



Published in final edited form as:

J Trauma Stress. 2009 February ; 22(1): 20–27. doi:10.1002/jts.20377.

Losing a Loved One to Homicide: Prevalence and Mental Health Correlates in a National Sample of Young Adults

Heidi Zinzow¹, Alyssa A. Rheingold¹, Alesia Hawkins¹, Benjamin E. Saunders¹, and Dean G. Kilpatrick¹

¹National Crime Victims Research and Treatment Center, Department of Psychiatry and Behavioral Sciences, Medical University of South Carolina, Charleston, SC

Abstract

The present study examined the prevalence, demographic distribution, and mental health correlates of losing a loved one to homicide. A national sample of 1753 young adults completed structured telephone interviews measuring violence exposure, mental health diagnoses, and loss of a family member or close friend to a drunk driving accident (vehicular homicide) or murder (criminal homicide). The prevalence of homicide survivorship was 15.2%. African Americans were more highly represented among criminal homicide survivors. Logistic regression analyses found that homicide survivors were at risk for past year posttraumatic stress disorder (OR = 1.88), major depressive episode (OR = 1.64), and drug abuse/dependence (OR = 1.77). These findings highlight the significant mental health needs of homicide survivors.

Keywords

homicide survivors; mental health; prevalence; PTSD; depression

In 2004, homicide claimed the lives of 16,611 victims (CDC, 2004). Each murder leaves behind 7 to 10 close relatives, in addition to friends, neighbors, and co-workers (Redmond, 1989). Therefore, the number of individuals affected is far greater than the number of direct homicide victims. "Homicide survivors," also called "co-victims" are generally defined as the friends, family, and loved ones that survive murder victims (including victims of drunk driving accidents, or vehicular homicide). While direct victims of homicide receive substantial attention in society and research reports, homicide survivors are infrequently acknowledged. However, the unexpected, violent loss of a loved one is a potentially traumatic event that can have significant psychological implications.

Homicide survivors suffer from both similar and unique experiences in comparison to direct victims of crime. Similar to other crime victims, homicide survivors may contend with economic stressors, stigmatization, fear of recurrence, anxiety when encountering reminders of the event, negative beliefs about themselves and the world, and feelings of guilt and responsibility. In contrast to other crime victims, homicide survivors often face greater intrusion of the media and criminal justice systems, strained relationships with friends or family members that are suspected perpetrators, and preoccupation with revenge (see Hertz, Prothrow-Stith, & Chery, 2005). These stressors may contribute to the risk for mental health problems among homicide survivors. An understanding of the impact of homicide is of particular

significance for young adults, who suffer from the highest victimization rates of any age group (Fox & Zawitz, 2007).

Little empirical research has examined the prevalence of homicide survivorship or its relationship to psychiatric disorders. One prior study reported a 9.3% prevalence of vehicular and criminal homicide survivors among a nationally representative sample of adults (Amick-McMullan, Kilpatrick, & Resnick 1991). Among this sample, 2.8% had lost an immediate family member, 3.7% had lost other relatives, and 2.7% had lost close friends to homicide. The majority of homicide survivors were white (66% of criminal homicide and 82% of vehicular homicide survivors), followed by African American (30% of criminal homicide and 10% of vehicular homicide). Furthermore, most were female, high school graduates, and currently employed. Surveys have indicated that direct homicide and violence victims are disproportionately represented among African Americans and individuals from low income levels (Bureau of Justice Statistics, 2007; Fox & Zawitz, 2007). However, no known studies have compared characteristics of indirect victims of homicide to non-victims.

Regarding mental health problems, several descriptive studies suggest that homicide survivors are at risk for posttraumatic stress disorder (PTSD) and general psychiatric symptoms (Amick-McMullan et al., 1991; Amick-McMullan, Kilpatrick, Veronen, & Smith, 1989; Freedy, Resnick, Kilpatrick, Danksy, & Tidwell, 1994; Murphy, Johnson, Wu, Fan, & Lohan, 2003; Murphy, Johnson, & Lohan, 2002; Parkes, 1993; Thompson, Norris, & Ruback, 1998). For example, those who have lost family members to violent death have been found to have higher prevalence rates of PTSD in comparison to direct crime victims (Freedy et al., 1994) and in comparison to parents who have lost loved ones to suicide or accidents (Murphy et al., 2003). Symptoms frequently include intrusive images of the violent death, avoidance of reminders of the death or loved one, overwhelming thoughts of revenge, numbing, and intense grief (e.g., Amick-McMullan et al., 1989). Although studies have demonstrated that trauma-exposed individuals are at risk for substance use disorders (e.g., Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997; Kilpatrick, Acierno, Saunders, Resnick, Best, & Schnurr, 2000), investigators have yet to explore whether losing a loved one to homicide represents a specific risk factor for substance use problems. Moreover, no known studies have examined whether homicide survivorship is a significant predictor of mental health outcomes in representative samples of survivors and non-victims.

Victims of violent crime frequently experience more than one traumatic event in their lifetimes (e.g., Saunders, 2003). Furthermore, criminal victimization is correlated with demographic factors such as racial/ethnic status and socioeconomic status, which represent risk factors for psychiatric disorders (Kilpatrick & Acierno, 2003). Therefore, it is sometimes difficult to attribute psychiatric symptoms to a particular traumatic event. More studies are needed that control for risk factors such as demographic variables and prior trauma history, in order to better understand the effects of traumatic events like homicide victimization.

The current study had three primary aims: 1) to determine the prevalence and distribution of homicide survivorship among a national sample of young adults, 2) to evaluate demographic differences between homicide survivors and the general population, and 3) to determine whether losing a loved one to homicide serves as a unique predictor of psychiatric symptoms, above and beyond the contributions of other risk factors. It was hypothesized that homicide survivors would be more likely to identify as female, African American, and of low income status in comparison to non-survivors. Based on the uniquely stressful nature of homicide survivorship and prior research linking homicide to mental health outcomes, it was expected that homicide survivors would demonstrate increased risk for psychiatric symptoms, beyond the contribution of other risk factors.

Method

Participants

Schulman, Ronca and Bucavala, Inc. (SRBI; a national survey research firm) conducted follow-up interviews with a national probability sample of 3,161 adolescents and a central city oversample of 862 adolescents who had completed Wave 1 interviews (collected in 1995) as part of the National Survey of Adolescents (NSA). Sample selection and interviewing of the original sample were conducted using a multi-stage, stratified, area probability random digit dialing procedure to produce a representative sample of adolescents based on U.S. Bureau of the Census (1988) estimates of the 1995 adolescent population. Parental permission was obtained to interview a randomly selected adolescent, and the adolescent gave permission and completed the interview in 75% of eligible households. The data presented here are drawn from the 1,753 participants who completed Wave 2 of data collection in 2004. Because a detailed description of the original NSA sample and methodology has been provided elsewhere (e.g., Kilpatrick et al. 2000; Kilpatrick, Ruggiero, et al., 2003), this description will focus primarily on measures and procedures central to the present study.

Males (50.2%) and females (49.8%) were equally represented. The majority of the sample was Caucasian non-Hispanic (73.7%), 13.0% was African-American, non-Hispanic, 7.9% was Hispanic, 1.8% was Asian-American, non-Hispanic, 1.0 % was Native American, non-Hispanic, and 2.6% was of mixed race. Age at Wave 2 data collection ranged from 18 to 26 (Mean = 22.12). Only 5.8% had less than high school education at Wave 2. Forty-seven percent reported they were employed full-time and 17.6% reported they were employed part-time, while 21.5% were students and 13.3% were unemployed at Wave 2.

Procedures

The research protocol was reviewed and approved by the appropriate Institutional Review Board's human participant review committee. Telephone interviews were conducted in English or Spanish, based on participant preference. A highly structured interview was conducted via telephone using a Computer Assisted Telephone Interviewing (CATI) technology such that questions appeared on a computer screen to be read verbatim by highly trained interviewers. This format facilitated complex skip patterns, reduced data entry errors, and insured that questions were asked as written. Two steps were taken to increase the likelihood that participant answered questions honestly and with a reasonable degree of privacy. First, the interviewer specifically asked whether participants were in a location where they could be assured of privacy and could answer freely. If participants indicated that they could not, the interviewer offered to call back at another time when privacy was more likely. Second, the interview was designed primarily with closed-ended questions, enabling participant to respond to questions with a simple "yes" or "no," or other one-word or phrase answers. Thus, anyone listening to a respondent's answers would be unlikely to hear anything that would place the respondent at risk. Participants received a \$5 incentive by mail for completing the interview. See Kilpatrick et al. (2000) for additional information on participant protection.

Measures

The interview was designed to collect information across several domains, including demographic variables, exposure to violence, psychiatric disorders, and exposure to other potentially traumatic events including the loss of a family member or close friend to homicide.

Demographics—Biographical variables were assessed including gender, racial/ethnic status, age, income, educational achievement, and student status. Race/ethnicity was assessed using standard questions employed by the U.S. Bureau of the Census (1988). Four dummy-coded variables referred to each of the following groups: African American, non-Hispanic;

Asian American, non-Hispanic; and Hispanic. Caucasian, non-Hispanic participants served as the reference group. Participants chose from one of ten categories to reflect their estimated household income. These categories were collapsed to create a dichotomous variable to represent low income (household income less than \$15,000; $n = 1016$, 58.0%). Age at time of assessment was dichotomized (“0” = 18-22 years; “1” = 23-26 years). Gender was coded “0” for male and “1” for female.

Violence Exposure—Behaviorally specific questions regarding four types of events (serious accident, physical assault, sexual assault, serious witnessed violence) were used to construct a dichotomous variable representing any violence exposure. Sexual assault was defined as forced (a) vaginal or anal penetration by an object, finger, or penis; (b) oral sex; (c) touching of the respondent’s breasts or genitalia; or (d) respondents’ touching of another person’s genitalia. Physical assault was defined as having been: (a) attacked or threatened with a gun, knife, or some other weapon; (b) attacked by another person with perceived intent to kill or seriously injure; (c) beaten and injured (i.e., “hurt pretty badly”) by another person; (d) spanked so forcefully that the respondent sustained welts or bruises, or required medical care; or, (e) cut, choked, or burned by a caregiver as a punitive consequence. Witnessed violence included having observed someone: (a) shoot someone with a gun; (b) cut or stab someone with a knife; (c) threaten someone with a gun, a knife, or other weapon; (d) mug or rob someone; or (e) rape or sexually assault someone.

Mental health problems—*Post-traumatic stress disorder (PTSD)* symptoms were assessed with a modified version of the National Women’s Study (NWS) PTSD Module (Kilpatrick, Resnick, Saunders, & Best, 1989), which assessed each DSM-IV criterion with the exception of functional impairment (American Psychiatric Association, 2000), and has demonstrated good convergent validity with the Structured Clinical Interview for DSM-III-R (Spitzer, Williams, & Gibbon, 1987). Participants indicated past 12 month symptom endorsement with a yes/no response (see Kilpatrick et al., 2000), and a dichotomous variable was used to represent participants meeting PTSD criteria. Cronbach’s alpha for the PTSD module for this sample at Wave 1 was .87 (Kilpatrick et al., 2003) and .89 at Wave 2, indicating good internal consistency.

Major Depressive Episode (MDE) symptoms were assessed using the NWS Depression Module, a structured interview that targets DSM-IV MDE criteria, with the exception of functional impairment. Participants indicated past 12 month symptom endorsement with a yes/no response. A dichotomous variable was used to represent participants who met MDE criteria. This module has been used in previous studies examining mental health correlates of interpersonal violence and terrorism (e.g., Duncan, Saunders, Kilpatrick, Hanson, & Resnick, 1996; Galea et al., 2002; Saunders et al., 1999). Cronbach’s alpha coefficient for this sample was .85 at Wave 1 and .90 at Wave 2.

Alcohol and drug abuse/dependence (AA/D)—Past year alcohol abuse/dependence was represented as a dichotomous variable and was assessed by structured interview items that followed DSM-IV criteria (American Psychiatric Association, 2000) Functional impairment was assessed by 8 items that asked whether participants had alcohol-related social, occupational, or legal problems during the past year. Cronbach’s alpha for the alcohol abuse/dependence module for this sample was .60 at Wave 2.

Drug Abuse/Dependence (DA/D)—The dichotomous drug abuse/dependence variable was defined as past year non-experimental substance use associated with functional impairment. Several items assessed past year non-experimental substance use, which was defined as using drugs non-medically on four or more occasions. Participants were asked about the following types of substances: tranquilizers, sedatives, stimulants, amphetamines, opioids, steroids, marijuana, cocaine, hallucinogens, inhalants, and club drugs (MDMA, GHB,

Ketamine, Rohypnol). Functional impairment was measured via 5 items assessing social, occupational, academic, health, and legal problems. Cronbach's alpha for the drug abuse/dependence module for this sample was .65 at Wave 2.

Survivor of homicide—The loss of a friend or family member to homicide or drunk driving was assessed by the following question: “Has a close friend or family member ever been deliberately killed or murdered by another person or killed by a drunk driver?” Responses were recorded as “yes” or “no” to homicide, drunk driving death, or both, and respondents were allowed to use their own judgment regarding what constituted a “family member” or “close” friend. Chi-square analyses revealed no significant differences between criminal and alcohol-related vehicular homicide survivors on mental health outcomes. Therefore, they were combined into one group for analyses involving mental health outcomes. Participants were also asked to describe their relationship to the victim, and their responses were coded into one of 15 categories. These categories were condensed into 6 categories for the purpose of this study: current or former spouses; parents or stepparents; siblings; current or former intimate partners; close friends; and other relatives. Finally, age at time of death was assessed.

Data Analysis

Attrition analyses were initially completed to examine differences between completers and noncompleters of Wave 2 to analyze the representativeness of the participants. Comparisons were based on Wave 1 data. Descriptive analyses were then conducted to examine the prevalence and patterns of exposure to homicide. Next, homicide survivors were compared to non-victims on demographic characteristics. These analyses were followed by four multivariate logistic regressions to examine whether exposure to homicide would maintain a statistical association with AA/D, DA/D, PTSD, and MDE once other relevant factors had been controlled. Control variables included the dummy coded racial/ethnic groups (i.e., African American, Hispanic, Asian, and Native American, with Caucasian, non-Hispanic as the reference group); age; gender; income; and violence exposure. Given that this sample were young adults, a significant proportion identified themselves as students, which overlapped with income level. In order to differentiate between poverty versus lower income due to student status, we created a demographic variable, student status (i.e., student and nonstudent) that was entered in the analyses. To correct for demographic discrepancies between the NSA and U.S. population proportions as a result of the central city oversample, data were weighted according to 2004 U.S. Census estimates on geographic stratum, age, race, and gender. Analyses were conducted using SUDAAN statistical software (Research Triangle Institute, 2005).

Results

Attrition

Data analyses were conducted to examine the extent to which attrition impacted the final sample. Of the 4,023 youth who completed Wave 1 of data collection, 43.6% ($n = 1753$) completed follow-up interviews approximately 8 years later (Wave 2). Data were not collected from the remainder of the sample at Wave 2 for the following reasons: 1579 (69.5%) could not be located, 277 (12.2%) were located but either could not be reached or were not successfully scheduled during the assessment period, 380 (16.7%) refused to participate or terminated the interview, and 34 (1.5%) were deceased or had health problems that precluded their participation. In conclusion, difficulty locating and scheduling participants, rather than participant refusal, accounted for the majority of the observed attrition.

In order to identify attrition bias (Miller & Wright, 1995), Wave 2 completers ($n = 1753$) and noncompleters ($n = 2270$) were compared with respect to selected demographic characteristics, victimization and mental health outcome variables as measured at Wave 1. When considering

demographics, a greater proportion of female (46.0%) than male (41.2%) participants were completers, $\chi^2(2, N = 4023) = 9.50, p < .01$. Nonhispanic Caucasians (46.7%) were also more likely than ethnic minorities (37.0%) to be completers at Wave 2, $\chi^2(2, N = 3950) = 41.45, p < .001$. Individuals from higher income families were more likely to be completers at Wave 2, $\chi^2(3, N = 3770) = 98.05, p < .001$. With regard to interpersonal violence, a greater proportion of those participants who did not have history of physical assault/abusive punishment at Wave 1 (45.4%) than those who were victims (35.4%) were completers, $\chi^2(2, N = 4023) = 24.27, p < .001$. Survivorship of homicide was not assessed at Wave 1; therefore comparison between completers and noncompleters could not be made with regard to this type of victimization. Finally, considering mental health outcomes, there was no difference in completion rate between those who experienced a major depressive episode (MDE) or PTSD 6 months prior to Wave 1 data collection and those who did not (MDE: $\chi^2(2, N = 4023) = .34, p = .56$; PTSD: $\chi^2(2, N = 4023) = .09, p = .77$; past 12 month MDE and PTSD were not assessed at Wave 1). However, while there was no difference in completion rate between those who admitted to alcohol abuse/dependence in the past 12 months at Wave 1 data collection and those who did not ($\chi^2(2, N = 4023) = .43, p = .51$), fewer of those who admitted to drug abuse/dependence at Wave 1 (37.1%) were completers compared to those who did not (44.1%), $\chi^2(2, N = 4023) = 5.59, p < .05$.

Prevalence and Characteristics of Homicide Survivors

Descriptive analyses indicated that the prevalence of losing a loved one to homicide was 15.2% ($N = 267$), which equates to approximately 3.2 million young adults in the U.S. population (see Table 1). Close to 1 in 10 young adults reported the loss of a family member or friend to criminal homicide. This equates to 2.0 million young adults in the U.S. population who report having a family member or close friend murdered. Almost 7% of young adults reported having a family member or close friend killed in a vehicular homicide (i.e., victim of a drunk driving accident).

Demographic Comparisons

Most survivors had lost either a close friend (39%) or non-immediate family member (i.e., cousin, aunt, uncle; 47%). Criminal homicide survivors did not significantly differ from vehicular homicide survivors regarding relationship to the victim, although the percentage of those who lost an intimate partner was four times higher among criminal homicide survivors (12% vs. 3%), and the percentage of those who lost a close friend nearly twice as high among vehicular homicide survivors (14% vs. 8%; see Table 2). The average participant age at time of death was 18.2 ($SD = 13.4$). The majority of homicide survivors were Caucasian (57%), followed by African American (29%; see Table 2 for breakdown between criminal and vehicular homicide survivors).

Chi-square analyses revealed significant differences among criminal homicide survivors, vehicular homicide survivors, and non-victims (see Table 2). For racial/ethnic differences, additional comparisons were made to determine significant differences among specific racial/ethnic groups. Homicide survivors were more likely to identify as African American in comparison to non-victims, with the highest proportion represented among criminal homicide survivors (37% of criminal homicide, 11% of vehicular homicide, 9% of non-victims; $\chi^2(2, N = 1753) = 109.3, p < .001$). Homicide survivors were also more likely than non-victims to be female, with the highest proportion of women again represented among criminal homicide survivors (63% of criminal homicide, 54% of vehicular homicide, and 49% of non-victims; $\chi^2(2, N = 1753) = 13.3, p < .01$). The distributions of employment, high school education, and income were not significantly different between survivors and non-victims. Not surprising given the restricted range, ANOVA analyses failed to demonstrate a significant difference between homicide survivors and non-victims on age at time of assessment ($F(8, 1743) = 1.31, p = .23$).

Mental Health Outcomes

In terms of demographic variables, female gender was positively related to depression (OR = 1.42 vs. male), and negatively related to drug abuse (OR = 0.33 vs. male), and alcohol abuse (OR = 0.57 vs. male). Student status was negatively related to PTSD (OR = 0.54 vs. none) and depression (OR = 0.66 vs. none). Participants who identified as African American were less likely to report depression (OR = 0.57 vs. Caucasian) and alcohol abuse (OR = 0.45 vs. Caucasian), and participants who identified as Asian American were less likely to report depression (OR = 0.21 vs. Caucasian). Participants who identified as Hispanic were less likely to report alcohol abuse (OR = 0.58 vs. Caucasian). Violence exposure was strongly associated with increased risk of PTSD (OR = 3.90 vs. none), depression (OR = 2.39 vs. none), drug abuse (OR = 3.25 vs. none), and alcohol abuse (OR = 2.50 vs. none).

Logistic regression analyses indicated that even after controlling for demographic variables and exposure to other victimization, individuals who lost their loved ones to homicide were significantly more likely to report past year posttraumatic stress symptoms (OR = 1.88 vs. none). In addition, young adults who lost a loved one were at greater risk than non-victims for reporting past year depression (OR = 1.64 vs. none). See Table 3 for regression results for past year PTSD and depression. Homicide survivors were also at greater risk to report past year drug abuse/dependence (OR = 1.77 vs. none), beyond the contributions of demographic factors and other violence exposure. Homicide survivorship did not significantly predict past year alcohol abuse/dependence (Table 4).

Discussion

The current study yielded prevalence estimates of homicide survivorship among a representative sample of young adults. Findings indicated that 15% of young adults are survivors of homicide, which represents an increase over previously reported estimates using similar definitions of homicide survivors (9%, Amick-McMullan et al., 1991). In contrast to prior findings indicating that nonimmediate relatives are most likely to be lost to homicide (Amick-McMullan et al., 1991), homicide survivors in this sample were most likely to indicate losing a close friend. This could be due to the younger age of the current sample, which places participants' peers in a higher risk group. Examination of demographic factors in our sample also yielded interesting findings. With respect to ethnic/racial identification, our results revealed that African Americans were more likely to be identified as homicide survivors than other ethnic/racial groups. This was particularly true for those reporting criminal homicide, where the proportion of African American survivors was nearly three times the proportion of African Americans in the general population. These findings are consistent with homicide rates indicating that African Americans are at greater risk than other racial/ethnic groups (Bureau of Justice Statistics, 2007; Fox & Zawitz, 2007). Consistent with the literature and as predicted, females in our sample were more likely than males to be identified as homicide survivors. Contrary to hypotheses, income did not emerge as a significant predictor of homicide survivorship, which was likely due to the homogeneity of reported income in this young adult sample. Further, low income in this population may not necessarily represent poverty or low SES as there was a correlation between student status and income.

Consistent with hypotheses and existing literature that suggest homicide survivors are at risk for PTSD and other psychiatric symptoms (e.g., Amick-McMullan et al., 1991; Murphy et al., 2003) significant relationships were obtained among homicide survivorship and negative mental health sequelae. Homicide survivors were almost twice as likely to experience past year PTSD, depression, and drug abuse/dependence. Earlier researchers have typically applied a grief framework to understand the impact of homicide survivorship. Our finding of an association between homicide survivorship and PTSD is consistent with more recent research

positions that propose reactions to losing a loved one to murder may be better described by PTSD than a typical grief response (Hertz, Prothrow-Stith, and Cherry, 2005).

It is noteworthy that homicide survivorship was more predictive of drug abuse but not alcohol abuse. It is not surprising that we found higher prevalence of drug use in homicide survivors, given research suggesting relations among trauma exposure, PTSD, and substance use (e.g., Chilcoat & Breslau, 1998, Kilpatrick et al., 2000). However, the nonsignificant finding between homicide survivorship and alcohol abuse was not expected. Perhaps one explanation may be related to existing research indicating differing rates of alcohol use in certain ethnic/racial populations. For example, some studies report that African Americans are less likely to abuse alcohol in comparison to other ethnic/racial groups (e.g., Grant et al., 2004). Since African Americans are more highly represented among homicide survivors, this may explain why we were unable to detect a significant relation between homicide survivorship and alcohol abuse/dependence. Additionally, this finding highlights the importance of separating out substance abuse to target specific addictive behavior more prevalent in homicide survivors of differing ethnic/racial backgrounds. Another interesting finding was that African American and Asian American homicide survivors were less likely to report depression in comparison to other ethnic/minority groups. Future studies may want to examine potential protective factors (e.g., social support, community outreach) that may act as possible buffers between this type of violence exposure and mental health consequences within these ethnic/racial groups.

Findings from this study suggest that “homicide survivor” can be defined more broadly than in previous studies and continue to serve as a risk factor for mental health outcomes. In this study homicide survivor was defined as the loss of a friend, immediate family member, or non-immediate family member to criminal homicide or drunk driving. However, earlier research studies focused primarily on immediate family members and criminal homicide. Even with broadening the definition to outside the immediate family and vehicular homicide, results still indicated that homicide of family member or friend had a significant impact on mental health functioning in survivors. It is also notable that we did not find significant differences between criminal and alcohol-related vehicular homicide survivors on mental health outcomes that would warrant us to treat the two variables separately for the analyses.

Limitations

Some limitations of the current study should be noted. Assessment was based on telephone interviews, meaning participants were limited to those residing in homes with telephones. The generalizability of the sample was also limited by its focus on young adults. Although analyses were weighted to increase the representativeness of the sample, several differences between completers and noncompleters were found that could further limit generalizability. The current sample may be more representative of young adults who are female, Caucasian, lacking a physical violence history, higher income, and not abusing drugs. Given that many of these variables are protective factors for mental health problems, relations among variables in the current study could have been attenuated. Since the study involved a retrospective self-report design, there is also a potential for recall bias, and intervening events may have influenced study variables since the homicide occurred. Because the study was correlational in nature, causal linkages between variables cannot be established.

Implications

Findings from this study have several research and clinical implications. First, given the differential representation and impact of race/ethnicity and gender on mental health outcomes in this study, more attention should be given to understanding potential moderators between homicide survivorship and mental health. In our study, individuals who were identified as African American and female were more likely to report surviving a criminal homicide,

suggesting that these groups should be targeted for violence prevention and interventions to positively alter their posttrauma sequelae. While African Americans appear to be at highest risk for losing a loved one to homicide, they were also at lower risk for depression and alcohol dependence in this study. These findings highlight the importance of examining protective factors in this population. Moreover, both research and practice should take into account cultural and gender-specific considerations when focusing on homicide survivors. Finally, more research is needed regarding potential mediators of the relationship between homicide survivorship and mental health, such as social support, involvement with media and legal systems, stigma, and loss of resources.

In sum, findings from this study suggest that homicide survivorship represents a significant public health burden. These results imply that, in addition to the attention given to direct victims of crime, further resources should be directed towards the significant mental health needs of those indirectly affected by violent crimes such as homicide. Affected individuals extend beyond immediate family members, and include both non-immediate family and close friends. Our findings add further support to existing violence prevention efforts, and underscore the significance of assessing for homicide survivorship in mental health settings.

Acknowledgments

This research was supported by Grant 1 R01 HD046830 from the National Institute of Child Health and Human Development. Views contained in this article do not necessarily represent those of the National Institute of Health or its associated agencies.

References

- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Washington, D.C: 2000.
- Amick-McMullan A, Kilpatrick DG, Resnick HS. Homicide as a risk factor for PTSD among surviving family members. *Behavior Modification* 1991;15:545–559. [PubMed: 1747092]
- Amick-McMullan A, Kilpatrick DG, Veronen LJ, Smith S. Family survivors of homicide victims: Theoretical perspectives and an exploratory study. *Journal of Traumatic Stress* 1989;2:21–33.
- Bureau of Justice Statistics. Crime and Victim Characteristics. 2007. <http://ojp.usdoj.gov/bjs/cvict.htm>
- Chilcoat HD, Breslau N. Investigations of causal pathways between PTSD and drug use disorders. *Addictive Behaviors* 1998;23:827–840. [PubMed: 9801719]
- Duncan RD, Saunders BE, Kilpatrick DG, Hanson RF, Resnick HS. Childhood physical assault as a risk factor for PTSD, depression, and substance abuse: Findings from a national survey. *American Journal of Orthopsychiatry* 1996;66:437–448. [PubMed: 8827267]
- Fox, J.; Zawitz, M. Homicide Trends in the U.S. Bureau of Justice Statistics; <http://www.ojp.gov/bjs/homicide/race.htm>
- Freedy J, Resnick HS, Kilpatrick DG, Dansky B, Tidwell R. The psychological adjustment of recent crime victims in the criminal justice system. *Journal of Interpersonal Violence* 1994;9:450–468.
- Galea S, Ahern J, Resnick H, Kilpatrick D, Bucuvalas M, Gold J, Vlahov D. Psychological sequelae of the September 11 terrorist attacks in New York city. *New England Journal of Medicine* 2002;346:982–987. [PubMed: 11919308]
- Grant BF, Dawson D, Stinson F, Chou SP, Dufour MC, Pickering RP. The 12-month prevalence and trends in DSM-IV alcohol abuse and dependence: United States, 1991–1992 and 2001–2002. *Drug & Alcohol Dependence* 2004;74:223–234. [PubMed: 15194200]
- Hertz MF, Prothrow-Stith D, Chery C. Homicide survivors: Research and practice implications. *American Journal of Preventive Medicine* 2005;29:288–295. [PubMed: 16376732]
- Kilpatrick DG, Acierno RE. Mental health needs of crime victims: Epidemiology and outcomes. *Journal of Traumatic Stress* 2003;16(2):119–132. [PubMed: 12699200]

- Kilpatrick DG, Acierno R, Saunders B, Resnick HS, Best CL, Schnurr PP. Risk Factors for Adolescent Substance Abuse and Dependence: Data from a National Sample. *Journal of Consulting and Clinical Psychology* 2000;68(1):1–12.
- Kilpatrick DG, Acierno R, Resnick HS, Saunders BE, Best CL. A Two Year Longitudinal Analysis of the Relationship Between Violent Assault and Alcohol and Drug Use in Women. *Journal of Consulting and Clinical Psychology* 1997;65(5):834–847. [PubMed: 9337502]
- Kilpatrick DG, Acierno RE, Resnick HS, Saunders BE, Best CL. Risk factors for adolescent substance abuse and dependence: Data from a national sample. *Journal of Consulting and Clinical Psychology* 2000;60:19–30. [PubMed: 10710837]
- Kilpatrick, DG.; Resnick, HS.; Saunders, BE.; Best, CL. The National Women's Study PTSD Module. Charleston, SC: National Crime Victims Research and Treatment Center, Department of Psychiatry & Behavioral Sciences, Medical University of South Carolina; 1989.
- Kilpatrick DG, Ruggiero KJ, Acierno R, Saunders BE, Resnick HS, Best CL. Violence and risk of PTSD, major depression, substance abuse/dependence, and comorbidity: Results from the National Survey of Adolescents. *Journal of Consulting and Clinical Psychology* 2003;71:692–700. [PubMed: 12924674]
- Miller RB, Wright DW. Detecting and correcting attrition bias in longitudinal family research. *Journal of Marriage and the Family* 1995;57:921–929.
- Murphy SA, Johnson LC, Lohan J. The aftermath of the violent death of a child: An integration of the assessments of parents' mental distress and PTSD during the first 5 years of bereavement. *Journal of Loss and Trauma* 2002;7:203–222.
- Murphy SA, Johnson LC, Wu L, Fan JJ, Lohan J. Bereaved parents' outcomes 4 to 60 months after their children's deaths by accident, suicide, or homicide: A comparative study demonstrating differences. *Death Studies* 2003;27:39–61. [PubMed: 12508827]
- Parkes CM. Psychiatric problems following bereavement by murder or manslaughter. *British Journal of Psychiatry* 1993;162:49–54. [PubMed: 8425139]
- Redmond, LM. *Surviving: When someone you know was murdered*. Psychological Consultations and Educational Services Ltd; Florida: Clearwater: 1989.
- Research Triangle Institute. SUDAAN. Software for the Statistical Analysis of Correlated Data, Release 9.0. NC: Research Triangle Park; 2005.
- Saunders BE. Understanding children exposed to violence: Toward an integration of overlapping fields. *Journal of Interpersonal Violence* 2003;18:356–376.
- Saunders BE, Kilpatrick DG, Hanson RF, Resnick HS, Walker M. Prevalence, case characteristics, and long-term psychological correlates of child rape among women. *Child Maltreatment* 1999;4:187–200.
- Spitzer RL, Williams JB, Gibbon MB. The structured clinical interview for DSM-III-R (SCID). I: History, rationale, and description. *Archives of General Psychiatry* 1992;49:624–629. [PubMed: 1637252]
- Thompson MP, Norris FH, Ruback RB. Comparative distress levels of inner-city family members of homicide victims. *Journal of Traumatic Stress* 1998;11:223–242. [PubMed: 9565913]
- U.S. Census Bureau. Annual estimates of the population by five-year age groups and sex for the United States: April 1, 2000 to July 1, 2006. 2007

Table 1

Homicide Survivorship Prevalence Rates

	Percent of Sample	U.S. Population Estimate
Criminal homicide	9.6%	2.0 million
Vehicular homicide	6.6%	1.4 million
Total homicide	15.2%	3.2 million

Population estimates based on 2004 U.S. Census estimates for ages 20 to 24 (N = 20,957,254).

Table 2

Comparisons between Homicide Survivors and Non-Victims on Demographic Characteristics

Demographic Characteristics	Criminal Homicide (n = 166)	Vehicular Homicide (n = 100)	Non-Victim (n = 1487)	χ^2
Relationship to Victim				5.1
Current/former spouse	1.1%	0%		
Parent or stepparent	3.2%	5.1%		
Sibling	7.4%	10.2%		
Current/former intimate partner	11.6%	3.4%		
Close friend	8.4%	13.6%		
Other relative	68.4%	67.8%		
Race/Ethnicity				643.7***
Caucasian	45.8%	80.0%	79.4%	94.2***
African American	37.3%	11.0%	9.4%	109.3***
Hispanic	10.8%	4.0%	7.1%	4.7
Native American	1.2%	2.0%	0.6%	3.0
Asian American	1.8%	1.0%	1.4%	0.3
Female gender	63.3%	54.0%	49.2%	13.3**
Student	23.0%	15.0%	22.2%	3.0
Employed	60.8%	72.0%	65.4%	3.4
GED/High school education	92.7%	94.0%	94.6%	1.0
Income <\$15,000	64.7%	54.3%	58.7%	3.1

Table 3
Results of Logistic Regression Analyses Relating Homicide Survivorship to past year PTSD and Major Depression Symptoms (N = 1753)

Predictor	PTSD					Major Depression				
	B	SE	W	OR	CI (95%)	B	SE	W	OR	CI (95%)
Gender	0.41	0.22	3.59	1.51	0.98-2.32	0.53	0.16	10.7	1.70**	1.24-2.33
Age group	-0.16	0.23	0.50	0.85	0.55-1.33	-0.15	0.16	0.89	0.86	0.62-1.18
Student status	-0.62	0.27	5.41	0.54*	0.32-0.91	-0.41	0.20	4.28	0.66*	0.45-0.98
Income <\$15,000	0.32	0.23	1.93	1.38	0.87-2.17	0.03	0.17	0.02	1.03	0.73-1.44
African American	-0.21	0.28	0.54	0.81	0.47-1.41	-0.56	0.25	5.04	0.57*	0.35-0.93
Hispanic	-0.27	0.32	0.72	0.76	0.40-1.43	-0.09	0.26	0.11	0.92	0.55-1.52
Native American	-0.16	0.73	0.05	0.85	0.20-3.56	-0.43	0.75	0.32	0.65	0.15-2.85
Asian	-0.67	1.12	0.36	0.51	0.06-4.63	-1.56	0.77	4.11	0.21*	0.05-0.95
Violence exposure	1.36	0.24	30.91	3.90***	2.41-6.30	0.87	0.16	29.84	2.39***	1.75-3.27
Homicide Survivorship	0.63	0.22	8.27	1.88**	1.22-2.88	0.50	0.18	7.19	1.64**	1.14-2.37

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 4
Results of Logistic Regression Analyses Relating Homicide Survivorship to Past Year Drug and Alcohol Abuse/Dependence (N = 1753)

Predictor	Drug Abuse/Dependence						Alcohol Abuse/Dependence					
	B	SE	W	OR	CI (95%)	B	SE	W	OR	CI (95%)		
Gender	-1.03	0.31	11.18	0.33***	0.19-0.65	-0.57	0.13	17.91	0.57***	0.44-0.74		
Age group	-0.79	0.34	5.53	0.77	0.23-0.88	-0.12	0.14	0.78	0.88	0.67-1.16		
Student status	-0.37	0.38	0.93	0.77	0.32-1.47	0.00	0.17	0.00	1.00	0.71-1.39		
Income <\$15,000	0.11	0.34	0.12	1.42	0.57-2.20	0.21	0.14	2.16	1.24	0.93-1.64		
African American	-0.03	0.46	0.01	0.93	0.39-2.36	-0.79	0.24	10.67	0.45***	0.28-0.73		
Hispanic	-1.01	0.57	3.13	0.58	0.12-1.11	-0.55	0.27	4.05	0.58*	0.34-0.99		
Native American	-0.54	1.14	0.23	0.20	0.06-5.40	0.67	0.62	1.15	1.95	0.57-6.64		
Asian	-1.00	1.10	0.83	0.53	0.04-3.19	-0.77	0.60	1.64	0.46	0.14-1.51		
Violence exposure	1.48	0.34	18.95	3.25***	2.26-8.62	0.92	0.13	45.67	2.50***	1.92-3.26		
Homicide Survivorship	0.61	0.33	3.42	1.77**	0.96-3.51	0.30	0.18	2.81	1.35	0.95-1.93		

* $p < .05$ ** $p < .01$ *** $p < .001$