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Social Network Differences Between American Indian Youth Who have Attempted Suicide and Have Suicide Ideation

Jerreed D. Ivanich[1], **Victoria O'Keefe**[2], **Emma Waugh**[2], **Lauren Tingey**[2], **Michael Tate**[3], **Anthony Parker**[3], **Mariddie Craig**[3], **Mary Cwik**[2]

[1]Centers for American Indian and Alaska Native Health, Community and Behavioral Health, Colorado School of Public Health, University of Colorado, Aurora, CO, USA

[2]Department of International Health, Center for American Indian Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

[3]White Mountain Apache Tribe, Whiteriver, AZ, USA

Abstract

Suicide is a crucial public health concern for American Indian and Alaska native (AIAN) communities. AIANs have the highest suicide rate compared to all other ethnic groups in the United States. Social relations are a salient fixture of AIAN culture. The primary aims of this study were to describe the personal networks of AI youth that have recently had a suicide attempt or suicidal ideation and to identify key network differences between the two groups. This study uses personal networks collected among AIs living on a reservation in the Southwest. Our sample included 46 American Indians that have recently attempted suicide or had suicidal ideation. We explored social network characteristics of the two groups descriptively as well as comparatively (t-tests). Our findings suggest that AI youth that have attempted suicide nominate more friends in their networks that have used alcohol and drugs compared to the networks of AI youth that have recent suicide ideation. Additionally, AI youth that recently attempted suicide have used alcohol and drugs with their network peers at a higher rate than youth that have had recent suicide ideation. Lastly, AI youth that have attempted suicide recently were significantly more likely to have more nominated friends in their networks that they had reached out to when they were struggling with suicide compared to their peers that have experienced recent suicide ideation. These results indicate a promising method moving forward to identify unique intervention strategies that extend beyond the individual.

Keywords

American Indian/Alaska native; Social network analysis; Suicide; Community-based participatory research

✉Jerreed D. Ivanich, jerreed.ivanich@cuanschutz.edu.

Conflict of interest The authors declare that they have no conflict of interest.

Introduction

A swath of public health gains have been noted over the past 50 years (Turnock, 2012), yet concern about suicide rates over the same period has continued to grow (Knox et al., 2004). Currently, suicide is the tenth leading cause of death among those living in the United States (CDC, 2017). Globally, suicide is the fourth leading cause of death for young males (15–19) and the third leading cause of death in females of the same age (Wasserman et al., 2005). In the United States, the rate of suicide for young people has steadily risen over the past five decades (McKeown et al., 2006). While variations in suicide differ by country, scholars have noted stark disparities between racial and ethnic groups in the United States (Sullivan et al., 2013).

Suicide rates are the highest among non-Hispanic American Indian and Alaska Native (AIAN) populations (Bailey et al., 2011). The suicide mortality rate for the AIAN male population between the ages of 15 to 24 (52.63 per 100,000) is 2.4 times more than non-Hispanic White males in the same age range. Similarly, females between the ages of 15–24 see a disproportionate rate of suicide mortality (23.89 per 100,000) compared to their non-Hispanic White counterparts in the same age range (5.21 per 100,000). AIAN suicide attempt rates are estimated to be higher than other ethnic groups across, especially in early adulthood (Hyde, 2011). Estimates of suicide ideation among AIAN populations continue to support alarming disparities between AIAN populations and other ethnic groups (Ivanich & Teasdale, 2017; Yoder et al., 2006).

A large body literature stems from the psychological literature, yet scholars have called for the inclusion of social determinates of suicide (Sapolsky, 2019). To this end, one group of scholars that have a growing presence in the suicide literature are social network scholars. Health, including suicide, is often a product of the social context in which one is embedded. As such, social network analysis aims to understand the social interactions and relational contexts (or lack thereof) that influence social systems, personal psychology, and peer-to-peer influences that all may place a role in suicide (Bearman, 1991). Studies support the notion that one’s interactions and placement within a larger social structure play a role in suicide (Bearman & Moody, 2004; Smith & Christakis, 2008).

Social network approaches to understand suicide among AIAN populations are not found in the extant literature with one exception (see, Philip et al., 2016). The omission of social network/relational approaches to understand suicide for AIAN populations in the literature is notable. Given the promise of social network studies to improve our understanding of suicide in the general population, one would expect the use of this method in a population that has a known history and culture for valuing kinship, extended kin (aunts, uncles, grandparents, cousins, etc.), and community relationships.

The purpose of this study is two-fold. First, we aim to detail the social networks (i.e. network size, proportion same ethnicity, network gender composition, etc.) of AI youth. Second, we aim to assess if differences are noted in networks for youth that have attempted suicide compared to youth that have known suicide ideation. To this end, we use data collected as part of a pilot social network study in partnership with our Tribal partners.

Understanding unique social structures that American Indian youth are embedded in at the time of suicide need (attempt and ideation) will provide direction for future prevention efforts that can target social structures as well as individual needs.

Methods

Community Partnership, Design, and Recruitment

As the community's needs have shifted, so has our work with the tribe. Following a spike in youth suicide in the late 1990s, our tribal partners sought solutions to this serious issue. Following extensive formative work and consultation with the tribe, an innovative suicide-surveillance and case-management system were developed and implemented (Cwik et al., 2014; Mullany et al., 2009). The foundation of this system is a community-wide tribal mandate requiring anyone who lives or works on the reservation to report any known suicide and self-harm behaviors (suicide ideation, attempt, and binge substance use) to a centralized system, which has come to be known as the Celebrating Life team. This group of dedicated community mental health specialists, provide follows-up on all reported events to bridge the gap between individuals and formal treatment services—providing case management services, referrals to healthcare and behavioral health programs providers, wellness checks, and even transportation to appointments (Cwik et al., 2014; Mullany et al., 2009). Additionally, this surveillance system has provided vast insight into the epidemiology of suicide among tribal members, allowing leaders and key stakeholders to make informed decisions about needed programs (Barlow et al., 2012; Cwik et al., 2011).

This study utilized the surveillance system for participant recruitment. All cases who were reported to the surveillance system for a suicide attempt or suicidal ideation were approached by community mental health specialists within two weeks of reported event about participating in this study during routine case-management visits. Individuals were not excluded from recruitment, other than mental capabilities. Interested participants were referred to research staff who conducted all research activities. Recruitment and data collection occurred between 2016 and 2018.

Participants completed a cross-sectional survey using audio computer-assisted self-interview (ACASI) software on computers with headphones in a private location. Participants received a $25.00 gift card for participating. All participants were consented to participate in accordance with institutional review board approval (#00006723) and tribal review.

Network Instrument

Name Generator—Respondents received the following prompt to elicit their personal (ego) network, "During the last 6 months, who did you get together with to socialize or hang out with—to have fun or to relax?" Respondents were allowed to nominate up to 23 alters. Respondents were instructed to enter the first name and first four characters of their alter's last name.

Name Interpreter Questions—Respondents were asked to identify several characteristics of their alters. For each alter, respondents provided information on their alters' age, gender, race/ethnicity, relationship, and length of time of knowing each other.

A full list of network name interpreter questions are included in Table 1. You will note that the respondent would be given a prompt about their network alters and they would select from their nominated alters all the alters that matched the prompt request. From this information, homophily variables, I-E index variables, and proportion variables were computed (Krackhardt, 1987; Wasserman & Faust, 1994).

Measures

In addition to the network information collected from each respondent, we also collected respondent specific information. For this study, we used the respondent's self-reported age and gender.

Results

Descriptive Statistics

The average age of participants was 16.33, 70% of the sample was female, and 39% of individuals were enrolled in the study for suicide ideation. The average network size was 9.57 but ranged from 0 to 23. According to participants, they indicate that, on average, 10% of their nominated network alters use alcohol or drugs. Similarly, participants used alcohol and drugs with only about 6% of their nominated network alters. On average, participants networks consisted of 35% Native alters (range = 0–100%). On average, 5% of networks were composed of cousins (range = 0–20%). Participants knew their nominated alters for roughly 8 years (range = 1.3–46.78 years) (Table 2).

Bivariate Results

Group means t-tests results are presented in this section comparing networks of respondents that have had recent suicide ideation (SI) and the networks of those that have recently attempted suicide (suicide attempt; SA). Participants with SI report a significantly lower proportion of their network that uses alcohol compared to those in the sample that have attempted suicide (t value = 2.18; $p < 0.05$). Similarly, adolescents with SI report a significantly lower proportion of their network that uses drugs compared to those in the sample that have attempted suicide (t value = 2.94; $p < 0.05$). This pattern continues when we examine the of average number of alters that the respondents indicated using drugs or drinking alcohol within their network. Participants with SI report a significantly lower proportion of their network that they use alcohol with compared to those in the sample that have attempted suicide (t value = 2.75; $p < 0.01$). Additionally, adolescents with SI report a significantly lower proportion of their network that they use drugs with compared to those in the sample that have attempted suicide (t value = 2.66; $p < 0.05$). Lastly, participants with SA reported that they reached out to 13.21% of their alters for help when they were struggling with suicide compared to 6.97% for participants with suicide ideation (t value = 2.65; $p < 0.05$).

Several t-tests indicated marginal significance, specifically, the average length of time participants have known their alters (p value = 0.0604), proportion of alters that have hurt themselves (p value = 0.09083), and proportion of alters in a gang (p value = 0.06888).

Discussion and Conclusion

Extant studies suggest youth with suicidal behavior frequently report friendship problems, social isolation, conflict with boyfriend/girlfriend, peer stressors and victimization from peers as reasons for an individual to attempt suicide (Bearman & Moody, 2004; Davies & Cunningham, 1999; Hawton et al., 1996; Magne-Ingvar et al., 1992). We also know that suicide clusters are common among youth in schools or small communities (Gould et al., 1990; Johansson et al., 2006). Youth in suicide clusters often knew each other and used similar methods for suicide (Bechtold, 1988; Wissow et al., 2001). For example, evaluation of one cluster in a southwestern AI reservation found youth were socially connected and 50% had alcohol in their bloodstream at the time of death (and presumably had recently been using alcohol with peers) but lacked other known risk factors (Bechtold, 1988). While interpersonal factors often precipitate suicide behavior and play a key role in suicidal clusters, the effects of social forces at the level of larger, community networks are not well studied in suicide research (Neeleman, 2002). This paper helps to address a critical barrier to progress—poor understanding of group- versus individual-level risk factors.

The patterns of social relationships captured in this study provide valuable insight into the difference between American Indian youth that have recently attempted suicide and those with suicide ideation. The first emerging pattern was the composition of suicide attempter networks have a larger proportion of their network made up of alters that use alcohol. It has been reported elsewhere that attempters tend to be older than those with suicide ideation for American Indian populations (Barlow et al., 2012). However, we do not find a significant age difference in our sample, suggesting that the increase of alcohol-using alters is not merely a product of belonging to an older age cohort, strengthening the meaning of this finding. Adolescents with suicide attempters not only reported having more alters that use alcohol, but they also indicated significantly higher rates of using alcohol with their nominated peers than those with suicide ideation. A similar pattern emerged for drug use. Social networks of those that attempted suicide nominated significantly more alters that used drugs compared to individuals in the study with suicide ideation. Little is known in the suicide literature when explicitly comparing those with suicide ideation to those in the same population with suicide attempts. This study is among a few studies, that we are aware of, to make such comparisons.

Limitations

This study has several limitations. First, the sample size of this study is small. As this is the descriptive study of American Indian youth with suicide ideation or recent attempt, while novel, may not be able to generalize to larger populations. Second, this study did not include a measure of ego's network density. While other scholars have found this to be a valuable concept to capture for understanding suicide (Janet Kuramoto et al., 2013), it is notably absent here. The cross-sectional nature of the data provides valuable insights into the differences between American Indian youth that have recently attempted suicide or have suicide ideation from a relational perspective. However, life-course scholars have long documented the typography of social relations at various life stages and the implication

for social behavior—including suicide (Mueller & Abrutyn, 2015)—which we are unable to document here.

Strengths

Notwithstanding the given limitations of this study, several strengths are also highlighted here. This study is the first of its kind; to collect social network data among American Indian youth that have recently attempted suicide or expressed suicide ideation. Further, this paper capitalizes on unique data from a tribally supported suicide surveillance system. The descriptive nature of these data provides insights and confirmation to community partners of the importance of alcohol and drugs in relation to other adverse behavioral outcomes. This study provides some early promise for a continued approach to understanding suicide through a relational perspective for this population. Although it is a promising direction for future research to take a relational approach to understand suicide, future researchers should be thoughtful to the measurement of social networks within American Indian and Alaska Native populations especially in reservation/village settings where current governing theories of social network dynamics may not operate similar to the general US population.

Conclusion

Past suicide research has focused on individual-level risk factors, where this study investigated the effect of social forces at the level of larger community networks and focused on identifying social and cultural assets that can reduce suicidal behavior and related substance use and promote resiliency. Findings can inform intervention development that engages protective social network factors, such as youths' family and tribal connectedness and relevant tribal traditional values.

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Public Significance Statement

American Indian communities bare a large public health burden of youth suicide. Social network approaches to understanding suicide among American Indian populations is culturally salient and may provide insights useful for intervention and treatment approaches to reduce suicide on reservations.

Table 1

Network measures

Measure	Question
Proportion of network expressed suicide	Looking at this entire list, has anyone (ever) expressed suicidal statements, made attempts, or died from suicide?
Proportion of network uses alcohol	Looking at this entire list, has anyone used alcohol in the past 6 months?
Proportion of network uses drugs	Looking at this entire list, has anyone used drugs in the past 6 months?
Proportion of network participant used alcohol with	During the last 6 months, who are the people that you used alcohol with?
Proportion of network participant used drugs with	During the last 6 months, who are the people that you used drugs with?
Proportion of network you did learn apache with	During the last 6 months, who did you learn from about Apache language, culture, or traditions?
Proportion of network that you feel listens	During the last 6 months, who do you feel really listens to you or gets you?
Average trust scores	How much do you trust [pipped alter]
Proportion of network that helped with emotion problems	During the last 6 months, who did you ask for advice or help about emotional or behavioral problems, like feeling depressed, angry, or drinking or drug use?
Proportion of network that are elders	During the last 6 months, who did you spend time with that you consider an Elder?
Proportion of network in a gang	Looking at the entire list, has anyone been (past or present) in a gang?
Proportion of network that you consider a caretaker	During the last 6 months, who were your caretakers?
Proportion of network you bullied	Looking at the entire list, have you been bullied by anyone on the list?

Table 2

Descriptive data

Statistic	N	Mean	St. Dev	Min	Max
Proportion of network uses alcohol	46	10.29	11.32	0.00	48.00
Proportion of network uses drugs	46	10.00	13.35	0.00	52.20
Proportion of network participant used alcohol with	46	6.13	8.47	0.00	30.40
Proportion of network participant used drugs with	46	6.70	9.77	0.00	39.10
Proportion of network received help for suicide ideation	46	11.03	8.45	0.00	35.00
Proportion of network you did apache activities with	46	7.82	6.72	0.00	30.40
Proportion of network exposed to suicide	46	6.59	8.39	0.00	48.00
Proportion of network that you feel listens	46	9.15	10.79	0.00	69.60
Average trust scores	41	6.63	1.35	2.00	9.00
Proportion of network have problems w/people	46	11.32	9.69	0.00	43.50
Average length # of years known alters	45	8.10	8.18	1.33	46.78
EI-index sex	46	0.45	0.37	−0.70	1.00
Proportion of network that has hurt self	46	9.15	9.00	0.00	39.10
Proportion of network that helped w/emotion problems	46	9.51	7.71	0.00	44.00
Proportion of network that are elders	46	6.02	7.60	0.00	52.20
Proportion of network that are native	46	34.49	25.73	0.00	100.00
Proportion of treat you well	46	2.91	3.89	0.00	17.40
Proportion of network in a gang	46	4.52	6.55	0.00	34.80
Proportion of network that you consider a caretaker	46	9.71	9.41	0.00	39.10
Proportion of network you bullied	46	2.43	2.52	0.00	8.70
Proportion of network you learned christian beliefs with	46	7.06	6.58	0.00	35.00
Proportion of network you consider a role model	46	6.78	5.55	0.00	22.00
Average trust scores	41	6.63	1.35	2.00	9.00
Proportion of network that are cousins	46	4.72	6.40	0.00	20.00
Proportion of network that are in school	46	42.76	28.94	0.00	100.00
Proportion of network that are same age	46	19.65	18.69	0.00	82.60
Proportion of network that are same sex	46	27.78	18.33	0.00	87.00