

**THE OCCURRENCE OF PARASUICIDE AMONG PREGNANT
WOMEN AT DR GEORGE MUKHARI HOSPITAL (DGMH):
[A RETROSPECTIVE STUDY]**

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2011

OBSTETRICS AND GYNAECOLOGY

DISSERTATION

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**THE OCCURRENCE OF PARASUICIDE AMONG PREGNANT
WOMEN AT DR GEORGE MUKHARI HOSPITAL: A RETOSPECTIVE
STUDY**

BY

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RESEARCH DISSERTATION

Submitted in fulfilment of the requirements for the degree of

MASTER OF MEDICINE

in

OBSTETRICS AND GYNAECOLOGY

in the

FACULTY OF HEALTH SCIENCES
(School of Medicine)

at the

UNIVERSITY OF LIMPOPO
(MEDUNSA CAMPUS)

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2011

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DECLARATION

I declare that the dissertation hereby submitted to the University of Limpopo, for the degree of Master of Medicine (Obstetrics & Gynaecology) has not been previously submitted by me for a degree at this or any other University; that it is my work in design and execution, and that all materials contained herein have been duly acknowledged.

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DEDICATION

First and foremost I will like to dedicate this study to my wife and family who through their love and patience gave me the support to complete this dissertation. To my supervisors who through their wisdom, knowledge and guidance assisted me to complete the study.

Finally, to the memory of my Late Mother, through whom I have recently had the strength to closely work on the completion of this dissertation.

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LIST OF ABBREVIATIONS

5 – HIAA: 5 – HYDROXYINDOLEACETIC ACID

AIDS: ACQUIRED IMMUNODEFICIENCY SYNDROME

CDC: CENTRE FOR DISEASE CONTROL

CEMD: CONFIDENTIAL ENQUIRY INTO MATERNAL DEATHS

CPD: CEPHALO-PELVIC DISPROPORTION

DGMH: DR GEORGE MUKHARI HOSPITAL

EEG: ELECTRO-ENCEPHALOGRAM

FAS: FOETAL ALCOHOL SYNDROME

HIV: HUMAN IMMUNODEFICIENCY VIRUS

ICD: INTERNATIONAL CLASSIFICATION OF DISEASES

ICU: INTENSIVE CARE UNIT

IUFD: INTRA-UTERINE FOETAL DEATH

NGO: NON-GOVERNMENTAL ORGANIZATION

NSAIDS: NON-STEROIDAL ANTI-INFLAMMATORY DRUGS

NSRF: NATIONAL SUICIDE RESEARCH FOUNDATION

RSA: REPUBLIC OF SOUTH AFRICA

TOP: TERMINATION OF PREGNANCY

USA: UNITED STATES OF AMERICA

WHC: WOMEN'S HEALTH COUNCIL

WHO: WORLD HEALTH ORGANIZATION

ABSTRACT

THE OCCURRENCE OF PARASUICIDE AMONG PREGNANT WOMEN AT DR GEORGE MUKHARI HOSPITAL

BACKGROUND:

Parasuicide is defined as an act with non-fatal outcome, in which an individual deliberately initiates a non-habitual behaviour that without intervention from others will cause self-harm, or when an individual deliberately ingests a substance in excess of the prescribed or generally recognized therapeutic dosage. Pregnant women experience higher rates of depression, anxiety, psychosomatic symptoms and lower level of social adjustments than non-pregnant women. Cases of parasuicide among pregnant women have been seen and treated at Dr George Mukhari Hospital over the years without any systematic assessment of the extent of the problem.

OBJECTIVE:

The aim of the study was to evaluate the impact of cases of parasuicide on the eventual maternal and foetal outcomes.

MATERIALS AND METHODS:

The study was conducted retrospectively using the hospital files of those pregnant women who had been diagnosed at Dr George Mukhari Hospital. The medical records of all such cases were retrieved from the filing room for assessment. The review period covered 1st January 2004 to 31st December 2006. Analysis was predominantly descriptive in which rates of incidences as well as proportion of occurrence of variables were calculated. Evaluation was for demographics, social status, intents and methods of parasuicide. In addition, the outcome of treatment for the mothers and their babies were evaluated. All the patients had been treated with gastric lavage and ingestion of activated charcoal from their referring centres regardless of the material used. The patients were stabilized and then referred for psychological counselling.

RESULTS:

During the three-year review period, 54 cases of parasuicide were recorded, with files for 42 (77.7%) patients found and evaluated. The ages of the women ranged from 16 to 35 years (median=21 years). Majority of women (57.1%) were parous while 42.9% were nulliparous. Socio-economic status of the women revealed that most patients were unemployed (95%), most were living with parents (90%), pregnancy was planned by 62%, 10% reported history of

physical abuse and only one of the women (2%) had a problem of alcohol abuse. Materials used for parasuicide included ingestion of tablets (23; 54.8%), organophosphates (7; 16.7%), herbal potions (6; 14.3%), rat poison (2; 4.8%) and other things such as paraffin, detergent (Jik) and laxatives. Thirty five of the 42 patients (83.3%) had reasons documented for parasuicide, of which the majority had relationship difficulties with their partners (22; 62.8%), (8; 22.9%) had relationship problems with family members and (5; 14.3%) wanted to terminate the pregnancy. The gestation at admission for treatment for parasuicide ranged between 16 and 40 weeks and at delivery pregnancy ended as: abortion (6; 14.3%), preterm delivery (13; 36.1%) and term delivery (23; 63.9%). The rate of abortion (14.3%) was significantly higher in these patients (p -value = 0.0001) compared to non-parasuicide patients (1.2%). Most of them delivered vaginally (95%), only one patient needed ICU admission for 6 days and there was no case of maternal death. Out of the 36 women who delivered viable babies, there were 33 (91.7%) who had live births, three other women had IUFDs (8.3%) and no neonatal death was recorded.

CONCLUSION

Although parasuicide in pregnancy occurs infrequently at DGMH, the most striking factor which could have led to attempts at parasuicide was the socio-economic situation of the women. A scenario in which 95% of these pregnant women were unemployed, 90% were unmarried and for most of the women the reasons for parasuicide were related to relationship difficulties, provide an effective recipe for parasuicide.

INTRODUCTION

Suicide is a death from injury, poisoning or suffocation where there is evidence (either explicit or implicit), that the injury was self inflicted and that the decedent intended to kill himself or herself [1].

It is an act performed by an unhappy or desperate or angry human being, who perceives this as the only remaining solution to these problems. However, human beings differ in their tolerance for the adversities that give rise to such desperate feelings, and also in their capacity to block impulses of self harm [2].

Young people from traditional backgrounds in multicultural South Africa, stressed by the conflict between traditional social roles and new roles offered by western culture, could more likely engage in self-destructive behaviour [3].

The Women's Health Council's International Classification of Diseases (1992), defines parasuicide as: An act with non-fatal outcome, in which an individual deliberately initiates a non-habitual behaviour, that without intervention from others, will cause self-harm, or deliberately ingests a substance in excess of the

prescribed or generally recognized therapeutic dosage, and which is aimed at causing changes which the subject desired via the actual or expected physical consequences [4].

The definition includes acts of self-harm that are interrupted before the actual self-harm begins, but does not include such acts by people who are unable to understand the meaning or consequences of their action for whatever reason. It may be used interchangeably with terms such as attempted suicide and deliberate self-harm.

Parasuicide is also defined as an apparent attempt at suicide commonly called a suicide gesture, in which the aim is not death [5].

The distinct motives for attempted suicide have been reported to include:

- Those who want to die
- Those who want to be unconscious and get away from their mental distress for a short while
- Those for whom it is an appeal or an attempt to move others [4].

Parasuicide is a major risk factor for completed suicide. The rate of suicide for individuals who have had an episode of parasuicide is hundred times higher in the year following the event, than that of the general population [6].

Attempted suicide occurs ten times as often as suicide, and women account for the majority of the reported attempts [1]. The rate is twice as high in women compared with men [6]. It has been reported that for every suicide in South Africa, there are more than twenty unsuccessful attempts. Between 137, 860 to 160, 000 individuals attempt suicide each year, figures which translate to eighteen cases per hour [7].

Some biological markers have been found to have an association with an increased risk of suicide; they are [2]:

- Reduced serotonin activity: serotonin is a neurotransmitter, which conveys signals between nerve cells in the brain. These cells regulate sleep, memory aggressive behaviour and other functions. Serotonin was studied because so many affective and

depressant drugs affect serotonin. The serotonin metabolite 5 – HIAA, rather than serotonin itself is measured in the spinal fluid because serotonin is not accessible. Studies have shown the association between suicide and violent crimes with low serotonin activity

- An increase in the production of cortisol: cortisol production increases in stressful situations, especially in situations that are beyond the individual's control and its excessive production has been associated with suicide.
- Rapid habituation of the skin conductance reaction to unexpected stimuli: the skin's conductance of small electrical currents is affected by the rate of sweating. Habituation of the skin conductance is just one example where the body's alarm systems stop reacting when the person is repeatedly exposed to strong stimulation. In suicidal people, the skin conductance reaction diminishes especially fast.
- An abnormal electro-encephalogram: the EEG records the electrical impulses on the surface of the brain. The EEG's of suicidal people suggest very minor brain dysfunctions, not related to epilepsy or other obvious pathological problems.

Pregnancy has been considered a relatively quiescent emotional period [8].

Psychiatrists have also suggested that pregnancy serves a psychologically protective role [9]. However, a number of psychosocial risk factors have been reported to be significantly associated with the risk of suicide. Pregnant women experience higher rates of depression, anxiety, psychosomatic symptoms and exhibit lower levels of social adjustments than non-pregnant women of childbearing age, and may be expected to have a higher risk of suicide [8]. However, case series and death certificate reviews found that very few pregnant women commit suicide. The possible reasons postulated to convey protection against suicide in pregnant women are:

- A lower prevalence of schizophrenia, substance abuse and personality disorders in pregnant women.
- Pregnant women have a high level of serotonin. More of the serotonin is produced by the foetus, which may suggest an evolutionary advantage to the inhibition of self-destructive behaviour by the pregnant mother. This is known as the Behavioural Inhibitory Factor [8].
- Marriage is also reported as protection against suicide
- Having young children in the home has also been found to have a protective effect against maternal suicide [1].

Suicide was found to be the second commonest cause of coincidental maternal deaths in the South African “Saving Mothers” Report of the triennium 1999 to 2001 [10]. In the triennium 2000 to 2002, suicide was reported as the fourth commonest cause of coincidental maternal deaths. This was attributed to better reporting of cases as compared to the previous triennium [11].

The sixth Report of the Confidential Enquiry into Maternal Deaths in England and Wales, found that:

- Deaths by suicide were more common than thromboembolism and cardiac deaths. This was related to a high rate of psychiatric disorders.
- Most deaths were of a violent nature, like hanging, jumping from heights or cutting throats, unlike suicides in women unrelated to pregnancy, among whom, drug overdose was the usual method [12].

However, women tend to choose “less lethal means”, for example overdose, wrist cutting than men do [1].

The National Suicide Research Foundation in Ireland, launched in January 2001 found that the main method of parasuicide was found to be overdose of

tablets, accounting for 80% of cases in females and 59% of cases in males. Self-poisoning, particularly with paracetamol, was the method most people used [4].

In Hungary, self-poisoning exceeded 90% of parasuicide attempts. Those who attempted suicide with self-poisoning were predominantly young and female, in 65% of cases. The peak period of suicide attempts and suicide deaths during pregnancy was found to be in the third month, while there was a significant decrease in suicide attempts as the pregnancy progresses [13].

Cases of parasuicide among pregnant women have been seen and treated at Dr George Mukhari Hospital over the years. Nevertheless, there has been no systematic analysis of the extent of this problem among pregnant women who delivered their babies at Dr George Mukhari Hospital. It was therefore, pertinent to evaluate the impact of this problem on the eventual maternal and foetal outcomes.

LITERATURE REVIEW

Throughout the world, about 200 people kill themselves each day (that is about 750 000 per year, in other words eighty per hour. An estimated 300 000 or more Americans survive suicide attempts each year. The average hospital stay for each patient is about ten days, and the average cost for treatment is about \$15 000. Seventeen percent (19 000) of these people become permanently disabled at a treatment cost of \$127 000 per person per year to the state [14].

According to the World Health Organisation, the rate of suicide among women is as follows [15]:

- 4.1/100 000 (1999) in the United States of America
- 3.3/100 000 (1999) in the United Kingdom
- 5.2/100 000 (1990) in Zimbabwe.

The rate of suicide among Black women in the United States is 1.7/100 000, lower than White women at 4.4/100 000. The lower rates among Black women are thought to be related to the protective factors of extended family networks and religion [1].

There are no such statistics available in South Africa.

Suicide is the third leading cause of death among 15 – 24 year olds, according to the United States' Centre for Disease Control. Only accidents and cases of homicide are more. Girls attempt suicide at a rate which is twice the figure for boys. For each age group the female rate exceeds that of the males with the highest rate among females in the 15 – 24 age group [6]. But, four times as many boys as girls die by suicide because boys tend to use more lethal methods [16].

The rate of attempted suicide in pregnancy has been reported to be 0.4 per 1,000 pregnancies in a study in the state of California in USA over an eight-year period [17].

Consequences of parasuicide in pregnancy

1. Risk factor for adverse obstetric outcome: Attempted suicide is associated with an increased risk of caesarean section, blood transfusion, preterm labour, neonatal respiratory distress syndrome and low birth weight deliveries [17].

2. Outcomes dependent on the method used: There are other possible outcomes of attempted suicide in pregnant women which are associated with the method used. Some of the drugs used in cases of attempted suicide include the following:

○ ***PARACETAMOL:***

It easily crosses the placenta. It does not increase the spontaneous abortion rate, which is at 8 – 10% in patients who had ingested an overdose of paracetamol. It is only when antidote treatment with acetylcysteine fails and the mother suffers massive liver damage, then foetal liver damage occurs [18].

○ ***NON-STEROIDAL ANTI-INFLAMMATORY DRUGS:*** e.g. Ibuprofen, Indomethacin.

They do not cause foetal structural abnormalities. They may lead to constriction or premature closure of the ductus arteriosus, which is gestation dependent. It is rare before 27 weeks, 50 – 70% at 32 weeks and can occur in as much as 100% from 34 weeks onwards. These can lead to neonatal primary pulmonary hypertension.

They affect the renal function by reducing the urine output because of reduced kidney perfusion and the increase in circulating vasopressors. These can lead to oligohydramnios.

They may also increase the risk of neonatal haemorrhage by inhibiting platelet function [18][19].

- ***ALCOHOL:***

Acute or chronic alcohol ingestion may be associated with the Foetal Alcohol Syndrome, characterized by prenatal and postnatal growth deficiency, central nervous system abnormalities (microcephaly, behavioural abnormalities, mental retardation and a characteristic pattern of facial features (short palpebral fissures, hypoplastic philtrum, flattened maxilla) [20].

- ***ORGANOPHOSPHATES:***

These chemical agents exert their toxic effects by long-lasting inhibition of cholinesterase at many sites in the body. There is limited data available on the effects of organophosphates during human

pregnancy. In cases of exposure, with no signs of clinical toxicity in the mother, no toxic effects were found in the infants.

Schaefer *et al.* reported on a case of foetal death two hours after chlorpyrifos (an example of an organophosphate) ingestion, where therapy was started more than ten hours after initial gastric lavage [18]. Therefore quick initiation of treatment is important with atropine and pralidoxime.

The same study also revealed that normal infants were born to two women who had attempted suicide by ingesting organophosphates during the second and third trimesters.

○ ***IRON SUPPLEMENTS:***

Toxic effects are caused by corrosion of the gastro-intestinal tract and by an increase in the unbound iron in serum. Out of 85 pregnancies exposed to iron overdose, 73 had live-born infants without congenital malformations, 5 infants had malformations, there were 2 foetal deaths, and 5 pregnancies were terminated [18].

Treatment with desferoxamine is indicated if the serum iron is more than $55\mu\text{mol/l}$ or if the pregnant woman is symptomatic, that is, having seizures, being unconscious or having circulatory shock [28].

In two other studies from the United Kingdom on drug overdose with paracetamol and iron during pregnancy [21], both found no increased risk of foetal abnormalities in 230 live-born infants after exposure to paracetamol, or in 43 live-born infants after exposure to iron overdose.

A Danish population-based study found that [6]:

- Maternal intake of a single drug overdose during pregnancy may be regarded as more harmful to the foetus than a continuous therapeutic dose.
- The proportion of miscarriage had almost doubled.
- There was no increased risk of congenital abnormalities, prematurity or low birthweight babies in women exposed to a drug overdose compared with the background population.
- A drug overdose in pregnancy need not necessarily be considered an indication for induced abortion.

Even when it is not a woman's intention to commit suicide but merely to terminate pregnancy, death may be the ultimate result.

RISK FACTORS ASSOCIATED WITH PARASUICIDE AMONG PREGNANT WOMEN.

Several factors have been shown to increase the risk of suicide among pregnant women, and these include:

1. Socio-economic factors.
2. Psychiatric disorders.
3. Unwanted pregnancies.
4. Alcohol abuse.

Socio-economic factors.

The WHO/EURO Multicentre study of suicide (1989) [4], found that people who attempted suicide were more likely to belong to social categories associated with social destabilisation and poverty.

The rate was generally found to be higher in urban, disadvantaged

areas and among single people. Unemployment and low levels of formal education were also found to increase the risk of parasuicide. In contrast to this finding, a review by Chaundron and Caine [1], found that women who died by suicide were more likely to have higher levels of education than women who died from natural causes.

The Samaritans website states that, relationship difficulties were the most common issues referred to by people who attempted suicide. Other factors mentioned were:

- Single marital status, including divorce and widowed people.
- Unemployment.
- History of physical or sexual abuse.
- Social isolation.
- Alcohol problems [4][22].

Three themes have been noted in pregnant women who displayed suicidal behaviour, these are [6]:

- Prior loss of children (by miscarriage, adoption or death).
- Potential loss of a lover.
- The desire for an abortion.

Abuse, either physical or psychological, unemployment and economic dependence on a partner have been identified in the literature as significant precipitating factors for parasuicide in women. Marishane *et al* and Evans *et al*. [6][27], found that significantly more married women than men cited spousal extramarital affairs, spousal alcohol abuse and marital violence as predisposing factors for their self-destructive behaviour. Suicide may represent the only way out of repeated episodes of domestic violence [23].

The WHC [4], reported on the National Suicide Research Foundation in Ireland, which found that a large proportion of patients cited interpersonal argument as a risk for attempted suicide, which was the case in 64% of women.

The increasing influences of a modern lifestyle, HIV-AIDS pandemic, high crime and violence rates, high stress levels, high unemployment levels, impact of socio-economic and related forces in South Africa,

are important aetiological considerations in patients presenting with suicidal behaviour [6].

Psychiatric disorders.

Suicide is most likely to result from the effects of mental disorders and has also been associated with any major event which resulted in the loss of a relationship. All major affective, psychiatric, anxiety and substance abuse disorders have been shown to increase the risk of suicide [1]. Depression combined with social isolation and the recent loss of an intimate relationship dramatically increases the risk of parasuicide [25].

Particular depressive symptoms like hopelessness, anhedonia, insomnia, psychic anxiety, panic attacks, persistent affective morbidity, delusions and co-morbid alcohol abuse were associated with an increased risk of suicide. History of serious suicide attempts and suicidal ideation were also associated with greater suicide risk [1].

Unwanted pregnancies.

Suicide may be the last resort for a woman, who is in a state of desperation due to an unwanted pregnancy. This has been reported to be particularly frequent in societies where access to family planning is limited and access to abortion is restricted [23]. Failure to complete pregnancy has been reported to be associated with a greater risk of suicide, especially for cases of unwanted pregnancies and where elective termination of pregnancy is unavailable. This is labelled the Hedda Gabler Syndrome. Unwanted pregnancies are a major risk factor for suicide. This is particularly true for female adolescents whose discovery of a pregnancy may lead to suicide. Pregnant women in crisis may face terrible dilemma such as disclosing their pregnancy, interrupting it or face social and economic difficulties [24].

For many young black girls in townships in South Africa, their first experience of sexual intercourse is usually through force or rape. Young girls may have problems finding dedicated sites for TOP [26].

Unwanted pregnancy as a consequence of sexual abuse may lead to attempts at suicide in social circumstances where women are stigmatized for being pregnant out of wedlock [23].

One reason for a strong link between abortion and suicide is the fact that women view these two events as having the same impact on their lives. A person who threatens suicide is actually crying out for help, so are women who contemplate abortion for a variety of reasons. In both situations, the woman is in a state of despair, lonely and faced by insurmountable odds. They are crying out for the support and encouragement to choose life, cherish life, and rejoice life. A woman who is distressed over a pregnancy is crying out for help when she tells others she is considering abortion [9].

Alcohol abuse.

Among women who die by suicide, alcohol abuse is also highly prevalent. The rate of alcohol use at the time of death was 25-30% among men and women in two studies. The use of alcohol at the time of suicide may reflect a substance use disorder, the need to be intoxicated in order to follow through or the impulsivity associated with intoxication [1].

The high incidence of a link between alcohol abuse and suicide can be explained in several ways [1]:

- Alcoholism can cause loss of friends, rejection by family members and loss of jobs leading to social isolation.
- Alcohol and suicide may both be attempts to deal with depression and misery.
- Alcohol will increase the effects of other sedative drugs, frequently used in suicidal attempts.
- Alcohol may increase impulsive actions.

Although the association of alcohol excess with suicide is clear, its causal relationship is not. Both alcoholism and suicide may be responses to the same pain. This was clearly demonstrated in the principle enunciated by Geo Stone who stated; “A man may drown his sorrows in alcohol for years before he decides to drown himself” [14]. This same scenario was previously demonstrated in the study by Frierson *et al.* who concluded that the rate of suicide among persons with alcohol dependence is fifty times that of persons without alcohol dependence [25].

MANAGEMENT OF PARASUICIDE IN PREGNANCY

The management of parasuicide in pregnancy requires a multidisciplinary team approach and should include an Obstetrician, Social Worker, Psychologist and a Psychiatrist. Management should be individualized and significant attention should be drawn to specific risk factors and protective factors pertaining to individual patients [6].

Most pregnant women attempt suicide with ingestion of poisonous substances. These patients are managed in a specific way as outlined in the South African Medicines Formulary [28]:

Management of acute poisoning [28].

Acute poisoning requires accurate assessment and prompt therapy. The most hazardous outcome of poisoning is associated with the potency of the poison, the quantity ingested, duration of exposure and presence of other ingredients. The measurement of plasma concentration levels is essential with few of the toxins, like paracetamol and salicylates.

The initial management of these patients is supportive care which includes the following:

- Adequate ventilation by ensuring an adequate airway, oxygen and mechanical ventilation for unconscious patients.
- Establish a satisfactory venous access.
- Correct volume depletion which may have resulted from vomiting, diarrhoea or sweating.
- Exclude and treat hypoglycaemia in any comatose patient.

The next step is to try to terminate or to reduce exposure of the patient to the ingested toxins. Here are some of the commonly used methods:

Emesis

Its use is recommended in rare situations where the following criteria exist:

- There is a substantial risk of serious toxicity
- There is no alternative method available to decrease gastrointestinal absorption of the toxin.
- It can be instituted within 30 to 90 minutes of ingestion of the toxin.

Gastric lavage

It should not be used routinely in the management of oral exposure to poisonous substances. There is no evidence that gastric lavage, beyond one hour after ingestion of a poisonous substance is of benefit. It should only be considered if a patient has ingested large amounts of a poison with a high inherent toxicity, less than two hours previously. Contraindications to gastric lavage include ingestion of potentially corrosive agents, volatile hydrocarbons and patients at risk of gastrointestinal haemorrhage due to underlying medical or surgical conditions.

Activated Charcoal

It is an absorbent of a wide range of poisonous substances and drugs, reducing their systemic absorption from the gastrointestinal tract. It is of no value in poisoning with strong acids, alkalis or corrosive substances and its absorptive capacity is too low to be of use in poisoning with iron salts, cyanides, lithium, organophosphates, petroleum products and organic solvents such as methanol and ethylene glycol.

It is safe, although the taste is unpleasant. It is administered orally or instillation through a nasogastric tube, ideally within one hour of ingestion of a potentially toxic amount of a substance. It can be given as a single dose or as multiple doses, which involves giving more than two doses which enhances the elimination of drugs already absorbed into the body, by interrupting the enterohepatic circulation of drugs excreted into the bile and reducing re-absorption of drugs that diffuse or are actively secreted into the intestines.

After the acute management and when they are stable, these patients are referred to Social Workers and Psychologists for psychological counselling.

Prevention of parasuicide in pregnancy

The confidential and personal nature of physician-patient relationship is unique. Patients often disclose information to the physician that they would not disclose to even a spouse or family member. These disclosures may include feelings of hopelessness or despair or frank suicidal thoughts. These findings put physicians in the frontline in

identifying depressed and suicidal patients and underscore the importance of suicide risk assessment at antenatal clinic visits [25].

The effective intervention and management of loss events and major depressive episodes among emotionally unstable subjects may prove to be most effective for the prevention of parasuicide in different populations [22].

It is therefore important to take careful history with regard to problems that may lead to adverse psychosocial factors to the pregnant woman. These include a past history of mental illness, previous puerperal psychosis, chronic medication and severe psychosocial stress situations [11].

The WHO/EURO Study [4]: the prevention of parasuicide has to focus more on social issues such as improving education rates particularly among disadvantaged people and improving housing and employment prospects, reducing the use of alcohol and preventing the misuse of drugs.

In cases related to suicide attempts due to unwanted pregnancies, it is important that women should have access to health care services that are youth-friendly, relevant and focused in the following manner:

- Youth relevant services and youth focused services, like general sexual education, the availability of emergency contraceptive services and abortion facilities.
- The patient should know that confidentiality will be maintained at all times.
- Specific communication skills on behalf of the provider, with a large component of education and counselling, which is gender-specific, straight forward and non-judgemental [26].

OBJECTIVES OF THE STUDY

The objective of the study was to evaluate the impact of cases of parasuicide during pregnancy on the eventual maternal and foetal outcomes.

STUDY DESIGN

This was a Retrospective study analysing clinical case notes of the patients who were identified and managed for parasuicide in pregnancy.

SETTING

The study was conducted at DGMH; Obstetric department. It is a tertiary (Level 3) health institution which forms a part of the health complex of the School of Medicine (University of Limpopo; Medunsa Campus). The Obstetric department admits all pregnant women who are 20 weeks pregnant or more.

METHODOLOGY

This was a review covering a 3-year period; ranging from the 1st of January 2004 to the 31st of December 2006. Clinical files of pregnant women who had been admitted in the Obstetric unit of DGMH with a diagnosis of parasuicide in pregnancy over the review period were retrieved from the filing room of the hospital. The evaluation of these files included the demographic characteristics of the patients, their socio-economic status, the reasons mentioned for the suicide attempt, the intents and the methods used for the suicide attempt. The eventual outcomes of the pregnancies of both the mothers and their babies were also evaluated.

The initial management of all the patients had been started outside the unit (either in the local clinic or in casualty department. All the patients had a nasogastric tube inserted; followed by gastric lavage. This was followed by instillation of activated charcoal, regardless of the type of toxin used. After these patients were stabilized, they were then referred for psychological counselling to either a social worker or a clinical psychologist.

SAMPLE SIZE

This was a retrospective clinical review which necessitated inclusion of all cases which occurred during the 3-year period. There were 54 cases of parasuicide in pregnancy that were recorded over the study period. However, files for 42 patients were found and subsequently evaluated. Twelve files could not be found in the filing room.

DATA ANALYSIS

Analysis was predominantly descriptive in which rates of incidences as well as proportion of occurrence of variables were calculated.

RESULTS

The incidence of parasuicide amongst our pregnant women population was 0.21%, calculated as 54 cases out of 25 500 hospital deliveries. Forty two cases were available for evaluation. Table 1 shows the demographic characteristics of the patients in the study.

Table 1: Demographic characteristics [n=42].

<i>AGE:</i>		
RANGE	16 – 35 YEARS	
MEDIAN	21 YEARS	
<i>PARITY:</i>		
NULLIPAROUS	18	42.9%
PAROUS	24	57.1%

The patients' ages ranged from 16 to 35 years, with a median of 21 years. The majority of the women were parous; 24(57.1%), with 18(42.9%) being nulliparous.

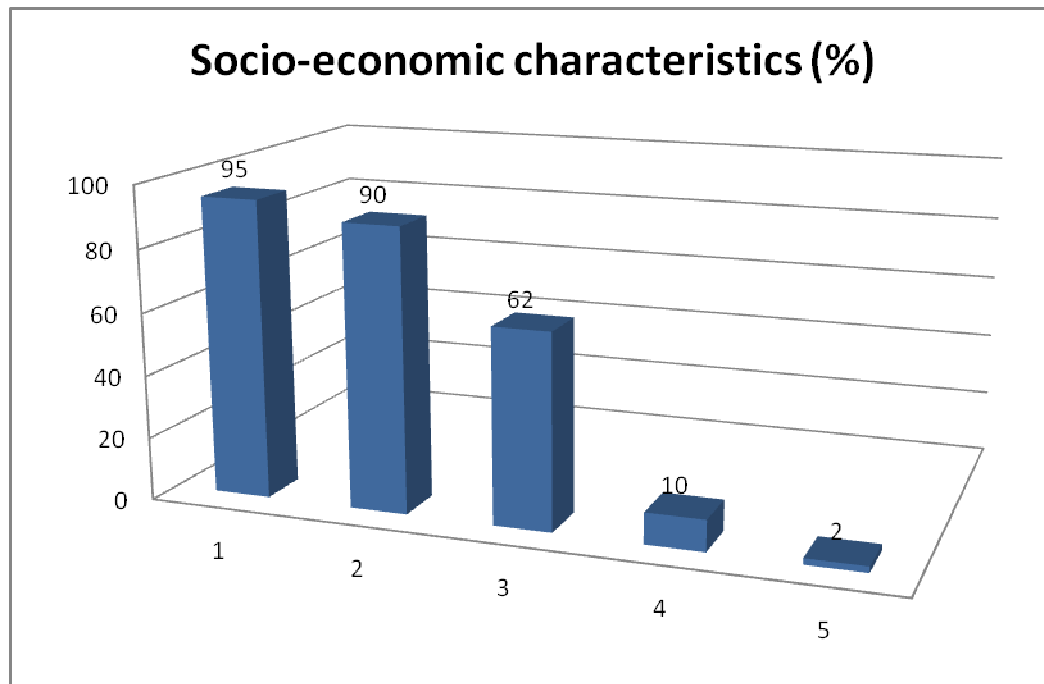
Table 2 outlines the socio-economic characteristics of the women who had attempted suicide in pregnancy. The majority of the women reported that

they were unemployed (95%), single women (90%), staying with their parents.

Table 2: Socio-economic characteristics [n=42].

CHARACTERISTICS		No.	PERCENTAGE (%)
1.	Unemployed	40	95
2.	Living with parents	38	90
3.	Planned pregnancy	26	62
4.	Physical abuse	4	10
5.	Alcohol abuse	1	2

Twenty six (62%) of the women had planned their pregnancies. Physical abuse by an intimate partner was reported by 4(10%) of the patients. Only one patient (2%) revealed a problem of alcohol abuse, even during pregnancy. She had also used it as one of the substances in her attempt to commit suicide. The same patient had not planned her pregnancy and wanted a TOP.



Key: x-axis legend corresponds to table 2.

Figure 1: Socio-economic characteristics of parasuicide pregnant women

A variety of substances were ingested to attempt suicide (Table 3). None of the women used violent methods like wrist cutting, hanging or gunshot. Most patients were found to have used an overdose of a variety of tablets 23(54.8%), like antibiotics, analgesics, haematinics and sleeping tablets. Seven (16.7%) ingested organophosphates and 6(14.3%) patients had used herbal potions. Few patients had used a number of other substances including rat poison, paraffin, detergent (Jik) and laxatives.

Table 3: Materials used for parasuicide [n=42]

MATERIALS	No.	PERCENTAGE (%)
Tablets (overdose)	23	54.8
Organophosphates	7	16.7
Herbal potions	6	14.3
Rat poison	2	4.8
Others (paraffin, Jik, laxatives)	4	9.5

Thirty five (83%) out of the 42 women had volunteered their reasons for attempting suicide. This is shown in table 4. Out of the 35 women, 22 (62.8%) women had relationship difficulties with their intimate partner before their attempted suicide. Of this, 13(37.1%) women reported conflict with the partner and this included an abusive partner, fighting with the partner for financial assistance or partner infidelity.

Table 4: Reasons for parasuicide [n=35].

REASON	No.	PERCENTAGE (%)
Conflict with partner	13	37.1
Partner denied paternity	9	25.7
Conflict with family members	8	22.9
Attempted TOP	5	14.3

Nine patients (25.7%) attempted suicide because the partner denied paternity. Some patients; 8(22.9%), pointed out that they attempted suicide because of various relationship difficulties with family members especially with parents or with siblings. Five (14.3%) of the women had unwanted pregnancies and had a primary intention of terminating the pregnancy with the method used for attempting suicide. These patients were reluctant to go to health care facilities for TOP because of lack of knowledge about the availability of lawful TOP in those facilities. One patient mentioned attempting suicide because of an inability to cope with the death of her mother.

The gestational ages of the pregnancies ranged from 16 to 40 weeks. Table 5 shows the gestational ages at which pregnancy termination was attempted or

at delivery of those patients who had attempted suicide compared to the other women who had delivered at DGMH over the study period.

Table 5: Gestational age at delivery for parasuicide group versus gestational age of women who delivered at DGMH.

PARASUICIDE GROUP (n=42)			NON-PARASUICIDE GROUP (DGMH) (n=25 828)		
<i>OUTCOME</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>P-value</i>
Abortion	6	14.3	310	1.2	0.0001
Preterm delivery	13	36.1	5450	21.4	0.0536
Term delivery	23	63.9	20 068	78.6	

There were 6(14.3%) abortions. This rate was significantly higher for the parasuicide patients compared to the non-parasuicide group who presented to the obstetric department, with a *p*-value of 0.0001. Thirteen (36.1%) of the women delivered prematurely. This was at a rate higher than in the non-parasuicide group, but did not reach statistical significance. Looking at all the patients who were not at term at the time of termination of pregnancy, parasuicide was associated with a higher percentage of early pregnancy

termination, which fell outside of statistical significance with a p -value of 0.0536. The majority of the women 23 (63.9%), delivered at term.

Of the viable pregnancies, the caesarean section rate was 5%. There were no assisted vaginal deliveries.

One patient needed ICU admission following ingestion of organophosphates and a secondary problem of aspiration pneumonia. There were no maternal deaths reported for patients who had attempted suicide over the study period.

There were 36 viable babies delivered out of the 42 cases. There were no multiple pregnancies. Thirty three (91.7%) of the women had live births, with 3 IUFDs (8.3%). There were no neonatal deaths.

DISCUSSION

The rate of parasuicide amongst pregnant women at DGMH during the review period was 0.21%. This is lower than the rate reported in a study conducted in the USA by Gandhi *et al.* of 0.4% [17]. The lower rate may be related to the population being studied, which is a predominantly Black population. A study in the USA found that the rate of suicide amongst Black

non-pregnant women was 1.7/100 000 which was lower than the rate amongst White women at 4.4/100 000 [1].

In this review, the majority of the women were parous at 57.1%. This finding is different from what other the WHC reported, which found that having young children at home had a protective effect against parasuicide amongst pregnant women [1].

The great majority of our patients were from a low socio-economic environment, with 95% of them being unemployed, 90% of the women were also single women who were staying with their parents. Such social features have previously been reported, showing higher rates of suicide attempts amongst single, unemployed women [4][22]. In contrast to this socio-economic factor, marriage has also been reported to have a protective effect against parasuicide [1].

Being in an abusive relationship has been noted to be a major risk factor for parasuicide amongst pregnant women [4][6][22][23]. However, in this review only 10% of the women reported a problem of physical abuse as a

contributory factor leading to attempted suicide. There was insufficient information to comment on other forms of abuse, like sexual, emotional or economic abuse which may not have been reported correctly and may have contributed to attempts at suicide.

Relationship difficulties and social isolation have been reported as important risk factors for parasuicide. Thirty out of the thirty five patients (85.7%), who reported their reasons for attempted suicide, had relationship difficulties as their motivating factor for attempted suicide. This finding is similar to what the literature on parasuicide in pregnancy has found, that relationship problems are a major risk factor for parasuicide, especially when there is potential loss of a lover, spousal extramarital affairs or a single marital status [4][6][22].

Alcohol abuse has been reported as an important risk factor for parasuicide [4][25]. However, in this study only one patient reported having alcohol abuse related to parasuicide. This may reflect the fact that alcohol abuse may not be a cause of attempted suicide, but may be a way of coping with depression and misery. This was also the conclusion in the report published by Geo Stone [14].

Psychiatric disorders like depression, psychotic and anxiety disorders are well known risk factors for attempted suicide [1][25]. In this study, there was no patient who was found to have a major psychiatric disorder as a potential reason for attempting suicide. However, one patient reported depressive symptoms following the death of her mother which she mentioned as the motivating factor in her attempt at suicide. The loss of an intimate relationship can cause depression which may lead to a suicide attempt [1][25].

The rate of abortion was 14.3%, which is a rate comparable to the spontaneous abortion rate of 15% to 20% among the general population, but much higher than the rate of abortions of 1.2% among those managed in the obstetric department of DGMH with a significant *p*-value of 0.0001. Out of the 16 patients who had unplanned pregnancies, 5(31%) patients were trying to terminate their pregnancy at the time of attempted suicide. Unwanted pregnancies are a major risk factor for attempted suicide. Despite the availability of legal abortion services, some patients still resort to the use of dangerous methods for TOP, most probably because of lack of knowledge about the availability of the service or because of fear of embarrassment due

to the stigma associated with TOP. This shows the importance of providing young women with information and access to contraception and safe abortion facilities [23][26]. In this review, those patients who wanted TOP used dangerous methods because of lack of knowledge about the availability of this service.

The commonest method used for suicide attempt was with an overdose of a variety of tablets which was recorded in 54.8% of the cases in this study. This is similar to what other studies have shown, that the commonest method used by women to attempt suicide is with a drug overdose, especially with paracetamol and that they tend to use less lethal methods like hanging or gunshots [1][4]. None of the women used any physical means to attempt suicide.

A more aggressive method of suicide attempt was the use of organophosphates. Seven (16.7%) of the women used this method to attempt suicide. Most of these women had no major complication, except for one woman who developed aspiration pneumonia and had to be admitted to ICU for 6 days. Patients with organophosphate poisoning who had quick intervention of treatment tend to have favourable outcomes [18]. There were

no other maternal complications reported with any of the other methods used to attempt suicide.

The preterm delivery rate was 36.1% which is higher than the institutional rate of 21.4% at DGMH and much higher than the generally accepted rate of 6% to 15%. There was no specific reason that could be found for the high rate of preterm deliveries since these patients had used different types of substances for the attempted suicide. However, this rate did not reach statistical significance with a p -value of 0.0536. There was also no documentation of any maternal disorders that could have caused preterm delivery. Therefore, the higher preterm delivery rate was probably directly related to the attempts at suicide. Flint *et al.* [21] did not find an increase in the prematurity rate in patients who had used drug overdose for suicide attempt. On the other hand, Gandhi *et al.* [17] found parasuicide amongst pregnant women to be a risk factor for preterm delivery.

The rate of caesarean section was 5%, which is much lower than the institutional rate of approximately 30%. All the caesarean sections were done for obstetric indications like CPD, foetal distress and cord prolapsed. None of the caesarean sections could be linked directly to the attempted

suicide as an additional reason for the caesarean deliveries. However, Gandhi *et al.* [17] have reported that attempted suicide increases the rate of caesarean section deliveries. This was not the finding in this study.

There were no maternal deaths reported during the study period because of attempted suicide.

There were 36 viable babies delivered out of the 42 pregnancies. Thirty three (91.7%) of these patients had live births, while the remaining three were recorded as IUFDs. There was no specific cause of death established for the IUFDs since no specific investigations were carried out to look for the possible cause. Two of the patients had used herbal potions and one patient used organophosphates for the attempted suicide. Studies have reported foetal deaths amongst parasuicide patients to be related to the type of method used. This was reported mainly in patients who used iron supplements and in those who used organophosphates and had a delay in starting treatment [18].

There were no neonatal deaths reported amongst the study population of this series.

CONCLUSION

Although the incidence is very low, cases of parasuicide amongst pregnant women are an unwarranted addition to an already overstretched health system.

The most striking factor that could have led to attempts at parasuicide was the socio-economic status of the women. A scenario where 95% of these women were unemployed, 90% of them being unmarried and a possibility of about 85% of them having serious intimate relationship problems, provides an effective recipe for parasuicide.

Preventative strategies against parasuicide in pregnancy need a multidisciplinary approach, including Obstetricians, Psychiatrists, Psychologists, Social Workers, NGOs and governmental organizations. An improvement in the socio-economic status of women, with the provision of educational and economic opportunities and also the availability of safe and accessible TOP and contraception facilities will help in reducing the risk of parasuicide amongst pregnant women.

STUDY LIMITATIONS

The study is a retrospective analysis of clinical case files, some of which had incomplete information due to the nature of the condition being studied. This could have been due to some of the clinicians not assessing some aspects related to suicide: such as the reasons outlined for the suicide attempt or the status of the patients' intimate relationships.

The number of the patients assessed is too small to make final conclusions about the role of the socio-economic factors leading to parasuicide or the maternal and foetal outcomes after the attempted suicide. Possibly, larger and more prospective studies where patients are specifically questioned about specific risk factors and the state of their relationships may assist in giving a more accurate reflection of the role of parasuicide amongst pregnant women. However, the incidence of parasuicide amongst pregnant women is very low in our setting and the need to reflect this may result in a study that will require a prohibitively large number of patients.

ACKNOWLEDGEMENTS

I would like to thank the management of Dr George Mukhari Hospital for allowing me access to the patients' files. I also acknowledge the efforts of the hospital clerical staff for their patience and understanding when they had to retrieve the patients' files from the filing room. Most importantly, I would also like to acknowledge the inputs of my Supervisor, Professor T.S Monokoane and the Co-supervisor, Professor O.A Towobola in completion of this study.

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