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Depression and burnout among health extension workers in rural Ethiopia: a cross-sectional study

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ACRONYMS

CBI	Copenhagen Burnout Inventory
DP	Depersonalization
DSM	Diagnostic and Statistical Manual of Mental Disorders
DASS-21	Depression Anxiety Stress Scale 21
EE	Emotional Exhaustion
FMOH	Federal Ministry of Health
HCs	Health Centers
HCWs	Health Care Workers
HEP	Health Extension Program
HEWs	Health Extension Workers
HPs	Health Posts
LMICs r	Low and Middle Income Countries
MBI	Maslach Burnout Inventory
MERQ	Monitoring, Evaluation, Research and Quality improvement
ODK	Open Data Kit
PA	Personal Accomplishment
PHC	Primary Health care
PRIME-MD	Primary Care Evaluation of Mental Disorders
PHQ	Patient Health Questionnaire
SNNPR	Southern Nations, Nationalities and Peoples' Region
WDA	Women Development Army
WHO	World Health Organization
YLD	Years of Life Lived with Disability

ABSTRACT

Background: Depression and burnout are common among healthcare workers (HCWs) and negatively impact their wellbeing as well as the quality of the service they provide. To date the burden of depression and burnout among health extension workers (HEWs) in Ethiopia has not been explored well. Results regarding the relationship between depression and burnout are also inconclusive.

Objective: To investigate the prevalence of depression and burnout and their relationship among HEWs working in rural Ethiopia.

Methods: We used a cross-sectional study design to collect data from 584 HEWs working in rural Ethiopia. A multi-stage cluster random sampling technique was used to recruit HEWs from rural areas of the nine regions of Ethiopia. The Patient Health Questionnaire (PHQ-9) and burnout self-test were used to screen CHWs for depression and burnout, respectively. Descriptive summaries were used to estimate the magnitude of depression and burnout of the study participants and logistic regression was used to examine the relationship between depression and burnout and other demographic characteristics.

Result: The mean age of HEWs was 27.1 years (SE= 0.27) and over half of them (56.8%) reported satisfaction with their job. The prevalence of major depression using PHQ-9 score at a 10 point cut-off was 16.5% (95% CI: 12.9%, 18.9%), whilst burnout risk was 39.8% (95% CI: 32.64, 47.49). The odds of having depression among HEWs with burnout risk is about twelve times compared to HEWs without burnout risk [AOR: 11.88; 95% CI (5.27, 26.80); P< 0.001)].

Conclusion: Our findings show that depression and burnout prevalence is high among HEWs in Ethiopia. They also indicate that burnout is a significant predictor of depression. Strategies should be in place to ensure HEWs can benefit from the integration of mental health services into primary health care units in Ethiopia. Further studies should explore the impact of depression and burnout on performance and the quality of the service among HEWs

1. INTRODUCTION

1.1. Background

The wellbeing of health care workers (HCWs) is crucial for a well-functioning healthcare system (1). It is essential to enhance their productivity, efficiency, motivation, (2) and professional commitment(3). In Ethiopia, millions of people, especially those who live in rural areas, are exposed to a variety of preventable diseases. To overcome this challenge, in 2003, the Federal Ministry of Health (FMOH) of Ethiopia introduced the Health Extension Program (HEP), a cost-effective primary care strategy for scaling up essential health promotion, disease prevention, and basic curative services(4). The Health Extension Workers (HEWs) are the key players in the program. To date, the government has employed more than 42, 000 female HEWs with high school education, who received one year's training on the HEP (5). HEWs have several challenges including high workloads, walking long distances to home visits, risk of being attacked by animals, violence, dealing with clients' problems (e.g impoverished clients) and other work related stress(6, 7). These conditions have the potential to expose HEWs to threat their wellbeing, mainly to depression and burnout.

Depression is a common mental disorder, characterized mainly by a loss of interest and depressed mood and is accompanied by impairment of normal functioning (8, 9). It affects more than 300 million people globally (with an estimated prevalence of 4.4%), and the majority of them are women (10). In Ethiopia, it is estimated to be 9.1% from the national survey data of 2012 (11) and 4.7% by the WHO World Mental Health Survey in 2015 (10). Depression is the second leading cause of years of life lived with disability (YLD) and is a major contributor to the non-fatal burden of disease (7.5% of all YLD), 80% of which occur in low and middle-income countries (LMICs) (10). Depression is also common among working populations and particularly among HCWs (12).

Burnout is defined as a syndrome that results from prolonged work-related stress. It is characterized by its three dimensions: emotional exhaustion (EE), depersonalization (DP) and reduced personal achievement (PA). EE is a feeling of stress and chronic fatigue due to excessive job demands (13). It is the core element of burnout (14). Whereas, DP refers to the loss of interest in work due to the development of a detached attitude towards work and the people with whom one works. The third dimension, reduced PA, refers to having doubt about professional

efficiency and feeling of lack of success and accomplishment in one's work (13). Burnout is common among HCWs and is associated with lower job satisfaction(15), lower quality of care (16, 17), higher incidence of medical errors(18, 19) and lower patient satisfaction (20). It could also be associated with depression (21).

1.2. Statement of the Problem

The Ethiopian HEP has been a flagship program and has shown positive outcomes in areas related to disease prevention, family health, hygiene, and environmental sanitation, and health education and communication(5, 6, 22). Despite these considerable successes, the HEP faces a number of challenges including quality of services provided under the program; enhancing skills and performance of the HEWs, particularly in the area of maternal health; sustaining the program with an appropriate career structure for the HEWs (22); resource gaps, including medical equipment and drugs; limited supportive supervision; absence of a well-established referral system; and unattractive salary scale (5-7). High turnover of HEWs is also reported as a challenge which in turn make HEWs overburdened (7). HEWs are involved in multitasking activities to provide the 17 service packages, which also contributes to the heavy workload(23). The work of HEWs is also physically and emotionally demanding and is associated with several workplace safety challenges. These conditions will expose HEWs to depression and burnout.

Wellbeing of HEWs is one of the key factors for improving the performance of HEWs and quality of care. Depression is one of the most important public health problems that compromise wellbeing (9, 10) and is a major concern among HCWs (12). In Ethiopia, prevalence of depression among HCWs reported from the existing few studies ranges from 20.5% to 51.3% (24-27). Similarly, prevalence of depression among CHWs ranges from 28.4% to 43.3% in Iran (28, 29)and Brazil(30). Likewise, among HCWs, it is reported to be 14.9% in Nigeria (31) and 30.1% in India (32). Depression is estimated to affect 20% to 62.2 % of nurses in Cameroon(33), China(34), Brazil(35), USA(36) and Australia(37). Likewise, prevalence of depression in doctors and medical students ranges from 17.3% to 66.3% in Cameroon (38), Nigeria(39) and China(40).Factors such as job satisfaction, high workloads, years of service, gender and marital status were commonly associated with depression (24, 37, 38, 41). Studies in the general population and HCWs show that depression is associated with reduced productivity, functional disability, higher suicide rate and excess mortality (42-46). Depression is also associated with

medical errors (47) and self-reported work insufficiency(48). This will have an impact on the service provider, on the service user and quality of care in general(12).

Health extension workers are expected to provide services to a population of about 2500 each(23) which is higher than the widely recommended number of people per community health worker(49). This heavier workload leads them to inefficiency, unavailability of services, and burnout. Studies indicated that higher levels of burnout are associated with lower job satisfaction(15), lower quality of care(16, 17), higher incidence of medical errors(18, 19) and lower patient satisfaction (20). Burnout can also impact the productivity of HCWs by increasing the number of sick leave days, reducing workability and intent to either continue practicing or change jobs(36, 50). Therefore, the magnitude of the problem needs due attention. The prevalence of burnout among HCWs in Ethiopia ranges from 3.8% to 36.7% (26, 51-54). A recent systematic review of burnout among HCWS in sub-Saharan Africa (65 studies) indicated that burnout is higher among HCWs with prevalence estimates ranging from 40 to 80%(55). Other studies reported it to be 17% and 34.5%) among CHWs in Iran (28, 29), 24.1% among CHWs in Brazil (30), 35.3% among US nurses (36). A longitudinal study conducted in Southern Ethiopia indicated that CHWs experienced higher burnout compared to facility based PHC workers and being a HCW is a predictor for burnout(26).

Several studies reported that there is association between burnout and depression and it is indicated that burnout is a risk factor for depression (21, 26, 38, 56, 57)but others argue that the causual relationship is not clear(58).Some argue that there is an overlap between depression and burnout(59). On the contrary, others believe that burnout and depression are two separate constructs (21, 38, 60). Results regarding the relationship between depression and burnout are non-conclusive and number of studies are not yet adequate.

1.3. Rationale and significance of the study

Burnout and depression are highly prevalent among HCWs. These disorders have critical impact and effect on the HCW's wellbeing as well as on their productivity and the quality of service they provide. Therefore, the magnitude of the problem warrants due attention. HEWs are different from other HCWs in various aspects; their scope, working in the community and health posts, education and training level, availability of resources and the services they provide. Even though many studies have consistently demonstrated that there is a high level of depression and

burnout among HCWs, there is scarcity of evidence nationally among HEWs, who are the backbone for the program that is considered as a flagship program in Ethiopia. Studies regarding the relationship between depression and burnout are also non-conclusive. Therefore, the aim of this study is to assess the magnitude of depression and burnout and their relationship among HEWs in rural Ethiopia.

Good knowledge of the prevalence of depression and burnout among HEWs in rural Ethiopia is important to improve the quality of the HEP and achieve the desired goal and to plan effective interventions to improve the health of HEWs. The results of this study can serve as a baseline evidence on the magnitude of depression and burnout among HEWs in rural Ethiopia. The results could show the level of the problems and thus inform policy and practice, the direction needed for further research and suggest interventions to prevent those problems.

2. LITERATURE REVIEW

This literature review is summary of the results of published studies conducted to assess prevalence and/or predicting factors of depression and burnout among HCWs, and the relationship between depression and burnout. We have included studies conducted among CHWs but they are few. The study participants of most of the studies discussed here are HCWs such us Doctors, Nurses, Midwives, medical students and other HCWs. HEWs are different from other HCWs. However, because of scarcity of published evidence among CHWs or community workers, we have presented summary of studies done among other HCWs.

2.1 Prevalence and Factors Associated with Depression among HCWs

Depression is common among HCWs and medical students. The reported prevalence varies across countries, depending on the instrument used and the type of the profession. A systematic review and meta-analysis (167 cross-sectional studies (n = 116,628) and 16 longitudinal studies (n = 5,728) among medical students from 43 countries found that the overall pooled crude prevalence of depression to be 27.2% (95% CI, 24.7% to 29.9%) (61). The prevalence of depression among nurses in the USA was 30.7% (36), 29% in Dutch hospital physicians (48), 17% among midwives in Australia(62) and 32.4% among nurses in Australia(37). A cross-sectional study conducted among medical professionals working in a tertiary care institute of India found that 30.1% of the physicians were depressed(32). Whereas, among nurses (n=310) at Sao Paulo, Brazil, it was 20% (35). In China, the prevalence of depression among physicians and nurses was found to be 28.13%(40)and 38%(34), respectively. A cross-sectional study among HCWs in Saudi Arabia (n=300) found that 4% of the HCWs had depression(41).

Several studies indicated that depression is more prevalent in medical students and residents than the general population. A prospective cohort study among pediatrics residents in the USA revealed that 20% of the residents are depressed (47). Similarly, a multicenter, cross-sectional survey in United Arab Emirates among medical residents (n=302) found that the prevalence of depression among residents ranges from 6% to 22% (63). The prevalence of depression among medical students is 41% (n=1,350) in Brazil (64), 48.4% (n=444) in India (65), 66.8 % in China(66) and 83.4% Saudi Arabia (67).

Depression is also highly prevalent among HCWs in Africa. A cross-sectional study (n=54) at a tertiary hospital in South Africa reported that 40.7% of interns had at least mild symptoms of

depression (68). Another cross-sectional study conducted in Tunisia among residents (n=1700) found that 62% had definite or probable depression symptoms (69). In Nigeria, studies showed that the prevalence of depression was 14.9% among health workers(31) and 17.3% among resident doctors (39). Cross-sectional studies conducted in Cameroon among nurses from public and private hospitals found that 62.2% had depression (PHQ-9 >4)(33). Similarly, about 30.6% of medical students in Cameroon (n=618) were found to have a major depressive disorder (70). Another study conducted in Cameroon among medical students showed that the prevalence of depression and major depression was 66.3% (PHQ-9 >4) and 23% (PHQ-9 ≥10)(38).

Few studies assessed the prevalence of mental disorders among CHWs. These studies used general health questioner 12 (GHQ 12) and thus reported the prevalence of mental disorders in general, not specifically depression. A cross-sectional survey conducted in Iran among Behvarzes (Mental Health Workers in rural areas) found that 28.4% of the health workers are suspected to have a mental disorder by GHQ 12 (28). Similarly, another study found the prevalence of mental disorder among Behvarzes to be 36.7% (29). The prevalence of common mental disorders among community-based health agents in Brazil was 43.3% (30).

In Ethiopia, few studies were conducted to assess the prevalence of depression among HCWs and medical students. A cross-sectional survey among Jimma University staff in south west Ethiopia found that 22.9% of the staff have depression(24). A longitudinal study among HCWs (PHC staff and HEWs) in Southern Ethiopia, which was conducted to assess the effect of implementation of integrated mental health service on the wellbeing of PHC staffs, found that 20.6% of the HCWs had depression at baseline (before implementation of the program) and 11.2% at the 6 months follow-up time point(26).On the other hand, a cross-sectional survey among medical students in Addis Ababa, Ethiopia found a depression prevalence of 51.3% (25). Similarly, the prevalence of depression among students at Addis Ababa University, Ethiopia, was reported to be 27.7%(71) and 40.9% among those in the University of Gondar(72).

Factors associated with depression among HCWs have been documented in different studies. A meta-analysis among Chinese medical students reported that male gender, higher grade level, rural residence, dissatisfaction with current major and low monthly income were significantly associated with depression(73). Depression was associated with socio-demographic factors such as female gender, marital status and age. Studies have found that female HCWs and medical

students are more likely to experience depression compared to men. Among medical students (64) and nurses (35) in Brazil, females were more depressed than their peers. Among medical students in Cameroon, female gender was a significant correlate of depression (70). Among Interns in South Africa, female gender was found to be a significant predictor of depressive symptoms (68). Conversely, a study conducted in Nigeria among resident doctors found no association between depression and gender. Regarding marital status, being single have been associated with depression among HCWs in Saudi Arabia(41) and among nurses in Brazil (35). Young age was a predictor of development of depression among HCWs in Saudi Arabia(41). On the contrary, among nurses in Brazil those aged over 40 years were more likely to develop depression compared to those under 40 years (35).

Among HCWs, depression was also associated with work related factors, including high workloads, longer working hours, frequent night shifts, low job satisfaction and years of employment. Job dissatisfaction was a correlate of depression among nurses in Australia(37). A study in Brazil found that the chance of depression was twice as high among nurses showing high levels of work stress (35). A study in India also found a significant association between depression and high work load(32). Likewise, long working hours has been associated with depression among HCWs (32, 34, 40). A study conducted in China found that nurses who work for more than 45 hours per week were more likely to experience depressive symptoms compared to those who work less(34). Another study conducted among doctors in China also showed that working for longer hours (> 60 hrs. per week)(40) Similarly, having less work experience was a predictor of depression amongst HCWs in Saudi Arabia(41). Frequent night shifts were also predictors of risk of development of depressive symptoms amongst doctors/nurses in China(34, 40) and Cameroon(33). On the other hand, financial difficulty and low income has also been associated with depression amongst medical students in Hong Kong and China (73, 74).

Health related and other factors have also been found to be associated significantly with depression among HCWs. For example, in sufficient sleep and physical inactivity were correlates of depression among physicians in China and nursing students in Hong Kong (74). Being a smoker (35)(66) and use of substance (68) has been associated with depression amongst HCWs and medical students in Brazil, Saudi Arabia and South Africa. Among medical students in Cameroon, the correlates of depression were the presence of a chronic disease and major life events (70).

Results of studies conducted in Ethiopia also found more or less similar risk factors. Among Jimma university staff in southwest Ethiopia, being female (AOR: 2.43, 95% CI: 1.22–4.77), having no job satisfaction (AOR: 10.59, 95% CI: 4.88–22.98), presence of conflict with colleagues (AOR: 2.33, 95% CI: 1.21–4.49), and khat chewing (AOR: 4.99, 95% CI: 2.57–9.69) were the risk factors(24). Among medical students in Addis Ababa, significant association was observed between depression and younger age (18–21 years old) [AOR: 2.42, 95% CI: 1.64, 9.22], first-year educational level (AOR: 1.63, 95% CI: 1.43, 6.26), second-year educational level (AOR: 1.39, 95% CI: 1.17, 5.18) and having one or more stressful life events in the last 6 months (AOR 1.61, 95% CI: 1.14, 2.76) (25).

2.2 Prevalence and Factors Associated with Burnout among HCWs

Several studies have attempted to estimate the magnitude of burnout among HCWs in different settings. The findings of those studies show that HCWs experience high levels of burnout. The prevalence of burnout among HCWs varies depending on the setting, the type of profession and mainly depending on the type of scale used to measure the level of burnout and the way it was reported. A systematic review that analyzed prevalence of burnout among HCWs in LMICs (n=20 studies) demonstrated that nurses in South Africa reported the highest prevalence in all the three dimensions of burnout (EE: 99.6%, DP: 98.0% and PA: 99.3%) whereas the least burnout was reported by rural health workers from Iran (EE: 27.4% and DP: 13.3%) and PHC providers in Lebanon (PA: 25.1%) (75). A recent systematic review of burnout among HCWS in sub-Saharan Africa (65 studies) indicated that burnout is higher among HCWs, with prevalence estimates ranging from 40 to 80%. From those HCWS, nurses reported the highest burnout levels(55). 67% of physicians reported burnout in a recent systematic review (n = 109,628 from 182 studies) (61).

The prevalence of burnout among US nurses was found to be 35.3% (36). A cross-sectional survey in midwives in Australia(n=1307) found that 64.9% of the midwives reported personal burnout; 43.8% reported work-related burnout, and 10.4% reported client-related burnout(62). High burnout level was also reported by medical practitioners in India. 45.02% of the medical practitioners reported experiencing high EE, 65.98% with a high degree of DP, and 87.14% with a low sense of PA(76). Similarly, a multicenter cross-sectional survey in UAE among medical residents (n=302) found that 75.5% of the residents suffering from moderate-to-high EE, 84%

with a high degree of DP, and 74% with a low sense of PA(63). The prevalence of burnout among medical students in Brazil was 12.0% (77). Nigerian nurses who work in a general hospital also reported higher burnout levels: 39.1% of the nurses reported suffering from high EE, 29.2% with high DP and 40.0% with a reduced PA (78).

Few studies assessed the prevalence of burnout among community health workers. A cross-sectional survey done in Iran among Behvarzes has shown that 17% of the health workers were suffering from burnout syndrome(28). Whereas, another study found that 34.5% had moderate to severe levels of burnout (29). Another cross-sectional study in Brazil among community-based health agents found that the prevalence of burnout is 24.1% (30).

In Ethiopia, several studies that assess the level of burnout among HCWs were conducted. Overall, the prevalence of burnout among HCWs in Ethiopia from the existing literature ranges from 3.8% to 36.7% (26, 51-54). A cross-sectional survey conducted in southwest Ethiopia among HCWs who work in a teaching hospital (n=334) found that 36.7% of the HCWs scored above the mean level of burnout using the Copenhagen Burnout Inventory (CBI). The study found that 35.5% of the HCWs reported personal burnout; 37.5% work-related burnout; and 37.2% client-related burnout. This study also indicated that nurses reported the highest level of burnout (82.8%) and laboratory technicians reported the least (2.8%) (51). Another cross-sectional survey conducted among physicians who work at public hospitals (n= 491) in southern Ethiopia revealed that 65.2% were experiencing a high level of EE, 85.1% with high DP, and 91% with low PA (52). On the other hand, a cross-sectional study conducted among HCWs who work in a teaching hospital in northern Ethiopia (n = 248) demonstrated that 13.7% of the HCWs have reported high overall burnout(53). A cross-sectional study conducted among medical students at DebreBirhan University (n=144) demonstrated that 34.0% of the students had symptoms of burnout; 61.8% scored high on EE, 47.9% scored high on DP and 59.7% scored low on PA subscales of MBI(54). A longitudinal study among HCWs in Southern Ethiopia demonstrated that the prevalence of burnout was 3.8% at baseline and 4.6% at the 6 months follow-up time point. The study also found that community-based HEWs reported experiencing higher EE than facility-based HCWs at both time points (18% vs. 2.2% at baseline and 11.4% vs. 5.6% at end line) (26).

Several factors have been found to be associated with burnout among HCWs. A meta-analysis of studies relating to nurses showed that being male, being single or divorced, and not having children were related to the highest levels of burnout (79). In a recent systematic review, high job stress, high time pressure and workload, and lack of organizational support were found to be risk factors for burnout among HCWs(75). Likewise, a systematic review of studies in sub-Saharan Africa showed that burnout is more common among women, those of younger age, and those with less support or resources to manage workloads(55).A study in Brazil among medical students demonstrated that women had a higher rate of burnout (8.0%) than men (4.0%) (77). A longitudinal study among PHC staff indicated that women are twice as likely as men to report burnout (36% vs 19%) (15).Among nurses in a Nigerian general hospital, doctor/nurse conflict, inadequate nursing personnel, and too frequent night duties were predictors of burnout (78). Satisfaction with results and regret of choice of nursing studies were predictors of burnout among nursing students in Cameroon (80).

A study in Iran found that burnout had a significant correlation with job stress and having a mental disorder (28). Another study among rural health workers in Iran found that age, education level, number of children, and years of employment were significantly associated with burnout ($P < 0.05$)(29). Among community health workers in China, burnout was an important predictor of intrinsic and extrinsic job satisfaction (81).

More or less similar factors were identified by studies from Ethiopia. Being male, unmarried, and years of experience were significant risk factors for all the three dimensions of burnout in a study from Northern Ethiopia(53). Among HCWS who work in a teaching hospital in southwest Ethiopia, job insecurity, history of physical illness, low interest in the profession, poor relationship status with managers, the worry of contracting infection or illness and physical/verbal abuse were predictors of burnout (51). Age of the physician, monthly salary, hospital type, receiving recognition from hospital managers, professional training and having support from family and organization are the main predictors of burnout in another study. The study indicated that age is negatively associated with all three subscales of MBI whereas, monthly salary is negatively associated with EE and DP subscales and positively associated with PA (52). Among medical students in northern Ethiopia, moderate social support (AOR: 0.2, 95% CI: (0.1, 0.8), and satisfaction with education (AOR: 0.1, 95% CI: 0.0, 0.7) were predictors of burnout (38). High depression symptom scores, experiencing two or more stressful life events,

being a community HEW, perceived job insecurity and older age were significantly associated with higher levels of emotional exhaustion longitudinally(26).

2.3 The relationship between Depression and Burnout

Findings of studies about the relationship between depression and burnout are unclear. Several studies have demonstrated that there is a positive correlation between burnout and depression(26, 38, 62, 82); more specifically with the subscale of EE(59). Based on these results, some argue that there might be an overlap between depression and burnout and that burnout might a dimension of depression(59). Conversely, others believe that burnout and depression are two separate constructs (26, 60, 62, 82). They argued that burnout is work-related, whereas depression is context-free(60).

A cross-sectional survey among medical students in Ireland indicated there is a strong correlation between the severity of burnout and depression but they are different entities (82). A large cross-sectional survey of Australian midwives (n=1307) has revealed that there is a significant correlation between burnout and depression and suggested that workplace burnout can have a significant implication in the development of mental illness like depression(62). A study in UAE among medical residents demonstrated that 83% of medical residents who had high scores for depression also reported burnout(63).A recent systematic review and meta-analysis showed that there is an association between depression and burnout but they are not the same constructs(21). A longitudinal study from Ethiopia among PHC workers also found similar results (26). Similarly, burnout was found to be an independent correlate of depression among medical students in Cameroon (38).On the contrary, a study among Austrian physicians reported that symptoms of burnout and depression are highly correlated and there is an overlap between the two entities. They showed that the risk of major depression increases with the grade of burnout(83). Prospective study among Finnish dentists found that burnout predicted new cases of depressive symptoms and depression predicted new cases of burnout and thus indicated that there is reciprocity of the relationships between the two (84).

Conversely, a longitudinal study done among French school teachers (n=627) which failed to find association between depression and burnout. They suggested that burnout did not predict major depression and believe that burnout is not a phase in the development of depression(58).

2.4 Conceptual Framework

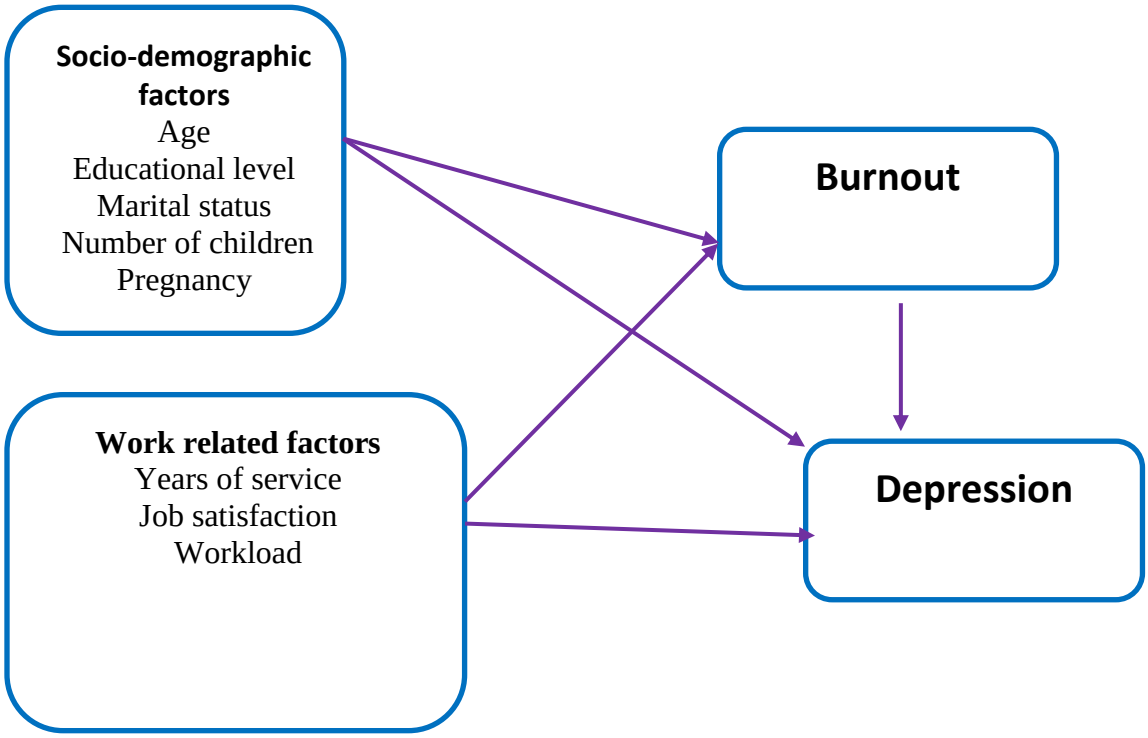

Figure 1: Conceptual Framework for the relationship between depression and burnout and other work-related and sociodemographic factors (Developed from different works of literature)

2. OBJECTIVES

2.1. General Objective:

To assess the prevalence of depression and burnout and their relationship among HEWs in rural Ethiopia in 2019

2.2. Specific objectives:

- To estimate the prevalence of depression among HEWs working in rural Ethiopia in 2019
- To determine the magnitude of burnout among HEWs working in rural Ethiopia in 2019
- To investigate the relationship between depression and burnout among HEWs working in rural Ethiopia in 2019

3. METHODS

3.1. Study design

A cross-sectional study design was used to address the objectives of this studyusing secondary data from the 2019 national assessment of the HEP.

3.2. Context, description of the data source and study setting

During the conduct of the current study, Ethiopia was administratively divided into nine regional states (Tigray, Amhara, Oromia, Southern Nations Nationalities and Peoples region, Benishanguel-Gumuz, Gambela, Harari, Afar, Somali) and two city administrations (Addis Ababa and Dire-Dawa). Each region is further structured into Zones and then Woreda. Woredasarethen divided into several kebeles which is the lowest government administrative units.Health service delivery in Ethiopia follows a three tier system and the lowest level is the primary health care unit. This consists of a health post that is centered in each kebele, and a health center that is designed to serve about 25,000 people and supervise five satellite health posts and a primary hospital. Health posts are staffed with HEWs in rural areas and health extension professionals in urban areas. HEWs are high school graduates with additional one year training on health promotion and disease prevention with limited curative services.

The 2019 national assessment on the HEP was conducted by Monitoring, Evaluation Research and Quality improvement (MERQ) consultancy PLC. The aim of the assessment was to address the information gap related national level assessment of the HEP. That is, regarding the performance, determinants, and prospects of the HEP or the wellbeing of the HEWs. The assessment involved collecting primary data with mixed methods, undergoing systematic reviews and conducting findings synthesis and recommendation workshops. The primary data was collected by reviewing documents, conducting qualitative interviews and undertaking quantitative surveys of HEWs. The assessment was conducted in the nine regions. It was conducted in agrarian and pastoralist settings. A total of 584 HEWs (from 372 kebeles within 6 woredas) were involved in the quantitative survey. The survey was conducted from February, 2019, to March, 2019. The study was funded by the Bill and Melinda Gates Foundation.

3.3. Source and study population

3.3.1. Source Population

The source population of the study was all HEWs working in rural areas of the nine regions of Ethiopia.

3.3.2. Study Population

The study population was all HEWs working in the six kebeles of each randomly selected woreda in the nine regions (i.e. 372 kebeles selected from 62 woredas across the nine regions of Ethiopia.)

3.3.3. Eligibility Criteria

Inclusion criteria

HEWs eligible for this study were those who work in the selected kebeles.

Exclusion criteria

HEWs who were on leave during the survey period were excluded.

3.4. Sample Size Determination

We used all the available data from the 2019 national assessment of HEP. However, we calculated the sample with assumed estimates of the target parameters to check if the available data was large enough to address our objectives. As starting estimates, we used the prevalence of depression (20.6%) and burnout (18%) reported by Selamu et al, 2019 (26) since the study sample included both HEWs and facility based PHC workers in rural Ethiopia.

The following formula was used to calculate sample size (85)

$$n = N \times \frac{\frac{Z^2 \times p \times (1-p)}{e^2}}{\left[N - 1 + \frac{Z^2 \times p \times (1-p)}{e^2}\right]}$$

Where, Z is the critical value of the Normal distribution at α/2 (We used a confidence level of 95%, thus α is 0.05 and the critical value is 1.96), e is the precision level, p is the sample proportion, and N is the population size (42,000 HEWs).

For the first objective: with an estimated prevalence of depression among HCWs assuming 20.6% as the best available estimate; 5% precision level, design effect 2 and considering a 10% non-response rate, the required sample size was 550. For the second objective: the estimated prevalence of burnout among HCWs was taken as 18%; 5% precision level and considering a 10% non-response rate, the calculated sample size was 497.

For the third objective: with an estimated 20.6% prevalence of depression; 15% difference in depression among HCWs experiencing burnout and those who don't experience burnout and considering a 10% non-response rate, it yielded a sample size of 348.

In the 2019 National assessment of HEP, data was collected from 584 HEWs which is above what is required to answer the three objectives of this study. Thus, we used all the available data.

3.5. Sampling procedures

Health extension workers who were involved in the 2019 National assessment of HEP were selected using multi-stage cluster random sampling method (Fig 2). Woredas and kebeles were used as clusters. 62 woredas were distributed across the nine regions. Within each region, 62 woredas was randomly selected by taking a list of woredas in that region as a sampling frame. Afar, Somali, Pastoralist areas in southern nation's nationalities and peoples' region (SNNPR) and Pastoralist areas in the Oromia region are considered as 4 pastoralist regions and managed in a similar manner as the remaining agrarian regions. Within each woreda, 372 kebeles were randomly selected and all HEWs within the selected kebele were approached for interviews.

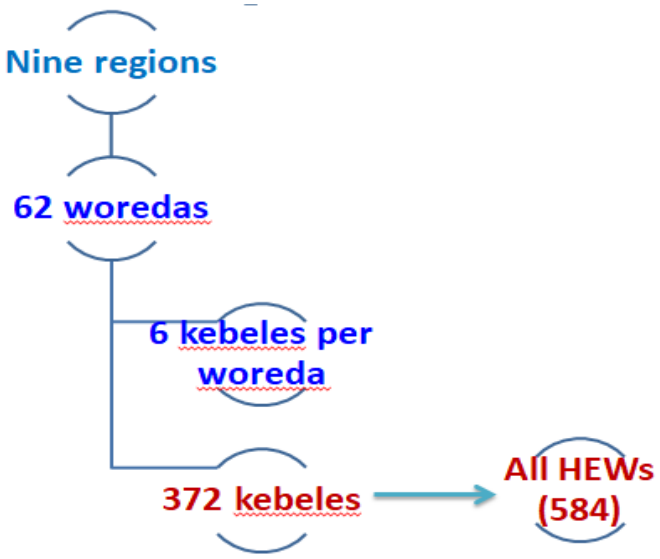

Figure 2: Sampling procedures of the national assessment of HEP, 2019

3.6. Data collection procedures

This study used secondary data from the 2019 national assessment of HEP. Data was collected from all HEWs who work in randomly selected kebeles using structured questionnaires. The questionnaire was administered to the participants using smartphones, which were programmed using an Open data kit (ODK). Trained and experienced lay data collectors were involved in the data collection. The data collectors were high school graduates with more than two years of work experience in data collection. Data collected on socio-demographic characteristics, work-related factors, depressive symptoms, level of burnout and other relevant information was extracted from the main data set and was used for this study. Patient health questionnaire-9 (PHQ-9) and Burnout self-test were used to screen HEWs for depressive symptoms and burnout, respectively.

Patient Health Questionnaire-9 (PHQ-9) is a self-administered version of the Primary Care Evaluation of Mental Disorders (PRIME-MD), a diagnostic instrument developed in 1990s to diagnose common mental disorders such as depression, anxiety, somatoform, alcohol, and eating disorders. Use of PRIME-MD as was limited due to the time it took to administer (5 to 12 minutes). Thus, shorter version, PHQ-9, was developed in 2000s and validated to assess patients for depression. PHQ-9 is widely used to screen for depression and measure its severity. It has

ten items. Nine items are aligned with the Diagnostic and Statistical Manual of mental disorders IV (DSM IV) (86, 87). Each item asks about the frequency of depressive symptoms in the past two weeks. It has four response categories which range from "0", indicating "not at all" to "3", indicating nearly every day. The 10th item of PHQ asks about the functional impairment that resulted due to the depressive symptoms. PHQ-9 has shown good reliability, validity, sensitivity, and specificity in different settings (86). The Amharic version has been validated in Ethiopia. In a general hospital setting (with a cut off point of 10), (88) the PHQ-9 items showed good internal consistency (Cronbach's alpha=0.85), test re-test reliability (intraclass correlation coefficient=0.92), sensitivity (86%) and specificity (67%). Similarly, in primary health care settings (with a cutoff point of 5), (89) it showed good internal (Cronbach's alpha=0.84), 88.9% and a specificity of 64,2%.. The Oromiffa version of this instrument has also been validated in a general hospital setting(90). It showed good internal consistency (Cronbach's alpha=0.85), test re-test reliability (intraclass correlation coefficient=0.98), sensitivity (80.8%) and a specificity of (79.5%) using cut-off point of eight.

Burnout level was measured using Burnout self-test. This tool has 15 questions and measures the risk of burnout. It asks how often the individual has been bothered by problems related to her/his job and the people he/she is working with. The items have five response categories that range from "1" (Not at all) to "4" (very often). The total scores were summed to give the total burnout level. This tool is not validated in Ethiopia.

3.7. Study variables

For objective one: the dependent variable is depression which was measured using PHQ-9 and the independent variables are socio-demographic characteristics and work-related factors.
For the second objective: the dependent variable is burnout, which was measured using Burnout self-test and the independent variables are socio-demographic characteristics and work-related factors.
For the third objective: the dependent variable is depression and the independent variable is burnout. In addition, other factors that might act as a cofounder, affecting the association between depression and burnout, are socio-demographic factors like age, marital status,

educational level, number of children and work-related factors such as years of service, job satisfaction and workload. These variables were selected based on the existing literature.

3.8. Operational Definitions

The following definitions were used for the purpose of this study

Depression: HEWs who score above 9 on PHQ-9 were considered to have probable depression

Major Depressive disorder: those who have scored five or more with the specific condition of being positive on one or two DSM IV core symptoms and at least 3 additional symptoms.

Burnout: those who score above 32 on Burnout self-test

3.9. Data management and analysis

The data was collected electronically using an ODK. It was cleaned and exported to Stata version 14 for statistical analysis. Descriptive statistics were used to estimate the level of depression and burnout of the HEWs and to describe their socio-demographics and work related characteristics.

To estimate the prevalence of depression among HEWs in Ethiopia, the total scores were summed for the nine items of PHQ-9 and then categorized using score-based and criterion based classification (91, 92). For the score based classification, a cutoff point of 10 or above was used to determine the prevalence of depression. The prevalence of depression was also reported using a cutoff point of 5 or above for ease of making comparison with some of the previous studies. The severity of depression was also assessed using the following scale: PHQ-9 score cut off of 5 for mild, 10 for moderate, 15 for moderately severe, and 20 for severe depression(86, 87). On the other hand, for criterion-based diagnosis, having a total of five or more symptoms (one or two DSM core symptoms and at least 3 additional symptoms) was used to determine the prevalence of the major depressive disorder.

To determine the prevalence of burnout, the total scores were summed to give the total burnout level. Then it was categorized using a cutoff score of 32. Scores above 32 indicate the risk of burnout(93). The severity of burnout risk was also assessed using the following scale: a score of

15 to 18 for no sign of burnout, score of 19 to 33 for little sign of burnout, score of 33 to 49 for risk of burnout, 50 to 59 for severe risk and 60 to 75 for very severe risk of burnout.

To assess the reliability of the Burnout self-test, we calculated the internal consistency coefficient, Cronbach's alpha.

Sociodemographic characteristics were categorized and recoded in the following manner: age as '18 to 24', '25 to 34' and 'above 35 years', marital status as 'single' , 'married' and 'divorced, widowed, separated'; number of children as '0' (no children), '2 or less' (1 and 2) and 'more than 2' (3 or more); levels of education as 'level three or lower' and 'level 4'; Certificate of competency (COC) certified as 'certified' and 'not certified'. Similarly, work related characteristics were categorized according to the following: years of service as 'less than five years', '5 to 10 years' and 'more than 10 years' and overall job satisfaction as 'dissatisfied' (very dissatisfied and moderately dissatisfied) and as 'satisfied' (very satisfied and moderately satisfied). For working hours per week, hours spent doing different activities as HEW over the week were summed and categorized into 'less than 40 hrs. per week' and 'more than 40 hrs. per week'.

To examine the strength and direction of the relationship between depression and burnout, Pearson correlation coefficient was calculated using total cores of PHQ and burnout self-test as continuous variables.

For logistic regression, diagnosis of depression was categorized into two using a cutoff point of 10 on PHQ-9 and a scores above 32 for the risk of burnout(93). Bivariate logistic regression was used to examine the unadjusted association of socio-demographics and work related characteristics of the study participants with depression and with burnout levels. The association between depression and burnout was examined using logistic regression. In that model depression (PHQ-9 score of 10+) was considered as the dependent variable and burnout as an independent variable. Socio-demographics and work related characteristics were considered as potential cofounding variables. Factors with P value of less than 0.25in the bivariate analysis were included in the multivariable logistic regression model to obtain adjusted effects of the variables on the odds of depression and burnout. Procedures to estimate prevalence, 95% confidence intervals, p-values and to run regression take into account the complex sampling design of the study and incorporated weights to consider the design effect and the imbalance in

sample size between the different settings. A p-value of less than 0.05 was used as an indication of statistical significance.

3.10. Data quality management

The quality of the source data was ensured using several methods such as using standard questions, pre-testing, translating and back translating the questionnaire into five local languages, using experienced data collectors, providing extensive training to the data collectors and supervisors, field level and office level checking of completeness of the collected data and conducting quality re-check after data collection. The data was cleaned and checked for consistency before used for analysis

3.11. Ethical Considerations

Ethical approval for the original study was granted from the Ethics Committee of the Ethiopian Public Health Institute. The ethical status of this specific study was evaluated and approved by the research ethics committee of the School of Public Health and Institutional Review Board of the College of Health Sciences, Addis Ababa University. Approval to access and analyze the data was obtained from MERQ consultancy. All HEWs were informed about the purpose of the main study and given the opportunity to ask questions before being invited to consent to participate. Only people who give verbal voluntary informed consent were included in the original study. The collected data was stored on a password-protected computer of MERQ consultancy.

3.12. Dissemination of Results

The findings of the study will be presented to the School of Public Health, College of Health Sciences, Addis Ababa University, as partial fulfillment of Master's Degree in General Public Health and will be disseminated in peer-reviewed journals. A copy of the thesis will also be submitted to MERQ consultancy and communicated to the Ministry of Health and other concerned organizations.

4. RESULT

4.1. Socio-demographic and work related characteristics

Background characteristics of study participants are summarized in table 1. A total of 584 rural HEWs were included in the study. The mean age of HEWs was 27.1 (SE= 0.27) years. Most of them were married (72.2%) and in the age range of 25-34 (72.5%). About three quarters of them (72.9%) were married after they started working as a HEW. The majority of the HEWs were not pregnant (92.5%) during the survey, 31.9% did not have children, and 16.0% hadat most two children.Almost half of the HEWs were Level 3 or lower (51.6%) and certified of COC (57.3%). Most of the HEWs (64.7%) live in the same kebele or woredawhere they work.

Regarding the work related characteristics of the participants, 75.0% of the HEWs had worked as a HEW for more than five years and the vast majority (86.0%) worked for less than 40 hours per week. Over half of the HEWs (56.8%) reported that they are satisfied with their job. Less than one quarter of the HEWs (21.3%) were looking for another job. Most HEWs used transportation services to get to their work place. On average HEWs took49 mins (SD= 48.94) to travel from their home to the health post.

Table 1: Socio-demographic characteristics of study participants

Characteristics		Number	Percent
Age	18-25	189	22.3
	25-34	361	72.5
	>35	34	5.2
	Mean ± linearized SE		27 (0.27)
Marital Status	Married	399	72.2
	Single	159	24.2
	Divorced/ widowed/separated	26.0	3.6
Married after or before started working as a HEW	Before	153	27.1
	After	246	72.9
Number of children	0	216	31.9
	≤2	271	52.1
	>2	97	16.0
Currently pregnant	Yes	56	7.5
	No	528	92.5
Level of Education as HEW	Level 3 or lower	345	51.6
	Level 4	239	48.4
COC	Certified	332	57.3
	Not certified	117	42.7

n=584HEW: Health Extension Worker, COC: Certificate of competency SE: Standard error

Table 2: Work related characteristics of study participants

Characteristics		Number	Percent
Means of transportation to work	By transportation	115	62.3
	On foot	75	37.7
Years of service as HEW	< 5 years	223	24.5
	5-10 years	189	32.5
	> 10 years	172	43.0
Working hours per week	Less than 40 hrs./ wk	519	86.0
	More than 40 hrs/wk	65	14.0
Intention to leave	Yes	115	21.3
	No	324	78.7
Overall Job satisfaction	Dissatisfied	243	43.2
	Satisfied	341	56.8

n=584 HEW: Health Extension Worker, COC: competency of certificate

4.2. Prevalence of depression

The prevalence of depression among HEWs varies depending on the cutoff score of the PHQ-9 used and the type of the diagnostic criteria used to define depression (Table 3). At PHQ9 cutoff score of 5, 43.1% (95%CI: 35.57, 50.96) of the HEWs had depression. Using PHQ-9cutoff score of 10: 16.5% (95%CI: 11.16, 23.84) of the HEWs had major depression. One hundred thirty eight (26.5%) participants had mild depression (PHQ-9; 5-9), 71 (13.4%) had moderate depression (PHQ-9; 10–14), 19 (2.5%) had moderately to severe depression (PHQ-9; 15–19), and 3 (0.7%) had severe depression (PHQ-9; 20–27) (Table 4)

Using the Algorithm based diagnostic criteria from DSM, 6.0% (95%CI: 3.09, 11.22) of the HEWs had major depression (Table 3).

Table 3: Prevalence of depression among HEWs working in rural Ethiopia using different diagnostic criteria

Diagnostic Criteria	Number (Weighted %) positive	95% CI
PHQ9 (5+)	231 (43.1)	(35.57, 50.96)
PHQ9 (10+)	93 (16.5)	(11.16, 23.84)
DSM 5	36 (6.0)	(3.09, 11.22)

PHQ: patient health questionnaire, DSM: Diagnostic and Statistical manual of mental disorders

Table 4: Severity of depression based on PHQ-9 scores among HEWs working in rural Ethiopia

Level of depression	Number (N)	Percent (%)
None (0-4)	353	56.9
Mild (5-9)	138	26.5
Moderate (10-14)	71	13.4
Moderately severe (15-19)	19	2.5
Severe (20-27)	3	0.7

The prevalence of depression in HEWs varies depending on the region they work in and their livelihood group. The magnitude of depression was higher among HEWs from Gambela region (36.7%) followed by Amhara (30.3%) and Tigray (21.0%) (Table5). Similarly, it was higher among those who work in agrarian setting than pastoralist setting, 17.5% (95% CI: (16.2, 23.9) vs6.8%(95% CI: (3.6, 11.3) respectively (Fig 3).

Table 5: Prevalence of major depression by region among HEWs working in rural Ethiopia

Region	Number (%) interviewed	Major depression (Scored 10+ on PHQ9)
		Yes N (%)
Oromia	123 (21.1)	15 (16.9)
Afar	19(3.3)	3 (19.9)
Harari	34 (5.8)	3 (10.4)
BenishangulGumuz	37 (6.3)	3 (8.5)
Gambela	42 (7.2)	15 (36.7)
Tigray	63 (10.8)	13 (21.0)
Somalia	75 (12.8)	5 (8.0)
Amhara	95 (16.3)	30 (30.3)
SNNP	96 (16.4)	6 (5.1)
Total	584 (100%)	93 (16.5)

N= 584 SNNP: Southern nation's nationalities and peoples' region

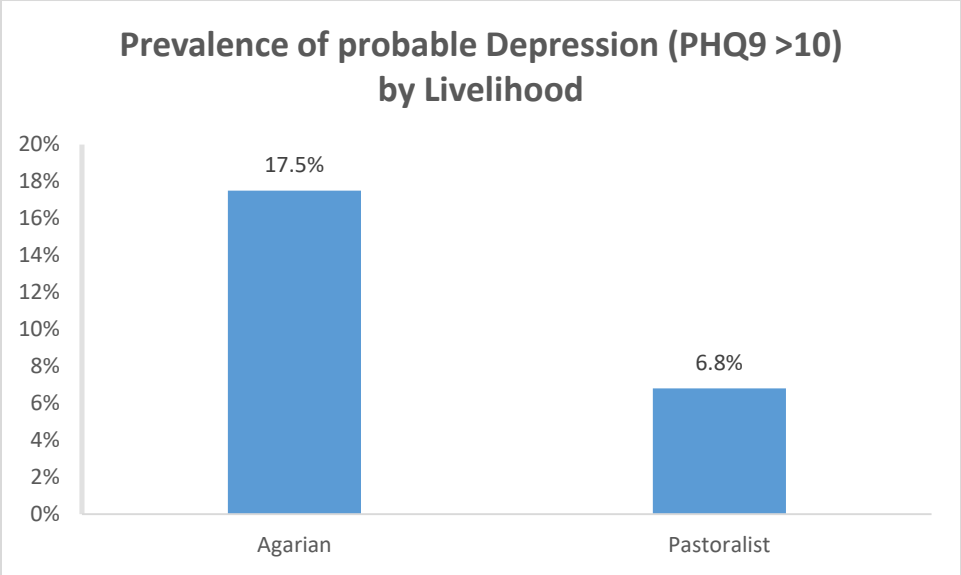

Fig 3: Prevalence of major depression by livelihood among HEWs working in rural Ethiopia

4.3. Prevalence of Burnout

In the present study, we computed the internal consistency of the Burnout self-test and found Cronbach's alpha to be0.92. This signifies that the instrument is a reliable tool to assess burnout.

Table 6 displays the prevalence of burnout risk. Overall prevalence of burnout risk among HEWs in rural Ethiopia is 39.8% (95% CI: 32.64, 47.49). About 44.7% of the HEWs from rural areas (227/584) had little sign of burnout, 35.5% (191/584) had risk of burnout, 4.4% (19/584) had severe risk and 0.4% (3/584) had very severe risk of burnout.

Table 6: Prevalence of burnout risk among HEWs working in rural Ethiopia

Level of Burnout risk	Number (Weighted %)	95% CI
No sign of burnout (15-18)	144 (15.5)	(9.65, 23.89)
Little sign of burnout (19-33)	227 (44.7)	(34.95, 54.84)
At risk of burnout (33-49)	191 (35.5)	(29.46, 41.07)
Severe risk of burnout (50-59)	19 (4.4)	(2.23, 8.44)
Very Severe risk of burnout (60-75)	3 (0.4)	(0.11, 1.51)

4.4. Relationship between depression and burnout

4.4.1. Result of Bivariate analysis

5.4.1.1 Factors associated with depression

The result of bivariate logistic regression which was conducted to assess the relationship between depression and burnout and other possible predicting variables is presented in Table 7. There was significant association between depression and burnout (P<0.001). Odds of having depression were about twelve times higher among those with burnout risk [COR: 12.14; 95% CI (5.43, 27.12); P< 0.001)]. According to the results of the correlation, which was conducted to examine the strength and direction of the relationship between depression and burnout, there was positive and moderate correlation between depression and burnout (r= 0.68, P<0.001) (Fig 4).

None of the sociodemographic or work related characteristics, however, were significantly associated with depression in the bivariate analysis. Although not significant, odds of having depression were higher among HEWs who have at least two children, are dissatisfied with their work and have more than 10 years of work experience. Odds of depression is 1.72 times higher among those who have at least two children compared to those who do not have children [COR: 1.72; 95% CI (0.94, 3.17); P: 0.08].Those who are dissatisfied with their job were nearly two times more likely to have depression [COR: 1.87; 95% CI (0.89, 3.89); P: 0.09]. Likewise, those

who have more than 10 years of work experience were more likely to have depression [COR: 1.99; 95% CI (0.88, 4.49); P: 0.09].

Table 7: Bivariate analysis for the relationship between depression, burnout and demographic factors among HEWs working in rural areas of Ethiopia (n=584)

Characteristics	Major depression (Scored 10+on PHQ9)		COR (95% CI)
	Yes N (%)	No N (%)	
Burnout risk			
No	16 (4.3)	355 (95.7)	1
Yes	77 (35.1)	136 (64.9)	**12.14 (5.43, 27.12)** *
Age			
18-24	18 (11.0)	171 (89.0)	1
25-34	69 (18.3)	292 (81.7)	1.80 (0.81, 4.01)
Above 35	6 (16.2)	28 (83.8)	1.56 (0.33, 7.30)
Marital Status			
Single	22 (15.8)	137 (84.2)	1
Married	66 (16.5)	333 (83.5)	1.05 (0.54, 2.06)
Divorced/ widowed/separated	5 (22.9)	21 (77.1)	1.58 (0.52, 4.84)
Number of children			
0	27 (12.4)	189 (87.6)	1
≤2	49 (19.6)	222 (80.4)	1.72 (0.94, 3.17)
>2	17 (14.8)	80 (85.2)	1.22 (0.39, 3.88)
Pregnant			
No	85 (17.1)	443 (82.9)	1
Yes	8 (10.3)	48 (89.7)	0.56 (0.16, 1.99)
Level of Education as HEW			
level 3 or lower	42 (16.4)	303 (83.6)	1
Level 4	51 (16.7)	188 (83.3)	1.02 (0.65, 1.61)
COC			
Certified	52 (18.0)	280 (82)	1
Not certified	41 (14.6)	211 (85.4)	0.78 (0.39, 1.54)
Years of service as HEW			
< 5 years	25 (11.2)	198 (88.8)	1
5-10 years	29 (15.9)	160 (84.1)	1.50 (0.62, 3.63)
> 10 years	39 (20.1)	133 (79.9)	1.99 (0.88, 4.49)
Working hours per week			
Less than 40 hrs./wk.	84 (15.6)	435 (84.4)	1
More than 40 hrs./wk.	9 (22.7)	56 (77.3)	1.59 (0.49, 5.20)
Overall Job satisfaction			
Dissatisfied	59 (21.5)	184 (78.5)	1.87 (0.89, 3.89)
Satisfied	34 (12.8)	307 (87.2)	1

Residence			
In the same kebele	60 (15.8)	334 (84.2)	1
In different kebele	33 (17.9)	157 (82.1)	1.16 (0.46, 2.89)

* Indicates the variables are significant (p <0.05), HEW: Health Extension Worker, COC: competency of certificate, COR: crude odds ratio PHQ: Patient health questionnaire

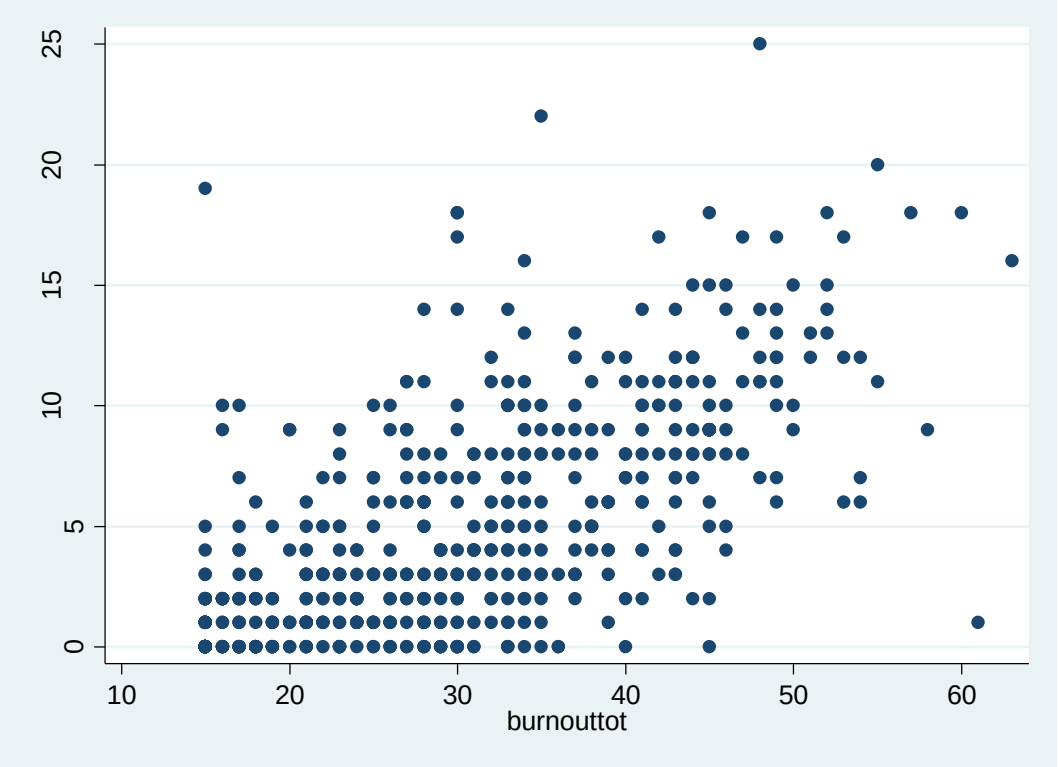

Fig 4: Scatter plot for the relationship between depression and burnout among HEWs working in rural Ethiopia (n=584)

5.4.1.2 Factors associated with burnout

Results of the bivariate logistic regression are displayed in Table 8. In the bivariate analysis, being pregnant at the time of the survey and years of service as a HEW were found to be significantly associated with the risk of burnout among rural HEWs. HEWs who were pregnant had about one third the odds of having burnout compared to those who were not pregnant [COR: 0.32: 95% CI (0.12, 0.86); P: 0.03]. The odds of having burnout risk was higher among those with more than 10 years of work experience [COR: 2.67; 95% CI (1.13, 6.41); P: 0.03].

Even though it is not statistically significant, those HEWs who are aged between 25 and 34, and are dissatisfied with their work were more likely to have burnout compared to their counterparts. Those who are dissatisfied by their job were 1.34 times more likely to have a risk of burnout

[COR: 1.34; 95% CI (0.81, 2.24); P: 0.25]. Likewise, the odds of having burnout risk is higher among those who are aged between 25 and 34 [COR: 2.33; 95% CI (0.98, 5.57); P: 0.06].

Table 8: Bivariate analysis for the relationship between burnout and demographic factors among HEWs working in rural areas of Ethiopia (n=584)

Characteristics	Burnout risk (Scored 32 or more)		
	Yes N (%)	No N (%)	COR (95% CI)
Age			
18-24	44 (25.4)	145 (74.6)	1
25-34	157 (44.3)	204 (55.7)	2.33 (0.98, 5.57)
Above 35	12 (395)	22 (60.5)	1.92 (0.72,5.07)
Marital Status			
Single	48 (38.7)	111 (61.3)	1
Married	153 (39.7)	246 (61.3)	1.04 (0.54, 1.99)
Divorced/ widowed/separated	12 (49.8)	14 (50.2)	1.57 (0.29, 8.54)
Number of children			
0	64 (37.2)	152 (62.8)	1
≤2	115 (42.8)	156 (57.2)	1.26 (0.66, 2.40)
>2	34 (35.4)	63 (64.6)	0.92 (0.49, 1.72)
Pregnant			
No	196 (41.6)	332 (58.4)	1
Yes	17 (18.4)	39 (81.6)	**0.32 (0.12, 0.86)** *
Level of Education as HEW			
Level 3 or lower	113 (38.8)	232 (61.2)	1
Level 4	100 (40.9)	139 (59.1)	1.09 (0.70, 1.69)
COC			
Certified	132 (39.7)	200 (60.3)	1
Not certified	81 (40)	171 (60)	1.01 (0.61, 1.68)
Years of service as HEW			
< 5 years	66 (25.9)	157 (74.1)	1
5-10 years	66 (39.2)	123 (60.8)	1.85 (0.80, 4.27)
> 10 years	81 (48.3)	91 (51.7)	**2.67 (1.12, 6.41)** *
Working hours per week			
Less than 40 hrs./ wk	186 (37.9)	333 (62.1)	1
More than 40 hrs/wk	27 (51.9)	38 (48.1)	1.77 (0.59, 5.29)
Overall Job satisfaction			
Dissatisfied	118 (43.9)	125 (56.1)	1.34 (0.81, 2.24)
Satisfied	95 (36.8)	246 (63.2)	1
Residence			
In the same kebele	139 (38.9)	255 (61.1)	1
In different kebele	74 (41.5)	116 (58.5)	1.11 (0.61, 2.05)

* Indicates the variables are significant (p <0.05), HEW: Health Extension Worker, COC: competency of certificate, Crude OR: crude odds ratio PHQ: Patient health questionnaire

5.4.2. Result of multivariable analysis

In the multivariable analysis, potential cofounding variables with a P value of less than 0.25in the bivariate analysis (with depression as well as with burnout) were included in the model to obtain adjusted effects of burnout on the odds of depression. Therefore, burnout risk, age, service year, number of children and overall job satisfaction were included in the final multivariable regression model. The multivariable logistic regression analysis showed that there was significant association between depression and burnout among HEWs in rural areas. The odds of having depression was about twelve times higher among those with burnout risk compared to those with no burnout risk [Adjusted OR: 11.88 (5.27, 26.80)]. However, none of the sociodemographic and work related characteristics were significantly associated with depression in the adjusted model (Table 9).

Table 9: Multivariable analysis for the relationship between depression, burnout and demographic factors among HEWs working in rural areas of Ethiopia (n=584)

Characteristics	Major depression (Scored 10+ on PHQ9)		Crude OR (95% CI)	Adjusted OR (95% CI)
	Yes N (%)	No N (%)		
Burnout risk				
No	16 (4.3)	355 (95.7)	1	1
Yes	77 (35.1)	136 (64.9)	**12.14 (5.43, 27.12)** *	**11.88 (5.27, 26.80)***
Age				
18-24	18 (11.0)	171 (89.0)	1	1
25-34	69 (18.3)	292 (81.7)	1.80 (0.81, 4.01)	0.75 (0.27, 2.06)
Above 35	6 (16.2)	28 (83.8)	1.56 (0.33, 7.30)	0.68 (0.08, 5.81)
Number of children				
0	27 (12.4)	189 (87.6)	1	1
≤2	49 (19.6)	222 (80.4)	1.72 (0.94, 3.17)	1.63 (0.69, 3.84)
>2	17 (14.8)	80 (85.2)	1.22 (0.39, 3.88)	1.37 (0.20, 6.76)
Years of service as HEW				
< 5 years	25 (11.2)	198 (88.8)	1	1
5-10 years	29 (15.9)	160 (84.1)	1.50 (0.62, 3.63)	1.12 (0.46, 2.70)
> 10 years	39 (20.1)	133 (79.9)	1.99 (0.88, 4.49)	1.27 (0.51, 3.19)
Overall Job satisfaction				
Dissatisfied	59 (21.5)	184 (78.5)	1.87 (0.89, 3.89)	2.17 (0.87, 5.43)

Satisfied	34 (12.8)	307 (87.2)	1	1

* Indicates the variables are significant (p <0.05), HEW: Health Extension Worker, Crude OR: crude odds ratio, Adjusted OR: adjusted odds ratio

Adjusted for burnout risk, age, service year, number of children and overall job satisfaction

5. DISCUSSION

This study assessed the magnitude of depression and burnout and their relationship among HEWs in rural Ethiopia. The findings show that depression and burnout are common among rural HEWs and depression is positively associated with burnout. However, no sociodemographic and work related characteristics were significantly associated with depression.

In this study, the magnitude of depression among rural HEWs in Ethiopia, defined as PHQ-9 >10, was 16.5%. This figure is higher than the prevalence of depression (9.1%) in the general population(11); however, it is lower than the prevalence of common mental disorders among WDA leaders (37%), one-to-five leaders (26%) and one-to-five members (22%) in rural Ethiopia (27). The difference could be because these community agents are not paid as well as CHWs, have low educational status and have an increased risk of facing stressful life events like food insecurity(27). Moreover, these two studies used different assessment tools (WHO Self-Reporting Questionnaire in WDAs study). The prevalence of depression in our study is also lower compared to other HCWs working in teaching hospital(22.9%) in Ethiopia(24), and PHC workers (20.6% at baseline) in Southern Ethiopia (26).In addition to a different study population who might experience different stressors, this could be because these studies used different screening instruments such as the Depression Anxiety Stress Scale 21 (DASS-21) questionnaire(24) and also lower (+5) cut-off point in PHQ-9 (26). The magnitude of depression in our study using 5+ cut-off (43.1%) is higher compared with the study in Southern Ethiopia (20.6%).The magnitude of depression in our study is lower than those studies conducted among CHWs in Iran (28.4% and 36.68%) (28, 29) and Brazil (43.3%) (30). The variation could be because the instrument they used (GHQ-12) assesses common mental disorder, not specifically depression. In addition, the type of work and settings of the countries is different from Ethiopia.

The prevalence of depression among HEWs in our study is consistent with findings from some studies conducted among HCWs in LMICs (31, 35, 39) . Studies conducted in Nigeria found a prevalence of 14.9% among health workers (31) and 17.3% among resident doctors (39). On the other hand, depression prevalence was reported as 20% among nurses at Sao Paulo, Brazil (35).On the contrary, the prevalence of depression found in our study is much lower compared

with the study conducted in Cameroon (62.2%) among nurses (33) and medical students (66.3%) (38).

Likewise, the depression prevalence in our study is lower compared to some studies conducted among nurses (30.7%) in the USA (36), among nurses (32.4%) in Australia (37), among medical professionals working in a tertiary care institute (32.4%) in India (32) and among physicians and nurses in China which was found to be 28.13% (40) and 38% (34), respectively. The difference in the observed magnitude of depression could be attributed to using lower (+4) cut-off point in PHQ-9(33, 38)and because of the difference in the nature of the work and the problems they are dealing with. Our study participants, HEWs, are different from other health professions. They mainly provide preventive services rather than curative services and have less contact with patients since they mostly deal with the community. They also don't have contact with patients with chronic illnesses unlike other HCWs.

Regarding the prevalence of burnout, there is substantial variation in previous studies conducted in Ethiopia, ranging from 3.8% to 36.7% (26, 51-54). The prevalence of burnout (39.8%) in our study is similar with the prevalence of burnout among HCWs working in a teaching hospital (36.7%) in southwest Ethiopia (51) and is almost within the range of a finding from a recent systematic review of burnout among HCWs in sub-Saharan Africa which ranges from 40 to 80% (55). On the contrary, it is much higher compared to the burnout rates among HCWs (3.8%) reported from a longitudinal study in Southern Ethiopia (26); variations in the study design might explain the difference. Similarly, the prevalence of burnout in our study is higher compared to studies conducted among HCWs working in a teaching hospital in northern Ethiopia(13.7%)(53), among CHWs in Iran(17%)(28), and in Brazil (24.1%) (30) and among nurses in the US (35.3%) (36). Our results may differ owing to the difference in type of scale used to measure the level of burnout, and difference in the working environment. Our participants are working more in the community thus are expected to walk long distances and have to deal with unbearable problems of clients. That is physically demanding and stressful.

Results of previous studies regarding the relationship between depression and burnout are non-conclusive. Some previous studies indicated that depression is a consequence of burnout (21, 26, 38, 56, 57)but others argue that the causual relationship is not clear(58). In this study burnout was positively and significantly associated with depression. This finding is consistent with a systematic review(21) and studies conducted elsewhere (26, 38, 56, 62, 82).A recent systematic

review and meta-analysis showed that there is an association between depression and burnout (21). Likewise, a longitudinal study from Southern Ethiopia that assessed depression as a predictor of burnout among PHC workers found a significant association between depression and burnout during the follow up period (26). Similarly, burnout was found to be an independent correlate of depression among medical students in Cameroon (38). A study among medical students in Oman also found a strong relationship between depression and burnout subscales. (56). Likewise, a cross-sectional survey of Australian midwives has also revealed that there is a significant correlation between burnout and depression (62). A cross-sectional survey among medical students in Ireland also indicated there is a strong correlation between the severity of burnout and depression (82). Similarly, a study in UAE among medical residents demonstrated that 83% of medical residents who had high scores for depression also reported burnout(63). A study among Austrian physicians found that the risk of major depression increases with the severity of burnout symptoms and burnout and depression are highly correlated(83). Likewise, prospective study among Finnish dentists showed that burnout predicted new cases of depressive symptoms and depression predicted new cases of burnout and thus indicated that there is reciprocity of the relationships between the two (84). Conversely, our findings are different from a longitudinal study completed among French school teachers (n=627) which failed to find an association between depression and burnout. The authors suggested that burnout did not predict major depression and they proposed that burnout is not a phase in the development of depression. The variation might be due to difference in the study population (teachers versus CHWs) and study design. They used a longitudinal design but our study is cross-sectional(58).

The present study found that burnout is a significant and positive predictor of depression and supported the findings of other studies. This could be attributed to various explanations. Depression and burnout share some common symptoms such as fatigue; hopelessness and frustration(58). They also share a common biological basis. It has been postulated that DNA methylation might act as a biomarker of stress-related mental disorders, such as depression, burnout and chronic stress. These might partly explain the relationship between the two conditions(94). All of our study participants are women. Being female is commonly implicated in the development of depression (24, 35, 68) and burnout (15, 55). This could also partly explain the result in our study.

Previous findings relating tothe overlap betweendepression and burnout arealso mixed. Some argue that there is an overlap between depression and burnout (59, 83). A study conducted in France found that participants with depression and burnout shared several symptoms and thus suggested that they are not separate entities. On the contrary, others believe that burnout and depression are two separate constructs (23, 44, 45). Our study also indicated that there is moderate correlation between depression and burnout (r= 0.68) and thus suggested that depression and burnout are similar but separate constructs. They are distinct conceptually. That is; burnout occurs due to stresses related to work whereas depression occurs due to stresses which occur in every aspect of the individual's life (not just work related).

In this study, none of the sociodemographic and work related characteristics we considered were significantly associated with depression among HEWs in rural areas. However, previous studies have found that various socio-demographic and work-related factors predict depression among HCWs.

Our study demonstrated that HEWs working in rural Ethiopia suffered considerably high depression and burnout levels. This could be because their work is more physically demanding and have several stresses. Additionally, most HEWs have lower levels of education than other HCWs. In Ethiopia, the majority of HEWs are female and this could contribute to the relatively high prevalence of depression and burnout in this study. The impact of higher levels of depression and burnout may not only be on the HEWs but, also it may also have a negative impact on the quality and quantity of the service they provide. Thus, adequate attention should be given to their overall wellbeing. Considerations of interventions that could improve their wellbeing are required. Interventions at individual and organization level have been shown to reduce burnout among HCWs (95). Routine screening may help with early detection and management of depression and burnout.

6. STRENGTHS AND LIMITATIONS

7.1. Strengths

To our knowledge, this is the first comprehensive assessment of depression and burnout among HEWs working in rural Ethiopia at a national level. The instrument used to assess depression is reliable and is validated in our setting. We have also used weights and taken in to account the complex sampling design during analysis to lower the risk of random error that arises due to clustering.

7.2. Limitations

The generalizability of the present study should be considered with its limitations. Firstly, the study was a cross-sectional study which didn't allow us to make statements about causality and temporality of depression and burnout. Secondly, the instrument used to assess burnout, burnout self-test, is not validated in our setting. However, the instrument has shown good internal consistency among our study participants. Cronbach's alpha among HEWs from rural Ethiopia was 0.92. The other limitation of this study was unavailability of information, as it is a secondary data analysis of a larger study, the 2019 national assessment of HEP. Thus, a more comprehensive assessment of work related and sociodemographic characteristics (such as work place violence, relationship with colleagues, job stress and social support), which may be considered as predictors of depression and burnout, may be beneficial.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1. Conclusions

In conclusion, the findings of the present study demonstrated that depression and burnout are considerably high among HEWs working in rural Ethiopia. Furthermore, this study showed that burnout is a significant predictor of depression. The odds of depression is higher among those with burnout risk compared to those with no burnout. Other work related and sociodemographic characteristics did not predict depression in the current study.

7.2. Recommendations

We have recommended the following based on the findings of our study

- The considerable rate of depression and burnout among HEWs warrants concern and requires interventions. Mental health of HEWs may have an impact on the individual as well as on the quality and quantity of the service they provide. Thus, strategies to reduce depression and burnout level and thus improve their wellbeing should be in place.
- Future longitudinal studies should be conducted to confirm direction of the relationship between depression and burnout and whether there is an overlap between the two constructs.
- Further studies are needed to explore the impact of depression and burnout on work performance and the quality of the service.
- Routine screening of HEWs for depression and burnout may help to detect and treat the conditions early.

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ANNEXES

I: Original study information sheet and consent (English)

Introduction

Hello. My name is _____. I am working for MERQ Consultancy PLC, a consultancy firm currently contracted by the Federal Ministry of Health and Melinda and Bill Gates Foundation to conduct a national assessment of the Health Extension Program.

Objective

The assessment intends to generate evidences that the health sector can use to further improve the implementation and effectiveness of the Health Extension Program.

How you are selected

You are selected to be part of the study through a random sampling process. It is completely by chance that you are included in the study.

Benefits

There will be no direct personal benefit that you will obtain because of your participation in this survey. However, the information we obtain from this survey will help Ministry of Health and other organizations to design and implement interventions that can improve the health extension program which will indirectly benefit all families in your area and the country.

Content and time

This interview will include questions about services you might have received from the HEP. We will have specific questions about the health of mothers and children, hygiene and sanitation, prevention of common diseases.

How long will it take?

The questions usually take about ____minutes. All of the answers you give will be confidential and will not be shared with anyone other than members of our survey team.

Confidentiality

We will not keep your name or other personal identifier linked to the information you share with us. Whatever information you provide will also be kept strictly confidential. Participation in this survey is completely voluntary. You can choose not to answer all or any specific question.

voluntary participation

If you have questions or points of clarifications, you can ask me at any time. You may also stop participation at any time if you feel discomfort or unhappy by the process. However, we hope that you will participate fully in this survey since your experiences and advices are important for the study.

Do you have any questions about the survey before we proceed to the interview? Please let me know if anything I have stated is not clear; I will be happy to explain it further to ensure you understand.

Contact
In case you need more information about the survey, you may contact the PI of the study, Dr. Alula Meressa by calling him @ 0935409495
Can I proceed to the interview now?

Yes ---------- Proceed to the interview

No ---------- Stop

Name of Interviewer: _____ _____

Signature of the interviewer: _____ Date: _____

II. Original study information sheet and consent (Amharic)
ቃለመጠይቅለሚደረግላት/ለት (ቤተሰብ) ቅጹንያንብቡ።

መግቢያ

ጤናይስጥልኝስሜ _____ይባላል::ከ
MERQአማካሪድርጅትየመጣሁመረጃሰብሳቢነኝ።
ጥናቱበአገርአቀፍደረጃየጤናኤክስቴንሽንፕሮግራምላይያተኮረሲሆንበፌዴራልጤናጥበቃሚኒስቴርእናበሚሊን ዳእናቢልጌትስፋውንዴሽንአማካይነትየሚከናወንነዉ።
የጥናቱዓላማ

የጥናቱዓላማየጤናውዘርፍየጤናኤክስቴንሽንመርሃግብርአፈፃፀምናውጤታማነትንለማሻሻልየሚረዳማስረጃን ማቅረብነው።

እርስዎእንዴትተመረጡ

እርስዎተሳታፎዎችንየመለያዘዴንበመጠቀምየጥናቱአካልእንዲሆኑተመርጠዋል።

በጥናቱውስጥየተካተቱትሙሉበሙሉበአጋጣሚነው።

በጥናቱየመሳተፍጥቅም

እርስዎበዚህጥናትተሳታፊበመሆንዎበቀጥታየሚያገኙትምንምአይነትጥቅምአይኖርም።

ይሁንእንጂበዚህጥናትየሚገኘዉመረጃየጤናጥበቃሚኒስቴርእናሌሎችድርጅቶችየጤናኤክስቴንሽንፕሮግራም ለማሻሻልእንዲሁምበአካባቢያችሁእናበአገርአቀፍደረጃያሉቤተሰቦችንበተዘዋዋሪእንዲጠቀሙበትለማድረግያ ግዛል። በዚህጥናትተሳታፊበመሆኖዎምንምዓይነትማበረታቻወይምክፍያአይሰጠዎትም፡

የጥናቱይዘት

ይህቃለመጠይቅበጤናኤክስቴንሽንመርሀግብርሊሰጡይችሉየነበሩአገልግሎቶችንያካትታል።

በተለይምእናቶችእናህጻናትጤና፣ የአካባቢእናየግልንጽህናአጠባበቅ፣

እንዲሁምየተለመዱበሽታዎችመከላከልላይያተኮሩጥያቄዎችይዳሰሳሉ።

የሚወስደዉጊዜ

ቃለመጠይቁበአማካኝ ከ 45 -60 ደቂቃዎችንይወስዳል።

የሚሰጧቸውሁሉምመልሶችሚስጥርነታቸዉየሚጠበቅናከጥናቱቡድንአባላትውጭለማንምሰውእንደማይተላ ላፍአረጋግጥለወታለሁ።

ሚስጥራዊነት

ለኛከሚያጋሩንመረጃጋርበተያያዘስምዎንወይምሌላየግልመለያዎንአናስቀምጥም።

ማንኛውንየሚሰጡትምላሽሚስጥራዊነቱየተጠበቀይሆናል፣

በዚህጥናትለመሳተፍየእርሰወፈቃደኝነትያስፈልጋል፣

ሁሉንምወይምየተወሰኑጥያቄወችንአለመመለስከፈለጉአይገደዱም።

በፍቃደኝነትላይየተመሰረተተሳትፎ

ጥያቄዎችወይምየማብራሪያየሚያስፈልጋቸዉነጥቦችካለዎትበማንኛውምጊዜሊጠይቁይችላሉ።

እንዲሁምሂደቱካልተመቸዎወይምደስተኛካልሆኑተሳትፎዎትንበማንኛውምጊዜማቋረጥይችላሉ፣

ሆኖምግንየእርስዎልምዶችእናጠቃሚምክሮችለጥናቱአስፈላጊእንደመሆናቸዉመጠንበዚህጥናትሙሉተሳትፎ እንደሚኖርዎትተስፋእናደርጋለን።

ወደቃለመጠይቁከመሄዳችንበፊትጥናቱንበተመለከተጥያቄአለዎት?

እስካሁንከተነጋገርነዉግልጽያልሆነነገርካለአሳውቁኝበትክክልእስከምትረዱትድረስየበለጠማብራሪያለመስጠት ደስተኛነኝ።

ተጨማሪ መረጃ ለማግኘት የሚጠቀሙት አድራሻ

ስለጥናቱተጨማሪመረጃካስፈለገዎትየጥናትአድራጊቡድንተጠሪዉንዶ/ርአሉላመሬሳበስልክቁጥር0935409495 በመደወልማግኝትይችላሉ።

እንደጥናትተሳታፊስለመሆንዎጥያቄዎችካለዎትከ2:00-11:00

ባለውየስራሰዓትለኢትዮጵያሕብረተሰብጤናኢንስቲትዩትበስልክቁጥር+251_____

በመደወልይህንጥናትያፀደቀውንየስነምግባርኮሚቴማግኘትይችላሉ።

በጥናቱለመሳተፍፈቃደኛነዎት?

አዎ_____ወደቃለ-መጠይቁይለፉ

አይደለሁም _____ቃለ-መጠይቁንያቁሙ

የመረጃሰብሳቢስም _____

ፊርማ _____ቀን _____ሰዓት _____

III. Copy of Ethical Approval letter for the original study

የኢትዮጵያ የሕብረተሰብ ጤና ኢንስቲትዩት
Ethiopian Public Health Institute
አዲስ አበባ-ኢትዮጵያ Addis Ababa, Ethiopia

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ቁጥር EPHI 1613/320
Ref. No
ቀን 15 FEB 2019
Date

Institutional Review Board (EPHI-IRB)

Certificate of Protocol Approval

EPHI-IRB Meeting No. *037*

Protocol number: *EPHI-IRB-151-2018*

Protocol Title: *Status, determinants, and prospect of the Health Extension Program in Ethiopia: A comprehensive assessment to inform programmatic and policy decisions*	
Principal Investigator	*Alula Teklu*
Institute	*Merq Consultancy PLC*
Study site/s	*Ethiopia*
Type of Review	✔ Full-Board ☐ *Expedited*
Decision of the meeting	✔ *Approved* ☐ Approved with Recommendation

I. Elements approved- 1. Protocol Version No. *Ver 001*
2. Protocol Version Date: *02 Feb 2019*

II. Obligations of the PI-
1. Should comply with the standard international & national scientific and ethical guidelines
2. All amendments and changes made in protocol and consent form needs IRB approval
3. The PI should report SAE within 10 days of the event
4. End of the study, including technical reports, thesis works and manuscripts should be reported to the IRB

III. Details of recommendation (if approved with recommendation) _____
Institution Review Board (IRB) Approval date: *02 Feb 2019*
Approval period: from *02 Feb 2019 to 01 Feb 2020*
Follow up report expected in: 3 Months ____ *6 Months* ✔ ____ 9 Months____ One year____

Chairperson, IRB
Signature _____
Date Feb 14, 2019

The Federal Democratic Republic of Ethiopia Ethiopian Public Health Institute

Director General
Signature _____
Date _____
Ebba Abate (DVM)
Director General

IV. Questionnaire

	Section 1: Interview Details	
No	Questions	Response
101	Interview date (dd/mm/yy)	
102	Name of Health Post	
103	Health post code	
104	Data collector ID	
105	Participant ID	
106	Region	
107	Zone	
108	Woreda	
109	Kebele	

	Section 2: Socio-demographic and work related information		
201	Age	_____Years	
202	Marital status (What is your current marital status?	Currently Married	1
		Never married	2
		Divorced	3
		widowed	4
		Separated	5
203	Did you get married after or before you start working as a HEW?	Before	1
		After	2
204	What is the occupation of your husband?	Teacher	1
		Agriculture development worker	2
		Health worker	3
		Other government employee	4
		Kebele Administrator	5
		Farmer	6
		Merchant	7
		Other (Specify) _____	8
205	Do you have children?	Yes	1
		No	2
206	If yes, How many children do you have?	_____ children	
207	How many of your children live with you?	_____ children	
208	Are you currently pregnant?	Yes	1
		No	2
209	What is your level of education as a HEW?	Level 1 or 2	1
		Level 3	2

		Level 4	3
210	Have you taken COC for your highest level of training as HEW?	Yes – Certified	1
		Yes - Not certified	2
		No	3
211	Where do you live?	In this kebele	1
		In nearby town	2
		Other (Specify) _____	3
212	How do you travel from your home to the health post?	Public transport	1
		On foot	2
		Other (Specify) _____	3
213	How long (on the average) does it take you to travel from your home to the health post?	_____ minutes	
214	If public transport, how much do you pay for one way trip?	_____ birr	
215	How many years have you served as HEW? (Completed Years)	_____ years	
216	How many years have you worked in this HP? (Completed Years)	_____ years	
217	Are you the head of the Health Post?	Yes	1
		No	2
218	Are you grown up in this same kebele?	Yes	1
		No	2
219	Are you grown up in this same Woreda?	Yes	1
		No	2
220	Are you grown up in this same Region?	Yes	1
		No	2

Section 3: Depression (PHQ-9)

Over the past **two weeks,** how often have you been bothered by any of the following problems? Rate this as "not at all", "sometimes", "most of the time", and "nearly every day".

301	Little interest or pleasure in doing things	Not at all	1
		Sometimes	2
		Most of the days	3
		Nearly every day	4
302	Feeling down, depressed or hopeless	Not at all	1
		Sometimes	2
		Most of the days	3
		Nearly every day	4

303	Trouble falling asleep, staying asleep, or sleeping too much	Not at all	1
		Sometimes	2
		Most of the days	3
		Nearly every day	4
304	Feeling tired or having little energy	Not at all	1
		Sometimes	2
		Most of the days	3
		Nearly every day	4
305	Poor appetite or overeating	Not at all	1
		Sometimes	2
		Most of the days	3
		Nearly every day	4
306	Feeling bad about yourself or that you are failure or have let yourself or your family down	Not at all	1
		Sometimes	2
		Most of the days	3
		Nearly every day	4
307	Trouble concentration on things, such as reading newspapers or watching television	Not at all	1
		Sometimes	2
		Most of the days	3
		Nearly every day	4
308	Moving or speaking so slowly that other people could have noticed or the opposite being so fidgety or restless that you have been moving around a lot more than usual.	Not at all	1
		Sometimes	2
		Most of the days	3
		Nearly every day	4
309	Thought that you would be better off dead or of hurting yourself in some way.	Not at all	1
		Sometimes	2
		Most of the days	3
		Nearly every day	4
310	If you have been bothered by any of the nine problems listed above please answer the following. How difficult have these problem made it for you to do your work, take care of things at home or get along with other people.	No difficult at all	1
		Somewhat difficult	2
		Very difficult	3
		Extremely difficult	4
311		Total Score	_____

Section 4: Burnout Self-Test In your experience**,** how often have you been bothered by any of the following problems? Rate this as "not at all", "rarely", "sometimes", "often", and "very often".			
401	Feeling run down and drained of physical or emotional energy.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5

402	Having negative thoughts about your job.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
403	Being harder and less sympathetic with people than perhaps they deserve.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
404	Being easily irritated by small problems, or by your co-workers and team.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
405	Feeling misunderstood or unappreciated by my co-workers.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
406	Feeling that you have no one to talk to.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
407	Feeling that you are achieving less than what you think you should.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
408	Feeling an unpleasant level of pressure to succeed.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
409	Feeling that you are not getting what you want out of your job.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
410	Feeling that you are in the wrong organization or the wrong profession.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5

411	Frustrating with parts of your job.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
412	Feeling that organizational politics or bureaucracy frustrates your ability to do a good job.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
413	Feeling that there is more work to do than you practically have the ability to do.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
414	Feeling that you do not have time to do many of the things that are important to doing a good quality job.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
415	Finding out that you do not have time to plan as much as you would like to.	Not at all	1
		Rarely	2
		Sometimes	3
		Often	4
		Very often	5
416		Total Score	_____

	Section 5: Your activities as a HEW and opinion about the HEP During the last one week, how many working hours have you spent on the following activities? Record "00" if she didn't do that activity during the week	
501	Providing services at HP	_____ hours
502	Home visit	_____ hours
503	Outreach services	_____ hours
504	Meetings in the Kebele	_____ hours
505	Meetings outside of the Kebele	_____ hours
506	Attending training	_____ hours
507	Other activities (Specify)	_____ hours
508	Leave (sick leave or for other reason)	_____ hours
509	Kebele level activities other than HEP (non-health)	_____ hours

510	Have you ever participated in Kebele level activities that are not related to the HEP? How often are you involved in such activities?	Yes - very often	1
		Yes – sometimes	2
		Yes – rarely	3
		Never	4
511	Overall, would you consider your involvement in those non-HEP activities as having a net positive or negative impact on the performance of the HP?	Positive impact	1
		Negative impact	2
		No impact/ balanced	3
		Both positive and negative	4
512	How well do you think is the HEP achieving its goal? Is it very well, well, bad, or very bad?	Very well	1
		Well	2
		Bad	3
		Very bad	4
512	From your observation as a HEW, would you consider the health of people in your catchment area improving or deteriorating	Improving satisfactorily	1
		Improving but not adequate	2
		Not improving	3
		Deteriorating	4
		I don't know	5

	Section 6: Intention to leave and Job satisfaction		
601	How many more years are you considering to work as a HEW? (in completed years)	_____ Years	
		lifetime	88
		Not decided	99
602	Are you currently looking for another job?	Yes	1
		No	2
603	What is your primary reason to consider leaving your current job?	Low salary	1
		Want to live in bigger towns/cities	2
		Family related issues	3
		Hate the job	4
		No carrier structure of HEPs	5
		Heavy burden/ work load	6
		Fear of insecurity	7
		Other (specify) _____ _____	8

	Next, I want you to ask yourself first whether you are satisfied or not with a specific aspect of your job. Once you decide whether you are satisfied or not, I also want you to rate your level of satisfaction or dissatisfaction as: Very dissatisfied Moderately dissatisfied Moderately satisfied Very satisfied

	To what extent are you satisfied by the following characteristics of your job/workplace/managers…	**Dissatisfied**		**Satisfied**		**Not applicable**
		1 Very Dissatisfied	**2 Moderately Dissatisfied**	**3 Moderately Satisfied**	**4 Very Satisfied**	
	Leadership relationship					
604	By the level of administration support	1	2	3	4	99
605	By the level of Recognition of your work from supervision	1	2	3	4	99
	Promotion			3	4	99
606	By the level of support for continuing education	1	2	3	4	99
607	By the level of opportunity for professional growth	1	2	3	4	99
608	By The level of support for Personal growth and development through education and training	1	2	3	4	99
	Autonomy			3	4	99
609	By the level of support for you to make autonomous work decision	1	2	3	4	99
610	By the level of support to be fully accountable for those decisions	1	2	3	4	99
611	By the chance to work alone on the job	1	2	3	4	99
612	By the freedom to use your own judgment	1	2	3	4	99
	Work environment and cohesion			3	4	99
613	By the extent to which the working environment allows you to make autonomous work decision	1	2	3	4	99
614	By the extent to which the working environment allows you to be fully accountable for those decision	1	2	3	4	99
615	By the extent to which the working environment encourages you to make adjustment in your practice to suit community needs	1	2	3	4	99
616	By the level of the working environment to provide a stimulating intellectual environment	1	2	3	4	99
617	By the level of the working	1	2	3	4	99

	environment to provide you high level of c competence on your work					
618	By the extent to which the working environment allows opportunity to you to expand your scope of practice	1	2	3	4	99
619	By the level of relationship among staffs in your facility	1	2	3	4	99
620	By the extent to which Group members positively influences one another	1	2	3	4	99
621	By the level of relationship with colleagues in your facility	1	2	3	4	99
	Professional training			3	4	99
622	By the level of training opportunities available to you	1	2	3	4	99
623	By the level of Training program appropriateness to provide information to enhance your job performance	1	2	3	4	99
624	By the level of training and orientation to new staffs	1	2	3	4	99
625	By the level of opportunity to participate in research	1	2	3	4	99
	Job security and salary			3	4	99
626	By the level of appropriateness of your salary as compensation for your employment	1	2	3	4	99
627	By the level of appropriateness for Employee benefits	1	2	3	4	99
628	By the level of payment in relation to what it cost to live in this area	1	2	3	4	99
629	For the job I do, I feel that the amount of money I make is not sufficient.	1	2	3	4	99
	Recognition at work			3	4	99
630	By the extent of sense of value for what you do	1	2	3	4	99
631	By the level of consideration given to your personal needs	1	2	3	4	99
632	By the level of consideration given to your opinion and suggestion for change in the work setting or office practice	1	2	3	4	99
633	By the level of recognition of your work from peers	1	2	3	4	99
	Perceived alternative employment opportunities			3	4	99
634	By the level of job opportunity,i.e. if you quite your current job, the chance that you would be able to find new job which is as good as or better than my present one.	1	2	3	4	99

635	Given your age, education and the general economic condition, the chance of attaining suitable position in some other organizations	1	2	3	4	99
636	By the possibility that it would be easy to find acceptable alternative employment	1	2	3	4	99
637	At this time, how satisfied are you in general as a HEW? Are you satisfied or dissatisfied? To what extent are you satisfied or dissatisfied?	1	2	3	4	99

Section 7: Self-Evaluation of the performance of HEW (day to day activity)

S/N	Item	Low				High	NA
		1 Very low	2 Low	3 Moderate	4 High	5 Very high	
701	How productive are you on your typical day?						
702	Do you feel you are as productive as you could/should be?						
703	How productive are your colleague HEPs on a typical day?						
704	Do you feel your colleague HEPs are as productive as they could/should be?						
705	Do you complete your TO DO list by the end of each day?						
706	Do you often think, 'how do I get more out of my time'?						
707	How much do you feel you need more staff to get through your current workload?						
708	How effective would you say you are at leading staff for high performance						
709	How energetic would you say you are at the end of each day?						
710	How energetic are your team members?						
711	How positive are your team members?						

Thank you for your time and ideas

Name of Interviwer: _____ Signature: _____

Name of supervisor: _____ Signature: _____

DECLARATION

I, the undersigned, declare that this is my original work and has not been presented in this or any other university, and all the resource and materials used for this thesis have been fully acknowledged as references.

Name: ____RahelBirhane____

Signature: _____

Date: _____

This thesis work has been submitted for examination with my approval as university advisor.

Advisor: __Dr. NegussieDeyessa___

Signature: _____

Date: _____