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Perceived health change in the aftermath of a petrochemical accident: an examination of pre-accident, within-accident, and post-accident variables

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Abstract

Background—Little research has been conducted on changes in perceived health after an industrial accident. Using data from an ongoing survey on stress and health in a petrochemical complex in Texas City, Texas, the associations of a petrochemical accident with perceived health changes were examined.

Methods—The mean changes in perceived mental and physical health across pre-accident, within-accident, and post-accident categories were compared. The association of these categorical variables with the change in perceived mental and physical health using multiple regression was also examined.

Results—Significant declines in both perceived mental and physical health were observed for the sample. Regression analyses showed that middle age, lower education level and reported damage in the neighbourhood were associated with decreases in perceived mental health. Lower education level, explosion impact, and distance from the explosion site were associated with decreases in perceived physical health.

Conclusions—These results indicate that both pre-accident and within-accident variables, such as education level and explosion impact, are associated with decreases in perceived physical and mental health. Even a modest event within the range of accidents and disasters was shown to be associated with negative health outcomes for a population-based sample.

Research on the health effects of disasters and accidents, both natural and technological, is becoming increasingly common. In the past 10 years, research has appeared on the impact of tsunamis,[1, 2] earthquakes,[3–5] hurricanes,[6] technological accidents,[7, 8] fires[9, 10] and explosions,[11, 12] among many others.[13–15] Reviews on research focusing on outcomes of disasters and accidents show marked effects on both the mental and physical health of those affected.[13–15] What is rare in public health research, however, is the ability to examine the impact of acute events on health with comparable data collected on exposed populations both before and after an event. In this research, we used pre and post-accident data to provide insight into the public health consequences of a deadly accident at a petrochemical refinery in Texas City, Texas.

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Although there is no agreed-upon definition of "disaster" vis-à-vis "accident", usage suggests that disasters entail more widespread destruction and extra-local assistance. Because there is more research on disasters, those types of events provide important clues about how smaller-scale but still significant accidents can affect health. Technological (eg industrial) disasters and accidents, which are different because individuals perceive them as preventable, are sometimes associated with greater anxiety and poorer mental health than natural disasters,[13, 16–18] but see Norris *et al*[19] for an exception.

One important element in the assessment of short-term and long-term effects on health is pre-disaster health status. The nature of unexpected events dictates that data collection is often post-disaster only, uses convenience samples, and often includes rapid assessment surveys.[12, 15, 20] Consequently, relatively little information is available on how disasters and accidents are associated with changes in health from pre to post-event.

In a systematic review on disaster research that yielded 225 disaster studies from 1981 to 2004, Norris[15] cited 10 studies that used pre and post-disaster information. Furthermore, only one study that focused on a technological accident had pre-accident measures. Therefore, little is known about the public health impact of technological accidents. The studies that contained pre and post-disaster health measures have primarily focused on children or adolescents[3, 6, 9, 10] and/or natural disasters.[4, 16, 21–27] For example, two studies examining children's mental health before and after natural disasters found increased psychological distress and behavioural problems after disasters.[22, 23] In addition, two studies that examined the impact of the 1993 midwest floods in Iowa on mental health showed that depressive symptoms increased after the floods and that those with lower income and education were more strongly affected.[17, 21] Although most of the pre and post-disaster measure studies found deleterious effects on mental and physical health, the severity of the impact tended to be smaller when accounting for pre-disaster health status.[14, 15] Findings from studies that account for pre-event health status reflect conservative estimates of the impact on health of a disaster or accident.

Texas City explosion

On 23 March 2005, an isomerisation unit at a British Petroleum refinery in Texas City, Texas, exploded. The blast killed 15 workers, and injured approximately 170 others.[28] Ten months later the press published information about ongoing environmental investigations stating that approximately 2500 pounds of benzene and 30 000 of other potentially dangerous air pollutants were released near the site during a four-week period after the blast.[29] The long-term effects from the explosion are still unknown. Researchers from the University of Texas Medical Branch in nearby Galveston, Texas, had been conducting a population-based survey on stress and health of Texas City residents since the previous July. After the explosion, investigators attempted to re-survey the 550 respondents from whom they had already collected data. This event presented an opportunity to provide information on the association of a technological accident with changes in perceived mental health and physical health.

We had two primary objectives in this analysis. First, we were interested in examining changes in perceived health from pre to post-explosion in a sample from the Texas City population. Second, we used a conceptual framework suggested by Freedy and colleagues[30] to examine the associations of characteristics of the respondents and of the accident with changes in perceived health pre and post-explosion. Their framework challenged the idea that disasters influence all victims similarly. They argued instead that individuals respond differently to the demands created by a disaster based on many types of factors: pre-disaster (demographic characteristics, such as gender, age, ethnicity); within-disaster (characteristics

of the disaster/accident exposure, impact of the disaster/accident); and post-disaster (other stressors and ongoing exposures). In this study, we applied this conceptual framework to organise variables possibly associated with health changes in a sample that experienced an industrial accident. While transferring a disaster framework to an accident event, the framework helped to clarify which types of risk factors are most important in understanding industrial accident sequelae.

METHODS

Study design

The sample for the current research was a subsample of the larger, ongoing study on stress, coping, and health in Texas City. The research design involved a multistage probability sample. The first stage included the selection of three ethnic strata: Mexican Americans aged 25–64 years, Mexican Americans aged 65 years and over, and non-Hispanic individuals. The second stage involved the selection of housing units in each stratum. In this stage all Hispanic housing units and one in eight non-Hispanic housing units were selected. The third stage included selecting one adult per household among Mexican Americans aged 25–64 years and among non-Hispanic individuals. All Mexican Americans aged 65 years and over were selected. Baseline interview response rates in the main study were 82%. The institutional review board at the University of Texas Medical Branch approved the study protocol, and informed consent was obtained from all participants.

At the time of the explosion, March 2005, 550 individuals had been interviewed. The sample on that date was derived from 16 randomly selected block aggregates (neighbourhoods) located within a 12-mile square area that borders the petrochemical complex. The study was designed so that at any time the sample would be representative of the entire city. From May 2005 to August 2005 (two to six months after the explosion), we successfully re-interviewed 315 of those 550 respondents (57%). An examination of the respondents compared with the non-respondents showed that the only significant differences were a larger proportion of men present in the follow-up, and non-participants had slightly higher baseline perceived physical health scores. We do not believe these differences materially affected our conclusions.

Survey

Selected and consenting residents were interviewed at baseline in their homes. The baseline survey instrument contains scales and items measuring a wide array of demographic, behavioural, social, and health indicators. Follow-up contact included both face-to-face interviews and telephone interviews. The follow-up instrument was a short version of the baseline survey containing selected scales and new items pertaining to the explosion.

Outcome measures

The outcome measures assessed two dimensions of perceived health with the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36).[31–34] This self-report measure contains both mental component scores and physical component scores through assessing functioning in eight domains of health and has been validated in a number of samples.[35–37] The scores are transformed to a 1 to 100 scale, in which the higher scores reflect better mental and physical health.[31, 33] The mean for the general US population is 50 (SD 10).[31, 33] We obtained complete SF-36 data for 312 of the 315 respondents.

Pre-accident variables

We categorised the variables in the analyses consistent with the conceptual framework for evaluating the impact of a disaster of Freedy and colleagues.[30] They recognised several

sociodemographic variables as potentially important pre-disaster variables that we addressed in this analysis. We assessed gender, age (less than 40, 40–60, greater than 60 years), marital status (married and not married), and education (categorical variable comparing those who have less than high school and high school degree with more than a high school degree). Both being female and middle aged are associated with increased psychological effects from disasters, although some studies have indicated that older adults are at an increased risk of poor health outcomes.[14] Marital status is a possible risk factor for distress after a disaster, with married women showing higher rates of distress.[14] Lower socioeconomic status is consistently shown to be associated with greater distress after a disaster.[14] Less is known about ethnicity, although some studies have shown an increased risk of distress for those who are from minority groups.[14] Ethnicity is examined across four categories: non-Hispanic black, non-Hispanic white, US-born Hispanic, and foreign-born Hispanic. In the multivariate analysis, we compared Hispanic and non-Hispanic black with non-Hispanic white individuals.

Within-accident variables

In the conceptual framework of Freedy and colleagues,[30] they argued that within-disaster characteristics, such as disaster exposure and cognitive appraisal of the disaster, are important for post-disaster adjustment. There are four variables related to explosion exposure. First, residence distance from the explosion was assessed and used as a continuous measure for the multivariate analysis. For descriptive comparisons, distance was dichotomised to compare respondents whose residence was closer to the explosion (within 1.5 miles) with those who lived further away. Second, the degree of impact was measured as an index created from three “yes or no” questions asking if respondents saw, felt, or heard the explosion (range 0–3 in the multivariate analysis). Again for descriptive comparisons, the degree of impact was dichotomised to reflect those respondents who saw, felt, and heard the explosion (considered “high impact”). Third, a series of questions were asked about injuries to self, household member, relative, or friend as a result of the explosion (“1” refers to yes on any of the questions). Very few respondents reported knowing anyone with injuries, so this variable was dichotomised to reflect those respondents who knew anyone who was injured compared with those who did not. Fourth, we asked respondents yes or no questions about property damage in the neighbourhood, to their homes, or to other personal property as a result of the explosion (1 refers to any damage). Except for damage in the neighbourhood, a small percentage reported damage; thus, the variable was dichotomised to reflect any damage versus no damage.

Post-accident variables

The framework of Freedy and colleagues[30] includes post-disaster variables that affect adjustment to a disaster. These include factors that amplify stress from the disaster, such as other acute and chronic stress, but could also potentially include other variables related to amplifying the stress of a disaster or accident, such as continued exposure to media coverage of the event. In this study, two variables assessed exposure to explosion media coverage. We categorised respondents as those who reported following the news a little or not at all and those who followed it more closely. This variable was dichotomised to reflect more exposure, because most individuals reported following the news very closely. The other variable captured the primary medium through which respondents received their information about the explosion and aftermath (ie television, radio, newspaper), which was dichotomised into television versus other media. The majority of respondents reported receiving information via television (61%).

Analysis

Our analysis focused on the mental and physical health component scores of the SF-36. We used paired *t*-tests to analyse the change in perceived health from pre to post-explosion across the pre-accident, within-accident, and post-accident variables. Changes experienced by various groups were compared using *t*-tests or analyses of variance (ANOVA). In addition, we analysed the associations of pre-accident, within-accident, and post-accident variables with changes in mental and physical health scores after the explosion using ordinary least squares regression. This regression method is appropriate for continuous, normally distributed variables, such as the mental and physical component scores of the SF-36. All analyses were conducted using SAS 9.13 (SAS Institute Inc., Cary, North Carolina, USA).

RESULTS

Table 1 shows the sample distribution among the categorical variables used in the analyses. The sample was two-thirds female, primarily married, and approximately 29% were older than 60 years. Approximately 32% lived closer than 1.5 miles to the border of the plant; 72% saw, heard, and felt the explosion, and only approximately 13% knew anyone who was injured. In addition, 65% did not experience any kind of property damage. Finally, almost 80% followed the media relatively closely after the accident, and 61% received their primary information via television.

Table 2 presents the means for the SF-36 components before and after the explosion for the total sample. There were significant declines in the perceived mental and physical health scores, 2.7 points and 3.6 points, respectively.

Table 3 shows two sets of descriptive analyses. First, the rows of the table show the paired *t*-test results for the mean change in perceived health scores from pre to post-explosion. Second, the columns indicate the probability (p) values from the two-sample *t*-tests and ANOVA for the mean change in perceived mental and physical health scores compared across pre-accident, within-accident, and post-accident variables. Examining the rows first, statistically significant declines in mental health scores from pre to post-explosion exist for many of the pre-accident variables. For example, women, on average, had a 2-point decline in mental health scores from pre to post-explosion ($p = 0.044$), whereas men had an average decline of 3.7 points ($p = 0.005$). Furthermore, foreign-born Hispanic respondents showed a statistically significant decline in the mental health score ($p = 0.008$).

Focusing on the within-accident variables, respondents who lived closer to the explosion site ($M = -5.3$, $p<0.001$) exhibited declines in mental health scores. Both low and high impact groups also showed perceived mental health declines. Respondents who knew someone who was injured in the blast showed a decrease of over 4 points in the perceived mental health score, whereas those who did not know anyone also showed declines. In addition, respondents who experienced some property damage reported significant declines in perceived mental health. Finally, turning to the post-accident variables, respondents who stated that television was their primary source of news about the explosion and those who followed the media more after the explosion reported statistically significant declines in perceived mental health.

In addition, table 3 shows the results for declines in the physical component score. The primary difference between the perceived mental and physical health declines is that virtually all respondents across the accident variables showed statistically significant declines in physical health scores. With the exception of respondents who scored lower on

the impact variables, all others reported lower perceived physical health scores after the explosion.

The second set of analyses shown in table 3 is the results of comparative analyses of the categorical variables perceived health change within each subcategory. No significant differences in change scores were apparent within the pre-accident variables. Table 3 indicates, however, that respondents who lived within 1.5 miles of the explosion site had a mean decline of 5.3 points in the mental component score compared with 1.4 points for respondents who lived further away ($p = 0.02$). Similarly for physical health, respondents who lived closer to the explosion site reported a mean decline of 5.5 points compared with 2.7 points for those who lived further away ($p = 0.007$). In addition, respondents who reported that they saw, felt, and heard the explosion reported a sharper mean decline in the physical component score ($M = -4.4$ versus -1.2, $p = 0.003$). Finally, respondents who reported some property damage had a mean decline of almost 6 points in the mental health component score compared with approximately 1 point for those who did not have any damage in their neighbourhoods ($p<0.01$).

To address the association of pre-accident, within-accident, and post-accident variables on declines in perceived health, we examined two ordinary least squares regression models. The first model in table 4 shows that two pre-accident and one within-accident variables are associated with a decline in mental health scores from pre to post-explosion: being middle aged (40–60 years), having less than a high school degree, and reporting damage within the neighbourhood were associated with declines in perceived mental health. The second model indicates that being younger and further away from the explosion site were associated with better post-explosion perceived physical health scores. On the other hand, having a high school degree (compared with more than high school) and scoring higher on the explosion impact score were associated with declines in physical health scores.

DISCUSSION

The goals of this research were to examine the associations of a fatal explosion at a petrochemical plant with residents' perceived health and to examine characteristics that were connected to changes in perceived health. Disaster research often provides information on post-disaster health only, and the few prospective studies that include data on disasters have primarily focused on natural disasters. We had the advantage of pre and post-event data to analyse, and our data allowed us to examine pre-accident, within-accident, and post-accident variables that were associated with perceived health declines.

In general, findings from the study indicated a decline in perceived mental and physical health after the explosion. Moreover, the magnitude of change appeared to be significant from a public health perspective. Previous research has shown that the SF-36 is a relatively stable measure, with minimal changes over a three-year time period.[38] In the current study, the results indicated changes from pre to post-accident ranging in magnitude from approximately 1 to almost 6 points. These results suggest that the perceived health declines approached average declines reported by patients with chronic conditions.[35]

The results presented in tables 3 and 4 are an assessment of the role that accident variables play in potential changes in health from a technological accident. Focusing on pre-accident variables, the results from this study were consistent with previous research on disasters, suggesting that lower socioeconomic status is related to poorer functioning after a disaster.[15] In the current study, having less education was associated with decreased perceived mental health from pre to post-accident, and having a high school degree (as opposed to more than high school) was associated with lowered perceived physical health from pre to post-

accident. The effects of age on post-disaster functioning appeared to be less clear.[15] Our findings were, however, consistent with some previous research on post-disaster health such that, in the current study, being younger was associated with improved perceived physical health, and being middle aged (40–60 compared with 61 years and older) was associated with decreased perceived mental health.[14] The findings with respect to gender and ethnicity were not consistent with research on post-disaster health. A recent review article suggested that women tend to have higher post-disaster stress and distress.[14] In the current study, there were no significant effects of gender on changes in perceived health. Although research on race/ethnicity with respect to the impact of disasters is not extensive, limited research has suggested that minority status is related to poor health after a disaster.[39]

Similar to the literature on disasters ranging from firework explosions to floods, our findings suggested that within-accident variables were significantly associated with health changes after a petrochemical accident.[14, 15] Research on the health effects of disasters overwhelmingly points to the important role of the degree of exposure to and impact of the disaster on negative health outcomes.[13–16] The current study was no different. Distance from the explosion site, explosion impact, and reported property damage were three correlates of decreased perceived health. For example, in the model assessing change in perceived mental health, only education and baseline perceived health were stronger predictors of change than reported property damage.

Finally, the only two variables that were included in the current study that reflected the nature of post-disaster measures were media exposure items. Post-disaster characteristics referred to acute or ongoing experiences in the weeks after a disaster that affected the level of adjustment.[30] We asserted that increased exposure to media, especially television with repeated imagery, could be an aspect of an ongoing experience that affected adjustment. Media exposure, however, as measured in this study, was not significantly associated with declines in perceived health.

There are two primary contributions of the current study to the larger field of disaster research. First, using the conceptual model of disaster characteristics of Freedy and colleagues[30] to describe variations in responses to disasters was useful in determining which types of variables were associated with declines in perceived health after an industrial accident. This framework and others similar to it have been used in summarising and reviewing the literature on the effects of disaster but have not been applied to specific research on the effect of a disaster or accident, but see Van den Berg *et al*[20] for an exception. Future research examining the harmful consequences of disasters and accidents would benefit from investigating effects from such a conceptual framework. Second, findings from the current study included both pre and post-accident data and suggested that the 2005 Texas City explosion, a relatively minor event within the domain of disaster research, was associated with declines in perceived health. Not only was exposure to such an event important, but also age and education appeared to be risk factors for diminished health.

Limitations

There are several limitations of the current study. First, the findings could be skewed by the length of time to re-survey after the explosion. Although the survey targeted two to six months after the accident, the first interviews from the parent survey began in July 2004, approximately eight months before the explosion (although 70% of the surveys were carried out between October 2004 and March 2005, when the explosion occurred). It is conceivable that the perceived health changes were less than they would have been had the timeframe been shorter between pre and post-explosion. Second, the response rate of 57% in the follow-up from the accident was less than desirable. It is possible that perceived health

changes were either under or overestimated depending on whether individuals who did not participate experienced the accident to a lesser or greater degree. Several other studies focusing on disasters have, however, had comparable follow-up rates.[3, 10, 26] Third, using the SF-36 to address changes in perceived mental health after an industrial accident may have resulted in underestimations of the true fluctuation in mental health. Using measures that are more adept at focusing on specific mental health responses, such as posttraumatic stress or depression, probably provide more accurate estimates of mental health responses to an industrial accident. Nonetheless, we were still able to detect changes in both perceived mental and physical health suggesting that those changes are not inconsequential.

CONCLUSION

The results from this study suggest that an industrial accident has a potentially important influence on both perceived mental and physical health of respondents in the surrounding area, most of whom were not directly affected by the accident (ie no personal injuries or damage to property). Declines in health scores from pre to post-explosion were evident across the total sample and were especially evident among those who experienced the explosion to a greater degree. We thus found that the within-accident variables, which focused on the exposure to the explosion, showed the most consistent associations with declines in perceived physical and mental health. Through a better understanding of factors that influence declines in health after an accident of this type, healthcare workers may be better able to target those who are at risk of declines in health.

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What this paper adds

The results from this study suggest that even a minor industrial accident has a potentially important influence on both the perceived mental and physical health of individuals. Respondents in the surrounding area, most of whom were not directly affected by the accident, still experienced declines in perceived health. These results indicate that both pre-accident and within-accident variables, such as education level and explosion impact, are associated with decreases in perceived physical and mental health. These results show how even a modest event within the range of accidents and disasters is associated with negative health outcomes for a population-based sample.

Policy implications

Through the better understanding of risk factors that influence declines in health after a petrochemical accident, healthcare workers may be better able to target those who are at risk of declines in health.

Table 1

Characteristics of the Texas City sample

Sample variables	Count	Percentage
Pre-accident		
Women	112	64.3
Men	202	35.7
Aged less than 40 years	103	32.7
Aged 40–60 years	122	38.7
Aged older than 60 years	90	28.6
Married	174	55.2
Not married	141	44.8
Less than high school	131	42.1
High school degree	100	32.2
More than high school	80	25.7
US-born Hispanic	123	39.6
Foreign-born Hispanic	78	24.1
Non-Hispanic black	30	9.6
Non-Hispanic white	80	25.7
Within accident		
Lives closer than 1.5 miles	101	32.1
Lives 1.5 miles and further	214	67.9
High impact	227	72.3
Lower impact	87	27.7
Anyone known injured	40	12.7
No-one known injured	275	87.3
Property damage anywhere	109	34.6
No property damage	206	65.4
Post accident		
Less exposed to media coverage	70	22.3
More exposed to media coverage	244	77.7
Primary information via television	192	61.0
Primary information via other media	123	39.1

Table 2

Comparison of the components of the SF-36 of the Texas City sample before and after the explosion on 23 March 2005 (n = 312)

	Before means (SD)	After means (SD)	Paired *t*-test p value (n)
Mental health	50.4 (11.6)	47.7 (13.3)	0.001
Physical health	49.3 (10.7)	45.7 (11.5)	<0.001

Table 3

Comparison of the change in the mental health and physical health components of the SF-36 between groups of the Texas City sample before and after the explosion on 23 March 2005

	Mean change in mental health (SD)	Paired *t*-test p Value	Mean change in physical health (SD)	Paired *t*-test p Value	n
Pre-accident					
Women	−2.0 (14.2)	0.044	−3.9 (9.1)	<0.001	200
Men	−3.7 (13.7)	0.005	−3.1 (7.7)	<0.001	112
Two-sample *t*-test	0.307		0.460		
Aged less than 40 years	−0.7 (14.3)	0.628	−2.8 (7.1)	<0.001	102
Aged 40–60 years	−4.1 (13.6)	0.013	−4.6 (9.1)	<0.001	120
Aged older than 60 years	−2.9 (14.0)	0.055	−3.0 (9.3)	0.029	90
ANOVA df 2	0.194		0.225		
Married	−3.4 (13.6)	0.001	−3.3 (7.6)	<0.001	174
Not married	−1.7 (14.4)	0.178	−3.9 (9.7)	<0.001	138
Two-sample *t*-test	0.274		0.545		
Less than high school	−4.3 (13.4)	<0.001	−3.6 (8.4)	<0.001	130
High school degree	−1.6 (15.3)	0.312	−4.6 (8.8)	<0.001	100
More than high school	−1.5 (13.3)	0.320	−2.0 (8.4)	0.045	78
ANOVA df 2	.231		.126		
US-born Hispanic	−2.0 (14.3)	0.117	−4.3 (9.2)	<0.001	122
Foreign-born Hispanic	−4.1 (13.2)	0.008	−3.0 (7.1)	<0.001	78
Non-Hispanic black	−5.4 (15.4)	0.066	−3.9 (8.6)	0.020	30
Non-Hispanic white	−0.9 (13.7)	0.543	−3.1 (9.0)	0.003	79
ANOVA df 3	0.343		0.708		
Within accident					
Lives closer than 1.5 miles	−5.3 (12.3)	<0.001	−5.5 (9.1)	<0.001	101
Lives 1.5 miles and further	−1.4 (14.6)	0.175	−2.7 (8.2)	<0.001	211
Two-sample *t*-test	0.020		0.007		
High impact	−2.1 (14.2)	0.031	−4.4 (8.6)	<0.001	226
Lower impact	−3.9 (12.9)	0.008	−1.2 (8.0)	0.175	83
Two-sample *t*-test	0.309		0.003		
Anyone known injured	−4.6 (12.3)	0.023	−4.3 (7.8)	0.002	40

	Mean change in mental health (SD)	Paired *t*-test p Value	Mean change in physical health (SD)	Paired *t*-test p Value	n
No-one known injured	−2.3 (14.2)	0.007	−3.5 (8.7)	<0.001	266
Two-sample *t*-test	0.337		0.587		
Any property damage	−5.8 (15.1)	<0.001	−4.6 (9.4)	<0.001	108
No property damage	−1.0 (13.1)	0.297	−3.1 (8.1)	<0.001	204
Two-sample *t*-test	0.004		0.130		
Post-accident					
Less exposed to media coverage	−3.3 (15.2)	0.07	−4.7 (8.4)	<0.001	70
More exposed to media coverage	−2.5 (13.7)	0.006	−3.2 (8.6)	<0.001	241
Two-sample *t*-test	0.656		0.216		
Primary information via television	−3.1 (13.6)	0.002	−3.5 (8.6)	<0.001	191
Primary information via other media	−2.0 (14.6)	0.134	−3.5 (8.5)	<0.001	119
Two-sample *t*-test	0.493		0.994		

ANOVA, Analysis of variance.

Table 4

Multiple regression model estimates for mental and physical health SF-36 component scores at follow-up (n = 307)

	Standardised estimate	*t* Value	Pr > *t*
Mental component score			
Pre-accident			
Female	0.001	0.02	0.986
Aged less than 40 years*	−0.089	−1.16	0.246
Aged 40–60 years*	−0.131	−2.03	0.043
Married	−0.010	−0.18	0.855
Black	20.089	−1.50	0.135
Hispanic	0.020	0.31	0.756
Less than high school†	−0.172	−2.41	0.017
High school degree†	−0.027	−0.42	0.673
Within accident			
Distance	−0.018	−0.31	0.759
Impact	0.081	1.49	0.137
Know anyone injured	−0.066	−1.23	0.221
Any property damage	−0.160	−2.83	0.005
Post-accident			
More media exposure	0.047	0.87	0.387
Primarily television	−0.072	−1.28	0.200
Baseline MCS	0.316	5.74	<0.0001
Baseline PCS	0.172	3.04	0.003
R^2	0.242		
Physical component score			
Pre-accident			
Women	−0.024	−0.59	0.556
Aged less than 40 years‡	0.144	2.72	0.007
Aged 40–60 years‡	0.008	0.16	0.867
Married	0.050	1.20	0.231
Black	0.010	0.22	0.824
Hispanic	0.022	0.44	0.662
Less than high school§	−0.041	−0.75	0.453
High school degree§	−0.098	−1.97	0.050
Within accident			
Distance	0.090	2.02	0.045
Impact	−0.098	22.36	0.019
Know anyone injured	−0.012	−0.26	0.796
Any property damage	−0.017	−0.39	0.700
Post-accident			

	Standardised estimate	*t* Value	Pr > *t*
More media exposure	0.035	0.85	0.394
Primarily television	−0.012	−0.28	0.780
Baseline MCS	0.127	3.00	0.003
Baseline PCS	0.647	14.96	<0.0001
R^2	0.552		

MCS, Mental component score; PCS, physical component score.

The comparison category for age is 61 years and older; for ethnicity, it is non-Hispanic white; for education, it is more than a high school degree.

*Age F-test df 2, p = 0.129.

†Education F-test df 2, p = 0.029.

‡Age F-test df 2, p = 0.005.

§Education F-test df 2, p = 0.131.