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Research paper

# Depression among female heads-of-household in rural Mozambique: A cross-sectional population-based survey

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ABSTRACT

*Background:* An estimated 350 million people live with depression worldwide. In Mozambique, there are no national data quantifying the burden of mental illnesses. With the sixth highest suicide rate in the world, there is strong evidence of an unmet mental health need. We conducted a survey to measure the prevalence of depression among female heads of household and assess individual, social, and cultural risk factors associated with a positive depression screening.

*Methods:* This survey was conducted across 14 rural districts in central Mozambique in 2014. We gathered information from 3543 female heads of household (100% response rate) on > 500 variables, including a depression screening tool (PHQ-8). Weighted percentages of survey responses are reported.

*Results:* Among female heads of household, 14% screened positive for depression (PHQ-8 score ≥ 10). Our adjusted models show increased odds of depression per additional year of age (aOR: 1.02 [1.01, 1.04]; p = 0.002), additional year of education (aOR: 1.06 [1.02, 1.11]; p = 0.006), and additional kilometer from the nearest clinic (aOR: 1.05 [1.02, 1.07]; p = < 0.001). Experiencing food insecurity (aOR: 1.05 [1.02, 1.08]; p = 0.003) was associated with increased odds of depression. Being single (aOR: 0.42 [0.29, 0.60]) or divorced/widowed/separated (aOR: 0.57 [0.34, 0.98]; p < 0.001) vs. married was protective against depression, as was a perceived "sufficient" household income (aOR: 0.37 [0.19, 0.69]; p = 0.008).

*Limitations:* Social desirability bias may have led women to underreport feelings of depression.

*Conclusions:* The association of more education and marriage with increased odds of depression may reflect a frustration with limited opportunity for success experienced by some women in rural Mozambique.

## 1. Introduction

Women living in rural sub-Saharan Africa (SSA) bear a disproportionate burden of household chores, including caring for dependent household members (including children), cultivating subsistence farm land, preparing meals and cleaning the home (United Nations, 2015). While shouldering much of the responsibility for the survival and success of the family, women are likely to experience physical and emotional violence, extreme poverty, and legal restriction of their rights to property, divorce, and inheritance (Sayagues, 2014; Van Klaveren et al., 2009). Recent efforts have successfully improved women's access to political office and decreased rates of early marriage among girls, however legal, social, and economic inequalities remain that negatively impact women's physical and mental well-being (Romao et al., 2007; Sayagues, 2014; Social Institutions and Gender Index, 2016).

Depression is the most common mental disorder, with an estimated 350 million people living with depression worldwide (World Health Organization, 2016). Among persons 15–49 years old of both sexes, the

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years lived with disability (YLD) in sub-Saharan Africa attributable to depression ranks higher than any other disease, including HIV (Insitute for Health Metrics and Evaluation (IHME), 2015). Symptoms of depression include persistent sad or anxious mood, loss of interest or pleasure in activities, sleeping too much or too little, appetite changes, thoughts of death or suicide, difficulty concentrating, and/or persistent physical symptoms that do not respond to standard treatments (National Institute of Mental Health, 2016). The risk of mental health and substance abuse disorders among men and women are similar, but women are at higher risk of internalizing disorders, resulting in depression and anxiety, whereas men are more likely to develop aggressive and antisocial personality traits, including substance abuse disorders (Rosenfield and Mouzon, 2013). Probable depression among a general population of adult women in SSA ranges from 4.4% in Ethiopia (Deyessa et al., 2008) to 20% in South Africa (Meffert et al., 2015).

Among pregnant and post-partum women in SSA, probable depression prevalence ranges from 10% to 47% (Bindt et al., 2012; Dewing et al., 2013; Ramchandani et al., 2009; Rochat et al., 2011; Sawyer et al., 2010). Though post-partum depression among women in sub-Saharan Africa is not well-documented, depression has been proven to be associated with food insufficiency (Tsai et al., 2016), poverty (Deyessa et al., 2008), and gender-based violence (Rotheram-Borus et al., 2015). Among women in Malawi, depression has been associated with perceived HIV risk (Kamen et al., 2015). In Ghana and Cote d'Ivoire, the risk of depression and anxiety has been linked with disability (Bindt et al., 2012).

In Mozambique, there are no national data quantifying the burden of common mental health illnesses (including depression), but with the sixth highest suicide rate in the world, there is strong indirect evidence of an unmet mental health need (World Health Organization, 2014). Studies of mental health disorders among people living in rural SSA have revealed a significant unmet burden of mental health needs (Charlson et al., 2014; Institute of Medicine (US) Forum on Neuroscience and Nervous System Disorders and Uganda National Academy of Sciences Forum on Health and Nutrition, 2010); these studies show only 7–14% of those affected by mental health illnesses in SSA are accessing services (Chisholm et al., 2016; Demyttenaere et al., 2004).

The need for improved mental health service access and delivery in rural Mozambique is clear (Sweetland et al., 2014; Wagenaar et al., 2015). There are two psychiatric hospitals in Mozambique as well as beds available for those experiencing mental illness in general hospitals. In 2014, there were 203 beds available for psychiatric patients in general hospitals and 298 beds available in the two psychiatric hospitals (dos Santos et al., 2016). Though the Ministry of Health has made efforts to increase access to mental health services, there is still a lack of accessibility with only 10 psychiatrists, 109 psychologists, and 23 occupational therapists in 2014 (dos Santos et al., 2016). Population-level estimates of epilepsy, psychosis, and other severe mental health and neurologic conditions have been documented (dos Santos et al., 2016; Patel et al.), but prevalence of depression among the general population has not been adequately established. In a multi-country study, quality of life, including psychological well-being, was lower among participants in Mozambique than among those in surrounding countries (Lesotho, Malawi, South Africa, Swaziland, Zambia, and Zimbabwe). Depression was not assessed (van Rensburg, 2009).

Patterns of depression among female heads of household living in north-central Mozambique are not well understood. Female head of household is defined as the woman living in a given household who is responsible for household decision-making. This female head of household position is not limited to women of a particular marital status; rather it reflects her important role in the family structure which may or may not include a male head of household. Female heads of household have a specific set of responsibilities: they are in charge of housework (cooking, cutting firewood, fetching water), farming, and childcare. They are often poorly educated, and less than 50% speak Portuguese (instead they speak one of Mozambique's 42 local languages), limiting their ability to communicate with people outside their region and to secure gainful employment (Instituto Nacional de Estatistica and Ministério da Sauda, 2013). Thus, depression in this population not only has implications for a woman's health and well-being, but also the health and well-being of her family, especially her children. Therefore, we aimed to describe depression in a representative sample of female heads of household, assessing their health status as well as the well-being of their children.

## 2. Methods

### 2.1. Study area

Zambézia Province, Mozambique is home to 4.4 million people from five primary ethnic groups (Chuabo, Macua-Lomwe, Manhaua, Merenge, and Senas) with 11 languages spoken. In rural communities, access to food is limited in January and February (the hunger season), but plentiful from May to June (the harvest season) (Korkalo et al., 2015). October and March are months in which flooding frequently destroys and/or damages houses, basic social service facilities, and agriculture (World Bank, 2017). Zambézia is one of Mozambique's poorest performing provinces in terms of health and development indicators, with low literacy rates, poor maternal and child health indices, high rates of tuberculosis and malnutrition, and the highest estimated total number of people living with HIV in the country (Audet et al., 2010; Ministério da Sauda and Instituto Nacional, 2009).

Public health support, including activities targeting improved access to maternal and child healthcare, family planning/reproductive health, and nutrition; water, sanitation and hygiene (WASH); livelihood capabilities/economic development; and malaria bed net distribution were implemented over a four year period through a USAID-funded grant (locally called Ogumaniha-SCIP). Two population-based household surveys were conducted – at baseline (2009) and at the end of the program (2014) – as part of a larger program evaluation to identify improvements in health and wellness among people living in Zambézia Province. Survey items measuring depression and alcohol use were only collected in the post-project survey.

### 2.2. Survey data

Post-project data was collected from 12 May to 15 June 2014. The design and implementation of the survey are detailed elsewhere (Victor et al., 2014). In summary, a total of 255 enumeration areas (EA) were selected, with probability proportional to size. Two samples were taken such that three districts (Namacurra, Morrumbala, and Alto Molócuè) were heavily sampled with 206 EA (Fig. 1), with another 49 EAs being drawn from the remaining districts across Zambézia Province, for a total of 3892 households. As the Ministry of Health considers adults to be aged 16 or older, this was an inclusion criterion for the study. Interviews were conducted with female heads of household covering various topics including socio-demographics; knowledge, attitudes, practices, and access to health- and HIV-related services and products; access to water and sanitation; nutrition; agricultural production; current pregnancy and prior childbirth events; and depression and alcohol use (Moon et al., 2015; Victor et al., 2014). Of the 3892 households interviewed, 3543 (91%) female respondents reported their age, and all were 15 or older. In total, 2752 women (71%) responded to questions about depressive symptoms. Single participants were more likely to answer questions about depressive symptoms than those who were married ($p = 0.01$), but were otherwise similar in age, educational attainment, and household income. In contrast, the AUDIT items were more likely completed among single ($p = 0.006$), slightly better educated (mean: 2.9 vs. 3.4 years; $p < 0.001$) women, with a self-reported income of "less than sufficient" ($p < 0.001$). In addition to questions about the participant, the interview software randomly selected one