Review

Unbearable trauma and irreparable damage: maternal death by suicide raises serious perplexities

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Abstract

Introduction: Maternal death by suicide raises serious perplexities. The ICD-10 classifies maternal suicide as an indirect form of maternal death. Due to this current mis-classification, a classificatory consensus of maternal suicide as a direct form of maternal death is urgent.

Objective: Analyze the psychological that permeate the phenomenon of maternal suicide, to define the profile of mothers in the postpartum period and pregnant women who commit suicide, with the purpose of elucidating ways of preventing maternal suicide.

Method: A systematic review was made following the PRISMA protocol (Preferred Reporting Items for Systematic Reviews and Meta-Analysis).

Results: Twenty-one studies reported the urgent need to implement interventions in order to prevent or reduce mental health problems caused by mothers and pregnant women who commit suicide. Twenty studies demonstrate the need for interventions to organizational adjustments, especially related to the emotional conflicts involved suicide and maternity.

Conclusion: Maternal suicide is mainly caused by severe psychiatric disorders, however, higher suicide rates are seen due to psychosocial factors, such as poor familial support and domestic violence, illegal substance abuse and alcoholism, history of sexual or physical violence, racial oppression, economic instability, unwanted pregnancy, difficulty in accessing intentional abortion, and trauma related to past maternity experiences.
Introduction

The death of a mother, in of itself, leaves unbearable trauma and irreparable damage not only for the children but for the entire family and social context surrounding the mother. Hence, the struggle for the survival of pregnant women and mothers in the postpartum period has raised great scientific and social efforts, resulting in the global decline of annual rates of maternal death by 46% between the years of 1990 and 2010. Most causes of maternal death, such as hemorrhage, eclampsia, malnutrition, infection, and venous thromboembolism, have been combated and mitigated. However, little focus has been placed on maternal suicide, which is now characterized as the primary cause of maternal death in developed countries as well as among the leading causes in developing countries.

Maternal death is defined by the tenth edition of the International Classification of Diseases (ICD-10) as the death by any means of a pregnant woman up to one year after the end of her pregnancy, whether directly, i.e. pregnancy-related obstetric causes, childbirth, and puerperium, or indirectly, due to non-obstetric or pre-existing conditions, aggravated by the effects of pregnancy. 

In this context, maternal death by suicide raises serious perplexities. The ICD-10 classifies maternal suicide as an indirect form of maternal death, making these cases even more difficult to classify, analyze, and prevent. Due to this current misclassification, a classificatory consensus of maternal suicide as a direct form of maternal death is urgent. Because of this, the discussion for the eleventh edition of the International Classification of Diseases (ICD-11) has proposed to include suicide as a direct form of maternal death in order to facilitate its epidemiological analysis, screening and prevention. Nevertheless, even with ICD-10 applied the notification and computation of maternal suicides are extremely impaired because there is still no definitive, standard classification; many countries, especially the least developed, still do not classify maternal suicides as direct maternal deaths, leading to an important gap in the knowledge of maternal deaths due to suicide worldwide.

In the midst of this situation, maternal suicide continues to reach terrifying rates. There are 2 suicides per 100,000 live births in the USA and Canada, while there are 3.7 suicides for every 100,000 in Sweden, and 2.3 per 100,000 in Italy, with similar rates worldwide. This paper aims to understand the phenomenon of maternal suicide by qualitatively analyzing the relationship between suicide and maternity, characterizing causes, issues, and cofactors involved in the process of maternal suicide, as well as proposing preventative measures. Above all, this paper aims to identify who are the mothers and pregnant women who commit suicide.

Method

A systematic revision was made, following the PRISMA protocol (Preferred Reporting Items for Systematic Reviews and Meta-Analysis).

Inclusion criteria

To search for studies, the following databases were used: Pubmed Scopus and Embase. We identified categorized references for the “Maternal death”; “Suicide”; “Mental disorders”; “Pregnancy”; “Postpartum period”. Besides, we identified references by searching (title/abstract) in the database, using the keywords: suicide *, psych *, stress *, ans *, depr *, mental *. We selected all references identified specifically for the inclusion criteria for this systematic review.

Data extraction and methodological quality assessment

We have developed a data extraction form to collect data on participants and exposure intervention, if relevant, results related to relationship between suicide and maternity, characterizing causes, issues, and cofactors involved in the process of maternal suicide. We extracted data on mental health problems, as well as related ones (that is, risk/resilience factors); strategies implemented or accessed by with the objective to identify who are the mothers and pregnant women who commit suicide.

Three researcher (MLRN, SNAO and NNRL) extracted data and another verified the extraction. Three researchers (KRDA, FC and MMMLB) independently assessed the methodological quality of systematic reviews using the AMSTAR tool and qualitative studies using the CASP checklist (Critical Appraisal Skills Program – CASP). A re-searcher (MLRN) assessed the quality of cross-sectional studies using the JBI Prevalence or the JBI Cross-sectional analytical checklist and longitudinal studies using the JBI Co-hort checklist (Johanna Briggs Institute).

Data presentation and analysis

We summarized the results narratively. We described interventions and outcomes based on the
information provided in the studies. We decided not to perform a quantitative analysis of summaries of the associations between the various correlates and health factors, due to a combination of heterogeneity in the measures and lack of control groups, and an embraced lack of descriptions necessary to confirm sufficient homogeneity. We rated the certainty of the evidence using the GRADE approach – (Grading of Recommendations Assessment, Development and Evaluations).¹⁵

Results

The search strategy yielded 229 results in Pubmed Scopus and Embase. Titles and/or abstracts of these records were screened and 156 did not meet the eligibility criteria. Out of the remaining 73 full-text articles, 32 were excluded for various reasons, such as lack of relevancy to the proposed topic. Thus, our systematic review includes 41 publications (Figure 1 and Table 1).

Figure 1. PRIMA flow diagram.
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Significant outcomes

| Year | Methods used in the study | Significant outcomes |
|------|---------------------------|----------------------|
| 2016 | Case series of all women with pregnancy-associated deaths from self-harm in Colorado between 2004 and 2012. Data was extracted from state death certificates data and other sources, such as prenatal care and delivery hospitalization records. | 30% of all maternal deaths in Colorado resulted from self-harm. The majority of the deaths occurred in the first postpartum year, and six maternal deaths occurred during pregnancy. Prior psychiatric diagnoses were documented in 54% of the women, and prior suicide attempts in 10%. |
| 2011 | Longitudinal study. Multiple logistic regression was used to estimate the associations between correlates and elevated depressive symptoms during the first 5 postpartum years of the life course. | The prevalence of elevated depressive symptoms in adolescent mothers significantly increased over the 17 years of the study from 19.8% to 35.2%. Intimate partner violence (IPV) was positively and significantly associated with elevated depressive symptoms at all but one developmental period. Other significant correlates of elevated depressive symptoms included welfare receipt, smoking, and parity. |
| 2014 | A systematic review to identify studies reporting the association between pregnancy-related deaths attributable to suicide or injuries or both, in low-income and middle-income countries. Meta-analysis to calculate the pooled prevalence of pregnancy-related deaths attributable to suicide, stratified by WHO region. | There might have underestimated suicide deaths because of the absence of recognition and inclusion of these causes in eligible studies. The pooled prevalence of suicide among pregnant women was 0.03%. In the US, the western Pacific Mediterranean region (3.55%, 0.37-9.37), and the southeast Asia region (1.16%, 1.04-3.68) had the highest prevalence for suicide, with the western Pacific (1.16%, 0.00-4.67) and Africa (0.05%, 0.45-0.88) regions having the lowest. |
| 2004 | An observational time-series study using data of the National Violent Death Reporting System. | There were 94% of pregnancy-associated suicide, yielding pregnancy-associated suicide rate of 2.0 deaths per 100,000 live births. Native Americans showed more suicide rates than other racial groups. 54.3% of pregnancy-associated suicides involved intimate partner conflict. |
| 2020 | Retrospective cohort study using data from the Alberta Perinatal Health Program from 1998 to 2015. | The pregnancy-related maternal mortality rate for suicide up to 405 days after birth was 0.05 deaths per 100 total births. Close to 1 in 5 maternal deaths in the study were related to suicide or drug toxicity. |
| 2016 | An observational time-series study using data of the Swedish Cause of Death Register, Medical Birth Register, and National Patient Register. | The maternal suicide ratio was 3.7 per 1,000 live births for the period 2000-2012. The suicide ratio was higher in women born in low-income countries. Violent suicide methods were common. Most of the victims had psychiatric care at some point. |
| 2020 | An observational time-series study using data of the regional death registers of Belgium, hospital discharge databases, and other data sources. | In Italy, the maternal suicide ratio was 2.30 per 100,000 live births in 2000-2012. The suicide rate was 1.18 per 100,000 among pregnant women giving birth. The suicide risk was lower after abortion and higher after miscarriage. The maternal mortality rate of 0.74 per 100,000 live births, and the suicide rate was higher in women born in low-income countries. Violent suicide methods were common. Most of the victims had psychiatric care at some point. |
| 2003 | An observational time-series study using data of four national Danish longitudinal registers. | History of hospitalization due to a psychiatric disorder was associated with the highest odds ratio and the highest attributable risk for suicide. Combing or single marital status, unemployment, low income, retirement, disability, sickness-related absence from work, and a history of hospitalization for suicide and/ or psychiatric disorders were also significant risk factors for suicide. Having a young child with lower suicide risk in female subjects. |
| 2013 | Literature review. Narrative description of the evolution of female suicidal rates during a lifetime. | There is an idea that the birth of a child is a protective factor against total and non-fatal self-harm, especially in the first year after delivery. However, pregnant and postpartum women who experience depression disorders may use suicide to complete suicide. Suicidal behavior may be increased after abortion, miscarriage, other factors, such as single marital status, low income, unemployment, poor social support. |
| 2014 | Literature review. The evidence suggests an epidemic of suicidality, risk factors, and severity of maternal mental illness in relation to childbirth. | Suicide is a leading cause of maternal death. Severe mental illnesses are strongly associated with suicide in pregnancy and in the postpartum period, such as bipolar disorder, affective psychosis, major depression, and schizophrenia. Past psychiatric illness is one of the leading causes of maternal death, with the majority of suicides occurring by violent means. |
**Unbearable trauma and irreparable damage: maternal death by suicide raises serious perplexities**

Castro e Couto, Branco, Cardoso, Garcia, Nicotra, Aguiar, Leite, Cristida 2016 Archives of women's mental health An observational time-series study using semi-structured interviews as well as the Edinburgh Postnatal Depression Scale, Beck Depression Inventory, and Mini-International Neuropsychiatric Interview Plus. The suicide risk among pregnant women was 23.3%. Antenatal depression, lifetime bipolar disorder, and any current anxiety disorders were identified as strong risk factors. Unemployment and fewer years of education were considered independent risk factors.

**Maternal suicide, Register based study of all suicides occurring after delivery in Sweden 1974-2009**

Igelström, Wikström, Örnfelt, Ekholm, Runeson 2018 PLoS one A case-control study designed with data from Swedish National Patient Register consisted of all women given birth in Sweden between 1974 and 2007. Suicide victims of the postpartum year more often had affective disorders, psychiatric disorders, and a history of self-harm. A severe mental disorder after delivery and a history of self-harm was strongly associated with an increased risk of suicide in the postpartum year.

**Perinatal Depression: Embracing Variability toward Better Treatment and Outcomes**

de Mello, Patil, Fisher, Cabral 2012 World Health Bulletin of the World Health Organization An observational time-series analysis of maternal mortality revisited: Maternal suicide - Register database. The real number of maternal deaths attributed to suicide appears to be underestimated. The suicide risk among pregnant women seems underestimated.

**Suicide during Perinatal Period: Epidemiology, Risk Factors, and Clinical Correlates**

Choplini, Valcher, Tassamaj, Isseroli, Forwany, Boitani, Fampa, Bellati-Falk 2016 Frontiers in psychiatry A systematic literature review in accordance with the guidelines recommended by PRISMA. The majority of suicide worldwide are related to psychiatric diseases. Among these, depression, subdung, and psychosocial constitute the most relevant risk factors, but also anxiety, personality eating- and trauma-related disorders as well as organic mental disorders significantly add to unnatural causes of death compared to the general population.

**Suicidality among pregnant women of Brazil: Prevalence and risk factors**

Sangal, Bieweil, Patel, Wail-Wayler, Langston, Holston, Deaman, Roos 2017 CMAJ Open Retrospective cohort analysis of women with children born in Manitoba between 1984 and 2012. Women with fetal alcohol spectrum disorder are at increased risk for suicide, with higher rates of suicidality.

**Depression and thoughts of death among disadvantaged mothers: A systematic review and impact on maternal and child health**

Crandall, Walsh, Schermer 2010 Archives of suicide research Retrospective database analysis with biostatistic and multivariate statistics utilizing 3 years of data from the prospective Fragile Families and Child Wellbeing Study. Depression and thoughts of death were significantly associated with family violence and abuse, self-harm, and the risk of infant hospitalisation. Routine screening for these issues should be implemented.

**Maternal mortality revisited: the application of the new ICD-10 classification system in reference to maternal deaths in Sri Lanka**

Agampodi, Wickramage, Jayathilaka, Gunaratne, Alagiyawanna 2014 Reproductive health An observational study. Data analysis of maternal death surveillance system in North Central Province of Sri Lanka, for the period of 2005 to 2012. Classification of maternal suicides as direct forms of maternal death has an immediate, and/or pending maternal mortality, and raising the risk of infant hospitalisation. Routine screening for these issues should be implemented.

**Prevalence and determinants of common perinatal mental disorders in women in low- and lower-middle-income countries: a systematic review**

Fisher, Coban, Pelino, Patel, Rahman, Tran, Holton, Holmes 2012 Bulletin of the World Health Organization Major databases were searched systematically for English-language publications on the prevalence of non-psychotic common perinatal mental disorders and their risk factors and determinants. Risk factors were: socioeconomic disadvantage, maternal depression, history of self-harm, a history of self-harm, intimate partner violence, and history of mental health disorders. Protective factors were: more education, permanent job, ethnic minority, and lack of trust in intimate partner in developing countries. Maternal suicide seems underestimated.

**Maternal deaths from suicide in Singapore**

Chen & Lau 2008 Singapore medical journal An observational time-series study using data from 2000 to 2006 in Singapore, by linking coronial cases of suicide and matched analysis using linked administrative data. Only one maternal death due to suicide was identified. Strong familial support in Singapore may help to diminish the rates of maternal suicidality.

**Antenatal depression and suicidal ideation among rural Bangladeshi women: A community-based study**

Gaasch, Fisher, Ali, Oesthuizen 2009 Archives of women's mental health A community-based study conducted during 2005 in the Matlab sub-district, rural area of eastern Bangladesh. Interviews were structured in accordance with the Edinburgh Postnatal Depression Scale. The prevalence of depression and suicide ideation at 34-36 weeks pregnancy was 33%. Intimate partner violence, unhealthy alcohol intake and depressive family climate were significantly associated with maternal depression.

**Suicidal ideation during pregnancy: prevalence and associated factors among low-income women in São Paulo, Brazil**

Huang, Faisal, Cury, Chen, Tabb, Kahn, Menezes 2012 Arch Womens Mental Health Cross-sectional analysis of women surveyed during 20 to 25 weeks of pregnancy using Self-Report Questionnaire-20. The prevalence of suicidal ideation was 6.1%. Factors associated with suicidal ideation were common mental disorders, single partner status, post-partum depression, and smoking tabacco. All cases of suicidal ideation were associated with common mental disorders.

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Bronisch, Lieb, 2018

There was higher suicidal ideation incidence after childbirth. Maternal satisfaction protected women from depression, while miscarriage experiences increased the risk. Family history was a protective factor, especially harmony with the mother-in-law.

Suicidal ideation in pregnancy: an epidemiologic review

Gelagotella, Williams, 2016

A systematic epidemiologic review in accordance with PRISMA guidelines.

Pregnant women are more likely than the general population to endorse suicidal ideation, intimate partner violence, lower education, and major depressive disorder were strongly identified as risk factors. There is a need for enhanced screening for antepartum suicidal ideation.

Intimate partner violence and suicidal ideation in pregnant women

Allhusen, Frohman, Purcell, 2015

Cross-sectional analysis of women between 22-25 weeks gestation using the Edinburgh Postnatal Depression Scale and the Abused Assessment Screen.

Depressive symptomatology and intimate partner violence were significantly associated with an increased risk of antenatal suicidal ideation and, consequently, higher rates of suicidality during pregnancy and the postpartum period.

Suicide in early pregnancy among antepartum mothers in urban India

Suprana, Panesar, Mahajan, Jha, Chandra, 2016

A cross-sectional study of pregnant women in southern India, using Suicide Behaviors Questionnaire-Revised and Edinburgh Postnatal Depression Scale.

The severity of depressive symptoms, domestic violence, poor social support, younger age, economic instability, and history of suicidal ideation were associated with higher rates of suicidality.

Antenatal depression in socially high risk women in Canada

Bowen, Stewart, Baatz, Muhsaline, 2009

A cohort study in two women groups (majoritarian and non-majoritarian), using the Edinburgh Postnatal Depression Scale.

MATERNAL DEATH AND SUICIDAL IDEATION

Maternal depression and suicidal ideation during the perinatal period: risks and possible mechanisms for offspring depression at age 18 years

Barron, Thomas, Howlett, Lewis, Howard, O’Connor, Stein, 2013

JAMA psychiatry

A prospective investigation of associations between symptoms of antenatal and postnatal parental depression with offspring depression at age 18 years in a UK community-based birth cohort.

Postnatal depression may affect up to 42% of migrant women. Common risk factors for antenatal depression include a history of stressful life events, lack of social support, and maternal factors.

Refugee, asylum seeker, immigrant women and postnatal depression: rates and risk factors

Collins, Zimmerman, Howard, 2011

Archives of women’s mental health

Interactive and dynamic narrative review, conducted across ten databases.

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Caucasian and black maternal mortality: a multilead study

Alves, Alves, Antunes, Santos, 2013

Revista de Saúde Pública

An observational time-series study, using data from coronal registries, hospitalization registries, besides family interviews.

Unplanned pregnancy, illegal intended abortion, and low-income settings are associated with higher maternal suffering.

Maternal depression and the perinatal period: rates and risk factors

Stirling, Barnett, Schmied, Dennis, Franca, 2018

Psychiatry

Short-term longitudinal survey at perinatal edges of 213 Chinese women.

There was higher suicidal ideation incidence after childbirth. Maternal satisfaction protected women from depression, while miscarriage experiences increased the risk. Family history was a protective factor, especially harmony with the mother-in-law.

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Maternal depression, suicide during pregnancy and the first postpartum year in Austria: Findings from 2004 to 2017

Kraapfögl, Matal, König, Vyssoki, Kaposta, Blum, 2019

Psychiatry research

Retropective investigation of data between 2004 and 2017.

All of maternal suicide cases were performed using violent methods.

Perinatal psychiatric disorders: a leading cause of maternal morbidity and mortality

Oates, 2003

British medical bulletin

Wide literature review.

All women should be asked early in their pregnancy about a previous history of perinatal psychiatric disorders. Management plans should be in place with regard to the high risk of recurrence after delivery.

Maternal deaths in NSW (2000-2010) from nonmedical causes (suicide and trauma) in the first year following birth

Thompson, Schmitz, Dennis, Barnett, Dahlén, 2013

BioMed research international

An observational study linking population datasets from births, hospital admissions, and death registrations between 2000 and 2007.

67% of women deceased due to suicide had a mental health diagnosis and/or a mental health issue related to substance abuse. 73% of suicide deaths were conducted by violent means.

Maternal suicidality and suicide risk in offspring

Bronsch, Lieb, 2008

The Psychiatric journal of North America

Baseline and 4-year follow-up data were used from the Early Developmental Stages of Psychopathology Study, a prospective, longitudinal community study.

Offspring of mothers reporting suicide attempts showed a remarkably higher risk for suicidal thoughts and suicide attempts, and a tendency toward suicide attempts at an earlier age.

Maternal or paternal suicide and offspring psychiatric and suicide attempt hospitalization risk

Kurama, Steup, Runesen, Lichter, Langstrøm, Wilcox, 2010

Pediatrics

An observation study using national longitudinal, population-based registries between 1972 and 2003.

Maternal suicide is associated with an increased risk of suicide attempts in offspring. Risk factors for maternal suicide include chronic mental disorders in order to make early interventions and prevention research, especially in socioeconomically disadvantaged populations and low-income countries.

Effects of perinatal mental disorders on the fetus and child

Stein, Pearson, Company, Epp, Rahman, McCamley, Howard, Paniante, 2014

Janet

Wide literature review, summarizing the evidence for associations between perinatal psychiatric disorders and offspring outcomes from fetal development to adolescence in all income settings.

It is necessary for the early identification of perinatal mental disorders in order to make early interventions and prevention research, especially in socioeconomically disadvantaged populations and low-income countries.

Maternal suicidality and risk of suicidality in offspring: findings from a community study

Lieb, Bronsch, Holler, Schreier, Wittench, 2005

The American journal of psychiatry

Cooperative study. Baseline and 4-year follow-up data were used from the Early Developmental Stages of Psychopathology Study, a prospective, longitudinal community study.

Suicidality seems to run in families, independent of depression and other psychopathology.
Unbearable trauma and irreparable damage: maternal death by suicide raises serious perplexities

Evaluation of the methodological quality of the included studies

The most common methodological weaknesses in all the studies arose from insufficient reporting: samples, scenarios, and recruitment procedures were often not fully described.

Interventions in mental health

Twenty-one studies reported the urgent need to implement interventions in order to prevent or reduce mental health problems caused by mothers and pregnant women who commit suicide. Twenty studies demonstrate the need for interventions to organizational adjustments, especially related to the emotional conflicts involved suicide and maternity.

Changes in mental health

Fifteen of the studies that implemented mental health interventions reported the effects of interventions on emotional conflicts involved suicide and maternity. The only data available to connect the impact of the suicide came from three longitudinal research studies, that report changes over time, both of low-quality methodological value.

The summary of the results table below shows the studies that contribute to each mental health result. We evaluate that the certainty of the reported results of levels of anxiety, depression, distress, and sleep problems in pregnant women who commit suicide, using the GRADE approach, is moderate. 3.9.

Discussion

Studies report that motherhood can work as a protective factor for mental health, reducing the risk of suicide, especially in pregnant women and women who have recently given birth.16,17 However, maternal suicide is a major cause of maternal death around the world, primarily in developed countries.4,18 Pregnancy and the arrival of a child represent, for many women, a unique experience of hope and joy, but for some women, this period may become overlapped by serious psychiatric disorders, which destabilize and lead to life-threatening situations for many mothers and pregnant women.18,19 In this context, motherhood seems to intensify the prevalence of mental illnesses in vulnerable women3, with a history of suicidal thoughts, i.e. a set of suicidal behaviors that include intentional self-harm (with or without the intention to die), suicide ideation and suicide attempts.20 Major depressive disorders during pregnancy and the postpartum period, which is considered a main risk factor for maternal suicide, is heavily prevalent, affecting around 20% of women worldwide, from mild forms to more severe ones and, more rarely, psychosis.4,21 Indeed, perinatal depression is a unique subtype of major depressive disorder, where women rapidly experience severe forms of depressive episodes with high levels of comorbidities such as anxiety, obsessive-compulsive disorders, and ideations of inflicting self-harm and harm to the child.18,22

Women in distress are more likely to commit suicide8, mainly in the first months postpartum23,24 and during the pregnancy.8,23 Studies confirm this notion, stating that the vast majority of pregnant women and mothers who commit suicide are afflicted with severe mental illnesses5, such as major depressive disorders and schizophrenia10,24, and account for nearly 75% of all maternal suicides.2,10,24 Furthermore, high rates of suicidal behavior are also seen in women with a history of illegal substance abuse23,25, alcoholism23,26,27, and even tobacco consumption.3 A study performed in Sri Lanka links the high prevalence of depression in pregnant women, with 27.1% of the pregnant women having a depressive episode prior to the pregnancy and 16.2% having postpartum depression, with the high rate of maternal suicides, which represents almost 18% of all the causes of maternal deaths in the country.28 Suicide is also one of the main causes of maternal deaths in other developing countries, but nonetheless, maternal suicide has remained under-investigated and under-diagnosed and consequently under-treated.29 The social stigma surrounding taking one’s life, as well as inadequate health systems and clasificatory obstacles still prevail, which all contribute to the serious problem of under-reporting.4,29

In any case, maternal suicide, as with any other psychological phenomenon, does not have one single cause. Pregnant women and mothers in postpartum in such a diverse world could not have the same sufferings nor could they suffer equally in any of their afflictions. However, family support has been shown to be a significant protective factor against maternal suicide29,30, while mothers without adequate family support have higher rates of suicide.3,29 Guasia et al.31 claim that in Bangladesh, unhelpful and unsupportive husbands and mother-in-laws were significant risk factors for suicide, especially for women who have suicidal ideation during pregnancy, which makes up 14% of all pregnant women in the country. In addition, unmarried or divorced marital statuses, as well as pregnancies outside of marriage are also presented as risk factors for maternal suicide, as these situations could be associated with a lack of familial ties and support.25,32 On the other hand, marital satisfaction was revealed as a protective factor, due to the emotional support provided.33 Not surprisingly, teenage mothers may be three times more likely to commit suicide than other age group of women.3,17
Likewise, domestic violence has been demonstrated to aggravate the risk of maternal suicide. In the USA, 54.3% of women who have committed maternal suicide have experienced some type of domestic abuse. In India, Supraja et al. also indicated that domestic violence and inadequate familial and social support had a strong correlation with suicidal ideation in early pregnancy. Furthermore, other types of abuse, whether physical or psychological, are also identified as determining factors for maternal suicide, such as sexual violence, where studies indicate that mothers who were victims of sexual abuse in the antenatal period have 2 to 4 times more symptoms of depression.

Social contexts of oppression, such as being an ethnic minority, also proves to be of high significance when examining the suicide of mothers and pregnant women worldwide. In Canada, where approximately 1 in 5 maternal deaths occur due to suicide or drug toxicity, self-harm ideation rates are alarmingly higher in Aboriginal women, who experience different forms of social disparities, than in other groups of Canadian women. Similarly, in the USA, Native American women have been reported to have higher rates of maternal suicide than any other ethnic group. In Sweden, women who have emigrated from developing countries had 3 times more psychiatric morbidities during postpartum than Swedish immigrants from more developed countries. This situational framework is further intensified in women refugees and asylum seekers, where Collins and colleagues report that such groups reach three times higher prevalence of postnatal depression due to serious stressful and traumatic life events in the past.

A range of various social settings has been demonstrated to have significant impacts on maternal mental health and, therefore, a direct effect on maternal suicide. Furthermore, unemployment and low wages are already well understood to be related to suicide in the general population. Supraja et al. also reported that, in India, the highest prevalence of maternal suicide occurs in middle-class women, potentially due to the unstable and still growing Indian economy, where even the middle class finds themselves lacking financial stability. There is also evidence that lower levels of education, which may be related to low income and unemployment, is a risk factor for suicide, particularly in the first postpartum year.

Unplanned or unwanted pregnancies are also described as a risk factor for maternal suicide. Thus, difficult access to abortion services, as well as the illegality of abortion in certain countries, also tends to corroborate maternal suffering and possibly suicide. A study conducted in Brazil by Alves et al. associated unwanted pregnancy, the illegality of intentional abortion, and less privileged social condition with maternal suicide, where suicide could present itself as the only resource in the face of the despair of women without adequate familial support. Intentional abortion is also associated with higher rates of maternal suicide in some studies. However, the evidence establishes a higher suicide rate after intentional abortion because it stems from traumas experienced during the procedure, and not from the abortion decision or from the act itself. Miscarriage and the loss of a child in the first year of life are described as very strong risk factors for suicidal behavior, as well as the sorrow of having a stillborn child.

It is important to highlight that the general population of women is less likely to commit violent suicide, however, in the case of maternal suicides, the vast majority of women end up committing suicide violently, mainly by hanging or jumping. Thornton et al. refers that, in Australia, 73% of maternal suicide cases were conducted by violent means, some cases including gunshot and lying in front of a moving object. Maternal distress and suicidal ideation during pregnancy are even associated with gestational and childbirth complications, as well as impairments in the newborn child's physiology, such as reduced dopamine levels and increased cortisol levels. Revealing the singularity of the phenomenon of maternal suicide, the violent way in which pregnant or in-postpartum women seek to take their own lives opens up the complexity of the theme and the severity of the despair suffered by those who do so. Countless reasons can lead women, both in the pregnancy period and in the postpartum period, to attempt violence against their own lives. Many studies are in consensus that maternal suicide presents itself as a serious and unique psychiatric phenomenon despite the social factors strongly associated with suicidal behavior mentioned above. Thus, a history of mental illness such as depression, anxiety, bipolarity, post-traumatic stress disorder, suicide ideation, substance abuse, or any other effect of psychotic disor-der, in addition to a family history of psychiatric diseases and suicide is a primary risk factor for maternal suicide.

The death of a pregnant or a puerperal woman by suicide is a tragedy of incalculable damage, which carries immeasurable psychological damage for the entirety of their life. The descendants of mothers who come to commit suicide are at an increased risk of also committing suicide, in addition to being prone to numerous other psycho-emotional disorders. Lieb et al. still indicate that suicidal behavior may have genetic factors involved as well, as though suicide could run in
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Conclusion

Women who commit maternal suicide are, above all, women with serious mental illnesses\(^8,19,22,\) and with suicide aggravated by serious situations of psychosocial vulnerabilities, those of which include poor familial support\(^10,33,\) domestic abuse\(^24,35,\) a history of sexual abuse\(^1,\) illegal substance abuse and alcoholism\(^24,26,27,\) specific racial oppression\(^10,37,\) economic instability\(^21,26,\) and unwanted pregnancy combined with difficulty or illegality to perform intentional abortion\(^40,\) in addition to severe trauma related to motherhood, such as miscarriage and loss of child during the delivery or within the first year of life.\(^42\)

Considering that pre-existing mental illness is strongly associated with most suicide cases, maternal suicides must be considered preventable with adequate medical care, especially with primary health care.\(^6\) With the universal and systematic screening of mental illness in the earlier stages of pregnancy\(^23,48,\) about a quarter of all maternal suicides could be prevented\(^44,\) with adequate pharmacological therapy and comprehensive psychological assistance.\(^42\) Regarding the profile of pregnant women and mothers in the postpartum period who have committed suicide, it is imperative to develop multidisciplinary monitoring standards for the preventative care for suicide in women defined as most vulnerable\(^2,48\) in all levels of care.\(^29\) Special treatments must be focused mainly on pregnant women who have related a past of psychiatric disorders or addictions\(^23,27,\) or even a history of suicide in the family\(^26,\) with great attention given to unmarried women, unemployed women, women in the course of unwanted pregnancy, those who have suffered from traumatic experiences, such as physical or sexual violence, those who lack adequate sup-port from family and those belonging to marginalized social groups.\(^24,25,38\) Furthermore, there is an urgent need for a consensus on the classification of maternal suicide\(^6,\) in order to avoid misclassification bias and enable better analysis of the theme.\(^6,\)\(^7,19\)

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