

## ORIGINAL ARTICLE

# A Mixed Method Study to Assess the Effect of Training of Adolescents on Perception and Practices regarding Unintentional Childhood Injuries

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## ABSTRACT

**Background:** Adolescents are the future citizens of any society, who can be trained to become responsible members and also function as change agents in the community to improve children's health. Child-To-Child Approach is an innovative technique which was used in the present study to improve perception and practices regarding unintentional childhood injuries, by training the adolescent population. **Methodology:** An intervention study was conducted in two villages of Delhi from April 2017 to July 2019, to test the Child-To-Child Approach in preventing childhood injuries, by training the eldest adolescent in each family of intervention area and encouraging them to disseminate the knowledge to other family members. Present study is a part of the main study and analyses improvement in Perception and Practice (PP) regarding injuries after intervention, as assessed from PP scores of adolescents eligible for training, other adolescents and adult women. Focus group discussions (FGD) for assessing perception were also conducted with adolescents and adult women, at the beginning and end of study. **Results:** During pre-intervention period, PP scores of all three groups of subjects showed no significant difference between the two areas. Statistically significant improvement was observed in PP scores of all three groups of subjects in the intervention area during the post-intervention phase, in comparison to pre-intervention phase as well as in comparison to scores of control area in post-intervention phase. Findings from the FGD showed that perception of both groups regarding types and reasons of injuries was low in the beginning, but increased markedly in the second FGD in both the groups, compared to the first FGD. **Conclusion:** These findings indicate that training adolescents and encouraging them to disseminate messages to their siblings and to the adult women of their families, which is the essence of Child-To-Child Approach, is effective in improving the perception and practices regarding unintentional childhood injuries.

## KEYWORDS

Perception, Awareness, Safety Practices, Unintentional Childhood Injuries, Child-to-Child Approach

## INTRODUCTION

With changing pattern of diseases due to epidemiological transition, injury has currently become an area of concern as its magnitude is rising at a steady pace, in terms of both morbidity and mortality. All age groups are at risk of sustaining injuries. However, population in extremes of age that is children and elderly, are more vulnerable to injuries and are also at much higher risk of its consequences. Global Burden of Diseases data revealed that unintentional injuries accounted for approximately 18% of the

estimated 3.5 million deaths among children between the ages of 1 and 19 years globally.<sup>[1]</sup> Prevention and control of childhood injuries and their grave consequences are intimately associated with safety behavior of the individuals and good practices of the families. Present study aims to report the effect of training the adolescents on improving the perception and practices of families, by making the adolescents responsible for disseminating messages regarding unintentional injuries in children.

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The intervention was based on the Child-To-Child Approach, which is an innovative technique, designed by Dr. David Morley, to improve children's health in developing countries through enhancing children's role and place in their community. This concept is based on the fact that children in developing nations can act as caregivers, teachers and health workers in their family and community. It aims to use children as change agents to disseminate messages to their peers, family and community, to ultimately change the environment and improve health.<sup>[2]</sup>

## MATERIAL & METHODS

A quasi-experimental before and after intervention study was conducted in two villages of Delhi, from April 2017 to July 2019, to test the efficiency of Child-To-Child Approach in prevention of childhood injuries. Sample size was calculated considering incidence of injury in subjects 0-19 years of age as 15% on the basis of a pilot study conducted in the area before conceptualizing the study. Assuming after the intervention the incidence would come down to 5%, keeping alpha and beta errors at 5% and 20% respectively, the sample size calculated for a two-sided hypothesis test for an incidence rate when the observations are censored at 4 months, was 90 children. Considering a design effect of 2 to control for clustering due to all eligible subjects in a family being selected and an attrition rate of 10% likely to happen due to the prolonged study period, the final calculated sample size after rounding off was 200 subjects 0-19 years of age, in each intervention and control group. The total subjects recruited for the study belonged to 59 families in intervention village and 57 families in control village.

Present mixed method study report is a part of the main study and analyses the improvement in perception of subjects and practices of the families under study after the intervention. The research project was approved by the Institutional Ethics Committee of Maulana Azad Medical College, New Delhi, where it was conducted.

Families having at least one adolescent and two younger adolescents or children were eligible for inclusion in the study. Consecutive families meeting the eligibility criteria were selected, for wider dissemination of the messages. The eldest literate adolescent of each family was eligible for training. Such eligible adolescents of the families in intervention area were trained on common

types of injuries, their risk factors, prevention and control. They were motivated to convey all the information they have gathered regarding prevention of injury in children, to other members of the family. Eligible adolescents of the control area were not given such trainings during the intervention phase. However, they were trained in similar manner after the data collection phase of the research was over.

Data regarding perception and practice (PP) was collected by interview of the adolescents eligible for training, other adolescents and adult women aged 20 years and above of the families of both areas, using a pre-tested semi-structured schedule, before and after the intervention phase. Perception of subjects, and practice of families regarding injury prevention and treatment seeking behavior following injuries as reported by subjects, were assessed on various aspects and was finally graded by scoring. Maximum attainable scores were: Perception score-29; Practice score regarding injury prevention-44; Practice score regarding seeking treatment for injury-16; Total PP score regarding injuries-89. Higher scores implied better knowledge and safer practice.

Data was entered into MS Excel and analysed using IBM SPSS 25.0 software. Comparisons were made between pre-intervention data of intervention and control groups; pre- and post-intervention data of intervention group; post-intervention data of intervention and control groups. The data was normally distributed and hence parametric tests were applied. Differences between mean scores were tested using independent sample *t* test for between group comparison and paired *t* test for within group comparison.

Other than the quantitative data collection, the study involved qualitative assessment also. Focus Group Discussions (FGD) were conducted to assess perception of participants regarding common types of injuries that might occur in children and adolescents, and reasons for the same. Two FGDs were conducted with women and adolescents of the selected families of both areas, with ten participants in each group for each FGD. The participants were selected by convenient sampling that is those who could be contacted at that time and were willing to participate. One FGD was conducted just after recruitment of the families for assessment of need of such intervention. Second FGD was conducted after completion of data collection for

evaluation of the effect of intervention. FGDs for women and adolescents were conducted separately. Discussion was conducted using a FGD Guide.

The discussions were focused on 2 core areas viz. types and reasons for occurrence of injuries in children. Analysis was done manually. The textual data obtained was coded and then consolidated into 3 thematic areas viz. types of injuries, risk behavior of the subjects and factors in the environment that might facilitate occurrence of injuries, the second and third thematic areas emerging as response to the question on reasons for occurrence of injuries in children. On compiling the responses of all

subjects in a group, if half or more of the participants in the group mentioned a particular response it was scored as ++, if less than half the group mentioned the reason it was scored as + and if no one in the group mentioned a particular reason it was given a negative (-) score.

**RESULTS**

Total population under study were 59 eligible adolescents, 93 other adolescents, 93 adult women in intervention group, and 57 eligible adolescents, 81 other adolescents, 80 adult women in control group.

**Table 1: Perception and Practice (PP) Scores regarding Injuries of Intervention and Control Groups during Pre-Intervention Period**

PP Score	Intervention Group (mean ± SD)	Control Group (mean ± SD)	p-value*
<b>Adolescents eligible for training</b>			
Perception Score	8.85 ± 1.946	9.00 ± 1.890	0.669
<b>Practice Score for:</b>			
Injury Prevention	26.68 ± 4.474	25.35 ± 4.257	0.105
Treatment Seeking	12.97 ± 1.351	12.63 ± 2.807	0.418
Total Practice Score	39.64 ± 4.863	37.98 ± 5.671	0.093
Overall PP Score: Mean	48.49 ± 5.351	46.98 ± 6.618	0.179
% of total score	54.48	52.79	
<b>Other adolescents</b>			
Perception Score	7.97 ± 2.164	8.54 ± 1.732	0.057
<b>Practice Score for:</b>			
Injury Prevention	25.55 ± 3.338	24.65 ± 2.968	0.063
Treatment Seeking	12.90 ± 1.445	12.86 ± 3.124	0.902
Total Practice Score	38.45 ± 3.883	37.51 ± 4.236	0.125
Overall PP Score: Mean	46.42 ± 4.830	46.05 ± 5.006	0.616
% of total score	52.16	51.74	
<b>Adult women</b>			
Perception Score	8.05 ± 1.694	8.24 ± 1.566	0.459
<b>Practice Score for:</b>			
Injury Prevention	27.53 ± 4.104	28.57 ± 4.085	0.11
Treatment Seeking	12.91 ± 1.658	12.84 ± 1.686	0.796
Total Practice Score	40.44 ± 4.712	41.41 ± 4.638	0.19
Overall PP Score: Mean	48.49 ± 5.406	49.65 ± 5.192	0.167
% of total score	54.48	55.79	

Table 1 depicts the scores of all three groups of subjects assessed for perception and practices during the pre-intervention period. Total PP scores were slightly more than 50% in all groups of subjects of both the areas. Comparison of PP scores between the adolescents eligible for

training, other adolescents and adult women in the two areas in the pre-intervention phase showed no statistically significant difference, indicating all three categories of subjects in both intervention and control groups matched in terms of PP at the initiation of the study .

**Table 2: Perception and Practice (PP) Scores regarding Injuries of Intervention Group during Pre- and Post-Intervention Periods**

PP Score	Pre-Intervention Period (mean ± SD)	Post-Intervention Period (mean ± SD)	p-value*
<b>Adolescents eligible for training</b>			
Perception Score	8.85 ± 1.946	11.61 ± 2.600	<b>0</b>
<b>Practice Score for:</b>			
Injury Prevention	26.68 ± 4.474	33.07 ± 3.872	<b>0</b>
Treatment Seeking	12.97 ± 1.351	14.39 ± 1.365	<b>0</b>
Total Practice Score	39.64 ± 4.863	47.46 ± 4.779	<b>0</b>
Overall PP Score: Mean	48.49 ± 5.351	59.07 ± 6.368	<b>0</b>
% of total score	54.48	66.37	
<b>Other adolescents</b>			
Perception Score	7.97 ± 2.164	9.79 ± 2.317	<b>0</b>
<b>Practice Score for:</b>			
Injury Prevention	25.55 ± 3.338	32.76 ± 4.145	<b>0</b>
Treatment Seeking	12.90 ± 1.445	14.27 ± 1.636	<b>0</b>
Total Practice Score	38.45 ± 3.883	47.03 ± 5.172	<b>0</b>
Overall PP Score: Mean	46.42 ± 4.830	56.82 ± 6.497	<b>0</b>
% of total score	52.16	63.84	
<b>Adult women</b>			
Perception Score	8.05 ± 1.694	10.49 ± 2.249	<b>0</b>
<b>Practice Score for:</b>			
Injury Prevention	27.53 ± 4.104	34.01 ± 3.098	<b>0</b>
Treatment Seeking	12.91 ± 1.658	14.35 ± 1.519	<b>0</b>
Total Practice Score	40.44 ± 4.712	48.36 ± 4.077	<b>0</b>
Overall PP Score: Mean	48.49 ± 5.406	58.85 ± 5.350	<b>0</b>
% of total score	54.48	66.12	

Table 2 shows comparison of PP score between the pre- and post-intervention phases of all three groups of subjects of the intervention area. Statistically significant improvement was observed in trained adolescents in the post-intervention phase. Similar improvement of PP

scores during post-intervention phase was also observed in other adolescents of the families, who were not trained. PP score of adult women of the intervention area also shows statistically significant improvement of all scores, in the post-intervention phase.

**Table 3: Perception and Practice (PP) Scores regarding Injuries of Intervention and Control Groups during Post-Intervention Period**

PP Scores	Intervention Group (mean ± SD)	Control Group (mean ± SD)	p-value*
<b>Adolescents eligible for training</b>			
Perception Score	11.61 ± 2.600	9.04 ± 1.592	<b>0</b>
<b>Practice Score for:</b>			
Injury Prevention	33.07 ± 3.872	28.46 ± 3.328	<b>0</b>
Treatment Seeking	14.39 ± 1.365	12.77 ± 2.147	<b>0</b>
Total Practice Score	47.46 ± 4.779	41.23 ± 3.732	<b>0</b>
Overall PP Score: Mean	59.07 ± 6.368	50.26 ± 4.228	<b>0</b>
% of total score	66.37	56.47	
<b>Other adolescents</b>			
Perception Score	9.79 ± 2.317	8.38 ± 1.438	<b>0</b>
<b>Practice Score for:</b>			
Injury Prevention	32.76 ± 4.145	28.31 ± 3.408	<b>0</b>
Treatment Seeking	14.27 ± 1.636	12.80 ± 1.998	<b>0</b>
Total Practice Score	47.03 ± 5.172	41.11 ± 3.780	<b>0</b>

PP Scores	Intervention Group (mean ± SD)	Control Group (mean ± SD)	p-value*
Overall PP Score: Mean	56.82 ± 6.497	49.49 ± 4.227	0
% of total score	63.84	55.61	
<b>Adult women</b>			
Perception Score	10.49 ± 2.249	8.76 ± 1.551	0
<b>Practice Score for:</b>			
Injury Prevention	34.01 ± 3.098	30.53 ± 3.743	0
Treatment Seeking	14.35 ± 1.519	13.63 ± 1.429	0.002
Total Practice Score	48.36 ± 4.077	44.16 ± 4.127	0
Overall PP Score: Mean	58.85 ± 5.350	52.92 ± 4.660	0
% of total score	66.12	59.46	

Table 3 depicts comparison of PP scores between the three groups of subjects of both areas during the post-intervention phase. It was observed that scores on all aspects were statistically significantly higher in trained adolescents in the intervention area in comparison to adolescents eligible for training in

control area who were not trained. Comparison of PP scores of other adolescents and adult women of intervention and control areas in the post-intervention phase also showed significantly higher scores in both groups of subjects of the intervention area than that in the control area.

**Table 4: Perception regarding Injuries**

Perception regarding:	Need Assessment (N=10)		Evaluation (N=10)	
	Women	Adolescents	Women	Adolescents
<b>Types of injuries</b>				
Cut	++	++	++	++
Burn	+	+	++	++
Fracture	+	-	++	++
Sprain	-	-	++	++
Bruise/haematoma	-	-	+	+
Abrasion/contusion	-	-	+	+
Bite	-	-	++	++
<b>Risk behavior</b>				
Jumping from height	+	++	++	++
Playing near fire	+	-	++	++
Pushing each other while playing	-	-	+	++
Crossing road without seeing	-	+	++	++
Riding bike without helmet	-	-	++	++
More than two riders in bike	-	-	+	++
Disturbing animals	-	-	++	++
<b>Environmental factors</b>				
Lack of illumination within house	-	-	+	+
Slippery floor	+	-	++	++
No/low wall in terrace	-	-	+	-
Accessible harmful materials	+	-	++	+
Uncovered electric points	-	-	+	+
Dirty/slippery surroundings	-	-	+	+
Water body/open drain nearby	-	-	+	+

Table 4 compares results of the two FGDs, in the beginning and at the end, in both the groups that is adolescents and adult women of the intervention area. It may be observed that awareness of both groups regarding all the points discussed was low in the beginning, which showed awareness generation was urgently needed. Perception of both groups was seen to

have increased markedly in the second FGD, compared to the first FGD. This finding too indicates that Child-To-Child Approach implemented in this research by which the trained adolescents were to disseminate messages to their siblings and to the adult women of their families, was effective.

## DISCUSSION

Essential requisite for prevention of injuries is safe behaviour of individuals, for which awareness level needs to be high and injury should be perceived as a serious problem. Perception of mothers is extremely vital in developing safe behaviour in children. In addition, family practice needs to be good for prevention of injuries as well as prevention of consequences in case injuries have occurred.

Awareness regarding injuries has been studied by many researchers. Studies done in Egypt found that nearly one-fourth of mothers having school-age children did not know the term 'first aid' and had not even heard of the term 'first aid'.<sup>[3,4]</sup> In another study 49.6% of secondary school students aged 15-19 years had previous knowledge about injuries and their prevention.<sup>[5]</sup>

In India, a descriptive cross-sectional study conducted in a public school of Dehradun among school children of classes 9th to 12th, reported that majority (91%) had heard about first aid, of which only 17% had complete knowledge of first aid. Out of these students, 23.1% knew when, where and how the kit is to be used and 55.8% of students had ever used it.<sup>[6]</sup>

In the present study, perception of subjects and practice of families as reported by subjects was assessed by interview of adolescents eligible for training, all other adolescents and all women aged 20 years and above of the families. Perception of the subjects was assessed, regarding various aspects of injuries including types, reasons and prevention of injuries. Family practice was assessed as reported by the subjects, on two aspects i.e. measures taken for prevention of injuries and treatment seeking behavior in case of occurrence of injuries. Mean Overall PP scores regarding various aspects under study related to injuries at the baseline, in the intervention and control groups respectively were 48.49 and 46.98 in adolescents eligible for training, 46.42 and 46.05 in other adolescents, and 48.49 and 49.65 in adult women. At the baseline, Overall PP score ranged from 50-55% of total score in all subjects.

Child-To-Child Approach has been studied by many researchers and found to be effective.<sup>[7-10]</sup> Of these, two studies related to injuries were conducted for improvement of knowledge and practices regarding first aid and both have yielded positive results.<sup>[7,8]</sup> A quasi-experimental research study done in Cairo, Egypt to assess the effect of Child-To-Child Approach

educational method on knowledge and practices regarding first aid among school children, showed a statistically significant improvement in knowledge and practice scores before and after application of Child-To-Child Approach ( $p < 0.001$  for all items).<sup>[7]</sup> A quasi-experimental study was done in Tamil Nadu, India to assess effectiveness of planned health teaching programme on selected first aid measures among school children using Child-To-Child Approach. There was a statistically significant increase ( $p < 0.05$ ) in pre- and post-intervention knowledge scores among the study subjects.<sup>[8]</sup>

In the present study, in trained adolescents of the intervention area, comparison of PP score between the pre- and post-intervention phases showed statistically significant improvement in the post-intervention phase. This was probably due to the extensive training given to the adolescents as part of the intervention under this project. Both perception of the adolescents and family practice as reported by the adolescents had improved after the intervention. Comparison of PP score between the eligible adolescents of both intervention and control areas during the post-intervention phase showed that all scores were statistically significantly higher in the intervention area. This indicates that the improvement of PP in intervention area was due to training of the adolescents, while in the control area there was not much change due to lack of training. However, the slight change observed in subjects of the control group also, may be due to repeated visits and enquiry made by the Field Investigators.

In other adolescents as well as in adult women of the families of the intervention area, comparison of PP score between the pre- and post-intervention phases showed statistically significant improvement of all scores in the post-intervention phase. This is probably due to increased awareness of the other adolescents and adult women through dissemination of messages by the trained adolescent to his or her younger siblings, as well as to other members of the family, which is the essence of Child-To-Child Approach. Comparison of PP scores of other adolescents and adult women of intervention and control areas in the post-intervention phase shows that all scores are higher in the subjects of the intervention area, which are all found to be statistically significant. This indicates that the change is probably due to



the intervention, which was absent in control area.

Focus Group Discussion conducted in the intervention group after completion of the post-intervention data collection phase of the present research showed perception of both groups that is adult women and adolescents, regarding types and reasons of injuries, had improved markedly from the FGD conducted earlier at the time of need assessment just after recruitment of families and subjects for the research.

### Conclusion

Training of adolescents and encouraging them to disseminate messages to their siblings and to the adult women of their families is effective in improving perception of family members and practices in families, regarding injuries in children, which is the essence of Child-To-Child Approach. Older children in families should be trained through schools or community programmes and motivated to follow safety behavior and also to take responsibility of their younger siblings and the entire families for generating awareness among them, improving their perception and developing safe practices in the families. This will go a long way in prevention of injuries and their consequences in themselves and other family members.

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