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Maternal deaths from suicide reported to the National Committee On Confidential Enquiries Into Maternal Deaths (NCCEMD) 2017-2019

P Soma-Pillay[1], S Fawcus[2], T Ibrahim[3], J Moodley[4]
[1] Department of Obstetrics and Gynaecology, Steve Biko Academic Hospital and University of Pretoria, Pretoria, South Africa
[2] Department of Obstetrics and Gynaecology, University of Cape Town, Cape Town, South Africa
[3] District Clinical Specialist O&G eThekwini District, Kwa Zulu- Natal, Department of Health, Durban, South Africa
[4] Women's Health and HIV Research Group, Department of Obstetrics and Gynaecology, University of Kwa Zulu- Natal, Durban, South Africa

Abstract
Maternal death as a result of suicide has been under-reported in South Africa for several reasons. The aim of this chapter is to identify all deaths from suicide reported to the NCCEMD during 2017 to 2019 coded in various sections so they can be analysed as a single group. The importance of suicide as a cause of maternal death has been grossly under-estimated. Most suicides occurred in women without any known psychiatric disorder suggesting that the reasons for suicide are multi-factorial. All pregnant women should be screened for mental health conditions as well as psychosocial risk factors at the first ante-natal booking visit.

Introduction

Maternal deaths from suicide during pregnancy and the puerperium have been missed in maternal mortality enquiries such as that of the National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD). This is due to the multiple areas where pregnant women dying due to suicide have been classified, namely: correctly as psychiatric deaths under the medical and surgical conditions; or coincidental pregnancy deaths; as adverse reactions to medication as herbal medication; or 'sudden unexplained deaths' in the absence of forensic pathology or toxicology services; or they may occur outside of health facilities and be classified as unknown; and possibly most commonly not being recorded at all. The diagnosis is associated with stigma and relatives may be unhappy to have it classified as suicide. Data collection systems are not well developed in many low and middle-income countries further underestimating the importance. In addition, most maternal death enquiries collect data up to 42 days after delivery, but suicide from postnatal depression may occur up to one year as 'late' maternal deaths, which are collected in UK.[1]

Where perinatal suicide deaths are recorded, they are found to be a major cause of maternal death. The UK maternal deaths enquiry showed that in 2015-2017, suicide was the leading cause of maternal death when late postpartum deaths are included, and the 5th most common cause overall.[1] In California USA, drug overdoses and suicide rank as the 5th and 7th most common cause of maternal death respectively and the most common cause of postpartum deaths up to one year.[2] Non – white and Hispanic women are at the greatest risk[2].

When the NCCEMD started in South Africa in 1998, perinatal suicide deaths were classified as coincidental and not maternal.[3] There was however a category for Pre-existing Medical Conditions which included non-suicide psychiatric causes. This changed in 2008 when suicide became classified as an Indirect Maternal Death and was included under Psychiatric in the Medical and Surgical Disorders category, which replaced Pre-existing Medical Disorders.[4] Despite this, there has been confusion amongst the provincial assessors when assessing the maternal deaths. Although most are placed in the correct category some are still coded under coincidental, adverse drug reactions, acute collapse and other/unknown. There were 11 maternal deaths from psychiatric disorders in 2011-2013 and five in 2014-2016. During these triennia, suicide was not separately documented.[5,6]

One of the limitations of the NCCEMD is that there is not a system of collecting data for events outside of facilities, so even when these deaths are correctly identified and classified, the Enquiry may be unable to collect information about the suicide. Often the deaths are reported by forensic pathology and not the health services and often it is unclear when medication is used, whether it is a suicide or pregnancy termination attempt.

The aim of this chapter is to identify all the deaths from suicide reported to the NCCEMD during 2017 to 2019 coded in various sections so they can be analysed as a single group. The secondary aim was designing interventions to improve identification of pregnant women with suicidal ideation in order to provide more psychosocial support.

Correspondence
Prof Priya Soma-Pillay
email: priya.somapillay@up.ac.za

Methods

All maternal deaths reported to the NCCEMD are assigned a cause of death with assessment of avoidable factors and data is then entered into the MAMMAs database. Deaths from suicide were identified by the NCCEMD member writing the chapters on different causes of death. The majority of suicide deaths was expected to be in the Medical and Surgical Disorders group under Psychiatric, but also possibly in Adverse Drug Reactions, Acute Collapse, "other" and Fortuitous groupings. The files were then reviewed and relevant details entered into a purpose designed database.

Results

Seventy-four maternal deaths due to suicide were reported for the 2017-2019 triennium. Forty cases were reported on the MAMMAs database under the medical and surgical diseases category and an additional 34 deaths reported under co-incidental, adverse drug reactions and "other". In ranking the sub-category condition in order of prevalence, suicide occurs in 14th position, just below conditions such as HELLP syndrome, pulmonary embolism and puerperal sepsis after vaginal delivery, but above conditions such as puerperal sepsis following caesarean delivery, uterine atony and retained placenta.

Cases notes were available for 43 women who died. Post-mortem examinations were performed in 29 cases. The demographic data for the women who died are shown in table 1.

Three women were known to psychiatric services and one was known to use illegal substances. Overdose of drugs or medications was reported as the method of suicide in 39 cases. Organophosphate (n=14), traditional herbs/medications (n=8) and pharmaceutical drugs (n=8) were the most common methods used. Violent methods of self-harm were reported in four cases. One woman jumped from the third floor of the maternity ward four days after delivery; three used hanging as a method of suicide and in one case the method used was uncertain. Sixty-nine % of the women presented to hospital in a critical condition while 7.7% were dead on arrival. The majority of the women were from the KwaZulu-Natal (n=20), Western Cape (n=8) and Limpopo (n=7). There were four deaths from Mpumalanga and the Eastern Cape. The duration of time from admission to death ranged from <5 minutes to 8 days. The final cause of death relating to the organ systems that failed is shown in figure 1.

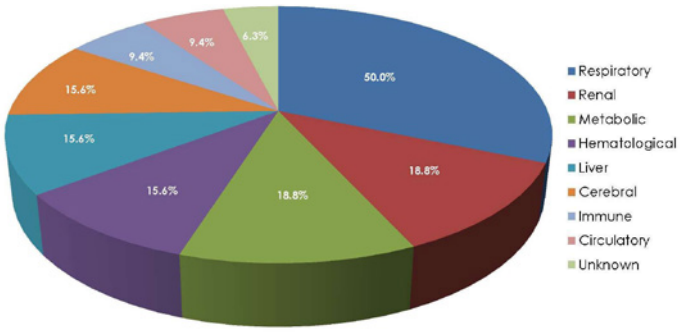

Figure 1. Organ system failure in women who died

Avoidable factors were identified in 78% of the suicide deaths. Table 2 shows the factors contributing to deaths in this category.

Below are excerpts from attending physician's notes on admission regarding the events related to the suicide :

Case 1

16 year P0G1 26 weeks by dates; booked today
Discovered to be pregnant by grandmother who then became angry; had misunderstanding
She then drank grandmother's hypertensive treatment – overdose about 30 pills; unknown names of drugs. Vomited some pills
BP 59/23mmHg
Admitted to ICU

Table 1. Demographic data of women who died as a result of suicide (n=43)

Age	
Average (years)	24.6
Age categories (years)	Number, median, (range)
< 20	10, 16.5, (12-20)
20-34	28, 28, (22-30)
35-39	4, 38, (38-39)
>40	1
Race	
Black African, n (%)	40 (93)
Coloured, n (%)	1 (2.3)
Indian, n (%)	2 (4.7)
White, n (%)	0
Average parity (median)	1
Average gravidity (median)	2
Gestational age at death (weeks)	
Average (weeks), range	26.4, 12 weeks to 28 days postpartum
Timing of death	
Antenatal, n (%)	36 (83.7)
Post-natal, n (%)	7 (16.3)
Average number of days since delivery	2
Obstetric status on admission	
Antenatal (%)	88.5
Intrapartum (%)	7.7
Postpartum (%)	3.8
Antenatal care	
Yes (%)	37.5
Booked before 20 weeks (%)	21.9
No (%)	37.5
Unknown (%)	25.0
Planned pregnancy	
Yes (%)	6.25
No (%)	15.6
Unknown (%)	78.1
Level of ante-natal care	
Community health centre (%)	84.6
District hospital (%)	7.7
Regional hospital (%)	7.7
HIV status	
Positive	15.6
Negative	34.3
Unknown	50.0

Table 2. Factors contributing to maternal death	
Facilities	
Lack of transport	3 (7.0%)
Lack of beds	2 (4.7%)
Human resources	
Lack of human resources	1 (2.3%)
Lack of expertise	11 (25.6%)
Delay in referral	2 (4.7%)
Delay in appropriate action	6 (14.0%)

Case 2
Patient seen in casualty as para-suicide, 21 years old primigravid at 23 weeks
Ingested unknown amount of ferrous sulphate and folic acid tablets
Motive – Someone in her family stole her bank card and some cash

Case 3
Patient (Pt) admitted for elective induction of labour for raised BMI
Pt stable with "good fetal condition" on admission
Priming dose of misprostol given. Fetal distress pattern noted and emergency caesarean done
Maternal tachycardia noted on day 1 post-delivery (Heart Rate- 120 beats/minute; Hemoglobin 7.7/dl)
Pt refuses taking formal Hb and cross match due to anaemia
Pt becomes increasingly upset and wants to sign "Refused Hospital Treatment"
Head of Department counsels patient on 2 occasions to discuss possible transfusions
Pt becomes increasingly restless, inappropriate actions and tearful
Pt reports that staff/doctors should wait until her family arrives before she will submit to any further questioning or investigations
Decision to give patient stat dose of "Ativan" – patient refuses
Staff report patient asking for forgiveness for her behaviour
Pt then slams window with her fists, breaking window and pushing herself through open window.
Diagnosis – Traumatic brain injury (falling from the third floor)
These three cases illustrate the limited information available in case notes to understand the factors underlying the suicide. The first two cases seem to be related to acute psychosocial crises whereas the third appears to be unrecognised puerperal psychosis

Discussion
The importance of suicide has been grossly under-estimated. The ranking of 14th in most common sub-category causes of maternal deaths is certainly an under-estimation. Most suicides occur postpartum but in this study only 4% were postpartum clearly indicating the under-reporting. Assuming the number of deaths is double, (due to the possible lack of reporting of postpartum deaths) this would place suicide 5th after TB, eclampsia, preeclampsia and cardiac disease. The latest Saving Mother's Report showed inconsistencies in the way suicide deaths were classified. In order to improve this, the new maternal death classification of the NCCEMD for 2020, includes suicide as a separate sub-category and thus these deaths should not be misclassified in the future. Another long-term recommendation, which could be piloted in selected provinces, would be to capture maternal deaths up to one year so that late postpartum deaths from suicide are identified.

Injury and violence have been identified as major burdens of disease facing the South African health care system and suicide has been identified as a major contributor to the global mortality burden.[7,8] The widely accepted belief that "pregnancy is protective" against suicide has been called into question.[9] Women in this study were young, most in their second pregnancies and most were women of African ancestry. The demographic profile of our study population was similar to the findings of Vadwa et al., who studied suicide attempts in a pregnancy at a tertiary hospital in Durban, South Africa.[10] The mean age of women in that study was 23.4 years with a mean gestational age 22.7 weeks.[10] Over 75% of women in our study were admitted to hospital in a critical condition or were dead on arrival making it difficult for health care providers to obtain a history regarding risk factors, the presence or absence of mental illness, educational level or marital status. It was not always clear whether medications taken were with intent for suicide or rather to self-terminate an unwanted pregnancy.

One third of women in the NCCEMD data (2017-2019) booked for ante-natal care and a fifth booked before 20 weeks gestation. Only two women were known with prior psychiatric disorders suggesting that the reasons for suicide in pregnancy may be multi-factorial, and in certain circumstances may be an impulsive action with no prior psychiatric morbidity. Onah et al., studied suicidal ideation and behaviour among pregnant women in a low-income urban South African setting.[11] Sixty-seven percent of women with suicidal ideation had no major depressive episode diagnosis, 65% had no anxiety disorder while 54% had neither diagnosis[11]. Suicides by pregnant women can occur for several reasons including relationship problems, financial hardship or sexual abuse.[12] These conditions may be incidental or pre-date the pregnancy. Vadwa et al., found that relationship conflicts were key precipitants to suicide attempts by pregnant women and partner or family relationship problems were responsible for more than 77% of suicide attempts.[10] Studies in high income countries have found that intimate partner violence is a precipitant for either major depression or suicide attempts and that spousal physical abuse and poor relationships with mother-in-law were stressors in developing countries. [13,14]

For many years, the Perinatal Mental Health Project has advocated for the inclusion of a screening program for perinatal mental health problems (anxiety and depression) during antenatal care.[15] This screening program has already been rolled out in certain facilities in the Western Cape. In addition, the screening tool has been included in the New Maternity Case Record (MCR), (Table 3). There has unfortunately

Table 3. Mental Health Screen Tool included in the Maternity Case Record						
In the last 2 weeks, have you on some or most days felt unable to stop worrying or thinking too much?	❑	Yes	[1]	❑	No	[0]
In the last 2 weeks, have you on some or most days felt down, depressed or hopeless?	❑	Yes	[1]	❑	No	[0]
In the last 2 weeks, have you on some or most days had thoughts and plans to harm yourself or commit suicide?	❑ **refer**	Yes	[1]	❑	No	[0]
TOTAL SCORE	❑	1				
	❑	2	>>>>		Refer	
	❑	3	>>>>		Refer	
Offered Counselling	❑	Yes	[1]	❑	No	[0]
Accepted counselling	❑	Yes	[1]	❑	No	[0]

not been widespread use of this tool yet due to limitations in personnel in providing counselling services for women identified with problems.

For the acute event, good history taking is essential to determine the timing and details of drugs taken. Pharmaceutical drugs such as oral iron and isoniazid which are routinely prescribed during pregnancy can lead to serious complications and death. Many women who presented to healthcare facilities with iron overdose did not have any symptoms and signs on presentation but their clinical condition deteriorated over time. This type of presentation often misleads clinicians into believing that no action is necessary. The classic triad for isoniazid poisoning is seizures, metabolic acidosis and coma. In many cases seizures due to isoniazid toxicity were diagnosed as eclampsia and supportive care and treatment with pyridoxine was delayed. Aspiration pneumonia must be excluded in women presenting with altered levels of consciousness. Appropriate management includes a thorough clinical examination, arterial blood gas and oxygen saturation levels. Suicide should also be considered in women presenting with unsafe termination of pregnancy. Herbal medications, often obtained from traditional healers, were one of the common suicide methods used. It is estimated that 60% of the South African population use traditional healers.[16] A national survey found that 20% of participants with a lifetime diagnosis of mental disorders obtained treatment from a traditional healer compared with 29% who consulted a biomedical practitioner. This highlights the need for possible collaboration between traditional healers and biomedical practitioners to develop public health interventions with the aim of forming a national suicide prevention strategy.

Conclusion and recommendations

Suicide is a previously unrecognised major cause of maternal mortality in South Africa. Women in low-and middle income-countries face several life stressors that increase the risk for suicidal ideation and behaviour. This is likely to increase dramatically with the Covid-19 pandemic. Public health and social interventions should include identifying psychosocial risk factors. Reproductive Health Education should be taught at all schools and all women should have access to contraceptive and safe miscarriage services. The reduction of perinatal suicide deaths needs to focus on better identification of vulnerable women in the antenatal period with associated counselling and support systems; as well as better management of the acute event. Health workers at all levels of care should receive training on mental health screening and women should be screened for mental health conditions at the first ante-natal visit. Further discussions may be required at subsequent visits if women are not forthcoming with information at the initial visit. A high level of awareness is essential as well as creating the necessary support systems for referral. Specialist psychiatrists should be consulted timeously for women displaying symptoms of postnatal depression. The need for intensive care monitoring must be timeously determined for women presenting with a suicide attempt.

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