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Suicide in Rural Areas: An Updated Review of the Literature

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Suicide is a significant public health concern at a global level and occurs at a greater rate in rural compared with urban areas. A review of the literature on rural suicide indicates that a growing body of empirical, theoretical, and prevention work has been conducted on the topic, with an increasing number of countries represented and articles written. From an ecological perspective, current data and models suggest that our approach to understanding and preventing rural suicide must be multifaceted, addressing the individual level (e.g., traditional risk factors such as psychiatric illness), as well as the microsystem (e.g., family and peer relations), mesosystem (e.g., the interconnectedness between microsystems), exosystem (e.g., the rural community), and macrosystem (e.g., social norms) levels. Geographic and interpersonal isolation, agricultural or otherwise hazardous vocational demands, environmental and governmental policies, availability of means, lack of access to care and rural ideologies appear to contribute to suicide risk. Interventions must be community-driven, culturally acceptable and feasible within the context of available resources to be effective. Prospective research on risk and protective factors for rural suicide is required, as is development, implementation and assessment of interventions that are originated by, implemented in, and sensitive to the needs of rural communities.

Keywords: rural suicide, suicide prevention, frontier, remote, primary care

Suicide continues to be a significant public health concern worldwide, and a leading cause of death; over one million individuals globally die by suicide annually (Värnik, 2012). Death by suicide, as well as suicidal behavior, including ideation and attempts, often occurs at greater rates in rural than urban areas (Singh, Azuine, Siahpush, & Kogan, 2013), and research has suggested that, in addition to well-established risk factors such as depression, rural-specific risk and protective factors also exist (Arnautovska, McPhedran, & De Leo, 2014; Wagenaar, Hagaman, Kaiser, McLean, & Kohrt, 2012).

Historically, much of the extant knowledge on rural suicide was anecdotal or lacked empir-

ical rigor; however, in the last decade, there has been an increasing interest in mental health and suicide prevention policies and research and interventions directed toward rural residents, and many of these efforts have been documented in the scientific literature. For example, in 2006, there were 212 studies reported in a review of the literature on rural suicide (Hirsch, 2006), whereas a search using the same parameters today yields greater than 1,000 citations. Similarly, in 2006, there were 26 countries represented in studies of rural suicide (Hirsch, 2006), but a current search yields 67 countries, representing a 158% increase. It is important that much of the new data has originated from countries on the continents of South America, Africa, and Asia, where little has been known about the frequency of or contributors to suicidal behavior, and about intervention efforts.

In 2006, thematic trends in the published literature suggested that not only did traditional demographic risk factors such as age, race, ethnicity, and gender, and well-established psychosocial factors such as depression and substance abuse, contribute to rural suicide, but that rural-

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specific risk and protective factors also existed. At that time, factors such as rural life and culture, including geographic isolation and sense of rugged individualism, access to firearms and pesticides, lack of access to services, agricultural demands, as well as sociopolitical and economic stressors, were identified in a model as unique contributors to suicide risk for rural residents (Hirsch, 2006). As well, sense of personal and family honor, and community cohesion and collectiveness, were noted as potential buffers against suicidal behavior. These early observations are now well-supported in the literature. Yet almost a decade later, it is clear that although there is a strong interest in understanding rural suicide, and despite many coordinated efforts toward its prevention, the field of suicidology still has a great deal to learn about the phenomenon of rural suicide.

Over the last 10 years, several comprehensive literature reviews have been conducted, and explanatory models have been developed, on the topic of rural suicide, highlighting gaps in the field and guiding current and future research and prevention efforts. For example, a rural-adapted version of the “cry of pain/ entrapment model” was developed which noted the importance of cross-setting factors, such as age and race, for suicidal behavior, but also emphasized that the process of coping in a suicidal crisis, for a rural individual, includes social norms regarding self-harm and help-seeking, availability of social resources, lethality of methodology, and likelihood of rescue after an attempt (Stark, Rioridan, & O’Connor, 2011). In two sociological reviews, cultural elements such as masculinity, reluctance to acknowledge one’s difficulties, shame at loss of identity, rural perspectives on ageing, as well as difficulties of ageing in a rural area, were identified as contributors to higher suicide rates and in need of further study (Garnham & Bryant, 2014; Hogan, Scarr, Lockie, Chant, & Alston, 2012).

In an Australian-based review (Handley, Inder, Kelly, Attia, & Kay-Lambkin, 2011), terminology differences in conceptualization of rurality, and a general lack of research on more common suicidal behavior such as ideation and attempts, on rural-specific factors and on community-based samples, were identified as areas in need of clarity and examination. Finally, a matrix model for rural sui-

cide prevention was proposed, which identified limited access to care, social and geographic isolation, access to means, and stigma and cultural considerations as risk factors for suicide, and emphasized the identification of rural-specific, evidence-based prevention targets, and rigorous assessment of outcomes (Zaheer et al., 2014). In sum, the scientific investigation of rural suicide is ongoing and increasing in scope, addressing many previously posited questions about the role of traditionally urban-studied risk and protective factors as applied to rural persons and settings, as well as expanding knowledge of rural-specific risk and protective factors.

This updated review of the literature provides an overview of the most current epidemiological trends, correlates and predictive models, and intervention programs focused on the understanding and prevention of rural suicide. It is not exhaustive with regard to identification of countries studied, but focuses, rather, on emergent global themes in the study of rural suicide and its prevention.

Search Strategy and Selection Criteria for Studies

All identified empirical studies were included, regardless of study design or methodology. All studies focused on rural suicide, differences between urban and rural suicide, and individual-level studies utilizing rural populations were eligible for inclusion. An electronic search for eligible studies was conducted using the following electronic databases: MEDLINE (2006–2014) and PsycInfo (2006–2014). Search strategies were developed using combinations of the following keywords/index terms: rural, frontier, urban, suicide, suicide ideation, suicide attempt, and completed suicide. There was no language restriction. Retrievals were reviewed by title and abstract to identify studies appearing to qualify for the review, and final decision for inclusion was based on the full report. Because of space limitations, this literature review is not exhaustive but, rather, summarizes emergent themes in the study of rural suicide; snowballing and saturation techniques were applied in the development of thematic coding and citation selection.

Demographic Characteristics and Rural Suicide

Given the wide array of studies included in this review of the literature, including cross-sectional and longitudinal, qualitative, and quantitative, it is not possible to determine causality of the associations between rural characteristics and suicidal behavior. However, result patterns indicate that rural areas may have inherent characteristics, such as remoteness, that influence suicide, but also that rurality may interact with or exacerbate more traditional risk factors, such as age, gender, race/ethnicity, socioeconomic disadvantage, and hazardous agrarian or otherwise dangerous occupational environments (Smith, Humphreys, & Wilson, 2008).

Although some dissenting findings exist, the current literature suggests that rural rates of suicidal behavior and death by suicide are often higher than in urban areas, and that this pattern is documented in almost all countries reporting suicide-related data. In the United States, epidemiological data indicates that males (27/100,000) and females (7/100,000) in the 10 least-densely populated states (i.e., Wyoming, Alaska, Montana, Nevada, New Mexico, Idaho, South Dakota, Utah, Arizona, and North Dakota) had greater suicide rates than their counterparts (males = 19/100,000; females = 5/100,000) living in the 10 most-densely populated states (i.e., Florida, Michigan, Ohio, Pennsylvania, North Carolina, Georgia, Texas, California, Illinois, and New York; Centers for Disease Control and Prevention, 2014). This pattern is corroborated across type of study, including large, national epidemiological data collection efforts (Kim et al., 2011), urban versus rural comparative and spatial patterning studies (Congdon, 2011; Hempstead, 2006), and smaller studies using rural community and clinical samples.

The epidemic of rural suicide is not limited by the boundaries of countries, with most countries worldwide, where there is available literature, publishing mental health statistics indicating higher rates of rural suicide compared with urban suicide. This occurs, for instance, in Australia (Qi, Hu, Page, & Tong, 2012), where rates are greater for rural males than for rural females or urban males and females (Alston, 2012; Page, Morrell, Taylor, Dudley, & Carter, 2007).

In Belarus, the urban/rural suicide difference has increased in the last 20 years (Razvodovsky, 2011). In South Korea, suicide rates were greater in rural areas (Kim, Jung-Choi, Jun, & Kawachi, 2010), and these locales were characterized by a higher percentage of male and older adult residents (Park & Lester, 2012). In China and India, the rates of rural suicide are more than double the rates of urban areas (Phillips & Cheng, 2012; Vijayakumar, 2010). Similar patterns exist in Belarus (Razvodovsky & Stickley, 2009); Brazil (Macente & Zandonade, 2012); Cameroon (Keugoung, Kongnyu, Meli, & Criel, 2013); England (Congdon, 2013); Kosovo (Wenzel et al., 2009); Taiwan (Chang et al., 2011); Iran (Alaghebandan, Lari, Joghataei, & Islami, 2011); Italy, particularly for males (Martiello, Cipriani, Voller, Buiatti, & Giacchi, 2006); the Nordic countries, including Norway, Sweden, and Finland (Titelman et al., 2013); Romania (Jung, Matei, & Hecser, 2009); and Sri Lanka (Marecek, 2006), among others. In addition, whereas rates of suicide in urban areas of some countries, such as Austria and New Zealand, were once predominant, that gap is narrowing as a result of the rapid increase in rural suicides (Kapusta et al., 2008; Pearce, Barnett, & Jones, 2007).

Demographic characteristics, including age, gender, race, ethnicity, and education level, among other factors, are associated with rural suicide. In China, for example, rural older adults are at three to five times greater risk for suicide than their urban counterparts (Li, Xiao, & Xiao, 2009). Older rural adults are at risk in rural areas of Nigeria and Taiwan (Liu, 2009; Ojagbemi, Oladeji, Abiona, & Gureje, 2013). Of note, older rural adults experiencing elder mistreatment are at greater risk for suicidal behavior in China (Wu et al., 2013), as are those in residential treatment in Greece (Arvaniti et al., 2005).

In most countries of the world, except China, rural males continue to have higher suicide rates than rural females (Sauvaet et al., 2009; Yip & Liu, 2006), and may be more accepting of suicide than females (Kaneko & Motohashi, 2007). In China, however, researchers continue to investigate the inverse pattern of female-predominant suicide rates in rural areas (Yip & Liu, 2006). In most cases, the suicide rate for rural females has increased dramatically over the past several decades and, for some methods of sui-

cide, such as pesticide poisoning, rural females are more likely to utilize these methods than urban or rural males (Sudhir Kumar, Mohan, Ranjith, & Chandrasekaran, 2006). In most rural locales, such as in Turkey and Uganda, females report greater suicidal behavior, including ideation and attempts (Kahramansoy, Gürbüç, Kurt, Erkol, & Boztas, 2013; Rudatsikira, Muula, Siziya, & Twa-Twa, 2007). Racial and ethnic differences in suicidal behavior also exist in rural locales such as, for example, greater suicide risk for rural Latinos with anxiety in the United States (Dilsaver, Benazzi, Akiskal, & Akiskal, 2008). Finally, classification as a military veteran also confers risk; for example, in a study of over five million veterans in the United States, rural veterans were at 20% greater risk for suicide than urban veterans (McCarthy et al., 2012).

Rural-Based Characteristics and Suicide

Many rural-based factors continue to be identified as contributors to suicide risk in rural individuals, and these can be classified as: geographic/isolation-based, agriculturally determined, sociocultural and socioculturally sanctioned, psychological and physical health factors, and environmentally determined.

Geographic and Isolation-Based Factors

For several reasons, including isolation and lack of access to services, the physical boundaries of rural areas remain an imposing barrier to effective suicide prevention. In the United States, England, and Australia, for example, increasing rurality is associated with increasing rates of age-standardized suicide deaths, and this pattern extends to rural locales deemed as remote or frontier areas (Cheung, Spittal, Pirkis, & Yip, 2012; Congdon, 2013). Lack of access to preventive or emergency care, because of distance and a shortage of providers, are also critical characteristics of suicide occurring in rural geographic locations, and have been documented in countries such as Australia, India, and the United States (Judd, Cooper, Fraser, & Davis, 2006; Zaheer et al., 2014).

Agricultural Factors

Farming communities are, intuitively, more often located in rural than urban areas, yet it is

not only their geographic location that contributes to suicide risk, but also agricultural factors such as climate change, flooding and drought, agriculture-based economic pressures, and exposure to pesticides (Miller & Burns, 2008; Park & Lester, 2012). As an example, Australia has experienced a decade of drought conditions, which are predicted to continue, and have been linked to increased suicide rates (Hanigan, Butler, Kokic, & Hutchinson, 2012). In a study of Canadian farmers, financial stress, family salvation, and farming pressures were related to suicide ideation (Sturgeon & Morrisette, 2010). In a study of Indian farmers, chronic indebtedness, economic decline, and the rising costs of agricultural inputs paired with falling prices of agricultural produce, were noted as risk factors for suicide (Behere & Behere, 2008). Patterns of increased rates of suicide of persons associated with farming, including families and farm workers, are evident in numerous additional countries, including India and the United Kingdom (Dongre & Deshmukh, 2012; Hounscome, Edwards, Hounscome, & Edwards-Jones, 2012).

Sociocultural Factors

Ideological frameworks for understanding gender relations, work ethic, and political and religious institutions often differ between urban and rural areas, with individuals in rural locales more often espousing a male-dominant, honor-based, rugged and individualistic life perspective (Alston, 2012; Brown, Imura, & Osterman, 2014). Such a world-view may place undue pressure on the rural male to succeed in defined gender roles (e.g., being a man) or as a provider (e.g., supporting a family), stoically, despite physical or psychological pain and, for the same reasons, to avoid sharing personal problems or seeking treatment (Alston & Kent, 2008). Stigma originating from rural social beliefs also may preclude treatment seeking and may be related to suicide deaths (Kposowa, 2013). Furthermore, religion and governmental-based beliefs influence suicide in rural locales around the world, such as the Confucian tenet of female subordination in China, which results in psychological strain (Zhang & Liu, 2012; Zhang et al., 2010). In addition, in some countries, such as Japan, suicide may be viewed as more acceptable in rural areas (Kageyama, 2012), although findings are mixed (Li & Phillips, 2010).

Marginalized or otherwise vulnerable groups may be at greater risk when residing in rural areas; for example, rural sexual minority persons in Canada were at greater risk than urban counterparts (Poon & Saewyc, 2009). Those in poverty or with low education, and living in rural areas, have been found to be at greater risk in China, India, and Uganda (Kinyanda, Kizza, Levin, Ndyabangi, & Abbo, 2011; Sauvaet et al., 2009; Zhang & Sun, 2014). Indigenous persons in rural Australia and Norway are at greater risk, with social and contextual risk factors most salient (Kuipers, Appleton, & Pridmore, 2012; Silviken, Haldorsen, & Kvernmo, 2006), as are immigrants to rural areas, particularly ethnic minorities (Pan & Carpiano, 2013).

Finally, interpersonal factors, such as problems in intimate and marital relationships, and peer and familial dysfunction (including intergenerational difficulties), are contributors to suicide risk in rural persons, including in China and Japan (Traphagan, 2010; Zhang & Ma, 2012). Low social support emerged as a longitudinal predictor of suicidal ideation in Australian community adults (Handley, Inder, Kelly, et al., 2012) and rural Chinese females (Zhang & Sun, 2014), and thwarted belongingness and perceived burdensomeness predicted risk for suicidal behaviors in rural primary care patients in the United States (Nsamenang, Webb, Cukrowicz, & Hirsch, 2013). Similar patterns emerged involving lack of social support, negative family interactions, and domestic abuse and sexual assault in rural China, Bangladesh, South Africa, and Vietnam (Naved & Akhtar, 2008; Shilubane et al., 2014; Vung, Ostergren, & Krantz, 2009; Yanqiu, Yan, & Lin, 2011), bullying in the United States (Hay & Meldrum, 2010), loneliness in Uganda (Rudatsikira et al., 2007), and the break-up of a relationship, in India (Manoranjitham et al., 2010).

Psychological and Physical Health Factors

In many studies, including from China, India, and the United States, rural individuals who are suicidal experience and/or report less psychological symptoms, receive fewer psychiatric diagnoses, and receive less mental health care than urban individuals (Chen, Chien-Chang Wu, Yousuf, & Yip, 2012; Searles, Valley, Hedegaard, & Betz, 2014). Yet, the well-established

associations between psychological difficulties and suicidal behavior so often documented in urban samples have largely been replicated in rural samples from around the world, including: poor self-esteem and coping ability, impulsivity, negative life events, hopelessness, mental illness, and family history of suicide in rural China (Gao, Zhang, & Jia, 2011; Wang et al., 2011; Zhang, Li, Tu, Xiao, & Jia, 2011; Zhang & Sun, 2014; Zhang, Xiao, & Zhou, 2010); psychological distress, substance abuse, and comorbid anxiety or posttraumatic stress disorder, in Australia (Handley, Inder, Kay-Lambkin, et al., 2012; Handley, Inder, Kelly, et al., 2012); mental illness in Uganda (Kinyanda et al., 2011); body image concerns in Canada (Cook, MacPherson, & Langille, 2007); subclinical depression in Ethiopia (Fekadu et al., 2007; Orui, Kawakami, Iwata, Takeshima, & Fukao, 2011); and depressive symptoms and self-injury in the United States (Kiankhooy, Crookes, Privette, Osler, & Sartorelli, 2009; Nsamenang et al., 2013).

Physical health problems, including chronic pain, may increase risk for suicidal behavior in rural individuals; such associations are reported in rural India (Manoranjitham et al., 2010). Other instances in the literature include increased suicide risk in patients with Parkinson's disease in rural Finland (Mainio, Karvonen, Hakko, Sarkioja, & Rasanen, 2009), in cancer patients in Lithuania (Smailyte et al., 2013), and in persons with physical disabilities in the United States (Hughes, Nosek, & Robinson-Whelen, 2007). In addition, lack of care when experiencing an illness may be a risk factor for rural suicidal behavior, as in Haiti (Wagenaar et al., 2012).

Environmental Factors

Often, forces outside of personal control, such as financial markets and governmental policies, negatively influence suicide risk. For example, economic crises have taken their toll on rural and agricultural communities, with the factors of deprivation, social fragmentation and rurality often co-occurring as risk factors, such as in England and the United States (Congdon, 2011, 2013). Socioeconomic status, including poverty and loss of income, is also a predictor of suicide risk in rural areas, including China (Gong, Zhang, Wang, & Liang, 2011).

It is becoming undeniable that familiarity with and access to firearms are robust predictors of suicide in both urban and rural locales, and it is increasingly noted that rural individuals, usually because of agricultural needs (e.g., predator deterrence) or sociocultural acceptance (e.g., hunting, “gun culture”), are more likely to have such exposures (Brown et al., 2014; Nance, Carr, Kallan, Branas, & Wiebe, 2010). In countries where access to firearms is more permissible, suicide deaths by firearm occur at a greater rate in rural than in urban areas (Searles et al., 2014), including in Australia, Ireland, and the United States (Klieve, Sveticic, & De Leo, 2009; Sarma & Kola, 2010). Furthermore, in most countries with a firearm presence, rural deaths by suicide occur predominantly by this method, including in Finland (Lahti, Keranen, Hakko, Riala, & Rasanen, 2014).

Similarly, pesticide ingestion is a suicide method that occurs, globally, at a higher rate in rural than urban areas, because of its similar characteristics of familiarity and accessibility. Countries reporting this pattern include China, Greece, India, South Korea, and Vietnam (Cha, Khang, & Lee, 2014; Kastanaki et al., 2010; Nguyen et al., 2010; Patel et al., 2012; Zhang & Li, 2011), among many others, and efforts to restrict pesticide access have been successful in reducing suicidal use of such chemicals (Chowdhury, Banerjee, Brahma, & Biswas, 2013). In addition to safe storage practices, it has been recommended that physicians in rural areas be trained more extensively in the treatment of poisoning (Mishara, 2007).

Implications for Future Research and Prevention

The themes emerging from this review of the literature on rural suicide have important implications for policy and funding, translational research, and the development and implementation of prevention strategies for the reduction of rural suicide. Based on the data, it appears that any successful rural intervention will need to approach the problem of suicide from an ecological perspective, focusing on risk and protective factors at the individual level, as well as at the levels of the microsystem (e.g., peer relationships, family, work roles), mesosystem (e.g., the intercon-

nectedness between microsystems, which is often unavoidable in rural areas), exosystem (e.g., rural community, church or coworkers, media, governmental policies), and macrosystem (e.g., rural and/or agrarian culture, collectivism, “rugged individualism”; Bronfenbrenner, 1977).

The current literature on rural suicide suggests that there are many contributors to risk, including, for most countries, demographic characteristics, such as age, race, ethnicity, education level, and marital and socioeconomic status; mental health difficulties including mood disorders and previous suicidal behavior, schizophrenia, and substance use; relationship problems and other negative and potentially traumatic life events; personality factors, including social desirability in Italy, and low levels of extraversion and high levels of neuroticism in China (Fang, Heisel, Duberstein, & Zhang, 2012; Miotto & Preti, 2008); and, cognitive-behavioral dysfunction, including impulsivity. In addition to such traditional factors, numerous rural-likely factors exist, such as agriculture and lack of access to care; rural-specific factors, such as remoteness and isolation; and rural-unique factors, such as the value system and worldview often held by rural individuals.

In rural areas, the potential presence of stigmatized beliefs against mental health treatment, as well as a general lack of appropriate services, makes it imperative that suicide prevention plans enacted in rural areas be pragmatic and tailored to the needs and desires of rural individuals and communities. For example, in an Australian study, a random sample of rural residents indicated that, of the 75% who had Internet access, 20% would be willing to access help online (Handley et al., 2014). Yet, rural residents are less likely to agree with physicians about mental health treatments, and are more likely to stigmatize strong predictors of suicide, such as depression, than urban residents, as found in a Canadian study (Jones, Cook, & Wang, 2011). In Japan, rural residents were more likely than urban residents to feel shame about help-seeking (Kageyama, 2012) and, in Australia, rural residents were less likely to have knowledge of mental health resources than urban residents (Marshall & Dunstan, 2013). Rural individuals in Scotland were less likely to see

a mental health specialist in the month and year prior to their death by suicide, than individuals living in urban areas (Stark, Vaughan, Huc, & O'Neill, 2012) and, in South Africa, rural residents were less likely than urban residents to use a crisis line (Meehan & Broom, 2007). Thus, it may be the case, as with other findings, that general and primary care practitioners may be a source of early prevention and emergent intervention for rural suicidal behavior; support for such findings are emerging from rural locales in Australia, Hungary, and the United States (Sartore, Kelly, & Stain, 2007; Szanto, Kalmár, Hendin, Rihmer, & Mann, 2007). In some countries, however (e.g., Haiti), rural suicidal individuals may be more likely to utilize community resources, such as a clergy or spiritual leader, than clinics or hospitals (Wagenaar, Kohrt, Hagaman, McLean, & Kaiser, 2013). Yet, even when receiving treatment, rural individuals are more likely to die by suicide, such as in Australia (Sankaranarayanan, Carter, & Lewin, 2010), suggesting the presence of other contributing factors.

At the cultural level, any proposed intervention must be culturally customized to be acceptable, whether for rural persons in general, or perhaps tailored to specific rural subgroups such as farmers or veterans and their families (Slovak & Singer, 2012). Interventions may need to be specific to indigenous needs and beliefs; for example, in a community-based participatory study of a sample of Native Americans living in a remote area of the United States, community members identified substance abuse as a target problem and suggested cultural activities and traditional and faith-based healing as acceptable interventions (McDonald & Pritchard, 2010). Religious and spirituality-based interventions also have been suggested for use in rural Haiti (Hagaman et al., 2013). In a study of rural adolescents in the United States, perceptions of adult and community support, likelihood of help provision, and greater accessibility to coping assistance were related to increased disclosure of suicidal ideation and likelihood of help-seeking behavior (Pisani et al., 2012). In Australia, a community sample was less likely to view psychotherapy as helpful, but endorsed use of alcohol and pain medication as means of alleviating depression; rural res-

idents also have been less likely to have knowledge of national mental health campaigns (Griffiths, Christensen, & Jorm, 2009), suggesting that education and mental health literacy may be important prevention targets in rural areas.

Capitalizing on protective characteristics of rural communities may be an important strategy, including focusing on community-identified priorities (Zaheer et al., 2014); using such community-based participatory research and prevention strategies builds on the communal nature of rural areas. The collectivistic nature and, thus, social capital, of rural communities may also be a source of formal and informal social and helping networks, such as via church and clergy (Jones, Cassidy, & Heflinger, 2012), and may provide opportunities for community engagement, including peer support networks, to be developed as a suicide prevention infrastructure (Boyd, Hayes, Wilson, & Bearsley-Smith, 2008; Lynne Armstrong & Manion, 2006; Walker, Ashby, Hoskins, & Greene, 2009). For one at-risk group, immigrants to a rural area of Canada, sense of community was related to less suicide ideation (Pan & Carpiano, 2013) and, in a Japanese intervention, promotion of community empowerment and civic engagement, reduced rural suicide rates (Motohashi, Kaneko, & Sasaki, 2005). Community-based prevention programs have been successfully implemented with rural indigenous populations, including the Yup'ik of Alaska (Allen, Mohatt, Fok, & Henry, 2009). Protective characteristics also exist at the individual level for rural persons, including being employed and married in Australia (Handley, Inder, Kay-Lambkin, et al., 2012), future oriented constructs such as optimism and hope (Chang, Yu, & Hirsch, 2013; Hirsch, Wolford, LaLonde, Brunk, & Parker-Morris, 2009), and a sense of connection to the land or region (Hegney et al., 2007).

Despite advances in knowledge and prevention of rural suicide, ambiguities persist. For example, associations between mental illness and suicide are often less salient in rural compared with urban areas (Tong & Phillips, 2010), and the often-reported differences in help-seeking behavior between rural and urban persons, particularly males, did not emerge in Australia (McPhedran & De Leo, 2013). Thus, our future research and prevention efforts must be multifaceted, examining non-mental health risk and protective factors and interventions, and the acceptability of different

modalities of help seeking and help provision, such as family and community-based therapies. Although largely successful, means restriction sometimes may be offset by methodology replacement in rural areas, which occurred in Taiwan, suggesting it is important to monitor causes of death for substitution of other types of potential suicide methodologies (Chen, Kwok, Yip, & Wu, 2013).

In some studies, rural areas are reported to have lower rates of suicidal behavior than urban areas including in Mexico, Nigeria, Spain, and South Africa (Alvaro-Meca, Kneib, Gil-Prieto, & Gil de Miguel, 2013; Borges et al., 2009; Omigbodun, Dogra, Esan, & Adedokun, 2008; van Pletzen, Stein, Seedat, Williams, & Myer, 2012). In addition, some studies, such as those conducted in China, indicate that rates of suicide have been rapidly decreasing for rural areas (Sun, Guo, Zhang, Jia, & Xu, 2013). Similarly, some findings suggest younger rural residents are at greater suicide risk, whereas other research suggests it is older adults at greater risk; some research, such as with rural Australian farmers, suggest it is both younger and older adults who are at bimodal risk (Amautovska et al., 2014). Further study of such anomalies will be important contributions to our understanding of risk and protective factors for rural suicide.

Finally, there are some curious findings regarding emigration from and immigration to rural areas, as related to suicide. Visitors to high-suicide, often-rural states, who were not previously suicidal, manifest increasing levels of suicidal behavior over time and, conversely, residents of such states who are away from those regions also manifest greater levels of suicidal behavior (Shrira & Christenfeld, 2010); perhaps the old saying is true, that “you can take a woman/man out of the country, but you cannot take the country out of a woman/man.” Such a pattern suggests that there may be some contextual and intrapersonal, potentially learned, factors involved in the development and maintenance of rural suicidal behavior that not only disproportionately contribute to risk for current residents, but also for emigrants to and immigrants from rural areas (Pan & Carpio, 2013). This pattern suggests a critical area for future research and intervention, that being a focus on differentiating rural-likely, rural-specific, and rural-unique risk and protective factors from one another, and from traditional and urban-based risk and protective factors (Judd et al., 2006).

Conclusion

Often considered idyllic and slow-paced, or stereotyped as backward and uneducated, rural communities and the individuals that reside there appear to be vulnerable to numerous impactful forces that contribute to risk for suicide. Yet, despite a growing body of research acknowledging the epidemic of rural suicide, this population continues to be overlooked and underserved with regard to the identification and treatment of suicidal behavior, at both the individual and public health levels. This current literature review supports the notion that both place-effects, including geographic isolation and social belief systems emanating from rural communities, and person-effects, such as poor mental health, influence rural suicide risk, and suggests that successful interventions must consider each of these dimensions to be effective.

References

- Alaghebandan, R., Lari, A., Joghataei, M. T., & Islami, A. (2011). The role of marital status, literacy, and urbanicity in suicidal behavior by burns in the province of Khorasan, Iran. *Community Mental Health Journal*, 47, 181–185. doi:10.1007/s10597-010-9297-1
- Allen, J., Mohatt, G., Fok, C. C. T., & Henry, D. (2009). Suicide prevention as a community development process: Understanding circumpolar youth suicide prevention through community level outcomes. *International Journal of Circumpolar Health*, 68, 274–291. Retrieved from <http://www.circumpolarhealthjournal.net/index.php/ijch/article/view/18328>. doi:10.3402/ijch.v68i3.18328
- Alston, M. (2012). Rural male suicide in Australia. *Social Science & Medicine*, 74, 515–522. doi:10.1016/j.socscimed.2010.04.036
- Alston, M., & Kent, J. (2008). The big dry: The link between rural masculinities and poor health outcomes for farming men. *Journal of Sociology*, 44, 133–147. Retrieved from <http://jos.sagepub.com/content/44/2/133.abstract>. doi:10.1177/1440783308089166
- Álvaro-Meca, A., Kneib, T., Gil-Prieto, R., & Gil de Miguel, A. (2013). Epidemiology of suicide in Spain, 1981–2008: A spatiotemporal analysis. *Public Health*, 127, 380–385. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0033350612004568>. doi:10.1016/j.puhe.2012.12.007
- Armstrong, L., & Manion, I. G. (2006). Suicidal ideation in young males living in rural communities:

- Distance from school as a risk factor, youth engagement as a protective factor. *Vulnerable Children and Youth Studies*, 1, 102–113. doi:10.1080/17450120600659010
- Arnautovska, U., McPhedran, S., & De Leo, D. (2014). A regional approach to understanding farmer suicide rates in Queensland. *Social Psychiatry and Psychiatric Epidemiology*, 49, 593–599. doi:10.1007/s00127-013-0777-9
- Arvaniti, A., Livaditis, M., Kanioti, E., Davis, E., Samakouri, M., & Xenitidis, K. (2005). Mental health problems in the elderly in residential care in Greece: A pilot study. *Aging & Mental Health*, 9, 142–145. doi:10.1080/13607860412331336869
- Behere, P. B., & Behere, A. (2008). Farmers' suicide in Vidarbha region of Maharashtra state: A myth or reality? *Indian Journal of Psychiatry*, 50, 124–127. doi:10.4103/0019-5545.42401
- Borges, G., Medina-Mora, M. E., Orozco, R., Oueda, C., Villatoro, J., & Fleiz, C. (2009). Distribution and socio-demographic determinants of the suicidal behavior in Mexico. *Salud Mental*, 32, 413–425.
- Boyd, C. P., Hayes, L., Wilson, R. L., & Bearsley-Smith, C. (2008). Harnessing the social capital of rural communities for youth mental health: An asset-based community development framework. *The Australian Journal of Rural Health*, 16, 189–193. doi:10.1111/j.1440-1584.2008.00996.x
- Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, 32, 513–531. doi:10.1037/0003-066X.32.7.513
- Brown, R. P., Imura, M., & Osterman, L. L. (2014). Gun culture: Mapping a peculiar preference for firearms in the commission of suicide. *Basic and Applied Social Psychology*, 36, 164–175. doi:10.1080/01973533.2014.882259
- Centers for Disease Control and Prevention. (2014). *Web-based Injury Statistics Query and Reporting System (WISQARS)*. Atlanta, GA: National Center for Injury Prevention and Control.
- Cha, E. S., Khang, Y. H., & Lee, W. J. (2014). Mortality from and incidence of pesticide poisoning in South Korea: Findings from national death and health utilization data between 2006 and 2010. *PloS one*, 9, e95299. doi:10.1371/journal.pone.0095299
- Chang, E. C., Yu, E. A., & Hirsch, J. K. (2013). On the influence of optimism and hope on depressive symptoms in primary care patients: Does doubling up on bonum futurum Proffer any added benefits? *The Journal of Positive Psychology*, 8, 404–411. doi:10.1080/17439760.2013.818163
- Chang, S. S., Sterne, J. A. C., Wheeler, B. W., Lu, T. H., Lin, J. J., & Gunnell, D. (2011). Geography of suicide in Taiwan: Spatial patterning and socioeconomic correlates. *Health & Place*, 17, 641–650. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1353829211000062>. doi:10.1016/j.healthplace.2011.01.003
- Chen, Y. Y., Chien-Chang Wu, K., Yousuf, S., & Yip, P. S. F. (2012). Suicide in Asia: Opportunities and challenges. *Epidemiologic Reviews*, 34, 129–144. doi:10.1093/epirev/mxr025
- Chen, Y. Y., Kwok, C. L., Yip, P. S. F., & Wu, K. C.-C. (2013). A test of the substitution hypothesis: An analysis of urban and rural trends in solid/liquid poisoning suicides in Taiwan. *Social Science & Medicine*, 96, 45–51. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0277953613003754>. doi:10.1016/j.socscimed.2013.06.031
- Cheung, Y. T. D., Spittal, M. J., Pirkis, J., & Yip, P. S. F. (2012). Spatial analysis of suicide mortality in Australia: Investigation of metropolitan-rural-remote differentials of suicide risk across states/territories. *Social Science & Medicine*, 75, 1460–1468. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0277953612003474>. doi:10.1016/j.socscimed.2012.04.008
- Chowdhury, A. N., Banerjee, S., Brahma, A., & Biswas, M. K. (2013). Participatory research for preventing pesticide-related DSH and suicide in Sundarban, India: A brief report. *International Scholarly Research Notices*, 2013, 1–10. doi:10.1155/2013/427417
- Congdon, P. (2011). The spatial pattern of suicide in the U.S. in relation to deprivation, fragmentation and rurality. *Urban Studies*, 48, 2101–2122. doi:10.1177/0042098010380961
- Congdon, P. (2013). Assessing the impact of socioeconomic variables on small area variations in suicide outcomes in England. *International journal of environmental research and public health*, 10, 158–177. doi:10.3390/ijerph10010158
- Cook, S. J., MacPherson, K., & Langille, D. B. (2007). Far from ideal: Weight perception, weight control, and associated risky behaviour of adolescent girls in Nova Scotia. *Canadian Family Physician*, 53, 678–684. Retrieved from <http://www.cfp.ca/content/53/4/678.abstract>
- Dilsaver, S. C., Benazzi, F., Akiskal, K. K., & Akiskal, H. S. (2008). Differential patterns of lifetime multiple anxiety disorder comorbidity between Latino adults with bipolar I and major depressive disorders. *Bulletin of the Menninger Clinic*, 72, 130–148. doi:10.1521/bumc.2008.72.2.130
- Dongre, A. R., & Deshmukh, P. R. (2012). Farmers' suicides in the Vidarbha region of Maharashtra, India: A qualitative exploration of their causes. *Journal of Injury and Violence Research*, 4, 2–18. doi:10.5249/jivr.v4i1.68
- Fang, L., Heisel, M. J., Duberstein, P. R., & Zhang, J. (2012). Combined effects of neuroticism and extraversion: Findings from a matched case con-

- trol study of suicide in rural China. *Journal of Nervous and Mental Disease*, 200, 598–602. doi:10.1097/NMD.0b013e31825bf53
- Fekadu, A., Alem, A., Medhin, G., Shibre, T., Cleare, A., Prince, M., & Kebede, D. (2007). Utility of the concept of minor depressive disorder: Evidence from a large rural community sample in a developing country setting. *Journal of Affective Disorders*, 104, 111–118. doi:10.1016/j.jad.2007.03.008
- Gao, Q., Zhang, J., & Jia, C. (2011). Psychometric properties of the Dickman Impulsivity Instrument in suicide victims and living controls of rural China. *Journal of Affective Disorders*, 132, 368–374. doi:10.1016/j.jad.2011.03.002
- Garnham, B., & Bryant, L. (2014). Problematising the suicides of older male farmers: Subjective, social and cultural considerations. *Sociologia Ruralis*, 54, 227–240. doi:10.1111/soru.12029
- Gong, Y., Zhang, L., Wang, Z., & Liang, Y. (2011). Pathway analysis of risk factors for severe suicidal ideation: A survey in rural China. *Canadian Journal of Public Health*, 102, 472–475.
- Griffiths, K., Christensen, H., & Jorm, A. (2009). Mental health literacy as a function of remoteness of residence: An Australian national study. *BMC Public Health*, 9, 92. doi:10.1186/1471-2458-9-92
- Hagaman, A. K., Wagenaar, B. H., McLean, K. E., Kaiser, B. N., Winskell, K., & Kohrt, B. A. (2013). Suicide in rural Haiti: Clinical and community perceptions of prevalence, etiology, and prevention. *Social Science & Medicine*, 83, 61–69. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0277953613000592>. doi:10.1016/j.socscimed.2013.01.032
- Handley, T. E., Inder, K. J., Kay-Lambkin, F. J., Stain, H. J., Fitzgerald, M., Lewin, T. J., . . . Kelly, B. J. (2012). Contributors to suicidality in rural communities: Beyond the effects of depression. *BMC Psychiatry*, 12, 1–10. doi:10.1186/1471-244X-12-105
- Handley, T. E., Inder, K. J., Kelly, B. J., Attia, J. R., & Kay-Lambkin, F. J. (2011). Urban-rural influences on suicidality: Gaps in the existing literature and recommendations for future research. *The Australian Journal of Rural Health*, 19, 279–283. doi:10.1111/j.1440-1584.2011.01235.x
- Handley, T., Inder, K., Kelly, B., Attia, J., Lewin, T., Fitzgerald, M., & Kay-Lambkin, F. J. (2012). You've got to have friends: The predictive value of social integration and support in suicidal ideation among rural communities. *Social Psychiatry and Psychiatric Epidemiology*, 47, 1281–1290. doi:10.1007/s00127-011-0436-y
- Handley, T. E., Kay-Lambkin, F. J., Inder, K. J., Attia, J. R., Lewin, T. J., & Kelly, B. J. (2014). Feasibility of internet-delivered mental health treatments for rural populations. *Social Psychiatry and Psychiatric Epidemiology*, 49, 275–282. doi:10.1007/s00127-013-0708-9
- Hanigan, I. C., Butler, C. D., Kokic, P. N., & Hutchinson, M. F. (2012). Suicide and drought in New South Wales, Australia, 1970–2007. *Proceedings of the National Academy of Sciences of the United States of America*, 109, 13950–13955. doi:10.1073/pnas.1112965109
- Hay, C., & Meldrum, R. (2010). Bullying victimization and adolescent self-harm: Testing hypotheses from general strain theory. *Journal of Youth and Adolescence*, 39, 446–459. doi:10.1007/s10964-009-9502-0
- Hegney, D. G., Buikstra, E., Baker, P., Rogers-Clark, C., Pearce, S., Ross, H., . . . Watson-Luke, A. (2007). Individual resilience in rural people: A Queensland study, Australia. *Rural and Remote Health*, 7, 620.
- Hempstead, K. (2006). The geography of self-injury: Spatial patterns in attempted and completed suicide. *Social Science & Medicine*, 62, 3186–3196. doi:10.1016/j.socscimed.2005.11.038
- Hirsch, J. K. (2006). A review of the literature on rural suicide: Risk and protective factors, incidence and prevention. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*, 27, 189–199. doi:10.1027/0227-5910.27.4.189
- Hirsch, J. K., Wolford, K., LaLonde, S. M., Brunk, L., & Parker-Morris, A. (2009). Optimistic explanatory style as a moderator of the association between negative life events and suicide ideation. *Crisis*, 30, 48–53. doi:10.1027/0227-5910.30.1.48
- Hogan, A., Scarr, E., Lockie, S., Chant, B., & Alston, S. (2012). Ruptured identity of male farmers: Subjective crisis and the risk of suicide. *Journal of Rural Social Sciences*, 27, 118–140.
- Hounscome, B., Edwards, R., Hounscome, N., & Edwards-Jones, G. (2012). Psychological morbidity of farmers and non-farming population: Results from a U.K. survey. *Community Mental Health Journal*, 48, 503–510. doi:10.1007/s10597-011-9415-8
- Hughes, R. B., Nosek, M. A., & Robinson-Whelen, S. (2007). Correlates of depression in rural women with physical disabilities. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 36, 105–114. doi:10.1111/j.1552-6909.2006.00122.x
- Jones, A. R., Cook, T. M., & Wang, J. (2011). Rural-urban differences in stigma against depression and agreement with health professionals about treatment. *Journal of Affective Disorders*, 134, 145–150. doi:10.1016/j.jad.2011.05.013
- Jones, D. L., Cassidy, L., & Heflinger, C. A. (2012). You can talk to them. You can pray: Rural clergy responses to adolescents with mental health concerns. *Journal of Rural Mental Health*, 36, 24. doi:10.1037/h0094777
- Judd, F., Cooper, A. M., Fraser, C., & Davis, J. (2006). Rural suicide: People or place effects?

- Australian and New Zealand Journal of Psychiatry*, 40, 208–216.
- Jung, H., Matei, D. B., & Hecser, L. (2009). Biostatistical study of suicide features in Mures County (Romania). *Legal Medicine*, 11, S95–S97. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1344622309001515>
- Kageyama, T. (2012). Views on suicide among middle-aged and elderly populations in Japan: Their association with demographic variables and feeling shame in seeking help. *Psychiatry and Clinical Neurosciences*, 66, 105–112. doi:10.1111/j.1440-1819.2011.02313.x
- Kahramansoy, N., Gürbüz, N., Kurt, F., Erkol, H., & Boztas, G. (2013). Gender differences in trauma mechanisms, and outcomes in a rural hospital which is not designed as trauma centre. *Emergency Medicine Journal*, 30, e16. doi:10.1136/emmermed-2011-200657
- Kaneko, Y., & Motohashi, Y. (2007). Male gender and low education with poor mental health literacy: A population-based study. *Journal of Epidemiology*, 17, 114–119. doi:10.2188/jea.17.114
- Kapusta, N. D., Zorman, A., Etzersdorfer, E., Ponocny-Seliger, E., Jandl-Jager, E., & Sonneck, G. (2008). Rural–urban differences in Austrian suicides. *Social Psychiatry and Psychiatric Epidemiology*, 43, 311–318. doi:10.1007/s00127-008-0317-1
- Kastanaki, A. E., Kraniotis, C. F., Kranioti, E. F., Nathana, D., Theodorakis, P. N., & Michalodimitrakis, M. (2010). Suicide by pesticide poisoning. *Crisis*, 31, 328–334. doi:10.1027/0227-5910/a000042
- Keugoung, B., Kongnyu, E. T., Meli, J., & Criel, B. (2013). Profile of suicide in rural Cameroon: Are health systems doing enough? *Tropical Medicine & International Health*, 18, 985–992. doi:10.1111/tmi.12140
- Kiankhooy, A., Crookes, B., Privette, A., Osler, T., & Sartorelli, K. (2009). Fait accompli: Suicide in a rural trauma setting. *The Journal of Trauma and Acute Care Surgery*, 67, 366–371. doi:10.1097/TA.0b013e3181ae81d5
- Kim, M. H., Jung-Choi, K., Jun, H. J., & Kawachi, I. (2010). Socioeconomic inequalities in suicidal ideation, parasuicides, and completed suicides in South Korea. *Social Science & Medicine*, 70, 1254–1261. doi:10.1016/j.socscimed.2010.01.004
- Kim, N., Mickelson, J. B., Brenner, B. E., Haws, C. A., Yurgelun-Todd, D. A., & Renshaw, P. F. (2011). Altitude, gun ownership, rural areas, and suicide. *American Journal of Psychiatry*, 168, 49–54. doi:10.1176/appi.ajp.2010.10020289
- Kinyanda, E., Kizza, R., Levin, J., Ndyababangi, S., & Abbo, C. (2011). Adolescent suicidality as seen in rural northeastern Uganda. *Crisis*, 32, 43–51. doi:10.1027/0227-5910/a000059
- Klieve, H., Svetcic, J., & De Leo, D. (2009). Who uses firearms as a means of suicide? A population study exploring firearm accessibility and method choice. *BMC Medicine*, 7, 52. doi:10.1186/1741-7015-7-52
- Kposowa, A. J. (2013). Association of suicide rates, gun ownership, conservatism and individual suicide risk. *Social Psychiatry and Psychiatric Epidemiology*, 48, 1467–1479. doi:10.1007/s00127-013-0664-4
- Kuipers, P., Appleton, J., & Pridmore, S. (2012). Thematic analysis of key factors associated with Indigenous and non-Indigenous suicide in the Northern Territory, Australia. *Rural and Remote Health*, 12, 1–16.
- Lahti, A., Keranen, S., Hakko, H., Riala, K., & Rasanen, P. (2014). Northern excess in adolescent male firearm suicides: A register-based regional study from Finland, 1972–2009. *European Child and Adolescent Psychiatry*, 23, 45–52. doi:10.1007/s00787-013-0422-x
- Li, X., & Phillips, M. R. (2010). The acceptability of suicide among rural residents, urban residents, and college students from three locations in China. *Crisis*, 31, 183–193. doi:10.1027/0227-5910/a000024
- Li, X., Xiao, Z., & Xiao, S. (2009). Suicide among the elderly in mainland China. *Psychogeriatrics*, 9, 62–66. doi:10.1111/j.1479-8301.2009.00269.x
- Liu, H. L. (2009). Epidemiologic characteristics and trends of fatal suicides among the elderly in Taiwan. *Suicide and Life-Threatening Behavior*, 39, 103–113. doi:10.1521/suli.2009.39.1.103
- Macente, L. B., & Zandonade, E. (2012). Spatial distribution of suicide incidence rates in municipalities in the state of Espirito Santo (Brazil), 2003–2007: Spatial analysis to identify risk areas. *Revista Brasileira de Psiquiatria*, 34, 261–269. doi:10.1016/j.rbp.2011.11.001
- Mainio, A., Karvonen, K., Hakko, H., Sarkioja, T., & Rasanen, P. (2009). Parkinson's disease and suicide: A profile of suicide victims with Parkinson's disease in a population-based study during the years 1988–2002 in Northern Finland. *International Journal of Geriatric Psychiatry*, 24, 916–920. doi:10.1002/gps.2194
- Manoranjitham, S. D., Rajkumar, A. P., Thangadurai, P., Prasad, J., Jayakaran, R., & Jacob, K. S. (2010). Risk factors for suicide in rural south India. *The British Journal of Psychiatry*, 196, 26–30. Retrieved from <http://bjp.rcpsych.org/content/196/1/26.abstract>. doi:10.1192/bjp.bp.108.063347
- Marecek, J. (2006). Young women's suicide in Sri Lanka: Cultural, ecological, and psychological factors. *Asian Journal of Counselling*, 13, 63–92.
- Marshall, J. M., & Dunstan, D. A. (2013). Mental health literacy of Australian rural adolescents: An analysis using vignettes and short films. *Australian*

- Psychologist*, 48, 119–127. doi:10.1111/j.1742-9544.2011.00048.x
- Martello, M. A., Cipriani, F., Voller, F., Buiatti, E., & Giacchi, M. (2006). The descriptive epidemiology of suicide in Tuscany, 1988–2002. *Epidemiology and Psychiatric Sciences*, 15, 202–210. doi:10.1017/S1121189X00004450
- McCarthy, J. F., Blow, F. C., Ignacio, R. V., Ilgen, M. A., Austin, K. L., & Valenstein, M. (2012). Suicide among patients in the Veterans Affairs health system: Rural - urban differences in rates, risks, and methods. *American Journal of Public Health*, 102, S111–S117. doi:10.2105/AJPH.2011.300463
- McDonald, T. W., & Pritchard, M. E. (2010). Mental health and substance abuse issues among Native Americans living on a remote reservation: Results from a community survey. *Journal of Rural Community Psychology*, 13, 1–12.
- McPhedran, S., & De Leo, D. (2013). Miseries suffered, unvoiced, unknown? Communication of suicidal intent by men in rural Queensland, Australia. *Suicide and Life-Threatening Behavior*, 43, 589–597. doi:10.1111/sltb.12041
- Meehan, S. A., & Broom, Y. (2007). Analysis of a national toll free suicide crisis line in South Africa. *Suicide and Life-Threatening Behavior*, 37, 66–78. doi:10.1521/suli.2007.37.1.66
- Miller, K., & Burns, C. (2008). Suicides on farms in South Australia, 1997–2001. *The Australian Journal of Rural Health*, 16, 327–331. doi:10.1111/j.1440-1584.2008.01011.x
- Miotto, P., & Preti, A. (2008). Suicide ideation and social desirability among school-aged young people. *Journal of Adolescence*, 31, 519–533. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0140197107000760>. doi:10.1016/j.adolescence.2007.08.004
- Mishara, B. L. (2007). Prevention of deaths from intentional pesticide poisoning. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*, 28, 10–20. doi:10.1027/0227-5910.28.S1.10
- Motohashi, Y., Kaneko, Y., & Sasaki, H. (2005). Lowering suicide rates in rural Japan. *Akita Journal of Public Health*, 2, 105–106.
- Nance, M. L., Carr, B. G., Kallan, M. J., Branas, C. C., & Wiebe, D. J. (2010). Variation in pediatric and adolescent firearm mortality rates in rural and urban U.S. counties. *Pediatrics*, 125, 1112–1118. doi:10.1542/peds.2009-3219
- Naved, R. T., & Akhtar, N. (2008). Spousal violence against women and suicidal ideation in Bangladesh. *Women's Health Issues*, 18, 442–452. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1049386708000972>. doi:10.1016/j.whi.2008.07.003
- Nguyen, T. V., Dalman, C., Le, T. C., Nguyen, T. V., Tran, N. V., & Allebeck, P. (2010). Suicide attempt in a rural area of Vietnam: Incidence, methods used and access to mental health care. *International Journal of Mental Health Systems*, 4, 3. doi:10.1186/1752-4458-4-3
- Nsamenang, S. A., Webb, J. R., Cukrowicz, K. C., & Hirsch, J. K. (2013). Depressive symptoms and interpersonal needs as mediators of forgiveness and suicidal behavior among rural primary care patients. *Journal of Affective Disorders*, 149, 282–290. doi:10.1016/j.jad.2013.01.042
- Ojagbemi, A., Oladeji, B., Abiona, T., & Gureje, O. (2013). Suicidal behaviour in old age: Results from the Ibadan study of ageing. *BMC Psychiatry*, 13, 80. doi:10.1186/1471-244X-13-80
- Omigbodun, O., Dogra, N., Esan, O., & Adedokun, B. (2008). Prevalence and correlates of suicidal behaviour among adolescents in southwest Nigeria. *International Journal of Social Psychiatry*, 54, 34–46. doi:10.1177/0020764007078360
- Orui, M., Kawakami, N., Iwata, N., Takeshima, T., & Fukao, A. (2011). Lifetime prevalence of mental disorders and its relationship to suicidal ideation in a Japanese rural community with high suicide and alcohol consumption rates. *Environmental Health and Preventive Medicine*, 16, 384–389. doi:10.1007/s12199-011-0209-y
- Page, A., Morrell, S., Taylor, R., Dudley, M., & Carter, G. (2007). Further increases in rural suicide in young Australian adults: Secular trends, 1979–2003. *Social Science & Medicine*, 65, 442–453. doi:10.1016/j.socscimed.2007.03.029
- Pan, S. W., & Carpiano, R. M. (2013). Immigrant density, sense of community belonging, and suicidal ideation among racial minority and white immigrants in Canada. *Journal of Immigrant Minority Health*, 15, 34–42. doi:10.1007/s10903-012-9657-8
- Park, B. C., & Lester, D. (2012). Rural and urban suicide in South Korea. *Psychological Reports*, 111, 495–497. doi:10.2466/12.17.PR0.111.5.495-497
- Patel, V., Ramasundarahettige, C., Vijayakumar, L., Thakur, J. S., Gajalakshmi, V., Gururaj, G., . . . Jha, P. (2012). Suicide mortality in India: A nationally representative survey. *The Lancet*, 379, 2343–2351. doi:10.1016/S0140-6736(12)60606-0
- Pearce, J., Barnett, R., & Jones, I. (2007). Have urban/rural inequalities in suicide in New Zealand grown during the period 1980–2001? *Social Science & Medicine*, 65, 1807–1819. doi:10.1016/j.socscimed.2007.05.044
- Phillips, M. R., & Cheng, H. G. (2012). The changing global face of suicide. *The Lancet*, 379, 2318–2319. doi:10.1016/S0140-6736(12)60913-1
- Pisani, A. R., Schmeelk-Cone, K., Gunzler, D., Petrova, M., Goldston, D., Tu, X., & Wyman, P. (2012). Associations between suicidal high school students: Help-seeking and their attitudes and per-

- ceptions of social environment. *Journal of Youth and Adolescence*, 41, 1312–1324. doi:10.1007/s10964-012-9766-7
- Poon, C. S., & Saewyc, E. M. (2009). Out yonder: Sexual-minority adolescents in rural communities in British Columbia. *American Journal of Public Health*, 99, 118–124. doi:10.2105/AJPH.2007.122945
- Qi, X., Hu, W., Page, A., & Tong, S. (2012). Spatial clusters of suicide in Australia. *BMC Psychiatry*, 12, 86. doi:10.1186/1471-244X-12-86
- Razvodovsky, Y. E. (2011). Suicide and fatal alcohol poisoning among rural and urban population of Belarus. *European Psychiatry*, 26, 1638–1738. doi:10.1016/S0924-9338(11)73342-9
- Razvodovsky, Y., & Stickley, A. (2009). Suicide in urban and rural regions of Belarus, 1990–2005. *Public Health*, 123, 27–31. doi:10.1016/j.puhe.2008.10.003
- Rudatsikira, E., Muula, A., Siziya, S., & Twa-Twa, J. (2007). Suicidal ideation and associated factors among school-going adolescents in rural Uganda. *BMC Psychiatry*, 7, 67. doi:10.1186/1471-244X-7-67
- Sankaranarayanan, A., Carter, G., & Lewin, T. (2010). Rural-urban differences in suicide rates for current patients of a public mental health service in Australia. *Suicide and Life-Threatening Behavior*, 40, 376–382. doi:10.1521/suli.2010.40.4.376
- Sarma, K., & Kola, S. (2010). Firearm suicide decedents in the Republic of Ireland, 1980–2005. *Public Health*, 124, 278–283. doi:10.1016/j.puhe.2010.02.018
- Sartore, G. M., Kelly, B., & Stain, H. J. (2007). Drought and its effect on mental health: How GPs can help. *Australian Family Physician*, 36, 990–993.
- Sauvaiget, C., Ramadas, K., Fayette, J. M., Thomas, G., Thara, S., & Sankaranarayanan, R. (2009). Completed suicide in adults of rural Kerala: Rates and determinants. *The National medical journal of India*, 22, 228–233.
- Searles, V. B., Valley, M. A., Hedegaard, H., & Betz, M. E. (2014). Suicides in urban and rural counties in the United States, 2006–2008. *Crisis*, 35, 18–26. doi:10.1027/0227-5910/a000224
- Shilubane, H. N., Ruiter, R., Bos, A., van den Borne, B., James, S., & Reddy, P. (2014). Psychosocial correlates of suicidal ideation in rural South African adolescents. *Child Psychiatry and Human Development*, 45, 153–162. doi:10.1007/s10578-013-0387-5
- Shrira, I., & Christenfeld, N. (2010). Disentangling the person and the place as explanations for regional differences in suicide. *Suicide and Life-Threatening Behavior*, 40, 287–297. doi:10.1521/suli.2010.40.3.287
- Silviken, A., Haldorsen, T., & Kvernmo, S. (2006). Suicide among Indigenous Sami in Arctic Norway, 1970–1998. *European Journal of Epidemiology*, 21, 707–713. doi:10.1007/s10654-006-9052-7
- Singh, G. K., Azuine, R., Siahpush, M., & Kogan, M. (2013). All-cause and cause-specific mortality among US youth: Socioeconomic and rural–urban disparities and international patterns. *Journal of Urban Health*, 90, 388–405. doi:10.1007/s11524-012-9744-0
- Slovak, K., & Singer, J. B. (2012). Engaging parents of suicidal youth in a rural environment. *Child & Family Social Work*, 17, 212–221. doi:10.1111/j.1365-2206.2012.00826.x
- Smailyte, G., Jasilionis, D., Kaceniene, A., Krilaviciute, A., Ambrozaitiene, D., & Stankuniene, V. (2013). Suicides among cancer patients in Lithuania: A population-based census-linked study. *Cancer Epidemiology*, 37, 714–718. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1877782113000969>
- Smith, K. B., Humphreys, J. S., & Wilson, M. G. A. (2008). Addressing the health disadvantage of rural populations: How does epidemiological evidence inform rural health policies and research? *Australian Journal of Rural Health*, 16, 56–66. doi:10.1111/j.1440-1584.2008.00953.x
- Stark, C. R., Riordan, V., & O'Connor, R. (2011). A conceptual model of suicide in rural areas. *Rural and Remote Health*, 11, 1622.
- Stark, C. R., Vaughan, S., Huc, S., & O'Neill, N. (2012). Service contacts prior to death in people dying by suicide in the Scottish Highlands. *Rural and Remote Health*, 12, 1876.
- Sturgeon, R., & Morrisette, P. J. (2010). A qualitative analysis of suicide ideation among Manitoban farmers. *Canadian Journal of Counselling and Psychotherapy*, 44, 191–207.
- Sudhir Kumar, C. T., Mohan, R., Ranjith, G., & Chandrasekaran, R. (2006). Gender differences in medically serious suicide attempts: A study from South India. *Psychiatry Research*, 144, 79–86. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0165178105003811>. doi:10.1016/j.psychres.2005.11.012
- Sun, J., Guo, X., Zhang, J., Jia, C., & Xu, A. (2013). Suicide rates in Shandong, China, 1991–2010: Rapid decrease in rural rates and steady increase in male to female ratio. *Journal of Affective Disorders*, 146, 361–368. doi:10.1016/j.jad.2012.09.020
- Szanto, K., Kalmar, S., Hendin, H., Rihmer, Z., & Mann, J. (2007). A suicide prevention program in a region with a very high suicide rate. *Archives of General Psychiatry*, 64, 914–920. doi:10.1001/archpsyc.64.8.914
- Titelman, D., Oskarsson, H., Wahlbeck, K., Nordentoft, M., Mehlum, L., Jiang, G. X., . . . Waserman, D. (2013). Suicide mortality trends in the

- Nordic countries 1980–2009. *Nordic Journal of Psychiatry*, 67, 414–423. doi:10.3109/08039488.2012.752036
- Tong, Y., & Phillips, M. R. (2010). Cohort-specific risk of suicide for different mental disorders in China. *The British Journal of Psychiatry*, 196, 467–473. Retrieved from <http://bjp.rcpsych.org/content/196/6/467.abstract> doi:10.1192/bjp.bp.109.070409
- Traphagan, J. W. (2010). Intergenerational ambivalence, power, and perceptions of elder suicide in rural Japan. *Journal of Intergenerational Relationships*, 8, 21–37. doi:10.1080/15350770903520643
- van Pletzen, E., Stein, D. J., Seedat, S., Williams, D. R., & Myer, L. (2012). Recall of early non-fatal suicidality in a nationally representative sample of South Africans. *Ethnicity & Health*, 17, 149–159. doi:10.1080/13557858.2012.664271
- Värnik, P. (2012). Suicide in the world. *International Journal of Environmental Research and Public Health*, 9, 760–771. doi:10.3390/ijerph9030760
- Vijayakumar, L. (2010). Indian research on suicide. *Indian Journal of Psychiatry*, 52, S291–S296. doi:10.4103/0019-5545.69255
- Vung, N. D., Ostergren, P. O., & Krantz, G. (2009). Intimate partner violence against women, health effects and health care seeking in rural Vietnam. *European Journal of Public Health*, 2009, 19, 178–192. doi:10.1093/eurpub/ckn136
- Wagenaar, B. H., Hagaman, A. K., Kaiser, B. N., McLean, K. E., & Kohrt, B. A. (2012). Depression, suicidal ideation, and associated factors: A cross-sectional study in rural Haiti. *BMC Psychiatry*, 12, 1–13. doi:10.1186/1471-244X-12-149
- Wagenaar, B. H., Kohrt, B. A., Hagaman, A. K., McLean, K. E., & Kaiser, B. N. (2013). Determinants of care seeking for mental health problems in rural Haiti: Culture, cost, or competency. *Psychiatric Services*, 64, 366–372. doi:10.1176/appi.ps.201200272
- Walker, R. L., Ashby, J., Hoskins, O. D., & Greene, F. N. (2009). Peer-support suicide prevention in a non-metropolitan U.S. community. *Adolescence*, 44, 335–346.
- Wang, X., Jia, C., Zhuang, M., Gao, Q., Liu, L., Liu, H., & Han, M. (2011). Psychometric characteristics of the self-esteem scale and association between self-esteem and suicide in the rural population. *Journal of Shandong Health University (Health Sciences)*, 7, 39–45.
- Wenzel, T., Rushiti, F., Aghani, F., Diaconu, G., Maxhuni, B., & Zitterl, W. (2009). Suicidal ideation, post-traumatic stress and suicide statistics in Kosovo. *Torture*, 19, 238–247.
- Wu, L., Shen, M., Chen, H., Zhang, T., Cao, Z., Xiang, H., & Wang, Y. (2013). The relationship between elder mistreatment and suicidal ideation in rural older adults in China. *The American Journal of Geriatric Psychiatry*, 21, 1020–1028. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1064748113000419>. doi:10.1016/j.jagp.2013.01.036
- Yanqiu, G., Yan, W., & Lin, A. (2011). Suicidal ideation and the prevalence of intimate partner violence against women in rural western China. *Violence Against Women*, 10, 1299. doi:10.1177/1077801211425217
- Yip, P. S. F., & Liu, K. (2006). The ecological fallacy and the gender ratio of suicide in China. *The British Journal of Psychiatry*, 189, 465–466. doi:10.1192/bjp.bp.106.021816
- Zaheer, J., Links, P. S., Law, S., Shera, W., Hodges, B., Ka Tat Tsang, A., . . . Liu, P. (2014). Developing a matrix model of rural suicide prevention. *International Journal of Mental Health*, 40, 28–49. doi:10.2753/IMH0020-7411400403
- Zhang, J., Li, N., Tu, X. M., Xiao, S., & Jia, C. (2011). Risk factors for rural young suicide in China: A case-control study. *Journal of Affective Disorders*, 129, 244–251. doi:10.1016/j.jad.2010.09.008
- Zhang, J., & Li, Z. (2011). Suicide means used by Chinese rural youths: A comparison between those with and without mental disorders. *Journal of Nervous and Mental Disease*, 199, 410–415. doi:10.1097/NMD.0b013e31821d3ac7
- Zhang, J., & Liu, E. (2012). Confucianism and youth suicide in rural China. *Review of Religious Research*, 54, 93–111. doi:10.1007/s13644-011-0027-0
- Zhang, J., & Ma, Z. (2012). Patterns of life events preceding the suicide in rural young Chinese: A case control study. *Journal of Affective Disorders*, 140, 161–167. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0165032712000171>. doi:10.1016/j.jad.2012.01.010
- Zhang, J., & Sun, L. (2014). Suicide ideation and acceptability among females aged 15 to 34 years in rural China. *Journal of Nervous and Mental Disease*, 202, 161–166. doi:10.1097/NMD.0000000000000104
- Zhang, J., Wiecek, W., Conwell, Y., Tu, X. M., Wu, B. Y. W., Xiao, S., & Jia, C. (2010). Characteristics of young rural Chinese suicides: A psychological autopsy study. *Psychological Medicine*, 4, 581–589. doi:10.1017/S0033291709990808
- Zhang, J., Xiao, S., & Zhou, L. (2010). Mental disorders and suicide among young rural Chinese: A case-control psychological autopsy study. *American Journal of Psychiatry*, 167, 773–781. doi:10.1176/appi.ajp.2010.09101476

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