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The Hurricane Choir: Remote Mental Health Monitoring of Participants in a Community-based Intervention in the post-Katrina Period

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Introduction

Natural disasters such as the hurricanes that struck the coast of southern Louisiana, Mississippi, and Texas in 2005 are synonymous with the destruction of the physical environment and the depletion of material assets of individuals and whole communities. They are unique in that the widespread destruction they cause often results in collective trauma in which whole communities find themselves engulfed in severe shock.¹ In the case of the 2005 hurricane season, the rapid succession of a number of large and destructive hurricanes is likely to have intensified the psychological impact of the disasters, as infrastructure that survived previous storms was destroyed, rebuilding efforts were restricted, and stressors on survivors were exacerbated and drawn out over a long period.

Typically, post-disaster stress symptoms include (among others) recurrent nightmares, intrusive memories, hypervigilant arousal, impaired concentration, depression, emotional detachment from others, and disengagement from parts of life that were previously rewarding.^{1,2} With exposure to such severe psychological distress, post-traumatic stress disorder (PTSD) can develop, having a severe impact on healthy functioning and making emergence from the effects of a disaster much more difficult.³ For example, David and colleagues⁴ demonstrated that 51% of survivors who were exposed to Hurricane Andrew developed a new-onset psychiatric disorder. Of these, PTSD was the

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most common (at 36%), followed by major depression (30%) and generalized anxiety disorder (11%). Moreover these researchers found significant co-morbidity, with 68% of PTSD sufferers also satisfying the clinical criteria for major depression.

In the case of the hurricane disaster of 2005, it is possible that the prevalence rates of psychological trauma are likely to be associated with the presence or absence of community risk factors. Prior to Hurricane Katrina, data from the U.S. Census (2000) highlighted the fact that New Orleans had an 18% poverty rate and was one of the poorest metropolitan centers in the country.⁵ Nationally, New Orleans was ranked in the bottom 20% for the educational qualifications of its residents. Class and race divisions were prevalent, with two thirds of the Black population living in the inner city of New Orleans in contrast to a predominantly White suburban population. In short, the region of New Orleans was growing slowly, struggling with issues such as segregation, concentrations of chronic poverty in Black communities, and underemployment.⁶ Given these disadvantages, it is probable that the region was particularly ill-equipped to tackle the devastating impact of Hurricane Katrina.

The Hurricane Choir. Being a member of a functional community can have broad benefits to mental health.⁷⁻¹¹ As suggested by Norris and colleagues, it is necessary to develop ongoing assistance and interventions that provide mental health care to disaster victims in a way that is “culturally appropriate and feasible.”^{12,p.291} Given the musical heritage of South Louisiana, a culturally appropriate community initiative in the post-hurricane period was a choir, organized by Australian choral leader Martin Meader in Baton Rouge, Louisiana. The choir (called the *Hurricane Choir*) comprised hurricane disaster evacuees and survivors who rehearsed and performed to live audiences. The choir commenced six months after the hurricane disasters and had a 12-week intensive rehearsal period that culminated in three public performances in the American Spring of 2006. Rehearsals were held three times a week in local churches, community centers, and evacuee villages.

The organizers of the Hurricane Choir were keen for the mental health outcomes of choir participants to be monitored during rehearsals. Subsequently, researchers from Sentiens, an Australian health care company, and the University of Western Australia were invited by the choir organizers to collaborate in the project and develop a strategy to track the mental health outcomes of choir participants.

Ours was a naturalistic research project and we did not attempt to influence the planning and processes involved with the formation of the choir. A web-based monitoring system was used to record the experiences of participants before and after the hurricane disaster and to measure self-reported levels of psychological distress. The platform technology of the online system was developed by Sentiens and has been used successfully in mental health clinical applications in Perth, Western Australia, since 2002.¹³⁻¹⁴

Enrollment and procedure. Choir members had a window of one month to enroll into the research. The project was promoted to existing choir members at rehearsal nights in which they were directed to a web-based enrollment page hosted by the researchers. Informed consent was sought at choir rehearsals and electronically via a web page. Incorporated into the enrollment phase was some basic data collection on demographics, medical histories (including incidence of past psychiatric disorders),

and social networks. Access to the Internet was provided at the choir rehearsal facility on donated computers. Alternatively, participants were encouraged to complete the questionnaires at home if they had access to the Internet.

It was a requirement that all participants have an e-mail address; however, it was recognized that not all participants would have e-mail addresses and would not be skilled at using computers. A guide to setting up e-mail accounts was provided and volunteers were available to assist those who required help with the technology. In addition, participants could request extra assistance in completing the project. This assistance included help with the technology and help comprehending and understanding the content delivered to them.

While the web-based system has the facility to deliver evidence-based therapy (e.g., cognitive behavioral therapy), this feature was not used for this project as researchers wanted to measure only the impact of the Hurricane Choir on mental health. Prior approval by the University of Western Australia Human Research Ethics Committee was obtained and a local counselor was on hand to provide extra assistance to any distressed participants (although no participants required this assistance during the study). Access to brochures promoting mental health literacy was also supplied.

Data were collected at scheduled sessions, each of which covered a period of 5 days in which measures were administered. Automatically generated e-mail reminders notified and encouraged participants to adhere to the research schedule. If a participant logged on during a session week, they were directed to the measures that were scheduled. In addition to administration of questionnaires, an e-diary was available to participants to enter any thoughts and feelings they may have had.

Data collection. Measures were taken prior to the initial rehearsals for the choir with repeated measures occurring midway through the rehearsal period and immediately before the final performances. Eighty five percent of the original 150 choir participants consented to participate in the research project ($n=127$). Eighty per cent of those who gave their consent ($n=102$) subsequently completed online enrollment and one or more scheduled sessions. Standardized mental health and attitudinal measures included:

- Depression, Anxiety, and Stress Scales (DASS)¹⁵
- Davidson Trauma Scale¹⁶
- Life Orientation Test Revised (LOT-R)¹⁷
- Hurricane Coping Self-Efficacy Scale (HCSE)¹⁸
- A modified version of the Inventory of Socially Supportive Behaviours (ISSB)¹⁹

Additional data were collected to identify risk and resilience factors for individual participants. These included:

- age, sex, marital status, dependents, level of education;
- level of resource loss (including financial loss and loss of housing and employment);
- availability of family support and social networks;
- impact of the hurricane on the individual in the first week after the disaster;
- experiences of loss (including bereavement);

- perceived level of social and community support, including religious commitment; and
- presence/absence of pre-existing mental health and other medical conditions.

Preliminary outcomes. A complete analysis of the full set of data is planned when the follow-up data are collected in 2007, 12 months after the choir disbanded. Some preliminary outcomes are presented here. First, at the beginning of the choir, disruption to family functioning, loss of optimism, and drug and mental health problems were the most common problems (Table 1). To expand upon this, it should be noted that losses were severe: a substantial number of choir members had lost a friend or family member in the disaster. Second, qualitative feedback from participants and volunteers indicated that those who were initially anxious about using computers for the research grew to enjoy it when they realized that they would be supported through the early learning process. Finally, local government and non-government agencies in the disaster zone recognized the value of the project in tracking mental health remotely, provided sponsorship and support, and expressed particular interest in using the system to monitor the mental health of their aid workers and to provide accessible, online psycho-education in the area of stress management.

Unfortunately, the project was not without some limitations. It is possible that early disorganization by choir organizers in the establishment phase of the choir discouraged individuals who were highly stressed from joining the choir. For example, coping with change is very challenging to individuals with PTSD and there were frequent changes to rehearsal dates and venues in the early stages of choir recruitment. Coupled with this, transportation difficulties reduced choir participation rates for evacuees despite their enthusiasm for the project. However, despite the above problems, the paradigm employed in this study provided the opportunity for disadvantaged and traumatised

Table 1.

**PRESENCE OF STRESSORS CAUSED BY 2005
HURRICANE SEASON, BEGINNING OF REHEARSALS, N=102**

Risk variable	Percentage of choir participants
Loss of family or friend in the hurricane disaster	11
High or moderate level of family disruption	18
Disruption to family functioning	88
Pre-existing medical conditions that had not received appropriate care	35
Loss of optimism	75
Drug problems and mental health problems	41
Loss of control	37
Loss of psychological resources	26
Loss of monetary resources	20

members of a community to utilize online monitoring, enabling tracking of mental health outcomes in the context of disaster recovery.

A Final Comment

This summary paper introduces a novel naturalistic research project using Internet-based monitoring to track the mental health outcomes of participants in a community choir following Hurricane Katrina. To a large extent this project succeeded; researchers from Australia were able to engage and recruit the majority of participants from the choir and monitor their mental health during their rehearsals in Louisiana.

It should be recognized that the choir provided a strategy to assist survivors of the hurricanes who might not otherwise have been able to get direct psychological support from mental health professionals. Although there were federal funds directed to crisis counselling, these were underutilized by survivors of the hurricane.²⁰ It is difficult to know why this was the case but examination of the tracking data provided by the Brookings Institution suggests that, despite high levels of trauma, there were lower percentages of health professionals available to provide support to survivors in New Orleans and Louisiana than are available in the U.S. more generally. In addition many people may have found it hard to acknowledge their vulnerability and seek mental health support. The choir provided a non-stigmatised and supportive environment in which individuals could find support and develop social networks. It is hoped such projects assist disaster survivors to feel increased social support and a greater sense of community cohesion, and lead to improved coping skills that may increase resilience to PTSD. Further analysis of longitudinal data from the project will aim to find evidence for this.

Notes

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