

Reproductive Health Assessment After Disaster Toolkit (RHAD Toolkit)

Location: North Carolina/Georgia (Pilots)
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BACKGROUND

Since the 1990s, the number of federally declared disasters has been increasing in the United States (U.S.), with an average of 61 major declared disasters per year from 1996-2011 compared with an average of 29 per year from 1980-1995. Each U.S. state and territory has experienced a disaster in the past 15 years and nearly 850,000 people in the U.S. are affected by natural disasters annually. This number does not include those affected by man-made events or pandemic diseases such as pandemic H1N1 influenza. Pregnant women are of particular concern, as they are classified as “at-risk individuals” in the Pandemic & All-Hazards Preparedness Act of 2006. Even so, data on them are often not collected or if collected, not used - so little is known about disaster effects on pregnant women.

As sparse as data are about pregnant women and disaster, information about disaster and women of reproductive age is even more so. In the U.S., women between the ages of 15 and 44 years are considered to be of reproductive age. Disasters have been associated with changes in post-disaster fertility but the associations have been inconsistent; in some studies, fertility increased whereas in other studies it decreased.

The Reproductive Health Assessment After Disaster (RHAD) Toolkit was developed to assess the reproductive health needs of women aged 15-44 years who have been affected by natural and/or man-made disasters. The toolkit is intended for United States (U.S.) local and state health departments. However, the toolkit may prove useful to other government and non-governmental organizations that provide or are interested in providing reproductive health services to U.S. disaster-affected women. The toolkit is designed for use by staff with limited epidemiology expertise, although it is helpful if interviewers have some survey skills.

TITLE VMCH BLOCK GRANT MEASURES ADDRESSED
N/A

PROGRAM OBJECTIVES

The goal of the RHAD Toolkit is to equip state and local health departments with new methodology to gather the information they need to maximize the use of local programs and policies as they assist disaster-affected women.

TARGET POPULATION SERVED

The RHAD Toolkit is designed to assess the reproductive health needs of women aged 15-44 years who have been affected by natural and/or man-made disasters. Implementation of the RHAD Toolkit is encouraged within six months of the disaster date in ≥ 1 county(ies) that are declared federal disaster areas and include FEMA individual assistance. The sample size depends on whether the user is collecting data among women of reproductive age or specifically pregnant and postpartum women. To survey women of reproductive age (including pregnant and postpartum women) using two-stage cluster sampling with referral to increase the proportion of pregnant and postpartum women, a random sample of 30 census divisions is recommended, yielding an overall sample of ≥ 130 women. To survey pregnant and postpartum women only, users are encouraged to use a snowball or another type of network sampling approach. For this approach the sample size is at the discretion of the user.

PROGRAM ACTIVITIES

The RHAD Toolkit is modeled after the Reproductive Health Assessment Toolkit for Conflict-Affected Women (RHA Toolkit), a toolkit designed by CDC's Division of Reproductive Health in 2007. The RHA Toolkit was developed to help refugee-serving organizations with limited survey expertise to collect, analyze, and disseminate reproductive health data in international settings. Using the RHA Toolkit as a model, the RHAD Toolkit also aids public health practitioners and emergency management officials in determining the reproductive health needs of the disaster affected communities. Data from the RHAD Toolkit can assist implementers in better understanding relationships between disasters and reproductive health

outcomes, and subsequently facilitate more informed program and policy development processes.

The RHAD Toolkit contains two questionnaires: one designed to assess comprehensive reproductive health among a sample of women of reproductive age, and another designed to assess reproductive health among a sample of pregnant/postpartum (P/PP) women. Whenever possible, questions were pulled from existing data collection tools. When measures did not exist, new questions were created, based as closely as possible on limited literature or qualitative data collected by CDC staff after Hurricane Katrina. Questionnaire topics include pregnancy and delivery care, infant care, family planning, family stressors and service needs, health and risk behaviors, and gender-based violence. RHAD also includes the following items; a planning checklist, budget template, sampling instructions, a training manual, implementation forms and procedures, and suggestions for data use. All items were recreated and tailored to fit the audience of users in the U.S.

The RHAD Toolkit uses an innovative two-stage cluster sampling method, adapted from CDC's Community Assessment for Public Health Emergency Response, with referral to increase the proportion of pregnant and postpartum women included in a post-disaster assessment. The proportion of pregnant and postpartum women interviewed in three pilots increased dramatically when the enhanced survey method with referral was used. In the first pilot the increase was from 6.25% (1 of 16) to 21% (4 of 19); in the second pilot from 8% (5 of 64) to 19% (14 of 73); and in the third pilot from 9% (12 of 131) to 17% (25 of 144). The RHAD Toolkit draws from the experience of three pilot tests and includes two questionnaires, planning and training tools, sampling instructions, analysis instructions for use with Epi Info, and guidance for report writing and dissemination.

Implementation of the RHAD Toolkit is optimal up to six months after a disaster occurs. The timeframe for implementation will vary depending on the resources available to the user. Implementation may take anywhere from a few weeks to a few months. The RHAD Toolkit contains a detailed planning guide to assist users in developing a timeframe for implementation.

PROGRAM OUTCOMES/EVALUATION DATA

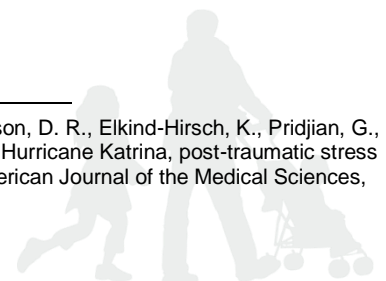
Three pilots were conducted in partnership with local health departments in disaster-affected counties from 2008 through 2010. The disaster-affected counties chosen for the pilots met the following criteria: 1) disaster occurred \leq 6 months from the start of the pilot; 2) federally declared disaster area; 3) eligible for individual assistance from FEMA. Pilots were conducted in Johnston County, North Carolina, after tornadoes (November 2008), Cobb/Douglas Counties in Georgia after flooding (September 2009), and Bertie County, North Carolina, after hurricane-related flooding (October

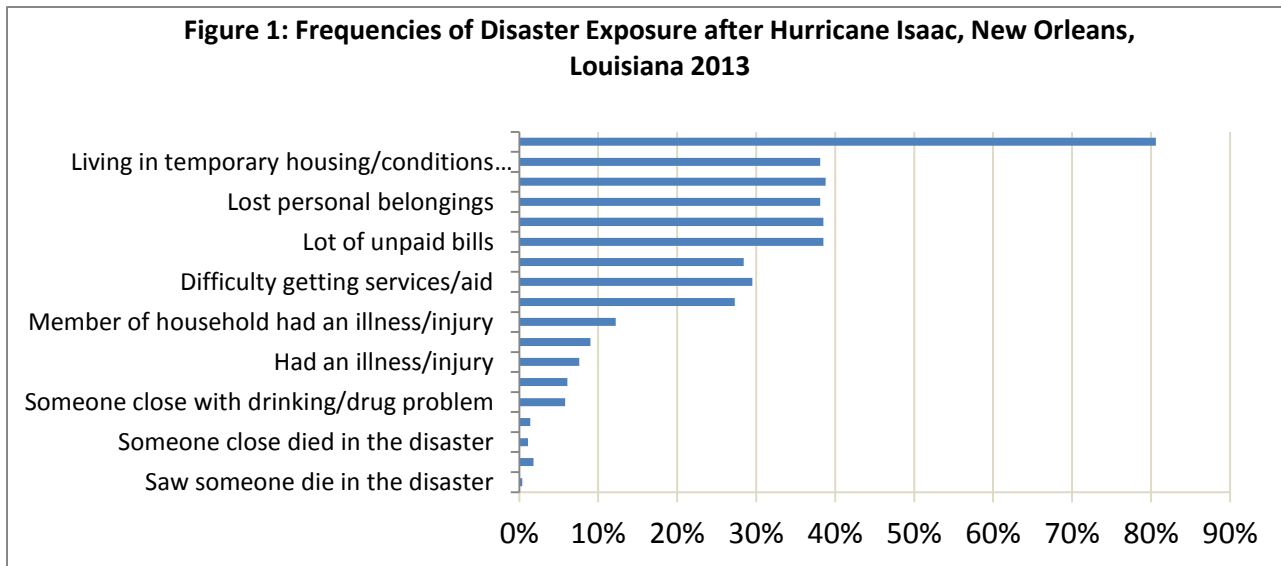
2010). Local health department staff and members of graduate student outreach teams were recruited to serve as interviewers in each pilot. Throughout and after each pilot, interviewers provided feedback on the training that they received, the experience of locating participants using the sampling procedures, and the practicality and flow of the actual questionnaires. Their feedback was incorporated after each pilot to strengthen the tools contained in the toolkit. Once the toolkit was complete, health departments were asked to review the on-line toolkit and to provide feedback on the content and organization of the site.

In addition, Tulane University's School of Public Health and Tropical Medicine used the RHAD Toolkit to assess reproductive health outcomes among P/PP women affected by Hurricane Isaac. From November 2012 through February 2013, Tulane partnered with the Louisiana Department of Health and Hospitals to recruit and enroll 278 P/PP women in WIC and family planning clinics in 7 federally declared disaster-affected parishes. Women were asked about their experiences of physical and emotional threats, illness, loss and damage during the hurricane. Using the RHAD toolkit enabled researchers to measure high hurricane exposure, a factor associated with having low birth weight infants¹. Researchers can assess hurricane exposure by combining 8 items: 1 item about the amount of home damage with 7 other items from the Family Stressors section of the toolkit (e.g., feeling one's life was in danger at the time of disaster, walking through floodwater or debris, and/or being without electricity for one week or longer). In the Tulane assessment, 26% of the women were categorized with high exposure, having experienced 3 or more of listed exposure events. As shown on Figure 1, overall, many women reported experiencing stressors because of the hurricane.

The short-term outcome of the toolkit is to guide users through assessing and identifying the needs of disaster-affected women of reproductive age in the U.S. The anticipated long-term outcome is the promotion and enhancement of evidence-based local programs and services to improve the health of disaster-affected women and their families.

¹ Xiong, X., Harville, E. W., Mattison, D. R., Elkind-Hirsch, K., Pridjian, G., & Buekens, P. (2008). Exposure to Hurricane Katrina, post-traumatic stress disorder and birth outcomes. *American Journal of the Medical Sciences*, 336(2), 111-115.





PROGRAM COST

The costs associated with carrying out the assessment will vary depending on the situation and the types of resources available to the user. The RHAD Toolkit contains a detailed cost estimate meant to serve as a general guide to help users forecast the costs and develop a budget. In addition, the toolkit contains a budget template, a sample donation letter, and information on recruiting volunteers in an effort to reduce costs associated with the assessment. The costs for each of the three pilots that were conducted ranged from \$10,000 to \$20,000 depending on the size of the pilot and the resources in each location.

ASSETS

The need for the RHAD Toolkit was realized when CDC’s Division of Reproductive Health (DRH) began receiving requests for technical assistance with reproductive health needs assessments from health departments in Louisiana and Mississippi following Hurricane Katrina in 2005. Using the RHA Toolkit approach as a model to guide domestic post disaster assessments, the health departments collaborated with DRH to create appropriate domestic questionnaires and discuss approaches for sampling. In addition, DRH collaborated with the Louisiana Office of Public Health, Healthy Start New Orleans, and Danya International to conduct focus groups among women with low income or limited education who were living in New Orleans and were pregnant or had recently given birth at the time of Hurricane Katrina. The lessons learned from these experiences led DRH in October of 2008 to fund a 2-year cooperative agreement with the University of North Carolina (UNC) Center for Public Health Preparedness at the UNC Gillings School of Global Public Health to create, implement, and evaluate the components of a toolkit designed to assess the health needs of women of reproductive age following a disaster.

Since the staff capacity of each participating health department varied, the pilots relied on pools of volunteers from graduate student outreach teams at UNC and Emory University to serve as additional interviewers on assessment teams. Incorporating the volunteers as interviewers cut down on costs and allowed for a larger number of interviewer teams, allowing the assessments to be carried out in a shorter period of time.

CHALLENGES

Several challenges were faced during implementation in the pilots, some of which include:

- Locating disaster-affected women within federally declared disaster counties.
- Difficulty finding eligible women of reproductive age to participate in the assessment.
- Low response rates among women of reproductive age approached to participate in the assessment.
- Difficulty staffing the interview teams, due limited financial resources

LESSONS LEARNED

To address the difficulty of locating women of reproductive age eligible to participate in the assessment, we modified the sampling approach by using census data to determine the median age of women living in the census block. Only census blocks where the median age was 45 years of age or younger were eligible for selection.

In an attempt to survey more disaster-affected women within federally declared disaster counties, we modified our sampling approach in the second pilot. In the first stage, census block groups were selected with probability proportionate to population from all census block groups in the counties where disaster-related deaths had been confirmed or where household damage had been reported through windshield surveys conducted by local officials.



To increase the response rate among women of reproductive age approached to participate in the assessment, interview teams approached households in the evenings and on weekends, as opposed to during business hours on weekdays. Interview teams found that women were often working during business hours on weekdays. Those who were at home during business hours on weekdays often could not take time away from their caregiving duties to participate in the assessment.

FUTURE STEPS

The RHAD Toolkit is free and easily accessible to interested users [online](#). Technical assistance and implementation support is available through the Emergency Preparedness and Response Program within the Division of Reproductive Health at CDC. Staff will conduct additional trainings on early steps to implementation of the toolkit at national meetings and workshops so as to facilitate its use by partners. The RHAD Toolkit provides user-friendly tools to quantitatively assess the reproductive health needs of disaster affected women. It allows states to collect data that can inform program planning, enhance services, and provide critical tools for advocacy and informed policy development.

COLLABORATIONS

The RHAD Toolkit was created in partnership by the Division of Reproductive Health at the Centers for Disease Control and Prevention and the University of North Carolina Center for Public Health Preparedness. Pilots were conducted in collaboration with local health departments in Johnston and Bertie Counties in North Carolina and Cobb and Douglas Counties in Georgia.

PEER REVIEW & REPLICATION

The RHAD Toolkit was introduced in a Report from the CDC in the *Journal of Women's Health* (2011). The sampling methodology has also been published in the *Journal of Women's Health* (2012).

- Zotti, ME & Williams, AM. (2011). Reproductive Health Assessment After Disaster (RHAD): Introduction of the RHAD Toolkit. Report from the CDC. *Journal of Women's Health*. 20(7), 1-5.
- Horney J, Zotti ME, Williams AM, Hsia J (2012). Cluster sampling with referral to improve the efficiency of estimating unmet needs among pregnant and postpartum women after disasters. *Women's Health Issues*. 2012; 22 (3): e253-e257. PMID: 22365134

The RHAD Toolkit has been presented at several national conference (in various stages of its development), including the Natural Hazards Research and Applications Workshop (2009), the Public Health Preparedness Summit (2011), the Reproductive Health Conference (2010), the Maternal and Child Health Epidemiology Conference (2011 and 2012), the Council for State and Territorial Epidemiologists Conference (2012), and the Association of Maternal and Child Health Programs Conference (2012).

RESOURCES PROVIDED

The RHAD Toolkit is available online at <http://cphp.sph.unc.edu/reproductivehealth/index.html>.

In addition, the RHAD Toolkit was also promoted in the AMCHP webinar "Emergency Preparedness and MCH: A guide to the Reproductive Health Assessment After Disaster (RHAD) Toolkit." Download the resources from that webinar at:

<http://www.amchp.org/CALENDAR/WEBINARS/WOMENS-HEALTH-INFO-SERIES/Pages/Women'sHealthInfoSeries-2012Archive.aspx#RHAD>.

Key words: Access to Health Care; Data, Assessment & Evaluation; Emergency Preparedness; Reproductive Health

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