



Preliminary communication

Social support as a protective factor in suicide: Findings from two nationally representative samples

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ABSTRACT

Background: Suicide is a problem of worldwide concern and research on possible protective factors is needed. We explored the role of social support as one such factor. Specifically, we hypothesized that increased social support would be associated with decreased likelihood of a lifetime suicide attempt in two nationally representative samples as well as a high-risk subsample.

Methods: We analyzed the relationship between social support and lifetime history of a suicide attempt, controlling for a variety of related psychopathology and demographic variables, in the National Comorbidity Study Replication (NCS-R), a United States sample and the Adult Psychiatric Morbidity Study (APMS), an English sample.

Results: Results indicate that social support is associated with decreased likelihood of a lifetime suicide attempt controlling for a variety of related predictors in both the full US sample ($OR=0.68$, $p<.001$) and the full English sample ($OR=0.93$, $p<.01$).

Limitations: The cross-sectional data do not allow true cause and effect analyses.

Conclusions: Our findings suggest social support is associated with decreased likelihood of a lifetime suicide attempt. Social support is a highly modifiable factor that can be used to improve existing suicide prevention programs worldwide.

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1. Social support as a protective factor in suicide: two studies from American and English nationally representative samples

Suicide is a problem of great concern worldwide. For example, among all age groups it is the tenth leading cause of death in the United States (Centers for Disease Control and Prevention, 2012) and the fifth leading cause of death in England and Wales (Office for National Statistics, 2012). Moreover, it is the number one preventable (non-accidental) cause of death in some age groups in these countries. Furthermore, suicide currently represents 1.8% of the total worldwide burden of disease (World Health Organization, 2007). Given these statistics, it is imperative that considerable resources be dedicated to the identification of risk and resiliency/protective factors for suicide. Indeed, there has been a growing body of literature on risk factors for suicide (Nock et al., 2008b). In contrast, there has been far less research on the role of protective factors in suicide and researchers have noted the great need for further research (Prinstein, 2008; Vijayakumar, 2004). Brent (2011) cites that suicide researchers' primary focus on risk, rather than resilience, has led to sub-optimally effective suicide

interventions and that one way to increase the efficacy of such interventions is through greater knowledge of resiliency factors.

One potential resiliency factor that warrants consideration is social support. Social support is anything that leads someone to "believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations" (Cobb, 1976, p. 300). Previous studies provide initial evidence that social support may confer resiliency to suicide ideation. Some find that social support is directly associated with lower occurrence of suicide ideation (Chioqueta and Stiles, 2007), while others find that social support is protective against suicide in the presence of risk factors such as negative life events (Meadows et al., 2005; Yang and Clum, 1994). Furthermore, other studies find that social support works indirectly to reduce suicide by increasing other protective factors such as self-esteem (Kleiman and Riskind, in press). In addition to the empirical evidence that social support may be a protective factor in suicide, there is strong theoretical support as well. For example, the presence of social support may increase feelings of belongingness, which is negatively associated with suicide risk within Joiner's Interpersonal Theory of Suicide (Joiner, 2005; Joiner et al., 2009; Van Orden et al., 2010). Social support may also mean the presence of others that can help individuals cope with stressful events and difficulties associated with psychopathology, which may reduce risk for suicide.

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Regardless of modality or mechanism, there is general agreement among the empirical and theoretical literature that the presence of social support is related to increased resiliency to suicide. Despite the growing literature, there are several gaps that remain unaddressed. First, of the previous studies addressing social support as a protective factor in adult suicide, most studies have not examined suicide attempter status as an outcome variable. Rather, these studies typically examine suicide ideation as an outcome variable. Approximately one third of ideators eventually transition to a suicide attempt (Nock et al., 2008a), meaning most people with thoughts of suicide will likely not attempt suicide in their lifetime. Thus, caution should be exercised in generalizing findings regarding protective factors for suicide ideation to actual attempts. Research is needed that examines actual suicide attempts rather than ideation. Thus, the primary goal of the present studies was to examine social support as a predictor of actual attempts.

A second issue in the current adult literature is that many previous studies typically use undergraduate samples. Although these studies provide some initial evidence for the value of social support as a protective factor in suicide, replication in a representative general community sample is needed to support the generalizability of the findings in college students to larger populations. Given the need for studies in representative samples, we examine social support using nationally representative samples.

Additionally, a third issue is that the extant research on suicide resiliency has been primarily conducted in North American samples. This limits generalizability to other cultures. Although there is some evidence for the universality of risk factors across cultures (Vijayakumar and Rajkumar, 1999), research is needed on the universality of resiliency factors. Furthermore, researchers note the need to examine multiple cultures in the study of suicide reliance and prevention (Goldston et al., 2008). Thus, it is imperative to examine protective factors within the context of multiple cultures. To this end, we tested the role of social support as a protective factor in suicide in two nationally representative datasets drawn from different countries. The first, the National Comorbidity Study, Replication (NCS-R) is a nationally representative sample of adults of age 18–54 in the United States. The second sample, the Adult Psychiatric Morbidity Survey (APMS; McManus, Meltzer et al., 2009) is a nationally representative sample of participants aged 16–95.

Taken together, the goal of the present studies was to examine social support as a protective factor in suicide. We hypothesize that greater social support will be associated with lower likelihood of a lifetime suicide attempt. In study 1 we examined social support as a predictor of lifetime suicide attempts in a US nationally representative sample. Finally, in study 2 we replicate the findings of study 1 in a nationally representative sample from England in an attempt to examine cross-national universality of the protective nature of social support. In both studies we provide a stringent test of our hypothesis by covarying a variety of related covariates, such as psychiatric and developmental history variables. Having a significant finding despite the relevant covariates will help demonstrate that the study findings are not due to spurious factors.

Study 1: Social support as a protective factor in suicide in a US nationally-representative sample.

2. Method

2.1. Participants

Data for the study come from the National Comorbidity Study-Replication (NCS-R; Kessler et al., 2004a, 2004b, 2004c), a United States nationally representative sample conducted between 2001 and 2003 of English speaking residents over the age of 17. Weighting procedures for the study data were used according to the guidelines

of Kessler et al., 2004a, 2004b, 2004c. Of the participants, 4.1% had attempted suicide at some point in their lifetimes. The ethnic composition of the sample was 73.2% Caucasian, 11.0% African American, 7.2% Mexican/other Hispanic, 2.1% Asian, and the rest were of another ethnicity. Further information about the NCS-R data and weighting procedures can be found elsewhere (e.g., Kessler et al., 2004a, 2004b, 2004c).

2.2. Variables

2.2.1. Psychiatric history

Presence of DSM-IV diagnosis of psychiatric disorders was determined using the third edition of the World Health Organization Composite International Diagnostic Interview (CIDI; Kessler et al., 2004a, 2004b, 2004c). Diagnoses from the CIDI have been found to be consistent with diagnoses in clinical diagnostic interviews such as the Structured Clinical Interview for DSM-IV (Kessler et al., 2004a, 2004b, 2004c).

2.2.2. Family of origin variables

Participants were asked if either of their parents died or if their parents divorced before participants turned 15. Parental divorce (Gould et al., 1998) and death of a parent (Brent et al., 1993) have been linked to increased risk for suicide and were thus included as relevant predictors of risk. Maternal and paternal suicides were also recorded.

2.2.3. Help-seeking behaviors

Participants were asked if they had engaged in help seeking behaviors such as calling a crisis hotline or sought treatment from a mental health provider.

2.2.4. Social support

An overall social support score was created from an average of eight items on 1 (not at all) to 5 (a lot) scale¹ that assessed perceived support from friends and family. Items include “how much can you rely on relatives who do not live with you for help if you have a serious problem?” and “how much can you open up to your friends if you need to talk about your worries”. This scale had good acceptable consistency ($\alpha=.72$) and appeared to be relatively normally distributed ($M=3.24$, $SD=0.74$, skewness = -0.44).

2.2.5. Suicidal behavior

NCS-R participants were first asked if they had ever attempted suicide in their lifetime. Interviewers asked participants if they had ever had “experience C” and were then given a card that said “you attempted suicide”. This was to avoid the decreased rate of responding associated with interviewer over self-report of embarrassing topics such as suicidality (Turner et al., 1998). Participants who reported they had attempted suicide were coded as 1, and participants who did not report attempting suicide were coded as 0.

2.2.6. Data analytic strategy

Given that suicide attempt status is a yes/no binary outcome, we tested our hypothesis using a multivariate binary logistic regression in SPSS version 20.0. We tested the relationship between social support and lifetime suicide attempts with each set of relevant covariates entered in separate blocks. These blocks included demographics (e.g. age and gender), psychiatric history (e.g. alcohol dependence and diagnosis of depression), family of origin variables (e.g. parental suicide attempt or divorce during

¹ In the NCS-R data, the social support questions were originally coded so 1 = a lot and 4 = not at all. Items were recoded in the present study such that higher scores reflect more social support, which facilitated interpretation of the results.

childhood), and other help-seeking behaviors (e.g. hospitalization for psychiatric reasons and joining a therapy group). In addition to the odds ratios calculated for each variable to determine increase or decrease in risk, χ^2 change and pseudo R^2 values were calculated to examine the relative contribution of each set of covariates in predicting suicide attempt status.

3. Results and discussion

Table 1 presents the results of a logistic regression analysis predicting lifetime suicide attempter status after covarying relevant demographic variables, psychiatric history, family of origin variables, and help seeking behaviors. First, lower age, lower education, and female gender were all associated with higher likelihood of a lifetime suicide attempt. With the exception of drug dependence and specific phobia, all psychiatric disorders were associated with higher likelihood of a lifetime suicide attempt. Parental death and divorce during childhood were associated with higher likelihood of a lifetime suicide attempt. Being hospitalized for psychiatric reasons, joining a therapy or self-help group, and calling a crisis hotline were all associated with higher likelihood of a lifetime suicide. Finally, greater social support was associated with lower likelihood of a lifetime suicide attempt ($B = -0.39$, Wald = 18.53, OR = 0.68, $p < .001$).

Overall, the results of this study provide evidence that social support is associated with a decreased likelihood of suicide attempter status in a nationally representative sample. Specifically, the odds ratio indicates that individuals with higher social support may be over 30% less likely to have a lifetime suicide attempt than those with lower social support, even after considering a host of known risk and protective factors for suicidal behaviors.

One interesting finding from the NCS-R data is the significant positive relationships between several help-seeking behaviors (e.g. joining a self-help group and being hospitalized) and

likelihood of suicide attempt. It may be that such behaviors do not have a negative relationship with suicide attempts because they are actually indicators of severity of suicide intent or previous attempts rather than seeking help seeking in the sense that individuals are seeking help to reduce the chance they will attempt suicide. That is, many of the help seeking behaviors (e.g. being hospitalized) may happen after a suicide attempt has occurred. The cross-sectional nature of the NCS-R data does not allow a true temporal index of whether or not the help-seeking behaviors preceded or followed a suicide attempt.

Our findings leave several areas for further exploration. Although there was support for social support as a protective factor in suicide in a nationally representative sample, the data were representative of only one nation's population. Indeed, even the majority of studies on cultural differences in social support have been conducted in different cultures within America. For example, there have been several studies examining the differences between Asian Americans and European Americans (e.g., Taylor et al., 2007), but to our knowledge there has been no study to examine social support as a protective factor in suicide across multiple nations. Thus, further exploration in other countries is needed. To that end, the goal of study two is to replicate the findings of study 1 in a non-American sample with different measures of suicidal behaviors, social support, and covariates.

Study 2: Replication of findings in an English representative sample.

4. Method

4.1. Participants

Data for the study come from the 2007 Adult Psychiatric Morbidity Survey (APMS; McManus et al., 2009), an English nationally representative sample conducted from October, 2006 to December,

Table 1
Results of logistic regression analysis predicting lifetime suicide attempt status in a US nationally representative sample.

	%	B	S.E.	Wald	P	OR	95% CI	$\chi^2 \Delta$	p	R^2
<i>Demographics</i>								130.64	< .001	.06
Age	–	–0.03	0.01	50.19	< .001	0.97	0.96–0.98			
Gender (female = 2)	–	0.57	0.14	16.98	< .001	1.76	1.34–2.31			
Education level	–	–0.21	0.06	11.37	.001	0.81	0.72–0.92			
<i>Psychiatric history</i>								358.51	< .001	.21
Alcohol dependence	4.8	0.41	0.15	6.95	.008	1.59	1.11–2.03			
Drug dependence	2.9	0.22	0.22	0.99	.320	1.22	0.81–1.90			
Major depression	16.6	0.71	0.15	23.28	< .001	2.04	1.53–2.72			
Dysthymia	4.0	0.36	0.18	3.81	.051	1.43	0.99–2.04			
Bipolar I/II/Subthreshold	4.4	0.79	0.2	15.84	< .001	2.16	1.35–2.46			
Generalized anxiety disorder	7.8	0.6	0.15	15.47	< .001	1.82	1.05–2.15			
Panic disorder	4.7	0.41	0.18	5.05	0.03	1.51	1.07–1.99			
Post-traumatic stress disorder	6.2	0.38	0.16	5.69	0.02	1.46	1.08–1.88			
Social anxiety disorder	12.1	0.35	0.14	6.27	0.01	1.42	0.76–1.34			
Specific phobia	12.5	0.01	0.15	< .001	0.95	1.01	1.08–1.41			
Sleep difficulties	–	0.21	0.07	9.56	< 0.01	1.23	1.35–2.46			
<i>Family of origin variables</i>								31.18	< .001	.23
Paternal suicide attempt	1.1	0.08	0.29	0.07	.797	1.08	0.61–1.90			
Maternal suicide attempt	2.0	0.71	0.36	3.84	.050	2.02	1.00–4.10			
Parents divorced before age 15	12.6	0.46	0.14	11.17	.001	1.59	1.21–2.09			
Parent died before age 15	3.7	0.51	0.19	7.33	.007	1.67	1.15–2.42			
<i>Help seeking behaviors</i>								102.81	< .001	.27
Hospitalized for psychiatric reasons	3.7	1.33	48.93	42.37	< .001	3.77	2.60–5.46			
Treated by mental health professional	2.8	–0.16	0.18	0.14	.675	0.85	0.40–1.81			
Joined a therapy group/self help group	7.5	0.58	13.68	17.95	< .001	1.79	1.32–2.44			
Joined online self-help group	1.1	0.43	1.84	0.98	.174	1.54	0.83–2.85			
Called a crisis hotline	2.7	1.11	32.29	24.91	< .001	3.04	2.07–4.46			
<i>Social support</i>								18.33	< .001	.28
Total social support from friends/family	–	–0.39	0.09	18.58	< .001	0.68	0.57–0.81			

Note: $\chi^2 \Delta$ = Model $\chi^2 \Delta$; R^2 = Nagelkerke R^2 .

2007 of residents over the age of 16. Weighting procedures for the study data were used according to the guidelines of McManus et al. (2009). The participants in the study were 56.8% female and ranged from 16 to 95 years of age ($M=46.35$, $SD=18.60$). The ethnic origin of the sample was 89.6% White, 3.0% Black, 3.8% South Asian, and the rest were of another ethnicity.

Sampling occurred over two phases. The first phase involved randomly sampling households proportionate to the population from 519 different postcode sectors across England representing a full distribution of socioeconomic status. The second phase involved trained interviewers visiting 28 households in each of the 519 postcode sectors, for a total of 14,532 households. Of these 14,532 households, 12,694 households were found to be eligible for the survey. One person from each household was randomly selected to participate in the survey and 57% of those eligible agreed to be in the study leaving a final sample of 7,461 participants. Further detail about data collection methods in the APMS can be found elsewhere (McManus et al., 2009).

4.2. Variables

In general, we attempted to mirror the variables included in study 1. However, some variables of interest in the NCS-R data were not available in the APMS, and vice-versa.

4.2.1. Demographic variables

Basic demographic variables (e.g. age, gender) were recorded by the interviewer. Estimated verbal IQ was determined using the National Adult Reading Test (NART; Nelson, 1991), a brief measure of pre-morbid intelligence that correlates strongly with longer measures of intelligence, such as the Weschler Adult Intelligence Scale, Revised (Blair and Spreen, 1989).

4.2.2. Psychiatric history

Psychiatric diagnoses were determined using the Clinical Interview Schedule – Revised (CIS-R; Lewis et al., 1992). The CIS-R is an

interview measure administered by trained lay-interviewers. The CIS-R has been found to have strong concordance with diagnoses on other lay-interviewer measures of psychiatric diagnoses, such as the CIDI, the measure used in study 1 (Jordanova et al., 2004).

4.2.3. Family of origin variables

Participants were asked if their parents had divorced before the age of 16 or had died during their childhood. Parental divorce (Gould et al., 1998) and death of a parent (Brent et al., 1993) have been linked to increased risk for suicide and were thus included as relevant predictors of risk.

4.2.4. Help seeking behaviors

Participants were asked if they had participated in a variety of help-seeking behaviors such as hospitalization for psychiatric reasons or attended a support group.

4.2.5. Social support

An overall social support score was created from a composite of seven items on a 1 (not true) to 3 (certainly true) scale that assessed perceptions of social support from family and friends. Items include “there are people I know amongst my family and friends who would see that I am taken care of if I needed to be” and “there are people I know amongst my family and friends who give me support and encouragement”. This scale had good internal consistency ($\alpha=.89$). Individuals reported relatively high rates of social support ($M=20.15$, $SD=1.93$, skewness = -3.26).

4.2.6. Suicidal behavior

APMS participants were asked if they had ever attempted suicide in their lifetime. Participants who reported they had attempted suicide were coded as 1, and participants who did not report attempting suicide were coded as 0.

Table 2

Results of logistic regression analysis predicting lifetime suicide attempt status in an English nationally representative sample.

	%	B	SE B	Wald	P	OR	95% CI	$\chi^2 \Delta$	p	R ²
<i>Demographics</i>								51.76	.000	.02
Age	–	0.00	0.00	0.79	.373	0.99	0.99–1.00			
Gender (female=2)	–	0.55	0.13	18.41	.000	1.73	1.35–2.22			
Verbal IQ	–	–0.01	0.00	2.11	.147	0.99	0.99–1.00			
<i>Psychiatric history</i>								236.63	.000	.13
Alcohol dependence	5.8	0.38	0.20	3.48	.062	1.66	1.12–2.48			
Drug dependence	3.3	0.89	0.22	17.05	<.001	2.39	1.52–3.76			
Major depression	3.4	1.06	0.32	10.83	<.001	2.43	1.61–3.67			
Generalized anxiety disorder	4.4	0.78	0.23	11.26	.002	1.81	1.24–2.64			
Panic disorder	1.1	–1.14	0.45	6.37	.001	2.95	1.60–5.47			
Post-traumatic stress disorder	2.9	1.00	0.33	9.14	.003	3.20	2.14–4.77			
Borderline personality disorder	0.2	0.64	0.21	9.60	.006	4.90	1.40–17.17			
Social anxiety disorder	1.2	1.25	0.21	35.13	.022	0.38	0.16–0.89			
Specific phobia	2.2	1.16	0.70	2.77	.002	2.74	1.45–5.20			
Anti-social personality disorder	0.1	–1.36	1.11	1.51	.220	0.09	0.01–0.77			
Any eating disorder	1.5	–0.14	0.34	0.16	.689	1.43	0.78–2.62			
<i>Family of origin variables</i>								24.56	.000	.14
Parents divorced before 16	11.2	0.73	0.15	22.69	<.001	2.07	1.53–2.79			
Parent died before age 16	3.8	0.62	0.27	5.39	.002	1.86	1.10–3.15			
<i>Help seeking behaviors</i>								26.26	.000	.15
Joined a therapy group/self help group	0.7	1.01	0.36	7.81	.005	2.75	1.35–5.58			
Treated by mental health professional	2.7	0.67	0.23	8.42	.004	1.94	1.24–3.05			
Hospitalized for psychiatric reasons	0.1	0.99	1.15	0.73	.392	2.68	0.28–25.57			
<i>Social support</i>								8.48	.004	.16
Social support composite score	–	–0.08	0.03	9.32	.002	0.93	0.88–0.97			

Note: $\chi^2 \Delta$ = Model $\chi^2 \Delta$; R^2 = Nagelkerke R^2 .

4.2.7. Data analytic strategy

We conducted analyses in study 2 in the same manner as study 1. We tested our hypothesis using a series of multivariate binary logistic regressions in SPSS 20.0 using the same division of related predictors in separate blocks.

5. Results and discussion

Table 2 shows the results of a logistic regression analysis predicting lifetime suicide attempts controlling for relevant demographics, psychiatric history, family of origin variables, and help seeking behaviors. Lower age and female gender predicted greater likelihood of a lifetime suicide attempt. With the exception of eating disorders, social phobia, and anti-social personality disorder, all psychiatric history variables were associated with greater likelihood of a lifetime suicide attempt. Social phobia and anti-social personality disorder were associated with lower likelihood of suicide attempts but were artifacts of a suppressor effect.² Parental death and divorce during childhood were associated with greater likelihood of a lifetime suicide attempt. Joining a self-help group and being treated by a mental health professional were associated with greater likelihood of a suicide attempt. Finally, greater social support was associated with lower likelihood of a lifetime suicide attempt ($b = -0.77$, Wald = 9.44, OR = 0.93, $p < .01$). These findings corroborate the findings from the U.S. sample and lend support to the idea that social support functions as a robust protective factor across different cultures.

6. General discussion

Suicide is a problem of worldwide concern and there is a need for more research on protective factors in suicide. One such potential factor is social support. We presented a series of studies using nationally representative data that examine the role of social support as a protective factor in suicide. We found that controlling for a variety of relevant predictors, social support was associated with lower likelihood of having a lifetime suicide attempt. In the first study using an American nationally representative sample (NCS-R; National Comorbidity Study-Replication), we found that higher levels of social support were associated with a decreased likelihood of a lifetime suicide attempt. In study 2 we replicated study 1 findings in a representative sample from England (Adult Psychiatric Morbidity Study; APMS).

Our findings contribute to the literature in several ways. First, they provide strong evidence that social support is a protective factor in suicide. Second, they address the gaps in previous research, including the use of convenience sampling and the focus on suicidal ideation rather than attempts. Finally, these findings provide evidence for the cross-national relevance of social support as a protective factor.

One question that remains from our findings but was outside the scope of these studies is *how* exactly social support functions to be associated with lower suicidal risk. Specific mechanisms of social support could include psychological factors (e.g. increased social support leads to increased self esteem), social factors (e.g. increased social support leads to friends available for distraction in times of stress), or physical factors (e.g. friends are available to remove weapons from the home of someone who is suicidal). However, it is likely that social support is a multifaceted construct

that confers resilience to suicide in multiple ways. Future research is needed to determine mediators of the social support/suicide relationship, which could help to strengthen the benefit received from social support. A related question is which aspects of social support are the most relevant to suicide. For example, social support consists of instrumental support (e.g. friends helping someone get a new job) and emotional support (e.g. friends helping someone through the stress of losing their job). We were unable to assess the various aspects of social support and future studies addressing which aspect is most effective may be useful.

6.1. Strengths, weaknesses, and clinical implications

The most notable weakness of the datasets used in this manuscript is their cross-sectional methodology. Having cross-sectional data limits the ability to examine directionality of our hypothesis. For example, although our findings are consistent with the idea that social support results in lower likelihood of a suicide attempt, future longitudinal research is needed to test the temporal nature of this relationship. Although we did examine findings from two different cultures, future researchers may wish to explore these findings in more diverse cultures, especially eastern cultures, as social support may operate differently within more collectivist cultures. Weaknesses aside, our findings have several strengths including the use of two large nationally representative samples as well as the use of interviewer assessed psychiatric and suicide history, including suicide behaviors. Social support is a particularly valuable as a protective factor because it is modifiable. Programs that are designed to increase social support are readily available, highly effective, and easily implemented (Cohen et al., 2000; Hogan et al., 2002). Our findings suggest that social support may be a useful point for clinical intervention that could be used to advance the development of suicide prevention programs.

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The funding sources did not influence study design, analysis or interpretation of data, or the writing of this manuscript.

Conflict of interest

The authors declare no conflicts of interest.

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² This is evidenced by these variables having a positive bi-serial correlation as well as positive betas when they are separately entered into a logistic regression model predicting suicide attempts with no covariates (Social Phobia: $b = 2.03$, OR = 7.62, $p < .001$, ASPD: $b = 2.00$, OR = 6.40, $p = .011$).

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