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 empirical 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-
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, Riordan, & 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 suicide 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 (Keougoung, Kongnyu, Meli, & Criel, 2013); England (Congdon, 2013); Kosovo (Wenzel et al., 2009); Taiwan (Chang et al., 2011); Iran (Alaghehbhandari, Lari, Joghataei, & Islami, 2011); Italy, particularly for males (Martelli, 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 (Sauvaget 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, Ranjit, & Chandrasekaran, 2006). In most rural locales, such as in Turkey and Uganda, females report greater suicidal behavior, including ideation and attempts (Kahramansoy, Gürbüz, Kurt, Erkol, & Boztas, 2013; Rudatsikira, Muula, Siziya, & Twu-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, Kocic, & Hutchinson, 2012). In a study of Canadian farmers, financial stress, family salvation, and farming pressures were related to suicide ideation (Sturgeon & Morrissette, 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; Hounsome, Edwards, Hounsome, & 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 & Saewycz, 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, Ndyanabangi, & Abbo, 2011; Sauvaget 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; Yanqu, 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 (Smialyte 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 interconnectedness 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, Kalmar, 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 residents 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, & Hefflinger, 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 (Álvaro-Meca, Kneib, Gil-Prieto, & Gil de Miguel, 2013; Borges et al., 2009; Omigbodun, Dogra, Esan, & Adedokun, 2008; van Pletzen, Stein, Seedit, 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 (Arnavutovska 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 (Shirra & 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 & Carpiano, 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.

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