Assessment of a Media Campaign and Related Crisis Help Line Following Hurricane Katrina

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SYNOPSIS

Objectives. We evaluated the impact of a media campaign targeting stress and depression following Hurricane Katrina. We specifically examined public response to the campaign's recommendation that people could contact a telephone help line for further assistance if needed.

Methods. Call data from Via Link allowed us to track trends in 800-number Crisis Line call volume (n=29,659), which is the number recommended in the media campaign, and 2-1-1 Information and Referral Line call volume (n=8,035), which is employed in a control-like manner. With data from April 1, 2006, through November 30, 2006, multivariate analysis was used to assess trends and differences among and within pre-intervention, intervention, and post-intervention.

Results. Information and Referral Line call volume, which was unrelated to the campaign, did not change over time. In contrast, Crisis Line call volume, which was related to the campaign, increased significantly from pre-intervention to intervention, but not from intervention to post-intervention. Furthermore, the daily rate of Crisis Line call volume was constant during pre-intervention, increased during intervention, but decreased during post-intervention.

Conclusion. There is support for the media campaign's influence on public behavior to contact Via Link in regard to stress and depression following Hurricane Katrina. Analysis helps undermine alternative explanations, including general trends in help line call volume and those specific to Crisis Line call volume.

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Previous research has examined various aspects of telephone help lines related to different concerns, including smoking cessation,[1] marital problems,[2] cancer,[3] home birth,[4] and gambling.[5] Some research has evaluated the benefits that such services can bring to callers. For example, extended telephone contact with a dementia help line led to an increase in use of community services and a decrease in caregiver burden.[6] Similarly, a study of a telephone help line for smokers found that 24% of the callers reported subsequent cessation.[7] In contrast, telephone support related to another tobacco help line did not lead to improvements in smoking cessation.[8]

Related research has evaluated the effectiveness of media initiatives that encourage the use of such telephone help lines. For example, antismoking public service announcements elicited an increase in the call volume of the Cancer Information Service.[9] In another study, soap operas with human immunodeficiency virus (HIV) prevention content and the displayed toll-free telephone number of the National Sexually Transmitted Disease and Acquired Immunodeficiency Syndrome Hotline spurred a dramatic rise in call volume.[10] Yet another study demonstrated the effectiveness of a media campaign that encouraged people to seek mental health services via a hotline following 9/11.[11] In contrast, a tobacco help line received fewer than three calls per month despite advertisements via a newsletter, refrigerator magnets, and mailings that included call incentives and provisions for a free computer-assisted smoking-cessation system.[12] Similarly, a televised smoking cessation program did not influence cessation, perhaps as a result of low use of the recommended telephone hotline.[13]

Amid this ambiguity, this study examined a media campaign that targeted stress and depression following Hurricane Katrina. Mental health consequences vary by disaster, partly as a result of the extent of the recovery period.[14] In the context of Hurricane Katrina, mental health problems, including post-traumatic stress disorder (PTSD), were rampant, as exemplified by the following four screening rates: 46% of hurricane shelter residents for depression in October 2005,[15] 44% of adult caregivers for psychological distress in February 2006,[16] 31% of adults for mental illness in February 2006 (as compared with nearly 16% before the hurricane),[17] and 63% and 46% of African American women and men, respectively, for PTSD from April to August 2006.[18] Such mental health problems are paramount because of their associations with increased morbidity and decreased quality of life.[19,20]

The current study evaluated the effectiveness of a media campaign in New Orleans that encouraged the public to call a telephone help line for assistance with stress and depression. The campaign's effectiveness in this regard was assessed with call volume data from the telephone help line. We could only locate one previous evaluation—the 9/11 study noted previously[11]—that involved a media campaign and related help line behavior in the context of mental health.

METHODS

Intervention

The media campaign ran for 11 weeks, from June 12, 2006, to September 8, 2006. Messages were broadcast on four radio stations in New Orleans that have a high reach in terms of the campaign's primary target population of African Americans. The messages were broadcast five times per weekday on each of the four stations, with weekly gross rating points (GRPs) of 142.5. This GRP level signifies that, on average, people in the target audience heard the messages about 1.5 times per week and 16 times during the campaign. These rates are quite high. For example, another media campaign in New Orleans had weekly radio GRPs of 70.2 for a similar target audience.[21]

From June 12 to July 21, three of six radio messages were specific to stress and depression. From July 24 to September 8, a total of five messages ran, each focusing on stress and depression. Thus, 50% of the campaign messaging dealt with stress and depression from June 12 to July 21, while all of the campaign messaging dealt with stress and depression from July 24 to September 8. Each message made a specific recommendation about a preventive behavior, including maintaining a normal and productive routine, staying socially and physically active, and working to resolve day-to-day conflicts.[22,23] Then, the messages indicated that further assistance could be requested by calling an 800-number, which was provided. The 800-number was that of Via Link (www.vialink.org), which aims to connect people with information and resources that can enable them to help themselves and others. With a focus on the metropolitan New Orleans area, Via Link provides callers with information and support, including clinician referrals, counseling, and crisis intervention. Via Link can be reached via its 800-number and by calling 2-1-1. The presence of these two numbers allows for creating a pseudo-treatment group (the 800-number, which was mentioned in the campaign messages) and a pseudo-control group (the 2-1-1 number, which was not mentioned in the campaign messages).

The recommendation of calling the 800-number for additional help with stress and depression served as a cue to action and stimulus to self-efficacy.[24] The

messages were tailored specifically for African Americans,[25,26] with radio messages spoken by two African American radio personalities who were generally known by the listening audience. Background music was new-age jazz- and hip hop-influenced rhythm and blues instrumental.

Data

Via Link call data from April 1, 2006, through November 30, 2006, were assessed. The current analysis implements Crisis Line call volume (n=29,659) as a pseudo-treatment group and Information and Referral Line call volume (n=8,035) as a pseudo-control group. Generally, the 800-number Crisis Line, which was referred to in the media campaign, receives calls in relation to emotional distress, abuse, violence, and everyday stresses. The 2-1-1 Information and Referral Line, which is unrelated to the recommendations made in the media campaign, generally receives calls for assistance with basic needs such as food, shelter, medical service assistance, and temporary financial assistance. Information and Referral Line call volume, as it was unrelated to the campaign recommendations, is a good ongoing marker of the public's use of a telephone help line unrelated to the focal media campaign following Hurricane Katrina.

Analysis

Four steps of statistical analysis were conducted using Stata 9.[27] In the first step, one-way analysis of variance (ANOVA) was used to assess whether there were differences in Information and Referral Line call volume among the three time periods: pre-intervention, intervention, and post-intervention. Information and Referral Line call volume was the dependent variable. In the second step, ordinary least squares (OLS) regression was used to test for daily change in Information and Referral Line call volume within each of the three time periods: pre-intervention, intervention, and post-intervention. In this regression analysis, Information and Referral Line call volume was the dependent variable, and a continuous variable representing days from April 1 through November 30 was entered as the independent variable.

In the third step, analysis of covariance (ANCOVA), with Information and Referral Line call volume entered as a covariate, was used to examine whether there were differences in Crisis Line call volume among the three time periods—pre-intervention, intervention, and post-intervention—and, if so, to specify the source of such difference (pre-intervention vs. intervention and/or intervention vs. post-intervention). In ANCOVA, Crisis Line call volume was the dependent variable, and concurrent Information and Referral Line call volume was the covariate. In the fourth step, OLS regression—with Information and Referral Line call volume used as a control variable—was implemented to assess for daily change in Crisis Line call volume during pre-intervention, intervention, and post-intervention. In this regression analysis, Crisis Line call volume was the dependent variable, concurrent Information & Referral Line call volume was entered as a control variable, and a continuous variable representing days from April 1 through November 30 was entered as the independent variable.

RESULTS

The Table depicts daily call volumes. For the Crisis Line, there was a dramatic increase in call volume, from 100.33 calls per day at pre-intervention to 125.32 calls per day at intervention to 134.39 calls per day at post-intervention. For the Information and Referral Line, there was a slight increase in call volume, with 29.76 calls per day at pre-intervention, 32.92 calls per day at intervention, and 35.29 calls per day at post-intervention.

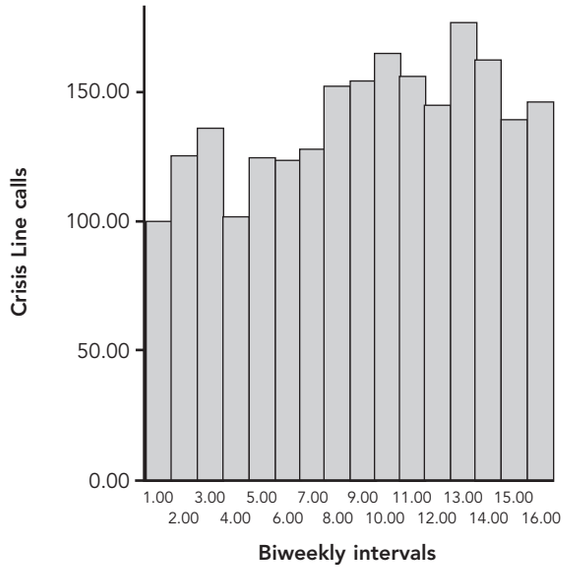
The Figure depicts biweekly Crisis Line call volume when adjusted for Information and Referral Line call volume. The Figure shows an increase in call volume related to the campaign when taking into account general trends in help line call volume unrelated to the media campaign recommendation. The increase in Crisis Line call volume occurred primarily during the weeks of the intervention (indicated as biweekly intervals 6–13). The trend of call volume at pre-intervention (see biweekly intervals 1–5) was inconsistent. The trend during the intervention (from biweekly intervals 6–13) had a steep slope, climbing to a peak during biweekly interval 13. At post-intervention (see biweekly intervals 14–16), call volume appeared to be on the decline. The rate of the increase during the intervention was steepest following July 24 (see biweekly intervals 8–13), when the campaign's focus on stress and depression increased from 50% to 100% of total messaging.

Table. Descriptive statistics of daily call volume

Time period	*Crisis Line mean (SD)*	*Information and Referral Line mean (SD)*
Pre-intervention	100.33 (34.01)	29.76 (18.10)
Intervention	125.32 (40.87)	32.92 (17.45)
Post-intervention	134.39 (52.07)	35.29 (15.93)

SD = standard deviation

Figure. Adjusted[a] biweekly Crisis Line call volume



[a]Adjusted for Information and Referral Line call volume

Step 1
ANOVA signified that Information and Referral Line call volume did not vary significantly across the three time periods, $F(2, 243)=2.17$, $p=0.117$.

Step 2
OLS regression indicated that Information and Referral Line call volume did not vary during any of the three time periods: pre-intervention ($\beta=-0.05$, $p=0.654$), intervention ($\beta=0.11$, $p=0.335$), or post-intervention ($\beta=0.06$, $p=0.592$).

Step 3
ANCOVA indicated that Crisis Line call volume varied significantly among the three time periods, $F(3, 243)=13.81$, $p<0.001$. Subsequent ANCOVA indicated that Crisis Line call volume varied significantly between pre-intervention and intervention—$F(2, 146)=11.74$, $p<0.001$—but not between intervention and post-intervention—$F(2, 171)=1.44$, $p=0.232$. This analysis indicates that Crisis Line call volume varied significantly among the three time periods and, more specifically, between pre-intervention and intervention, but not between intervention and post-intervention.

Step 4
OLS regression, with Information and Referral Line call volume entered as a control variable, indicated that daily Crisis Line call volume did not vary significantly during pre-intervention ($\beta=-0.03$, $p=0.796$), increased significantly during intervention ($\beta=0.16$, $p<0.05$), and decreased significantly during post-intervention ($\beta=-0.11$, $p<0.05$). These findings signify that Crisis Line call volume varied on a daily basis only during the intervention.

DISCUSSION

Analysis indicates invariance over time in Information and Referral Line call volume, while Crisis Line call volume was highest during the intervention, increasing on a daily basis only during this time period. These findings provide evidence of a media effects process in which the dissemination of the media campaign invoked an increase in the suggested behavior (i.e., calling Via Link for help with matters such as stress and depression). This is an important finding, suggesting the potential mental health benefit of media campaigns in post-disaster settings that are fraught with threats to mental health. This finding is generally consistent with those of the previous study that involved a media campaign and use of a telephone hotline for mental health services following 9/11.[11]

A strength of the current study's approach is its measurement of help line call behavior with call center data and not via respondents' self-report, an approach that could have been implemented with survey data. Another evaluation of this media campaign relied on survey data, but considered the campaign recommendations for specific PTSD preventive behavior, not its recommendation of contacting Via Link for further assistance. That study found support for a multistep model in which campaign attention influenced PTSD beliefs, which influenced PTSD preventive behavior, which, in turn, inversely influenced PTSD.[18]

While the current analysis indicates that Crisis Line call volume increased following the dissemination of campaign messages recommending such calls, it is important to consider potential alternative explanations for the increase including: (*1*) that help line call volume would be generally expected to increase following the hurricane, free of the influence of the media campaign and, perhaps, as a result of the continued psychological effects of the hurricane; and (*2*) that Crisis Line call volume would be expected to increase on a consistent basis following the hurricane, free of the influence of the media campaign and, perhaps, related to the differing nature of the two help lines.

The first alternative explanation would entail that help line call volume, either via the Crisis Line or Information and Referral Line, would increase following the hurricane. If this were the case, it would undermine this study's determination of the media campaign's

effectiveness. Such a general upward trend in help line call volume, however, is inconsistent with this study's demonstration that Information and Referral Line call volume did not vary among pre-intervention, intervention, and post-intervention. In contrast, Crisis Line call volume increased from pre-intervention to intervention. Thus, although Crisis Line call volume increased with the onset of the media campaign, Information and Referral Line call volume remained constant. This finding offers support for the media campaign's effectiveness, with its dissemination appearing to influence the behavior of calling the Crisis Line. Furthermore, there were no significant daily trends in Information and Referral Line call volume during pre-intervention, intervention, or post-intervention. In contrast, Crisis Line call volume increased at a significant daily rate during the intervention. That this rate was significant—in contrast with the daily rates of the Crisis Line at pre- or post-intervention and the Information and Referral Line at any of the three time periods—provides further support for the media campaign's effectiveness.

The second potential alternative explanation is that Crisis Line call volume would increase on a consistent basis following the hurricane, free of the influence of the media campaign and, perhaps, related to the differing nature of the two help lines. Such a consistent increase in Crisis Line call volume would undermine this study's determination of the media campaign's effectiveness. In such a scenario, differences in help line call volume could result from the differing nature of the two help lines. It is possible that there would be different trends in requests for basic assistance via the Information and Referral Line and requests for psychological assistance via the Crisis Line. Thus, it could be that the need for basic assistance remained constant, while the need for psychological assistance rose following the hurricane. This alternative explanation, however, does not hold up. The daily trend in Crisis Line call volume was constant during pre-intervention, steeply positive during intervention, and then negative during post-intervention. These trends indicate that there was a dramatic increase in Crisis Line call volume with the onset of the campaign intervention—and then a drop-off after the intervention.

It is important to consider such alternative explanations because of the difficulty of measuring the myriad potential influences in a study of this nature. The analysis conducted in this study helps mitigate such concerns and addresses the three primary elements of causation: (*1*) that X and Y covary, (*2*) that X precedes Y, and (*3*) that the relationship between X and Y is not spurious.[28]

CONCLUSION

This study demonstrates the effectiveness of a media campaign that recommended telephone help line use in regard to mental health. These findings have implications for research related to other types of help line functions and outcomes. As noted earlier, previous research provides mixed support for the media's capacity to stimulate call volume for health-related concerns including smoking cessation and HIV prevention.[9,10,12,13] The findings of this study, however, are clearer and consistent with one related 9/11 study.[11] The current analysis suggests the effectiveness of media messages in a unique context: post-Hurricane Katrina New Orleans. It is important that future research evaluate different media campaigns related to telephone help lines, with different audiences and different contexts. Such future study is critical because disasters and their mental health consequences differ greatly from one another.[14] In addition, research should assess whether increases in help line use, as demonstrated in this study, can lead to subsequent improvements in mental health indicators.

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REFERENCES

1. Owen L. Impact of a telephone helpline for smokers who called during a mass media campaign. Tob Control 2000;9:148-54.
2. Hunt PA. Relateline: an evaluation of a telephone helpline counselling service for marital problems. Br J Guidance Counselling 1993;21:277-89.
3. Rainey LC. Cancer counseling by telephone help-line: the UCLA Psychosocial Cancer Counseling Line. Public Health Rep 1985;100:308-15.
4. Shaw R, Kitzinger C. Calls to a home birth helpline: empowerment in childbirth. Soc Sci Med 2005;61:2374-83.
5. Potenza MN, Steinberg MA, McLaughlin SD, Wu R, Rounsaville BJ, O'Malley SS. Gender-related differences in the characteristics of problem gamblers using a gambling helpline. Am J Psychiatry 2001; 158:1500-5.
6. Coyne AC, Potenza M, Broken Nose MA. Caregiving and dementia: the impact of telephone helpline services. Am J Alzheimer Dis and Other Dementias 1995;10:27-32.
7. Platt S, Tannahill A, Watson J, Fraser E. Effectiveness of antismoking telephone helpline: follow-up survey. BMJ 1997;314:1371-5.
8. Lando HA, Rolnick S, Klevan D, Roski J, Cherney L, Lauger G. Telephone support as an adjunct to transdermal nicotine in smoking cessation. Am J Public Health 1997;87:1670-4.
9. Pierce JP, Anderson DM, Romano RM, Meissner HI, Odenkirchen JC. Promoting smoking cessation in the United States: effect of public service announcements on the Cancer Information Service telephone line. J Natl Cancer Inst 1992;84:677-83.
10. Kennedy MG, O'Leary A, Beck V, Pollard K, Simpson P. Increases in calls to the CDC National STD and AIDS Hotline following AIDS-related episodes in a soap opera. J Communication 2004;54:287-301.
11. Frank RG, Pindyck T, Donahue SA, Pease EA, Foster MJ, Felton CJ, et al. Impact of a media campaign for disaster mental health

counseling in post-September 11 New York. Psychiatr Serv 2006; 57:1304-8.
12. Glasgow RE, Lando H, Hollis J, McRae SG, La Chance PA. A stop-smoking telephone help line that nobody called. Am J Public Health 1993;83:252-3.
13. McFall SL, Michener A, Ruben D, Flay BR, Mermelstein RJ, Burton D, et al. The effects and use of maintenance newsletters in a smoking cessation intervention. Addict Behav 1993;18:151-8.
14. Gerrity ET, Flynn BW. Mental health consequences of disasters. In: Noji EK, editor. The public health consequences of disasters. Oxford: Oxford University Press; 1997. p. 101-21.
15. Beaudoin CE. News, social capital and health in the context of Katrina. J Health Care Poor Underserved 2007;18:418-30.
16. Abramson D, Garfield R. On the edge: children and families displaced by Hurricanes Katrina and Rita face a looming medical and mental health crisis. New York: Columbia University Mailman School of Public Health; 2006.
17. Kessler RC, Galea S, Jones RT, Parker HA; Hurricane Katrina Community Advisory Group. Mental illness and suicidality after Hurricane Katrina. Bull World Health Organ 2006;84:930-9.
18. Beaudoin CE. Evaluating a media campaign that targeted PTSD after Hurricane Katrina. Health Communication. In press.
19. Frayne SM, Seaver MR, Loveland S, Christiansen CL, Spiro A III, Parker VA, et al. Burden of medical illness in women with depression and posttraumatic stress disorder. Arch Intern Med 2004;164:1306-12.
20. Ouimette P, Cronkite R, Henson BR, Prins A, Gima K, Moos RH. Posttraumatic stress disorder and health status among female and male medical patients. J Trauma Stress 2004;17:1-9.
21. Beaudoin CE, Fernandez C, Wall JL, Farley TA. Promoting healthy eating and physical activity: short-term effects of a mass media campaign. Am J Prev Med 2007;32:217-23.
22. National Child Traumatic Stress Network and National Center for PTSD. Psychological first aid: field operations guide. Washington: National Center for PTSD; 2005.
23. Department of Health and Human Services (US). Coping with a traumatic event: information for the public. Washington: DHHS, Public Health Service, Centers for Disease Control and Prevention (US); 2003.
24. Janz NK, Becker MH. The Health Belief Model: a decade later. Health Educ Q 1984;11:1-47.
25. Kelman HC. Process of opinion change. Public Opinion Quarterly 1961;25:57-78.
26. McGuire WJ, McGuire CV, Child P, Fujioka T. Salience of ethnicity in the spontaneous self-concept as a function of one's ethnic distinctiveness in the social environment. J Pers Soc Psychol 1978; 36:511-20.
27. StataCorp. Stata: Version 9.0. College Station (TX): StataCorp.; 2005.
28. Menard SW. Longitudinal research. Newbury Park (CA): Sage Publications; 1991.