focus group discussions (FGDs) were conducted with the teachers to assess the process of intervention.

Results

The intervention did not show a significant effect on reducing PTSD symptoms (β=0.74, p=0.165). It also did not show significant effects on depression symptoms (β=0.25, p=0.061), and hope (β=-0.35, p=0.406) among the adolescents. However, FGDs suggested the training was helpful for the teachers to provide psychosocial support to the adolescents.

Conclusion

The intervention did not improve PTSD symptoms, depression symptoms, and hope among adolescents in Dhading. However, the training was perceived to be useful by the teachers. Thus, efforts are needed to upscale the intervention to improve mental health, and longer follow-up is needed to assess the changes over time.

Key words: Adolescents, mental health, hope, psychosocial support, school, teachers

Chapter 1

Introduction

1.1 Global context of adolescent mental health

Globally, 10-20% of children and adolescents are affected by mental health problems.(1) Adolescence is a period between 10 and 19 years of age when major physical, psychological and behavioral changes take place.(2) Many adolescents become prone to mental health problems as they transition from childhood to adulthood. Around 50% of the mental health problems are believed to start by the age 14.(3) However, most of the problems in adolescents often go unnoticed, particularly in low-resource settings.(4)

The mental health problems manifested in adolescents could be more complex than in adults.(5) The symptoms may cover a wide range of behaviors, responses, and severity.(5) If not recognized and intervened timely, the consequences could be damaging and disabling in the long run.(6) In low-income countries, compromised health system could add additional challenges to address these problems for this vulnerable population.(7)

1.2 Adolescent mental health in disaster settings

Adolescents are a vulnerable population that could be affected largely by mental health problems in the aftermath of a disaster.(8) Disaster is a common global challenge that disrupts the community or a society leading to widespread human, material, economic, and environmental losses.(9) It can cause serious physical and psychological injuries.(2) The psychological injuries can lead to mental health problems such as post-traumatic stress disorder (PTSD) and depression.(10)

A review conducted among 160 studies suggested that disasters can have a negative psychological impact among 10% to 50% of the survivors persistently.(11) Adolescents are shown to have higher mental health problems as compared to adult population following disasters such as earthquake.(12) PTSD is the most commonly identified mental health

problem in the aftermath of an earthquake.(13) Depression is also a common mental health problem identified following an earthquake.(14, 15) Both PTSD symptoms and depression symptoms can either co-occur or occur independently after the disaster.(16)

PTSD is a condition that can develop in people who have experienced unpleasant events.(17) It can occur either due to a single traumatic event such as accident or exposure to repeated trauma such as community violence.(17) The symptoms usually begin within 3 months of the traumatic incident but can also begin many years later.(18) PTSD symptoms can last for a minimum of 1 month and may remain for many years if left untreated.(19, 20) The symptoms of PTSD in adolescents could range from fear, bad dreams, and disturbing thoughts to anger and aggression.(21)

Depression is a common mood disorder that can begin from early childhood.(4) Unlike PTSD, it is not always related to a traumatic event. Various factors can contribute to it such as environment, family, friends, school, and community.(22) Depression is diagnosed when the symptoms last for a minimum of 2 weeks.(17) Symptoms of depression in adolescents can include sadness, lack of sleep, crying, and emotional numbing.(19, 23)

Evidence on the status of the PTSD and depression symptoms among adolescents remain widely varied. Studies on adolescents after earthquake reported a wide range of prevalence rates for PTSD from 4.5% to 95%.(24-32) Prevalence rates reported for depression among adolescents after earthquake have also ranged from 13.6% to 51.3%.(33-36) The differences could be attributed to the time of the study conducted after the disaster, magnitude of the earthquake, socio-demographics and local contexts.(37)

Despite the challenges, hope can help adolescents to cope better with difficulties.(38, 39) Hope includes the belief in one's potential to achieve a goal and the belief in the ability to initiate and sustain the way towards achieving the goal.(40) Hope is directed towards positive future expectations and working towards it.(41) Hope can help adolescents cope better in challenging circumstances and may act as a protective factor against mental health problems.(42)

1.3 Earthquake in Nepal

Nepal is a low-income country that faces disasters such as flood, landslide, fires, and avalanche affecting thousands of lives every year.(43) The country also ranks 11th for the earthquake risks in the world.(44) On April 25, 2015, on a Saturday noon, the country faced a devastating earthquake of 7.6 Magnitude.(45) The massive earthquake was followed by over 300 aftershocks in next several months, of which 4 aftershocks were greater than 6 Magnitude.(45) The epicenter of the earthquake was in a district called Gorkha which lies 76 kilometers northwest to the capital city, Kathmandu.(45) (Map in Annex 1)

It was estimated that more than one-third of the entire population in Nepal was affected by the earthquake.(45) The earthquake killed over 8,000 people and over 6,000 were severely injured.(45) As the earthquake took place on a Saturday which is a weekend holiday in Nepal, lives of thousands of school children were saved. However, over 25,000 schools and over 400,000 houses were severely damaged across the country.(46)

The initial assessment by the government of Nepal suggested that 31 out of 75 districts in Nepal were affected by the earthquake.(45) Moreover, the government declared 14 districts as the severely affected districts based on the magnitude of damage caused.(45) In addition to the loss of human lives, the earthquake leads to widespread damage to official and residential

buildings, schools and health facilities, roads and bridges, and water and hydropower plants. The remote and rural areas were more affected as compared to the cities due to the poor housing structures.(45)

The government also declared a state of emergency and called for international support.(47) In addition to rescue and relief, around a dozen of local and international organizations provided psychological first aid to the earthquake victims.(48) However, no standard protocols were provided by the government for mental health and psychosocial support (MHPSS) for disaster settings. The mental health policies had not yet been implemented properly in the country. Thus, initial situational analysis suggested that most organizations faced challenges to provide proper MHPSS.(48)

The adolescents comprise 11.8% of the total population in Nepal.(2) However, only a few organizations had worked on adolescent mental health in the aftermath of the earthquake. Furthermore, all the schools in the earthquake affected districts remained closed for over a month after the earthquake. Thus, most schools were not directly involved in providing immediate psychosocial support to the school going children and adolescents. When the schools re-opened, most schools of the affected districts continued to provide education to children and adolescents in makeshift classrooms or open fields.

The damage caused by the earthquake was further worsened by the political instability and shortage of essential supplies in the country.(49) This could have led to delay in relief and reconstruction work in earthquake-affected areas. The immediate psychosocial problems following earthquake could also have been compounded by the challenges caused by political instability.(49) This could have worsened the mental health problems among many children and adolescents.

1.4 Different layers of mental health and psychosocial support in disasters

As per the guideline outlined by Inter-Agency Standing Committee (IASC), the mental health and psychosocial support should be multilayered. The type of intervention directed and the target population for each layer would be different. However, the interventions for each layer should occur simultaneously.(50)

The guideline had outlined different layers of intervention with more generalized interventions for a wider population at the bottom and more specialized intervention at the top. (Figure 1)

The first layer of intervention at the bottom is basic service and security. This layer of intervention focuses on basic needs of overall population such as food, water, shelter, and basic health care.(50)

The second layer of intervention is community and family supports. This layer focuses on the affected population who could benefit from community and family supports to uphold their mental health and psychosocial well-being. School-based interventions and other community interventions fall into this layer.(50)

The third layer towards the top is targeted at a smaller group of people. The population in this layer would require more focused individual, family or group interventions by trained and supervised workers. But the providers do not require to be specialists in the field. This layer includes psychological first aids and basic mental health care provided at primary health care level.(50)

The fourth and the topmost layer is specialized services. This layer usually includes a subgroup of a population who face significant difficulties and would require more specialized

care to overcome their problems. The specialized care would include psychiatric and psychological support to be provided by specialists. This population often needs referral to a higher health center.(50)

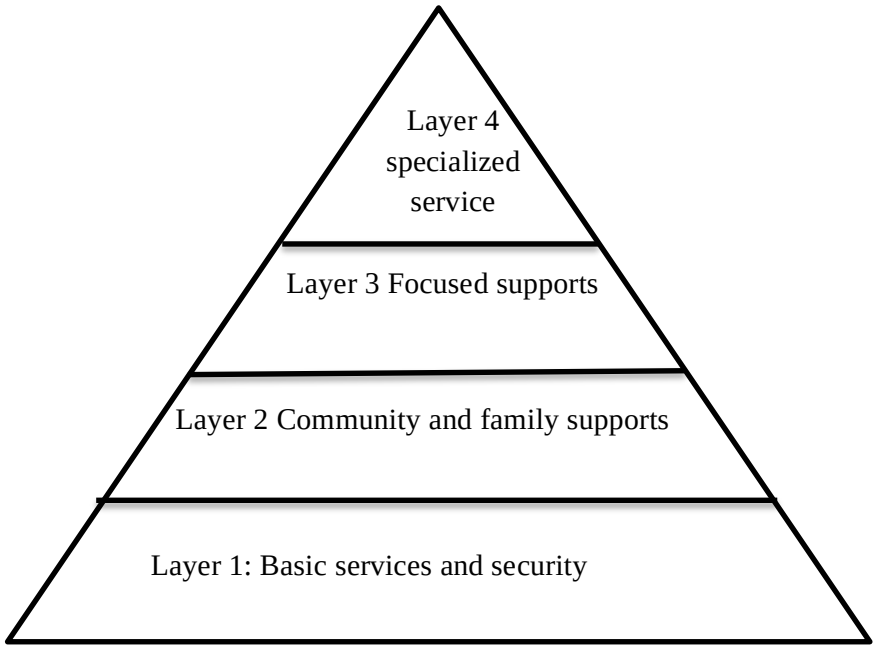


Figure 1. Different layers of mental health and psychosocial support(50)

1.5 Role of schools in providing psychosocial support to adolescents

School is an important community setting to promote mental health and hope for adolescents.(51) School can provide community-level interventions.(50) It can also provide more focused intervention to subgroups of affected students through trained personnel such as the health providers or counselors.(50)

Systematic reviews and meta-analyses on school-based psychosocial interventions for adolescents after natural disasters such as an earthquake have suggested positive findings.(52, 53) However, most of the psychosocial support interventions for children and adolescents in the previous studies were provided by health providers or psychologists.(53) A recent systematic review that included the publications between 2002 and 2016, had identified 8 studies on health care providers or mental health specialists such as psychiatrists and psychologists, after natural disasters.(29, 54-61) However, only 4 studies had focused on teachers after natural disasters.(62-65)

Though the psychosocial support provided by the health care providers are considered to be effective, such intervention is not always feasible in low-resource settings.(8, 53) Most low- and middle-income countries (LMICs) are likely to continue facing shortage of health professionals, and the shortage of mental health professionals is severer.(66)

A low-income country such as Nepal faces a severe shortage of mental health professionals with only 2 psychiatrists and 0.6 clinical psychologists per million population.(67) Under these circumstances, school-based interventions delivered through health professionals would not be feasible. Teacher-mediated interventions would remain the most feasible option to provide psychosocial support to the affected adolescents in low-resource settings.(62)

School teachers could be more readily available and have a positive influence on children and adolescents.(51) They can provide timely and continued psychosocial support.(53) Teachers can help motivate the students to believe in themselves and help achieve their goals.(68) However, the evidence on the effectiveness of teacher-mediated interventions for low-income settings remains inadequate.

1.6 Teacher-mediated psychosocial support interventions after natural disasters in LMICs

I conducted a literature review for school-based interventions mediated by teachers after the natural disaters in LMICs. I included the studies published between 2000 and 2017 and the findings were consistent with recent systematic reviews on psychosocial support interventions for adolescents and children.(53, 69) Only 4 teacher-mediated intervention studies were identified that had measured the school children's well-being.(62-65) The identified intervention studies were conducted in Sri Lanka,(62) China,(63) and Turkey.(64, 65)

The randomized controlled trial (RCT) from China was conducted among 210 school going children 12 months after the 2008 Sichuan Earthquake.(63) The mean age of the children participating in the intervention was 10.5 years. The intervention focused on calligraphy treatment of 30 days for 129 children in the intervention group with 81 children in the control group. The outcomes of the study included PTSD symptoms and salivary cortisol level. The intervention showed significant improvement in PTSD symptoms among the children in the intervention group.(63)

The pre and post-intervention study from Turkey was conducted among 287 school going children with the mean age of 11.5 years. The intervention was provided in the year 2000,

around 4 to 5 months following the 1999 earthquake. The intervention was on training the school authorities and teachers on classroom-based school reactivation program. The intervention comprised of teacher-led 8 sessions of 2-hourly meetings that focused on psychosocial modules and cognitive behavioral techniques. The children were followed up after 6 weeks which showed significant improvement of PTSD symptoms among the students in intervention group.(65) This study further followed the children in the schools 3 years after the intervention. The teachers who were not involved in the early intervention were blinded of the intervention and were asked to assess the symptoms among the children. The results showed better scores for the children from the intervention group for mental well-being as compared to those from the control group.(64)

The study from Sri Lanka was conducted following 2004 Tsunami.(62) It was a quasi-RCT conducted 2 years after the Tsunami in 2006 among 166 school going children in 1 school only, of which 84 were in the intervention group. The students were between the age 9 and 14 years. The unit of randomization in the study were classrooms within the same school. The training for teachers focused on a program called 'ERASE-Stress **(**Enhancing resiliency among students experiencing–Stress) Sri Lanka' which comprised of 12 structured sessions. The teachers in both intervention and control groups received the same training before the intervention was implemented. The intervention was classroom-based that helped children to cope with trauma experiences. The teachers were trained on psychosocial support and had applied the lessons from the training in their everyday classroom activities. The teachers in the control group were told not to implement the lessons from the training. Instead they provided religious lessons on Buddhism to the students in the

control group. PTSD symptoms, depression symptoms and hope were significantly improved in the intervention group at 3 months follow-up.(62)

1.7 Research gaps

Teacher-mediated, school-based interventions could be more feasible and sustainable to provide psychosocial support to adolescents in post-earthquake situations.(8) However, little is known about the effect of such interventions following earthquake in Nepal and other low-income countries.

In the context of low- and middle-income countries, evidence is available only from China, Turkey, and Sri Lanka.(62-64) In particular, in Sri Lanka, psychosocial support training for teachers showed positive effect on children's mental health outcomes.(62) However, the study was conducted only among 166 children in one school, of which 84 were in the intervention group.(62) Thus, the effect of such intervention is less understood for a wider population in multiple schools in a post-earthquake situation.

In this Sri Lankan study, the teachers in both intervention and control groups attended the same training prior to implementation.(62) In the control group, the type of support to the students was not used from the training.(62) But spill-over effect cannot be completely ruled out between the 2 groups . Therefore, a better intervention design is needed to provide a stronger evidence.

1.8 Objective

To address the research gaps, this study was conducted 16 months after the earthquake, in multiple schools, in a post-earthquake situation in a low-income country with the following objective.

To examine the effect of psychosocial support by school teachers from multiple schools in a severely earthquake-affected district 16 months after the earthquake in Nepal on PTSD symptoms, depression symptoms and hope among the adolescents.

1.9 Research hypothesis

I hypothesized that if the teacher-mediated intervention is adapted for multiple schools in a post-earthquake situation in a low-income country, it could help improve PTSD symptoms among the adolescents. The intervention could also improve depression symptoms and hope among the adolescents affected.

1.10 Conceptual framework

I adapted the conceptual framework (Figure 2) developed by United Nations Relief and Work Agency (UNRWA) on the principles for psychosocial support in education for disasters.(73) I adapted the intervention to provide training to school-teachers that focused on 6 core principles of psychosocial support. The intervention intended to train the teachers to implement psychosocial support through their everyday school activities instead of just some specified activities. The 6 core principles of psychosocial support included the following.

- Holistic care: It focused on considering adolescents' needs in different areas such as educational, emotional, psychological, physical, social, and safety wellbeing.

- Enabling care: It focused on promoting positive aspects of well-being such as resilience, coping and hope.

- Rights-based care: It focused on respecting adolescents' rights to learn and participate in educational activities, and protect them from harm and violence.

- Child-friendly care: It focused on creating a safe and comfortable environment in the schools for children to enjoy the learning experiences from caring teachers.

- Child-centered care: It focused on adolescents' strengths, best interests, and needs instead of focusing on highlighting the weaknesses.

- Comprehensive care: It focused on caring adolescents on a range of daily school activities to implement all the above aspects of psychosocial support care.

To implement the training effectively based on the above mentioned conceptual framework, I adapted the standard training resource package from UNRWA.(73) The resource package was comprehensive and was structured around the 6 core principles of psychosocial support mentioned above. The details of the intervention are explained in Chapter 2.

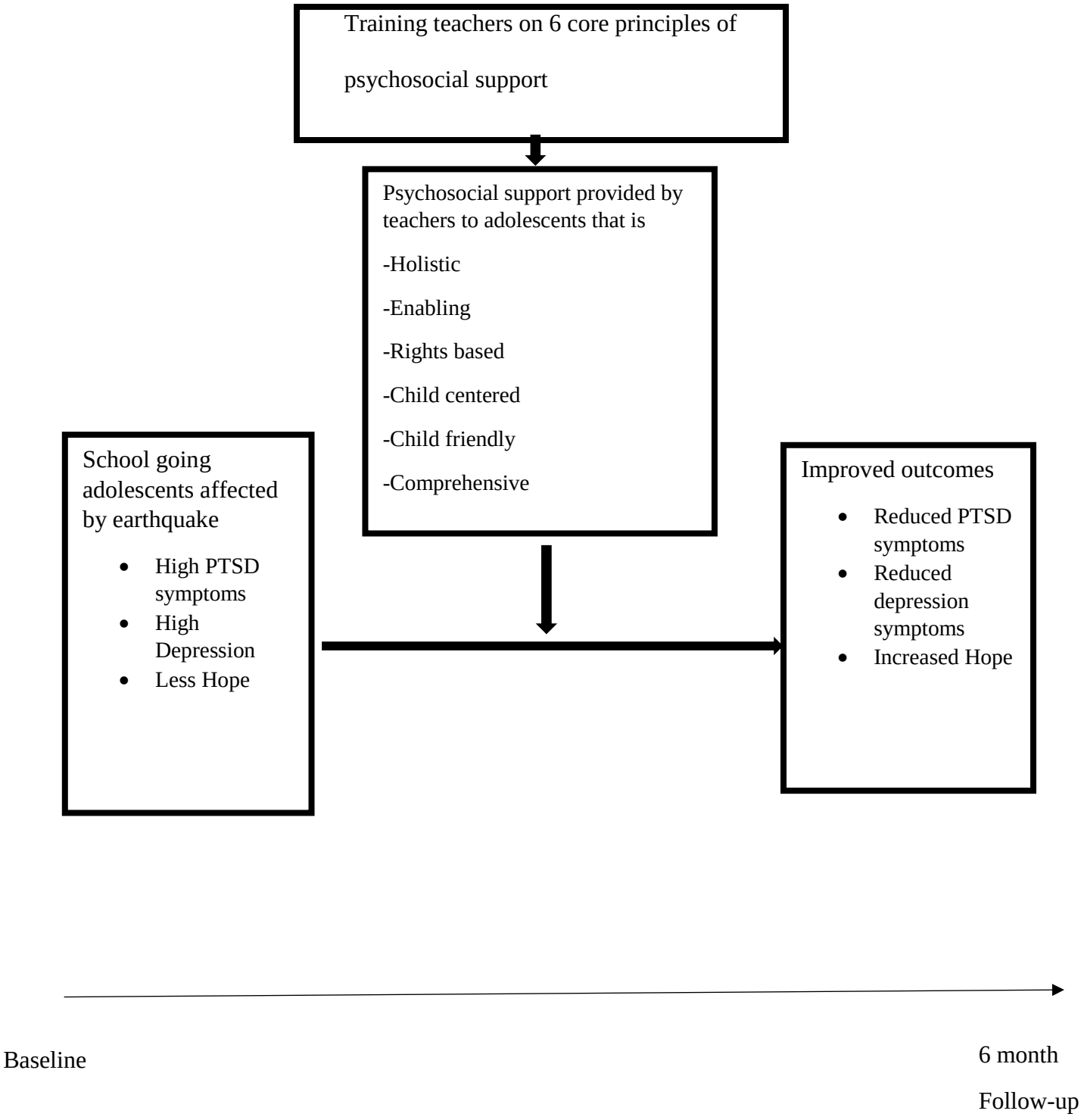


Figure 2: Conceptual framework

Chapter 2:

Methods

2.1 Trial design

This study is a cluster randomized controlled trial (cRCT). The trial was registered with Clinical Trials. Gov, under following registration number: NCT03387007, retrospectively. Though the study was registered retrospectively in an open domain, the trial protocol was submitted prospectively to the Research Ethics Committees of the University of Tokyo and Nepal Health Research Council. The study follows the process as suggested by the (Consolidated Standards of Reporting Trials) CONSORT guidelines for cRCT.(74) The hypothesis and outcomes of the study remain consistent with the study protocol. The schools were the clusters and unit for randomization for the intervention.

2.2 Study area

The study area of this study was Dhading district in Nepal. National Planning Commission of Nepal had identified Dhading as a severely affected district by the 2015 earthquake in Nepal.(45) According to National Planning Commission of Nepal, the remote districts were more affected by the earthquake and needed more support.(45) Dhading is one of the remote districts affected by the earthquake in Nepal. I intended to conudcte the study in a remote district and thus selected this district by convenience.

Dhading lies adjacent to Gorkha district which was the epicenter for the earthquake.(75) According to initial assessment, 70% of 236 schools were damaged and around 70,000 students were affected in Dhading.(75) About 50% schools in the district were considered to be completely destroyed.(75)

Around 50% of Dhading lies at an elevation of 1,000 to 3,000 meters above the sea level.(76) The roads connecting to the areas in the higher altitude are mostly un-pitched which affects the accessibility, mostly in rainy seasons. The district had only one municipality called

Nilkantha, at the time of data collection. Any hilly and mountainous localized area within a district, with a population of more than 10,000, that have access to electricity, drinking water, and transport is declared as a municipality in Nepal.(23) The topography within Nilkantha municipality in Dhading range from the lowlands of around 600 meters to the elevation of around 2,000 meters above the sea level.(75) I included all the government secondary schools from the municipality of Dhading in this study.

At the time of baseline data collection, almost all the selected schools' buildings were damaged. Some schools were teaching the students in makeshift classrooms. According to District Education Office (DEO) in Dhading, almost all the damaged schools had received financial support from various international and national organizations for construction of the school buildings. During our initial visits, the construction of new school buildings was taking place within the school premises of most schools. However, none of the schools had received training for the school teachers on providing psychosocial support to the students. At 6 months follow-up, the construction process in all the schools was almost complete and the students had started studying in newly built classrooms.

2.3 Study participants

The study participants for this study were school going adolescents from grades 6, 7 and 8 from the selected schools. In the context of Nepal, students in the selected grades would fall into the age groups of around 11 to 14 years. It is the beginning of transition period with new physical and emotional changes.(2) Around 50% mental health problems start at the age 14 years.(3) Moreover, the mental health problems tend to double from around age 13 to 18 years.(77) This highlights the need to timely address the mental health problems among this

population to prevent serious consequences. On the other hand, it is also a time when they are more receptive and more resilient as compared to older adolescents.(77)

The inclusion criteria comprised all the adolescents from the grades 6, 7 and 8 of the selected schools with a minimum attendance rate of 80% in the given academic year. I intended to exclude the adolescents with any diagnosed mental health problems who would not be able to answer the self-administered questionnaires. However, the school teachers did not identify or suggest such students.

I selected the students from the selected schools through simple random sampling without replacement method. I first prepared a list of all the student identification numbers of the eligible students from grade 6, 7 and 8 for each school. The average number of students in each grade was around 40 to 50 and the average daily attendance rate was around 75 to 80% in most schools. I then generated a list of random numbers and used the list to select 100 students for each school. As a result, I identified 1,500 adolescents to be eligible for this study. The details of the total number of adolescents recruited in this study is provided in the sample size section of this chapter.

I excluded the adolescents who refused to provide assent, did not have written informed consent from their guardians or were absent on the day of data collection. Research assistants and I followed up the students who participated at the baseline after 6 months. The details of the ethical procedures are described under the ethical considerations section.

2.4 Pairing of schools

The municipality in Dhading had 15 secondary government schools in total. Though I had selected all the schools from the same municipality, some differences existed between these schools. The differences included topography, accessibility, and school infrastructure.

In terms of topography, some schools were located at the base of the hills while some schools were located at an elevation. The schools at the base were easier to access whereas the schools located in the higher lands were difficult to access, in particular during rainy seasons. The schools towards the base were located in a more crowded market area as compared to the schools located in the higher lands. The schools at the base were also less damaged as compared to the schools in the higher lands.

The DEO officers helped in grouping the schools into pairs based on their similarities as mentioned above. The pairing was done for the list of total government secondary schools in the municipality. They created a total of 7 pairs and 1 unpaired school out of the total 15 schools based on the categories as follows.

2.4.1 Schools with best accessibility and infrastructure

Out of 7 pairs, a pair of schools were located at the base and very close to each other. According to the DEO officers, these schools were the most accessible schools and had better school infrastructure than other schools.

2.4.2 Schools with moderate accessibility and infrastructure

The second, third and fourth pairs were located higher up in the hills. The schools had a moderate level of accessibility and were more remote as compared to the first pair of schools. The infrastructure of the schools was moderately damaged as compared to the schools in the first pair. The DEO officers paired the schools located closest to each other. One of the unpaired school also fell into this category.

2.4.3 Schools with worse accessibility and infrastructures

The fifth, sixth and seventh pairs of schools were more remote and had more damage due to the earthquake than the schools in the previous pairs. These schools were difficult to access

particularly in rainy seasons. It would take around 2 hours of walk to reach the school or by 1 hour of very careful driving on a non-pitched and muddy road to reach the schools.

2.5 Randomization and allocation

2.5.1 Randomization

First, the DEO provided the list of all the 15 government secondary schools. Then, I invited all the school principals to attend a briefing meeting about the research. I then explained the randomization process for selecting schools for the intervention, and randomized the schools with the help of research assistants and the DEO officer through following steps:

- Research assistants and I wrote the names of each school in separate pieces of papers.
- I grouped the papers with schools' names into pairs based on the process explained in 2.4 Pairing section of this thesis.
- Research assistants and I folded the papers and kept each paper inside separate opaque envelopes.
- The DEO officer randomly assigned the opaque envelopes from each pair to either Group A or Group B.

He also randomly assigned the unpaired school into one of 2 groups.

2.5.2 Allocation concealment

I concealed the allocation until all the schools were assigned to 2 groups as mentioned above. The DEO officer and I then revealed the names for each group through following steps.

- I wrote the terms "Intervention" or "Control" on separate opaque papers and carefully folded the papers into same sizes.
- The DEO officer randomly picked up one of the 2 folded papers for Group A.
- He revealed the name written on the paper as "Control".

- He named all the schools assigned to Group A as “Control” group.
- He named all the schools in Group B as “Intervention” group.
- All the school principals agreed to the allocation of their schools to either intervention group or control group.

2.5.3 Blinding

Blinding was not done for the intervention because I required permission from each school to conduct the training. I had also informed all the schools about the plan to disseminate the findings of the study after the completion of the study.

2.6 Intervention

2.6.1 Training of school teachers

The intervention for this study was school teachers’ training on psychosocial support. I developed the intervention for this study based on the suggestions from the summary report of the national consultative meeting held in Kathmandu, Nepal in October 2015 on “Strengthening psycho-social support in the post-disaster situation in schools and communities of rural Nepal”. The report had highlighted the need for community-based and sustainable interventions in education.(78)

According to IASC, school-based interventions fall under the second layer (Figure 1), namely community and family supports.(23) This layer of intervention focuses on the population who are able to uphold their mental health and psychosocial well-being if they receive appropriate support system. I adapted the training guidelines on psychosocial support for education in emergencies prepared by UNRWA.(24) I consulted the Department of Psychiatry and Mental Health at Tribhuwan University Teaching Hospital in Kathmandu, Nepal to refine the training manual further to fit into the socio-cultural contexts of the

country. The department nominated an experienced clinical psychologist as the trainer who had worked closely with the children and adolescents in Nepal. The clinical psychologist provided 2 days training on psychosocial support for the school-teachers. The training comprised 8 sessions in total with 1 to 2 hours for each session.(24) All the sessions were interactive in nature. The sessions covered the following topics:

1. Key concepts and principles of psychosocial support
2. How children react to a crisis situation
3. The role of teachers in promoting psychosocial well-being
4. How to discuss a crisis with children
5. Activities for improved learning and recovery
6. How to manage challenging behavior in the classroom
7. Identifying and assisting children who may need more advanced support
8. Teachers' well-being

2.6.1.1 Key concepts and principles of psychosocial support

According to UNWRA's training manual, the purpose of this topic was to introduce key concepts and principles of psychosocial support to the teachers.(24) The training activities included matching key concepts with their definitions to assess the knowledge of the teachers. The session highlighted that it is not necessary for the teachers to be health professionals to be able to help the adolescents cope and overcome difficult life situations. The training also highlighted that they can promote psychosocial support through many ways in everyday school activities to the students. It also highlighted that psychosocial support should be comprehensive.

2.6.1.2 How children react in a crisis situation

The purpose of this topic was to explore the feelings and reactions of the adolescents to the difficult situations. The session highlighted that adolescents and children can cope better in presence of responsible and caring adults such as teachers. The teachers can help create a calm and stable surrounding despite the difficulties. The training also addressed that majority of the adolescents could recover if basic psychosocial support is provided through classroom activities and recreational activities. The trainer encouraged the teachers to discuss their past experiences where they had positively influenced and helped the adolescents.

2.6.1.3 The role of teachers in promoting psychosocial well being

The purpose of this topic was to facilitate the teachers to understand how they could find ways to promote psychosocial well-being of the students through daily classroom activities. It focused on subtopics such as how the teachers could promote a sense of security, a sense of identity, self-esteem, and hope among the adolescents even in crises.

The trainer also encouraged teachers to discuss different strategies to promote psychosocial well-being and internalize why those activities would be helpful for their context. I followed up the teachers at 6 months and the activities they aforementioned were evaluated qualitatively through focus group discussions. The details of the process evaluation are provided in Chapter 3.

2.6.1.4 How to discuss a crisis with children

The purpose of the topic was to facilitate teachers to understand and practice appropriate ways of communicating with the adolescents. The session highlighted that adolescents and children need factual information. It also highlighted the ways for teachers to start a conversation with the adolescents to help them overcome the feelings of guilt. Moreover, it highlighted the need to respect the privacy of the adolescents and not disclose the traumatic

events in their lives in the public such as in front of the class. The session encouraged the teachers to promote healthy discussions among the adolescents while respecting their confidentiality.

2.6.1.5 Activities for improved learning

The purpose of this session was to facilitate the teachers to promote a creative platform and help students cope with the help of non-formal recreational activities in the school. The session highlighted that such session could help the adolescents recover traumatic experiences and regain their confidence.

2.6.1.6 How to manage challenging behavior in the classroom

This session intended to help the teachers explore positive approaches to handle challenging behavior in the classroom, and help such students through proper psychosocial support. It also facilitated the teachers to understand the reasons behind their actions and find positive non-threatening solutions for such adolescents.

2.6.1.7 Identifying and assisting children who may need more advanced support

The purpose of this session was to facilitate the teachers to recognize the symptoms and refer the ones in need to health centers for treatment. The session also highlighted the different layers of psychosocial support. The trainer encouraged the teachers to share their experiences and observations of the students and discuss on how they dealt with the situations. The trainer also encouraged them to share their future plans on how they intend to address such situations after the training.

2.6.1.8 Teacher's well being

This session highlighted the importance for teachers to look after their own emotional and mental well-being. The session facilitated the teachers to address their own stress and helped

them find ways to handle their stress. The trainer encouraged the teachers to identify and discuss about their plans to handle their stress in the future.

The trainer provided training handouts in English to all the teachers considering their level of qualification. The trainer also provided additional informal translation of the original version of the English handout to facilitate their understanding. The trainer and I had translated the manual from English to Nepali.

2.6.2 Selection criteria for the trainees

The participants of the training were school teachers for lower-secondary school level. In Nepal, grades 6 to 8 were considered to be lower-secondary level at the time of data collection. The intervention schools had a total of 23 lower-secondary level teachers, of which 16 were selected to participate in the training. Though it would have been ideal to provide training to all the secondary level school teachers, the training required a smaller number of participants for more effective interactions. Moreover, only one training was feasible within the study period. Therefore, the school principals nominated 2 teachers each from their school to participate in the training.

The selection criteria for the school teachers to participate in the training were as follows.

- Those who were teaching all the selected grades- 6, 7 and 8.
- Those who were the full-time employee in the school.
- Those considered to have a positive influence on the students as assessed by the school authorities.
- Those considered to be able to spend a significant amount of time with the students.
- Those teaching major subjects such as social sciences or health sciences or a class teacher for any of the selected grades.

- Those teaching the students in the selected grades preferably on every school days or more than 4 times a week.
- Those without a current diagnosed history of mental illness or any other personal crises that would interfere with their own well-being.

2.6.3 Control group

The control schools had a total of 29 teachers teaching in the grades from 6 to 8. The teachers did not receive any training on psychosocial support. Instead, the teachers for higher grades in the control schools received training on nutrition as part of a separate study.

2.7 Measures

The primary outcome of this study was PTSD symptoms. The secondary outcomes were depression symptoms and hope.

2.7.1 Outcomes

2.7.1.1 Primary outcome

I selected PTSD symptoms as the primary outcome of this study as it is one of the most common mental health problems identified following an earthquake.(13) Moreover, the intervention focused on the psychosocial well-being of the adolescents and had trained the teachers to address trauma symptoms.

I used Child PTSD symptom scale (CPSS) to measure the PTSD symptoms.(79) The scale has already been validated in Nepal.(19) The CPSS has 17 items based on PTSD diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).(79) The scores ranged from 0 to 51. The higher scores indicated severer PTSD symptoms. The scale covers symptoms related to re-experiencing, avoidance and hyperarousal.(79) The symptoms related to re-experiences included questions such as, “Having upsetting thoughts or images

about the event that came into your head when you didn't want them to".(79) The symptoms related to avoidance included questions such as "trying to avoid activities or people, or places that remind you of the event''.(79) The symptoms related to hyperarousal included questions such as "I feel easily startled''.(79) The details of all the questions are provided in the Annex.

2.7.1.2 Secondary outcomes

I chose depression symptoms and hope as the secondary outcomes of this study.

Depression symptoms

I selected depression symptoms as a secondary outcome of this study as depression is also considered to be a commonly occurring mental health problem in the aftermath of an earthquake.(13) Depression may either co-occur with PTSD or occur independently.(16) Unlike PTSD, depression may not always occur as result of a traumatic event. Other factors could also influence depression symptoms.

I measured depression symptoms using Depression Self-Rating Scale (DSRS), which is an 18-item self-report measure for children and adolescents.(80) The DSRS has been validated in Nepal.(19) The scores range from 0 to 36 with higher scores indicating severer symptoms for depression. The questions on depression symptoms included emotional symptoms such as "I feel so sad I can hardly stand it'' and physical symptoms such as "I feel tummy ache".(80)

Hope

I measured hope as a secondary outcome using children's hope scale (CHS).(40) Hope includes the belief in one's potential to achieve a goal and in the ability to initiate and sustain the way towards achieving the goal.(40) Hope is also focused towards positive future expectations and working towards it.(41)

The CHS is a 6-item measure(40) which has been recently validated in Nepal.(81) The score ranged from 1 to 36, with higher scores indicating higher levels of hope. The questions included the adolescents' perspectives on belief in to find solutions to overcome difficulties such as, "When I have a problem I come up with lots of ways to solve it" and positive outlook towards future such as, "I think the things I have done will help me in the future".(40)

2.7.2 Sociodemographic characteristics

I adapted the questions related to sociodemographic characteristics of the adolescents from the Nepal adolescent and youth survey 2011.(82) The variables included gender, age, living arrangement, and family size.

2.8 Sample size

I calculated the sample size for this study based on the mean values of CPSS from a previous study conducted in Nepal.(9) The mean scores of CPSS in the previous study for 2 groups after the intervention were 17.7 (SD 5.0) and 18.6 (SD 5.3), respectively.(9) The minimum required sample size for each group was calculated to be 498 with a power of 80% and 5% level of significance. Thus, the total minimum required sample size was calculated to be 996. I extrapolated the sample size considering the loss to follow-up. The research assistant and I screened 1,500 adolescents for eligibility with an attempt to collect 100 students from each school. After exclusion, research assistants and I recruited a total of 1,220 adolescents at baseline of which 1,070 were available for the follow-up.

2.9 Ethical considerations

The study followed all the ethical considerations as outlined in the guideline by Council for International Organizations of Medical Sciences (CIOMS) in collaboration with the World Health Organization (WHO), for research in populations and communities with limited resources, involving children and adolescents, community engagement, and disasters.(83) This research was generated through community engagement following the suggestions from the summary report of the national consultative meeting held in Kathmandu, Nepal in October 2015 on "Strengthening psycho-social support in a post-disaster situation in schools and communities of rural Nepal".(78) The consultative meeting comprised of stakeholders from national and international level. The national level represented both the central- and community-level stakeholders. The report had highlighted the need for community-based and sustainable interventions in education.(78) Therefore, the intervention was derived from the existing need in the community which is in line with the CIOMS and WHO guideline on research in communities with limited resources.(83) The research protocol for the cRCT was then reviewed and approved by the Research Ethics Committees of the Graduate School of Medicine at the University of Tokyo in Japan and Nepal Health Research Council in Nepal. Following the approval, the research team then coordinated with the DEO of Dhading. The DEO authorities then coordinated with all the school principals of the selected schools. A briefing meeting was organized for all the school principals of the selected schools and key local stakeholders under the coordination of DEO. In the meeting, the research team shared the research plan and explained about the intervention. As outlined in the CIOMS and WHO guideline,(83) the research team thoroughly explained about the importance of this research and how it could benefit the schools and adolescents in the community.

As outlined in the CIOMS and WHO guideline for research in communities with limited resources,(83) the research team also ensured the DEO and school authorities that the results would be made available to them after completion of the study. The school principals provided permission for adolescents from the selected grades to participate in the study within the school hours.

The research assistants and I obtained written informed consent from the guardians of the adolescents who participated in this study. Furthermore, the team also obtained written assent from all the selected adolescents to participate in the study each time at baseline and follow-up. We also ensured all the adolescents that they could leave the study any time they wish or feel uncomfortable, despite obtaining approval from their guardians. Furthermore, we ensured that they will not be penalized in any manner for refusal to participate or if they wish to leave the study in between. The anonymity of the adolescents and confidentiality was ensured. We also provided information sheet to all the teachers who participated in the focus group discussions (FGD) and obtained permission from them.

2.10 Data collection

2.10.1 Data collection from the adolescents

The baseline data was collected in August 2016 and follow-up data in February 2017 from all the selected schools in Dhading. The research team collected the data through self-administered questionnaire in all the schools during the school hours. I first trained 6 research assistants on data collection and ethical procedures. The research assistants then provided instructions to the adolescents to fill the self-administered questionnaires in classrooms during regular school hours. The research assistants were available throughout

the process to resolve any problem or explain questions to the adolescents. The adolescents took around 30 to 45 minutes to complete the questionnaire.

2.10.2 FGDs with the teachers

I conducted 8 FGDs with 32 teachers to evaluate the process of the intervention at 6 months follow-up. The participants in the FGDs included both the trained and untrained teachers from the intervention schools. The average number of teachers was around 4 to 5 in each FGD. Around 3 teachers in each school were exclusively teaching the students from grades 6 to 8. Whereas, the remaining teachers were teachin atleast one lesson in either one of the selected grades.

2.11 Data analysis

I conducted bivariate analyses through chi-squared test and independent sample t-tests to assess the difference between the intervention and control groups at baseline and follow-up. I then conducted multivariable analyses through generalized estimating equation (GEE) models to examine the effect of the teachers' training on PTSD symptoms, depression symptoms, and hope. I first generated the unadjusted models and then adjusted models for the primary and secondary outcome variables. I used PASW Statistics 18.0 (SPSS Inc., Chicago, Illinois, USA) for all statistical analyses and a p-value of less than 0.05 was set as the significance level for all analytical procedures.

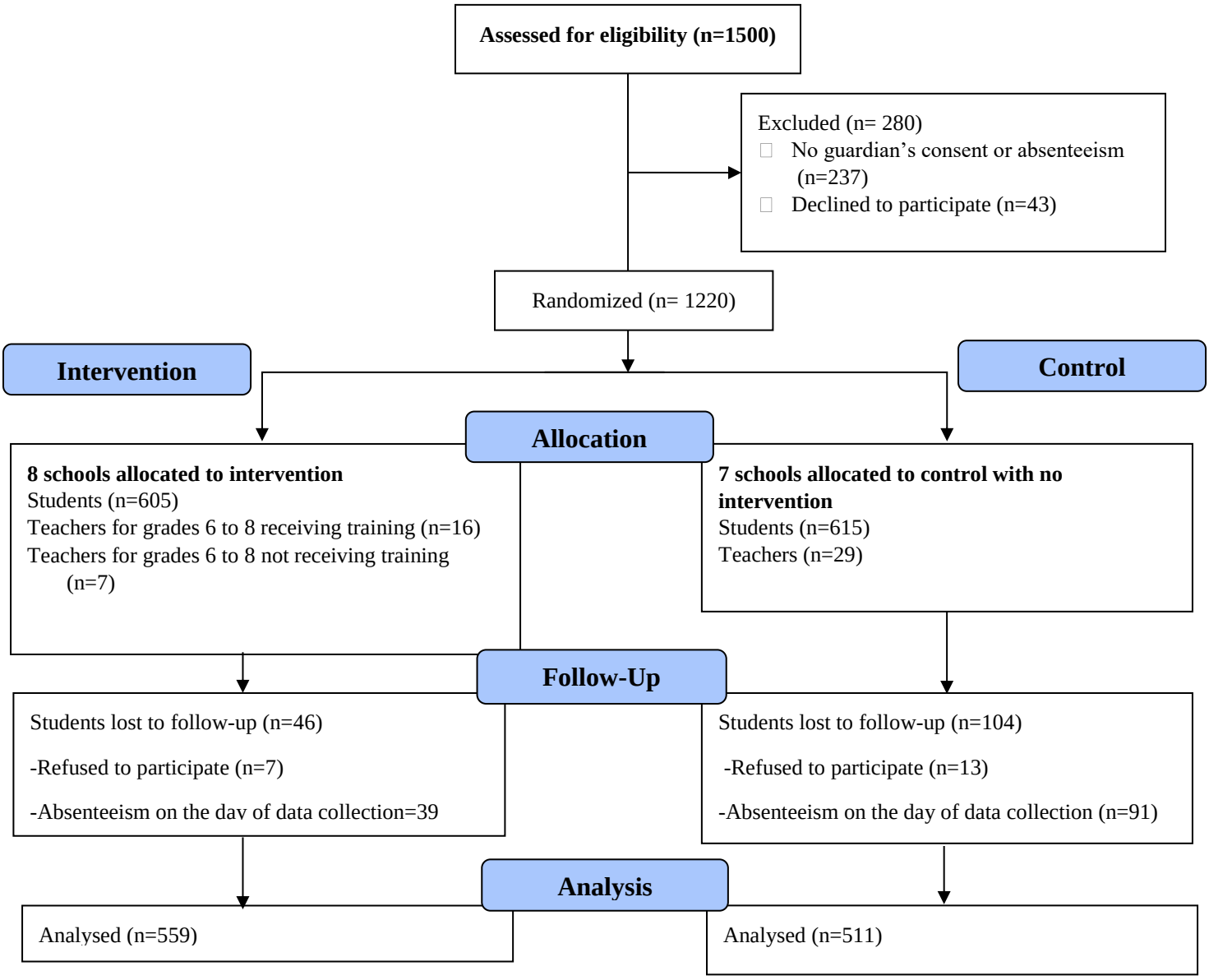
Chapter 3

Results

3.1 Study flow

Among 1,500 eligible adolescents for this study, 1,220 adolescents participated in the baseline study. A total of 280 students were excluded from the study due to the absence of consent forms the guardians or refusal to participate. A total of 605 adolescents belonged to the intervention group and 615 to control group. At 6-month follow-up, a total of 511 adolescents were available from the intervention group and 556 from control group for the study. (Figure 4) The follow-up rate was 91% for the intervention group and 83% for the control group. The main reason for the loss to follow-up was absenteeism on the day of data collection. The average school attendance was around 75% to 80% in every school.

Figure 3. Study flow



3.2 General characteristics of the adolescents in Dhading at baseline

Table 1 shows the general characteristics of the adolescents in the intervention and control groups in Dhading. In Dhading, 605 adolescents were in the intervention group and 615 in the control group. The mean age was almost 13 years in both groups. No significant difference was identified in gender between the intervention and control groups. More than 60% of the adolescents lived with both parents in the intervention and control groups. The mean family size was almost 5 in both groups.

Table 1. General characteristics of the adolescents at baseline

Variable	Intervention n (605) n (%)	Control (n=615) n (%)	p-value
Age[a], mean in years(SD)	12.9 (1.3)	12.9 (1.4)	0.351
Gender[b]			
Male	51.0	49.0	0.369
Female	48.4	51.6	
Living arrangement[b]			
Both Parents	76.7	62.9	<0.001
Single Parent	16.0	17.1	
Other guardian	7.3	20.0	
Family size[a], mean (SD)	5.0 (1.7)	4.8 (1.6)	0.033

[a]Independent sample t-test
[b]Chi-squared test

3.3 Differences in PTSD symptoms, depression symptoms and hope among the adolescents

Table 2 demonstrates the differences in mean scores for PTSD symptoms, depression symptoms, and hope between the intervention and control groups in Dhading.

No major differences were identified for PTSD symptoms between the intervention and control groups. However, the mean score of PTSD symptoms among adolescents at baseline in the intervention group (mean 16.4, SD 7.9) was slightly lower than those in the control group (mean 17.4, SD 8.1, p=0.025). No significant difference was determined for PTSD symptoms at follow-up between the intervention and control groups.

The mean score for depression symptoms at baseline was also slightly lower among the adolescents in the intervention group (mean 12.7, SD 3.6) than those in the control group (mean 13.2, SD 3.6, p=0.037). At follow-up, no significant difference was determined for depression symptoms between the groups.

No significant difference was determined for hope at baseline between the intervention and control groups. No significant difference was determined for hope between the groups at follow-up as well.

Table 2. PTSD symptoms, depression symptoms and hope in control and intervention groups

	Intervention[a] mean (SD)	Control[a] mean (SD)	p-value
PTSD symptoms			
Baseline	16.4 (7.9)	17.4 (8.1)	0.025
Month 6	16.4 (7.5)	16.8 (8.0)	0.477
Depression symptoms			
Baseline	12.7 (3.6)	13.2 (3.6)	0.037
Month 6	13.1 (3.8)	13.0 (3.7)	0.801
Hope			
Baseline	22.2 (6.1)	21.9 (6.1)	0.416
Month 6	22.3 (6.0)	22.3 (6.3)	0.856

[a]Refer to figure 1 for 'n' at baseline and follow for each group.

3.4 Effect of the intervention on PTSD symptoms among the adolescents

3.4.1 Unadjusted GEE model

Table 3 shows the unadjusted model of the effect of the intervention on PTSD symptoms among the adolescents. The intervention did not show significant effect on the PTSD symptoms at 6 months follow-up. The PTSD symptoms scores were significantly lower in the intervention group (β=-1.02, p=0.025) at baseline. No significant change was determined for PTSD symptoms over time between baseline and follow-up period.

Table 3: Unadjusted GEE analyses; effect of intervention on PTSD scores among the adolescents

	β	**(95% CI)**	**p-value**
Intervention*time[a]	0.69	(-0.35, 1.73)	0.194
Time			
Baseline[b]			
Month 6	-0.71	(-1.46, 0.42)	0.064
Intervention			
Control[b]			
Intervention	-1.02	(-2.20, -0.52)	0.025

[a]Intervention*time represents the status of the intervention group in comparison with the control group at 6-month follow-up

[b]Reference group

3.4.2 Adjusted GEE model

Table 4 shows the adjusted model of the effect of the intervention on PTSD symptoms among the adolescents. The intervention did not show significant effect on the PTSD symptoms at 6 months follow-up. The PTSD symptoms scores were significantly lower in the intervention group (β=-1.02, p=0.025) at baseline. No significant change was determined for PTSD symptoms over time between baseline and follow-up.

Table 4:Adjusted GEE analyses[a]; effect of intervention on PTSD scores among the adolescents

	β	**(95% CI)**	**p-value**
Intervention*time[b]	0.74	(-0.31, 1.8)	0.165
Time			
Baseline[c]			
Month 6	-0.74	(-1.5, 0.01)	0.052
Intervention			
Control[c]			
Intervention	-1.04	(-1.94, -0.13)	0.024

[a]Adjusted for age, gender, ethnicity, family size, and living arrangement

[b]Intervention*time represents the status of the intervention group in comparison with the control group at 6-month follow-up

[c]Reference group

3.5 Effect of the intervention on depression symptoms among the adolescents

3.5.1 Unadjusted GEE model

Table 5 shows the unadjusted model of the effect of the intervention on depression symptoms in Dhading. The intervention did not show significant effect on the depression symptoms at 6 months follow-up. However, the depression symptoms scores were significantly lower in the intervention group (β=-0.14, p=0.036). No significant change was determined for depression symptoms over time between baseline and follow-up.

Table 5: Unadjusted GEE analyses; effect of intervention on depression symptom scores among the adolescents

	β	**(95% CI)**	**p-value**
Intervention*time[a]	0.25	(-0.01, 0.99)	0.054
Time			
Baseline[b]			
Month 6	-0.14	(-0.49, 0.22)	0.450
Intervention			
Control[b]			
Intervention	-0.43	(-0.84, -0.28)	0.036

[a]Intervention*time represents the status of the intervention group in comparison with the control group at 6-month follow-up

[b]Reference group

3.5.2 Adjusted GEE model

Table 6 shows the adjusted model of the effect of the intervention on depression symptoms in Dhading. The intervention did not show significant effect on the depression symptoms at 6 months follow-up. However, the depression symptoms scores were significantly lower in the intervention group (β=-0.42, p=0.039). No significant change was determined in depression symptoms over time between baseline and follow-up.

Table 6:Adjusted GEE analyses[a]; effect of intervention on depression scores among the adolescents

	β	**(95% CI)**	**p-value**
Intervention*time[b]	0.25	(-0.02, 0.97)	0.061
Time			
Baseline[c]			
Month 6	-0.13	(-0.49, 0.22)	0.458
Intervention			
Control[c]			
Intervention	-0.42	(-0.83, -0.02)	0.039

[a]Adjusted for age, gender, ethnicity, family size, and, living arrangement

[b]Intervention*time represents the status of the intervention group in comparison with the control group at 6-month follow-up

[c]Reference group

3.6 Effect of the intervention on hope among adolescents in Dhading

3.6.1 Unadjusted GEE model

Table 7 shows the unadjusted model of the effect of the intervention on hope in Dhading. The intervention did not show significant effect on hope scores at 6 months follow-up. No significant change in hope was observed over time between baseline and follow-up. Moreover, no significant difference was determined in intervention and control groups.

Table 7: Unadjusted GEE analyses; effect of intervention on hope among the adolescents

	β	**(95% CI)**	**p-value**
Intervention*time[a]	-0.35	(-1.19, 0.48)	0.404
Time			
Baseline[b]			
Month 6	0.47	(-0.11, 1.05)	0.112
Intervention			
Control[b]			
Intervention	0.35	(-1.19, 0.48)	0.416

[a]Intervention*time represents the status of the intervention group in comparison with the control group at 6-month follow-up

[b]Reference group

3.6.2 Adjusted GEE model

Table 8 shows the unadjusted model of the effect of the intervention on hope in Dhading.

The intervention did not show significant effect on the hope scores at 6 months follow-up.

No significant change in hope was observed over time between baseline and follow-up.

Moreover, no significant difference was observed between intervention and control groups.

Table 8:Adjusted GEE analyses[a]; effect of intervention on hope among the adolescents

	β	**(95% CI)**	**p-value**
Intervention*time[b]	-0.35	(-1.12, 0.48)	0.406
Time			
Baseline[c]			
Month 6	0.49	(-0.10, 1.1)	0.102
Intervention			
Control[c]			
Intervention	0.42	(-1.2, 0.48)	0.424

[a]Adjusted for age, gender, ethnicity, family size, and living arrangement

[b]Intervention*time represents the status of the intervention group in comparison with the control group at 6-month follow-up

[c]Reference group

3.7 Qualitative findings

The evaluation of the intervention followed a qualitative assessment of their implementation activities through FGDs and general observations of the school activities at 6 months follow-up. The teachers were requested to a maintain logbook each of the activities they had conducted as outlined in the training. However, the teachers did not maintain the logbooks citing inconvenience.

3.7.1 Focus group discussions with school teachers of intervention schools

The FGD was aimed at understanding the perceptions of the teachers on the effect of training on psychosocial support on adolescents' mental health. I identified 4 major themes from the preliminary content analysis as follows:

- Usefulness of the training
- Activities implemented after the training
- Ways to identify and refer the adolescents
- Sustainability and recommendations for future training

3.7.1.1 Usefulness of the training

Trained teachers' perspectives

All the trained teachers suggested that the training was helpful. Moreover, they suggested that the sessions in the training provided them a new perspective on how to deal with the students. All of them shared that the training was a mind opening experience.

"*I learned so many new concepts from the training. Some contents really touched my heart. For example, before training, I never considered how the students would feel if I scolded them in public. In particular, after they have gone through so much in the earthquake. So I think the training is useful."* (Male, Social Science teacher)

"*Immediately after the earthquake, some organizations provided us some training on immediate psychological first aid. But I don't really remember much because back then I was going through a lot. But the timing of this training provided by your team seemed more useful. I also liked the contents because it is explained in more detail.*" (Female, Health Science teacher)

Untrained teachers' perspective

All the teachers were aware of the training and those who were not able to participate in the training showed interest to participate in such training in the future. The untrained teachers suggested that their fellow trained colleagues had shared the new concepts they had learned from the training. They suggested that they felt the training has been useful to their fellow teachers.

"*I did not take part in the training. But I have heard about the training from my colleagues and I have even seen the training manual. I think the contents are really useful."*(Male, Computer Science teacher)

3.7.1.2 Activities conducted after the training

Majority of the trained teachers suggested that they have become more mindful after the training on how to deal with adolescents. Most of them suggested that they try to make the classroom activities more interactive and try their best to instill hope among the students. They suggested that they try to incorporate the lessons learned in their everyday classroom activities. Many suggested that they allow the students to speak up more often. Some further suggested that they have become more careful dealing with the students with difficult behaviors. However, none of the teachers had maintained the logbooks of the activities they conducted citing that it was not feasible to record all their daily school activities.

"I try to incorporate all those little things I learned from the training in my teaching. I now talk to the students with challenging behaviors separately to understand their problems rather than shouting harshly at them in front of everyone."(Male, Social Science teacher)

"I have now allocated 5 to 10 minutes in my classroom for fun activities such as encouraging the students to tell some jokes, sing a song, and share an exciting story etc. so that the learning environment is more interesting and fun for them." (Male, Science and Math's teacher)

"I know our trainer had suggested us to maintain a logbook. But if we incorporate all the activities in our daily classroom, it is technically not possible to write down all of them. But I feel a subconscious change within myself and I have become more careful in my classroom interactions. For example, I try to make more effort to uplift and encourage the students than before."(Female, Social Science teacher)

The untrained teachers too suggested that though it is difficult for them to assess the activities their fellow trained teachers conducted, they noticed some changes in their approaches. They felt the trained teachers were more careful and polite in their approaches towards the adolescents.

"*I cannot tell distinctively what were the required activities expected from my colleagues who were trained. But they do sometimes share how they dealt with students as outlined in the training. For example, they shared the concept of positive discipline, where those students who have challenging behaviors are dealt with positivity rather than just punishing them*."(Male, Math's teacher)

3.7.1.3 Activities to identify and refer the adolescents with mental health problems

The trained teachers suggested the overall situation seemed better for their community after the earthquake. However, they suggested that many people continued to live in makeshift homes. They suggested that all the students in their schools belong to similar socioeconomic status and poverty remains the biggest challenge that affects the overall physical health and mental health among the students. However, they suggested most of the students have been active and doing well. A trained teacher suggested that she has become more watchful of the symptoms among the students and have helped to refer a student to a nearby health post. However, she suggested that as the students' parents were too poor, they couldn't refer the student to a better health facility in the bigger cities.

"*Once, a female student had a mental health problem. The symptoms were similar to what were taught to us in the training as warning signs. I took her to the nearby district hospital myself and called the parents. I even personally talked to her parents as well*."(Female, Health Science teacher)

Other untrained teachers also suggested they understand that it is important to refer the students with special needs to a health facility. But they pointed out that the best they can do is to refer them to the nearest health center, where the mental health professionals are not available. They suggested that it is difficult to address the mental health problems due to stigma associated with it. The untrained teachers also suggested that they have huge workload and many students to look after. Therefore, overlooking the students with specific symptoms that need treatment is possible.

"*We are mostly busy as the number of teachers are limited. We cannot look after or observe each and every student unless the symptoms are too obvious for everyone to notice. So it is*

possible for us to miss out the ones with more subtle or silent symptoms." (Male, English teacher)

3.7.1.4 Recommendations for future training

All the trained teachers suggested that they are committed to implementing the lessons they learned. They further suggested that they often read the training manuals in case of confusions. However, they suggested that refresher trainings are necessary for them to reflect back and re-learn the things that they have forgotten.

"*We should have more training like this and refresher trainings so that the lessons taught will remain fresh in our memories*" (Female, Health Science teacher)

The untrained teachers suggested that they feel the training is important and would be interested to be part of such training in the future.

"*I would really be interested to participate in such training if you ever plan to re-organize or other organizations would conduct*."(Male, Nepali language teacher)

However, they suggested that the training programs should be owned by the government and make it a part of regular training programs for teachers to make it sustainable.

"*The government should take the initiative. DEO should come up with these activities. We understand they coordinated this training on your behalf and it is a research. But DEO should take initiative to formalize it as part of educationional programs*."(Male, Social Science teacher)

Some teachers also suggested that poverty is the underlying problem for all the challenges faced by the children and adolescents. They highlighted that many children don't get enough food to eat and have nutrition problems. Therefore, future psychosocial support programs

should be integrated with nutrition programs or other school-health programs rather than just a separate mental health program.

"*The biggest problem for all the students in this school is poverty. When they are so poor, they don't even have enough food to eat which will also affect their mental health. I hope the program on mental health and other nutrition programs can come together. Encouraging students in the classrooms alone will not help their hunger or other problems!"*(Male, Social science teacher)

3.7.2 General observation

The general observations suggested the school environment had improved for most school. During baseline data collection, the students were studying in makeshift classrooms. At follow-up, the construction of new buildings at most schools had been completed and the students had started studying in new and better classrooms.

The teachers who had participated in the training seemed more at ease to communicate with the research team and were open to discussions at follow-up. The students too seemed more familiar with the research process and were more efficient at completing the questions. Most of the adolescents were eager to participate in the follow-up study with only few students refusing to participate than in baseline data collection. Based on the observations, the circumstances seemed to have improved over the time between baseline and follow-up study period.

Chapter 4

Discussion, conclusion and recommendations

4.1 Discussion

This study aimed to examine the effect of training on psychosocial support for school teachers on PTSD symptoms as a primary outcome in Dhading, a severely affected district by the 2015 earthquake in Nepal. The study also examined the effect of the intervention on depression symptoms and hope. The intervention in this study was implemented around 16 months after the earthquake. This study did not show a significant effect of the intervention on PTSD symptoms, depression symptoms and hope among the adolescents at 6 months follow-up after the intervention. However, the qualitative findings suggested that the teachers perceived the training to be useful.

No significant effects of the intervention on the PTSD and depression symptoms among adolescents in this study are different from the teacher-mediated intervention studies from Sri Lanka, China, and Turkey.(62-64)The modality of the intervention, the time of the intervention introduced after the earthquake and local contexts could have attributed to the differences between this study and previous studies. The study from Sri Lanka showed improved PTSD symptoms and depression symptoms among the adolescents 3 months after the intervention.(62) However, the study had focused on a smaller proportion of adolescents in only one school as compared to a large number of adolescents from different schools in this study.(62) Moreover, the randomization process for the intervention was different which could have attributed to the difference in the outcomes.(62) The study from China had adopted an intervention that suited their local context through calligraphy which is culturally very different from Nepal's context.(63) The study from Turkey was conducted over 15 years ago which may not be applicable to present contexts.(64)

This study did not show a significant change in PTSD symptoms and depression symptoms over time between baseline and follow-up. PTSD symptoms may not appear in a short time after a

traumatic event and can manifest a long time later.(29, 30, 84) Moreover, exposure to new traumatic events could be possible during this period which could have lead to persistence of PTSD and depression symptoms. The political instability and delay in recovery process could also have contributed to the absence of significant effect by the intervention on PTSD symptoms and depression symptoms.(49) Moreover, school-based psychosocial support interventions through health professionals such as psychologists or school nurses are known to yield better results as compared to teacher-mediated interventions.(53) However, school-based interventions requiring more specialized professionals would not be feasible in a low-resource setting such as in Nepal.(8) Nepal has a severe shortage of mental health professionals with only 2 psychiatrists and 0.6 clinical psychologists per million population.(67) Under these circumstances, teacher-mediated interventions remain the most feasible option to identify the mental health problems among the adolescents. More focused and longer training could be necessary for the teachers to recognize the mental health symptoms and timely refer the ones affected by further treatment. Moreover, longer follow-up could be necessary to assess the changes in PTSD and depression symptoms over time.

Nevertheless, the qualitative findings of this study indicated that the teachers found the training to be useful. The training for the school teachers in this study was provided by an experienced clinical psychologist. The intervention in this study had focused on training teachers to provide psychosocial support to the adolescents through a holistic approach.(34) The intervention intended to train them to help the students in their everyday school activities.(73) Teachers can act as a coach to inspire and motivate the adolescents to have a positive outlook towards the future despite the difficulties surrounding them.(68) Further follow-up would be necessary to assess the long-term effect of the approach of the intervention in this study. Moreover, refresher training and new training for the teachers could be necessary to observe the actual changes.

This study also found no significant change in hope scores over time. Though no specific cut-off score for hope is available, the mean scores of hope in this study were around 22 at both baseline and follow-up for both intervention and control groups. The mean scores in this study are higher than the mean scores of around 13 to 14 in an intervention study conducted in Nepal in 2010 following a 10-year conflict in the affected districts.(23) Both the studies have used the same scale, and the finding from this study suggests that the level of hope among the adolescents affected by the earthquake is higher than the study conducted after the conflict in Nepal. The nature of disasters could have attributed to the difference. Moreover, the country has transformed and undergone massive political and economic changes over the decade since the time of conflict which had ended in 2006.(81) In difficult circumstances such as an earthquake, when the surroundings are not favorable, the children and adolescents often look out for role models and seek hope from adults.(22) The teachers can form an important line of defense and help instill hope among the adolescents.(68) Thus, training more teachers could help improve the level of hope further among the adolescents.

The findings of this study should be interpreted with several limitations. First, I used a self-administered questionnaire for this study which could have resulted in under- or over-reporting by the adolescents. Second, the follow-up period after the intervention is just 6 months, which is shorter as compared to most studies following disasters on mental health. Qualitative observations suggested that the situations surrounding them had just started to improve. Therefore, the recent changes may not have been directly measurable.

Third, we do not have the data of the pre-existing mental health problems prior to the earthquake period. This may affect the interpretation of the existing symptoms and the direct effect of the earthquake in this study. Fourth, this study lacks information from additional sources such as guardians. Their observations could have provided us a better perspective of the changes taking

place among these adolescents. Though qualitative information is available from the teachers, a further in-depth analysis is necessary to understand the actual changes taking place.

Fifth, this study was conducted in a remote district in Nepal. Therefore, the findings of this study cannot be generalized to the more urban areas with better resources. However, the findings have important implications for areas with limited resources. Lastly, the control group had a higher proportion of loss to follow-up as compared to the intervention group. Though the major reason for the loss to follow-up was absenteeism, any underlying factors affecting their absenteeism or mental wellbeing is not known. Nevertheless, the follow-up rate was still over 80% in both intervention and control groups which still represented the majority of the adolescents who participated in the baseline study. Despite the limitations, this study provided an important information on what may work and what may not work in a post-earthquake situation in low-income countries.

4.2. Conclusions

This thesis highlights the need to address the mental health problems among the adolescents in an earthquake-affected district of Nepal. The intervention on training school teachers to provide psychosocial support to adolescents seems feasible to reach out to adolescents in a post-earthquake low-resource setting. However, such intervention may not be able to reduce the magnitude of mental health problems among the adolescents.

The training on the psychosocial support was perceived to be useful by the teachers. Training more teachers on psychosocial support and for longer duration could help improve the level of hope among more adolescents. However, interventions for PTSD and depression may require more focused interventions by health care professionals targeting smaller sub-groups. Moreover, longer follow-up is necessary to provide a longitudinal perspective of the changes in the status of mental health and hope among the adolescents.

4.3 Policy implications

Results of this thesis can be used to guide policymakers to make sustainable plans to provide continuous psychosocial support to the adolescents affected by a disaster. The findings of this thesis indicate high PTSD symptoms among adolescents from a severely earthquake affected district. This highlights the vulnerability of the adolescents following the disasters of massive scale. In line with CIOMS-WHO's International Ethical Guidelines on research in community engagement and in disasters,(83) the data will be shared and the results will be translated for all the schools involved in this study. The findings of this thesis will also be disseminated at a larger scale which can guide the policymakers to conduct similar studies at the national level and global level so that data-driven decisions can be made.

Moreover, the findings of this thesis could help the policymakers on adapting training of school teachers on psychosocial support in low resource settings. This thesis provides evidence that such training is feasible in low resource and disaster-prone settings and is useful for the teachers. However, revising the duration or sessions of the training could be more effective for teachers to reach out to more children. Such training should also be scaled up at national and global level. More specified mechanisms and training guidelines could help teachers address specific mental health problems among adolescents. Furthermore, a more focused intervention not requiring highly skilled human resources but with the potential to timely address, the mental health problems could help the adolescents with mental health problems in low-income and low resource settings.
The qualitative findings of this study highlight the need for policymakers to look into a bigger picture and future school health programs should be integrated where a holistic approach can be implemented to address social, physical and mental health.

Moreover, it is important for countries such as Nepal to strengthen their mental health policy by responding to the mental health needs of the vulnerable population such as adolescents. Evidence from this thesis points out areas to improve for mental health and psychosocial support in Nepal and other similar settings.

4.4 Recommendations

Results of this thesis highlight the need to strengthen post-disaster mental health policy in low-income and disaster-prone settings such as in Nepal. It also highlights the need to assess the mental health status of adolescents affected by the disaster at a larger scale.

This thesis recommends training by the mental health professionals for the school teachers on psychosocial support. However, the thesis also suggests more innovative and longer training sessions to be considered to address more complex symptoms of mental health problems.

A long-term follow-up of the mental health problems is recommended. Moreover, more frequent interactions and follow-up with the teachers after the training is also recommended. Refresher training for the school teachers would be needed for sustaining continuous psychosocial support in the schools. More school teachers need to be trained on psychosocial support to reach out to more adolescents in every school. This study also highlights the need for community engagement through a participatory approach in every process of the intervention to make such interventions sustainable. Furthermore, this thesis calls for scaling up the intervention at the national and global level, in particular for the low-income settings so that it can help adolescents in disasters. It also could prepare them for unanticipated events in the future. Moreover, ownership and commitment of the government are necessary for the sustainability of such interventions in the long run.

Acknowledgements

I would like to express my utmost gratitude to my main supervisor, Professor Masamine Jimba, for guiding me to become a better researcher every day. Over the past years of being his student, he has shown me the light and guided me through the path when I felt extremely lost. Professor Jimba has given me important research skills, guidance, and knowledge in the field of global health. He has taught me to look deeply into the world around us and translate it into simple writing. His guidance and support have made me a more confident and competent global health practitioner.

I would also like to thank Dr. Shibanuma Akira for his guidance with my research and for always being available to help me with my doubts. I would also like to thank Dr. Junko Kiriya for her valuable insights. I am grateful to all members of the Department of Community of Global Health for the mentorship and academic guidance. I am also grateful to the administrative support from Ms. Naoko Hashizume, Ms. Junko Kimura, Ms. Kaoru Tanaka and Ms. Junko Nakajima. I am most grateful to my friend and colleague Ms. Moe Miyaguchi who helped me and was with me throughout the research design and data collection phase and also for her help with Japanese translations.

I would also like to thank Dr. Saroj Ojha and Mr. Suraj Shakya from Department of Psychiatry and Mental Health from Tribhuwan University Teaching Hospital, Kathmandu, Nepal for guiding me through my finalization of the training plans. I express my sincere gratitude to Ms. Sirjana Adhikari who provided the training to the school teachers in Dhading without hesitation even in the difficult circumstances of long travels. My sincere gratitude to the research assistants who helped me conducting this research. I am thankful to the district health education office and school principals of Dhading for their support in conducting the study in the schools and training for the school teachers. I am indebted to the school teachers who participated in the training and expressed their enthusiasm

and commitment to providing psychosocial support to the adolescents in their schools. Most importantly, I shall remain forever obliged to all the adolescents who agreed to participate in my study and took time to answer my questions with such sincerity.

I am thankful for the funding from various sources that supported this research. The research was supported by Grant-in-Aid for Challenging Exploratory Research from Ministry of Education, Culture, Sports, Science and Technology, and National Center for Global Health and Medicines, and Post- Disaster Health Promotion Project in Dhading from The Association of Medical Doctors of Asia.

At last but not the least, I would like to convey my sincere gratitude to my beloved family-my parents and sister for always having faith in me and pushing to become a better person every day. My deepest thanks and love to my husband Dr. Mangal Gharti Magar for always being there for me and supporting me. I would also like to thank my friends for helping me when I needed them the most. It wouldn't have been possible without the love and warmth of my family and friends.

References

1. UN. World Population Prospects: The 2017 revision, key Findings and advanced tables. New York: United Nations, Department of Economic and Social Affairs, Population Division; 2017.
2. WHO. Mental health status of adolescents in South-East Asia: evidence for action. New Delhi: World Health Organization, Regional Office for South-East Asia; 2017.
3. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, EE W, et al. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Arch Gen Psychiatry. 2005;62(7).
4. Kieling C, Baker-Henningham H, Belfer M, Conti G, Ertem I, Omigbodun O, et al. Child and adolescent mental health worldwide: evidence for action. Lancet. 2011;378(9801):1515-25.
5. Olteanu A, Arnberger R, Grant R, Davis C, Abramson D, Asola J. Persistence of mental health needs among children affected by Hurricane Katrina in New Orleans. Prehosp Disaster Med. 2011;26(1):3-6.
6. Jacobs MB, Harville EW. Long-term mental health among low-Income, minority women following exposure to multiple natural disasters in early and late adolescence compared to adulthood. Child Youth Care Forum. 2015;44(4):511-25.
7. Barry MM, Clarke AM, Jenkins R, Patel V. A systematic review of the effectiveness of mental health promotion interventions for young people in low and middle income countries. BMC Public Health. 2013;13:835.
8. Fujiwara T, Yagi J, Homma H, Mashiko H, Nagao K, Okuyama M, et al. Clinically significant behavior problems among young children 2 years after the Great East Japan Earthquake. PLoS One. 2014;9(10):e109342.

9. Gerdin M, Clarke M, Allen C, Kayabu B, Summerskill W, Devane D, et al. Optimal evidence in difficult settings: improving health interventions and decision making in disasters. PLoS Med. 2014;11(4):e1001632.
10. Guo J, Wang X, Yuan J, Zhang W, Tian D, Qu Z. The symptoms of posttraumatic stress disorder and depression among adult earthquake survivors in China. J Nerv Ment Dis. 2015;203(6):469-72.
11. Norris FH, Friedman MJ, Watson PJ, Byrne CM, Diaz E, Kaniasty K. 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981-2001. Psychiatry. 2002;65(3):207-39.
12. Norris FH, Friedman MJ, Watson PJ. 60,000 disaster victims speak: Part II. Summary and implications of the disaster mental health research. Psychiatry. 2002;65(3):240-60.
13. Farooqui M, Quadri SA, Suriya SS, Khan MA, Ovais M, Sohail Z, et al. Posttraumatic stress disorder: a serious post-earthquake complication. Trends Psychiatry Psychother. 2017;39(2):135-43.
14. Lai BS, La Greca AM, Auslander BA, Short MB. Children's symptoms of posttraumatic stress and depression after a natural disaster: comorbidity and risk factors. J Affect Disord. 2013;146(1):71-8.
15. Kukihara H, Yamawaki N, Uchiyama K, Arai S, Horikawa E. Trauma, depression, and resilience of earthquake/tsunami/nuclear disaster survivors of Hirono, Fukushima, Japan. Psychiatry Clin Neurosci. 2014;68(7):524-33.
16. Elhai JD, Grubaugh AL, Kashdan TB, Frueh BC. Empirical examination of a proposed refinement to DSM-IV posttraumatic stress disorder symptom criteria using the National Comorbidity Survey Replication data. J Clin Psychiatry. 2008;69(4):597-602.

17. O'Donnell ML, Creamer M, Pattison P. Posttraumatic stress disorder and depression following trauma: understanding comorbidity. Am J Psychiatry. 2004;161(8):1390-6.
18. O'Donnell ML, Creamer MC, Parslow R, Elliott P, Holmes AC, Ellen S, et al. A predictive screening index for posttraumatic stress disorder and depression following traumatic injury. J Consult Clin Psychol. 2008;76(6):923-32.
19. Kohrt BA, Jordans MJ, Tol WA, Luitel NP, Maharjan SM, Upadhaya N. Validation of cross-cultural child mental health and psychosocial research instruments: adapting the Depression Self-Rating Scale and Child PTSD Symptom Scale in Nepal. BMC Psychiatry. 2011;11(1):127.
20. Vloet A, Simons M, Vloet TD, Sander M, Herpertz-Dahlmann B, Konrad K. Long-term symptoms and posttraumatic growth in traumatised adolescents: findings from a specialised outpatient clinic. J Trauma Stress. 2014;27(5):622-5.
21. Kar N, Bastia BK. Post-traumatic stress disorder, depression and generalised anxiety disorder in adolescents after a natural disaster: a study of comorbidity. Clin Pract Epidemiol Ment Health. 2006;2:17.
22. Wells VE, Deykin EY, Klerman GL. Risk factors for depression in adolescence. Psychiatr Dev. 1985;3(1):83-108.
23. Jordans MJ, Komproe IH, Tol WA, Kohrt BA, Luitel NP, Macy RD, et al. Evaluation of a classroom-based psychosocial intervention in conflict-affected Nepal: a cluster randomized controlled trial. J Child Psychol Psychiatry. 2010;51(7):818-26.
24. Ekşi A, Braun KL, Ertem-Vehid H, Peykerli G, Saydam R, Toparlak D, et al. Risk factors for the development of PTSD and depression among child and adolescent victims following a 7.4 magnitude earthquake. Int J Psychiatry Clin Pract. 2007;11(3):190-9.

25. Altindag A, Ozen S, Sir A. One-year follow-up study of posttraumatic stress disorder among earthquake survivors in Turkey. Compr Psychiatry. 2005;46(5):328-33.
26. Hsu CC, Chong MY, Yang P, Yen CF. Posttraumatic stress disorder among adolescent earthquake victims in Taiwan. J Am Acad Child Adolesc Psychiatry. 2002;41(7):875-81.
27. Goenjian AK, Karayan I, Pynoos RS, Minassian D, Najarian LM, Steinberg AM, et al. Outcome of psychotherapy among early adolescents after trauma. Am J Psychiatry. 1997;154(4):536-42.
28. Roussos A, Goenjian AK, Steinberg AM, Sotiropoulou C, Kakaki M, Kabakos C, et al. Posttraumatic stress and depressive reactions among children and adolescents after the 1999 earthquake in Ano Liosia, Greece. Am J Psychiatry. 2005;162(3):530-7.
29. Giannopoulou I, Strouthos M, Smith P, Dikaiakou A, Galanopoulou V, Yule W. Post-traumatic stress reactions of children and adolescents exposed to the Athens 1999 earthquake. Eur Psychiatry. 2006;21(3):160-6.
30. Goenjian AK, Walling D, Steinberg AM, Karayan I, Najarian LM, Pynoos R. A prospective study of posttraumatic stress and depressive reactions among treated and untreated adolescents 5 years after a catastrophic disaster. Am J Psychiatry. 2005;162(12):2302-8.
31. Kun P, Chen X, Han S, Gong X, Chen M, Zhang W, et al. Prevalence of post-traumatic stress disorder in Sichuan Province, China after the 2008 Wenchuan earthquake. Public Health. 2009;123(11):703-7.
32. Tian Y, Wong TK, Li J, Jiang X. Posttraumatic stress disorder and its risk factors among adolescent survivors three years after an 8.0 magnitude earthquake in China. BMC Public Health. 2014;14:1073.

33. Kolaitis G, Kotsopoulos J, Tsiantis J, Haritaki S, Rigizou F, Zacharaki L, et al. Posttraumatic stress reactions among children following the Athens earthquake of September 1999. Eur Child Adolesc Psychiatry. 2003;12(6):273-80.
34. Fan F, Zhang Y, Yang Y, Mo L, Liu X. Symptoms of posttraumatic stress disorder, depression, and anxiety among adolescents following the 2008 Wenchuan earthquake in China. J Trauma Stress. 2011;24(1):44-53.
35. Qu Z, Wang X, Tian D, Zhao Y, Zhang Q, He H, et al. Posttraumatic stress disorder and depression among new mothers at 8 months later of the 2008 Sichuan earthquake in China. Arch Womens Ment Health. 2012;15(1):49-55.
36. Ying L, Wu X, Lin C, Jiang L. Traumatic severity and trait resilience as predictors of posttraumatic stress disorder and depressive symptoms among adolescent survivors of the Wenchuan earthquake. PLoS One. 2014;9(2):e89401.
37. Dai W, Chen L, Lai Z, Li Y, Wang J, Liu A. The incidence of post-traumatic stress disorder among survivors after earthquakes:a systematic review and meta-analysis. BMC Psychiatry. 2016;16:188.
38. Masten AS. Global perspectives on resilience in children and youth. Child Dev. 2014;85(1):6-20.
39. Rutter M. Resilience: some conceptual considerations. J Adolesc Health. 1993;14(8):626-31, 90-6.
40. Snyder CR, Hoza B, Pelham WE, Rapoff M, Ware L, Danovsky M, et al. The development and validation of the Children's Hope Scale. J Pediatr Psychol. 1997;22(3):399-421.
41. Stoddard SA, Pierce J. Promoting positive future expectations during adolescence: The Role of Assets. Am J Community Psychol. 2015;56(3-4):332-41.

42. Schmid KL, Lopez SJ. Positive pathways to adulthood: the role of hope in adolescents' constructions of their futures. Adv Child Dev Behav. 2011;41:69-88.
43. Gaire S, Castro Delgado R, Arcos González P. Disaster risk profile and existing legal framework of Nepal: floods and landslides. Risk Manag Healthc Policy. 2015;8:139-49.
44. UNDP. ISDR Global Assessment report on poverty and disaster risk 2009, global assessment of risk, Nepal Country report. Kathmandu: UNDP; 2009.
45. National Planning Commission, GoN. Nepal earthquake 2015 post disaster needs assessment. National Planning Commission, Government of Nepal; 2015.
46. Baral G. An assessment of the safe delivery incentive program at a tertiary level hospital in Nepal. J Nepal Health Res Counc. 2012;10(21):118-24.
47. MoHA. Nepal Disaster Risk Reduction Portal, Kathmandu. Nepal earthquake 2071; situation update as of 11th May. Kathmandu: Ministry of Home Affairs, Government of Nepal; 2015.
48. International Medical Corps. Rapid mental health and psychosocial support needs assessment: services, identified needs and recommendations following April and May 2015 earthquakes in Nepal. Washington DC: International Medical Corps; 2015.
49. Lamichhane J. Health consequences of the blockade in Nepal. Lancet. 2015;386(10010):2251.
50. IASC. IASC Guidelines on mental health and psychosocial support in emergency settings. Geneva: Inter-Agency Standing Committee; 2007.
51. Weare K, Nind M. Mental health promotion and problem prevention in schools: what does the evidence say? Health Promot Int. 2011;26 Suppl 1:i29-69.
52. Fu C, Underwood C. A meta-review of school-based disaster interventions for child and adolescent survivors. J Child Adolesc Ment Health. 2015;27(3):161-71.

53. Brown RC, Witt A, Fegert JM, Keller F, Rassenhofer M, Plener PL. Psychosocial interventions for children and adolescents after man-made and natural disasters: a meta-analysis and systematic review. Psychol Med. 2017;47(11):1893-905.
54. Chen Y, Shen WW, Gao K, Lam CS, Chang WC, Deng H. Effectiveness RCT of a CBT intervention for youths who lost parents in the Sichuan, China, earthquake. Psychiatr Serv. 2014;65(2):259-62.
55. Pityaratstian N, Piyasil V, Ketumarn P, Sitdhiraksa N, Ularntinon S, Pariwatcharakul P. Randomized controlled trial of group cognitive behavioural therapy for post-traumatic stress disorder in children and adolescents exposed to Tsunami in Thailand. Behav Cogn Psychother. 2015;43(5):549-61.
56. Pityaratstian N, Liamwanich K, Ngamsamut N, Narkpongphun A, Chinajitphant N, Burapakajornpong N, et al. Cognitive-behavioral intervention for young tsunami victims. J Med Assoc Thai. 2007;90(3):518-23.
57. Taylor LK, Weems CF. Cognitive-behavior therapy for disaster-exposed youth with posttraumatic stress: results from a multiple-baseline examination. Behav Ther. 2011;42(3):349-63.
58. Chemtob CM, Nakashima JP, Hamada RS. Psychosocial intervention for postdisaster trauma symptoms in elementary school children: a controlled community field study. Arch Pediatr Adolesc Med. 2002;156(3):211-6.
59. Tang TC, Yang P, Yen CF, Liu TL. Eye movement desensitization and reprocessing for treating psychological disturbances in Taiwanese adolescents who experienced Typhoon Morakot. Kaohsiung J Med Sci. 2015;31(7):363-9.

60. Sushma M. Humanitarian projects and growth of EMDR Therapy in Asia. Journal of EMDR Practice and Research. 2014;8:252-9.
61. Jarero I, Artigas L, Hartung J. EMDR integrative group treatment protocol: a postdisaster trauma intervention forchildren and adults. Traumatology. 2006;12:121-9.
62. Berger R, Gelkopf M. School-based intervention for the treatment of tsunami-related distress in children: a quasi-randomized controlled trial. Psychother Psychosom. 2009;78(6):364-71.
63. Zhu Z, Wang R, Kao HS, Zong Y, Liu Z, Tang S, et al. Effect of calligraphy training on hyperarousal symptoms for childhood survivors of the 2008 China earthquakes. Neuropsychiatr Dis Treat. 2014;10:977-85.
64. Wolmer L, Laor N, Dedeoglu C, Siev J, Yazgan Y. Teacher-mediated intervention after disaster: a controlled three-year follow-up of children's functioning. J Child Psychol Psychiatry. 2005;46(11):1161-8.
65. Wolmer L, Laor N, Yazgan Y. School reactivation programs after disaster: could teachers serve as clinical mediators? Child Adolesc Psychiatr Clin N Am. 2003;12(2):363-81.
66. Huff C. Shrinking the Psychiatric Shortage. Manag Care. 2018;27(1):20-2.
67. Luitel NP, Jordans MJ, Adhikari A, Upadhaya N, Hanlon C, Lund C, et al. Mental health care in Nepal: current situation and challenges for development of a district mental health care plan. Confl Health. 2015;9:3.
68. Shorey HS, Snyder CR. Hope in the classroom: the role of positive psychology in academic achievement and psychology curricula. APA education directoriate. 2002;12(1).
69. Coombe J, Mackenzie L, Munro R, Hazell T, Perkins D, Reddy P. Teacher-mediated interventions to support child mental health following a disaster: A Systematic Review. PLoS Curr. 2015;7.

70. World Bank. World Bank Country and Lending Groups country classification [cited 2018 February 1]. Available from: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups.
71. Zhu T, Feng B, Wong S, Choi W, Zhu SH. A comparison of smoking behaviors among medical and other college students in China. Health Promot Int. 2004;19(2):189-96.
72. Okuyama J, Funakoshi S, Tomita H, Yamaguchi T, Matsuoka H. School-Based Interventions Aimed at the prevention and treatment of adolescents affected by the 2011 Great East Japan Earthquake: A three-year longitudinal study. Tohoku J Exp Med. 2017;242(3):203-13.
73. UNRWA. Psychosocial support for education inemergencies - training and resource package for teachers and counsellors. Gaza: United Nations Relief Works Agency; 2013.
74. Campbell MK, Piaggio G, Elbourne DR, Altman DG, Group C. Consort 2010 statement: extension to cluster randomised trials. BMJ. 2012;345:e5661.
75. OSOCC, UNOCHA, ACAPS. Nepal earthquake district profile 2015. Nepal: On-Site Operations Coordination Centre, United Nations Office for the Coordination of Humanitarian Affairs (OCHA), The Assessment Capacity Projects; 2015
76. Kessler RC, Amminger GP, Aguilar-Gaxiola S, Alonso J, Lee S, Ustün TB. Age of onset of mental disorders: a review of recent literature. Curr Opin Psychiatry. 2007;20(4):359-64.
77. Green Tara Nepal. Strengthening psycho-social support in post-disaster situation in schools and communities of rural Nepal. Kathmandu; Green Tara Nepal; 2015.
78. Foa EB, Johnson KM, Feeny NC, Treadwell KR. The child PTSD Symptom Scale: a preliminary examination of its psychometric properties. J Clin Child Psychol. 2001;30(3):376-84.

79. Birleson P. The validity of depressive disorder in childhood and the development of a self-rating scale: a research report. J Child Psychol Psychiatry. 1981;22(1):73-88.
80. Haroz EE, Jordans M, de Jong J, Gross A, Bass J, Tol W. Measuring Hope Among Children Affected by Armed Conflict: Cross-Cultural Construct Validity of the Children's Hope Scale. Assessment. 2017;24(4):528-39.
81. Nepal MoHaP. Adolescent and youth survey 2010/2011. Kathmandu: Ministry of Health and Population Nepal; 2012.
82. CIOMS. International ethical guidelines for health-related research involving humans. Geneva: Council for International Organizations of Medical Sciences (CIOMS); 2016.
83. Goenjian AK, Pynoos RS, Steinberg AM, Najarian LM, Asarnow JR, Karayan I, et al. Psychiatric comorbidity in children after the 1988 earthquake in Armenia. J Am Acad Child Adolesc Psychiatry. 1995;34(9):1174-84.
84. Matherson CJ, Baptiste L, Jude-Mary Cn, Daniel D. Symptoms of PTSD among adolescents and young adult survivors six years after the 2010 Haiti earthquake. Journal of Loss and Trauma. 2017.

Appendix 1: Map of Nepal and study districts

Source: World Bank Group

Appendix 2: Research questionnaires (English)

Study ID	
District	
School	1. Lower secondary 2. Secondary
Name of school	
Date of filling	
Name of person distributing questionnaire	
Name of person collecting questionnaire	

General questions

1.	What is your completed age now?	…….	
2.	What is your gender?	1. Male (boy) 2. Female (girl)	
3.	Which grade are you in?	1. Grade 6 2. Grade 7 3. Grade 8	
4.	What is your ethnicity?	1. Brahmin/Chetri 2. Janajati 3. Madhesi	4. Dalit 5. Others Specify ……..
5.	What is your religion	1. Hindu 2. Budhist 3. Christian	4. Muslim 5. Jain 6. Others

			Specify…….
6.	Whom do you live with currently with?	1. Both parents 2. Mother only 3. Father only	4. Grandparents 5. Other guardian 6. Others…specify
7.	What is your father's education	1. Cannot read and write 2. Can read and write 3. Primary level 4. Vocational training	5. Secondary level 6. Higher secondary level 7. Bachelors and above 8. Others
8.	What is your mother's education	1. Cannot read and write 2. Can read and write 3. Primary level 4. Vocational training	5. Secondary level 6. Higher secondary level 7. Bachelors and above 8. Others
9.	What does your father do for living?	1. Agriculture 2. Government service 3. Non-government service 4. Business 5. Daily wage	6. Foreign employment 7. House work 8. No work 9. Passed away 10. Others
10.	What does your mother do for living?	1. Agriculture 2. Government service 3. Non-government service 4. Business 5. Daily wage	6. Foreign employment 7. House work 8. No work 9. Passed away 10. Others
11	Have you been employed in the past 12 months?	1. Yes 2. No	
12	If you had been employed, what work did you do?	1. Agriculture 2. Government service	5. Foreign employment 6. House work 7. No work

		3. Non-government service 4. Business Daily wage	8. Passed away Others
13	How many brothers and sisters do you have? (except for yourself)		
	1. No. of brothers…… 2. No. of sisters……		
14	Which position are you, among your brothers/sisters in terms Of age? ……..		

Child PTSD Scale

		Never	**Sometimes** (once a week)	**Often** (two to four times a week)	**Always** Five times or more in a week
1	Having upsetting thoughts or images about the event that came into your head when you didn't want them to?	0	1	2	3
2	Having bad dreams or nightmares	0	1	2	3
3	Acting or feeling that the event is happening again (hearing something or seeing a picture about it and feeling as if I m there again.	0	1	2	3
4	Feeling upset when you think about it or hear about the event (e.g feeling sad, guilty, angry, sad)	0	1	2	3
5	Having feelings in your body when you think about of hear about the vent (e.g breaking out into sweat, heart beating fast)	0	1	2	3
6	Trying not to think about, talk about or have feelings about the event	0	1	2	3

7	Trying to avoid activities, people, or places that remind you of the traumatic event.	0	1	2	3
8	Not being able to remember an important part of the upsetting event	0	1	2	3
9	Having much less interest or doing things you used to do	0	1	2	3
10	Not feeling close to people around you	0	1	2	3
11	Not being able to have strong feelings (for example, being unable to cry or unable to feel happy)	0	1	2	3
12	Feeling as if your future plans or hopes will not come true (for example, you will not have a job or get married or have kids)	0	1	2	3
13	Having trouble falling or staying asleep	0	1	2	3
14	Feeling irritable or having fits of anger	0	1	2	3
15	Having trouble concentrating (for example, losing track of a story on the television, forgetting what you read, not paying attention in class	0	1	2	3
16	Being overly careful (for example, checking to see who is around you and what is around you)	0	1	2	3
17.	Being jumpy or easily startled (for example, when someone walks up behind you)	0	1	2	3

Depression Self-Rating Scale

		Never	Sometimes	Most of the time
1	I look forward to things as much as I used to	0	1	2
2	I sleep very well	0	1	2
3	I feel like crying	0	1	2
4	I like to go out to play	0	1	2
5	I feel like running away	0	1	2
6	I get tummy aches	0	1	2
7	I have lots of energy	0	1	2
8	I enjoy my food	0	1	2

9	I can stick up for myself	0	1	2
10	I think life isn't worth living	0	1	2
11	I am good at the things I do	0	1	2
12	I enjoy things I do as much as I used to	0	1	2
13	I like talking with my family	0	1	2
14	I have bad dreams	0	1	2
15	I feel very lonely	0	1	2
16	I am easily cheered up	0	1	2
17	I feel so sad I can hardly stand it	0	1	2
18	I feel very bored	0	1	2

Children's hope scale

		Never	A little of the time	Some of the time	A lot of the time	Most of the time	All the time
1.	I think I am doing pretty well.	1	2	3	4	5	6
2	I can think of many ways to get the things that are most important to me	1	2	3	4	5	6
3	I am doing just well as other kids my age are doing	1	2	3	4	5	6
4	When I have a problem I come up with lots of ways to solve it.	1	2	3	4	5	6
5	I think the things I have done in the past will help me in the future	1	2	3	4	5	6
6	When others want to quit, I know I can find ways to solve the problem	1	2	3	4	5	6

Appendix 2: Research questionnaires (Nepali)

विद्यार्थीको लागि प्रश्नावली

क्रम संख्या	
जिल्ला	
नगरपालिका	
विद्यालय	1. निम्न माध्यमिक 2. माध्यमिक
विद्यालयको नाम	
मिति	
प्रश्नावलीवली बाँड्ने व्यक्ति को नाम	
पुरा भरिएको प्रश्नावली जांच गर्ने व्यक्ति को नाम	

	प्रश्नहरु		
1	तपाइंको जन्म मिति कहिले हो ?	….……वर्ष/महिना/गते	
2	तपाईंको लिङ्ग के हो ?	1. पुरुष	2. महिला
3	तपाईं अहिले कति कक्षामा पढ्दै हुनु हुन्छ ?	1. कक्षा ८, 2. कक्षा ९ 3. कक्षा १०	
4	तपाईं कुन जात भित्र पर्नु हुन्छ ?	1. ब्राह्मण/ छेत्री 2. जनजाति 3. मधेसी	4. दलित 5. अन्य (उल्लेख गर्नु होस्) ……..
5	तपाईं कुन धर्म मान्नु हुन्छ ?	1. हिन्दु 2. बौद्ध 3. क्रिस्चियन	4. मुस्लिम 5. जैन 6. अन्य (उल्लेख गर्नु होस्)
6	तपाईं हाल घरमा को संग बस्नु हुन्छ?	1. आमा र बुवा दुवै संग 2. आमा संग मात्र	1. बाजेबजै संग 2. अन्य अविभावक संग

		3. बुवा संग मात्र	3. अन्य (उल्लेख गर्नु होस्) .....
7	तपाईंको बुवा ले कति सम्म पढ्नु भएको छ?	1. अक्षर चिन्नु हुदैन 2. अक्षर चिन्नु हुदैन 3. प्राथमिक तह 4. माध्यमिक तह	5. उच्च माध्यमिक 6. स्नातक तह वा माथि 7. प्राविधिक तालिम 8. अन्य (उल्लेख गर्नु होस्) .....
8	तपाईंको आमाले कति सम्म पढ्नु भएको छ?	1. अक्षर चिन्नु हुदैन 2. अक्षर चिन्नु हुदैन 3. प्राथमिक तह 4. प्राविधिक तालिम	5. माध्यमिक तह 6. उच्च माध्यमिक 7. स्नातक तह वा माथि 8. अन्य (उल्लेख गर्नु होस्) .....
9	तपाईंको बुवाले के काम गर्नु हुन्छ?	1. कृषि 2. सरकारी जागिर 3. गैर सरकारी जागिर 4. व्यापार 5. ज्यालादारी	6. वैदेशिक रोजगार 7. घरको काम 8. केहि काम गर्नु हुन्न 9. बितिसक्नु भयो 10. अन्य (उल्लेख गर्नु होस्)
10	तपाईंको आमाले के काम गर्नु हुन्छ?	1. कृषि 2. सरकारी जागिर 3. गैर सरकारी जागिर 4. व्यापार 5. ज्यालादारी	6. वैदेशिक रोजगार 7. घरको काम 8. केहि काम गर्नु हुन्न 9. बितिसक्नु भयो 10. अन्य (उल्लेख गर्नु होस्)

Child PTSD

		कहिले पनि भएन	कहिले काही भयो (हप्ताको एक पटक)	धेरै जसो भयो (हप्ता को २ देखि ४ पटक)	सधैं भयो (हप्ताको ५ पटक वा सो भन्दा बढी)
		0	1	2	3
1	तपाईंले नचाहदा नचाहदै पनि पहिले घटेको घटनाहरुको दु:ख दिने तस्बिर सोच या यादहरु (सम्झना) कत्ति आए होला ?				
2	तपाईंले कति पटक नराम्रो डर लाग्दो सपना देख्नु भयो होला? तपाईंलाई आफु फेरि त्यहि घटना परे जस्तो, केहि सुने जस्तो र केहि देखे जस्तो कत्तिको भएको थियो?				
3	तपाईंलाई पहिला घटेको घटनाको बारेमा सोच्दा या सुन्दा, दु:ख लाग्ने, रिस उठ्ने या तर्सिने कत्ति भयो होला ? तपाईंलाई पहिला घटेको घटनाको बारेमा सोच्दा या सुन्दा, शरीरमा कत्तिको असर पर्यो?				
4	(जस्तै मुटु ढुकढुक हुने, सांस फेर्न गाह्रो हुने, शरीरमा पसिना आउने र काम्ने) तपाईंले पहिला घटेको घटनाको बारे नसोच्ने या कुरा नगर्ने कत्तिको कोशिश गर्नु भयो?				
5	तपाईंले पहिला घटेको घटनाको ठाउंमा नजाने अथवा घटना संग सम्बन्धित मान्छे संग नभेट्ने अथवा घटना संग क्रियाकलाप नगर्ने कत्तिको कोशिश गर्नु भयो?				
6	तपाईंलाई पहिला घटेको दुखदायी कुरा सम्झना कत्तिको गाह्रो भएको थियो?				
7	जस्तै तपाईंको भाइलाई भुकम्पले चोट लागेको थियो, उक्त घटना समझदा तपाईं लाई कत्तिको गाह्रो हुन्छ ?				
8	तपाईंलाई सधै गर्न मन लाग्ने काम, अब कत्तिको मन नलागेको होला ?				

9	तपाईंको मनमा साथीभाई संग अनि परिवार संग कत्तिको टाढा भएको जस्तो लाग्छ ?				
1	तपाईंलाई सुख भएको बेला पनि मन खुशी नहुने, दु:ख भएको बेला पनि मन दुखि नहुने कत्तिको भएको थियो ?				

Depression self-rating scale

		कहिले पनि लागेन	कहिले काही लग्यो	सधैं लग्यो
1	तपाईं पहिले जति चीजहरु चाहनु हुन्थ्यो अहिले पनि त्यति नै चाहनु हुन्छ?	0	1	2
2	तपाईंलाई कत्तिको रुन मन लाग्छ?	0	1	2
3	तपाईंलाई कत्तिको खेल्न मन लाग्छ?	0	1	2
4	तपाईंलाई कत्तिको भाग्न मन लाग्छ (जस्ती स्कूल बाट, घर बाट, खेल्ने थुना बाट आदि)	0	1	2
5	तपाईंको पेट कत्तिको दुख्ने गर्छ?	0	1	2
6	तपाईंलाई आफु कत्तिको जाँगरिलो छु जस्तो लाग्छ?	0	1	2
7	तपाईंलाई खाने कुरा देखि कत्तिको खाउँ जस्तो लाग्छ?	0	1	2
8	कसैले तपाईंलाई वा कसैलाई होच्याउन खोज्दा उंहालाई तपाइंले कत्तिको बुझाउन सक्नु हुन्छ जस्तो लाग्छ?	0	1	2
9	तपाईंलाई आफ्नो जीवन कत्तिको बेकार जस्तो लाग्छ?	0	1	2
10	तपाईंलाई आफुले गरेको कामहरु कत्तिको राम्रो लाग्छ?	0	1	2
11	आफुले गरेको काम कुराहरुमा तपाईं पहिले जति खुशी हुनुहुन्थ्यो अहिले नि त्यति खुशी हुने गर्नु हुन्छ?	0	1	2
12	तपाईंलाई आफ्नो परिवार संग कत्तिको कुरा गर्न मन लाग्छ?	0	1	2
13	तपाइंले नराम्रा वा डर लाग्दा सपना कत्तिको देख्ने गर्नु हुन्छ?	0	1	2
14	तपाईंलाई आफु कत्ति एक्लो छु जस्तो लाग्छ?	0	1	2
15	तपाईंलाई दुख लागेको पछि खुशी हुन कत्ति समय लाग्छ?	0	1	2
16	तपाईंलाई सहनै नसक्ने गरि कत्तिको दु:ख लाग्छ ?	0	1	2
17	तपाईंलाई धेरै कुरामा इच्छा हराए जस्तो लाग्छ ?(जस्तै आफ्नो रुचि, खेलकुद आदि)	0	1	2
18	तपाईंलाई कत्तिको रुन मन लाग्छ?	0	1	2

Children's hope scale

		कहिले पनि लाग्दैन अलि	अलि मात्र लाग्छ	कहिले काही लाग्छ	प्राय जसो लाग्छ	सधैंजसो लाग्छ	हरेक पटक लाग्छ
1.	मैले राम्रै गरिराखेको छु जस्तो लाग्छ	1	2	3	4	5	6
2.	मैले चाहेको कुरा धेरै तरिका हरुले पाउन सक्छु जस्तो लाग्छ	1	2	3	4	5	6
3.	म मेरो उमेरको अरु बच्चाहरुले जति को नै राम्रो गरिराखेको छु जस्तो लाग्छ	1	2	3	4	5	6
4.	मलाई समस्या परेको बेला धेरै तरिका ले त्यसको समाधान गर्न सक्छु जस्तो लाग्छ	1	2	3	4	5	6
5.	मलाई मैले पहिला गरेको कामले पछि (भविष्यमा) सहयोग गर्छ जस्तो लाग्छ	1	2	3	4	5	6
6.	अरुले हार मानेको बेला पनि मलाई मैले त्यो काम गर्न सक्छु जस्तो लाग्छ						

Appendix 3 Information sheet for adolescents (English)

Dear student,

We, the research team from the University of Tokyo, are conducting a research to understand the psychosocial and mental health status of children in the school that you are currently enrolled in.

The title of the research is “Efficacy of psychosocial support training for school teachers to improve mental health and resilience of school going adolescents in districts affected by earthquake in Nepal “

Adolescent is a time when you may go through many problems but you may also have qualities to overcome the problems. Teachers could help the students like you in school by providing you proper and timely psychosocial support.

We are planning to conduct training for the teachers teaching at your school on psychosocial support. We would like to see how your mental health wellbeing improves with this training given to the teacher.

We will ask you to fill in the questionnaire three times in total. First time will be before we provide training to the schoolteachers, second time at 3 months and third time at 6 months after the training. We will mainly assess if you any symptoms related to post traumatic disorder and depression. We will also try to find out how you have tried to overcome problem through questions related to concern for others, hope and quality of life.

Your identity will remain confidential. We will use an identity number for you instead of your name. The information provided by you will be solely used for the purpose of research. The questions asked are appropriate and hope will be understandable for your age group. There will be no harm to you through this research. If you feel uncomfortable you can stop answering the questions any time.

You may withdraw at any time without affecting your education, by informing the researcher with your signature in “Retraction of consent form”.

If you have understood and would like to take part in this research, we request you to sign the consent form attached with this information sheet.

Appendix 4 Information sheet for adolescents (Nepali)

विद्यार्थीको लागि अध्ययनबारे जानकारी

प्रिय विद्यार्थी,

हामी टोक्यो युनिभर्सिटी को अध्ययन समूह ले तपाइंको बच्चा ले पढीराख्नुभएको विद्यालयमा एक अध्ययन गर्दै छौँ, जस अन्तर्गत तपाईं र तपाईं जस्ता अन्य किशोर किशोरी हरुको मानसिक स्वास्थ्य र रेसिलेंचे को अवस्था बारे बुझ्न चाहान्छौ ।

किशोरावस्था एक संबेदनशील समय हो र यस बेला अन्य समस्या ले तपाईंहरुलाई सताइराखेको हुनसक्छ। तर यस बिषय मा नेपाल को परिवेश मा धेरै अध्यन भैसकेको छैन। तसर्थ हामी यस बिषय मा अध्ययन गर्न चाहान्छौ र तपाईं ले अध्ययन गर्ने विद्यालय को विद्यार्थी हरु लाई केहि प्रश्न सोध्न चाहान्छौ। प्रश्न अत्यन्तै सरल हुने छ र किशोर किशोरी ले बुझ्ने भाषा मा हुने छ। यस अध्ययन मा कुनै पनि विद्यार्थी वा तपाईं लाई कुनै पनि रुपमा हानी पुग्ने छैन। तपाईं ले कुनै पनि समय मा कुनै प्रश्न को उत्तर दिन मन नलागेको खण्ड मा बीच मा नै प्रश्न को उत्तर दिन छोड्न पनि सक्नु हुने छ।

हामी ले तपाइं पढिराखेको विद्यालय मा शिक्षक लाई पनि यस विषयमा तालिम दिदै छौँ । वहाँ हरु लाई दिएको तालिम ले तपाईं तथा अरु कीशो किशोरी हरु लाई कति फाइदा हुन्छ र हामीले तपाइं र अन्य किशोर-किशोरीहरु को मानसिक स्वास्थ्य एबं रेसिलिएन्से मा समय अनुसार कति को फरक आउने छ भन्ने पनि बुझ्न चाहान्छौ।

तसर्थ तपाईं हरु लाइ यी प्रश्न हरु तीन पटक सोधिने छ। पहिलो पटक शिक्षक तालिम अघि विद्यार्थी हरु प्रश्न सोध्छु अनि पहिलो प्रश्न सोधेको तीन महिना पछि र छ महिना पछि गरि हामी जम्मा तीन पटक विद्यालय गएर, उहाँ हरु को कक्षामा गई यी प्रश्न हरु सोध्ने छौ। हरेक पटक प्रश्न सोध्न को लागि हामी ४० मिनट देखि १ घण्टा सम्म को समय लिने छौ।

तपाईं दिने उत्तरहरु गोप्य रहने छन् र तपाईंको नाम कतै खुला रुप ले उल्लेख गरिने छैन।

किशोर किशोरी नाबालिक भएका कारण अभिभावक को पनि मंजुरिनामा र अनुमति आवश्यक हुन्छ। यदि तपाईं ले अस्विकार गर्नु हुन्छ भने हामी तपाईं को बच्चा लाइ कुनै प्रश्न सोध्ने छैनौ र बच्चा लाइ कुनै किसिम को हानी पनि हुने छैन । यदि तपाईं ले स्वीकार गर्नु हुन्छ र अनुमति दिनु हुन्छ भने पनि तपाईं को बच्चा लाई कुनै हानी हुने छैन। यदि अनुमति दिनु हुन्छ भने कृपया मंजुरिनामा फारम मा सहि गरि दिनु होला।

Appendix 5 Information sheet for guardian (English)

Dear Sir/Madam,

We are conducting a research to understand the psychosocial and mental health status of children in the school that your child is currently enrolled in.

The title of the research is "Efficacy of psychosocial support training for school teachers to improve mental health and resilience of school going adolescents in districts affected by earthquake in Nepal "

Adolescence is a time when your child may go through many problems but they may also have qualities to overcome the problems. Teachers could help the students in school by providing them proper and timely psychosocial support.

We are planning to conduct training for the teachers teaching at your child's school on psychosocial support. We would like to see how the mental health status and resilience of the children improves with this training given to the teacher.

We will ask your child to fill in the questionnaire three times in total. First time will be before we provide training to the schoolteachers, second time at 3 months and third time at 6 months after the training. We will mainly assess if your child has any symptoms related to post traumatic disorder and depression. We will also try to find out how your child tries to overcome problem through questions related to concern for others, hope and quality of life.

The identity of your child will remain confidential. We will use an identity number for your child. The information provided by your child will be solely used for the purpose of research. The questions asked are appropriate for child's age group. There will be no harm to your child. We will also take consent from your child. If your child feels uncomfortable he/ she can stop answering the questions any time.

You may withdraw at any time without affecting your child's education, by informing the researcher with your signature in "Retraction of consent form".

If you have understood and allow your child to take part in this research, we would like to request you to provide us permission by signing the informed consent form attached with it.

Appendix 6 Information sheet for guardian (Nepali)

अभिभावकको लागि अध्ययन बारे जानकारी

आदरणीय अभिभावक ज्यु,

हामी तपाईंको बच्चाले पढीराख्नु भएको विद्यालयमा एक अध्ययन गर्दै छौँ, जस अन्तर्गत हामी किशोर किशोरी को मानसिक स्वास्थ्य बारे बुझ्न चाहान्छौ।

किशोरावस्था एक संबेदनशील समय हो र यस बेला अन्य समस्या ले उनीहरुलाई सताइराखेको हुनसक्छ. तर यस बिषय मा नेपाल को परिवेश मा धेरै अध्यन भैसकेको छैन। तसर्थ हामी यस बिषय मा अध्ययन गर्न चाहान्छौ र विद्यालय को विद्यार्थी हरु लाई केहि प्रश्न सोध्न चाहान्छौ।प्रश्न अत्यन्तै सरल हुने छ र किशोर किशोरी ले बुझ्ने भाषा मा हुने छ। यस अध्ययन मा कुनै पनि विद्यार्थी लाई कुनै पनि रुपमा हानी पुग्ने छैन। विद्यार्थीले कुनै पनि समय मा कुनै प्रश्न को उत्तर दिन मन नलागेको खण्ड मा उहाँ ले बीच मै प्रश्न को उत्तर दिन छोड्न पनि सक्नु हुने छ।

हामी ले तपाइंको बच्चा पढिराखेको विद्यालय मा शिक्षक लाई पनि यस विषयमा तालिम दिदै छौँ । वहाँ हरु लाई दिएको तालिम ले तपाईं को बच्चा तथा अरु कीशो किशोरी हरु लाई कति फाइदा हुन्छ र हामीले तपाइंको बच्चा र अन्य किशोर किशोरी हरु को मानसिक स्वास्थ्य एबं रेसिलिएन्से मा समय अनुसार कति को फरक आउने छ भन्ने पनि बुझ्न चाहान्छौ।

तसर्थ विद्यार्थी हरु लाइ यी प्रश्न हरु तीन पटक सोधिने छ। पहिलो पटक शिक्षक तालिम अघि विद्यार्थी हरु प्रश्न सोध्छु अनि पहिलो प्रश्न सोधेको तीन महिना पछि र छ महिना पछि गरि हामी जम्मा तीन पटक विद्यालय गएर, उहाँ हरु को कक्षामा गई यी प्रश्न हरु सोध्ने छौ. हरेक पटक प्रश्न सोध्न को लागि हामी ४० मिनट देखि १ घण्टा सम्म को समय लिने छौ।

तपाईंको बच्चाले दिने उत्तरहरु गोप्य रहने छन् र उहाँको नाम कतै खुला रुप ले उल्लेख गरिने छैन ।

किशोर किशोरी नाबालिक भएका कारण अभिभावक को पनि मंजुरिनामा र अनुमति आवश्यक हुन्छ । यदि तपाईं ले अस्विकार गर्नु हुन्छ भने हामी तपाईं को बच्चा लाइ कुनै प्रश्न सोध्ने छैनौ र बच्चा लाइ कुनै किसिम को हानी पनि हुने छैन । यदि तपाईं ले स्वीकार गर्नु हुन्छ र अनुमति दिनु हुन्छ भने पनि तपाईं को बच्चा लाई कुनै हानी हुने छैन।यदि अनुमति दिनु हुन्छ भने कृपया मंजुरिनामा फारम मा सहि अथवा छाप लगाई दिनु होला।

Appendix 7 Written informed consent form guardian and adolescent (English)

Informed consent form guardian and student

I, Mr./ Mrs./ Ms……(Initial of the first name), after reading and understanding the contents of this study, I have decided my and my child's participation in this study.

I understand:

1. The purpose and procedures of the study.
2. The contents of the questionnaires.
3. That I and my child will not be placed under any harm or discomfort.
4. That I and my child can refuse to answer any of the questions if we don't want to.
5. That I and my child can withdraw from the study at any time (during or after study) without any harm.
6. That any information I and my child provide will be strictly treated in a confidential manner that we will not be identified in the reporting of the results.

……. ……

Date Signature or the finger print

of the guardian who gave the consent

…….. ……..

Date Name/Signature of the person received the consent

Appendix 8 Written informed consent form guardian and adolescent (Nepali)

अनुमति (मंजुरीनामा) पत्र

म श्री/श्रीमती/ सुश्री .....ले यस अध्ययन को बारे को जानकारी बारे राम्ररी बुझेर मेरो बच्चालाई यस अध्ययन मा भाग मा अनुमति दिन्छु .

मैले तल उल्लेखित कुरा हरु राम्ररी बुझेको छु:

- यस अध्ययन ले मा र मेरो बच्चा लाई कुनै हानी पुर्याउने छैन भन्ने कुरा राम्ररी बुझेको छु
- मैले यो अध्ययन कुन समूह ले र के को लागि गर्न लागेको भनेर बुझिसकें
- मेरो बच्चा ले कुनै पनि प्रश्न को उत्तर दिन न चाहे नदिदा पनि हुन्छ
- मेरो बच्चा ले कुनै पनि बेला प्रश्न को उत्तर दिन न चाहेमा प्रश्न लाई बीच मा नै छोड्न सक्ने छ र त्यसो गरेमा मेरो बच्चा कुनै पनि हानी हुने छैन.
- मेरो बच्चा ले दिने उत्तर हरु गोप्य रहने छन् र उहाँको नाम कतै खुला रुप ले उल्लेख गरिने छैन

बच्चा को हस्ताक्षर .....

अभिभावक को हस्ताक्षर वास औंला को छाप.....

Appendix 9: Ethical approval from the University of Tokyo (Japanese)

倫　理　委　員　会
審 査 結 果 通 知 書

2016年04月18日

申請者（研究責任者）
国際地域保健学
教授
神馬 征峰　殿

倫理委員会の設置者
東京大学大学院医学系研究科・医学部長
宮園　浩平
（公印省略）

審査番号　11143

研究課題　ネパール地震の被災地において教師による心理社会的サポートが学童へのメンタルヘルス・レジリアンスに及ぼす効果

上記研究計画を2016年04月18日の委員会で審査し下記のとおり判定しました。
ここに通知します。

判　定

○承認する	条件付きで承認する
変更を勧告する	承認しない
該当しない	

Appendix 10: Ethical approval from Nepal Health Research Council

Government of Nepal

Nepal Health Research Council (NHRC)

Estd. 1991

Ref. No.: 2127

09 June 2016

Dr. Rolina Dhital
Principal Investigator
Department of Community and Global Health
The University of Tokyo, Japan

Ref: **Approval of Research Proposal** entitled **Efficacy of psychosocial support training for school teachers to improve mental health and resilience of school going adolescents in district affected by earthquake in Nepal**

Dear Dr. Dhital,

It is my pleasure to inform you that the above-mentioned proposal submitted on 24 April 2016 (**Reg.no.102/2016** please use this Reg. No. during further correspondence) has been approved by NHRC Ethical Review Board on 08 June 2016.

As per NHRC rules and regulations, the investigator has to strictly follow the protocol stipulated in the proposal. Any change in objective(s), problem statement, research question or hypothesis, methodology, implementation procedure, data management and budget that may be necessary in course of the implementation of the research proposal can only be made so and implemented after prior approval from this council. Thus, it is compulsory to submit the detail of such changes intended or desired with justification prior to actual change in the protocol.

If the researcher requires transfer of the bio samples to other countries, the investigator should apply to the NHRC for the permission. The researchers will not be allowed to ship any raw/crude human biomaterial outside the country; only extracted and amplified samples can be taken to labs outside of Nepal for further study, as per the protocol submitted and approved by the NHRC. The remaining samples of the lab should be destroyed as per standard operating procedure, the process documented, and the NHRC informed.

Further, the researchers are directed to strictly abide by the National Ethical Guidelines published by NHRC during the implementation of their research proposal and submit progress report and full or summary report upon completion.

As per your research proposal, the total research amount is **US$ 7000.00** and accordingly the processing fee amount to **NRs. 10,600.00**. It is acknowledged that the above-mentioned processing fee has been received at NHRC.

If you have any questions, please contact the Ethical Review M & E section of NHRC.

Thanking you,

Dr. Khem Bahadur Karki
Member-Secretary