

**PERINATAL RECREATIONAL DRUG USE: A CASE STUDY OF
LIKONI SUB COUNTY HOSPITAL, MOMBASA COUNTY-
KENYA**

MARCELLINA WAMUYU NDEGWA

**A THESIS SUBMITTED TO THE SCHOOL OF APPLIED AND HEALTH
SCIENCES IN THE DEPARTMENT OF ENVIRONMENT AND HEALTH
IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE
AWARD OF DEGREE OF MASTER IN PUBLIC HEALTH OF
TECHNICAL UNIVERSITY OF MOMBASA**

2023

DECLARATION

This thesis is my original work and has not been presented for academic award in any other University.

Signature..... Date.....

MARCELLINA NDEGWA

MPH/0005/2015

This thesis has been submitted with our approval as University Supervisors.

Signature..... Date.....

DR. VALENTINE BUDAMBULA

**DEPARTMENT OF ENVIRONMENT AND HEALTH
SCIENCES**

Signature..... Date.....

DR. JOSEPH BAYA

DEPARTMENT OF PURE AND APPLIED SCIENCES

DEDICATION

I dedicate this thesis to my husband Maina Rwingo, and daughters Karen, Maureen and Helena for continuously being a source of encouragement as well as inspiration throughout the study period.

ACKNOWLEDGEMENT

I thank almighty God for granting me good health and strength to carry out this study. The path to completion has been long and sometimes very difficult. Many people contributed in various ways to make it a success. Although it might not be possible to mention all of them, I am so grateful to all of them. I would like to most sincerely thank my supervisors Dr. Valentine Budambula and Dr. Joseph Msanzu for accepting to supervise this work. To them I greatly feel indebted for; their precious time, invaluable scholarly guidance, critical comments and suggestions that helped shape this study. I would also like to sincerely thank Dr. Suleiman Mzee, Dr. Cosmas Munga and Dr. Moses Ngare for the advice during the early stages of writing this study. I must extend my appreciation to all the Lecturers in the Department of Environment and Health Sciences as well for their effort during coursework that helped shape my thinking and influenced my academic achievement. Many thanks to the Department of Health Services, Mombasa County for the assistance in approval of this study and support from Likoni Sub County fraternity. My gratitude also goes to all research assistants, community health volunteers and respondents for their kind cooperation and contribution in this study.

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
ABBREVIATIONS AND ACRONYMS	viii
LIST OF TABLES	xi
LIST OF FIGURES	xii
LIST OF APPENDICES	xiii
OPERATIONAL DEFINITION OF TERMS	xiv
ABSTRACT	xvi
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the study	1
1.2 Statement of the Problem	2
1.3 Justification of the study	2
1.4 Objectives	3
1.4.1 Main objective.....	3
1.4.2 Specific objectives	3
1.5 Research Questions.....	3
1.6 Hypotheses.....	4
1.7 Delimitation and limitations	4
1.8 Conceptual frame work.....	4
CHAPTER TWO	6
LITERATURE REVIEW	6
2.1 Global Overview.....	6
2.2 Recreational drug use in Africa	7
2.3 Effects of perinatal drug use	8

2.3.1 Neonate effects	8
2.3.2 Nutrition and drug use.....	8
2.3.3 Appetite suppression.....	9
2.3.4 Lactation.....	9
2.4 Factors influencing perinatal drug use	10
2.4.1 Socio-demographics characteristics.....	10
2.4.2 Nutrition status	12
2.5 Commonly used drugs in pregnancy.....	14
2.5.1 Marijuana.....	14
2.5.2 Cocaine.....	15
2.5.3 Amphetamines	15
2.5.4 Methamphetamine	16
2.5.5 Opioids	16
2.5.6 Alcohol.....	16
2.5.7 Tobacco products	17
2.5.8 Benzodiazepines.....	17
2.5.9 Poly drug use	18
2.6 Knowledge Gap.....	18
CHAPTER THREE	19
MATERIALS AND METHODS	19
3.1 Study design	19
3.2 Study variables	19
3.3 Study site.....	20
3.4 Target and sample populations	20
3.4.1 Inclusion criteria.....	20
3.4.2 Exclusion criteria.....	21
3.5 Sampling methods	21
3.6 Sample size determination	21
3.7 Data collection tools.....	22

3.8 Data Collection Procedure.....	23
3.8.1 Socio-demographic characteristics and self-reported history on recreational drug use among perinatal mothers.....	23
3.8.2 Anthropometric measurements of perinatal mothers.....	23
3.8.3 Determination of type of drugs used.....	23
3.9 Data Management and Analysis.....	24
3.10 Ethical Considerations.....	24
CHAPTER FOUR	26
RESULTS.....	26
4.1 Introduction	26
4.2 Socio-demographic characteristics	26
4.2.1 Association between drug use and Socio-demographic characteristics of perinatal mothers	26
4.2.2 Socio-demographic characteristics determining recreational drug use among perinatal mothers.....	32
4.3 Nutrition status of perinatal mothers.....	35
4.3.1 Anthropometric measurements of the perinatal mothers.....	35
4.3.2 Association of anthropometric measurements with perinatal drug use .	40
4.3.3 Anthropometric components that predict perinatal drug use.....	42
4.4 Drug use among perinatal mothers	43
4.4.1 Self-reported history on drug use and practices by perinatal mothers....	43
4.4.2 Confirmed drug use based on saliva analysis among perinatal mothers	46
4.4.3 Comparison between confirmed and self-reported history on drug use by perinatal mothers.....	48
4.4.4 Socio-demographic factors that predict perinatal drug use based on saliva analysis	52
4.4.5 Self-reported history of poly-drug use by perinatal mothers.....	61
4.4.6 Poly-drug use patterns based on saliva analysis.....	62
CHAPTER FIVE.....	64

DISCUSSION	64
5.1 Effect of socio-demographic characteristics on drug use by perinatal mothers	64
5.2 Effect of perinatal drug use on anthropometric measurements	68
5.3 Drugs used by perinatal mothers.....	73
5.4 Poly drug use among perinatal mothers	92
CHAPTER SIX	94
CONCLUSION AND RECOMMENDATIONS	94
6.1 Conclusion	94
6.2 Recommendations	95
6.3 Future studies	95
REFERENCES	96
APPENDIX I: MAP OF THE STUDY SITE	121
APPENDIX II: INTERVIEW SCHEDULE	122
APPENDIX III: ORAL FLUID TEST KIT	124
APPENDIX IV: TECHNICAL UNIVERSITY OF MOMBASA APPROVAL	125
APPENDIX V: ERC APPROVAL	126
APPENDIX VI: MOMBASA COUNTY DEPARTMENT OF HEALTH SERVICES APPROVAL.....	127
APPENDIX VII: VOLUNTARY CONSENT FORM.....	128

ABBREVIATIONS AND ACRONYMS

ACOG	American College of Obstetricians and Gynecologists
AIDS	Acquired Immune Deficiency Syndrome
ALC	Alcohol
AMP	Amphetamine
BMI	Body Mass Index
BScN	Bachelor of Science in Nursing
BZO	Benzodiazepine
CDC	Centers for Disease Control & Prevention
COC	Cocaine
COT	Cotinine
CS	Caesarean section
CSW	Commercial Sex Workers
DOD	Date of delivery
DoHS	Department of Health Services
EDD	Expected date of delivery
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
ERC	Ethics Review Committee
FAS	Foetal Alcohol Syndrome
FASD	Foetal Alcohol Syndrome Disorder
GA	Gestational age
HB	Haemoglobin level

HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
IDUs	Injection Drug Users
IEBC	Independent Electoral and Boundaries Commission
KAIS	Kenya AIDS Indicator Survey
LBW	Low Birth Weight
LMP	Last menstruation/monthly period
MOD	Mode of delivery
MUAC	Mid Upper Arm Circumference
MNCH	Maternal, neonatal and child health
NACADA	National Authority for Campaign against Alcohol & Drug Abuse
NIDA	National Institute on Drug Abuse
NIH	National Institute Health
NASCOP	National AIDS STI Control Program
NMIHS	National Maternal & Infant Health survey
NSDUH	National Survey on Drug Use and Health
OPI	Opioids
PWID	People Who Injection Drugs
SAMHSA	Substance Abuse & Mental Health Services
SDG's	Sustainable Development Goals
SOP's	Standard Operation Procedures
SVD	Spontaneous Vertex Delivery

THC	Tetrahydrocannabinol-Marijuana
UN	United Nations
UNICEF	United Nation International Children Emergency Fund
UNODC	United Nation Office on Drug & Crime
US	United States
WHO	World Health Organization

LIST OF TABLES

Table 4.1 Comparison within the median ages and drug use circumstances .	30
Table 4.2 Socio-demographic characteristics of perinatal mothers.....	31
Table 4.3 Socio-demographic characteristics that determine drug use among perinatal mothers.....	34
Table 4.4: Anthropometric measurements of perinatal mothers	36
Table 4.5 Association between anthropometric measurements and drug use among perinatal mothers.....	41
Table 4.6 Anthropometric measurements that predict recreational drug use among perinatal mothers.....	43
Table 4.7 Self-reported history on recreational drug use by perinatal mothers	45
Table 4.8 Confirmed drug use based on saliva analysis among perinatal mothers	47
Table 4.9 Confirmed drug use versus self-reported drug use history of perinatal mother	51
Table 4.10 Likelihood of socio demographic characteristics among perinatal mothers that determine confirmed tetrahydrocannabinol use	53
Table 4.11: Socio-demographic characteristics that predicted confirmed alcohol use by perinatal mothers.....	55
Table 4.12: Socio demographic predictors of confirmed amphetamines use by perinatal mothers attending Likoni Sub County Hospital, Mombasa County between May 2018 and August 2019.....	57
Table 4.13: Likelihood of socio demographic characteristics that determined cotinine use among perinatal mothers	59
Table 4.14. Socio demographic characteristics that predict confirmed cocaine use by perinatal mothers.....	60

LIST OF FIGURES

Figure 4.1: Box plot indicating standing height of perinatal mothers.....	37
Figure 4.2: Box plot indicating standing height of perinatal mothers.....	377
Figure 4.3: Box plot showing MUAC measurements of perinatal mothers.....	38
Figure 4.4: Box plot indicating BMI of perinatal mothers.....	39
Figure 4.5: Self-reported history on drug use by perinatal mothers.....	44
Figure 4.6: A summary of confirmed drug use versus self-reported drug use history of perinatal mothers	52
Figure 4.7 Self-reported combination of drugs used by perinatal mothers.....	61
Figure 4.8. Heat map showing intensity of drug use combinations based on saliva analysis among perinatal mothers.....	63

LIST OF APPENDICES

APPENDIX I: STUDY SITE	121
APPENDIX II: INTERVIEW SCHEDULE	122
APPENDIX III: ORAL FLUID TEST KIT	124
APPENDIX IV: TUM APPROVAL	125
APPENDIX V: ERC APPROVAL	126
APPENDIX VI: PERMISSION FROM MOMBASA COUNTY DEPARTMENT OF HEALTH SERVICES	127
<u>APPENDIX VII: VOLUNTARY CONSENT FORM</u>	<u>128</u>

OPERATIONAL DEFINITION OF TERMS

- 1st trimester:** Gestation period from conception up to 14 weeks
- 2nd trimester:** Gestation period between 14 to 28 weeks
- 3rd trimester:** Gestation period from 28 to 42 weeks
- Neonatal health:** Pertaining to the health of infant 0 to 28 days old
- Child health:** Wellbeing of child below the age of five years
- Clientele:** Individual taking part in the study as a participant
- Drug use:** Consumption of drug or substance by inhalation snorting, sniffing, drinking, smoking
- Low birth weight:** Body weight less than gestation age
- Maternal health:** A heathy state of a mother
- Maternity unit:** Department where medical and nursing care is provided to pregnant mothers from labour to delivery
- Nutritional status:** A condition determined by observation of certain Physical signs and measures that suggest whether the state of nutrition is good or bad
- Perinatal mothers:** Describes pregnant and/or lactating mothers
- Perinatal drug use:** Refers to the use of recreational drugs by mothers during pregnancy and lactation
- Prenatal period:** A state of expectancy before delivery or child birth
- Preterm birth:** Delivery before 37 weeks gestation

Poly drug use: Consumption of more than one type of drug or substance concurrently

Postnatal period: Duration from child birth up to six weeks after child birth

Recreational drug use: Use of drug without medical justifications but rather for its psychoactive effects

Under nutrition: Inadequate nutrition resulting from lack of food or failure of the body to absorb or assimilate nutrients properly

ABSTRACT

Drug use is a critical public health problem with perinatal recreational drug use posing as a threat to both maternal health and child survival. When used in pregnancy drugs can easily cross placental barrier, negatively affecting neurodevelopmental events and contributes significantly to poor pregnancy outcomes. In lactating mothers, drugs are expressed with breastmilk which exposes infants to adverse health effects. Maternal drug use is a barrier to seeking antenatal care partly due to guilt and fear of being reprimanded. This cross-sectional study sought to determine the extent of recreational drug use among perinatal mothers in Mombasa County. Ethical approval was obtained from Pwani University ERC and permission granted by Department of Health, Mombasa County. Purposive and convenient sampling methods were used to recruit 373 participants upon obtaining voluntary consent. A six panel plus alcohol saliva test kit confirmed actual drug use. Kruskal Wallis, Chi Square, logistic regression analysis was used to test associated factors, as well as determinants of perinatal drug use. Data was analyzed by Statistical Package for Social Sciences Version 23. Regarding socio-demographic characteristics, perinatal drug use was significantly associated with religion ($P<0.001$), marital status ($P<0.001$), multiple partners ($P<0.001$) and condom use ($P<0.001$). Being above 35 years and unemployed increased likelihood of perinatal drug use. Being separated, divorced and cohabiting were significant determinants of drug use; tetrahydrocannabinol (THC) (CRR=1.43, 95% CI:1.07-1.92, $P=0.020$), alcohol (ALC), (CRR=1.83, 95% CI: 1.22-2.72, $P=0.003$), amphetamine (AMP) (CRR=1.81, 95% CI:1.26-2.61, $P=0.001$) and cotinine (COT) (ARR=2.54, 95% CI:1.3-4.90, $P<0.001$). Having multiple partners predicted use of THC (ARR 1.58, 95% CI:1.15-2.17, $P=0.005$), ALC (CRR=2.02, 95% CI:1.57-2.58, $P<0.001$), AMP (ARR=1.76, 95% CI:1.15-2.69, $P=0.009$) and COT (ARR=2.48, 95% CI:1.36-4.53, $P<0.001$). Muslim faith heightened the risk of AMP (ARR=2.04, 95% CI:1.33-3.13, $P=0.001$) and cocaine use (ARR=0.34, 95% CI:0.16-0.72, $P=0.006$). Using condoms strengthened AMP use (ARR=0.52, 95% CI:0.34-0.81, $P=0.004$). In anthropometric measurements, being undernourished and short-statured had association with perinatal drug use at -6.49 (95% CI: -9.88, -3.10; $P<0.001$), at -4.76 (95% CI: -8.50, -1.03; $P=0.010$) for weight and at -2.81 (95% CI: -4.81, -0.81), at -2.52 (95% CI: -4.74, -0.31) for height. THC (42.3%), ALC (41%) and AMP (23.9%) were the commonly used drugs. This is the first study to document perinatal drug use using saliva analysis in Kenya. In conclusion, THC, ALC, AMP and COT were the most used drugs. The most preferred combinations ALC-THC-AMP, ALC-THC-COT, and THC-AMP-OPI. Recommendations are strengthening of the family fabrics; increase of awareness on condom use; screening and identification of underlying root causes of under nutrition; inclusion of a drug use screening indicator in the current antenatal including the maternity admission profile and upscale on health education on the dangers of using drugs during perinatal period.