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School-Based Disaster Recovery: Child Mental Health Promotion Over the Long Haul

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Abstract

Background: The February, 2010 earthquake and tsunamis destroyed 80% of the coastal town Dichato, Chile, displacing over 400 families for nearly four years. The coalition, Recupera Chile (RC), participated in the town's integrated recovery process from January 2011 to present with a focus on children's mental health.

Program Development and Implementation: The multi-disciplinary RC coalition emphasized community-led post-disaster recovery, economic capacity rebuilding, and community health promotion (www.recuperachile.org). RC's child health team fostered partnerships between the local elementary school, health clinic, Universidad de Concepcion, and Boston Children's Hospital. The team responded to priorities identified by the town with a three-pronged approach of 1) case management, 2) resource development and 3) monitoring and evaluation. This work resulted in the development of a model school-based program: *La Escuela Basada en Realidad* – encompassing: 1) Health and Mental Health, 2) Language and Literacy and 3) Love of the Sea.

Lessons Learned: Post-disaster programs targeting mental health require a multi-year approach that extends beyond the completion of the physical reconstruction. Recovery is an organic process that cannot be pre-scripted and depends on solutions that emerge from the community. Finally, partnerships between schools and universities can foster resiliency and sustainability of programs for children and families.

Introduction

Over the past decade, public health researchers and policy makers increasingly recognized the psychological impact of natural disasters on children (e.g. anxiety, PTSD),[1-4] and began to incorporate mental health responses into disaster recovery. Severe natural disasters affect families with children through disrupted community infrastructure, destruction of personal property, unemployment, and stressed social relations.[5-7] Adult studies suggest that displacement can be as important as the initial exposure in predicting long-term post-disaster psychological consequences.[8] Children rely on caregivers to provide critical mental health protection,[9,10] and organizations such as UNICEF stress the value of normalization of daily life activities as an antidote to mental health stresses associated with disasters.[11]

The 2010 Chilean earthquake

On February 27, 2010, an 8.8 magnitude earthquake and three tsunami waves struck Chile, causing 526 deaths and leaving extensive property damage. In the seaside town of Dichato (pop. circa 4000) approximately 80% of the buildings were destroyed and over 400 families were displaced into temporary housing for nearly four years. This damage disproportionately affected families with preexisting psychological and socio-economic vulnerabilities. Six months after the disaster, a survey of the town's children documented persistently high levels of PTSD symptoms, 30% for girls and 15% for boys (age 9-16 years).[12]

Recupera Chile

Recupera Chile *(RC)* (www.recuperachile.org) grew as a coalition of academic, governmental and community actors engaged in long-term recovery interventions. *RC* addresses

four dimensions of recovery: (1) social systems (health, mental health, social services, education); (2) physical environment (built and natural environments); (2) economic systems (employment, training & entrepreneurial capacity building, financial security); and (4) cultural/heritage restoration and preservation.

RC seeks to accelerate the recovery process and create opportunities for community improvement through an intensive "place-based" approach, customizing the interventions based on local knowledge over the course of long-term recovery.[13] RC also employs an interdisciplinary, interdependent "whole community" approach.[14] Here we describe the developmental trajectory of the *RC* child mental health interventions.

Program Implementation: Child Mental Health Response

The RC team sponsored many opportunities to listen to community members, the only authentic experts on their community's recovery, and elicit areas of need as well as local strengths. In January and June, 2012, the *RC* mental health team conducted formal needs assessments following the SAFE model,[15] reviewing four specific areas: (1) Safety and Protection, (2) Access to Healthcare, (3) Family and Connection to Others, and (4) Education, Livelihood and Sense of Future. Families detailed what their lives were like during the emergency response and in temporary housing. Interviews with health, education, religious, and governmental leaders, unearthed information about on-going social-emotional stresses. Community members requested programming for young children (3-6 years) because they felt that these children, their families, and their schoolteachers were highly affected and underserved. In response, *RC* developed a three-pronged approach of (1) case management, (2) resource development, and (3) monitoring and evaluation. Programs were developed in partnership with

the elementary school, resulting in the transformation of the local school into a "model school" for the region called "*La Escuela Basada en Realidad."*

Case Management

In 2012, *RC* hired a community based health-focused Case Manager (CM) with training and experience as a psychologist. The CM assisted families with health, mental health and domestic violence (DV) problems as they tried to navigate the re-emerging health and social service systems (Table 1). In one case example, the CM advocated and facilitated the acquisition of a specific surgical instrument lost in the looting of a hospital after the earthquake. After nearly two years of no action, it was the CM who was able to solve the problem and help obtain the instrument that was then used to treat the patient. An additional ~200 children will also benefit from treatment.

Resource development - Building Partnerships

Through the case management program, the CM identified a deep reservoir of social resources in the Bio Bio region. The philosophy of RC was to strengthen existing service structures, improve access, and catalyze the creation of new community programs. The public elementary school's director and teachers shared *RC*'s commitment to the development of mental health promotion for young children and their care providers. The local clinic, Ministry of Health, as well as interested faculty and student volunteers from one of the regional universities (Universidad de Concepcion - UdeC) joined in the development of mental health promotion programming. The Departments of Psychiatry, Kinesthesiology and Education at the UdeC enthusiastically worked hand-in-hand with *RC* since 2012. A critical role for RC in developing

these partnerships included the identification of government funding dedicated to post-disaster reconstruction and the coordination of the various partners in applying for that funding.

Current Programming

The *RC* team, led by the CM, responded to the identified mental health needs of children and caregivers with tailored programs. *La Escuela Basada en Realidad* has 3 areas of focus: (1) Health and Mental Health, (2) Language and Literacy and (3) Love of the Sea. The idea of "Love of the Sea" was a direct response to the fear and anxiety described by community members post-disaster. Dichato was devastated by a tsunami wave – the sea literally rose up to destroy the town sweeping away homes, belongings, and history. Yet, the community depends on the sea for its livelihood and identity. RC recognized that individual or community intervention could not ignore the psychological, cultural, and economic role of the sea. Activities designed to rebuild "Love of the Sea" included swimming classes in the municipal pool, travel to a local island on a national navy ship, and building a nautical center for kayaking and sailing classes for children. Exposure to aquaculture aquariums (*Gran Marina Educativa)* brought the sea into the classrooms, and made linkages to new aquaculture economic opportunities and programs (*Granjeros del Mar*).

Through the creation of the model school the post-disaster recovery partnership responded to a number of community-driven requests, including the provision of a summer school, vision and hearing screenings, kinesthesiology programming to increase child coping mechanisms and self-esteem, the building of a school greenhouse, teacher trainings for managing child behavior problems, promoting early literacy and personal wellness, and parent mental health promotion described in Table 1. The school greenhouse became a source of pride for the

school as well as a surprising refuge for children experiencing excessive stress. Children benefited from caring for living plants, cultivating growth, and improving their diet. Kinesthesiology programs also successfully reduced the frequency of child aggressive behaviors in pre-school classrooms, a primary concern for the community.

On-going Monitoring and Evaluation

The CM maintains detailed progress notes about all services provided. In addition, *RC* conducted in-depth semi-structured interviews with community members four years post-disaster (June 2014). Two primary themes emerged about underlying reasons for child behavior and conduct problems: (1) lack of community unity due to increased competition following the earthquake, and (2) increased child exposure to violence in temporary housing. Interviewees described a sequential progression of changes in behavior beginning with increased competition around limited resources shortly after the disaster, then stressed family dynamics and exposure to family conflict in the tight quarters of the temporary housing compounds, followed by development of child aggressive behaviors, and finally an improved sense of security in permanent housing (all families relocated by March 2014). Interviewees contrasted the greater advancement in the physical rebuilding process with the limited resolution of interpersonal conflict and stress.

Lessons Learned and Future Directions

Disaster recovery is a long process

Communities benefit from a multi-year view of recovery, particularly with respect to children and family mental health. The full fruits of case management and social investment

often do not emerge for 4-5 years post disaster. Currently, Indonesia and New Orleans are reviewing the 'decade' of each of their recoveries and documenting the importance of long-term vision and sustained interventional input.

Persistence of social and mental health problems

Displacement into camps and temporary housing lead to a lack of privacy and the disruption of natural communities. Unequal distribution of limited resources fuels jealousy and interpersonal violence. Families become separated and may also develop anxieties about returning to areas affected by the disaster. Response to these challenges is frequently late and hampered because social agencies have also been impaired by the disaster, leaving them under-staffed and over-taxed.

Resources, partnerships and creativity

Visionary, resilient, entrepreneurial citizen leaders find ways to rebuild their communities and to support families and children. In RC's case, the community discovered valuable resources within the local universities and the CM helped organize, fund, and launch new programs. The Dichato school served as the central hub of community recovery for children and families. Schools around the world can provide a powerful convening force, bringing together families, and connecting families to resources through the central government or large institutions such as universities.

Recovery is an organic process. There is no prescription for exactly how a community will come together nor how the recovery will progress. Successful programs may actually happen totally by surprise. Communities that are open to change and development can recover,

and, in some cases find themselves (with time) in a better place than they were before the disaster.

Table 1. Recupera Chile Programs January 2012 to August 2015

PROGRAM	Date	Participants
EDUCATION		
Teacher training by UdeC psychiatry department: managing difficult child behavior	2013	7 teachers in pre-kinder and kindergarten Dichato elementary
Parent and teacher training by Departmen of publich health: *Nadie es Perfect* parenting class	2013 2014	20 parents, 2 teachers 15 parents, 2 teachers
Training by *Un Buen Comienzo*: promoting early literacty	2014-2015	15 parents, 60 children, 8 teachers in 5 rural schools
Dichato Summer School	2014 2015	150 children, 30 parents Dichato 100 children, 30 teachers, 25 parents in Dichato and Cobquecura
Dichato Nautical Center – kayak, sailing, swimming lessons	2013-2015	
Education session in marine biology and nutrition: *Granja Marina Educativa*	2014	200 children, 40 teachers, 80 parents
Aquiring funding for: School radio, school greenhouse, and Mapuche traditional oven	2014	Dichato elementary school
HEALTH		
Health Fair – *El Molina*	2013	60 children, 30 parents
Vision screening **Hearing screening**	2013 2013	470 children – 22 children screened positive
Referral to Dichato health post **Referral to Tome Hospital**	2014 2014	20 children 2 children
UdeC Kinesthesiology Program: pre-kinder and kindergarten classes teaching body control, movement classes, imaginative play, stress reduction	2013 2014	60 children, 12 parents, 2 teachers 30 UdeC students and 4 professors 60 children, 15 parents, 4 teachers, 12 UdeC students and 4 professors
Dental preventative visits	2013	213 children
Domestic violence community sessions	2014 2015	80 women, 9 sessions 20 women, 3 sessions
NETWORK BUILDING		
Participation in Tome Mental Health Netowrk	2013	Assitance with finding services for Case Manager cases and prevention of domestic violence
Participation in the Regional Reconstruction Roundtable	2013-2014	Bio-bio region reconstruction planning

References

1. La Greca A, Silverman WK, Vernberg EM, et al. Symptoms of posttraumatic stress in children after Hurricane Andrew: a prospective study. *J Consult Clin Psychol.* 1996;64(4):712-723.
2. Lonigan CJ, Shannon MP, Taylor CM, et al. Children exposed to disaster: II. Risk factors for the development of post-traumatic symptomatology. *J Am Acad Child Adolesc Psychiatry.* 1994;33(1):94-105.
3. Goenjian AK, Pynoos RS, Steinberg AM, et al. Psychiatric comorbidity in children after the 1988 earthquake in Armenia. *J Am Acad Child Adolesc Psychiatry.* 1995;34(9):1174-1184.
4. Kar N, Bastia BK. Post-traumatic stress disorder, depression and generalised anxiety disorder in adolescents after a natural disaster: a study of comorbidity. *Clin Pract Epidemiol Ment Health.* 2006;2:17.
5. Sastry N, VanLandingham M. One year later: mental illness prevalence and disparities among New Orleans residents displaced by Hurricane Katrina. *Am J Public Health.* 2009;99 Suppl 3:S725-731.
6. Najarian LM, Goenjian AK, Pelcovitz D, et al. The effect of relocation after a natural disaster. *J Trauma Stress.* 2001;14(3):511-526.
7. Salloum A, Carter P, Burch B, et al. Impact of exposure to community violence, Hurricane Katrina, and Hurricane Gustav on posttraumatic stress and depressive symptoms among school age children. *Anxiety Stress Coping.* 2011;24(1):27-42.
8. McFarlane AC, Policansky SK, Irwin C. A longitudinal study of the psychological morbidity in children due to a natural disaster. *Psychol Med.* 1987;17(3):727-738.

9. Bokszczanin A. Parental support, family conflict, and overprotectiveness: predicting PTSD symptom levels of adolescents 28 months after a natural disaster. *Anxiety Stress Coping.* 2008;21(4):325-335.

10. La Greca AM, Lai BS, Llabre MM, et al. Children's Postdisaster Trajectories of PTS Symptoms: Predicting Chronic Distress. *Child Youth Care Forum.* 2013;42(4):351-369.

11. BUILDING BACK BETTER: A 12-Month Update on UNICEF's Work to Rebuild Children's Lives and Restore Hope since the Tsunami. UNICEF website. http://www.unicef.org/TSUNAMI_E_BOOK_spreads.pdf. Published 2005. Accessed June 7, 2016.

12. Cova F, Valdivia M, Rincón P, et al. Estrés postraumático en población infantojuvenil post 27F. *Revista Chilena de Pediatría* 2013;84(1):32-41.

13. Cutter SL, Finch C. Temporal and spatial changes in social vulnerability to natural hazards. *Proc Natl Acad Sci U S A.* 2008;105(7):2301-2306.

14. A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action. FEMA website. http://www.fema.gov/media-library-data/20130726-1813-25045-0649/whole_community_dec2011__2_.pdf. Published 2011. Accessed June 15, 2016.

15. Betancourt TS, Fawzi MK, Bruderlein C, et al. Children affected by HIV/AIDS: SAFE, a model for promoting their security, health, and development. *Psychol Health Med.* 2010;15(3):243-265.