MATERNAL MORTALITY AND MATERNAL HEALTH SERVICE UTILIZATION IN EASTERN ETHIOPIA: THE CASE OF KERSA DISTRICT

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A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in Reproductive Medicine

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October 2019

Statement of originality

"I hereby certify that the work embodied in the thesis is my own work, conducted under normal supervision. The thesis contains no material which has been accepted, or is being examined, for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made. I give consent to the final version of my thesis being made available worldwide when deposited in the University's Digital Repository, subject to the provisions of the Copyright Act 1968 and any approved embargo."

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Co-author statement

By signing below, I confirm that Gezahegn Tesfaye Girma has contributed to the following published papers included in this thesis in the conception and design of the studies, designing methodology, developing research tool, data collection, carrying out statistical analysis of the data, interpretation of results, and write-up of the manuscripts.

1. Tesfaye G, Chojenta C, Loxton D, Semahegn A, and Smith R: Delayed initiation of Antenatal Care and Associated Factors in Ethiopia: A systematic review and meta-analysis. *Reproductive health, 2017; 14(150).*
2. Tesfaye G, Loxton D, Chojenta C, Assefa N, and Smith R: Magnitude, trends, and causes of maternal mortality among reproductive-aged women in Kersa Health and *Demographic Surveillance System, eastern Ethiopia*. *BMC Women's health, 2018; 18(198).*
3. Tesfaye G, Chojenta C, Smith R, and Loxton D: Application of the Andersen-Newman Model of Health Care Utilization to understand Antenatal Care use in Kersa District, eastern Ethiopia. *PLoS ONE, 2018; 13(12)*
4. Tesfaye G, Chojenta C, Smith R, and Loxton D: Magnitude and correlates of Postnatal Care utilization among reproductive-aged women in a rural district in eastern Ethiopia: a Cross-sectional study. *Midwifery, 2019; 70, 22-30*
5. Tesfaye G, Chojenta C, Smith R, and Loxton D: Delaying factors for maternal health service utilization in eastern Ethiopia: A qualitative exploratory study. Accepted for publication in *Women and Birth, 2019*

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List of publications included as part of the thesis

Chapter 3

Tesfaye G, Chojenta C, Loxton D, Semahegn A, and Smith R: Delayed initiation of antenatal care and associated factors in Ethiopia: A systematic review and meta-analysis. Reproductive Health, 2017; 14(150).

Chapter 5

Tesfaye G, Loxton D, Chojenta C, Assefa N, and Smith R: Magnitude, trends, and causes of maternal mortality among reproductive-aged women in Kersa Health and Demographic Surveillance System, eastern Ethiopia. BMC Women's Health, 2018; 18(198).

Chapter 6

Tesfaye G, Chojenta C, Smith R, and Loxton D: Application of the Andersen-Newman Model of Health Care Utilization to understand antenatal care use in Kersa District, eastern Ethiopia. PLoS ONE, 2018; 13(12)

Chapter 8

Tesfaye G, Chojenta C, Smith R, and Loxton D: Magnitude and correlates of postnatal care utilization among reproductive-aged women in a rural district in eastern Ethiopia: a cross-sectional study. Midwifery, 2019; 70, 22-30

Chapter 9

Tesfaye G, Chojenta C, Smith R, and Loxton D: Delaying factors for maternal health service utilization in eastern Ethiopia: A qualitative exploratory study. Accepted for publication in *Women and Birth, 2019*

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List of papers submitted for publication

Chapter 7: Predisposing, enabling, and need factors associated with skilled delivery care utilization among reproductive-aged women in Kersa district, eastern Ethiopia. *Submitted to Reproductive Health and is currently under review.*

Acknowledgments

I gratefully acknowledge the University of Newcastle, Australia, for providing me with the opportunity to study my PhD through the International Postgraduate Research scholarship, and thanks to the Deputy Vice-Chancellor (Research and Innovation) for partially supporting the research. I would like to sincerely thank my supervisors Professor Deborah Loxton, Dr Catherine Chojenta, and Laureate Professor Roger Smith for all the dedicated support, continuous professional guidance, and encouragement. You have all been tremendous mentors throughout my studies. My PhD undertaking has been a truly life-changing experience for me, and it would not have been possible to realize this without the help and directions from my supervisors. I feel extremely lucky, and it was very fantastic to have had the opportunity to study my PhD under your supervision.

Deb, you opened up the opportunity to join the University of Newcastle, an internationally renowned institution in which I'm very proud to be a postgraduate student. You were very positive and welcoming the first time I requested your supervision as an international student via email. I remember how happy I was when you accepted my supervision request. I understand that it could be difficult to accept a supervision request from someone whom you do not know in person. But you were optimistic about me and accepted my supervision request without hesitation, and thank you very much for believing in me. I also can't thank you enough for your patience and continuous motivation to improve my research skills throughout my studies. Thank you, Deb, for allowing me to grow as a researcher along the way in my PhD career. Cath, I would like to thank you for your insightful advice, invaluable comments, and encouragement at many stages in the course of this research project, which benefited to improve all aspects of the thesis. You are always supportive of my work and motivate me to work more which gave me strength throughout my study. You are always there to assist me in any aspect of the research project with no time and place restrictions. Your positive outlook and confidence in my research inspired me a lot and gave me more courage. Roger, you have been very enthusiastic about my research, and thank you for unreserved guidance and inspiration. I appreciated your continuous follow up on the research project and for all the insightful thoughts that you added starting from the inception of the project to the final thesis write-up. I learned a lot from your way of thinking, and you have positively influenced me on how to view and gradually approach the target when facing a new research topic. Your

vision and passion for research have urged me a lot during my PhD candidature.

I also would like to thank Kersa Health and Demographic Surveillance System coordinating office, Ethiopia, for their permission to access and extract the secondary data for the first study. This PhD study would not have been possible without the cooperation and support extended by the research assistants, community members, and local administrators in the study district. I want to extend my deep appreciation to the moderators, interviewers and the supervisor whose excellent work during data collection has made an invaluable contribution towards my PhD. I am also indebted to all study participants without whom this research would have been impossible to reach this level. The participants' patience during the data collection; while undertaking many focus group discussions, and also during the long hour household surveys is very much appreciated. I greatly appreciate the very welcoming local community and villagers in the study district who helped me feel comfortable throughout the survey in the fieldwork, and you made my field stay very unforgettable and easy. Our field car driver, village-level facilitators, local coordinators and Health Extension Workers also deserve my heartfelt thanks.

I wish to extend my appreciation to Dr Ryan O'Neill for your language revisions, including proofreading of the final thesis draft. Your careful editing enormously contributed to the production of this thesis. Many thanks to all staff and my fellow students at RCGHA and MBRC for providing me with the moral and emotional support during my study; your friendship and warmth made me feel comfortable and helped me keep things in perspective. Of course, I am thankful to Mr. Ryan Tuckerman for your enormous assistance for any issues related to IT during my candidature.

I also would like to thank my family. I am short of words to express my gratitude to my beloved mother. Mom, thank you very much for the sacrifices that you have made for me since my childhood. Your prayers are what keeps me strong throughout my studies. Thanks a lot for your unconditional love and consistent support throughout my life. I would also thank my father, sisters, and brothers; your encouragement cheered me up during the difficult times. Finally, I wholeheartedly thank Almighty God and the Holy Virgin Mary, for letting me finish my study with great strength. I have experienced your guidance in my daily life. I will keep on trusting you for my future life.

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Acronym and abbreviations

ANC: Antenatal Care

AOR: Adjusted Odds Ratio

CI: Confidence Interval

COR: Crude Odds Ratio

CSA: Central Statistical Agency

DEFF: Design Effect

GNI: Gross National Income

HDSS: Health Demographic Surveillance Survey

MDG: Millennium Development Goal

MMR: Maternal Mortality Ratio

Mmrate: Maternal Mortality Rate

MPH: Master of Public Health

OR: Odds Ratio

PNC: Postnatal Care

PRISMA-P: Preferred Reporting Items for Systematic Reviews and Meta-analyses Protocols

ICD: International Code of Diseases

SDG: Sustainable Development Goal

SPSS: Statistical Package for Social Sciences

USD: United States Dollars

WHO: World Health Organization

Abstract

Background: In Ethiopia, the maternal mortality ratio is among the highest in the world. The high burden of maternal mortality is associated with the non-use of maternal health services. Although there have been notable improvements in the uptake of maternal health services, the rate remains unacceptably low. The purpose of this thesis is to synthesize existing literature on delayed antenatal care use in Ethiopia, and to investigate maternal mortality and maternal health service utilization at the community level in eastern Ethiopia.

Methods: In order to determine the magnitude and predictors of delayed initiation of antenatal care, systematic review and meta-analyses were conducted. To explore the magnitude, trends, and causes of maternal mortality, a secondary surveillance data analysis was performed. To examine the level of, and factors associated with maternal health service utilization, a community survey was conducted. The community survey involved both quantitative and qualitative studies. For the quantitative study, a total of 1320 eligible women were recruited to complete an interviewer-administered house-to-house survey. Bivariate and multivariate logistic regression analyses were carried out to measure associations. For the qualitative study, thirteen focus group discussions were conducted with a total of eighty-eight participants to assess delaying factors for maternal health service utilization. The qualitative data were imported into NVIVO version 11 and analyzed thematically.

Results: The systematic review and meta-analyses show that the pooled prevalence of delayed antenatal care in Ethiopia was 64% (95% CI: 57%, 70%). The secondary data analysis reveals that the maternal mortality ratio from 2008 to 2014 was 324 per 100,000 live births (95% CI: 256, 384). The most common direct cause of maternal death was postpartum haemorrhage, followed by hypertensive disorders of pregnancy. The secondary data analysis further indicates that only 26% of the deceased mothers had attended at least one antenatal care visit. The community survey findings demonstrate that 53.6%, 30.8%, and 7.3% of women attended antenatal, skilled delivery, and postnatal care for the index child, respectively. Best friend's use of maternal care, wealth index, husband's attitude towards care, and awareness of pregnancy complications were strong predictors of antenatal care utilization. Presence of an educated family member, receipt of maternal health education, prior use of skilled delivery care, best friend's use of maternal care, place of residence, pregnancy intention, and use of antenatal care were associated with skilled delivery care attendance. Similarly, receipt of maternal health education, best friend's use of maternal care, living in the female-headed household, and experience of postpartum complications predicted postnatal care utilization.

The qualitative study identified a range of contextual delaying factors for maternal health service utilization. These delaying factors were generally linked to restrictive socio-cultural practices, the poor social status of women, and underdeveloped community and health infrastructures.

Conclusion: The magnitude of maternal mortality remains high in Ethiopia. The direct causes of maternal mortality include haemorrhage and hypertension, both of which can be prevented and treated using maternal health services. Yet, the uptake of maternal health services remains low, and, as a result, maternal mortality remains high. The current study demonstrates that education, best friend's use of care, receiving education on maternal health, women's social and economic empowerment, husband's involvement, quality of maternal care, and Health Extension Workers' home visits can increase service use and therefore decrease maternal mortality. Context-specific interventions should focus on targeting these factors to reduce maternal mortality in the future.