Report of the Pilot Project on Child Injury Prevention in Nepal

Submitted to

The Royal Society for the Prevention of Accidents (RoSPA)

Submitted by

Puspa Raj Pant
University of the West of England
Bristol

Acknowledgement

This community-based pilot project has been successful to start community initiation for preventing children from injuries. The mothers were motivated to re-think about the safety arrangements for their own children. I am grateful to the Royal Society of the Prevention of Accidents (RoSPA), Birmingham for awarding me with the BNFL scholarship to do this project as a post-doctoral research.

The need of this type of work in the community was identified by my PhD research, which was also funded by RoSPA; however, the approach used to feed the concept into the community was derived from an earlier work of the Mother and Infant Research Activities (MIRA). MIRA has been involved in social mobilisation for the improvement of maternal and child health in Nepal for a long time. I have also obtained a significant amount of research motivation to address the issue of child injury through community involvement from the PRECISE project conducted by the Centre for Injury Prevention and Research Bangladesh (CIPRB). I am thankful to the University of the West of England (UWE) Bristol for providing me an opportunity to work for this noble project.

This community based pilot intervention was conducted in Hatiya Village Development Committees (VDC) of Makwanpur district, in Central Nepal. The fieldwork for the project was carried out in cooperation of the Mother and Infant Research Activities (MIRA) in Kathmandu, Nepal. Ethical clearance has been granted by the Nepal Health Research Council (NHRC), Kathmandu Nepal. My sincere thanks are also due to Mr Shyam Lama for his efforts in preparing the required artworks.

I am grateful to the advisory team including Professor Elizabeth Towner, Dr Toity Deave , Dr Julie Mytton, and Dr Matthew Ellis. I would also like to thank Professor Dharma Manandhar, President of MIRA for providing me a platform in Nepal to implement this project under the organisation of MIRA. I would also like to thank the colleagues at the Centre for Child and Adolescent Health (CCAH), Bristol for their support at different levels.

Above all, I would like to thank all Mother's groups, female community health volunteers (FCHVs), field facilitator and MIRA Makwanpur colleagues, Mr Bharat Budhathoki Magar in particular, for successful accomplishment of this work.

Puspa Raj Pant
Bristol
May 2014

Table of contents

1. Background

Child injury is a major global public health problem with the highest burden in low- and middle-income countries (Peden et al., 2008); they are also a rising problem for children in Nepal (Government of Nepal, 2010) and other Asian countries (Rahman et al., 2005, Linnan et al., 2007, Balan and Lingam, 2012, Pant et al., 2013). In 2010, about 939,000 children and adolescents (aged 0-19 years) died from injuries in the world of which 90% occurred in developing countries (IHME, 2014). Every day 2,316 children and adolescents (0-19 years) die from injuries in developing countries.

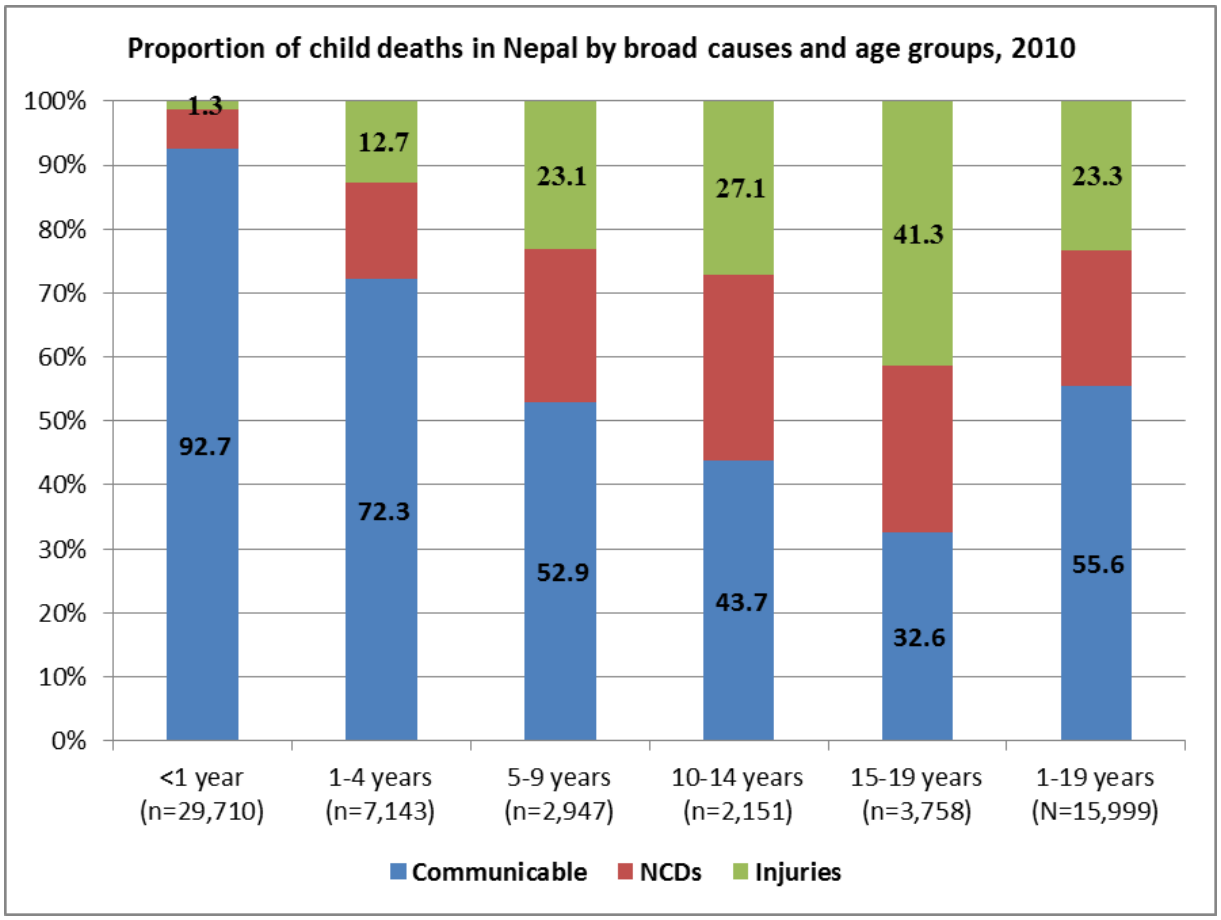


Figure 1 - Proportion of child deaths in Nepal by broad causes and age groups, 2010

Nepal does not have an injury surveillance system but the latest Global Burden of Disease study provides estimates for the causes of deaths for different age groups. In Nepal, injury related deaths among children and adolescents (aged 0-19 years) were about 4,000 which is 23% injury deaths in all ages (IHME, 2014). The Figure 1 explains the patterns of causes of death across different age groups in Nepal in 2010. The World Health Organisation has urged its member states to address the problem of child injuries (World Health Organisation, 2011).

Injury mortality rates for the children aged 1-4 years, 5-9 years, 10-14 years and 15-19 years are 32, 18, 16 and 47 per 100,000 respectively (IHME, 2014). As figure above depicts, deaths resulting from injuries grow proportionately as communicable disease deaths decline; although there is a growing attention towards the problem, injury prevention is not yet a national public health priority (Government of Nepal, 2010).

1.1 Burden of nonfatal injuries

Fatal injuries are considered as 'the tip of the iceberg' of the real burden of injuries (Chandran et al., 2010, NIOSH, 2011). Nonfatal injuries to children may have long term consequences resulting in higher Disability Adjusted Life Years (DALYs) due to the remaining years of life affected by disability (Bartlett, 2002). Although estimates for all non-fatal injuries are not available for the population of Nepal, government records show that 7,400 children and adolescents (0-19 years) were hospitalised due to injuries in Nepal in the fiscal year 2011/12 (Ministry of Health and Population, 2013) which is 24% of all injury related hospitalisations in Nepal.

These figures are quite low and do not represent the numbers hospitalised in private hospitals and treated in hospitals in bordering India. Non-fatal injuries may be over 100 times higher than fatal injuries in Nepal. A recent estimate shows that 18 hospitalisations; over 18,000 children and adolescents (0-19 years) are hospitalised and over 143,000 sustain injuries but not required to hospitalisation only due to Road Traffic Injuries (RTIs) in Nepal (Global Road Safety Facility, 2014).

There are a few studies describing the costs of injuries from Low and Middle Income Countries (Norton et al., 2006). A review found only 6 studies describing costing data for injury treatment from South-East Asian countries out of 68 identified papers from low and middle income countries published. The cost of non-fatal injury ranged from $14.00 to US$17,400 (Wesson et al., 2013). Calculation of the proportion of per capita GDP spent in hospitalisation and treatment of injuries was presented in the review and explains how non-fatal injuries lead the family and country into poverty. A study by Joshi and Shrestha (2009) estimated US$128 per injury which is 24% of per capita GDP for Nepal. In a country like Nepal, treatment of such acute and nonfatal injuries may be an important factor for pushing families into poverty with additional burden of care and emotional consequences. Injury prevention therefore will become an ever increasing priority going forward.

1.2 Community-based injury prevention

It is apparent from general observations and literature that considerable proportions of child injuries are associated with lack of awareness and supervision. Child injury prevention programmes have been shown to be effective when a community-based approach is applied. The PRECISE project demonstrated a reduction in injury hospitalisation in Bangladesh (Rahman et al., 2009). RoSPA also recommends that effective practice in child safety education requires close partnerships with communities (RoSPA, 2012).

This project also aimed to develop a community mobilisation programme for child injury prevention in rural Nepal using the structure of Female Community Health Volunteers (FCHVs) and mother's groups. Normally, mother's group meet once a month to discuss health issues. FCHVs provide services including family planning and reproductive advice to couples, pregnancy care, immunisations, treatment of common childhood diseases and first aid. FCHVs act as facilitators to enable the mothers to determine the health priorities they wish to discuss, and to explore and develop local solutions (Manandhar et al., 2004, Morrison et al., 2005).

FCHVs previously had little involvement in child injury prevention; they were keen to be involved in future programmes (Pant et al., 2014). It was anticipated that increasing injury awareness and basic first-aid training of FCHVs would lead to an increased injury prevention practices and a reduction in injury occurrence in the households of the area they serve. This project has developed a culturally appropriate, educational programme for FCHVs and determined the feasibility of evaluating its effectiveness through women's groups. This intervention included both primary (safety information) and secondary (first-aid training) prevention components.

1.3 Rationale

It is clear from the available information that injuries are affecting thousands of children and their families in Nepal. A doctoral research study on child injuries, conducted in Makwanpur district, estimated the annual rate of non-fatal injuries among children (<18 years) of 24.60 (95% CI 21.2-28.0) per 1,000 children, with the rates for boys almost double [32.5 (95%CI 27.0-38.1)] that for girls [16.7 (95%CI 12.7-20.8)]. The injury rate by age category showed that children aged 5-9 years had the highest rate i.e. 30.3 (95%CI 22.9-40.0) per 1,000 children followed by 1-4 years. Falls, cuts/wounds and road traffic injuries were common non-fatal injuries.

Lack of knowledge about childhood injuries was observed. However, lack of supervision was identified as a major risk factor for injuries to small children. Community people were keen to contribute in the prevention of injuries and to safeguarding children in the future. This project was founded largely upon this community assurance. The Royal Society for the Prevention of Accidents (RoSPA) funded this pilot project on Child Injury Prevention in Nepal for a duration of 10 months from August 2013 to May 2014. This project aimed to develop a culturally appropriate, educational programme for the Female Community Health Volunteers (FCHVs) and to determine the feasibility of evaluating its effectiveness through women's groups. This intervention included both primary (safety information) and secondary (first-aid training) prevention components.

2. Aim and Objectives

The main aim of the project was to develop a culturally appropriate, educational programme for FCHVs and to determine the feasibility of evaluating its effectiveness through women's groups. The specific objectives were as below:

1) To develop and evaluate an educational programme on child injury awareness for FCHVs in Makwanpur district of Nepal,
2) To develop educational materials for FCHVs to use with mothers' groups on child injury prevention,
3) To provide training to the FCHVs on child injury awareness and basic first-aid,
4) To evaluate the knowledge of injury prevention and first-aid in FCHVs and mothers before- and after- training led by the trained FCHVs.

3. Methods and materials

This project was conducted in Hatiya VDC, selected conveniently from 43 VDCs in the district. Makwanpur district represents a range of different environments in Nepal (Osrin et al., 2003), topographically and also includes people from 15 ethnic groups. Agriculture is the main livelihood of its population. Hetauda is the only municipal town in the district which borders with the programme VDC in the East. A VDC is the lowest rural administrative unit of Nepal and has 9 wards; at least one FCHV is working in each ward. FCHV is responsible for convening mother's group in each ward. The mother's group ideally has at least 20 members with one Chairperson.

According to the objective of the project, three major activities were planned: 1) first aid training for all FCHVs, 2) introduction of child injury prevention component in regular mother's group meetings; and 3) child injury notification and data collection. The field activities were implemented for the duration of 7 months from October 2013. Ethical approval application, preparation of the drafts of training manual and picture-book were the first two month's activities (August and September 2013).

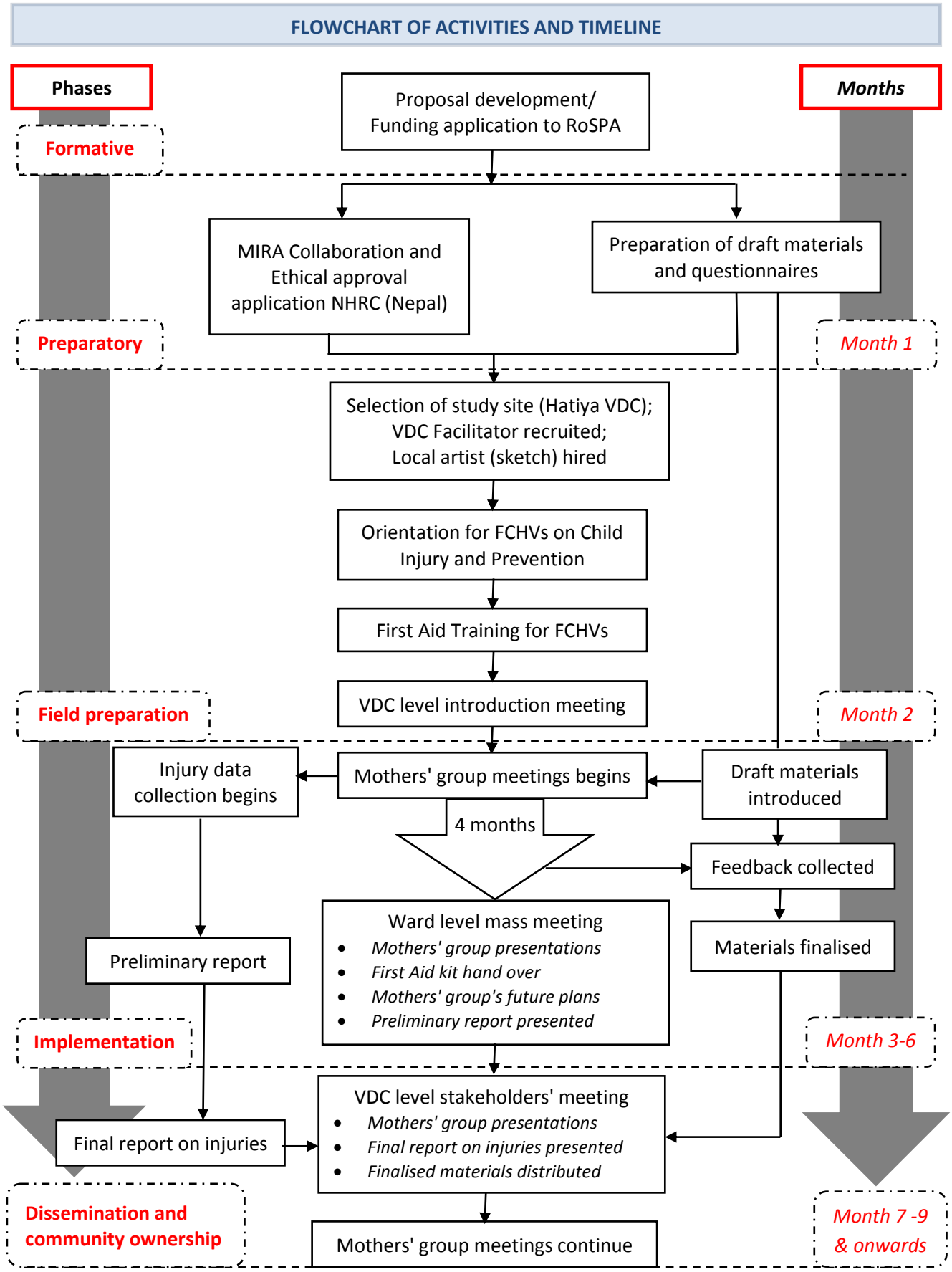


Figure 2 - Flowchart of the intervention

The project encompassed 4 stages i.e. Formative, Preparatory, Preparations in the field and implementation. The project was handed over to the community after the completion of the 4th stage. The Mothers' Groups took the ownership and presented their future plans in mass meetings in each wards. The major activities are presented in the flowchart in Figure 2.

3.1 Study area and population

Hatiya VDC is a neighbouring VDC with the Hetauda municipality in the West and it has 13,100 people living in 2,750 households [average family size 4.8]. Estimated 45% of the population are children aged 0-17 years. It also has a mix of geographic and socioeconomic environments (Figure 3).

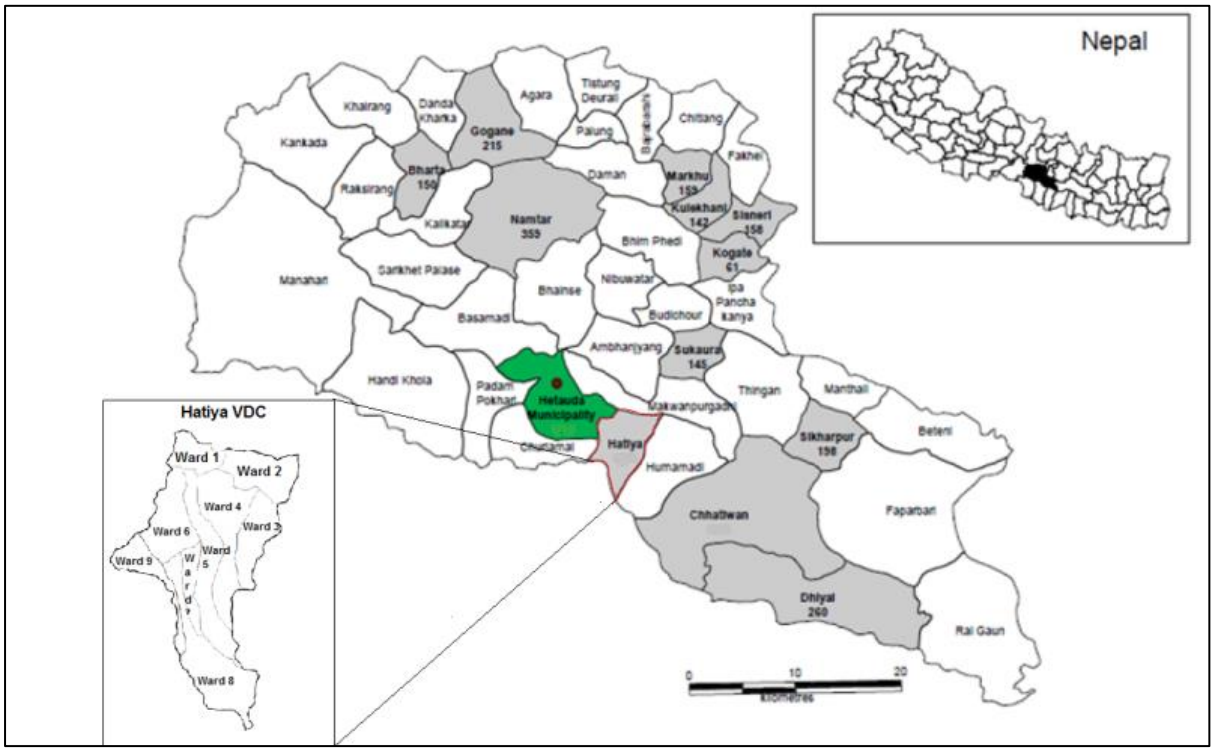


Figure 3 - Map of Hatiya VDC showing the Wards (inset: location of Makwanpur district in Nepal)

Ward numbers 3 and 8 are the two biggest wards in the VDC and together make 30% of the VDC population. The number of children in each ward is calculated from the district average. Most the people in Hatiya VDC live on subsistence agriculture. However, some were working in a newly established Cement factory and dairies in the VDC.

Table 1 – Distribution of population of Hatiya VDC in 2011 by wards

Ward No	Household	Total population	Male	Female	Children
1	183	863	419	444	388
2	179	1,003	506	497	451
3	434	1,941	925	1,016	873
4	368	1,769	874	895	796
5	339	1,638	818	520	737
6	278	1,284	608	676	579
7	221	1,058	512	546	476
8	392	1,858	892	966	836
9	357	1,685	825	860	758
TOTAL	**2,751**	**13,099**	**6,379**	**6,420**	**5,894**

Source: Nepal Population Census 2011.

3.2 Field activities

The project activities were mostly reliant on community involvement except the preparation of the draft materials to be used and improved at the end of the project. The field activities of this project started in September 2013, after a series of preparatory works at UWE (Bristol), MIRA (Kathmandu) and MIRA (Makwanpur).

Table 2 - Timeline of actual activities

Planned activities	Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May
Field trip to Nepal																			
Initial meeting with district/VDC level stakeholders and FCHVs																			
Application for Ethical approval																			
Application for Social Welfare Council approval																			
Training module preparation - Childhood injuries (FCHV orientation)																			
Preparation of pre- and post- test questionnaires																			
Development child injury record form																			
Recruitment of VDC facilitator																			
Pre-test (for FCHVs)																			
Training for FCHVs (1 day)																			
Post-test (for FCHVs)																			
First-aid (child) training for FCHVs (4 days)																			
Hired a local artist to make sketches																			
FCHVs conduct monthly mothers' group meeting (6 months)																			
Collation FCHVs experience on mothers' group facilitation (3 months)																			
Ward level mass meetings																			
Finalise the training manual (1 month)																			
VDC Level mass meeting and dissemination																			
Analysis and Report writing																			

Initiation of the activities in the field was made successful with a coordinated cooperation from all concerned parties. The maize harvesting had already started from mid-September and people were looking forward to paddy harvesting and festivals in October. People agreed to take part in all of the project activities; including FCHVs' attendance in the 4-day long first aid training despite all the additional household activities occurring in this period. All the FCHVs in the VDC and all the mother's groups in the VDC agreed to arrange meeting and additional training.

Since MIRA is working to improving the neonatal and mother health activities in Makwanpur district over two decades, it was helpful to relate these activities to growth and development of children. Therefore, this project included a child-rights based approach to provide education about the stages of childhood before starting the discussions on child injury prevention. This helped make uniform understanding about child-age among the mothers and community people.

3.3 Operational definitions

There was an emphasis on two major terms to make clear to all people: 1) child or children and 2) injury. This project used the definition of a child as defined by the United Nations Convention on the Right of the Child which says – anybody below the age of 18 years as a child. The definition of an injury as any unintentional event causing bodily damage and result in interruption in usual activities of the victim for at least one day regardless of treatment. The meaning of the term Injury in Nepali refers to discernible injuries only therefore the English word "Injury" was also used within Nepali conversations and in documents written in Nepali.

Clarifying these definitions to the people in the beginning of the project prepared them for thinking clearly and enhanced the understanding of the subject matter.

3.4 Ethical clearance

Ethical clearance for this project was obtained from the Nepal Health Research Council (NHRC), an apex government body that regulates health research in Nepal. In addition, a clearance from the Social Welfare Council (SWC) was obtained which allowed using the foreign funds to be used in research/intervention in Nepal.

3.5 Advisory committee

This project was developed and implemented by the researcher under the close guidance of an advisory team – providing support to this project without funding. The advisory team comprised of experts in the field of injury prevention research including the projects funded by the WHO and UNICEF; National Institute for Health Research (NIHR); Keeping Children Safe programme (E Towner, T Deave) and the FAST (First-aid advice and safety training) Parents Programme (J Mytton, E Towner). M Ellis, a paediatrician, has extensive experience working with the Government and MIRA team in Nepal. The researcher was based at the Centre for Child and Adolescent Health in Bristol. The team provided support to the researcher through regular meetings in the UK and in the field.

3.6 Educational materials on child injury prevention

To accomplish the objectives of the project, a set of educational materials were produced. The Mother's Group Meeting Facilitation Manual (FCHV Manual) was the major product that has been developed by the project. A pictorial book comprised of pictures and minimum text was also produced as a supporting document for the mothers and people with low literacy. Two sets of posters were also prepared: one was focussed on the awareness about various risk factors in children's surroundings and the other described different types of injuries.

The FCHV manual was prepared on the basis of similar manual produced by MIRA for neonatal health in the past. The manual guides to the mother's group members to discuss the issues in their communities and encourage them to priorities. The manual itself doesn't prescribe solutions on how to prevent certain type of injuries but it motivates mothers for advocacy and promotion of safety awareness so that it can enable the mothers to think about safety of their children.

The picture book contains many illustrations of the events of injuries to children of different ages from birth to adolescence. All the pictures used in the picture-book were listed by the researcher upon the observation and discussion with mother's group members and prepared by a local artist. A sample of the pictures was validated by the community; it was found that people easily understood what was happening in those pictures. A couple of the pictures were also borrowed from the internet and CAPT picture book. The picture book was prepared after reading the similar picture books prepared by Bangladesh-based CIPRB and UK-based CAPT. The participants found the poster quite informative and understood by all.

We used first aid training of the FCHVs as a way to engage the FCHVs in the subject of injuries, and as a way to introduce the subject of preventing the injuries from happening in the first place. If injuries did occur, the FCHVs were also more likely to be able to respond appropriately to minimise the harm from the injury.

3.7 Mother's group meeting

Ideally, mother's group members meet at a pre-decided venue and date where FCHV facilitate discussions about various health topics. They also convene at the meeting for their micro-credit and saving activities at the same time. It was observed that the FCHVs have varied level of activeness depending upon their age, qualification, and experience. It was observed that the FCHVs and mother's group needed refresher-training on their role, responsibilities and regular expected activities, in general. In the absence of local monitoring system of the FCHVs they were performing at their own prudence.

Since the issue of injury prevention was completely new agenda, they didn't feel comfortable to introduce the matter to the mother's group. It was observed that they were jumbled by the different types of injuries to mention at the same time; from discernible injuries such as cut wounds, scald, fractures to indiscernible injuries such as poisoning, concussions etc. It was observed that they were more inclined to discuss discernible injuries.

Keeping all these observations in mind, the researcher introduced the topic to all the mothers groups which included the definition, classification, consequences and situation of fatal and nonfatal injuries in Nepal. It was felt that the first session prepared the way forward for the FCHVs and mother's group members to take over this issue easily. The project staff (VDC facilitator) assisted the FCHVs and mother's groups in consequent meetings in all wards.

The feedback was obtained at the end of each session.

3.8 Injury notification and data collection

In addition the regular mother's group meeting activities, a child injury notification form was developed to record every injured child in the ward (appendix 1). Ideally, the mother's group members would provide information about the injured child at the meeting and FCHV of that ward would record the details using this form. This form also comprised of pictures to make it easy to read for the people with low literacy. However, this activity was mostly supported by the project staff (VDC Facilitator). It was observed that the mothers were not clear about what to count and how to record.

3.9 Supervision of field activities

Supervision of field activities became easier with the help of the collaboration with MIRA, a Nepalese NGO working in Makwanpur district in the field of maternal child health. MIRA facilitated the recruitment of a Female VDC Facilitator before commencing the activities. Similarly, a MIRA colleague was responsible for supervising day to day administration, which allowed the researcher to focus in the development and finalise the intervention. The researcher also spend significant amount of time in all field activities.

3.10 Art work

A local artist was hired to make required sketches to be used in the picture book, posters and the manual. Sample of these pictures were shown to the mother's group members and community people in order to validate them. All of the picture sketches were well understood by the people and were found to be useful. Altogether over 100 sketches are prepared by the local artist. These sketches can also be used for developing other educational materials on child injuries.

4. Results

4.1 Summary of major accomplishments

An educational injury prevention programme, including basic first-aid training was developed for FCHVs and mother's group members. This included the discussion about child injury prevention in

mother's group meeting; development of a mother's group facilitation manual; a picture book on child injuries and two education posters.

Two hundred and 60 mothers and thirty males were directly involved in the mother's group meetings. Twenty First-Aid kits were provided to 9 FCHVs, 10 mother's groups and a VDC facilitator. In total, the FHCVs and mothers identified 155 injured children in the VDC over a period of 7 months using the child injury data collection form. A report of the feasibility of delivering the materials through women's groups in wards across the project VDC was prepared. An observation of their knowledge about child injuries before and after implementing this intervention found considerable increased awareness about child injuries. Each mother's group was able to establish a Child Injury Prevention Fund in their ward using a donation of about £6 per ward from the research study (see section 4.12).

Dissemination of the intervention and findings has been done through presentations at the South West Public Health Scientific Conference in February 2014 and IUHPE World Health Promotion Conference in Thailand in August 2013. An oral presentation is planned for the Faculty Research Conference at the University of the West of England in 2014. As stated in the proposal, preparation of articles for Peer Reviewed Journal and abstracts for International Conference is also planned. The following sections describe the results related to the process and programmatic part of the intervention (as mentioned in the figure 2).

4.2 Recruitment and First Aid training for FCHVs

Female Community Health Volunteers (FCHVs) and Mother's Groups (MGs) were the important parts of the intervention. All the FCHVs and MGs in Hatiya VDC were included in the project.

Figure 4 – Female Community Health Volunteers (FCHVs) working in the Hatiya VDC

All the FCHVs were informed about First Aid training by the in-charge of the Hatiya Health Post and requested to agree on suitable date for all FCHVs for the training. The dates were fixed for 6-9 October 2013.

Meanwhile, a project support staff (VDC Facilitator) was also recruited by MIRA to support in day to day field activities. A local female was appointed with specified job-description. This person played a

key role to liaise with the researcher, MIRA, FCHVs and the MG members in relation to the project activities.

4.3 Orientation of Child Injury Awareness

All the FCHVs were again invited for a one-day child injury prevention orientation programme. A brief presentation was prepared in Nepali language was using materials adopted from the WHO-VIP website. Some statistics in the presentation were used from earlier PhD (Pant, 2013) study and Global Burden of Disease 2010 study (IHME, 2014). The participants were assessed for their existing knowledge and assessed afterwards as post-test.

Figure 5 - Orientation training on child injury prevention

Figure 6 – FCHVs working in groups during the orientation of child injury prevention

4.4 First Aid Training for FCHVs

Nepal Red Cross certified trainers provided comprehensive first aid training with particular emphasis to children. First aid training took place at the hall of the Health Post. A four-day long training also trained FCHVs on CPR. First Aid training was provided to all 9 FCHVs and the Programme Facilitator. The training was conducted at local Health Post's training hall (Appendix 2).

Figure 7 - FCHVs receive First Aid training for the first time

The overall objective of the first aid training was to build up capacity of the FCHVs to cope with and to be prepared for probable accidents and disaster by providing first aid skills and knowledge. During the training the concept, principles and process of First Aid were introduced to the participants. The trainers discussed and determined do's and don'ts of first aid at an emergency.

Figure 8 - FCHVs with their First Aid kit and certificate of completion

The knowledge of first-aid in FCHVs was assessed independently by the trainers before and after the training. All of the 10 participants were successful in their assessment and received the Certificate of Attendance. Everyone received one First Aid Manual (in Nepali language) and a standard First Aid Kit. The trainers were impressed with their progress considering the age and literacy level of the participants.

4.5 VDC Level orientation on the project

After the successful completion of the first aid training course, a VDC level meeting was conducted in order to inform VDC level stakeholders about the child injury prevention intervention to be implemented in Hatiya VDC. MIRA formally invited the local leaders, social workers, children's group representatives, and VDC officials. About 20 people attended the meeting. The participants appreciated the objectives of the programme and expressed their commitment for their support to the programme.

Figure 9 - VDC level orientation meeting with local stakeholders

4.6 Mother's group meeting

In every VDC, mother's group meeting take place every month on a fixed date; FCHVs convene the meeting and minutes are prepared. Alongside the discussion on health issues, saving and credit activities also take place in the meeting venue. The following meeting dates were obtained from the FCHVs and the preparations for meeting were done accordingly.

Ward number	Place of meeting	Number of meetings	Meeting date (Nepali calendar)	Avg attendance per meeting (Females)	Avg attendance per meeting (All)
1	Chuchchekhola	6	23 of every month	25	27
2	Rajdevi	6	14 of every month	27	31
3	Nepalchaur	6	12 of every month	24	28
4	Dabile	6	24 of every month	29	30
5	Trishule School	6	06 of every month	26	29
5*	Ghyampe Danda	3	23 of every month	25	25
6	Ashok Batika	6	07 of every month	27	32
7	Pranami nagar	6	15 of every month	27	30
8	Dhimal Tole	6	22 of every month	25	29
9	Jarung Danda	6	10 of every month	25	29
	TOTAL	**57**		**260**	**290**

**additional group in the ward #5; as this ward is narrow and long, it has two mothers' groups for convenience*

A total of 260 females attended in all six meeting in all wards. Mother's group members' attendance goes up as they know that there is something new is going to be discussed in the meeting. Since the

issue of child injury prevention was new, the attendance was commendable. It is important to mention here that the months of October was major crop (paddy) harvesting season and there was national election in mid-November. To adhere to the dates of meetings, the groups also met during early mornings in some cases.

Figure 10 - Mother's group meeting in ward #9

A draft of meeting facilitation manual was prepared before the first meeting of the Mother's group. The manual was prepared in Nepali language and FCHVs were oriented about using the manual during the Mother's Group (MG) meetings. At this stage the manual consisted of useful background information on child injuries, session plans from 1-6. There was a system to collect feedback on the session facilitation manual from the FCHVs and the participants immediately after each of the meetings in each ward. The draft of the picture book and posters were also presented during the meetings.

Mother's group meetings took place in usual time and venues; however, attendance of the participants was reasonable despite the season of paddy, maize harvesting. Some of the meetings took place at early morning time because people have to go in the farms to work afterward.

Figure 11 - Mother's group meeting in ward #1

These pictures show different settings of the mother's group meetings in different wards of the project VDC. The mother's group members discuss various issues of child injuries once it has been introduced by the FCHV, who is also the facilitator of the meeting. However, the first and second meetings were mostly led by the researcher or the VDC facilitator. The older and less illiterate FCHVs requested the researcher and the VDC facilitator to describe about child injuries during the meetings. It was also observed that the mother's group members also were capable of leading such interaction and meetings and requested to support each-other during the meetings.

Figure 12 - Mother's group usual meeting ward #7

The mother's group meetings work according the community work cycle system; where the community people convene and discuss about health problems and recommend possible way to resolve them. The meeting facilitation manual was also prepared in a way that it can drive the community people to discuss about child injuries and offered ideas to enable them to create possible solutions to local child injury risks

Figure 13 - Mother's group meeting in ward #6

Mother's group members provided some examples where children died or sustained severe injuries. Some mentioned the treatment costs of injuries to children in the past. All these experience contributed positively to make them more attentive to this matter.

In addition to increased knowledge and awareness about child injuries the MG members were also able to bring environmental changes. The following picture (Figure 14) is a meeting venue in ward number 2. The balcony of this house was repaired after the first meeting. This suggests that the community quickly recognised they could take some action once they understood the importance of the issue.

Figure 14 – This house got railings repaired after the first month's meeting on injury prevention

4.7 Preparation for the mass meetings

The first three MG meetings were focussed on the provision of information about different aspects of children, injuries and their prevention. The fourth meeting was about how to arrange the knowledge obtained in the past meetings and how to present it to the community.

Figure 15 - Preparation meeting for the ward level mass meeting at ward # 4

The fourth meeting of the mother's group members reviewed the meetings from 1 to 3 and planned for a ward level dissemination meeting. This meeting included nominating 5-6 members of the group to present in the ward level mass meeting. They also finalised the agenda, correspondence and

invitations. Those selected members met before the ward level (5th Monthly) meeting where they finalised their presentations, and assigned responsibilities for conducting the mass meeting.

4.8 Mass meetings and observations

In the fifth month from the beginning of this project, mother's group in each ward organised a ward level mass meeting. Local leaders, social workers, teachers, members of Community-based Organisations (CBOs) and the residents were invited to attend this meeting. This meeting is also a part of mother's group meeting where they present the activities they had been carrying out in the past four months. The selected 5-6 members of the Mother's Group presented their activities in the meeting. This was a good opportunity to showcase their work and seek support from the wider community.

Figure 16 - FCHV welcoming at the mass meeting in ward #9

These meetings took place in 9 wards of the project VDC during the period 18 February - 21 March 2014. A total of 446 people attended in these meetings. Over 10% of the participants of these mass meetings were children affiliated to child or adolescent's clubs; these children and young people may be very useful to engage in future research activities.

Table 3 - Details of mass meetings conducted in Hatiya VDC

Ward number	Meeting date	Venue	Attendance
1	11 March 2014	Local primary school	53
2	25 February 2014	Forestry User Group hall	44
3	23 February 2014	Premises of a local temple	50
4	07 March 2014	VDC Office hall	55
5	21 March 2014	Local school premises	50
6	14 March 2014	Local youth club hall	63
7	20 March 2014	Open ground near FCHV house	40
8	05 March 2014	Open ground near FCHV house	44
9	22 February 2014	Forestry User Group hall	47
Total			**446**

The researcher was also present in the three of these meetings conducted in the ward numbers 2, 3 and 9 from 22-25 February 2014. There were some very useful lessons that were learnt during the observation of those three mass meetings. Most of the MG members expressed shyness to come forwards for their presentation; among them some did very well while some needed support during the actual presentation. However, all the invitee appreciated their efforts for coming forward to do something for the prevention of child injuries in their own localities. It was learnt that there was a long gap when a mass meeting was organised some 7 years ago. So the MG members were found lacking skills on how to appear in front of a big group of people.

Figure 17 - Mass meeting in ward #3 of the project VDC

The following few pictures were taken for the mass meetings took place in various places of the VDC and presented here to give an idea of different settings across the VDC.

Figure 18 – People attending the mass meeting in ward #9 of Hatiya

Figure 19 - Local social workers and leaders were among the guests

The mass meetings were attended and observed by ward level leaders and social workers and males. The venues of the meeting were varied in terms of physical facilities and structures. Most of the meetings took place in common public places.

This activity showed the importance of trying to influence the invited local leaders with the work of the mother's group in their community. The local leaders were able to influence how the VDC budgets were spent and how to get hold of funds. These local leaders mentioned in their remarks and speeches that they could help the mother's group to be included in the scheme and requested mother's group to come up with a plan. This has further encouraged the mother's group to plan and carry out child injury prevention activities in their localities.

Figure 20 - Mass meeting at ward #7

Figure 21 - Mass meeting in ward #6

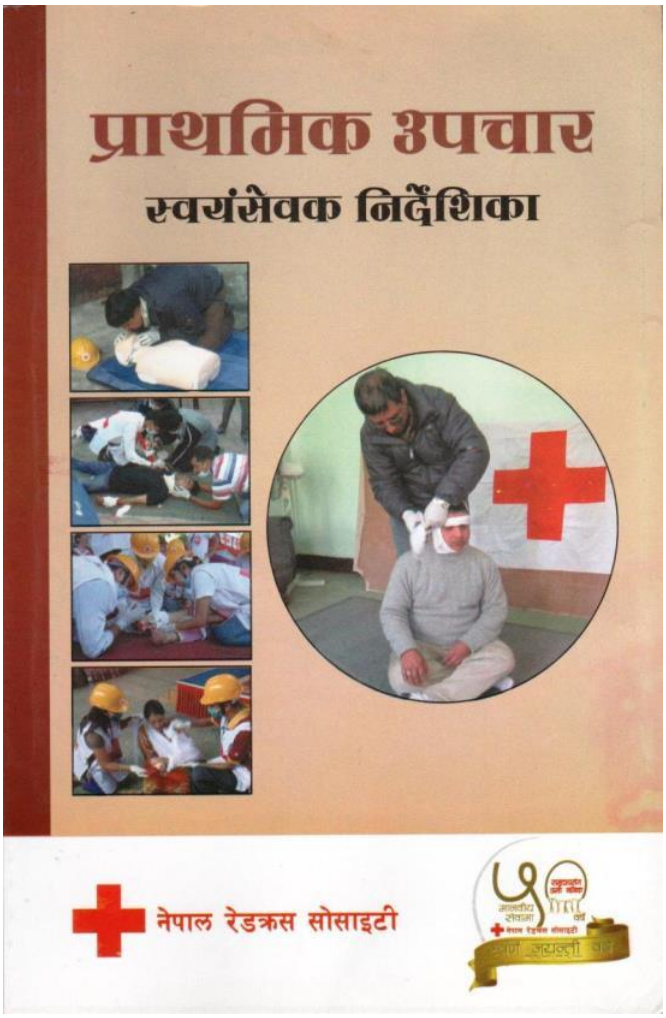
4.9 First Aid kit distribution to Mother's Groups

One of the notable events took place in the history of the mother's group of Hatiya VDC is they received the first ever First Aid kit. The kit was handed over to the Chairpersons of mother's groups during the mass meetings. The kit was handed over to them by the Chief Guests of the ward level mass meetings. This first aid kit was purchased from the Nepal Red Cross which contains standard items. The idea behind giving this First Aid kit to the mothers is that they could use it either themselves for FCHV or anyone who knows first aid immediately after an injury. The mothers were very happy to receive these gifts. Another important thing to mention here is that the local health post expressed their willingness to replenish the supplies in the first aid kit as far as possible.

Figure 22 - Mother's group receiving the first aid kit

Figure 23 - Mother's group receiving the First Aid kit

4.10 Educational and reading materials provided to FCHVs



First-Aid Manual: A series of educational and reading materials were developed and distributed to the FCHVs for their use in aid to the community-based child injury prevention activities. They received an illustrative and well written First Aid manual (in Nepali language) if they successfully completed the training. Nepal Red Cross Society provided the most recent version of the volunteer manual, which was published in 2013 in the occasion of 50th Anniversary of Red Cross in Nepal (Figure 24).

It was observed during the first-aid training discussion sessions that the FCHVs with limited literacy requested their grandchildren read out the book for them and the children also like the book, contents and the illustrations.

Figure 24 - Nepal Red Cross Society provided a First Aid Manual for each FCHV

Figure 25 - Mother's group facilitation manual for FCHVs (Cover page)

FCHVs Manual: Following the plans to develop a Mother's Group Meeting facilitation manual, a 70-page manual with optimal information about child injuries, types and consequences of injuries, and session facilitation guidelines was prepared. The manual was drafted prior to commencing mother's group meeting in October 2013. The manual is focussed on child injuries.

The structure of the manual was based on a similar manual used in Makwanpur by MIRA for conducting the mother's group meetings on perinatal health a few years ago. This manual has been designed for six meetings. This manual has been finalised by incorporating the comments, feedbacks obtained from the participants and self-observations in the field.

This manual covers: the definition of a child, definition of injury, classification of injuries, burden of injuries in the world, developing countries and Nepal. The situation of child injuries in Makwanpur district is also described in the manual. In addition, the introduction and objectives of the project, role and responsibilities of FCHVs and Mother's Groups are also described. The manual has appendices where the stages of child development are described. Similarly, it contains stories when explain the situation where child injuries occurred.

Posters: Educational posters on child injury prevention were prepared and distributed in the community. Two types of posters were prepared one was on different types of injuries that may occur to children or adults and the other was on the common risk factors present around the day to day activities of children. These posters were helpful to facilitate the discussion among people on the types of injuries and risk factors for injuries.

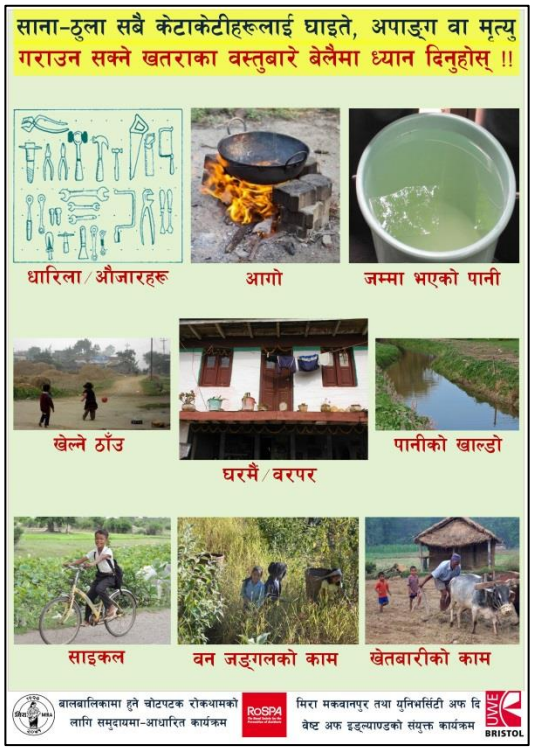


Figure 26 - Child injury prevention educational posters developed

The message in poster 1: *Prevent all children, small or big, from injuries and help in the protection of child rights and child development.* Similarly, the poster 2 says: *Please be aware about the risks that can injure, disable or kill the children of all ages, small or big.*

Picture book: A picture is worth a thousand words. It was also the main demand of the FCHVs and MG members to have a pictorial book from which all of them can learn better about different child injuries, their risk factors, and other associated things. It was also found to be helpful for the people have low literacy level.

This book contains illustrations prepared by a local artist. Emphasis is given on the circumstances that can lead to child injuries. Injury risks from different ages from the age of 6 months have been described. The concept of this book is taken from the *booklets* prepared by the Child Accident Prevention Trust (CAPT); three pictures/sketches have been borrowed to use in the pictorial book produced by this project (Figure 27). This is also prepared in Nepali language.

Figure 27 – Cover of the picture-book on child injury prevention

4.11 Project handover

A VDC level dissemination meeting was organised on 26th May 2014 in the presence of all FCHVs, MG members and VDC level stakeholders. On the occasion all the educational materials described above were distributed to the participants. VDC dissemination meeting is part of the 6th month activity, where the mother's group present child injury prevention activities conducted through the VDC in order to inform the stakeholders and also to ensure the support from local government.

Figure 28 - Participants of the closing and handover ceremony

During this meeting, a report on the situation of Child injuries in Hatiya VDC was also distributed; this report has been prepared using the data collected by the FCHVs, mother's groups and VDC facilitator during the period of 7 months. The report prepared in Nepal language in plain language itself worked as additional educational materials where people learnt about the number, types, and consequences of injuries in their VDC. This report was also an opportunity to audit the number of injured children surveyed.

4.12 Child Injury Prevention Fund

Community groups identified that financial support would help them maintain the legacy of the project. It was learnt that MIRA had previously established Maternal Child Health Funds a long time ago with a donation of 1,000 Rupees (about £10 in 1990s) to each mother's group. Taking from this, an idea of establishing a Child Injury Prevention Fund was evolved. The researcher donated 1,000 Rupees to each mother's group (£6 current rate) on the occasion of ward level mass meetings. Mother's group also agreed to collect nominal amount from its members to mark community contribution in the Fund. It was also agreed that the fund will be used to replenish the first aid kit supplies and provide emergency financial support to the families of injured people, as a loan to enable them to gain medical treatment.

5. Quantitative results of the injury data

Injury data were collected for any parent-reported injuries that occurred to their children aged from birth to 17 years, using the child injury notification system that was led by the mothers group from the month of Kartik (15 October 2013). Types of unintentional injuries included: falls, burns, road injuries, accidental poisonings, drownings, dog bite/ animal related, and mechanical injuries. A total of 155 injured children were identified in the 7 months until 15 May 2014. According to the estimates of National Census (2011), there are 5,900 children aged 0-17 years in Hatiya VDC.

Table 4 - Distribution of injured children in Hatiya VDC gender and wards

Ward no.	Total children (0-17 years)	Injured children (October 2013 to May 2014)	Boys	Girls
1	388	20	11	9
2	451	17	8	9
3	873	18	11	7
4	796	30	22	8
5	737	19	14	5
6	578	9	8	1
7	476	11	9	2
8	836	15	9	6
9	758	16	12	4
Total	**5893**	**155**	**104**	**51**

These children of different age groups, boys and girls, were pictured in their homes with the permission of their parents at the end of the project. Not all children surveyed were photographed.



The pictures do not exhibit non-discernible injuries; therefore those with visible injuries are given in this report.

The following text explains the analysis of the data collected by mothers group, FCHVs and Programme Facilitator. The tables and figures are based on the actual information for 7 months while the annual non-fatal injury rate is calculated on the basis of extrapolated number of injuries for 12 month's period.

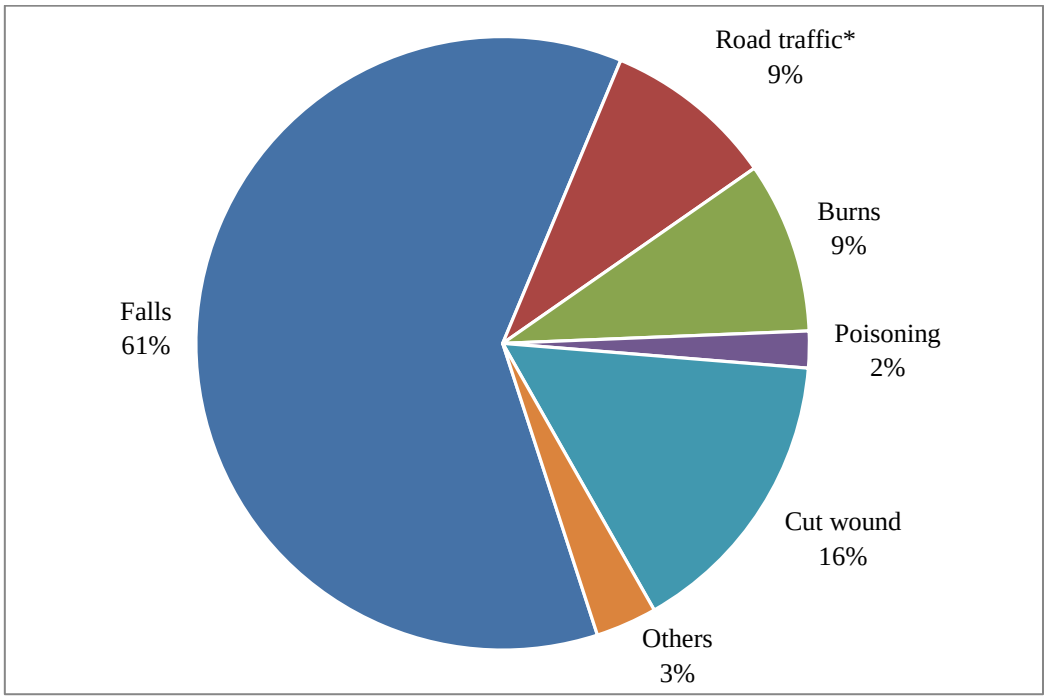


Figure 29 - Distribution of injured children by the types of injuries

**Road traffic include injuries took place on the road with the involvement of the injured child and a means of transport, motorised or nonmotorised. The common examples of road injuries were bicycle and motorcycle related injuries.*

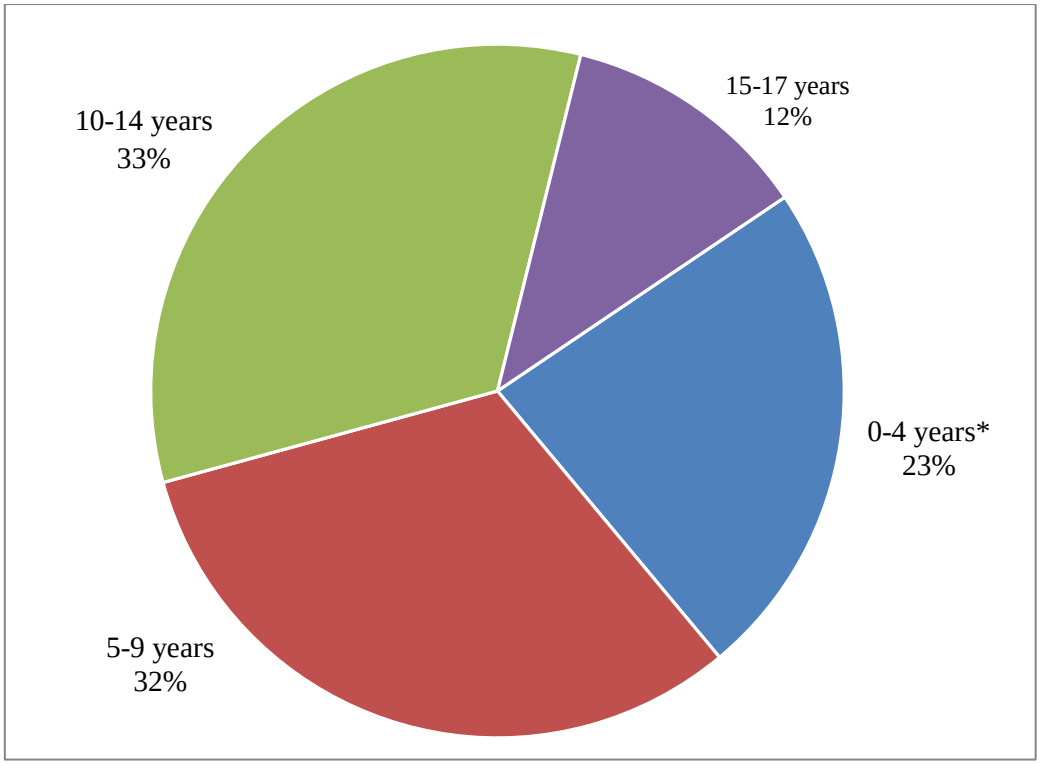


Figure 30 - Distribution of injured children by age groups

**Includes only one case of injured infant.*

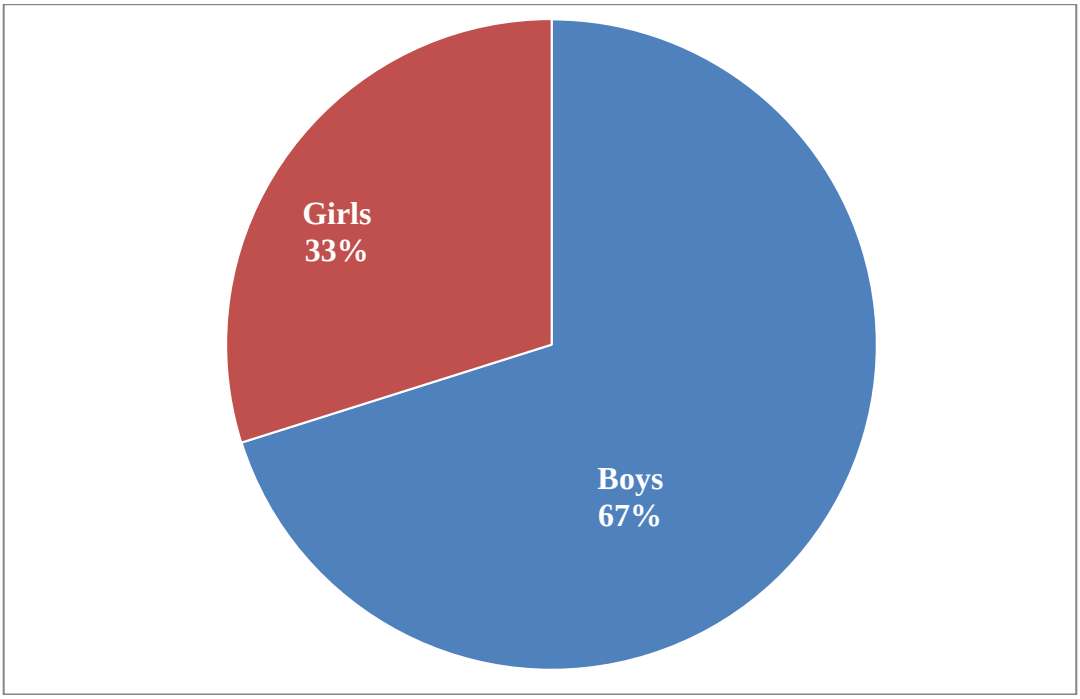


Figure 31 - Distribution of injured children by gender

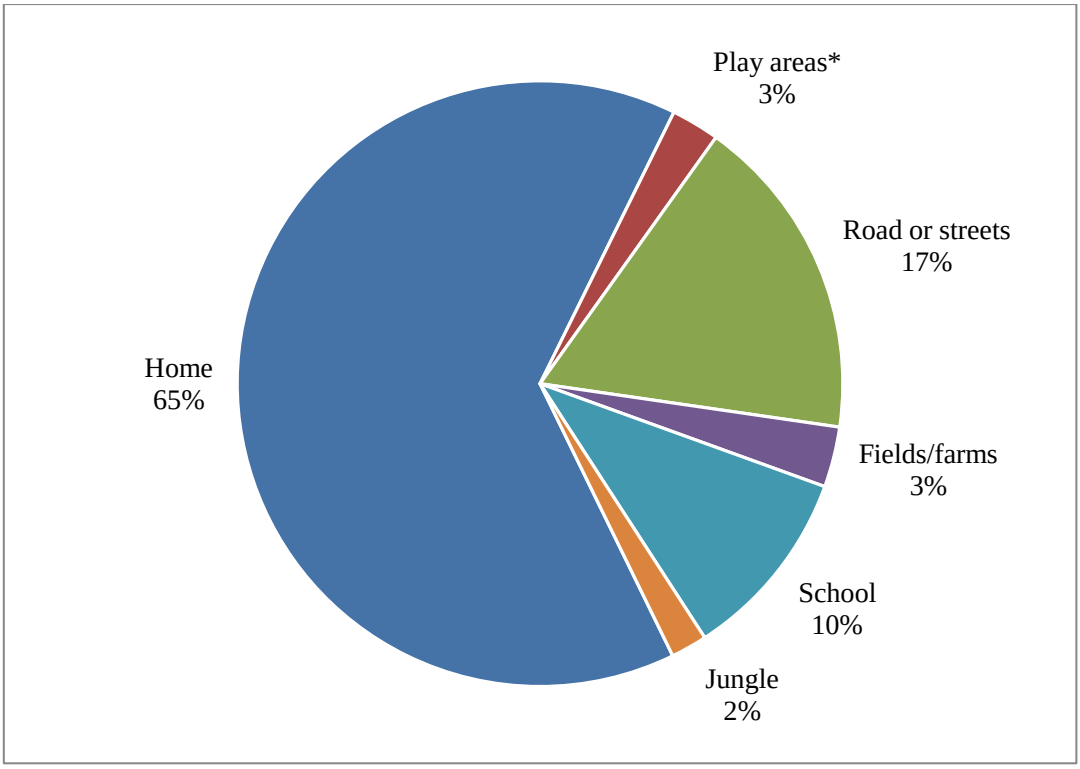


Figure 32 - Common places for child injuries

**In Nepal, it is rare to see managed children's play areas. The play area mentioned in the report indicates to open play grounds or a common place where children usually go for playing.*

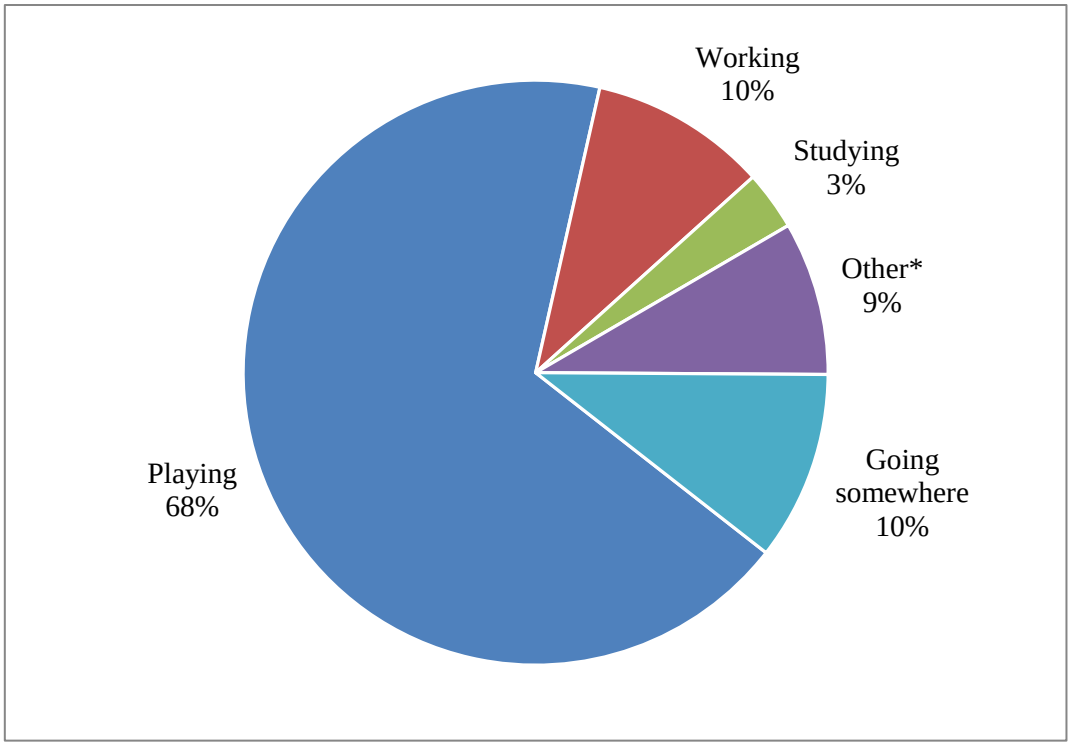


Figure 33 - Children's activities before the injury

**The 'other' category also includes the children who were doing activities such as climbing stairs, walking, sleeping and eating.*

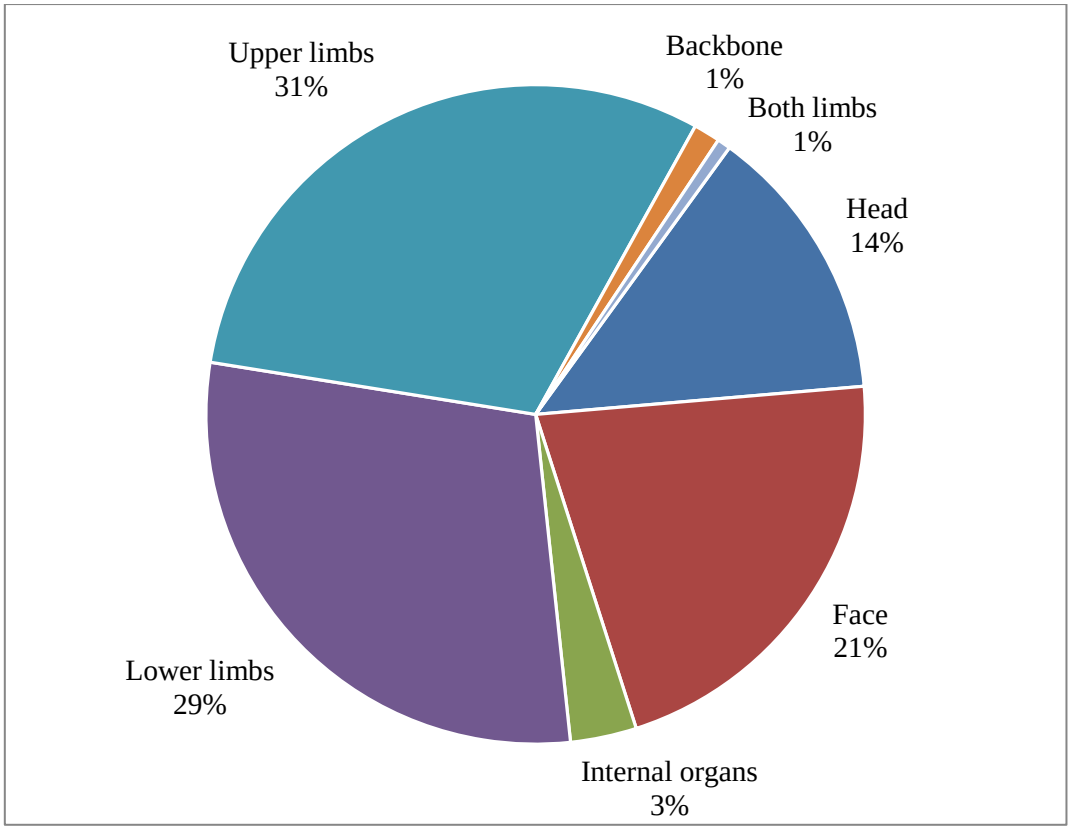


Figure 34 - Body parts injured

Table 5 - Distribution of injured children by month (Nepali calendar)

Month, year	Injured children	Percentage
Kartik, 2070 (Oct/Nov 2013)	15	10%
Mansir 2070 (Nov/Dec 2013)	14	9%
Paush 2070 (Dec/Jan 2014)	20	13%
Magh 2070 (Jan/Feb 2014)*	35	23%
Falgun 2070 (Feb/Mar 2014)	16	10%
Chaitra 2070 (Mar/Apr 2014)	31	20%
Baishakh 2071 (Apr/May 2014)	24	15%
Total	**155**	**100%**

**During the fourth month of the survey (Magh 2070), the researcher and the VDC facilitators intensively visited wards 1, 3, 5 and 6 to look for injured children. This was done because the number of injured children from these wards was reported quite low. It was observed that people still ignore injuries and they need continuous feedback.*

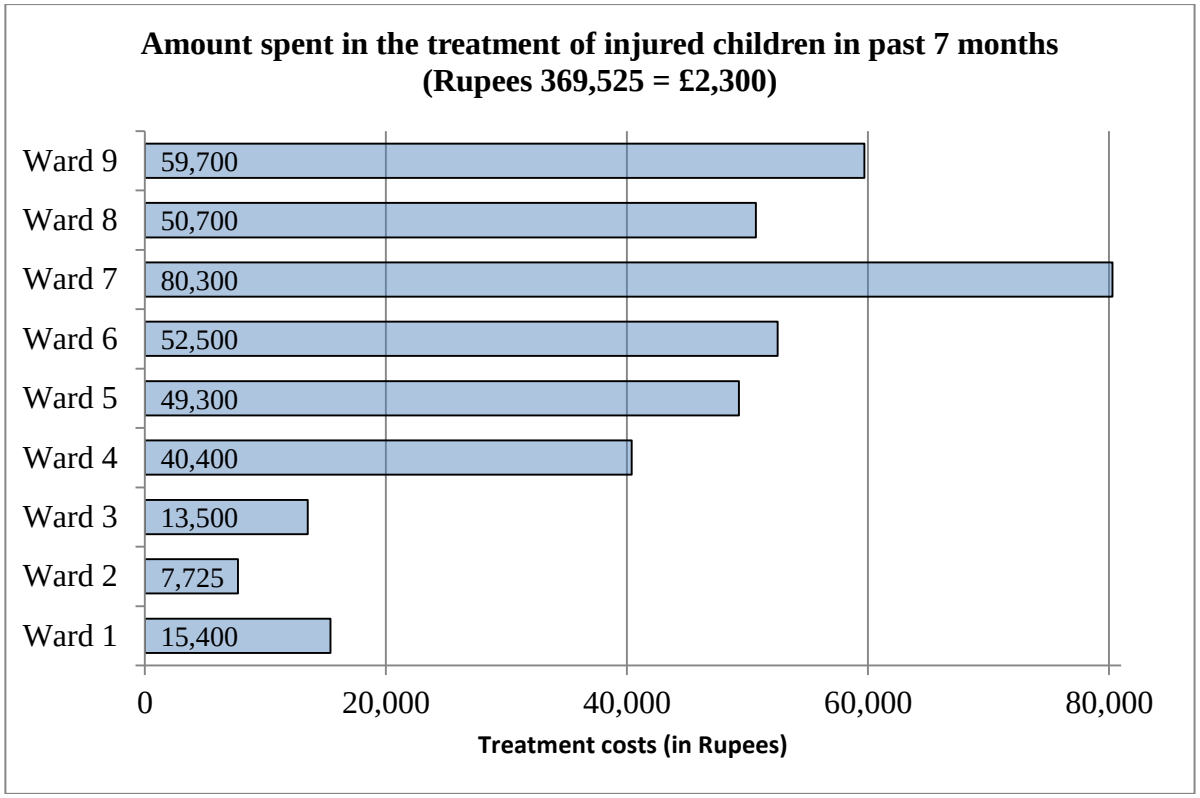


Figure 35 - Treatment cost of injured children by wards

During the past 7 months a total of 75 children received treatment. Data collected during the study showed that treatments cost an average of 4,900 Rupees per injured child. This amount is 15% of per capita income (@US$ 600 per annum). It was also observed that some injured children were not treated because of poverty. This amount is considerable as people have to pay out-of-pockets the treatment costs.

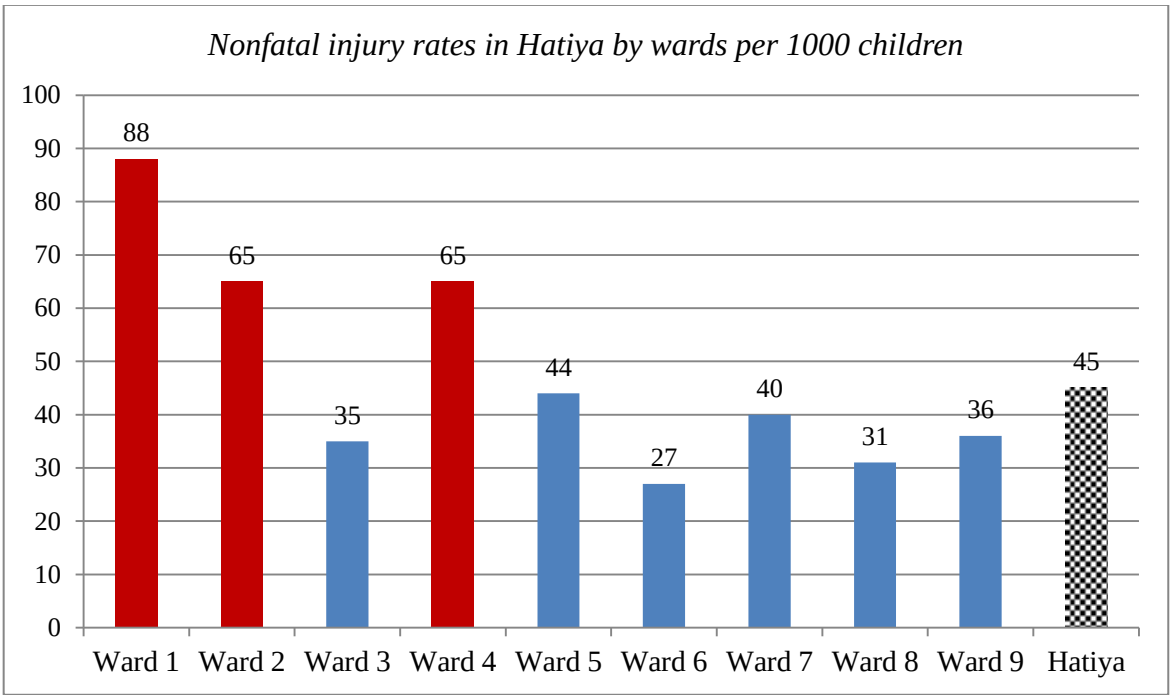


Figure 36 - Annual rate of child injuries in Hatiya VDC

**the wards with the three highest injury rates are shown in red*

The ward numbers 3, 8 and 4 of the VDC were the biggest in terms of population. We were surprised to find fewer injuries in the wards where there are more children. It is possible that there has been under-reporting in these areas. Wards 1 and 2 are the smallest wards in terms of population where the injury rates were found very high (Figure 35). However, these rates are 25% higher than previous survey of child injuries in the same VDC in 2010/11. The higher injury reporting is associated to increased awareness and change in the definition of an injury case.

6. Feasibility assessment of the intervention

In order to quantify the perception of different group of community people, a set of questions were developed where the response were measured in a scale from 1 to 5. These questions were administered to FCHVs, Mother's Group Chairs, and local social workers. Altogether 30 persons' opinions were collected. People's responses were found very much in favour of the programme. It can be understood from the findings that there are still places for improvement but the intervention is generally well accepted by the community people.

Table 6 – Opinions of the FCHVs on acceptability of the intervention (N=9)

Q.No. Statements	*Strongly disagree (1)*	*Disagree (2)*	*Can't say (3)*	*Agree (4)*	*Strongly agree (5)*
1. Child injury prevention is an important issue to consider for children's health and development	-	-	-	9 (100%)	-
2. Before this programme, I knew that injuries to children are preventable	-	-	2 (22.2%)	7 (77.8%)	-
3. I think there is a need for such an intervention in the community	-	-	-	5 (55.6%)	4 (44.4%)
4. The intervention helped me learn about child injury prevention	-	-	-	6 (66.7%)	3 (33.3%)
5. I think other parents/carers will also find this intervention useful	-	-	1 (11.1%)	8 (88.9%)	-
6. The total duration of the intervention i.e. monthly sessions for 6 months is appropriate	-	4 (44.4%)	-	5 (55.6%)	-
7. the duration is too long	-	-	-	-	-
8. the duration is too short	-	-	-	4 (44.4%)	-
9. The duration of the sessions for about 2 hours is appropriate	-	1 (11.1%)	-	8 (88.9%)	-
10. The duration of sessions is too short	-	-	-	-	-
11. The duration of the sessions is too long	-	-	-	1 (11.1%)	-
12. The duration between the sessions i.e. one month is appropriate	-	-	-	9 (100%)	-
13. The monthly interval is too long	-	-	-	-	-
14. The monthly interval is too short	-	-	-	-	-
15. The session facilitation manual appropriately covers the issues related to child injury prevention	-	-	-	8 (88.9%)	1 (11.1%)
16. Layout and the design of the manual are appropriate	-	-	-	8 (88.9%)	1 (11.1%)
17. Participation of the Mothers in the meeting is appropriate	-	-	-	9 (100%)	-
18. Mothers' group can lead to organise more sessions of child injury prevention themselves	-	-	1 (11.1%)	8 (88.9%)	-
19. I will be able to communicate these concepts with parents I see	-	-	-	4 (44.4%)	5 (55.6%)
20. The intervention is relevant to my everyday work	-	-	-	8 (88.9%)	1 (11.1%)

Four FCHVs (44%) believed that the 6 month's duration of the project was too short and one of them (11%) thought two hours is too short for a session of child injuries (Table 6). Similarly, 30% of the mothers (3/10) also believed that 6 month was the short duration for this project (Table 7). Strikingly 80% of the mother's group chairs thought that they may not have enough time for the meeting on child injuries, despite 100% of them being told that they would receive support of other family members. Perhaps they might have thought about the other responsibilities they have at home. This is where the programme should emphasise on the importance of child injury prevention to families. On the other hand, 36% of the local social workers did not agree that people ignore injuries because they don't think it can be prevented and 27% of them were undecided (Table 8). Overall, the responses were positive.

Table 7 - Opinions of the mother's group chairs on acceptability of the intervention (N=10)

Q.No. Statements	*Strongly disagree (1)*	*Disagree (2)*	*Can't say (3)*	*Agree (4)*	*Strongly agree (5)*
1. Child injury prevention is an important issue to consider for children's health and development	-	-	-	10 (100%)	-
2. Before this programme, I knew that injuries to children are preventable	-	-	1 (10%)	9 (90%)	-
3. I think there is a need for such an intervention in the community	-	-	-	4 (40%)	6 (60%)
4. The intervention helped me learn about child injury prevention	-	-	-	8 (80%)	2 (20%)
5. I think other parents/carers will also find this intervention useful	-	-	-	10 (100%)	-
6. The total duration of the intervention i.e. monthly sessions for 6 months is appropriate	-	3 (30%)	-	6 (60%)	1 (10)
7. The duration is too long	-	-	-	-	-
8. the duration is too short	-	-	-	3 (30%)	-
9. The duration of the sessions for about 2 hours is appropriate	-	-	-	10 (100%)	-
10. The duration of sessions is too short	-	-	-	-	-
11. The duration of the sessions is too long	-	-	-	-	-
12. The duration between the sessions i.e. one month is appropriate	-	-	-	10 (100%)	-
13. The monthly interval is too long	-	-	-	-	-
14. The monthly interval is too short	-	-	-	-	-
15. I think such meetings with FCHVs are useful to prevent child injuries in the community	-	-	-	9 (90%)	1 (10%)
16. I will be able to do the activities suggested by FCHVs/this Programme for the safety of my child	-	-	-	8 (80%)	2 (20%)
17. Mothers' group can lead to organise more sessions of child injury prevention themselves	-	-	-	9 (90%)	1 (10%)
18. I don't think I will have enough time to attend the meeting	-	-	2 (20%)	4 (40%)	4 (40%)
19. My family will support such an intervention	-	-	-	10 (100%)	-
20. I will be able to communicate these concepts with parents I see	-	-	-	8 (80%)	2 (20%)

Table 8 - Opinions of local social workers on acceptability of the intervention (N=11)

Q.No. Statements	*Strongly disagree (1)*	*Disagree (2)*	*Can't say (3)*	*Agree (4)*	*Strongly agree (5)*
1. Child injury prevention is an important issue to consider for children's health and development.	-	-	-	10 (90.9%)	1 (9.1%)
2. I think people ignore injuries because they don't think it can be prevented	-	4 (36.4%)	3 (27.3%)	4 (36.4%)	-
3. Before this programme, I knew that we can prevent children from injuries	-	-	1 (9.1%)	8 (72.7%)	2 (18.2%)
4. I think there is a need for such an intervention in the community	-	-	-	7 (63.6%)	4 (36.4%)
5. I think other parents/carers will also find this intervention useful	-	-	2 (18.2%)	8 (72.7%)	-
6. I think mothers' group meetings with FCHVs are useful to prevent child injuries in the community	-	-	-	9 (81.8%)	2 (18.2%)
7. Mothers' group can lead to organise child injury prevention activities after this programme	-	-	2 (18.2%)	9 (81.8%)	-
8. I have observed the meetings and the educational materials are appropriate	-	-	3 (27.3%)	8 (72.7%)	-
9. I will be able to communicate these concepts with parents I see	-	-	-	10 (90.1%)	1 (9.1%)
10. The intervention is relevant to my everyday work	-	-	1 (9.1%)	10 (90.9%)	-

7. Analysis of strengths and limitations

7.1 Strengths of the programme

- The study built upon established evidence that mothers groups can be used to improve the health of children at a community level.
- The study developed an innovative programme that mobilised the community groups in prevention of child injuries by introducing this agenda into their regular group meetings.
- The study achieved its stated objectives within the allocated time frame.
- Nine FCHVs received comprehensive first aid training (including cardiopulmonary resuscitation) for the first time in Hatiya VDC.
- Each mother's group received a first aid kit. This was the first time first aid kits had been available to wards in the VDC
- A group facilitation manual on child injury prevention has been prepared and piloted in mother's group meetings.
- A pictorial book and posters on child injuries have been prepared and piloted with FCHVs, mothers groups and people interested in child injury prevention.
- The feasibility study has reached an average of 26 mothers in each of the nine wards through attendance at the monthly mother's group meetings, and an average of 50 community members attending the mass meetings in each ward.
- Collaboration with the local NGO was helpful to carry out the activities in the field as well as administrative works in Kathmandu.
- The study was supported by the advisory committee from the UWE and the Centre for Child and Adolescent Health
- The study has been able to demonstrate the feasibility of adapting a child injury prevention methodology developed by the Centre for Injury Prevention Research, in Bangladesh.
- Preliminary data on parent-reported injuries suggested the significant financial burden on families of child injuries. The financial implications of managing child injuries could be an important driver for increased engagement in the subject of child injury, and should be further explored.
- Dissemination of findings conference presentations and peer reviewed journals [ongoing]

7.2 External output from the project

- Oral presentations at the 21st IUHPE World Health Promotion Conference, Thailand in August 2013
- Poster presentation at the South West Public Health Scientific Conference, February 2014
- Mothers' group meeting facilitation manual [Nepali]
- Pictorial book on child injury prevention [Nepali]
- Educational posters on child injury prevention [Nepali]
- Report on child injuries in Hatiya [Nepali]
- Faculty of Health and Applied Sciences Celebration of Research Conference (UWE), June 2014 (accepted for an oral presentation and a poster)
- Final report to RoSPA and UWE
- Journal article (1) BMC Public Health (Feasibility and acceptability of a community-based Child Injury Prevention intervention in Rural Nepal)
- Journal article (2) Injury Prevention (Mobilisation of women's group in Nepal: Opportunities in Child injury prevention in a low income country)
- Dissemination of a study report to community groups and collaborators in Nepal (30 sets)

7.3 Limitations of the programme

Although the programme was successfully completed and achieved all the objectives, there are a few observations which could have improved to achieve even better results. We acknowledge the following limitations of the feasibility study:

- We assumed that the FCHVs and the mother's group members were confident and able to hold regular mothers group meetings, and had recent experience of doing so. Therefore we spent only a small amount of time on the organisational skills of the FCHVs to deliver the programme. Although FCHVs had been conducting the meetings for long time, neither FCHV nor the MG members had received any refresher training on how to organise a group meeting. Therefore, additional training on meeting organisation, coordination and communication may have led to improved uptake of the issues identified.
- Neither the mother's group nor the FCHVs were aware of the policies about the formation, roles and responsibilities of mother's groups.
- The FCHVs had variable levels of literacy and therefore it was necessary to develop the materials (e.g. through the addition of the picture book and posters) so that they could be used by FCHVs who were less confident in reading.
- Mother's group members told that the attendance of mothers at meetings goes down if there is no new agenda to discuss and the information is repeated. Ensuring maximum attendance throughout the programme was challenging.
- These issues may have been less important if there had been regular involvement of the VDC and Health Post personnel. Due to the absence of local government at the time of this study, there was no monitoring and supervision of the activities of FCHVs and mother's group.
- The issue of injury prevention is seldom discussed in rural communities. This may have resulted from widespread risks in their surroundings. Similarly, people's understanding about safety is also very poor. They tend to believe that accidents are the part of life. This is a potential cultural barrier which will be challenging to change.

7.4 Opportunities for the programme

- This programme has shown that it is possible to develop and implement a low-cost community-based injury prevention intervention that incorporates primary and secondary (first aid) prevention components. Social mobilisation for child injury prevention is also found to be acceptable by the communities. The intervention could now be tested for its effectiveness and cost effectiveness in reducing child injury through evaluation in a trial.
- There are opportunities to identify existing community-based groups (mothers groups) and involve them in the activities related to child injury prevention, risk/hazard identification and elimination.
- The potential to engage additional community groups (e.g. Child and Adolescents Clubs) remains to be explored.
- The information collected and reported in this project can be used as preliminary evidence to design a future trial and seek funding for its delivery.

8. Recommendations

A cluster randomised controlled trial will be needed in order to test the validity and to know whether the intervention is effective and cost effective in reducing injuries.

9. References

BALAN, B. & LINGAM, L. 2012. Unintentional injuries among children in resource poor settings: where do the fingers point? *Archives of Disease in Childhood,* 97, 35-38.

BARTLETT, S. N. 2002. The problem of children's injuries in low-income countries: a review. *Health Policy and Planning,* 17, 1-13.

CHANDRAN, A., HYDER, A. A. & PEEK-ASA, C. 2010. The global burden of unintentional injuries and an agenda for progress. *Epidemiologic Reviews,* 32, 110-20.

GLOBAL ROAD SAFETY FACILITY 2014. Transport for Health: The Global Burden of Disease from Motorized Road Transport. Seattle, WA: IHME; Washington, DC: Global Road Safety Facility, The World Bank, Institute for Health Metrics and Evaluation.

GOVERNMENT OF NEPAL 2010. Nepal Health Sector Programme - Implementation Plan 2 (NHSP-IP2). Kathmandu: Ministry of Health and Population.

IHME. 2014. *GBD Cause patterns* [Online]. Washington: Institute of Health Metrics and Evaluation, University of Washington. Available: http://vizhub.healthdata.org/gbd-cause-patterns/ [Accessed 25 May 2014.

JOSHI, S. K. & SHRESTHA, S. 2009. Economic and social burden due to injuries and violence in Nepal: a cross-sectional study. *Kathmandu Univ Med J (KUMJ),* 7, 344-50.

LINNAN, M., GIERSING, M., COX, R., LINNAN, H., WILLIAMS, M. K., VOUMARD, C. & HATFIELD, R. 2007. Child Mortality and Injury in Asia: An overview. *Innocenti Working Papers 2007-04: Special Series on Child Injury (No. 1).* Florence: United Nations Children's Fund.

MANANDHAR, D. S., OSRIN, D., SHRESTHA, B. P., MESKO, N., MORRISON, J., TUMBAHANGPHE, K. M., TAMANG, S., THAPA, S., SHRESTHA, D., THAPA, B., SHRESTHA, J. R., WADE, A., BORGHI, J., STANDING, H., MANANDHAR, M. & COSTELLO, A. M. 2004. Effect of a participatory intervention with women's groups on birth outcomes in Nepal: cluster-randomised controlled trial. *The Lancet,* 364, 970-9.

MINISTRY OF HEALTH AND POPULATION 2013. The annual report of the Department of Health Services (2068/69 BS). Kathmandu: Department of Health Services, Ministry of Health and Population.

MORRISON, J., TAMANG, S., MESKO, N., OSRIN, D., SHRESTHA, B., MANANDHAR, M., MANANDHAR, D., STANDING, H. & COSTELLO, A. 2005. Women's health groups to improve perinatal care in rural Nepal. *BMC Pregnancy Childbirth*, 5, 6.

NIOSH. 2011. *NIOSH Program Portfolio: Global collaborations: Occupational Risks* [Online]. Atlanta: Center for Disease Control and Prevention, National Institute for Occupational Safety and Health. Available: http://www.cdc.gov/niosh/programs/global/risks.html [Accessed 31 January 2012 2012].

NORTON, R., HYDER, A. A., BISHAI, D. & PEDEN, M. 2006. Chapter 39. Unintentional Injuries. *In:* JAMINSON, D. T., BREMAN, J. G., MEASHAM, A. R., ALLEYNE, G., CLAESON, M., EVANS, D. B., JHA, P., MILLS, A. J. & MUSGROVE, P. (eds.) *Disease Control Priorities in Developing Countries.* Second ed. Washington, DC: International Bank for Reconstruction and Development and The World Bank.

OSRIN, D., MESKO, N., SHRESTHA, B. P., SHRESTHA, D., TAMANG, S., THAPA, S., TUMBAHANGPHE, K. M., SHRESTHA, J. R., MANANDHAR, M. K., MANANDHAR, D. S., STANDING, H. & COSTELLO, A. M. 2003. Implementing a community-based participatory intervention to improve essential newborn care in rural Nepal. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 97, 18-21.

PANT, P. R. 2013. *Epidemiology, impact and prevention of unintentional child injuries in Makwanpur district of Nepal (PhD Thesis).* PhD, University of the West of England.

PANT, P. R., TOWNER, E., PILKINGTON, P. & ELLIS, M. 2013. Epidemiology of unintentional child injuries in the South-East Asia Region: a systematic review. *Int J Inj Contr Saf Promot*.

PANT, P. R., TOWNER, E., PILKINGTON, P., ELLIS, M. & MANANDHAR, D. 2014. Community perceptions of unintentional child injuries in Makwanpur district of Nepal: a qualitative study. *BMC Public Health*, [accepted].

PEDEN, M., OYEGBITE, K., OZANNE-SMITH, J., HYDER, A. A., BRANCHE, C., RAHMAN, A. F., RIVARA, F. & BARTOLOMEOS, K. 2008. World report on child injury prevention 2008. Geneva: World Health Organization.

RAHMAN, A., RAHMAN, F., SHAFINAZ, S. & LINNAN, M. 2005. Bangladesh Health and Injury Survey: Report on children. Dhaka, Directorate General of Health Services, Institute of Child and Mother Health, United Nations Children's Fund, The Alliance for Safe Children.

RAHMAN, A. K. M. F., RAHMAN, A., MASHREKY, S. R. & LINNAN, M. 2009. Evaluation of PRECISE: a comprehensive Child Injury Prevention Program in Bangladesh. The first three years (2006-2008). Bangladesh, Dhaka: Centre for Injury Prevention and Research, Bangladesh (CIPRB).

ROSPA. 2012. *10 principles for effective safety education* [Online]. Birmingham: Royal Society for the Prevention of Accidents. Available: http://www.rospa.com/schoolandcollegesafety/teachingsafety/ten-principles.aspx 2013].

WESSON, H. K., BOIKHUTSO, N., BACHANI, A. M., HOFMAN, K. J. & HYDER, A. A. 2013. The cost of injury and trauma care in low- and middle-income countries: a review of economic evidence. *Health Policy and Planning*.

WORLD HEALTH ORGANISATION 2011. Sixty-fourth World Health Assembly. Child Injury Prevention. WHA64.27.

Appendix 1. Child injury data collection form

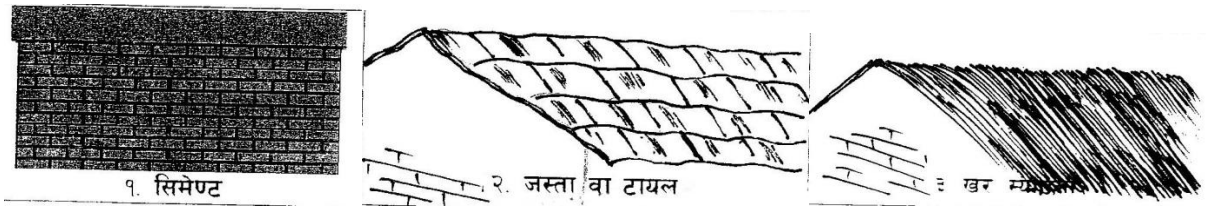
VDC: Hatiya, Locality ☐ Ward ☐ Date ☐☐☐☐ ☐☐ ☐☐

Child's name ☐ Age ☐☐ Year ☐☐ Month Gender ☐ ☐

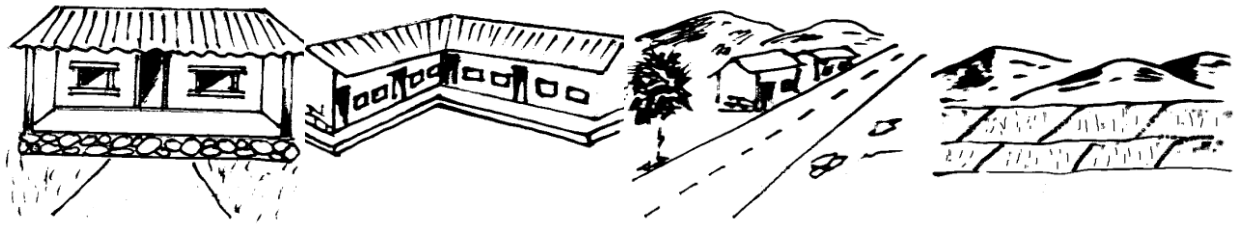
Education ☐☐ Completed Number of siblings: ☐☐

Age of mother ☐☐ Years Education ☐☐ Occupation ☐ Total children ☐☐

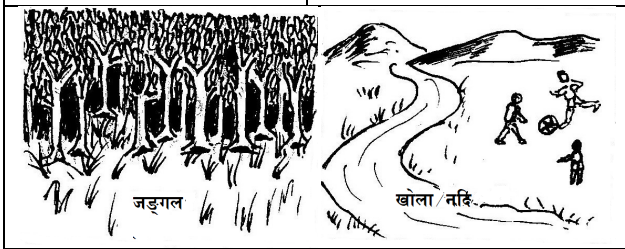
1. Roofing material of this household? (please tick one)



2. Place of injury? (please tick one)



Home	School	Road/street	Farm/Fields



Others

3. Activity of the child at time of injury? (please tick one)

Working Going school Playing Travelling

Other_____

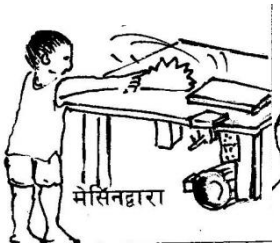
4. Body part injured by the injury ☐

Did the injury affect their usual activities? ☐ Yes ☐ No

Did the injury cause disability to the child? ☐ Permanent disability ☐ Temporary disability ☐ None

If yes please state ☐

5. What was the mechanism of injury to child? (Please tick one)

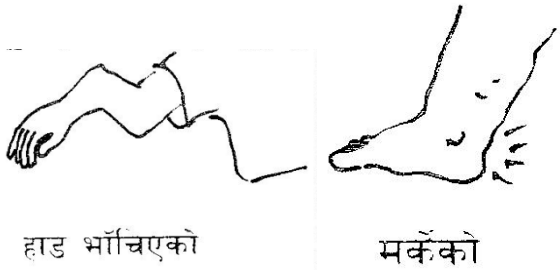


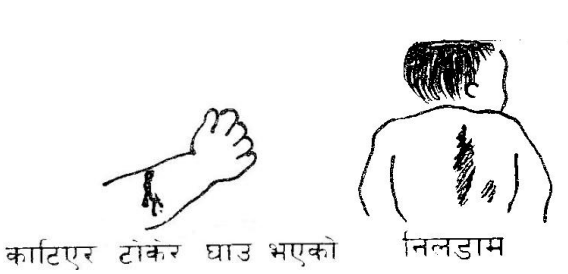
अन्य लेख्नुहोस् ☐

6. What was the intent behind the injury event? (Please tick one)

Unintentional ☐ Suicide ☐ Intentional ☐ Unknown ☐

7. What was the outcome of injury? (Please tick as suitable)





अन्य लेख्नुहोस्

8. What was done to the child immediately after the injury?

First Aid only ☐ Hospital Treatment ☐ Not treated ☐ Died ☐

Please mention the place, if treated _____

Whether the child required to be hospitalised ☐ Yes ☐ No

How much was the costs of treatments? _____ Medical _____ Others

9. Please explain how the injury occurred to the child?

_____

_____

_____

_____

_____

_____

_____

_____

_____

Appendix 2 : First Aid Training Schedule

Nepal Red Cross Society **First Aid Section, Basic First Aid and CPR training** Venue: Hatiya Health Post meeting hall Training Start Time: 10 am daily Trainers: Mr Raju Raut and Mr Krishna Ghimire			
Day	**Time**	**Content**	**Station**
Day 1	60 min.	Course Introduction, Pre- test, Training rules	Not Needed (NN)
	60 min.	Introduction to First Aid	Not Needed (NN)
	60 min.	Patient Assessment (Theory)	
	30 min.	Break	
	45 min	Patient Assessment (Practical)	Station 1,2: Initial Assessment & Physical Examination
	60 min.	Unconsciousness (Theory and Practical)	Station1,2: Safety Position
	75 min	Respiratory Problem (Theory)	
	15 min	Tea & snacks Break	
	90 min.	Respiratory Problem and CPR(Theory)	
	15min	Daily Review	
	510 min(Total 8.5 Hours)		
Day 2	15 min	Review of previous day	
	15 min	Respiratory Problem and CPR(Theory) **Contd…**	
	300 min	AR and CPR Practical	Station1,2: Chocking & AR and CPR
	30 min	Break	
	60 min	Bleeding and Shock (Theory)	
	45 min	Bleeding and Shock (Practical)	Station1: Big Bleeding Station2: Shock
	15 min	Daily Review	
	480 min (8 hours)		
Day 3	15 min	Review of previous day	
	45 min	Bleeding and Shock (Practical) **Contd.**	Station1: Big Bleeding Station2: Shock
	30 min	Spinal Injury (Theory)	
	45 min	Spinal Injury (Practical)	Station1: Cervical Collar & Back Board Station2: Cervical Collar & Back Board
	30 min.	Wounds and Bandaging (Theory)	
	90 min	Wounds and Bandaging (Practical)	Station1 : Triangular Station2 : Roller
	45 min	Fracture (Theory)	
	90 min	Fracture (Practical)	Station1:Hand, Elbow, Chest, Arm Station2: Lower extremities
	30 min	Break	
	60 min	Burn and Electrical Injury (Theory)	
	15 min	Daily Review	
	495 min (8.25 hours)		
Day 4	15 min	Review of previous day	
	60 min	Bites and Poison (Theory)	
	30 min	Lifting Moving (Theory)	
	90 min	Lifting Moving (Practical)	Station1 : Emergency Moving Station2 : Non-Emergency Moving
	30 min	Final Written Evaluation	
	15min	Tea & snacks Break	
	180 min	Final Practical evaluation	
	45 min	Training Evaluation & closing	
	465 min (7.75 hours)		
	TOTAL Duration: 1950 min (32.5 hours)		

Appendix 2a - Pre-test of the FCHVs on the knowledge of child injuries

	Ward 1	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	Ward 8	Ward 9
Q1. child age	<18 years	5-10 years	<5 years	<18 years	<14 years	<15 years	<15 years	<1 year	<18 years
Q2. injuries affecting children of all ages	Fire Water bodies Playing	Suffocation from duvet Fire burn	Falls Struck by Cuts	Cut wounds Burns Drowning Falls Fracture	Falls (while playing) Bicycle accident	Falls Bicycle accident Road transport Fall from tree	Cut by sharp Bicycle accident Burn	Fracture Blindness Head injury	Playing football Bicycling Swimming Climbing trees Fighting Cut from sharps
Q3. different in children and adults	Changes occur Menstruation & pregnant Pubic hairs	Soft Small Don't understand many things		Small size Limited knowledge Growing	Small size Less cautious Lack of safety	Small size Delicate Vulnerable	Small size Frequent feeding Small in weight	Menstruation Dev of breasts Can conceive	Small Soft Cautious
Q4. injury risks to 6-12 months children	Falls from bed While bathing Near fire	Suffocation from duvet Falls from bed Drowning Animals	Falls Struck by Suffocation	Fall from bed Suffocation due to mother's carelessness	Sharp tools Fire burns Drowning	Fall from bed Eye injury Suffocation	Unsupervised Sharp tools Fire	Fire places Fall from bed Sharp tools	Falls Cut wounds Drowning Fire burns
Q5. injury risks to 1-9 years children	Fire Water bodies Lack of supervision Climbing trees	Impatient/ over active Falls Sharp tools	Falls Hit by Metal and rocks	Lack of supervision Fire Cycle accidents Breast feeding	Play with fire Playing too much Falls Bicycle accident	Cut wounds Motorcycle accident Bicycle accident Fire burn	Bicycle Motorised vehicles Ladder	Playing Bicycle Motorised vehicles	Falls Bicycles Motorcycle Road transport
Q6. injuries to 1-4 year	While playing Sharp tools Running	Cut wounds Falls Fracture Choking	Falls Struck by Cuts	Playing Walking Poison	Cut wounds Wounded leg Jump Struck by	Cut from sharps Bicycle accident Drowning Fire burn	Falls Cut	Fracture Cut wounds Crush Head injury	Walking Fire Water bodies Bicycle
Q7. injuries to 5-9 years	Drowning Cut wounds Fire burns Cut wounds Climbing trees	Falls Cut wounds Climbing trees	Fall from tree Fall from ladder Fall when running	Fracture Drowning Fall from tree	Fracture Fire burn Bicycle accidents	Fire burn Fall Struck by Drowning	Cut wounds Fire burn Animals	Fracture Fall from tree Fall from ladder	Bicycle Motorcycle Water bodies Playing football Climbing trees Falls
Q8. Injury risks to 10-14 years	Lack of caution Grittiness Fire burns Drowning	Climbing trees Motorcycle Swimming	Bicycle Running Motorcycle	Bicycle accident Drowning Wounds	Cut wounds Head injury Falls Drowning	Bicycle accident Road transport Motorcycle accident	Running Defying instruction	Motorcycle Bicycle Fall from trees Fall from height	Playing football Walking
Q9. injuries to 10-14 years		Fall Cut wounds Drowning	Fire burns Fractures	Bicycle Motorcycle Poison Electric shock	Falls Cut wounds Acute illness	Risk taking Motorcycle and bicycle accident Drowning	Falls Burns Cut Fall from trees	Cut from sharp Jump Fall from tree	Cut wounds Fire burn Road transport
Q10. Injury risks to 15-19 years	On the way to school Travelling somewhere	Fighting Jump from trees or vehicles Risk taking	Motorcycle Spontaneously	Suicide Unnecessary stress	Road transport Cut wounds Normal illness	Lack of hygiene Injuries Cut wounds	Defying Risk taking Motorised vehicle	Betting Risk taking Sports	Playing football Bicycle accident Road transport

Appendix 2b - Post-test of the FCHVs on the knowledge of child injuries

	Ward 1	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	Ward 8	Ward 9
Q1. child age	<18 years	<18 years			<18 years	<18 years	<16 years	<18 years	<18 years
Q2. injuries affecting children of all ages	Road accidents Electrical appliances Sharp tools	Suffocation, falls, road transport, sports related, cut wounds, fall from tree			Falls Burns Fall from trees	Bicycle accident Drowning Road transport	Falls Fire burns Animal related	Burns Drowning Sharp tools	Burns Cut wounds Drowning Fall from height
Q3. different in children and adults	Small size Developing Decision making	Small size Soft skin Thinking ability			Developing Moustache	Soft body Developing Defying	Small size Soft skin	Soft skin Small size Decision making	Small size Developing Growing
Q4. injury risks to 6-12 months children	Fall from bed Suffocation while breastfeeding Fire burn	Suffocation Covered with clothes Fall from bed Dog bite			Suffocation Falls Burns	Fall from bed Road transport Electric shock	Fall from bed Suffocation Pneumonia Suffocation while breastfeeding	Unsupervised Fall Burns	Playing Walking Poison
Q5. injury risks to 1-9 years children	Fire burn Fracture from falling Road transport	Hit by objects Sharp tools Poison Road transport			Falls Drowning Poisoning	Fall Hit by cattle Bicycle accident	Animals in the shed Climbing ladder Sleeping	Sharp tools Bicycle accident Fall from ladder	Fire burns Climbing tree Fall in streets
Q6. injuries to 1-4 year	Poisoning Sharp cut Fire burn	Falls Road transport Cut wounds Poisoning			Burns Falls Drowning	Cut wounds Falls Burns	Falls Covered mouth	Vut wounds Burns Drowning	Playing Walking Poison
Q7. injuries to 5-9 years	Fall from tree Road transport Bicycle accidents	Road transport Cut wounds Poisoning			Falls Bicycle accident Drowning Poisoning	Falls Cut wounds Burns	Injuries while playing Bicycle accident Road transport	Cut from sharp Fall from height Play with poison	Fall from height Cut wounds
Q8. Injury risks to 10-14 years	Road transport Drowning Fall Fractures	Motorcycle Bicycle accident Going alone Show off			Road transport Poison consume Sports	Fighting Sharp cut Poisoning	Sport related Defying While herding cattle Jumping from height	Electric shock Bicycle or motorcycle accident Poisoning	Bicycle accident Swimming Doing risky things
Q9. injuries to 10-14 years	Fire burns Electrical appliances	Road transport Fighting poisoning			Road transport Falls Burns	Road transport Injured while working		Drowning Poisoning Suicide	Motorcycle accident Sports Fighting
Q10. Injury risks to 15-19 years	Poisoning Sports related Road transport	Road transport Fighting Poisoning Risk taking			Road transport Sports Poisoning Suicide	Fighting Consume poison Electric shock	Fracture Drowning		Consume poison Suicide