

Utilization of key preventive measures for pregnancy complications and malaria among women in Jimma Zone, Ethiopia

Mariame Ouedraogo¹, Jaameeta Kurji¹, Lakew Abebe², Ronald Labonté¹, Sudhakar Morankar², Kunuz Haji Bedru³, Gebeyehu Bulcha³, Muluemebet Abera², Beth K. Potter¹, Marie-Helene Roy-Gagnon¹, Manisha Kulkarni¹

1. School of Epidemiology and Public Health, University of Ottawa
2. Department of Health Education and Behavioural Sciences, Jimma University
3. Jimma Zonal Health Department



Background and Project Rationale

- With a maternal mortality ratio of approximately 353 deaths per 100,000 live births, maternal mortality remains critically high in Ethiopia¹. This could be explained by (1) women's limited access to and utilization of maternal health services and (2) complications related to diseases like malaria
- Antenatal care (ANC) is crucial for the detection and management of obstetric complications and promotion of health behaviours during and after pregnancy². It also represents an important opportunity for the diagnosis, management and control of malaria during pregnancy²
- Women who attend the recommended number of ANC visits are also more likely to deliver in a health facility and to seek postnatal care for themselves and their newborns.² ANC therefore represents an important opportunity to improve maternal health outcomes
- Yet, ANC remains underexploited. According to the 2016 Ethiopian Demographic Health survey: 62% of women attended one ANC visit and 32% attended the four recommended visits.³
- The ownership and utilization of mosquito nets for the prevention of malaria during pregnancy is also less than optimal. According to the 2015 Malaria Indicator Survey, 63% of household possessed a bed net and 44% of women slept under it at night.⁴
- The prevalence of malaria during pregnancy in Ethiopia is not well characterized



Credit: Paolo Patrino Photography, Future Learn website

Objectives

To attain better maternal health outcomes, it is essential to clarify how pregnant women use ANC and mosquito nets. It is also critical to determine the malaria infection rate in pregnant women but also to assess the various factors related to increased risk of malaria infections during pregnancy

We aimed to:

1. Assess the level and determinants of ANC attendance as well as mosquito net access and use within three districts of Jimma Zone, Southwest Ethiopia
2. Examine the relationship between mosquito net ownership and use, and self-reported malaria infection in pregnant women

Methods

Study setting

- Three districts of Jimma Zone, Southwest Ethiopia (i.e. Gomma, Kersa, Seka Chekorsa)

Data & Participants

- Cross-sectional survey conducted in from October 2016 to January 2017 with 3,784 women (response rate of 98.5%)
- Only women who had a birth outcome (either live birth, stillbirth, spontaneous or assisted abortion, or miscarriage) in the year preceding the survey



Relationships considered

1. Determinants of ANC attendance
2. Association between bed net ownership and utilization and ANC attendance
3. Determinants of self-reported malaria infection during last pregnancy

Statistical Analysis

- Chi-square and Fisher's exact tests
- Multivariable logistic regression analyses accounting for clustering of the participants by health facility

Results

Socio-demographic characteristics

Of the 3,784 women who participated in the survey,

- 50% were aged between 25 and 34 years
- 97% were married
- 20% were part of the poorest wealth quintile
- 78% were unemployed
- 55% were uneducated

Reproductive history

- On average, the number of pregnancies per woman was 3 to 4
- 6% of the women had at least one induced abortion
- 3% of the women had a prior miscarriage
- 5% of the participants experienced a stillbirth

Figure 1. Estimates for main variables

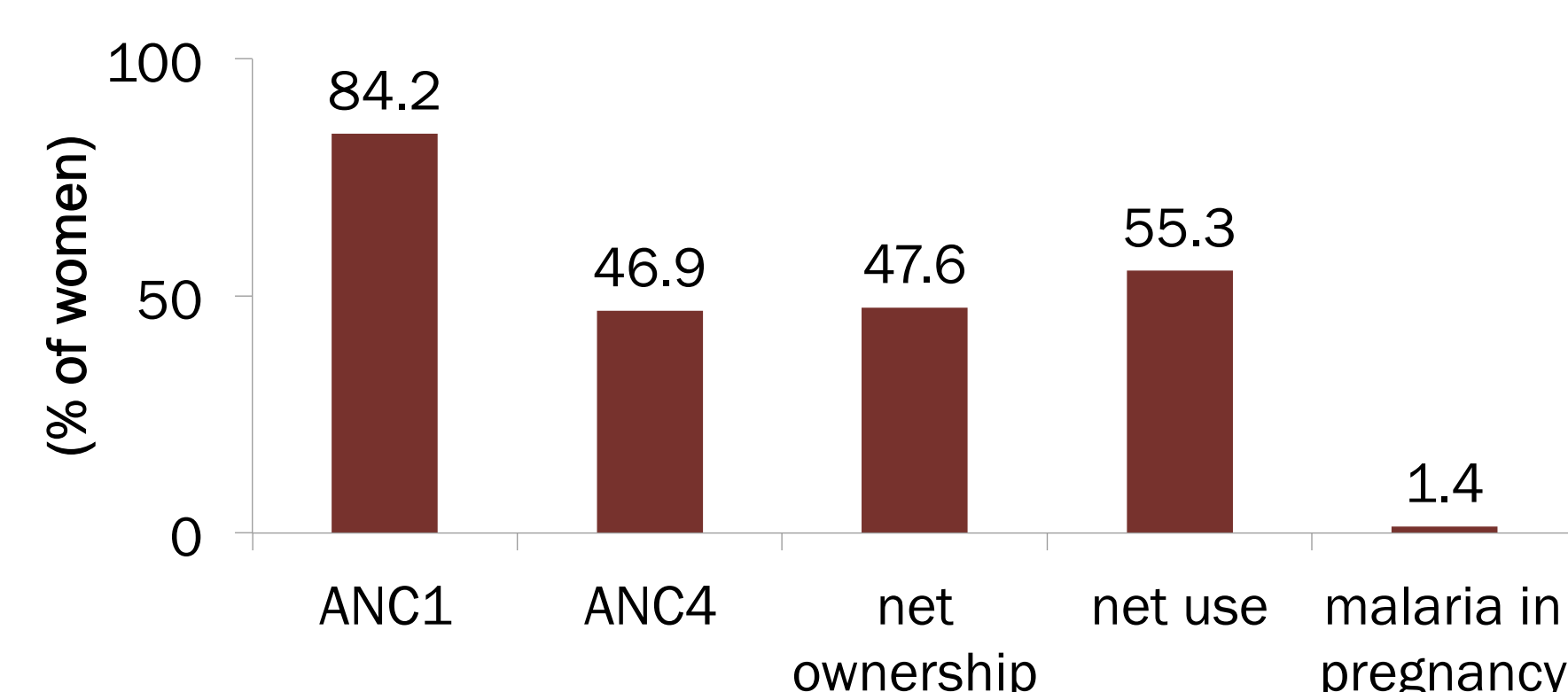


Table 1. Association between bed net ownership and utilization and ANC attendance

	Mosquito net ownership	Mosquito net utilization
ANC attendance	OR: 2.13 (95% CI: 1.68 – 2.68) AOR: 1.98 (95% CI: 1.55 – 2.53)	OR: 1.86 (95% CI: 1.43 – 2.43) AOR: 1.62 (95% CI: 1.23 – 2.13)

Abbreviations: OR – odds ratio; AOR – adjusted odds ratio; CI – confidence interval
Adjusted for maternal age, ethnicity, education level, wealth, household size, and indoor residual spraying

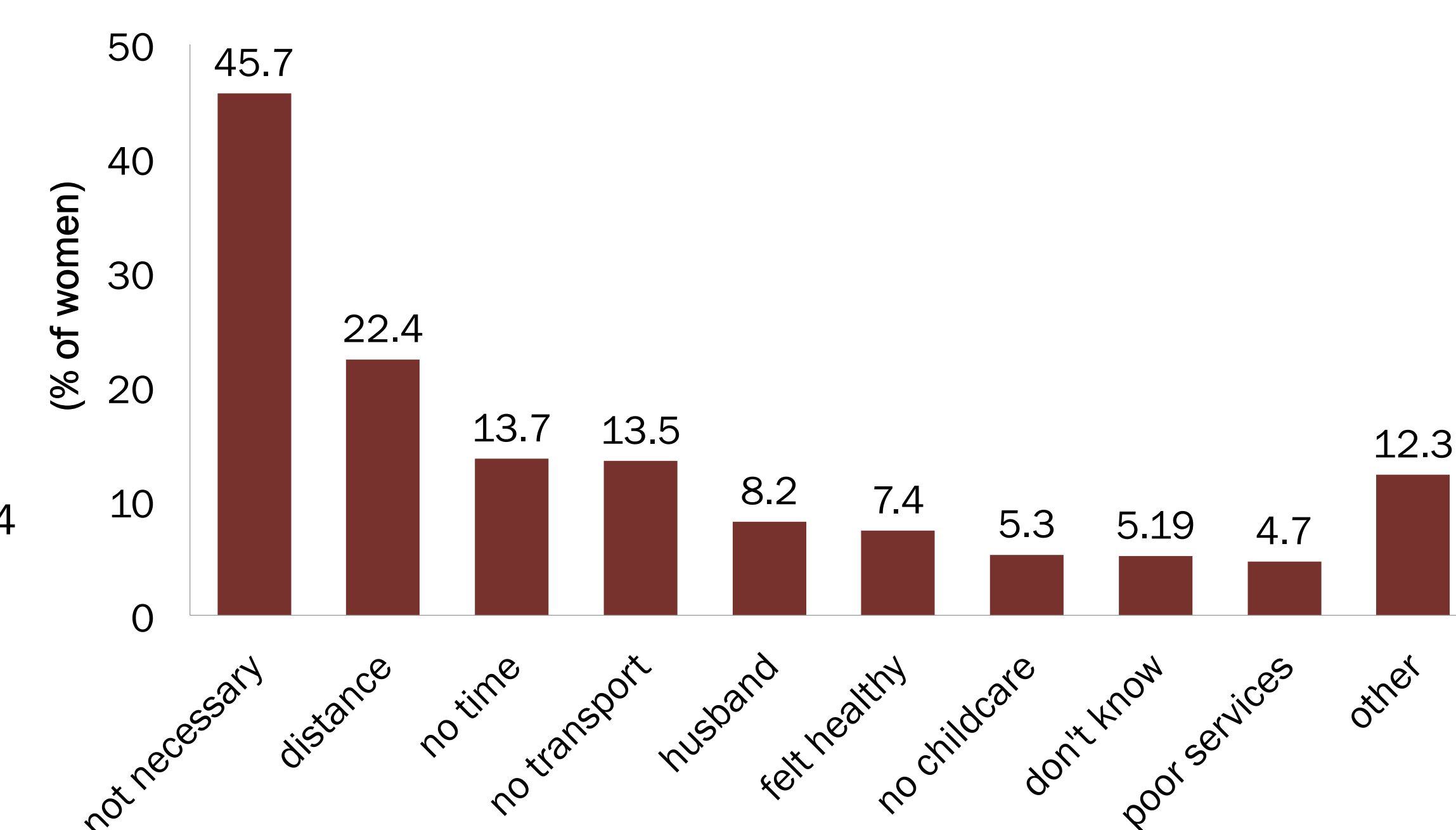
Table 2. Association between maternal characteristics and malaria infection during last pregnancy

Determinants	Measure of effect
Maternal age (years)	OR (95% CI)
≤ 18	Reference
19-24	0.48 (0.19 – 1.18)
25-34	0.25 (0.11 – 0.58)
≥ 35	0.21 (0.07 – 0.65)
Occupation Status	
Not Employed	Reference
Self-employed	2.81 (1.55 – 5.11)
Employed	3.50 (0.99 – 12.38)
Education level	
No education	Reference
Primary	0.42 (0.20 – 0.88)
Secondary or higher	0.42 (0.15 – 1.21)

Abbreviations: OR – odds ratio, CI – confidence interval

Bed net utilization and indoor residual spraying were not associated with malaria infection during last pregnancy, which may be explained by the limited power to assess these associations

Figure 2. Main reasons for not attending ANC



- 15.8% of the participants (N=597) reported not using ANC during their last pregnancy
- Other reasons for not attending ANC included: wait time (3.5%), did not know where to go (2.2%), sickness (1.2%), fear (1.2%), inconvenient hours (1.0%), use of home remedy (0.8%) and abortion (0.7%). Five percent (N=31) of the women did not provide a reason for not attending ANC.

Figure 3. Main determinants of ANC attendance

Women who were of an ethnic group different than Oromo or Ahmara were 40% less likely to attend ANC1

Women had higher odds of attending four or more visits if they had completed secondary (OR:1.90 (95% CI: 1.46 – 2.47) or higher (OR: 5.24 (95% CI:1.53 – 17.95)) education

Women who were in the richest wealth quintile were 64% more likely to attend ANC4, than women from the poorest wealth quintile

Women who were deciding jointly with their partner were 32% more likely to receive ANC4 than women whose husband or family member took the decisions about their health care

Attendance to ANC1 was more likely among women who experienced health problems during their last pregnancy

Women who had the intention of having their last pregnancy were approximately 70% and 34% more likely to seek ANC1 and ANC4, respectively

Women who were part of a household with more than seven children were 46% less likely to attend ANC4 than women who had three or less children part of their households

Women who had a prior stillbirth were 35% less likely to attend ANC4

Discussion and Conclusions

- Data from a cross-sectional survey confirmed that ANC attendance in Jimma Zone is lower than the Federal Ministry of Health's target of 95% of pregnant women attending four ANC visits by 2020.⁵ We also identified important factors associated with ANC attendance such as education, wealth status, the ability to take decisions regarding the healthcare, and the intendedness of the pregnancy.
- The self-reported prevalence of malaria in pregnancy was very low. This is consistent with other studies, suggesting that the impact that malaria may play on maternal health outcomes is low.
- By being able to distinguish the users of ANC from the non-users, community health workers who work closely with pregnant women may have the potential to better inform women on the benefits associated with the utilization of ANC for the management and prevention of obstetric complications and the access to and utilization of mosquito nets.
- Issues relating to the accessibility and quality of maternal health services would also have to be overcome to ensure that women use adequately ANC and other maternal health services. It would also be important to improve husband's understanding of the importance of ANC attendance so that they can encourage their wives to seek ANC.

References

1. World Health Organization. Trends in Maternal Mortality: 1990 to 2015. Estimates by the WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. (2015). at <http://www.who.int/maternal-child-reproductive/surveys-and-studies/maternal-mortality-reports-1990-2015>
2. Lincetto, O., Mothebesane-Anoh, S., Gomez, P. & Munjanja, S. Antenatal Care.
3. Ethiopia Demographic and Health Survey 2016 Key Indicators. (2016). at <http://www.dhs.org/pubs/pdf/2016/2016-ethiopia-demographic-and-health-survey-2016-key-indicators.pdf>

4. USAID Ethiopia. PRESIDENT'S MALARIA INITIATIVE ETHIOPIA - Malaria Operational Plan FY 2017. (2017). at <https://www.usaid.gov/our-work/press-releases/2017/04/2017-malaria-operational-plan>

5. The Federal Democratic Republic of Ethiopia Ministry of Health. Health Sector Transformation Plan 2015/16 - 2019/20. (2015). at <http://www.moh.gov.et/Portals/0/HSR/HSR%202015-2019.pdf>

Acknowledgments

This work was carried out with grants #108028-001 (Jimma University) and #108028-002 (University of Ottawa) from the Innovating for Maternal and Child Health in Africa initiative (co-funded by Global Affairs Canada (GAC), the Canadian Institutes of Health Research (CIHR) and Canada's International Development Research Centre (IDRC)). It does not necessarily reflect the opinions of these organizations.

