Suicide and Suicidal Behavior in Women

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Abstract

Suicide is the leading cause of mortality for young women between 15 and 19 years of age. Globally, suicide mortality rate is higher among men; however, in some Asian countries, it is higher in women. The suicide rate among women from low- and

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middle-income countries is 8.7 as compared to 5.7 among women in high-income countries. Globally, attempted suicide is higher in women than in men. Mental disorders like depression and schizophrenia are identified with suicidal behavior in both men and women. Eating disorders are correlated with a higher risk of suicide in women. Sociocultural factors like intimate partner violence, childhood abuse, and pregnancy-related factors have been associated with suicides among women. Being married appears to be less of a protective factor for women in Asia. Traditional and cultural systems that deny women autonomy have also been shown to increase suicidal behavior among them. There is an absence of targeted suicide prevention strategies for women. The issue of women and suicide has been neglected by policymakers, health, and community. For suicide prevention to be effective, the status of women in society needs to be systematically enhanced through empowerment programs focusing on education and employment. Interventions must be multifaceted and designed to nest within existing platforms of social, educational, and health services. Reducing suicide in women should be a global public health priority.

Keywords
Suicide · Women · Self harm

Introduction

Globally suicide is the second leading cause of death among people aged 15–29 (WHO 2014). Every year approximately 800,000 individuals die by suicide. In addition, it has been estimated that 10–20 million persons attempt suicide and 50–120 million are deeply affected by the suicide or attempted suicide of a close relative or someone they know. Suicide as a phenomenon has been characterized as a multi-determined event. That is to say that numerous factors, namely, biological, psychological, cultural, historical, and societal, determine and impact a person's decision to attempt suicide (Patel et al. 2016). Studies estimate that suicide will account for 2.4 of the global burden of disease by 2020. These staggering numbers make suicide a leading public health problem.

Magnitude of the Problem

Suicide is the leading cause of mortality for young women between 15 and 19 years of age. The rate of suicide among males is 18/100,000 and among females, 11/100,000 (WHO 2014). Universally, suicide mortality is higher among men. However, there are countries where the rate of mortality among women is higher (Table 1). The rate of attempted suicide is higher among women, the world over. The phenomena of women and suicide have been underrepresented, as more women attempt suicide compared to men; however, more men die from suicide than women do. Therefore, to have a clear understanding of the impact of suicide, morbidity must

Table 1 Women suicides more than men

Countries	All ages		15–29 years	
	Female	Male	Female	Male
	Rate	Rate	Rate	Rate
Afghanistan	4.4	3.7	9.8	5.1
Bangladesh	7.6	5.6	10.8	5.5
China	10.1	7.4	5.9	2.7
Indonesia	4.2	3.1	–	–
Iraq	1.5	0.8	2.0	0.7
Pakistan	8.1	6.8	12	6.3
Democratic Republic of Korea	–	–	37	29.6
India	–	–	36.1	34.9

Data sourced from WHO's "Preventing Suicide: A Global Imperative"

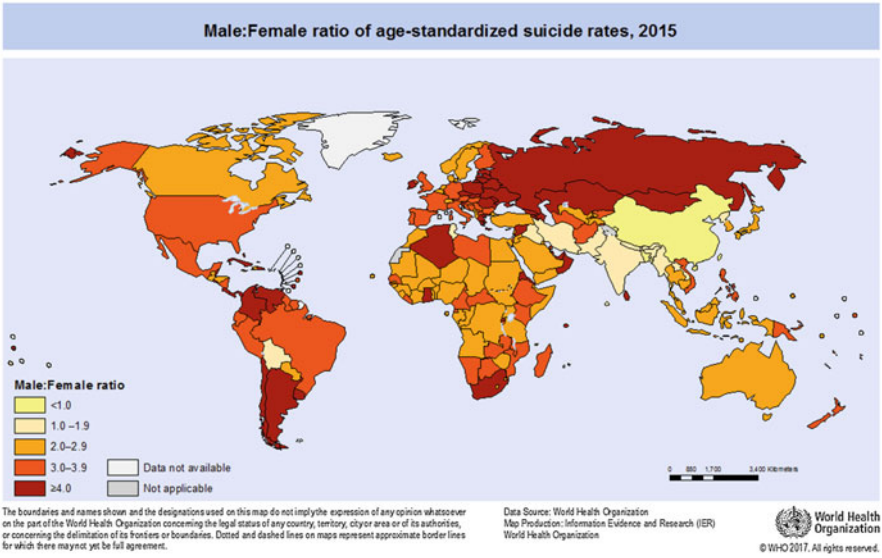

Fig. 1 Male-to-female ratio of age-standardized suicide rates, 2015

also be considered. When mortality and morbidity data are combined, it is evident that the burden of suicide falls disproportionately on women (Vijayakumar 2017). The issue of women and suicide has been neglected by policy makers and governments and in public health programs, and there is a lack of literature examining the specific nature of suicide in women.

Suicide-related global mortality data estimated regional- and country-level rates through weighted averages based on the population in each country. This revealed gender differences between low- and high-income countries. The male-to-female ratio of suicides in the world is highlighted in Fig. 1 from the WHO's report, "Preventing Suicides: A Global Imperative" (2014). Rates of suicide among men in HICs are

higher at 19.9, when compared to their LMIC counterparts at 13.7. This trend is reversed in women, where rates of suicide are higher in women from LMIC, i.e., 8.7, as compared to only 5.7 among women in HICs (Vijayakumar et al. 2016). As a result, there is a considerably lower male-to-female ratio of suicide rates in LMICs, when compared to HICs. The male-to-female ratio on average annual suicide rates in high-income countries was 3.49 as compared to 1.57 in low-income countries. Table 2 from Disease Control Priorities provides a breakdown of male and female rates for medium and high HDI countries within each region. A closer look at the country-wise breakdown of these numbers reveals that the gender ratio among WHO low-income regions for the Southeast Asia region (1.55) and the Western Pacific (0.91) is lower than the average of other countries in the region. The data reveals that the highest number of suicide-related deaths in women occurs in Asia. Suicides among females in LMIC comprise 43% of all suicides and in HICs, 22% (Vijayakumar et al. 2016).

Sociodemographic Factors

Age

The general trend is that rates of suicide increase with age. Globally, rates are low in age groups less than 15 years and are high in the 70 years and over group. There are a few exceptions in studies, which have found unique suicide trends among women. A study from Korea found that increasing risk of suicide increased as age decreases and that girls 13 years of age are at the highest risk (Kang et al. 2015). The suicide rate by gender varies across age groups in different WHO regions. Rates are higher in men in all regions, except for the Eastern Mediterranean and Western Pacific regions, where suicide rates are comparable between men and women (Vijayakumar et al. 2016).

In LMIC, 63% of all suicides occur in age groups 15–49 years. Southeast Asia has a high rate of suicide in young women, which is not the case in other regions (Vijayakumar et al. 2016). Verbal autopsy studies from rural India have shown that the rate of suicide in young women exceeds that found in young men and can be as high as 162/100,000 in women and 96/100,000 in men (Joseph et al. 2003) (Gajalakshmi and Peto 2007).

Globally, the rate of attempted suicide is higher in women than in men (Vijayakumar 2017). A study from China found the lifetime prevalence of attempted suicide in women was approximately 2.2 times the rates in men (Cao et al. 2015b). A study conducted in Hanoi, Taipei, and Shanghai found that adolescents aged 15–19 reported higher rates of suicidal ideation and attempt when compared to adolescents aged 20–24 (Blum et al. 2012).

Methods

Gender differences have been found in the methods chosen to die by suicide. Generally men tend to choose more violent methods, like shooting, hanging, etc.,

Table 2 Estimated incidence and characteristics of suicide in HICs and LMICs, based on WHO Global Health Estimates

Region	Number of suicides in 2012 (thousands)	Global suicides (%)	Age-adjusted suicide rate in 2012 (per 100,000)			M:F ratio	Mean age of suicide	All deaths due to suicide (%)	Rank of suicide as a cause of death in 2012			Change in number of suicides from 2000 to 2012 (%)	Change in age-adjusted suicide rate from 2000 to 2012		
			Male + female	Male	Female				Male + female	Male	Female		Male + female	Male	Female
Global[a]	804	100.0	11.4	15.0	8.0	1.87	44.1	1.44	15	13	22	–9.0	–26.3	–22.8	–32.2
HICs[a]	197	24.5	12.7	19.9	5.7	3.49	50.4	1.69	11	9	21	–2.9	–14.3	–17.5	–4.5
LMICs[a]	607	75.5	11.2	13.7	8.7	1.57	42.0	1.37	17	17	21	–10.8	–29.7	–24.2	–36.7
LMICs in six WHO regions															
Africa	61	7.6	10.0	14.4	5.8	2.47	37.6	0.66	24	27	37	38.0	1.5	2.0	0.7
Americas	35	4.3	6.1	9.8	2.7	3.61	40.4	1.02	22	15	33	17.5	–6.8	–7.0	–6.3
Eastern Mediterranean	30	3.7	6.4	7.5	5.2	1.45	39.7	0.77	27	27	26	32.0	–1.2	3.9	–7.2
Europe	35	4.3	12.0	20.0	4.9	4.08	45.3	1.35	11	8	22	–30.3	–37.9	–38.3	–37.2
Southeast Asia	314	39.1	17.7	21.6	13.9	1.55	36.7	2.28	11	11	12	9.5	–10.8	–5.7	–17.4
Western Pacific	131	16.3	7.5	7.2	7.9	0.91	57.0	1.16	13	16	11	–46.6	–57.7	–55.9	–59.1

HICs high-income countries, *LMICS* low- and middle-income countries, *WHO* World Health Organization

[a]Global figures, overall HIC figures, and overall LMIC figures include data for three territories that are not member states: Puerto Rico, Taiwan, and China are included with HICs; the West Bank and Gaza are included with LMICs. The figures for LMICs in the six WHO regions only included WHO member states. Sourced from Disease Control Priorities DCP3

when compared to women who, globally, have been found to die most often from self-poisoning (Denning and Cox 2000). Women from high-income countries were frequently found to use over-the-counter medications, which have low lethality but lead to high rates of hospital admissions (Huguet et al. 2015). However, in low-income countries, particularly those in Asia, self-poisoning using pesticides was the common method among women, with up to 30% of deaths (Gunnell et al. 2007).

Significant cultural differences can be found in the choice of method. Countries in the Middle East, Sri Lanka, and India have recorded high rates of self-immolation by women as a means of self-harm and suicide. Suicide by burning is a rare condition in the developed countries (0.06–1% of all suicides), and it is more frequent in developing communities (40.3% of all suicides) (Ahmadi 2007). In Iran, studies found that 70–88% of self-immolation suicides are by women (Ahmadi et al. 2008). In India, around 64% of suicides by self-immolation are by women (NCRB 2015). In the Hindu religion, which is the predominant religion in India, fire has been a symbol of purification. Practices of sati (widow burning) and jauhar (mass immolation to prevent capture) were prevalent in the country until they were banned (Vijayakumar 2004). Further easy access to kerosene/paraffin in the households has been cited as the reason why self-immolation is the most commonly used method by women in these regions.

Studies have also examined if differences between mortality rates between men and women are reflective of suicidal intent and do not pertain to choice of method alone. A study from Copenhagen found that there was no relation between suicide intention and choice of method, even though intention was found to be higher among males (Gunnell et al. 2007). In the case of women from rural and low-income countries, even though intention might be low, the use of lethal pesticides results in high suicide rates in these areas (Banerjee et al. 2009). Large data gaps exist in providing information on methods of suicide in LMIC, which impede understanding the problem and consequently developing interventions.

Protective and Risk Factors

In suicidology, there are many risk and protective factors that arise during the life course. These factors may differ between men and women and are important to understand, in order to develop appropriate interventions. It will also be important, while creating programs, to keep in mind the influences of culture and society on these factors and not to neglect the interaction between various factors. This section will discuss the various risk and protective factors that have been identified in women who have died by suicide or attempted suicide.

Clinical Risk Factors

Mental disorders in women, who die by suicide, have been an overlooked area by research and clinical services. Majority of the studies on suicidal women have focused

on the sociocultural and interpersonal factors rather than on mental disorders. Clinical risk factors for suicide among men and women are largely the same. The relationship between mental health disorders and suicide and attempted suicide is very strong. Disease Control Priorities have estimated that 60% of deaths resulting from suicide can be reattributed to mental and substance use disorders (Patel et al. 2016).

Kaplan et al. (2016) in a 20-year follow-up study found that maximum suicidality was in the early years (4–5 years) following index hospitalization, and suicidal behavior generally declined after that. The female schizophrenia patients and the female bipolar patients were exceptions to this, and their risk was high even after the initial years (Kaplan et al. 2016). Male suicidal activity was triggered more by psychotic symptoms, while female suicidal activity seems triggered more by affective symptoms. It is evident that the role of mental disorder differs significantly between men and women, and further research is needed to formulate effective intervention.

The first and, probably, one of the few psychological autopsy studies of suicide in women was by Asgard (1990) in Stockholm. She used the definition and criteria of the Lifetime Version of the Schedule for Affective Disorders and Schizophrenia (SADS). At ages 59 and over, 65% of women were depressed, while only 36% at ages under 30 were found to have depression. 63% had made a prior suicide attempt and 71% had received psychiatric treatment (Åsgård 1990). In a recent psychological autopsy in Japanese women, Kodaka (2017) et al. found no difference in the presence of MDD and schizophrenia between the sexes. The overall prevalence of mental disorders was significantly higher at 96.4% in females, while it was only 87% in males.

Depression poses the highest risk and contributes toward suicidal behavior in men and women. In a community cohort study in Goa, Maselko and Patel (2008) followed 2494 women aged 18–50 for 12 months and found that 37% of women, who had attempted suicide, had a common mental disorder (OR 8.75, 95% Confidence Interval (CI) 2.88). In a cohort of 50,692 Norvegians, Bjerkeset et al. (2008) found that suicide risk in comorbid anxiety and depression was twofold higher in men (OR 7.4, CI 3.1–17.5) than in women (OR 2.9, CI 0.8–10.6). History of psychiatric admissions had a stronger impact on increasing suicide risk among females (OR 146, CI 87.63–243.25) than among males (OR 51.96, CI 33.62–80.31) (Qin et al. 2000). Oquendo et al. (2007) studied a cohort of 314 patients with major depressive disorder (MDD) and found that the risk factors for men were a family history of suicide, comorbid substance abuse, and early separation. For women, the risk factors were a previous suicide attempt, the lethality of the attempt, and less number of reasons for living. It is well known that a person who has attempted suicide is at greater risk of future suicide attempts. Further persons who have a history of multiple attempts are more at risk (Ho Choi et al. 2013).

Eating disorders were found to significantly raise the risk of suicidal behavior in females (Kodaka et al. 2017). Women with anorexia are estimated to have a 50-fold increased risk of suicide, and suicide is the second leading cause of death in those with anorexia. Both bulimia and anorexia are linked with increased risk of suicide attempt, with suicide attempts reported in up to 20% of patients with anorexia and up to 35% of those with bulimia (Bulik et al. 1999).

In a prospective study of 28,905 Japanese women aged 40–59 followed from 1990 to 2012, 78 women died by suicide. Women with a high total/level of cholesterol had a significantly higher suicide rate H.R.1. 90 (95% CI 1.13, B.19) than those with normal cholesterol. The association was specifically found in women with body mass index of <25 kg/m^2 but not in overweight or obese women. No difference in cholesterol was found in suicides among men (Svensson et al. 2017).

Alcohol and Substance Use

Substance abuse has been traditionally associated with suicides in men rather than in women, and hence, substance abuse in suicidal women is poorly understood. A review found that substance use behavior was associated with increased suicide behavior (Perez-Gonzalez and Pereda 2015). In a nationwide psychological autopsy, Prikole et al. (1994) found that female psychoactive substance-dependent suicides differed from that of male suicides. Females were more dependent on prescription drugs. Females less than 40 years had higher prevalence of borderline personality disorder and repeated suicide attempts, whereas in older females it was similar to older males. The onset of AXIS I disorder preceded substance abuse in females.

High alcohol use has been found to be a predictive risk factor toward suicidal ideation in women (Kumar et al. 2012). This finding has been repeatedly found across a number of population groups, including in Korea and America (Lamis and Lester 2013). Interestingly, it has not been found to have the same effect in men, except, notably, among the Japanese (Takada et al. 2009). A study among adolescents in Korea found that being an "ever smoker" or "ever drinker" increased the likelihood of attempting suicide in women. A study from the USA reveals that lowering the drinking age results in persistent increased risk of suicide among women and not in men (OR 1.12, 95% CI 1.05–1.18) (Grucza et al. 2012). Among the Inuit, using marijuana and having psychological distress were found to be significant risk factors for suicide attempt in the previous 12 months, over other factors including experience of personal violence, alcohol use, and low self-esteem (Fraser et al. 2015). High-risk groups, such as women with a personal history of drugs and substance use and who had drug-using spouses or partners, were found to be at an increased risk of suicidal ideation and attempt (Noori et al. 2013).

Intimate Partner Violence (Domestic Violence)

Intimate partner violence is the most common form of violence perpetrated against women, having a global lifetime prevalence of 15–71% (Stewart and Vigod 2017). Data from 2003 to 2010 from the National Violent Death reporting system in America, which examined suicide in 16 states of America, found a history of self-harm, previous attempts, financial difficulty, and experiencing intimate partner violence to be strongly associated with suicide (Huguet et al. 2015). A recent

systematic review found that intimate partner violence (IPV) in women is strongly associated with death by suicide, with a lifetime prevalence ranging from 3.5% to 62.5% (MacIsaac et al. 2017). An important study in the review revealed a 17-fold increase in suicides compared to women who had not experienced IPV. Evidence examining the association of women as perpetrators of IPV and suicide, however, are more mixed (MacIsaac et al. 2017).

A prospective community-based study from India, focusing on risk factors in attempted suicide in women, found that exposure to violence and presence of a chronic physical illness were significantly associated with increased risk (Maselko and Patel 2008). Certain ethnic groups experience greater rates of violence and traumatic events. It is well documented that in the USA, African Americans experience traumatic events, such as sexual violence, more frequently when compared to other ethnic communities (Roy 2003). The lifetime prevalence of suicidal behavior among women who experienced intimate partner violence was 28% among White women, 17% in African Americans, and 21% among Latin and Hispanic women. Women who were in the "extreme danger" category had a 3.7 increased odds of attempting to or threatening suicide, when compared to women who were in the "variable danger" category (Cavanaugh et al. 2011). A secondary analysis of this data revealed that Danger Assessment (DA) scores were associated with suicidal behavior in Latina women but not for African American or European American women. DA scores were then correlated with nonfatal suicidal behavior and suicide communication (NSBSC) to understand which items were significant. Among Latina women "believing their partner could harm them," "partner using a weapon on them," "strangulation," "forced sex," "threats to harm children," "being constantly jealous," and "partners suicidal behavior" were strongly associated with NSBSC. African American women's NSBSC was associated with "threatening to harm children," "forced sex," and "stalking behavior." Few European American women-associated items were "partner having forced sex" and "beating them while pregnant" (Cavanaugh et al. 2015).

A highly significant association has been established between domestic violence and suicidal ideation. High rates of 61% from Egypt, 48% in Brazil, and 28% from the Philippines have reported domestic violence and suicidal ideation (World Health Organisation 2001). A large multi-site population-based study in India found that 40% of women experienced domestic violence. Of these women, 64% had suicidal ideation (Kumar et al. 2005). A WHO study on domestic violence against women in Bangladesh found that physical and emotional violence by a spouse was associated with an increase of suicidal ideation among married women. However, sexual violence was found to have no effect on suicidal ideation except when occurring outside of marriage, i.e., women who had experienced sexual abuse before their marriage or by someone who was not a spouse contributed to an increased suicide ideation (Tabassum Naved and Akhtar 2008). A dose-response effect was also noticed wherein the proportion of women reported having suicidal thoughts increased from just 1% if exposed to no form of violence to 15–16% when exposed to all forms (physical, sexual, emotional) of violence (Tabassum Naved and Akhtar 2008).

Domestic violence is highly prevalent in LMIC. Its occurrence has to some extent been normalized and is even culturally accepted. In strong patriarchal societies where collective norms are important to maintain, women may be less willing to discuss problems such as abuse and violence. Maintaining the families and the husbands "izzat" or honor prevents women from seeking help as reporting maltreatment is viewed as shaming the family (Asad et al. 2010). In some countries, sexual violence and marital rape are not punishable by law and may, therefore, be perceived as behavior that is acceptable within a marriage (Tabassum Naved and Akhtar 2008).

Childhood Abuse

Childhood mental, physical, and sexual abuses have been found to have crippling effects that can be sustained well into adulthood. Studies have shown it to be an important predictor of suicidal behaviors (Dube et al. 2013). Adversity and abuse during childhood have also been linked to mental health problems in adulthood, which in turn increase a person's risk of suicide. Social relationships in adulthood are also affected, as self-esteem and the ability to trust and form stable relationships are hindered (Stein et al. 2002, Dimitrova et al. 2010). Apart from mental health problems such as depression and post-traumatic stress disorder, persons who experience traumatic childhood events, including sexual violence, are at an increased risk of suicide (Vinson and Oser 2017).

A study examining the effects of emotional abuse during childhood found that it is significantly associated with suicidality in adulthood (Lee 2015). Participants, who were more frequently exposed, were found to have higher levels of suicidal behavior. The study also found that emotional abuse had long-term consequences through revictimization in adulthood and increased risk of suicidality.

Studies have found clear links between suicidal behavior and self-harming behavior in adults who have experienced sexual abuse in their childhood, when compared to adults who had no history of sexual abuse (Maniglio 2009). A 12-year prospective study of girls who had experienced childhood sexual abuse found that forced sexual acts were associated with lifetime suicide attempts, as well as a non-suicide-related self-harm behavior (Rabinovitch et al. 2016). A retrospective cohort study of 17,337 adults examining the link between childhood abuse, measured by the Adverse Childhood Experience (ACE) Questionnaire, and attempted suicide found that a lifetime prevalence of at least a single attempt was three times higher in women as compared to men (Dube et al. 2013). It also found that the risk of attempted suicide increased 2–5 times, if there was a history of childhood abuse in both sexes, regardless of the type of abuse. The risk of attempting suicide decreased over time, with a score of 7 on the ACE, resulting in a 51-fold increase in adolescence and a 30-fold increase in adults (Dube et al. 2013). A review of literature found a strong association between physical and sexual abuse in childhood to suicidal ideation and attempt in adolescence (Miller et al. 2013).

Marriage

It has been widely accepted that marriage is a protective factor for suicidal behavior. The evidence shows that persons who have been living alone, never married, divorced, widowed, or separated exhibit an increase in suicidal behavior (Monnin et al. 2012; Griffiths et al. 2008). There are gender differences, wherein marriage is more protective for men than women. A prospective, longitudinal study found that divorce and separation resulted in higher suicide rates, but only among men (Kposowoa 2000). Another prospective cohort study from Japan had similar findings, wherein the hazard ratios among widowed or divorced men, 2.84 (95% CI: 1.37–5.90), were higher compared to women (Fukuchi et al. 2013). However, most studies that have observed this finding have been from high-income countries (Luoma and Pearson 2002). The evidence is more mixed while considering the findings across low- and middle-income countries. A case-control study in China found no association between marital status and suicide (Phillips et al. 2002), while another study focusing on marriage among rural Chinese women found that marriage was a risk factor and increased the odds of suicide threefold (Zhang 2010). A study from India concluded that marital status alone was not associated with suicide but was influenced by other factors such as conflict within the family and social integration (Rao 1991).

For women from low- and middle-income countries, being married appears to be a risk factor for suicidal behavior. In Bangladesh, the prevalence of lifetime suicidal ideation among reproductive-aged women that had ever been married was 11–14%, which is high compared to other countries in the world (Tabassum Naved and Akhtar 2008). Women from LMIC in South Asia are particularly vulnerable, due to certain social and cultural practices. The practice of an arranged marriage is prevalent in these societies; often they are forced upon women who are "at a marriageable age" but may not wish to enter into the marriage. The couple may resort to suicide, to escape this forced marriage, either together or individually. Clearly, social and cultural practices and meaning surrounding marriage have a role to play in determining if marital status is a risk factor. Other stressors that impact a women at this stage include the pressure to have children, infertility, inability to produce a male heir, and troubled relationships within the family (Oner et al. 2015).

Pregnancy

Suicide is a known contributor to pregnancy-related mortality. A confidential inquiry survey found suicide to be a leading cause of death in women following the first year after giving birth (Weindling 2003). A systematic review of suicide-related mortality and pregnancy in 21 LMIC countries found that the suicide-related deaths during pregnancy ranged from 0% in Vietnam to 23.08% in Argentina (Fuhr et al. 2014). The studies showed high heterogeneity in methods and sample size. The pooled prevalence for suicide-related deaths was 1% (0.54–1.57). A study from South India found the prevalence of suicidality during pregnancy to be 7.6%. 2.4% of women

reported planning suicide attempts, and 1.7% had attempted suicide during the current pregnancy (Supraja et al. 2016).

Other studies have examined predictors of maternal self-injurious behavior and found that mothers, who had experienced depression or low mood, were at increased risk (Chaudron and Wisner 2014). However, generally women who are pregnant or in the postpartum period are at lower risk for suicide when compared to women in the general population (Fuhr et al. 2014). Schiff and Grossman examined the relationship between maternal complications and suicidal behavior in the postpartum period in women who were hospitalized following childbirth. There was no association between maternal complications. However, they found that death of the child or fetal death in the first year is strongly associated with suicidal behavior (Schiff and Grossman 2006).

Studies that have examined other factors contributing to suicide in pregnancy have also found that women who experienced domestic violence, strained family relationships, and socioeconomic deprivation were at the most risk for attempted suicide during pregnancy (Asad et al. 2010). Similar results were found in a case-control study from South India. When compared with controls, women experiencing suicidal ideation were found to have financial constraints, finding it difficult to buy basic food. They were also more likely to experience childhood abuse, have an unplanned pregnancy, or experience intimate partner violence (Supraja et al. 2016). Interestingly, a study from Pakistan found that pregnant women who were more educated exhibited more suicidal behavior, when compared to women who had less formal education (Asad et al. 2010)

Women during the postpartum period may be faced with mental health problems, ranging from affective disorders to postpartum psychosis. It was found that 59% of these maternal suicides could be reattributed to psychosis or depression (Cantwell et al. 2011). One study that examined the association between pre-existing psychiatric conditions and attempt to suicide postpartum found that younger Black, Native Alaskan, or American Indian women were more likely to attempt suicide. Women, who were at higher gravida and parity, were also found to be more at risk than their control counterparts (Comtois et al. 2008). The study found that there was a 10.7-fold increase in suicide attempt with one hospitalization and a sharp increase to 25.5-fold with two prior hospitalizations.

Miscellaneous Risk Factors

There are various life stressors in certain groups that may increase their risk and make them more vulnerable to suicidal behavior. This section will discuss the military, prison population, and LGBT groups.

Among military personnel, suicide rates, although lower than that of the general population, are of concern, due to the specific risk factors pertaining to the profession. High-stress environments, exposure to violence and traumatic events, lack of personal freedom, strong masculine culture within the military that makes it difficult to reach out for support, and easy access to firearms have all been cited as risk

factors. Women in the military constitute a growing population; however, most available literature has focused on men in the military. Little is known, therefore, about women-specific issues and risk factors.

Studies have found high rates of mental disorders, particularly PTSD among active soldiers. High rates of suicide and attempted suicide are also found among female veterans of war. A review of substance abuse and suicide among women veterans in America showed that women veterans had high rates of drinking problems. Two studies in the review also found that women veterans had suicide rates that were thrice as high when compared to the general population (Chapman and Wu 2014). Veteran attempters were found to have greater psychiatric morbidities and substance abuse issues.

Correctional facilities and remand centers have higher suicide rates than those present in the general population. A meta-analysis found high rates of mental illness, including depression, schizophrenia, and personality disorders, among prison inmates. Studies have found prior incarceration and history of violent crimes to be more prevalent in victims of suicide when compared to those of other inmates. Multiple studies have shown that some of the biggest risk factors to suicide attempts in prison are being a single cell occupant, mental illness, previous suicide threat, and incarceration for violent crimes. There is a paucity of literature on women in correctional facilities, and it will be interesting to know what gender differences exist in such a high-risk population. A prevalence study from New South Wales reported that women (28%) in prisons were significantly more likely than men (19%) to report lifetime suicide attempts (Larney et al. 2012).

LGBT groups have multiple stressors and risk factors mediating the association between sexual orientation and suicidality. Social exclusion, stigma, mental health issues, and substance use all contribute to suicidal behavior. Studies have found large unmet mental health needs of LGQ populations (Steele et al. 2017). Literature in this area has tended to focus more on men who are bisexual or gay as compared to women. A systematic literature review found that the lifetime prevalence among LGQ women to have a suicidal behavior risk ratio of 1.75:2.10 when compared to heterosexual women (King et al. 2008). Another population-based study found that in young LGQ women, the risk of attempting suicide was six times higher compared to their heterosexual counterparts (Fergusson et al. 2005).

The various risk factors for suicide in women can be assigned to five overlapping domains as shown in Fig. 2. Psychological, environmental, personal, sociocultural, and sociodemographic factors interact and intersect, resulting in suicide in women.

Protective Factors

Protective factors are key to decreasing the risk of suicidal behaviors. Incorporating these factors into suicide prevention program or creating interventions which incorporate these elements will strengthen their efficacy. Positive self-esteem, emotional adaptability, the ability to cope with stressful situations, resilience, and good interpersonal communication with family and friends are important protective factors and

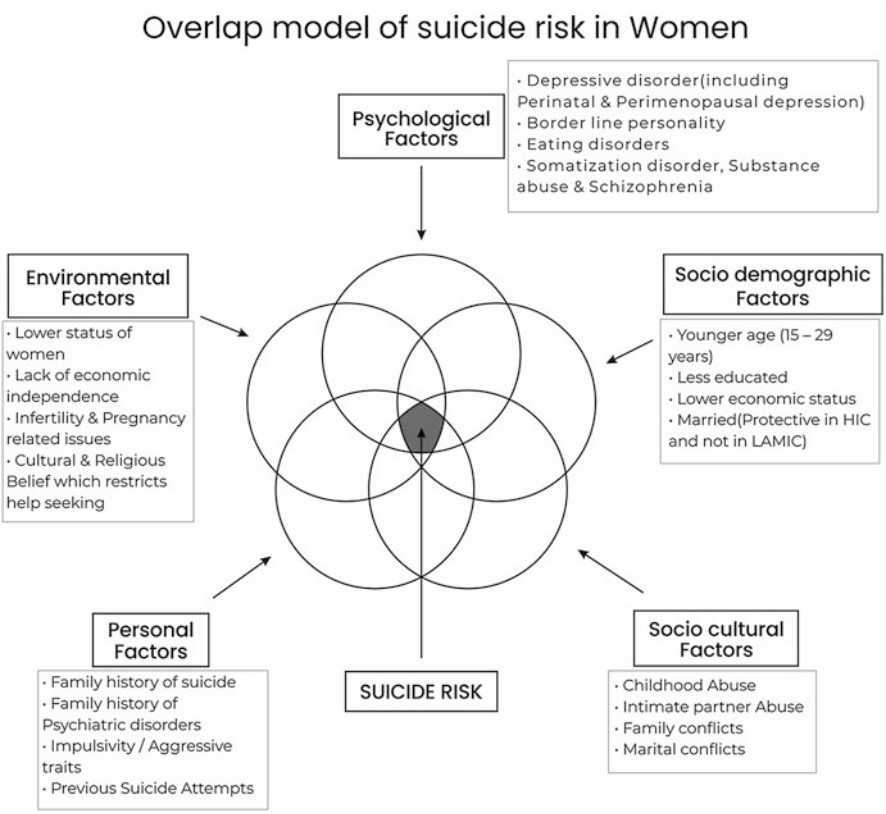

Fig. 2 Overlap model of suicide risk in women

provide support to the individual (Wang et al. 2011). In a study among adolescents, it was found that when controlling these risk and protective risk factors, suicidal ideation in females increased from 2.50 to 4.23 times when compared to that of males (Wang et al. 2011). Another multi-site study in Asia found that strong parent-child relationship, which was measured through various constructs, including support and monitoring of the child, served as a protective factor against suicidal ideation and attempt in adolescents aged 19–24 (Blum et al. 2012).

In minority communities such as aboriginal populations, it has been hypothesized that "cultural status" may be an important protective factor. However, studies examining protective factors among aboriginal communities have not always found this to be the case. When comparing closeness to community, having someone to reach out to for emotional support and various livelihood activities as protective factors among the Inuit, only "goes hunting" was found to be protective in women (Fraser et al. 2015). Some studies have examined ethnic identity to be a protective factor among African American women. Results have found conflicting evidence to show that it is protective for African American women, but not for those who have a history of sexual violence

as a minor (Vinson and Oser 2017). A study among the Metis aboriginal population in Canada found high self-esteem, positive coping strategies, and good health to be protective factors against suicidal ideation (Kumar et al. 2012). Social support was also found to be a protective factor among women but had no impact on suicidal ideation in men or in women who had experienced a major depressive episode.

Religion

Vijayakumar and John (2018) based on the data from the 2014 WHO suicide report calculated that the suicide rate of women in Buddhist countries was the highest at 11.08, followed by women in Hindu countries at 9.74. Atheist countries rate was 6.16, Protestant countries 5.68, Catholic countries 4.27, and Muslim countries 4.55.

Canetto (2015) in a review of suicidal behavior among Muslim women describes their suicidality as a desperate way to protest against and escape from family and social oppression and abuse.

Cultural and Regional Factors Related to Suicide

Variations across cultures with regard to suicidal behaviorism are known. The very conceptualization of suicide has been thought to influence prevalence rates in certain countries.

In Korea perceived low socioeconomic status and perceived poor performance in an academic setting increase the risk of suicidal behaviors (Kang et al. 2015). Status and the notion of perfection are held in high regard in the Korean culture, and therefore, adolescents, who perceive their performance to be less than average, are at risk. Contemporary suicide in Japan has taken on dimensions of suicide in the West. An aspect that distinguishes it from suicide in the West is the presence of Shinju or family suicides. These are by persons that are well known to one another, a mother and child or a father and child. Another form of suicide that has gained attention in Japan is Karojisatsu or work-related suicide, which is understood to be caused by the pressures of modern work culture.

One study found that women in Asia, who live alone or with friends, are at reduced risk for suicidal ideation and attempt, as compared to women who live with their families. Counterintuitively, it may seem that in such cultures, while families are important sources of support, societal pressures play a huge role in contributing to suicidal behavior (Blum et al. 2012). A study examining the changing rates of suicide and its causes from India notes that a sizeable percentage of women suicides were due to dowry. Dowry is an agreed amount of money and assets like livestock, gold, property, etc. that are paid to the husband and his parents by the girl's family. Often the sums of money and assets are much higher than what can be afforded, and this leads to harassment and abuse of the women (Aggarwal 2015).

A cross-cultural comparative study between adolescents in Hong Kong and the USA using matched controls for age and gender showed that culture influences risk

factors for attempting suicide. Depression, feeling hopeless, and poor quality of interpersonal relationships, as well as exposure to persons who have attempted or died by suicide, were significant factors that varied across cultures.

Accessing health services is also extremely low, when compared to other parts of the world. The limited availability of support structures in low- and middle-income countries poses a barrier to accessing services. Although mental illness and suicidal behaviors are stigmatized in many cultures, in countries such as India, suicide is a crime punishable by law. Suicide is also stigmatized that it is shameful for the family to report it. Thus in countries such as China and India, deaths by suicide may not be recorded accurately and are underestimated (Cao et al. 2015a). In Pakistan, suicides are not documented and, therefore, not featured in national health data. Cases that may be suicide related are recorded by the method employed instead, such as "acute poisoning" (Asad et al. 2010). A multi-site study examining help-seeking behavior among youth aged 15–25 across Vietnam, China, and Taiwan found that women and girls were more likely to seek help when compared to males. Women reported that they would first go to peers (60%) and health professionals (17%) for support, whereas men were more likely to seek support from their families (Blum et al. 2012). However, 25% of women and 32% of men reported that they would not approach any of these sources for help.

The AIDS pandemic in Africa has implications for suicidal behavior. Studies from Kenya and South Africa have shown that suicidal behavior increases during certain stages in the illness cycle, particularly during the initial period following diagnosis and toward the end stages of the illness. Pre-existing mental health conditions and previous suicide attempts have also been shown to be associated with suicidal behavior in persons living with HIV and AIDS in Africa. Widespread poverty and the stigmatizing nature of the illness create further complications for persons in the workplace and create conflicts at home which can lead to depression, stress, isolation, and finally increase in suicidal behavior.

In Brazil, the gender ratio for HIV/AIDS has decreased from 26 to 1.5 males for every female. A study examined the prevalence of violence and suicidal ideation among women, who are living with HIV/AIDS. It found that there was an extremely high rate of gender violence (72%) and that at least half of the women experienced suicide ideation as measured on the QIS scale (Ceccon et al. 2014).

Cultural conceptualizations of suicide and its causes have been shown in studies from indigenous communities in Australia. When asked how suicide is defined by the aboriginal community, answers included "spending time at certain places in the community." Explorative studies have found that there is a belief that when a person dies by suicide, their spirit lingers in the area that it happened and calls other people to join them by taking their lives (Tighe et al. 2015).

Traditional cultural systems that deny woman autonomy have also been shown to increase the risk of suicidal behaviors among women. The district of Van, a feudal agrarian society in Turkey, has higher rates of suicide in women, which may be attributed to the low social status of women. The practices of kuma or taking a

"fellow wife" and berdel "bride exchange," which are often done without the consent of or consultation with the women, contribute to the high suicide rate (Hekimoglu et al. 2016). The rate of suicide is the highest among childhood and adolescent girls.

Prevention

There is scant evidence for suicide prevention in women. Save for programs that have aimed to reduce maternal mortality through suicide, through screening and referral to mental health services (Healey et al. 2013).

The only intervention to reduce suicide in women is from Iran. Ahmadi (2007) developed a community intervention to reduce self-immolation of women. The intervention consisted of increasing awareness, videotaping of victim stories, drawing and painting competition, etc. Self-immolation was significantly reduced by 57% in the intervention region of Gilanghahar compared to 27% reduction in the control region of Sarpazahab ($p = 0.04$).

The lack of targeted suicide prevention intervention strategies for women is due, in part, to the conceptualization of suicide as primarily a male problem. A dearth of research in the specific manifestation of suicide in women compounds this problem. Attention will have to be paid to the varying ecological and social risk factors, which are prevalent among women in different countries and across different age groups.

Conclusion

Prevention of suicide in women is closely linked to the cultural and social status that women occupy. For suicide prevention to be effective, the status of women in society needs to be systematically raised through empowerment programs focusing on education and employment, which will ultimately lead to social and economic independence. Laws in certain countries that perpetuate certain risk factors against women, such as marital rape and intimate partner violence, must be changed. It has been estimated that the absence of sexual abuse would reduce the lifetime risk of attempting suicide by 28% in women (Bebbington et al. 2009). It is clear that the factors resulting in suicidal behavior in women are complex. Interventions, therefore, must be multipronged and nested into existing platforms of social, educational, and health services, for wide reach and better impact.

Cross-References

▶ Culture and Women's Mental Health
▶ Depression, Anxiety, and Physical Morbidity in Women
▶ Refugees and Asylum Seekers

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