The Occurrence of Postpartum Post-Traumatic Stress Disorder (PTSD) Amongst Women in Johannesburg Metropolitan Clinics

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A research report (in the format of a "submissible" paper) submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg in fulfillment for the requirements of the degree of Master of Medicine (Psychiatry), 2021

Declaration

I, Botho Pilediwa Pheto, hereby declare that this research is of my own, unaided work. I am submitting this research report for the degree Master of Medicine in Psychiatry (in the submissible format with my protocol) in the branch of Psychiatry at the University of the Witwatersrand, Johannesburg. This research report has not been submitted before for any degree or examination at this or any other university.

_____

(Signature of the candidate)

_____

Date

Contribution of the candidate to the paper

Declaration: Student's contribution to the article(s) and agreement of co-author(s)

I, Botho Pilediwa Pheto, student number 0704995A, declare that this research report is my own work and that I have contributed significantly towards the research finding presented in the paper intended for publication below.

Signature of Student : _____ Date:_____

Name of primary supervisor: Dr Reyanta Bridgmohun Date:_____

Signature of Primary Supervisor:_____ Date:_____

Name of Co-Supervisor : Dr Danie Hoffman Date:_____

Signature of Co- Supervisor: _____ Date:_____

Agreement by co-authors: By signing this declaration, the co-authors listed below agree to the use of the article(s) by the student as part of her research report. In cases where the student is not the 1st author of a published article, the primary supervisor must explain (under comments) why the student is entitled to use the paper for his/her degree purposes.

Article Title: The Occurrence of Postpartum Post-traumatic stress disorder (PTSD) amongst women in Johannesburg Metropolitan clinics.

Authors	Name	Signature	Date
1st author	Dr Botho P Pheto		
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Comments by the primary supervisor:

_____

Dedication

This research report is dedicated to my parents Mr. and Mrs. Tiroentle and Gaselarona Pheto, my partner Moreetsi and our beautiful daughter Dithebe. To my little girl Dithebe, my biggest blessing, thank you for choosing me to be your mother. Your birth brought so much joy to my life, it also brought along with it, new insight. You are deeply loved.

Presentations arising from the research project:

Abstract

Increasing research demonstrates a significant association between childbirth and Post-traumatic stress Disorder (PTSD). Existing work done suggests that childbirth is perceived as a traumatic event by some women and is a trigger of PTSD in the postpartum period. Postpartum PTSD is considered a public health problem as it may adversely affect the wellbeing of the mother and impair mother-child attachment as well as child development.

Most of the existing work in this field has been undertaken in western and high income countries. Several gaps remain in the African setting. The current study examined the occurrence of PTSD in the postpartum period amongst women in Johannesburg metropolitan clinics and associated factors.

Eighty eight women who were six weeks postpartum were recruited from baby immunization clinics in the Johannesburg metropolitan district. Between September and December 2020, a researcher developed questionnaire was administered to collect participants' socio-demographic data, delivery mode and neonatal complications. The City Birth Trauma scale was also administered to screen for the presence of PTSD symptoms in relation to the women's most recent childbirth experience.

Close to half of the participants (46.6%) endorsed their childbirth experience as a psychologically traumatic event. One participant (1.1%) reported all symptoms required to diagnose PTSD. Significantly more participants that reported childbirth as a traumatic event also reported experiencing intrusion/re-experiencing symptoms (Fisher's test = 0.003, CI = 1.42 – 9.99). Significantly more participants that endorsed childbirth as a traumatic event also reported having avoidance symptoms (Fisher's test = 0.020, CI = 1.15 – 10.17).

Acknowledgements

I would like to thank my supervisors for their guidance and believing in this work from the very beginning. I thank them for their consistent support in this very challenging yet fulfilling journey.

Thank you to my family for allowing me the opportunity to explore this interest further. Special thanks to my sisters Melitah Motlhale, Grace Nduku Wambua and Keneilwe Molebatsi. God had a reason for bringing you all into my life, to many more ahead. Thank you to the clinics for allowing me access to the participants. My heartfelt gratitude to all the women who agreed to take part of this study.

Finally I would like to acknowledge Prof Neville Pillay for his patience for guiding me through the statistics and Prof Subramaney for the encouragement at a time when I thought of giving up.

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Abbreviations

PTSD	Posttraumatic Stress disorder
DSM 5	Diagnostic and Statistical Manual of Mental Disorders 5
APGAR	Appearance, Pulse, Grimace, Activity and Respiration
SD	Standard Deviation
SASH	South African Stress and Health Study
CBTS	City Birth Trauma scale

Chapter 1: Research Report in the format of a "submissible" paper

The Occurrence of Postpartum Post - Traumatic Stress Disorder (PTSD) Amongst Women in Johannesburg Metropolitan Clinics

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The authors declare that there is not conflict of interest.

Abstract

Background: A large body of research suggests a significant link between childbirth and post-traumatic stress disorder (PTSD). Existing evidence demonstrates that some women perceive childbirth as a traumatic experience that can trigger the development of PTSD in the postpartum period. A prevalence rate of 4, 9% has been reported by recent studies. Postpartum PTSD has not been studied in the South African setting.

Objective: Investigate the occurrence of PTSD among women in Johannesburg metropolitan clinics who are six weeks postpartum and examine associated factors.

Method: A cross sectional study was conducted among 88 postpartum women attending routine six week baby immunization clinics in the Johannesburg Metropolitan district. A self-report questionnaire was administered to collect data on participant socio-demographic characteristics, support received during labour and from partners, delivery mode and neonatal outcome along with the City Birth Trauma Scale to screen for PTSD symptoms in relation to the most recent childbirth experience.

Results: Close to half of the participants (48.9%) perceived their most recent childbirth as a traumatic event, believing either themselves or their baby would be seriously injured or die. One participant (1.1%) endorsed all symptoms required to diagnose PTSD. Women who reported childbirth as a traumatic event had higher PTSD scores than women who did not report childbirth as a traumatic event. Significantly more participants that reported childbirth as a traumatic event also reported experiencing intrusion/re-experiencing symptoms (Fisher's test = 0.003, CI = 1.42 – 9.99). Significantly more participants that endorsed childbirth as a traumatic event also reported having avoidance symptoms (Fisher's test = 0.020, CI = 1.15 – 10.17).

Conclusion: The percentage of participants who perceived birth as a traumatic experience was in keeping with international literature. However, the percentage of participants who met full diagnostic criteria for PTSD at six seeks postpartum was lower than expected compared to international research. There is need for longer-term follow up of women who report childbirth as

a traumatic experience as well as develop validated screening tools targeted at PTSD in postpartum women.

Keywords: postpartum, posttraumatic stress disorder**,** childbirth

Introduction

For most women, conceiving and eventually giving birth to new life is a momentous and special event, it is often regarded to be a happy and enriching experience for all women. For some women however childbirth can present psychological distress, in some instances significant enough to trigger mental health disorders including postpartum stress disorder (1,2). An increasing body of evidence shows that the childbirth experience could be linked to the development of postpartum post-traumatic stress disorder (PTSD) and that it is more widespread than previously thought (3,4). Early research on PTSD was mainly associated with military veterans, it is only in recent years that PTSD following childbirth is being recognized and investigated (5).

Research on postpartum maternal mental health has largely focused on postpartum depression and while many are familiar with postpartum depression and psychosis, there is dearth of literature on the phenomenon of PTSD particularly in Africa (6,7). A systematic review investigating psychological disorders in the pre and postnatal period among women in Africa found that depression was the most commonly assessed disorder (8). The consequences of postpartum PTSD are varied and warrants attention and may be considered a public health concern as it may adversely affect mother-child bonding, impair fetal growth and cognitive development as well as marital difficulties (9,10).

There has been debate as to whether childbirth should be regarded as a traumatic event, as it is not sudden or unexpected and voluntary (6,11). PTSD is classified as a trauma and stressor related disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM) 5 (12). It is characterized by symptom clusters such as re-experiencing, avoidance, negative cognitions and mood as well as hyperarousal, following exposure to a traumatic event (12). A traumatic event involves personally experiencing or being exposed to actual or threatened death or serious injury to self or others. Studies have shown that the childbirth experience can result in the woman perceiving that her life or that of her child are in danger; thereby fulfilling this criterion(4,13). The first descriptions of traumatic experiences associated with childbirth were documented in case studies. Authors documented women experiencing intrusive symptoms such as suffering nightmares about birth, at times many years later after the births (1). Over time qualitative and

quantitative studies reported women developing PTSD symptoms after childbirth, even after successful health outcomes (7). In the 2000s further research suggested that posttraumatic stress disorder can occur as a result of childbirth after controlling for pre exiting psychiatric conditions before childbirth (3,4). Postpartum PTSD has been conceptualized in two ways; the first being that postpartum PTSD occurs as a result of the childbirth experience triggering preexisting PTSD, or secondly postpartum PTSD is indicative of new onset PTSD, induced by the childbirth itself (9).

There are variable estimates of the prevalence of Postpartum PTSD, with more recent studies indicating rates ranging between 3.4% and 7.2% The differences in rates may be attributable to several factors including; differences in the time of measurement of PTSD symptoms, different screening tools for PTSD, sample sizes and methodological approaches (5,14). The majority of studies were undertaken in western and middle east countries (6,11,15). A recent systematic review reported a prevalence of 4.9% in women who did not have a history of preexisting PTSD before childbirth. This systemic review of 36 articles included studies with high methodological ranking and controlled for PTSD symptoms before childbirth (9).

A study on postpartum PTSD by AO Adewuya (16) in Nigeria estimated a prevalence of 5.9% postpartum PTSD. This study was a cross sectional survey done in postnatal clinics and infant immunization clinics, a cohort of 876 women at 6 weeks postpartum was investigated for the presence of Postpartum PTSD (16). In South Africa, an extensive search of literature could not find a study that investigated the prevalence of PTSD in relation to childbirth.

A stress-diathesis approach has been used to identify factors giving rise to postpartum PTSD; it is described as an interplay between pre-birth vulnerability factors, risk factors in birth, and factors afterbirth (17). Factors that have been identified in the predictive model for women with traumatic childbirth at risk of developing postpartum PTSD include low social support and poor coping (18).

The adverse consequences associated with PTSD require attention and recognition from health care workers. Most of the existing work in this field has been undertaken in western and high income countries. Several gaps remain in the African setting. The current study examined the

occurrence of PTSD in the postpartum period amongst women in Johannesburg metropolitan clinics and associated factors.

Research Methodology

Study Aim and Objectives

The study aimed to investigate the occurrence of PTSD symptoms among women in Johannesburg metropolitan clinics, at six weeks postpartum as well as examine associated factors.

Research Method and design

The study was a descriptive cross-sectional design. It was conducted in postnatal clinics in the Johannesburg Metropolitan area. The routine 6 week postnatal follow up for women in Johannesburg is usually conducted at the district clinics and is independent of place of delivery hence is a combination of mothers who delivered in hospitals and in community obstetric units. Convenience sampling was used. The required sample size was determined to be at least 87 (19). Inclusion criteria were postpartum women over the age of 18 years old and not more than six weeks postpartum. They were required to understand English. Data was collected from three sites in Soweto namely Mofolo Community Health Centre (CHC), Chiawelo and Lillian Ngoyi clinics. Of the 90 women approached, two declined to participate in the study. Data collection was undertaken from September 2020 to December 2020. The participants were women booked for their routine six week postpartum checkup and were all exactly six weeks post delivery.

Ethics

The study was approved by the University of Witwatersrand Human research ethics committee (HREC) and post graduate committee. Permission was also obtained from the Johannesburg District committee. Informed consent was also obtained from the participants.

Data collection: Questionnaires

The City Birth trauma scale (CBTS) was used to screen for PTSD symptoms. It is a measure for PTSD in the postpartum period and was developed to measure PTSD according to the latest edition of the Diagnostic and Statistical Manual of Mental disorders, DSM 5. It is a 29-item questionnaire and shown to have excellent reliability. The total score ranges from 0-60, with diagnostic criteria for PTSD specified from questions 1-22. It goes on to specify if there is PTSD with dissociative symptoms or PTSD with delayed onset in questions 23 to 25 (13). The CBTS has not yet been validated in South Africa. However, it was selected as it is based on the latest diagnostic criteria for PTSD. Permission was obtained from the developer of the scale to use it in the study. The researcher designed a questionnaire which was administered to elicit participant demographic characteristics, details on the participant's most recent childbirth including the place and mode of delivery. The questionnaire also sought information on the neonatal characteristics including apgar scores and neonatal complications.

Procedure

Candidates who met the inclusion criteria were approached by the investigator. Informed consent was obtained from each candidate prior to participation in the study. Provisions were made for referral to a clinical psychologist for the participants who would be unsettled by the nature of questions in the questionnaires.

Data Analysis

Statistical analyses were conducted in R software (version 4.00; www.R-project.org). The normal distribution of the data was checked using the Shapiro–Wilk test and examining Q-Q plots. Categorical data were analyzed using chi-squared contingency tests or Fisher's exact tests, for which interquartiles and odds ratios are provided. Continuous variables were analyzed using Mann-Whitney U tests since the data were non-parametric. Tests were two-tailed and model significance set at 0.05. Data was reported as counts and percentages and as mean ($\pm$SD) and median and interquartiles, as appropriate, and are presented descriptively in charts, tables or in text.

Results

Sample characteristics

Data were obtained from a total of 88 women from three Johannesburg metropolitan clinics. The socio-demographic and clinical variables recorded in the study population are presented in Table 1.

Occurrence of PTSD

Only one (1.1%) of the 88 participants in this study fulfilled the DSM 5 criteria for PTSD using CBTS.

Childbirth endorsed as a traumatic event.

Nearly half of the women (n=43, 48.9%) perceived their most recent childbirth as a traumatic event (criterion A of PTSD), believing either themselves or their baby would be seriously injured or would die (Q1 and/or Q2). The median (IQR) PTSD symptom score was (median 2; interquartiles 3, 6). Comparing the perceived traumatic event (childbirth) against PTSD clusters indicated that women who reported the birth as a traumatic event had higher PTSD scores (n=43 median = 3, interquartiles = 1, 7.5) than women who did not report the birth as a traumatic event (n=45, median = 0, interquartiles = 0, 3) (U = 603.5, n = 43, n = 45, p = 0.002, Mann-whitney test). Intrusion symptoms (criterion B of PTSD) were fulfilled if the women had a score of 1 or more on Q3-Q7 of the CBTS, likewise avoidance symptoms were fulfilled if a woman had a score of 1 or more on Q8 and Q9.They fulfilled criterion D of PTSD if they scored 1 or more on Q10-16 and Q17-22 of the CBTS respectively. An analysis of the responses in the CBTS indicated that one woman fulfilled the full criteria for PTSD six weeks after birth. Of the 45 women who did not endorse childbirth as a traumatic event some went on to report PTSD symptomatology. (Table 2)

Among the 43 women who perceived childbirth as a traumatic event, 29 (67%) also reported experiencing intrusion symptoms (Fisher's test = 0.003, CI = 1.42 – 9.99) (Figure 1). In particular, those who endorsed childbirth as a traumatic event were 3.7 times (odds ratio) more likely to have intrusion/re-experiencing symptoms. Similarly, significantly more women that

endorsed childbirth as a traumatic event also reported having avoidance symptoms (Fisher's test = 0.020, CI = 1.15 – 10.17) (Figure 2). Specifically, they were 3.3 times more likely to have avoidance symptoms. There was no significant influence of stressors on negative cognition or mood symptoms (Fisher's test = 0.276, CI = 0.57 – 7.29) and hyperarousal symptoms (Fisher's test = 1.000, CI = 0.25 – 6.98). There was no association between the mode of childbirth and PTSD symptom scores (p=1.000, Mann-Whitney) (Figure 3). There is no association between the presence or absence of neonatal complications and PTSD symptoms scores (p=0.102, Mann-Whitney test) (Figure 4).

Annexure 1

Table 1: Sample Characteristics

		N=88	%
Age	<35	72	81.8
	>35	16	18.2
Highest level of Education	<Matric	25	28.4
	Matric	53	60.2
	Tertiary	10	11.4
Employed/Working	Yes	19	21.6
Relationship Status	Single	76	86.4
	Married	12	13.6
Supportive partner (n=87)	Yes	78	88.7
Supportive family (n=87)	Yes	83	94.3
Previous children (n=87)	1	27	30.7
	2	28	31.8
	3	20	22.7
	>3	12	13.7
Planned Pregnancy (n=87)	Yes	35	39.7
Type of delivery	Caesarean section	28	31.8
	Vaginal delivery	60	68.2
Place of delivery	Clinic (MOU)	28	31.8
	Hospital	59	67.1
Complications (n=87)	Yes	14	15.9
Use of analgesia during labour (n=87)	Yes	40	45.4
Supportive nursing staff during labour(n=87)	Yes	78	88.7

Table 2: Clusters of PTSD symptomatology

	YES		NO	
	N=	%	N	%
No. of women who believed self or baby would be seriously injured or die	43	48.9	45	51.1
No. of women who fulfilled PTSD DSM 5 Criteria	1	2.3	0	0
One or more symptoms of intrusion/re-experiencing	29	67	16	36
One or more symptoms of avoidance	18	42	8	18
Two or more of negative mood and cognition	10	23	6	13
Two or more symptoms of hyper vigilance	5	12	4	9

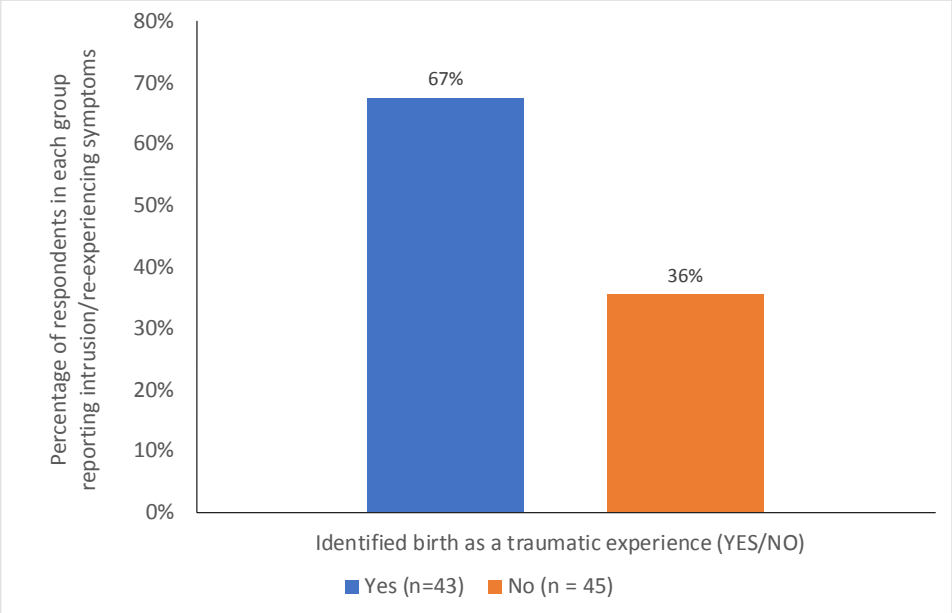

Figure 1: The relationship between viewing childbirth as a traumatic event and intrusion/re-experiencing symptoms.

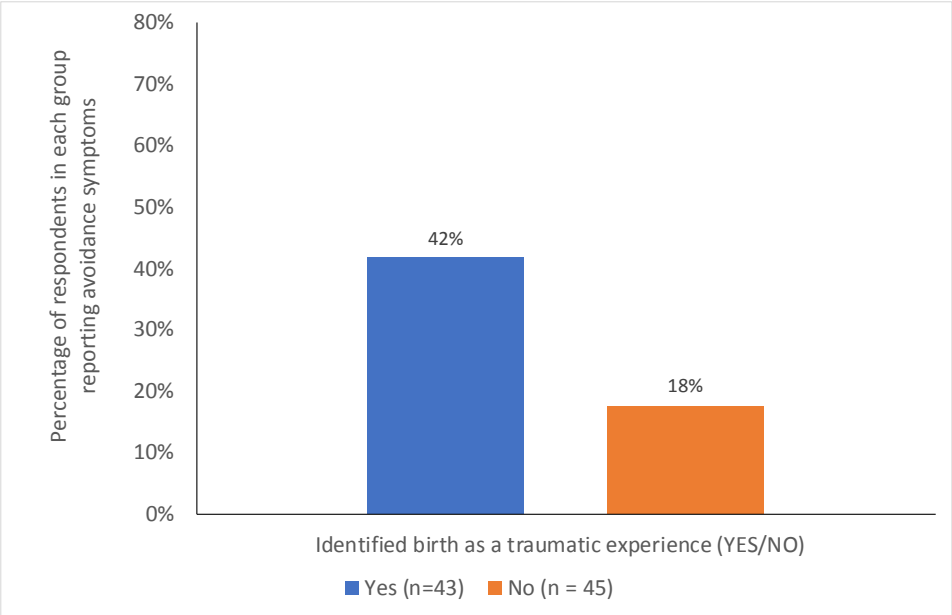

Figure 2: The relationship between viewing childbirth as a traumatic event and avoidance symptoms.

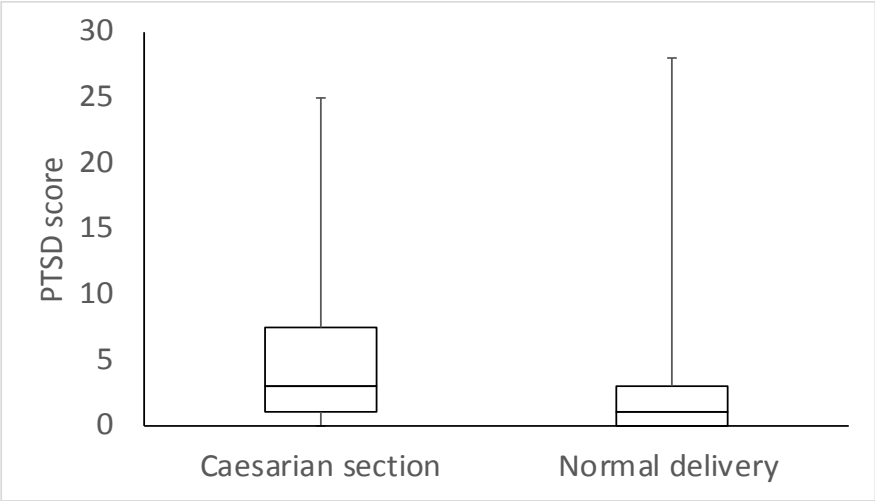

Figure 3: The relationship between type of birth (mode of delivery) and PTSD scores.

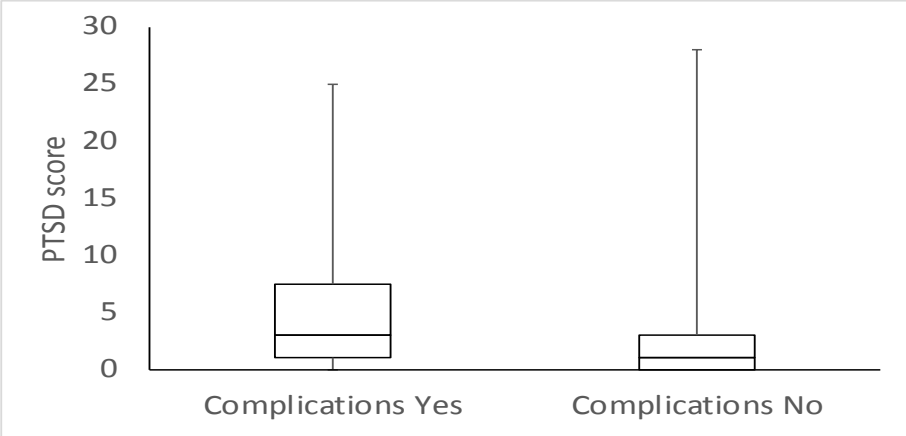

Figure 4: The relationship between neonatal complications and PTSD scores

Discussion

The study examined the occurrence of post-traumatic stress disorder in a cohort of women six week postpartum. The results showed that 1.1% of women fulfilled criteria for PTSD according to the City Birth Trauma Scale at six weeks postpartum. In addition, a large portion of women (48.9%) perceived their most recent childbirth to be a psychologically traumatic event. This is similar to work done in Australia which found 45.5% of women are likely to report childbirth as being a traumatic experience (4).

The current study also found that women who reported that they did not perceive childbirth as a traumatic event went on to endorse post-traumatic stress symptoms i.e. intrusion and avoidance symptoms. This may be as a result of difficulty understanding the questions in the screening tool or may suggest women are hesitant to express negative feelings to what society perceives a happy event. It may also be interpreted as an appropriate reaction to a significant experience such as childbirth (20).

The PTSD prevalence found in this study is lower than a prevalence rate of 4.9% reported in a meta analysis in 2017, however previous studies have reported similar rates (20). Good social support is a protective factor against the development of PTSD(21). In most cultural settings, there are postpartum practices in which experienced women stay with a new mother for a prescribed period of time, helping her adjust to her new role; this may confer coping skills hence contribute to the low PTSD prevalence found in the current study (22).

The prevalence rate in this study is also notably lower compared to a similar study done in Nigeria which estimated a prevalence rate of 5.9% (16). Although both studies examine postpartum PTSD in non-western settings at six weeks postpartum, there are several factors that may attribute the differences in prevalence rates; these include differences in sample size and the different measures used. The study conducted in Nigeria used a clinical structured interview and psychiatric interview to diagnose PTSD and had a much larger sample. The present study used the City Birth trauma scale which is a recent measure based on DSM 5 criteria for PTSD, while the study in Nigeria used the MINI International neuropsychiatric interview for psychiatric disorders in DSM 4.

The current study was unable to reliably identify associated factors; however, there may be differences between the two countries with regard to access to obstetric care and practices. Other factors maybe differences in exposure to trauma in either country as well as different cultural contexts (23). Both studies did not control for pre-existing maternal PTSD, therefore are unable identify if the PTSD symptoms endorsed are as a result of childbirth alone being the precipitating traumatic event. .

Evidence indicates that the expression of PTSD symptoms may vary due to differences in culture and that idioms of distress may influence the clinical presentation (12). Most studies investigating postpartum PTSD have been in western countries. There is a need for use of culturally appropriate measures to be used in further studies in our setting. There may have been an under or over detection of PTSD as the measure used in this study has not been validated and may not be culturally appropriate. Our study observed correlation between re-experiencing and avoidance symptoms which is similar with other studies and consistent with the two factor solution of re-experience/avoidance (25). The present study indicates that women who perceive childbirth as traumatic are more likely to go on to develop intrusion and avoidance symptoms. This highlights the need for further research in this field so as to offer targeted interventions. It is recommended that future studies explore if acute stress disorder symptoms that are endorsed postpartum are a predictor for PTSD after childbirth. This may be done by looking at the prevalence of acute stress disorder a week post childbirth and comparing how many of the mothers go on to endorse PTSD at 6 weeks follow up as well as follow up longer term(24).

Study Limitations

The lack of validation of the CBTS tool in the South African setting is a limitation of the current study. The design of the study prevents analysis of the prevalence of postpartum PTSD. The study sample was homogenous (single Black African women) from a similar setting in Johannesburg, so generalization of the findings should be made with caution. The sample size was small and pre-existing maternal PTSD as well as trauma in the past 6 weeks was not controlled for, hence we are unable to conclude if the symptoms indicate new onset PTSD. The sample only included data from women who had live births coming for follow up in clinics (6 weeks post partum); this may explain the lower percentage who met full diagnostic criteria for

PTSD. The sampling method used in the current study means that PTSD with delayed onset would not be captured.

Conclusion

The percentage of participants who met full diagnostic criteria for PTSD at six seeks postpartum was lower than expected compared to international research. However, the percentage of participants who perceived birth as a traumatic experience was in keeping with findings from international literature. This suggests the need for further research in the longer-term follow up of women reporting birth as a traumatic experience but not experiencing full diagnostic PTSD symptoms at 6 weeks postpartum. There is a gap in knowledge on childbirth induced PTSD and postpartum PTSD in South Africa and Africa generally. The current study has been beneficial in providing information on an under investigated topic. Further study in this area is needed to assist in developing targeted policies and screening tools.

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Annexures

Annexure 1: Ethics clearance certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

R14/49 Drs B Pheto and D Hoffman

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M200262

NAME: **(Principal Investigator)**	Drs B Pheto and D Hoffman
DEPARTMENT:	School of Clinical Medicine Department of Psychiatry Medical School University
PROJECT TITLE:	The occurrence of postpartum Post-Traumatic Stress Disorder (PTSD) amongst women in Johannesburg metropolitan clinics
DATE CONSIDERED:	2020/02/28
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Dr R Bridgmohun
APPROVED BY:	Dr CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	2020/08/14

This clearance certificate is valid for 5 years from the date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on the 3rd Floor, Phillip Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to submit details to the Committee. **I agree to submit a yearly progress report**. When a funder requires annual re-certification, the application date will be one year after the date when the study was initially reviewed. In this case, the study was initially reviewed in **February** and will therefore reports and re-certification will be due early in the month of **February** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature _____ Date _____

Annexure 2: Turn-it-in report of originality for research report in the format of a 'submissible' paper.

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Annexure 3: Guidelines for Authors submitting to the South African Journal of Psychiatry

Original Research Article full structure

Title: The article's full title should contain a maximum of 95 characters (including spaces).

Abstract: The abstract, written in English, should be no longer than 250 words and must be written in the past tense. The abstract should give a succinct account of the objectives, methods, results and significance of the matter. The structured abstract for an Original Research article should consist of six paragraphs labelled Background, Aim, Setting, Methods, Results and Conclusion.

 Background: Summarise the social value (importance, relevance) and scientific value (knowledge gap) that your study addresses.

 Aim: State the overall aim of the study.

 Setting: State the setting for the study.

 Methods: Clearly express the basic design of the study, and name or briefly describe the methods used without going into excessive detail.

 Results: State the main findings.

 Conclusion: State your conclusion and any key implications or recommendations.

Do not cite references and do not use abbreviations excessively in the abstract.

Introduction: The introduction must contain your argument for the social and scientific value of the study, as well as the aim and objectives:

 Social value: The first part of the introduction should make a clear and logical argument for the importance or relevance of the study. Your argument should be supported by use of evidence from the literature.

 Scientific value: The second part of the introduction should make a clear and logical argument for the originality of the study. This should include a summary of what is already known about the research question or specific topic, and should clarify the knowledge gap that this study will address. Your argument should be supported by use of evidence from the literature.

 Conceptual framework: In some research articles it will also be important to describe the underlying theoretical basis for the research and how these theories are linked together in a conceptual framework. The theoretical evidence used to construct the conceptual framework should be referenced from the literature.

 Aim and objectives: The introduction should conclude with a clear summary of the aim and objectives of this study.

Research methods and design: This must address the following:

 Study design: An outline of the type of study design.

 Setting: A description of the setting for the study; for example, the type of community from which the participants came or the nature of the health system and services in which the study is conducted.

 Study population and sampling strategy: Describe the study population and any inclusion or exclusion criteria. Describe the intended sample size and your sample size calculation or justification. Describe the sampling strategy used. Describe in practical terms how this was implemented.

 Intervention (if appropriate): If there were intervention and comparison groups, describe the intervention in detail and what happened to the comparison groups.

 Data collection: Define the data collection tools that were used and their validity. Describe in practical terms how data were collected and any key issues involved, e.g. language barriers.

 Data analysis: Describe how data were captured, checked and cleaned. Describe the analysis process, for example, the statistical tests used orsteps followed in qualitative data analysis.

 Ethical considerations: Approval must have been obtained for all studies from the author's institution or other relevant ethics committee and the institution's name and permit numbers should be stated here.

Results: Present the results of your study in a logical sequence that addresses the aim and objectives of your study. Use tables and figures as required to present your findings. Use quotations as required to establish your interpretation of qualitative data. All units should conform to the SI convention and be abbreviated accordingly. Metric units and their international symbols are used throughout, as is the decimal point (not the decimal comma).

Discussion: The discussion section should address the following four elements:

 Key findings: Summarise the key findings without reiterating details of the results.

 Discussion of key findings: Explain how the key findings relate to previous research or to existing knowledge, practice or policy.

 Strengths and limitations: Describe the strengths and limitations of your methods and what the reader should take into account when interpreting your results.

 Implications or recommendations: State the implications of your study or recommendations for future research (questions that remain unanswered), policy or practice. Make sure that the recommendations flow directly from your findings.

Conclusion: Provide a brief conclusion that summarises the results and their meaning or significance in relation to each objective of the study.

Acknowledgements: Those who contributed to the work but do not meet our authorship criteria should be listed in the Acknowledgments with a description of the contribution. Authors are responsible for ensuring that anyone named in the Acknowledgments agrees to be named.

Also provide the following, each under their own heading:

 Competing interests: This section should list specific competing interests associated with any of the authors. If authors declare that no competing interests exist, the article will include a statement to this effect: *The authors declare that they have no financial or personal relationship(s) that may have inappropriately influenced them in writing this article.* Read our policy on competing interests.

 Author contributions: All authors must meet the criteria for authorship as outlined in the authorship policy and author contribution statement policies.

 Funding: Provide information on funding if relevant

 Disclaimer: A statement that the views expressed in the submitted article are his or her own and not an official position of the institution or funder.

References: Authors should provide direct references to original research sources whenever possible. References should not be used by authors, editors, or peer reviewers to promote self-interests. Refer to the journal referencing style downloadable on our *Formatting Requirements* page.

Annexure 4: Approved study protocol

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

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Reference: Mrs Sandra Benn
E-mail: sandra.benn@wits.ac.za

06 February 2020
Person No: 0704995A
PAG

Dr BP Pheto
P O Box 10506
Vorna Valley
Midrand Ext 14
1685
South Africa

Dear Dr Botho Pheto

Master of Medicine in Psychiatry: Approval of Title

We have pleasure in advising that your proposal entitled *The occurrence of postpartum post traumatic stress disorder among women in a Johannesburg Metropolitan Clinic* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Joburg
a world class african city

Enquires: Sibongile Khanyile
Tel: (011) 694-3710/05
Email:Johannesburg.research@gmail.com

DATE: 24 JUNE 2020
TO: DR BOTHO PHETO
ADDRESS: PO BOX 10506 VORNA VALLEY MIDRAND
EMAIL: bohopheto@gmail .com

Dear Sir/ Madam

Re: the occurrence of post-partum PTSD amongst women Johannesburg metropolitan clinics

Your application dated 01/06/2020 refers. The District Research Committee has reviewed your application. This letter serves as an in-principle approval to access the District Health facilities (mentioned below) for the above project subject to following conditions:

- The facility to be visited: Lillian Ngoyi, Chiawelo, Mofolo, Zola and Wesbury.
- The research can only commence after you submit an ethics clearance certificate from a recognized institution.
- This facility will be from 01 July 2020 to 30 June 2021.
- For further information, you may contact regional/Sub-District Manager.
- You will report to the Facility Manager before initiating the study.
- Participants' Rights and confidentiality will be maintained all the time.
- No resources (financial, material and human resources) from the above facilities will be used for the study. Neither the District nor the facility will incur any additional cost for this study.
- The study will comply with Publicly financed research and Development Act, 2008 (Act 51 of 2008) and its related regulations.
- You will submit a copy (electronic and hard copy) of your final report. In addition, you will submit a six-monthly progress report to the District Research Committee. Your supervisor and University will ensure that these report are being submitted timeously to the District Research Committee.
- You will abide by the serious adverse event policy of the NDoH/GDoh/Johannesburg Health District/COJ (request a copy of the policy, if you/your institution do not have a copy)
- You will be responsible for any litigation associated with the trial.
- Copies of signed six-monthly progress report from each trial including report of the final result (if applicable) will also be submitted to District Research committee.
- I/ we understand that the DRC have the right to create policy brief from my/our research.
- The District must be acknowledged in all the report/publications generated from the research.
- The District must be acknowledged in all the reports/publications generated from the research and copy of these report/ publications must be submitted to the District Research committee.

We reserve our right to withdraw our approval, if you breach any of the conditions mentioned above.

Please feel free to contact us, if you have any further queries. On behalf of the District Research Committee, we would like to thank you for choosing our District to conduct such an important study.

MRS. M.L MOREWANE
CHIEF DIRECTOR: JHB HEALTH DISTRICT
DATE: 24/06/2020

The occurrence of postpartum post-traumatic stress disorder (PTSD) among women in Johannesburg metropolitan clinics.

Botho Pilediwa Pheto|0704995A|MMed Psychiatry

Supervisors: Dr R Bridgmohun| Dr D Hoffman

1.1 Background

For most women, falling pregnant and eventually giving birth to new life is something to look forward to, a momentous and special event in life, often positioned as a positive and life enhancing experience (1). For some however childbirth can be a very painful and traumatic event, physically and psychologically, with the woman perceiving that her life or that of her baby is in danger (2). A rapidly growing body of work agrees that childbirth may be a significant stressor, like war and famine, severe enough to trigger and develop post-traumatic stress disorder as a result (3–7). Many are familiar with postpartum depression; the phenomenon of Postpartum Post Traumatic Stress Disorder (PTSD) however is less well known and only in recent years is being investigated (8).

1.2 Literature Review

In 2009, Sawyer et al conducted a systematic review of studies looking at pre- and postnatal psychological wellbeing in Africa. They found that depression was the most commonly assessed disorder with a mean prevalence of 11.3% during pregnancy and 18.3% after birth. Only a small number of studies assessed *other* psychological disorders. Prevalence rates of pre- and postnatal anxiety were 14.8% and 14.0% respectively; and only one study reported the prevalence of PTSD as 5.9%, following childbirth (9).

The Diagnostic and Statistical Manual of Mental Disorders 5 (DSM 5), defines post-traumatic stress disorder as the development of characteristic symptoms following exposure to one or more traumatic events. The traumatic event may be either personally experienced or witnessed as it occurs to others and involves exposure to actual or threatened death or serious injury to self or others, the diagnosis of PTSD requires that symptoms be present more than a month (10).

Depression commonly occurs with PTSD hence it is important that health care workers are aware of the possibility of postpartum PTSD, so that women are not misdiagnosed as suffering from postnatal depression (7).

1.2.1 History of Postpartum Posttraumatic Stress Disorder

Traumatic experiences of childbirth date over decades back, in 1978 Bydloski and Rauol-Daval, reported on traumatic post-obstetric neurosis. This occurred after long, difficult births, or births in which the infant was handicapped or stillborn. Later in 1985, Beech and Robinson also wrote of women suffering severe nightmares about birth, at times years later after the births, these were undiagnosed and often untreated. It is possible that the women had posttraumatic stress disorder before and childbirth exacerbated the symptoms however it also suggests that childbirth can be a traumatic event that has long term psychological impact.(6,7)

In the early 2000s, one of the first studies suggested that posttraumatic stress disorder does occur as a ***result*** of childbirth (4). The study was a prospective investigation conducted in London, 293 women were recruited and completed questionnaires at 36 weeks gestation, 6 weeks postpartum and 6 months postpartum. The incidence of Postpartum PTSD after removing women with PTSD and/or depression in pregnancy was 2.8% at 6 weeks.

1.2.2 Prevalence rates of Postpartum Post Traumatic Stress Disorder

Studies undertaken in western and developed countries have reported a prevalence ranging from 0.9% to 9%. These include the United Kingdom, Israel, Canada, Australia and USA (5,8,11–13) .

In 2017, Yildiz et al undertook a systematic review and meta-analysis of 59 studies conducted between 1997 and 2015, they aimed to assess the prevalence of PTSD in pregnancy and after birth. The studies originated from 23 countries, including the United Kingdom, United States of America, Canada, Tanzania, Brazil, Nigeria and Australia. The overall mean prevalence of PTSD after birth was 5.44% and PTSD due to birth was 5.9% with a range of 0% to 43.1% (14).

In Africa, to date, only one study has investigated the prevalence of postpartum PTSD. Adewuya et al, over a decade ago reported a prevalence of 5.9%. A cohort of 876 women at 6 weeks

postpartum was investigated for PTSD, in a cross sectional survey done in postnatal clinics and infant immunization clinics (6).

In South Africa, an extensive search of literature, both electronic and manual, did not find any study that investigated the prevalence of PTSD in relation to childbirth. However, it was found that PTSD *during* pregnancy was investigated by Spies et al in 2009, from a sample of 129 pregnant women. The Structured Clinical Interview (SCID) for DSM 4 measure was used and a prevalence of 3.1% was reported (15).

1.2.3 Risk factors of developing Postpartum Posttraumatic Stress Disorder

In a study by Anderson et al. the following were identified as predictors for developing Postpartum PTSD. *Subjective distress in labour* i.e. maternal feelings of a loss of control during labour. *Obstetrical factors* such as emergency caesarean sections and instrumental delivery. *Infant complications* like low birth weight and development of medical complications. *Preexisting mental difficulties* like anxiety and depression particularly, are considered as strong correlates of the development of Postpartum PTSD (16).

1.3 Rationale

Research has reported significant association between childbirth and PTSD (4,6,8). Prevalence of Postpartum PTSD ranges from 0%-43.1% (14). Traumatic experiences associated with childbirth such as emergency caesarean sections, instrumental deliveries e.g. forceps and vacuum delivery as well as poor infant outcomes may explain the high rates of PTSD postpartum. Postpartum PTSD may cause adjustment difficulties, disrupt mother-infant bonding; leading to impaired child development as well as affect the woman's relationship with her partner. It can also affect decisions to have additional children (6,17). Common co-morbidity of PTSD and depression suggests that if not diagnosed early, the women may be treated based on secondary psychopathology, which may be unsuccessful. This could negatively impact the healthcare system by increased use of services by both the parents and the offspring(4).

As far as the author knows, no study has been undertaken to investigate the development of PTSD following childbirth in South Africa. This study aims to investigate the occurrence of

PTSD in relation to childbirth. The reported prevalence and possible implications pose significant public health concern that warrants further study as well as routine screening and treatment.

This study will be beneficial in providing information on this poorly studied topic in South Africa, which may be of major importance in predicting outcomes, modifying treatment strategies, maximizing patient benefit for mothers with postpartum PTSD as well as creating a starting point for further research in South Africa.

1.5 Aim and Objectives

1.5.1 Study Aim

This study aims to investigate the occurrence of Posttraumatic Stress Disorder among women in Johannesburg metropolitan clinics, 6 weeks postpartum.

1.5.2 Specific Objectives

To describe the demographic characteristics of the study participants.

To specify PTSD symptoms and specifically whether with dissociative symptoms or with delayed expression.

To describe the impact of the delivery method i.e. emergency caesarian section, instrumental delivery, natural delivery on the development of postpartum PTSD.

To describe the impact of complications with the fetus e.g. medical complications post birth on the development of PTSD in the mother.

2.0 Methodology

2.1 Study design

This study will make use of a descriptive cross-sectional study design. This method is appropriate because it can be used to assess the prevalence of conditions and potentially related factors at a specific point in time for a defined population.

2.2 Study setting

The study will be conducted in postnatal clinics in the Johannesburg metropolitan area. The routine 6 week postnatal follow up for women in Johannesburg is usually conducted at the district clinics and is independent of place of delivery.

2.3 Sample size

The following formula gives the sample size:

$$n = \frac{Z2 * P(1-P)}{E2} \qquad (18)$$

Where P is the expected proportion who have the characteristic of interest (5.9%), E is the margin of error (0.05). n is the sample size. Z_α is a value from the normal distribution related to the significant level α. Z_α = 1, 96. Therefore, n = (1.96) ^2(0.059) (0.941)/ (0.05) ^2 = 87.

2.4 Study Population

Postpartum women attending the six week postnatal clinic will be approached and asked to participate. Screening will be done to determine whether they meet the inclusion criteria.

2.4.2 Exclusion criteria

Postpartum women under the age of 18 years old.

More than six weeks postpartum.

Do not give consent.

2.4.3 Data collection procedures

The participants will be mothers attending postnatal clinics waiting in a queue to be seen for review. With the assistance of the nurse in charge of the clinic and patient register, the participants who meet the inclusion criteria will be approached and the aims and objectives of the study explained to them. If they are willing to participate in the study, they will be assured that they will not lose their position in the queue and that participation in the study is voluntary and will not have any impact on the treatment that they will receive at the clinic.

They will be offered a participant information sheet and informed consent document with details of the study and given an opportunity to ask any questions they may have regarding the study (Annexures 1, 2). The individuals who agree to participate will be assured they will in no way benefit or be negatively impacted on by the study.

Data collection will take place in a private room to ensure that the participants are not disturbed as they complete the questionnaires, it will take approximately 15minutes to complete the assessments. Data will be collected by the researcher in the form of self report questionnaires outlined, there will be no interviews conducted.

2.5 Data Collection instruments

A questionnaire designed by the researcher will be used to elicit participant information including:

Socio-demographic Characteristics: Age, parity, marital status, level of education, socio-economic status.

Delivery characteristics: The place of the delivery, mode of delivery, use of analgesia during labour and use of assistive devices during delivery e.g. forceps or episiotomy.

Neonatal/Baby characteristics: Apgar scores, birth weight, the presence or absence of medical complications and length of stay in hospital. Where the mother does not recall these details, permission will be sought to refer to the road to health book.

2.5.2 City Birth Trauma Scale

The City Birth trauma scale is a measure for PTSD in the postpartum period and has been developed to measure PTSD according to the latest edition of the Diagnostic and Statistical Manual of Mental disorders, DSM 5. It is yet to be validated in South Africa.

It is a 29-item questionnaire and shown to have excellent reliability. It is easy to understand with the total scale and subscales showing good internal consistency with Cronbach's alphas above the acceptable level of 0.7(19). As outlined by the Scale scoring information document attached, the total score ranges from 0 to 60, with PTSD symptoms scoring from question 3 to 22. It goes on to

specify if there is PTSD with dissociative symptoms or PTSD with delayed onset in questions 23 to 25. Developers of the scale have provided permission to use the scale and also provided scoring information (Annexure 6).

2.6 Data Analysis

Data will be collected using a specially designed form, processed and analyzed using the statistical software Stata version 15. Frequencies and percentages (proportions) will be provided to describe categorical variables. Socio-demographic variables will be presented using graphs (bar, pie, line, etc) while infant clinical complications and delivery variables will be presented in table format.

To determine whether socio-demographic, clinical variables and delivery methods are associated with the occurrence of PTSD following childbirth, the chi-square test of association shall be used. The rate of PTSD occurrence and the resulting confidence intervals shall be calculated for the socio-demographic, delivery and clinical characteristics using logistic regression.

2.7 Ethical Considerations

Ethical and Institutional approval - Approval will be sought from The Human Research Ethics Committee of the University of the Witwatersrand as well as the individual health center outlined above. Only when all approvals have been given will the data collection begin.

Informed consent - The researcher will explain the purpose and objectives of the study to the approached participants and they will be given opportunity to ask for clarification if need be. They will be informed that participation is voluntary. Those who withdraw at any stage will not to be penalized.

There is possibility of psychological stress in some participants due to the nature of the questions. Arrangements will be made with the in house psychologist for further management of the participants who may become distressed during data collection. Arrangements have been made with a separate registered clinical psychologist for participants that may require extensive counseling or psychotherapy if necessary (Annexure 3). Individuals will be offered a chance to participate without coercion. The study will not discriminate against any political affiliations,

ethnic background, sexual orientation or physical disabilities, or withdrawal will in no way influence the services they seek at the institution. *Confidentiality* - Participants will be assured that the data will be kept confidential and will only be used for research purposes. There will be no personal identifiers on the questionnaires, and this will ensure anonymity of the participants. *Compensation for participants* - Participants will not receive any compensation for participating in the study.*Potential benefits to study participants - the* current study participants may not directly benefit from the study however the data from the study will help patients and clinicians to better understand the association between childbirth and PTSD which may assist in improving diagnosis of PTSD among postpartum mothers leading to better management of their health.

2.8 Study Limitations

The study relies on self-reported information from participants and there may be no way to ascertain the accuracy of the information. Scores may be minimized or exaggerated on the self-report questionnaires.

The findings of this study may not be generalized to the country as findings will be representative of women in the Southern Gauteng area.

2.9 Study Timelines and Budget

2.9.1 Timeline

Proposed activity	**2019**				**2020**			
	Jan- Mar	Apr-Jun	Jul-Sep	Oct- Dec	Jan- Mar	Apr-Jun	Jul-Sep	Oct- Dec
Protocol Development								
Protocol submission								
Ethics Application								
Data collection								
Data management								
Data analysis								
Write up								
Submission of Thesis								

2.9.2 Study Budget

The project will be self-funded by the researcher.

Table 1*: Budget*

Category/Item	**Total cost for items**
Stationary for data collection purposes: i.e. Pencils, Pens, Pencil sharpener, Erasers, Stapler, Storage boxes etc.	R500.00
Operating expenses Transport costs	R2000.00
Hard copies of the data collection tools for the participants	R1000.00
Hard copies of the consent forms	R500.00
Document printing and copying, Proposal copies Copying and binding of the final research dissertation	R800.00
Total	R4800.00

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Annexures

Annexure 1: Study Information Document

Study Information Document

Study Title:

The Occurrence of Postpartum Post Traumatic Stress Disorder (PTSD) Among Women in Johannesburg Metropolitan Clinics.

Good Day

My name is Botho Pilediwa Pheto, I am a Master of Medicine in Psychiatry candidate at the University of Witwatersrand. As part of my studies, I am doing research on the occurrence of Post Traumatic Stress Disorder (PTSD) among women following childbirth.

Research is a process used in seeking new knowledge. In this study I want to learn if the mental health condition, Post Traumatic Stress Disorder may be linked to childbirth. There has been research done that suggests Post Traumatic Stress disorder maybe linked to childbirth with possible negative consequences for mothers, their babies as well as family. Currently in South Africa there is no policy that recommends routine Post Traumatic Stress Disorder (PTSD) screening for mothers following childbirth.

As part of this project, I would like to invite you to take part by answering questionnaires. You will be handed two hard copy questionnaires related to the birth of your most recent child. This activity will take place in a private room, to ensure that you are not disturbed as you complete the questionnaires, it will take approximately 15minutes to complete both. You will not lose your position in the queue and participation in the study will not have any impact on the treatment that you receive at the clinic.

Your participation is voluntary, you will not receive any direct benefits from participating in the study, your participation however may in the long term assist other mothers.. You may withdraw at any point during the process.

The questionnaire you complete will be completely confidential as I will not be asking for your name of any information that may identify you. The responses on the questionnaire not be disclosed to anyone else and will be kept securely.

If you express any distress or discomfort while responding to the questions asked we will not proceed further. If you need some support services following the questionnaire, these are made available at no cost to you by Clinical Psychologist Lebogang Mareletse on 011 933 883.

If you have any questions during or after this process, about this research, feel free to contact me on the details listed below.. If you wish to receive a summary of this report, I will be happy to send it to you**.** If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Thank you for reading this Study Information Sheet.

January 2019

Dr Botho P Pheto

Cell: 0761420907

Email: bothothophato@gmail.com

Annexure 2: Participant Consent Sheet

Participant Consent Sheet

Study Title:

The Occurrence of Postpartum Post Traumatic Stress disorder (PTSD) Among Women in Johannesburg Metropolitan Clinics.

I have been given a Participant Information Sheet which explains the nature and processes involved in this study, which is attached hereto;

I was given time to read it, or had it read to me, in the language I best understand;

I was given time to ask any questions I wanted to and found any answers given to me to be reasonable and satisfactory;

I believe I fully understand why the study is being conducted and what the intended outcomes will be;

I understand that there will be no immediate benefit to me, should I agree to participate, nor will I receive any payment; conversely, participation will not cost me anything but my time;

I understand that, even if I initially consent to take part in the study, I may subsequently withdraw at any time and would not be required to give any reasons; if that happened, any data collected about me for the purposes of the study would immediately be destroyed, unless I give consent for it to be retained

I have been given a range of contact details, listed below. If I require further information or become concerned about any aspect of this study I am free to speak to any of these contacts.

Contact details:

Dr Botho P Pheto, Principal Investigator, Contact no: 0761420907, or by e-mail at bothopheto@gmail.com

Dr. R Bridgmohun, Supervisor, Contact no: 0834767469, or by e-mail at reyantar@gmail.com

Professor CB Penny, Chairperson of the Human Research Ethics Committee (Medical) at the University of Witwatersrand, on telephone no. 011 717 2301, or by email at Clement.Penny@wits.ac.za

Ms. Z Ndlovu or Mr Rhulani Mkansi, Committee Secretariat,telephone nos.: 011 717 2700 or 1234, or by email at Zanele.Ndlovu@wits.ac.za or Rhulani.Mkansi@wits.ac.za

Date _____

Signature _____

Annexure 3: Letter of agreement. Distress Protocol

health and social development
Department: Health and Social Development
GAUTENG PROVINCE

Chris Hani Baragwanath Academic Hospital
Child Psychiatry Department
Chris Hani Road
Diepkloof Ext 6
Office No. 011 933- 8831

3rd of December 2019

Clinical Psychologist Letter of Agreement

My name is Lebogang Mareletse, registered senior Clinical Psychologist working at Chris Hani Baragwanath Hospital.

Contact details : (011) 933 – 8831

Email address : mywandzi@gmail.com

I have been in constant communication with Dr Botho Pheto with regards to her study. She has explained to me about her study and what it entails.

She is aware that some patients may need psychological intervention given the trauma they encountered and her interview may remind them of their traumatic history.

I have agreed to assist her as a clinical psychologist should she identify patients that require psychological intervention.

Hope you find the letter in order.

Warm Regards

Lebogang A Mareletse

Senior Clinical Psychologist

Qualification : MA Clinical Psychology (Free State)

HPCSA Number : PS0106844

Date : 03/12/2019

CHRIS HANI BARAGWANATH HOSPITAL
Child & Adolescent Psychiatry Unit
2019 -12- 03
Tel: 011 933 8831
PR 5601177

Annexure 4: Study Questionnaire

Topic: **Postpartum post-traumatic stress disorder in Gauteng.**

Thank you for choosing to take time to complete the following questionnaire. Please tick the appropriate option. Please note information contained here is confidential and will not be used for purposes other than those outlined by the study. You may withdraw at any point during the study.

1.	Age	Under 35	Over 35			
2.	Race	Black African	Indian	white	Mixed Race	
3.	Relationship status	Single	Married		Divorced	
4.	Employment status	Unemployed	Employed		Self employed	
5.	Highest level of completed education	No Matric	Matric		Tertiary	
6	How many children to you have?	1	2		3	More than 3
7.	Was the most recent pregnancy planned?	No	Yes			
8.	How did you give birth?	Normal vaginal delivery	Emergency caesarian section; what was the reason? …… ……..		Assisted vaginal delivery ie forceps, episiotomy, vaccum delivery.	
9.	Were there any problems or complications with the baby?	No	Yes		Please explain	
10.	What were the baby's Apgar scores?					
11.	What was the baby's birth weight?					
12.	What would you say was the attitude of the nursing staff?	Supportive	Not supportive			
13	Where did you deliver the baby?	Clinic	Hospital		Home	
14.	Was any analgesia/pain killers used, during and after delivery?	Yes	No			
15.	Did you have a supportive partner/relationship during the	Yes	No		Please Explain	

	pregnancy and after the baby was born?			
16.	Did you have support from other family members during the pregnancy and after the baby was born?	Yes	No	Please Explain

Annexure 5: City Birth Trauma Scale

This questionnaire asks about your experience during the birth of your most recent baby. It asks about potential traumatic events during (or immediately after) the labour and birth, and whether you are experiencing symptoms that are reported by some women after birth. Please tick the responses closest to your experience.

What date was your baby born? _____

During the labour, birth and immediately afterwards:		
Did you believe you or your baby would be seriously injured?	Yes	No
Did you believe you or your baby would die?	Yes	No

The next questions ask about symptoms you might have experienced. Please indicate how often you have experienced the following symptoms in the last week:

Symptoms about the birth*	Not at All	Once	2 - 4 Times	5 or more Times
Recurrent unwanted memories of the birth (or parts of the birth) that you can't control				
Bad dreams or nightmares about the birth (or related to the birth)				
Flashbacks to the birth and/or reliving the experience				
Getting upset when reminded of the birth				
Feeling tense or anxious when reminded of the birth				

Trying to avoid thinking about the birth				
Trying to avoid things that remind me of the birth (e.g. people, places, TV programs)				
Not able to remember details of the birth				
Blaming myself or others for what happened during the birth				
Feeling strong negative emotions about the birth (e.g. fear, anger, shame)				

* Although these questions refer to the birth, many women have symptoms about events that happened just before or after birth. If this is the case for you, and the events were related to pregnancy, birth or the baby then please answer for these events.

Symptoms that began or got worse since the birth	Not at All	Once	2 - 4 Times	5 or more Times
Feeling negative about myself or thinking something awful will happen				
Lost interest in activities that were important to me				
Feeling detached from other people				
Not able to feel positive emotions (e.g. happy, excited)				
Feeling irritable or aggressive				
Feeling self-destructive or acting recklessly				
Feeling tense and on edge				
Feeling jumpy or easily startled				
Problems concentrating				
Not sleeping well because of things that are not due to the baby's sleep pattern				
Feeling detached or as if you are in a dream				

Feeling things are distorted or not real				

If you have any of these symptoms:

When did these symptoms start?	
Before the birth	
In the first 6 months after birth	
More than 6 months after birth	
Not applicable (I have no symptoms)	

How long have these symptoms lasted?	
Less than 1 month	
1 to 3 months	
3 months or more	
Not applicable (I have no symptoms)	

Do these symptoms cause you a lot of distress?	Yes	No	Sometimes
Do they prevent you doing things you usually do (e.g. socialising, daily activities)?	Yes	No	Sometimes
Could any of these symptoms be due to medication, alcohol, drugs, or physical illness?	Yes	No	Maybe

Thank you for completing this questionnaire.

Annexure 6: City Birth Trauma Scale Scoring Information

This questionnaire asks about your experience during the birth of your most recent baby. It asks about potential traumatic events during (or immediately after) the labour and birth, and whether you are experiencing symptoms that are reported by some women after birth. Please tick the responses closest to your experience.

What date was your baby born?_____

During the labour, birth and immediately afterwards:	Score 1	Score 0
Q1. Did you believe you or your baby would be seriously injured?	Yes	No
Q2. Did you believe you or your baby would die?	Yes	No

The next questions ask about symptoms you may have experienced. Please indicate how often you have experienced the following symptoms in the last week:

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Symptoms about the birth*	NOT AT ALL	ONCE	2 - 4 TIMES	5 OR MORE TIMES
Q3. Recurrent unwanted memories of the birth (or parts of the birth) that you can't control	0	1	2	3
Q4. Bad dreams or nightmares about the birth (or related to the birth)	0	1	2	3
Q5. Flashbacks to the birth and/or reliving the experience	0	1	2	3
Q6. Getting upset when reminded of the birth	0	1	2	3
Q7. Feeling tense or anxious when reminded of the birth	0	1	2	3
Q8. Trying to avoid thinking about the birth	0	1	2	3
Q9. Trying to avoid things that remind me of the birth (e.g. people, places, TV programs)	0	1	2	3
Q10. Not able to remember details of the birth	0	1	2	3
Q11. Blaming myself or others for what happened during the birth	0	1	2	3
Q12. Feeling strong negative emotions about the birth (e.g. fear, anger, shame)	0	1	2	3

* Although these questions refer to the birth, many women have symptoms about events that happened just before or after birth. If this is the case for you, and the events were related to pregnancy, birth or the baby then please answer for these events.

Symptoms that began or got worse since the birth	NOT AT ALL	ONCE	2 - 4 TIMES	5 OR MORE TIMES
Q13. Feeling negative about myself or thinking something awful will happen	0	1	2	3
Q14. Lost interest in activities that were important to me	0	1	2	3
Q15. Feeling detached from other people	0	1	2	3
Q16. Not able to feel positive emotions (e.g. happy, excited)	0	1	2	3
Q17. Feeling irritable or aggressive	0	1	2	3
Q18. Feeling self-destructive or acting recklessly	0	1	2	3
Q19. Feeling tense and on edge	0	1	2	3

Q20. Feeling jumpy or easily startled	0	1	2	3
Q21. Problems concentrating	0	1	2	3
Q22. Not sleeping well because of things that are not due to the baby's sleep pattern	0	1	2	3
Q23. Feeling detached or as if you are in a dream	0	1	2	3
Q24. Feeling things are distorted or not real	0	1	2	3

If you have any of these symptoms:

Q25. When did these symptoms start?	
Before the birth	0
In the first 6 months after birth	1
More than 6 months after birth	2
Not applicable (I have no symptoms)	

Q26. How long have these symptoms lasted?	
Less than 1 month	0
1 to 3 months	1
3 months or more	2
Not applicable (I have no symptoms)	

Q27. Do these symptoms cause you a lot of distress?	Yes 2	No 0	Sometimes 1
Q28. Do they prevent you doing things you usually do (e.g. socialising, daily activities)?	Yes 2	No 0	Sometimes 1
Q29. Could any of these symptoms be due to medication, alcohol, drugs, or physical illness?	Yes 2	No 0	Maybe 1

The questionnaire can be used as a measure of PTSD symptoms or diagnostic criteria as follows:

PTSD symptoms

Symptom Subscales

Re-experiencing symptoms: Q3 + Q4 + Q5 + Q6 + Q7

Avoidance symptoms: Q8 + Q9

Negative cognitions and mood: Q10 + Q11 + Q12 + Q13 + Q14 + Q15 + Q16

Hyperarousal: Q17 + Q18 + Q19 + Q20 + Q21 + Q22

Total PTSD symptoms

Total score from Q3 to Q22 inclusive. Total range 0 - 60

Dissociative symptoms

Q23 + Q24

Please note these are not symptoms of PTSD but are for diagnostic purposes or if you are interested in dissociation during birth as a separate phenomenon.

Diagnostic criteria

[A] Stressor Criterion

Women fulfil DSM-5 criterion A if they respond yes to Q1 or Q2

[B] Re-experiencing symptoms (1 needed)

Women score 1 or more on any question from Q3 to Q7 inclusive

[C] Avoidance symptoms (1 needed)

Women score 1 or more on Q8 or Q9.

[D] Negative cognitions and mood (2 needed)

Women score 1 or more on 2 questions from Q10 to Q16 inclusive

[E] Hyperarousal (2 needed)

Women score 1 or more on 2 questions from Q17 to Q22 inclusive

[F] Duration

Women score 1 or more on Q26

[G] Distress and impairment

Women score 1 or more on Q27 or Q28

[H] Exclusion criteria

If women score 1 or more on Q29 then exclude them from diagnostic PTSD

PTSD with dissociative symptoms

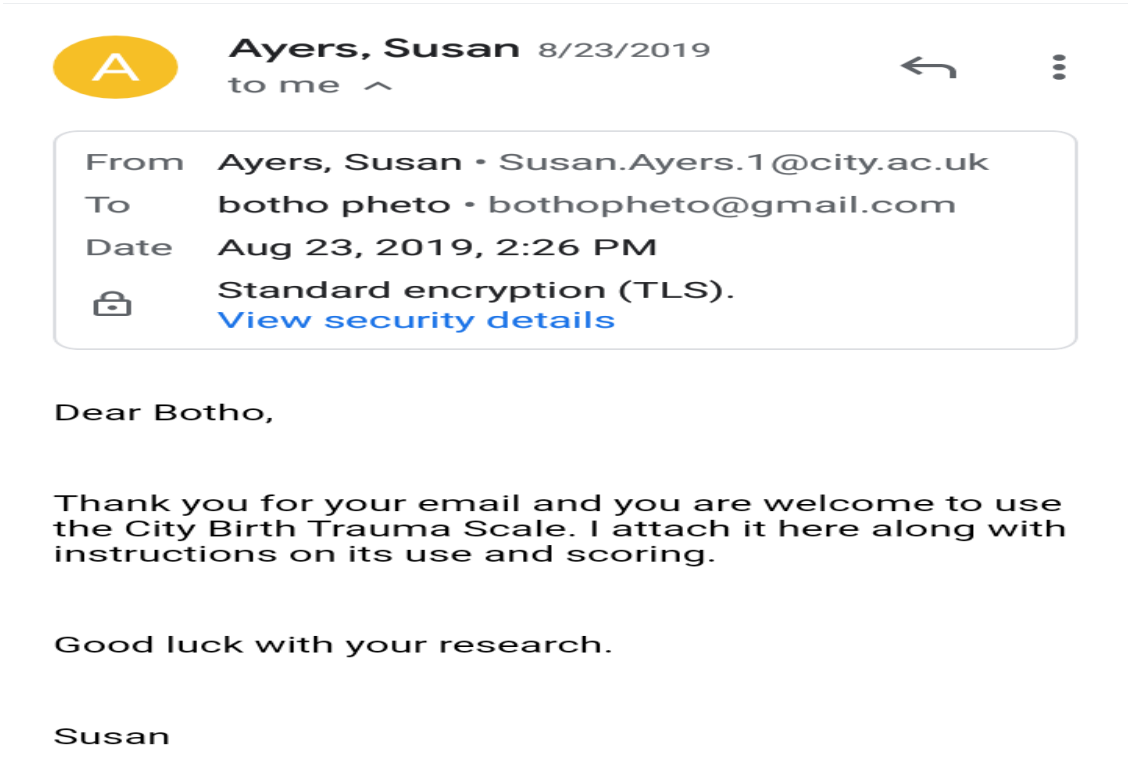
Q23 and Q24 measure dissociative symptoms so if women score 1 or more on either of these questions the diagnosis should be 'PTSD with dissociative symptoms'

PTSD with delayed onset

Score of 2 on Q25 means PTSD with delayed onset

Please note a score of 0 on Q26 suggests PTSD prior to birth so is a measure of prevalence rather than new incidence of PTSD due to birth

Annexure 7: Email corresponse requesting approval for use of City Birth Trauma scale



Ayers, Susan 8/23/2019
to me

From Ayers, Susan • Susan.Ayers.1@city.ac.uk
To botho pheto • bothopheto@gmail.com
Date Aug 23, 2019, 2:26 PM
Standard encryption (TLS).
View security details

Dear Botho,

Thank you for your email and you are welcome to use the City Birth Trauma Scale. I attach it here along with instructions on its use and scoring.

Good luck with your research.

Susan

Annexure 8: Wits PG committee approval

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

WITS SCHOOL OF CLINICAL MEDICINE

22 January 2020

The Chairperson
MMED Assessor Group Committee

Dear Doctor/Professor,

RE: DR B PHETO'S RESEARCH ENTITLED "THE OCCURRENCE OF POSTPARTUM POST TRAUMATIC STRESS DISORDER (PTSD) AMONG WOMEN IN JOHANNESBURG METROPOLITAN CLINICS"

I am satisfied that the corrected protocol and has been done in accordance with the recommendations of the assessor group, and is deemed suitable by the supervisor. For practical reasons, the recommendation for change of site of the study has not been taken into consideration, and will remain as per the original protocol.

Yours sincerely,

.....
PROFESSOR U SUBRAMANEY
ACADEMIC HEAD
DEPARTMENT OF PSYCHIATRY