Cognitive-Behavioral Intervention for Young Tsunami Victims

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Objective: *To evaluate the efficacy of the cognitive-behavioral intervention provided to children by volunteer professionals in a tsunami-hit area in Thailand. The intervention was aimed to prevent the severe development of post traumatic stress symptoms, and to help the children who might recover spontaneously to do so more quickly.*
Material and Method: *One hundred and sixty children in Ranong province voluntarily participated in 2-days group activities on the 57th day after the tsunami. The manualized intervention had been designed based on cognitive-behavioral model. Three domains of post traumatic stress reactions were targeted, intrusion, arousal, and avoidance. The Children's Impact of Events Scale (13) (CRIES-13) was completed by the participants before and 2 weeks after the intervention.*
Results: *The program was generally well understood by the children. No difference in CRIES scores was observed before and after the children entered the intervention program. However, when the sample was categorized into two groups, the group that was more likely to develop PTSD showed a significant reduction in the scores, whereas a significant increase in the scores was evident in the other group.*
Conclusion: *The findings supported the efficacy of cognitive-behavioral intervention in the children who were prone to develop PTSD. The program needed to be adapted to suit the religious, socio-economic, and cultural background of the sample. The unchanged Avoidance scores in the present study were possibly explained by the general feeling that a tsunami might happen again and the parental involvement. The increase of post-intervention scores in otherwise normal sample, though not exceeding the cut-off, raised some concern, and possibly the need for screening before the intervention.*

Keywords: *Cognitive-behavioral therapy, Traumatic stress, Tsunami victims*

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The impact of the tsunami generated by the earthquake in Sumatra on December 26, 2004 was devastating. Over 230,000 people lost their lives and some 430,000 homes across South-East Asia were destroyed in barely 24 hours. In Thailand, six southern provinces along the Andaman coastline were severely affected. The Thai Government reported the fatalities of 8,212 and missing people of 2,817, which included non-Thai casualties from 37 other countries. An estimated 50,000 children were impacted by the tsunami and an approximated 1,480 children lost one or both parents[1].

During a disaster, children, like adults, may be repeatedly exposed to many different sorts of horrific

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traumatic events. These sorts of experiences can lead to various sorts of psychological problems for children. It is now recognized that early help for children in how to cope with the stresses of disasters can be beneficial and may prevent later problems from developing; and when whole communities are affected, it is often a priority to provide assistance for large numbers of children as quickly as possible[2].

Post traumatic stress reaction is a normal consequence of having been exposed to life threatening events. The memory of the traumatic experience is so strong that it can intrude into consciousness repeatedly. The effort to push the memory away and avoid all reminders of it might provide temporary relief. Unfortunately, in the long run a problem can be exacerbated because it prevents the memory from being fully processed or worked through. Consequently, the memory continues to return, in the form of intrusive images, nightmares, or repetitive play. A vicious cycle then develops, with more intrusive recollections leading to greater avoidance, and vice versa. Increased physiological arousal can make the child more nervous and startle very easily. At the same time, the child is likely to become more fearful and anxious, and has difficulty concentrating[3].

Although wide varieties of psychotherapeutic techniques have been used, empirical support for psychosocial treatments of post traumatic stress reaction is strongest for cognitive-behavioral intervention[4-6]. This approach works to first change thoughts and feelings, with improvement in functional behavior following in return. In cognitive-behavioral intervention, the central focus is on identifying the psychological vulnerabilities existing in the form of cognitive distortion, skill deficits, and maladaptive behaviors that contribute to the etiology and maintenance of the problem, which, once identified, can be solved or modified through cognitive-behavioral procedures[7].

The purpose of the present study was to evaluate the efficacy of the cognitive-behavioral intervention provided to the children in a tsunami-hit area in Thailand. The aim of the intervention was to prevent post traumatic stress symptoms from developing seriously in as many children as possible, and to help those children who might recover spontaneously to do so more quickly. Investigators were primarily volunteer professionals (psychiatrists and mental health workers) working as a team to facilitate the recovery of victims in the aftermath of the disaster. Data collection procedure was kept to a minimum in order not to disturb the subjects' daily life.

Material and Method

Participants

A sample of 160 children aged 9-15 years from two schools in Suksamran sub-district, the worst-hit area in Ranong province, entered the study 57 days after the tsunami. The schools were informed in advance about the intervention program and the teachers were asked to pass the message to the students. The information was that there would be a 2-day group activities that would help make them feel better and cope better with the tsunami. Participating in the activities was fully voluntary.

Intervention

The intervention was designed based on cognitive-behavioral techniques reviewed from various sources[2,7-10]. Groups of 6-8 children of similar education level were formed to take part in 2-day activities. Two mental health professionals worked together as co-leaders of the groups. The activities in the group were intended for all children who had experienced the disaster, and not only for those who were clearly suffering psychologically. On the first day of the intervention, during a 2-hour session, the children were taught how to deal with the psychological impact of trauma, particularly the intrusion and hyperarousal. They were then encouraged to practice the techniques learned from the session at home and come back the next day for another 2-hour session with the same two co-leaders working on avoidance. The intervention was manualized and all the volunteer professionals had attended one-day workshop on this program beforehand to ensure the consistency of performance. Detail of activities is listed in Table 1.

Assessment measures

Before the groups started, the children had been asked to fill in questionnaires on demographic data and the Children's Impact of Events Scale (13) (CRIES-13). They were then asked to complete the CRIES-13 again 2 weeks later with an extra item on how much they practiced the techniques learned from the 2-day activities.

The Children's Impact of Events Scale (13) (CRIES-13) is a respondent-rated instrument that assesses the post traumatic stress symptoms across three domains: Intrusion (4 items), Avoidance (4 items), and Arousal (5 items). It is designed for use with children aged 8 years and above who are able to read independently. The scale shows satisfactory psychometric properties[11,12]. The scores above the cut-off point

Table 1. Detail of activities in the intervention program

Day 1 (2 hrs)
• Ice breaking activities
• Introduction and group rules
• Psychoeducation: reactions to disaster
• Progressive muscle relaxation
• Breathing control
• Using distraction
• Coping self-statements
• Imagery
• Dual attention tasks
Day 2 (2 hrs)
• Introducing exposure
• Hierarchy of traumatic reminders
• Fear thermometer
• Practice the techniques learned from Day 1
• Graded imaginary exposure

(sum of Intrusion and Avoidance scores of 17 or more) suggest the significant impact of trauma on the child that the probability is very high that he/she will obtain the diagnosis of post traumatic stress disorder (PTSD) after formal diagnostic procedures[13].

Data analysis

Descriptive statistics were used to summarize the sample characteristics. The frequencies and percentage are presented for categorical data, whereas the mean, SD, mode, and range are used to summarize continuous variables. The CRIES-13 scores pre- and post-intervention were compared by paired-samples t-test. Analysis was conducted using SPSS software version 13. A p-value of less than 0.05 was considered a statistically significant difference.

Results

Sample characteristics

Characteristics of the participating sample are shown in Table 2. The mean (SD) age was 10.51 (1.29) years; 40.6% of the sample was male; 92.5% was Muslim. The education level was evenly distributed between Prathom (Grade) 3 and 6. With respect to the sample's personal experiences with a tsunami, 21.9% reported seeing a tsunami with their own eyes and 8.1% were physically hit by a tsunami. A quarter (25.6%) of the sample lost at least one significant person in the family (father, mother, brother, sister, or relatives) with the range of 1-16 and the mode of 1. The wave damaged 16.3% of homes with 8.8% were profoundly destroyed.

Outcome measures

Table 3 presents the CRIES-13 mean (SD) total scores and composite scores of the three domains of all participating children, children with scores above the cut-off (CRIES+ve), and children with the score below the cut-off (CRIES-ve). Missing data of eight participants did not enter the outcome analysis (All from non-return of the post-intervention questionnaire). The data shows there was no significant difference in CRIES scores before and after the children entered the intervention program (p = .70). However, significant differences emerged when the sample was categorized into two groups: CRIES+ve and CRIES-ve. Significant decreases in Total, Intrusion, and Arousal scores were observed in the CRIES+ve group (p = .00 in all), while there was a significant increase in Total, Intrusion, and Avoidance Scores in the CRIES-ve group (p = .00 in all).

Two weeks after the intervention program, the children reported the mean (SD) days of practicing the techniques learned from the groups as 4.35 (3.82) days with the range of 0-14 days. The mode was 2 days

Table 2. Demographic characteristics of the sample (n = 160)

Characteristics	Number (Percentage)
Sex (male:female)	65:95 (40.6:59.4)
Age	
Mean $\pm$ SD	10.51 $\pm$ 1.29
Range	9-15
Education	
Prathom 3	46 (28.8)
Prathom 4	47 (29.4)
Prathom 5	34 (21.2)
Prathom 6	33 (20.6)
Religion	
Islam	148 (92.5)
Buddhism	12 (7.5)
Had seen a tsunami with their own eyes	35 (21.9)
Had been physically hit by a tsunami	13 (8.1)
Had lost a significant person in the family	41 (25.6)
Father	4 (2.5)
Mother	4 (2.5)
Older brother or sister	4 (2.5)
Younger brother or sister	8 (5)
Relatives	30 (18.7)
Home condition	
Not damaged	134 (83.7)
Partially damaged	12 (7.5)
Substantially damaged	14 (8.8)

Table 3. CRIES-13 Total scores and scores by domains

		Pre-intervention	Post-intervention	p-value
All	Total score	22.76 (10.74)	22.37 (10.15)	0.70
(n = 152)	Intrusion score	7.68 (4.31)	6.93 (3.98)	0.09
	Avoidance score	7.42 (4.88)	8.69 (5.10)	0.01*
	Arousal score	7.70 (5.18)	6.76 (4.38)	0.04*
CRIES+ve	Total score	31.80 (8.30)	24.36 (9.91)	0.00*
(n = 61)	Intrusion score	11.23 (3.11)	6.84 (3.86)	0.00*
	Avoidance score	10.89 (4.59)	10.44 (5.24)	0.53
	Arousal score	9.73 (5.15)	7.11 (4.25)	0.00*
CRIES–ve	Total score	16.69 (7.40)	21.03 (10.15)	0.00*
(n = 91)	Intrusion score	5.31 (3.23)	7.00 (4.08)	0.00*
	Avoidance score	5.07 (3.46)	7.51 (4.67)	0.00*
	Arousal score	6.32 (4.74)	6.53 (4.40)	0.73

* $p < 0.05$, paired-samples t-test
Data were presented as mean (SD)

and accounted for 33.1% of the sample. There was no statistically significant correlation between practice days and mean difference in pre- and post-intervention CRIES scores ($r = .012$, $p = 0.89$).

Discussion

Cognitive-behavioral intervention proved to be effective in children who were prone to develop PTSD in the present study. The sample showed statistically significant decrease in overall symptoms representing post traumatic stress reactions at 2 weeks after the intervention. The present findings were in accord with several studies demonstrating the effectiveness of group cognitive-behavioral therapy for children with PTSD symptoms[14-18]. The cultural specificity of the intervention was also carefully reviewed. Although cognitive-behavioral approach has long been supported by plenty of studies to be effective for PTSD in a Western context, much less was known about the application of it in different cultures[19,20]. The program used in the present study, with some adaptation for sensitive to the religious, socio-economic, and cultural backgrounds of the sample, was generally well understood by the children.

A possible explanation for the unchanged Avoidance scores in the present study is the general feeling of uncertainty in the area. At the time of the present study, 57 days after the tsunami, most of the people were still feeling unsure about the recurrence of the waves. The alarm system was yet to be introduced. Most of the children were too afraid to go near the sea themselves; or if they were brave enough, they were generally ordered to stay away from it by their parents. In order to have a successful return to the sea, additional intervention on parents is clearly needed as well as the sense of stability in the community.

Exposure to aversive stimuli is one of the most commonly used techniques in cognitive-behavioral therapy. The child learns to endure the affective arousal from exposure and rehearses various coping skills and, consequently, earns genuine self-confidence[8]. The confidence gained through authentic performance attainments is believed to be sturdy and enduring. The present findings clearly showed the benefit of exposure in the group of samples who was more likely to develop PTSD. However, the increase of CRIES scores in otherwise "normal" samples should raise some concern. Fortunately, though increased, the post-intervention scores did not exceed the cut-off point. One explanation can be the intervention might remind the children of the trauma as the process used in group activities usually involved children sharing stories to the group. In practicing imagery technique, the images could be very disturbing. The memory of the traumatic events could unsettle the children to some extent, although the effect was not of clinical significance. An alternative approach to this point might be to screen the children in need of the intervention before starting the group. Timing of the intervention is also a crucial factor, since inappropriately targeted therapy can compromise recovery and may even exacerbate post traumatic stress symptoms[21].

The present study has several limitations. The sample represents only the children in one province.

The present findings need to be replicated in a larger sample with different backgrounds in another area that might suggest the effect of other variables such as ethnicity and religion. The inclusion of a control group and randomization would surely improve the validity of results. The main outcome measurement - CRIES - had not been validated in Thai. The researchers encountered some practical problems when the children did not understand the meaning of some questions clearly and some items were too abstract. Systematic translation and culture-sensitive adaptation of CRIES is evidently required.

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การช่วยเหลือเด็กผู้ประสบภัยคลื่นยักษ์โดยการบำบัดทางกระบวนคิดและพฤติกรรม

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วัตถุประสงค์: *เพื่อศึกษาถึงประสิทธิผลของการบำบัดทางกระบวนคิดและพฤติกรรมแบบกลุ่มโดยอาสาสมัครเพื่อช่วยเหลือเด็กผู้ประสบภัยคลื่นยักษ์ในประเทศไทย การบำบัดมีเป้าหมายเพื่อป้องกันความรุนแรงของอาการความผิดปกติทางจิตใจภายหลังภยันตราย และเพื่อช่วยให้เด็กที่จะหายเองอยู่แล้วหายจากอาการได้เร็วขึ้น*

วัสดุและวิธีการ: *เด็กชั้น ป.3 – ป.6 จำนวน 160 คนในอำเภอสุขสำราญ จังหวัดระนองเข้าร่วมกลุ่มการบำบัด 2 วัน โดย สมัครใจ กิจกรรมจัดขึ้น 57 วันหลังจากเกิดคลื่นยักษ์ มีรูปแบบอยู่บนพื้นฐานของการบำบัดกระบวนคิดและพฤติกรรม โดยมีเป้าหมายอยู่ที่อาการ 3 กลุ่มคือ intrusion, arousal, และ avoidance เครื่องมือที่ใช้วัดผลคือแบบสอบถาม Children's Impact of Events Scale(13) (CRIES-13) โดยทำการวัดก่อนเข้าร่วมกิจกรรมและ 2 สัปดาห์หลังจากนั้น*

ผลการศึกษา: *เด็กมีความเข้าใจในโปรแกรมการบำบัดค่อนข้างดี เมื่อเปรียบเทียบคะแนนจากแบบสอบถาม CRIES ก่อนและหลังการบำบัดจากกลุ่มตัวอย่างทั้งหมดไม่พบว่ามีความแตกต่างกัน แต่เมื่อแบ่งกลุ่มตัวอย่างออกเป็น 2 กลุ่ม พบว่ากลุ่มที่มีโอกาสสูงที่จะเกิดโรคความผิดปกติทางจิตใจภายหลังภยันตรายมีคะแนนหลังการบำบัดลดลงอย่างมีนัยสำคัญทางสถิติ ในขณะที่กลุ่มที่มีโอกาสเกิดโรคต่ำมีคะแนนหลังการบำบัดเพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติ*

สรุป: *ผลการศึกษาสนับสนุนว่าการบำบัดทางกระบวนคิดและพฤติกรรมมีประสิทธิภาพสำหรับเด็กที่มีความเสี่ยงสูงที่จะเกิดโรคความผิดปกติทางจิตใจภายหลังภยันตราย การใช้โปรแกรมในพื้นที่ต้องมีการดัดแปลงให้เหมาะสมกับศาสนา เศรษฐฐานะ และภูมิหลังทางวัฒนธรรมของกลุ่มผู้เข้ารับการบำบัด กรณีที่คะแนนในหมวด avoidance ไม่ลดลงอาจเกิดจากสถานการณ์ในขณะศึกษาที่ยังมีความหวาดกลัวว่าคลื่นยักษ์จะเกิดซ้ำอีกอย่างมาก รวมทั้งผลจากการดูแลสั่งสอนของผู้ปกครอง ส่วนในกลุ่มที่อาการค่อนข้างปกติ คะแนนหลังการบำบัดที่เพิ่มขึ้นแต่ยังไม่เกินจุดตัดอาจบ่งชี้ถึงความจำเป็นในการคัดกรองเด็กก่อนเข้ารับการบำบัด*