

Mothers' work, family roles and self-reported health in peri-urban Ghana and Ethiopia

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Abstract

We test the associations between peri-urban mothers' paid work and reported health in Asawase, Ghana and Sebeta, Ethiopia using data from the Family Health and Wealth Study. The analytic sample is 608 and 667 mothers in Asawase and Sebeta respectively, aged 15 to 49. Dependent measures are self-rated health (SRH), self-reported health problems (SRHP), and chronic disease (CD) status. Independent variables include work/remuneration status. Bivariate and multivariate analyses are presented. Our results showed that in Asawase and Sebeta respectively, 88.3% and 80.1% of mothers had no CD; 88.3% and 91.9% reported very good/good health; 73.4% and 55.5% had no health problems. Ethiopian mothers remunerated for their work other than by cash alone reported better health, on all three outcomes compared with their non-working counterparts [CD-AOR (95%CI): 1.98(1.18-3.33); SRH: 3.49(1.39-8.80); SRHP: 1.40(1.04-1.88)]. Findings from Ghana were not as clear. Investigation of women's multiple family roles is warranted to understand pathways to better health.

Keywords: self-rated health; self-reported health problems; chronic disease; mother's work; family roles

Introduction

The health of working mothers is an understudied family and population development issue for sub-Saharan Africa (SSA), yet female labor force participation is substantial and growing in the region (World Bank, 2016). Mothers in many sub-Saharan African settings are said to bear a disproportionate burden of work due to the gendered roles ascribed to them by their communities, whereby they work outside the home, but are still expected to take full responsibility for household chores, cooking and childcare (Avotri & Walters, 1999). In many sub-Saharan African settings, however, women enjoy social capital benefits within their communities (von Jacobi, 2014), and many are able to delegate childcare to older siblings and relatives (Clark, 1999).

Women's labor force participation can boost prospects for regional demographic dividends but knowledge of how women's employment, including the compensation for the work they do, their childrearing and marital roles, and their self-reported health are related is limited. Women who are

employed outside the home in many cultures, including SSA are expected to be able to perform their family roles to the same extent as their counterparts who do not work outside the home (Avotri & Walters, 1999). However, these working women are not always adequately compensated for the work they do outside the home, and this may affect the way they perceive their own health.

Furthermore, childbearing costs can influence mothers' health status. Evidence from the West suggests that having multiple stressors, including employment, marriage, and raising children, can contribute to a diminished health status (Bernstein, 2001; Grice et al., 2007). Such evidence has also been demonstrated in sub-Saharan African contexts. In a study conducted in Botswana, it was reported that having a "positive community environment" shaped perception of health, but a negative relationship was observed between social capital and physical health (Modie-Moroka, 2009). Another study by the same researcher suggested that having social capital buffered the effects of chronic life stressors (including

general problems, work, marriage and relationships, parenting, family, social health, residence, health) on quality of life, but not on physical health outcomes (Modie-Moroka, 2009).

As urban and peri-urban families in sub-Saharan Africa adopt similar lifestyle choices of both parents working outside the home and relying on caretakers to raise young children, there can be positive and negative consequences for mothers' health status. One of such lifestyle choices is sedentary living. A study of the factors associated with sedentary behavior and physical inactivity in Uganda demonstrated that being female, living in a peri-urban area, being employed or working domestically were associated with sedentary behavior, a known risk factor for noncommunicable diseases (Kirunda et al. 2016).

To better understand the relationship between women's labor force participation, their roles as mothers within their homes, and their self-reported health within a peri-urban context, this study asked the following research questions: (1) How are mothers who work outside the home compensated for the work that they do? (2) Is there an association between labor force participation and self-reported health outcomes of mothers in peri-urban settings? (3) Does this association remain after adjusting for mothers' roles within the household and their commitment to their marriage?

Literature review and theoretical framework

Evidence about the effect of women's work on health varies by context in low- and middle-income settings. A Brazilian cohort study examined gender differences in the association between work-family conflict and health, and found that women experienced more work-family conflict than men, and that this conflict was detrimental to self-rated health (Griep et al., 2015). In a cross-sectional study from Tehran, Iran, no difference was found between the health status of working and non-working mothers (Ahmad-Nia, 2002). However, because these studies were conducted in different regional, cultural, and economic contexts than those of Ghana and Ethiopia, it cannot be assumed that the results will be the same.

In the sub-Saharan African context, a qualitative study from Ghana suggested that women were primarily concerned with psychosocial health problems, and these problems were exacerbated by gender roles and heavy workloads (Avotri and Walters, 1999). A panel study in Ghana observed whether or not having children affected working women's health and found that working women who had a child born during the study period had no

change in health status as compared to working women who did not bear a child during that period (Waterhouse, Hill & Hinde, 2016). While relevant to this field of women's health and family roles, this study examines only the effect of childbearing, and not the effect of working on women's health, given that all women enrolled in the study worked outside the home.

Sociological and demographic research of families in the West have identified structural incompatibilities among women's familial roles as sources of stress. For instance, a review of research on household labor in American families in the 1990s suggested that where women worked for many hours outside the home, they spent fewer hours doing household chores and providing informal care because they received support for these other roles from their husbands (Coltrane, 2000). Furthermore, the Australian Longitudinal Study on Women's Health demonstrated that women who had chronic disorders such as diabetes, asthma, depression, and arthritis were less likely to participate in the labor force beyond middle age, after taking into account competing interests within the home (Majeed et al., 2015). This finding corroborates what has been described as the 'healthy worker effect' where healthy people are more likely to be employed when compared with their counterparts who have underlying disease (Shah, 2009; Wen and Tsai, 1982).

On the flip side of the coin is the recognition that poor health has economic impacts on women. With prolonged periods of poor health, mothers are kept away from work outside the home, thus preventing them from climbing the economic ladder (Ehrhardt et al., 2009). This may be associated with poor psychological health, a factor reported to be captured in response to questions on self-rated health in surveys (Lee, 2014). Furthermore, psychological health has also been shown to be associated with employment, with women reporting moderate or severe psychological distress having greater odds of being unemployed (Canavan et al. 2013).

One cannot discuss the relationship between health and work without acknowledging the endogeneity of the two. Women may be unable to work outside of the home due to poor health (Canavan et al. 2013), while participation in the workforce and the addition of stressors to mothers' roles may affect health outcomes as well (Bernstein, 2001; Grice et al., 2007). This relationship will likely not be disentangled using cross-sectional studies. As such, associations, rather than causal pathways, can be examined here.

As female roles continue to evolve and sub-Saharan African economies strive to expand rapidly

into global markets, understanding the determinants of the health of working mothers will be crucial. Their labor productivity and financial management of earnings substantially contribute to economic growth and higher standards of living (OECD, 2012). Their persistent responsibilities as family caretakers and nurturing mothers can also have profound consequences on the health of future generations (Oppong, 2001). Furthermore, the effect of a mother's fertility on her labor force participation is influenced by contextual factors at the individual, community and policy levels (Jah, 2014).

Theoretical framework

This study tested the associations between peri-urban mothers' paid work status and self-reported health in Asawase, Ghana and Sebeta, Ethiopia, adjusting for selected household, partner, maternal and individual factors. Three positive health outcomes were studied—reported absence of any chronic disease, self-reported good or very good health and absence of any health problems. The study draws from the inter-role buffering effect whereby positive roles (such as motherhood can buffer the stressful effects of a different role (such as an unrewarding job) and thus limit the detrimental effects this may have on a mother's health (Barnett & Marshall, 1992; Lanza Di Scalea, 2012). The study also draws from the Maintenance Model Theory wherein individuals who consider a role to be important are more likely than those who do not to be committed to the role, even in the presence of high stress (Lydon & Zanna, 1990).

This study tested whether women who worked outside the home and received compensation for their work, however this was defined, differed in their self-reported health status from women who did not work outside the home. In the peri-urban contexts studied, when women work outside the home, they often would have received some formal education, as this is known to increase their prospects of employment in the labour force. However, despite their education and work roles, and the economic empowerment this may afford them, mothers are also expected to fulfill their family roles of caring for their children. This caregiving role is important to most mothers, and they remain committed to it, even though it may be an added stressor for some women (Maintenance Model Theory), potentially leading to a perceived decline in health status. However, other women are able to cope with their work and family roles, possibly because of the childcare support they receive from extended family and neighbours (von Jacobi, 2014). Such social capital, as well as a perception of marital

commitment may help to buffer the potential effects these multiple roles may have on mothers' self-reported health (inter-role buffering effect).

We examined the relationships between (1) women's work and payment status; (2) women's family roles, as defined by the ages of children within the household under a woman's care; (3) the degree of women's marital commitment (satisfaction with the marital relationship could reduce stress and enhance the mother's health) and their self-reported health status. We kept maternal age and education, and household wealth as controls.

Data sources and methods

Setting

This study was conducted in two peri-urban communities: Asawase and Sebeta, selected for this analysis because they were the only two of six study sites in the Family Health and Wealth study with 70% or higher follow up during the second wave of data collection. Asawase Sub-metropolitan District Council is located in the Ashanti region in Ghana. In 2012, this District Council was carved from the Kumasi Metropolitan Assembly, thus creating the Asokore Mampong Municipal Assembly. Asawase is located 7 kms from Kumasi.

Employment among women in the Ashanti region at the time of a 2014 survey was 76.8%, with an additional 3.8% reporting they were not employed, but had worked in the 12-month period preceding the survey. Women who worked outside the home were mostly engaged in sales and services (54.8%), agriculture (18.5%) and skilled manual jobs (14.6%). Total fertility rate among women 15-49 years in the Ashanti region was 4.2 while total wanted fertility was 3.5 births per woman in a 2014 survey (GSS, GHS and ICF International, 2015).

Sebeta is found in the Oromiya region of Ethiopia, located 24 kms away from the capital city of Addis Ababa. According to a 2011 survey, 41.0% of women were employed while another 15.1% had been employed in the 12-month period preceding the survey. Women of reproductive age were mostly employed in agriculture (45.9%), sales and services (33.9%) and skilled manual labor (13.0%). Total and wanted fertility rates among women ages 15-49 years were respectively 5.6 and 3.3 births per woman in the 2011 survey (CSA and ICF International, 2012).

Data

Data are from a probability sample of peri-urban couples in Asawase, Ghana, and Sebeta, Ethiopia, as part of the Family Health and Wealth Study (FHWS). The FHWS includes a cohort sample of an average of 500 couples in each of 6 sub-Saharan African (SSA)

sites (Ethiopia, Ghana, Malawi, Nigeria, Uganda, Egypt, with 2 sites in Nigeria). Study sites were purposively selected based on their proximity to the universities of the collaborating partners.

Two rounds of data have been collected in all 6 SSA sites (2009/2010 and 2011/2012 respectively), and a third round in Asawase and Sebeta. Loss to follow up was more than 25% in the other 4 SSA sites, thus the decision not to conduct a third round of data collection. The present analysis uses data from the first two waves of data collection, with detailed measures of women's work taken from the second one. Further details of the data source have been previously published (OlaOlorun et al., 2016).

Briefly, the sample design was cluster-based, where enumeration areas (clusters) in the peri-urban community were randomly selected and then a census of households within the selected enumeration areas was conducted. Following a random start, a systematic random sample of households were selected and recruited into the study. Eligible couples had to reside together, with the woman being 15-44 years, and her husband or long-term partner being 20-59 years.

Eligible couples who consented were recruited into the study along with members of their households. These households formed the study cohort and were visited at baseline and follow-up two years later. At each visit, interviews were conducted using 5 different modules: (1) household roster, which was used to list all members of the household; (2) household wealth, which was used to capture information on household assets, as well as water and sanitation indicators; (3) physical assessment, which was used to determine the height/length, weight and blood pressure for all household members, and mid-upper circumference for children under 5 years; (4) male module, used to obtain information on demographic, general health, reproductive and relationship quality indicators; (5) female module, used to obtain information on demographic, general health, reproductive and relationship quality indicators.

Sample

The present analysis consists of mothers aged 15 to 49, 608 in Asawase, and 667 in Sebeta, representing 97.6% and 89.9% of women interviewed in Wave 2 respectively. The sample was derived from wave 2 due to the addition of an expanded set of questions on women's work in this wave, derived from validated questions in the Nigeria Demographic and Health Survey (NPC and ICF International, 2014). Women eligible to be included in the sample were married, or living with a partner as if married, had

completed interviews in both waves of the survey, and had at least one child by Wave 2. Mothers who had missing observations on key variables (<2%) were excluded from this analysis.

Data collection

Data were collected for the first wave of the study between October 2010 and April 2011 in Sebeta, and February-July 2011 in Asawase. The second wave of data was collected from January to May 2012 in Sebeta, and September 2011-May 2012 in Asawase. Women were interviewed in their homes, and asked questions about demographic, relationship, reproductive and health-related factors. Data were also gathered on household characteristics and occupants' anthropometry.

Measures

We assessed three different self-reported health outcomes and created dichotomous measures, modeling good health: absence of any chronic disease (hypertension, heart disease, stroke, chronic pulmonary disease, ulcer, liver disease, kidney/urinary disease, diabetes, arthritis, cancer, or HIV) as diagnosed by a doctor (reference: presence of at least one chronic disease); Self-Rated Health (SRH) based on the woman's report of good or very good health (reference: less-than-good health). Self-Reported Health Problems (SRHP) were assessed based on a cumulative count of the woman's reported health problems occurring in the past year (chest pain, difficulty breathing, abdominal pain, back pain, difficulty in using arms, difficulty in walking, poor vision, hearing problems, difficulty in speaking, psychological conditions, headache/migraine, toothache, sexual dysfunction, vaginal discharge, or skin problems), and categorized as having any problem or none.

The independent variables included work status (currently working or not) and mode of compensation (cash only, cash-and-kind, in-kind only, and working but not paid). A single variable with three categories was created: not working [ref], cash only compensation, any other compensation package. To measure the burden of maternal care, we defined five categorical variables for the presence of any children in the household with ages: 0-2 years, 3-5 years, 6-9 years, 10-12 years, and teens (13-19 years).

To address issues related to temporality, mother's total relationship commitment score, and household wealth were extracted from the first wave of data collection. Household wealth was derived from questions on household assets and living conditions, converted into a score using principal component

analysis, and divided into quintiles as a measure of relative wealth. The Sternberg commitment scale was used to measure the woman's expected permanence of the relationship (scores range from 5 to 45). Internal consistency of the scales was high (Cronbach's alpha: 0.92 and 0.97 in Asawase and Sebeta respectively). Individual-level control covariates were conceptualized as fixed effects, and obtained from wave 1: (1) mother's age (binary variable categorized as 15-34 [ref] and 35-49 years), (2) her level of education (none [ref], primary, secondary/higher). All other measures were extracted from the second wave of data.

Data analysis

Following data exploration, bivariate analyses were run to test associations of family and demographic

variables with dependent measures. Multivariate logistic regression models were estimated, adjusting for clustered observations due to the stratified sampling design. We used a fixed effects model and computed a cluster robust standard error for the coefficient. All data were analyzed using Stata v14.

Results

The two peri-urban samples of mothers differed along all selected characteristics, other than household wealth, which was pre-defined as quintiles. In Asawase, mean age for the 608 mothers was 33.7 (\pm 6.3) years. Most (82.4%) mothers were working at the time of the survey. Of these, 72.3% earned cash, 18.6% were not paid for their work, and 8.4% earned a combination of cash and kind.

Table 1: Distribution of mothers by work status, compensation mode, and site

	Asawase, Ghana n (%)	Sebeta, Ethiopia n (%)
Sample size (N)	608 (100%)	667 (100%)
Working status		
Employed in past 12 months	501 (82.4)	371 (55.6)
Unemployed	107 (17.6)	296 (44.4)
Sample size (N)	501 (100%)	371 (100%)
Compensation for work		
Cash only	362 (72.3)	192 (51.8)
Cash & kind	42 (8.4)	3 (0.8)
Kind only	4 (0.8)	1 (0.3)
Not paid	93 (18.6)	175 (47.2)

In Sebeta, for the 667 mothers, mean age was 29.4 (\pm 6.2) years. Over half (55.6%) were working, with 51.8% of these being paid in cash only and 47.2% not paid for their work [Table 1]. In Asawase and Sebeta respectively, 88.3% and 80.1% of mothers

reported the absence of any chronic disease, 88.3% and 91.9% reported their health was good/very good, and 73.4% and 55.5% reported no health problems.

Table 2: Percent of married or cohabiting mothers self-reporting health status by key variables in Asawase, Ghana

Variables	CHRONIC DISEASE				SELF-RATED HEALTH				HEALTH PROBLEM				TOTAL	
	YES	NO	POOR	GOOD	YES	NO	YES	NO	No.	%	No.	%	No.	%
<u>Work and payment status</u>														
Cash only	49	13.5	313	86.5	55	15.2	307	84.8	107	29.6	255	70.4	362	59.5
Other compensation package	10	7.2	129	92.8	4	2.9	135	97.1	35	25.2	104	74.8	139	22.9
Not working	12	11.2	95	88.8	12	11.2	95	88.8	20	18.7	87	81.3	107	17.6
<u>Mother's age (years)</u>														
15-34 years	23	7.2	297	92.8	27	8.4	293	91.6	67	20.9	253	79.1	320	52.6
35-49 years	48	16.7	240	83.3	44	15.3	244	84.7	95	33.0	193	67.0	288	47.4
<u>Woman's education</u>														

No formal	12	15.4	66	84.6	18	23.1	60	76.9	30	38.5	48	61.5	78	12.8
Primary	31	10.4	267	89.6	31	10.4	267	89.6	77	25.8	221	74.2	298	49.0
Secondary/higher	28	12.1	204	87.9	22	9.5	210	90.5	55	23.7	177	76.3	232	38.2
<u>Mean commitment scores</u>	34.9±9.9		35.8±8.4		31.6±9.9		36.2±8.2		34.3±10.0		36.2±7.9			
<u>Wealth quintiles</u>														
Lowest quintile	15	13.3	98	86.7	10	8.8	103	91.2	25	22.1	88	77.9	113	18.6
Lower quintile	14	11.9	104	88.1	9	7.6	109	92.4	41	34.7	77	65.3	118	19.4
Middle quintile	20	15.3	111	84.7	24	18.3	107	81.7	44	33.6	87	66.4	131	21.5
Higher quintile	16	13.7	101	86.3	14	12.0	103	88.0	28	23.9	89	76.1	117	19.2
Highest quintile	6	4.7	123	95.3	14	10.9	115	89.1	24	18.6	105	81.4	129	21.2
<u>Child(ren) 0-2 years</u>														
No	47	15.1	264	84.9	45	14.5	266	85.5	96	30.9	215	69.1	311	51.2
Yes	24	8.1	273	91.9	26	8.8	271	91.2	66	22.2	231	77.8	297	48.8
<u>Child(ren) 3-5 years</u>														
No	43	13.7	272	86.3	42	13.3	273	86.7	84	26.7	231	73.3	315	51.8
Yes	28	9.6	265	90.4	29	9.9	264	90.1	78	26.6	215	73.4	293	48.2
<u>Child(ren) 6-9 years</u>														
No	32	11.8	240	88.2	30	11.0	242	89.0	67	24.6	205	75.4	272	44.7
Yes	39	11.6	297	88.4	41	12.2	295	87.8	95	28.3	241	71.7	336	55.3
<u>Child(ren) 10-12 years</u>														
No	36	9.9	326	90.1	43	11.9	319	88.1	93	25.7	269	74.3	362	59.5
Yes	35	14.2	211	85.8	28	11.4	218	88.6	69	28.0	177	72.0	246	40.5
<u>Teens 13-19 years</u>														
No	23	7.4	288	92.6	32	10.3	279	89.7	65	20.9	246	79.1	311	51.2
Yes	48	16.2	249	83.8	39	13.1	258	86.9	97	32.7	200	67.3	297	48.8
Total	71	11.7	537	88.3	71	11.7	537	88.3	162	26.6	446	73.4	608	100.0

Table 3: Percent of married or cohabiting mothers self-reporting health status by key variables in Sebeta, Ethiopia

<u>Variables</u>	CHRONIC DISEASE				SELF-RATED HEALTH				HEALTH PROBLEM				TOTAL	
	YES		NO		POOR		GOOD		YES		NO		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
<u>Work and payment status</u>														
Cash only	31	16.1	161	83.9	19	9.9	173	90.1	91	47.4	101	52.6	192	28.8
Other compensation package	29	16.2	150	83.8	7	3.9	172	96.1	72	40.2	107	59.8	179	26.8
Not working	73	24.7	223	75.3	28	9.5	268	90.5	134	45.3	162	54.7	296	44.4
<u>Mother's age (years)</u>														
15-34 years	85	17.2	408	82.8	29	5.9	464	94.1	211	42.8	282	57.2	493	73.9
35-49 years	48	27.6	126	72.4	25	14.4	149	85.6	86	49.4	88	50.6	174	26.1
<u>Woman's education</u>														
No formal	19	15.3	105	84.7	13	10.5	111	89.5	66	53.2	58	46.8	124	18.6
Primary	35	19.9	141	80.1	13	7.4	163	92.6	67	38.1	109	61.9	176	26.4
Secondary/higher	79	21.5	288	78.5	28	7.6	339	92.4	164	44.7	203	55.3	367	55.0
<u>Mean commitment scores</u>	42.1±5.5		42.3±5.3		41.6±6.4		42.3±5.2		41.8±5.6		42.6±5.0			
<u>Wealth quintiles</u>														
Lowest quintile	23	16.0	121	84.0	13	9.0	131	91.0	74	51.4	70	48.6	144	21.6
Lower quintile	22	18.0	100	82.0	7	5.7	115	94.3	49	40.2	73	59.8	122	18.3

Middle quintile	26	21.3	96	78.7	12	9.8	110	90.2	51	41.8	71	58.2	122	18.3
Higher quintile	27	20.0	108	80.0	11	8.1	124	91.9	70	51.9	65	48.1	135	20.2
Highest quintile	35	24.3	109	75.7	11	7.6	133	92.4	53	36.8	91	63.2	144	21.6
<u>Child(ren) 0-2 years</u>														
No	94	23.2	311	76.8	41	10.1	364	89.9	194	47.9	211	52.1	405	60.7
Yes	39	14.9	223	85.1	13	5.0	249	95.0	103	39.3	159	60.7	262	39.3
<u>Child(ren) 3-5 years</u>														
No	86	20.8	327	79.2	39	9.4	374	90.6	185	44.8	228	55.2	413	61.9
Yes	47	18.5	207	81.5	15	5.9	239	94.1	112	44.1	142	55.9	254	38.1
<u>Child(ren) 6-9 years</u>														
No	81	21.9	289	78.1	32	8.6	338	91.4	161	43.5	209	56.5	370	55.5
Yes	52	17.5	245	82.5	22	7.4	275	92.6	136	45.8	161	54.2	297	44.5
<u>Child(ren) 10-12 years</u>														
No	80	17.6	374	82.4	32	7.0	422	93.0	192	42.3	262	57.7	454	68.1
Yes	53	24.9	160	75.1	22	10.3	191	89.7	105	49.3	108	50.7	213	31.9
<u>Teen 13-19 years</u>														
No	58	16.1	302	83.9	20	5.6	340	94.4	150	41.7	210	58.3	360	54.0
Yes	75	24.4	232	75.6	34	11.1	273	88.9	147	47.9	160	52.1	307	46.0
Total	133	19.9	534	80.1	54	8.1	613	91.9	297	44.5	370	55.5	667	100.0

Multivariate logistic regression model results for Asawase revealed that working mothers who were remunerated other than by cash alone had better SRH than their non-working counterparts. On the other hand, mothers remunerated with cash alone had lower odds of reporting good health (as

measured by the absence of CD or SRHPs) than non-working mothers, but these did not reach statistical significance. Having high marital commitment was associated with better health for SRH [AOR (95%CI): 1.04 (1.01-1.08)].

Table 4: Multivariate logistic regression showing adjusted odds ratios and 95% confidence intervals for associations between health measures and family and demographic factors in Asawase, Ghana

Variables	ABSENCE OF CHRONIC DISEASE	VERY GOOD/ GOOD SRH	ABSENCE OF HEALTH PROBLEMS
	Adjusted OR (95% CI)	Adjusted OR (95% CI)	Adjusted OR (95% CI)
<u>Work and payment status</u>			
Not working	1.00	1.00	1.00
Cash only	0.99 (0.48, 2.06)	1.00 (0.46, 2.15)	0.70 (0.42, 1.16)
Other compensation package	1.87 (0.69, 5.04)	4.40 (1.16, 16.72)*	0.68 (0.33, 1.40)
<u>Mother's age (years)</u>			
15-34 years	1.00	1.00	1.00
35-49 years	0.66 (0.34, 1.30)	0.55 (0.37, 0.83)**	0.71 (0.43, 1.16)
<u>Mother's education</u>			
No formal	1.00	1.00	1.00
Primary	1.27 (0.65, 2.46)	1.82 (0.73, 4.54)	1.47 (0.77, 2.82)
Secondary/higher	0.94 (0.46, 1.93)	2.33 (1.14, 4.79)*	1.50 (0.82, 2.76)
<u>Commitment score</u>	1.01 (0.98, 1.04)	1.04 (1.01, 1.08)*	1.03 (0.99, 1.06)
<u>Wealth quintiles</u>			
Lowest quintile	1.00	1.00	1.00
Lower quintile	1.10 (0.51, 2.38)	1.21 (0.37, 3.98)	0.51 (0.24, 1.04)
Middle quintile	0.92 (0.47, 1.82)	0.38 (0.11, 1.29)	0.52 (0.28, 0.99)*
Higher quintile	0.92 (0.43, 1.97)	0.67 (0.28, 1.63)	0.85 (0.54, 1.35)

Highest quintile	3.27 (1.47, 7.29)**	0.84 (0.23, 3.04)	1.09 (0.47, 2.58)
<u>Child(ren) 0-2 years</u>			
No	1.00	1.00	1.00
Yes	1.41 (0.68, 2.92)	1.45 (0.74, 2.83)	1.09 (0.68, 1.76)
<u>Child(ren) 3-5 years</u>			
No	1.00	1.00	1.00
Yes	1.23 (0.85, 1.79)	1.13 (0.85, 1.51)	0.83 (0.59, 1.16)
<u>Child(ren) 6-9 years</u>			
No	1.00	1.00	1.00
Yes	1.10 (0.61, 1.97)	0.87 (0.52, 1.46)	0.89 (0.58, 1.36)
<u>Child(ren) 10-12 years</u>			
No	1.00	1.00	1.00
Yes	0.86 (0.53, 1.39)	1.41 (0.88, 2.25)	1.13 (0.88, 1.46)
<u>Teen 13-19 years</u>			
No	1.00	1.00	1.00
Yes	0.67 (0.42, 1.07)	1.29 (0.73, 2.31)	0.66 (0.50, 0.87)**

***p<0001; **p<0.01; *p<0.05

In Sebeta, mothers who were remunerated for their work other than by cash alone reported better health on all three outcomes, when compared with their non-working counterparts [CD - AOR (95%CI): 1.98 (1.18-3.33); SRH - AOR (95%CI): 3.49 (1.39-

8.80); SRHP - AOR (95%CI): 1.40 (1.04-1.88)]. Additionally, mothers who were paid only cash had higher odds of reporting the absence of chronic disease, when compared with their non-working counterparts [AOR (95%CI): 2.02 (1.21-3.38)]

Table 5: Multivariate logistic regression showing adjusted odds ratios and 95% confidence intervals for associations between health measures and family and demographic factors in Sebeta, Ethiopia

Variables	ABSENCE OF CHRONIC DISEASE	VERY GOOD/ GOOD SRH	ABSENCE OF HEALTH PROBLEMS
	Adjusted OR (95% CI)	Adjusted OR (95% CI)	Adjusted OR (95% CI)
<u>Work and payment status</u>			
Not working	1.00	1.00	1.00
Cash only	2.02 (1.21, 3.38)**	1.18 (0.55, 2.55)	1.00 (0.66, 1.53)
Other compensation package	1.98 (1.18, 3.33)*	3.49 (1.39, 8.80)**	1.40 (1.04, 1.88)*
<u>Mother's age (years)</u>			
15-34 years	1.00	1.00	1.00
35-49 years	0.68 (0.40, 1.18)	0.48 (0.21, 1.08)	0.83 (0.53, 1.31)
<u>Mother's education</u>			
No formal	1.00	1.00	1.00
Primary	0.72 (0.41, 1.27)	1.41 (0.72, 2.76)	1.68 (0.94, 3.02)
Secondary/higher	0.72 (0.41, 1.25)	1.49 (0.62, 3.60)	1.16 (0.66, 2.04)
<u>Commitment score</u>	1.01 (0.98, 1.05)	1.02 (0.96, 1.09)	1.02 (0.99, 1.06)
<u>Wealth quintiles</u>			
Lowest quintile	1.00	1.00	1.00
Lower quintile	1.00 (0.50, 2.00)	1.81 (0.70, 4.71)	1.60 (0.87, 2.95)
Middle quintile	0.86 (0.47, 1.57)	1.01 (0.40, 2.56)	1.42 (0.80, 2.50)
Higher quintile	1.17 (0.59, 2.31)	1.56 (0.57, 4.24)	1.15 (0.63, 2.09)
Highest quintile	0.92 (0.46, 1.84)	1.74 (0.44, 6.89)	2.14 (1.19, 3.85)*
<u>Child(ren) 0-2 years</u>			

No	1.00	1.00	1.00
Yes	1.62 (1.08, 2.42)*	1.82 (0.93, 3.58)	1.26 (0.88, 1.81)
<u>Child(ren) 3-5 years</u>			
No	1.00	1.00	1.00
Yes	1.17 (0.79, 1.73)	1.64 (0.94, 2.85)	1.07 (0.78, 1.47)
<u>Child(ren) 6-9 years</u>			
No	1.00	1.00	1.00
Yes	1.53 (0.91, 2.57)	1.39 (0.75, 2.56)	0.97 (0.64, 1.46)
<u>Child(ren) 10-12 years</u>			
No	1.00	1.00	1.00
Yes	0.71 (0.44, 1.14)	0.85 (0.42, 1.72)	0.84 (0.62, 1.14)
<u>Teen 13-19 years</u>			
No	1.00	1.00	1.00
Yes	0.76 (0.41, 1.41)	0.63 (0.34, 1.18)	0.82 (0.51, 1.30)

***p<0001; **p<0.01; *p<0.05

Discussion

We tested whether working mothers in peri-urban communities in Asawase, Ghana and Sebeta, Ethiopia had better self-reported health than their non-working counterparts, independent of family and personal control factors. Compared with their non-working counterparts, and contrary to expectations, mothers' work status and compensation mode were only weakly associated with the health outcomes we examined, net of other factors. Thus, our expectations on paid work status and working mothers' health are not supported empirically with this analysis. Some adjusted odds ratios for paid work status significantly changed in the expected direction with good health in Ethiopia, but not in Ghana. The latter sample had a high proportion of mothers reporting paid work status, which may have mitigated the influence of the selected covariates. There is variation in associations with different measures of health within and across the two samples.

Our results must be interpreted with caution, as estimates were not as precise as would have been desired due to minimal variability on key variables. A separate analysis (not presented) that compared working to non-working mothers, yielded similar results, and more precise estimates, but lost information on compensation mode. However, we believe that our focus on how work, compensation mode and health are related in peri-urban communities in sub Saharan Africa is an important contribution to existing sparse literature from the subcontinent.

Working mothers in Sebeta were more likely to report better health than their non-working counterparts. One explanation may be that those receiving compensation for work may be selectively better able to protect and manage their health.

Work can make mothers feel fulfilled and increase their self-esteem, and thus a global measure of health such as self-rated health is more likely to capture these intangible benefits of work on health. In surveys, self-rated health is believed to capture information on physical, mental and social well-being (Lee, 2014). On the other hand, the multiple roles of women at work and at home expose them to physical exertion that may lead to physical health problems, thus their report of more health problems than their non-working counterparts in Asawase, though this finding did not attain statistical significance. A qualitative study conducted in Ghana reported similar findings with working women reporting headache, back pain, and other health problems (Avotri & Walters 1999).

In measuring the burden of maternal care, the finding that having a child under 2 years was protective against report of chronic disease in Sebeta may be explained in part by the relatively young age of the mothers themselves. Other explanations may include the fulfillment associated with motherhood coupled with the availability of workplace, community or household social support systems and programmes to support young mothers' family roles (Clark, 1999). Additionally, there may be buffering of the detrimental health effects of work due to mothers' caregiving roles and marital commitment (Barnett & Marshall, 1992; Repetti, 1998). The absence of a significant finding in Asawase is in keeping with a study conducted in Accra, Ghana that found no change in physical or mental health between working mothers who had a child born in between two waves of data collection and those who did not (Waterhouse, Hill & Hinde 2016). The findings in this study are in keeping with the mixed reports in literature that suggest that the relationships

between mothers' work, family roles and self-reported health are complex and differ by setting.

The two analytic samples of working mothers differed compositionally and these differences may be responsible for the within-sample relationships with the health outcomes estimated. Although there was no consistent pattern of paid work and health status associations over the two samples, there were associations within. The structural compatibility of women's roles as intimate partners, economic producers, mothers and individuals also likely varies in strength across sub-Saharan African countries, as compared to Western settings. Multiple factors may be affecting mothers' health and their underlying distributions in the populations of interest will influence how similar those patterns are with those in the West. At the aggregate level and with rapid urbanization bringing families into new congested environments, the stressors for women's health can compromise their maternal performance and earning trajectory over their lifetimes.

The focus on mothers who work in two peri-urban sub-Saharan settings adds to the little we know about how women's multiple roles and their health interact. However, the lack of variability on key outcome variables made it difficult to present the data in such a way as to more adequately represent subgroups of women, such as women in narrower age groups. Such analysis yielded poor precision and wide confidence intervals, but estimates in the same direction as those presented in this paper. This lack of variability in self-reported health may be because the women in the sample were generally healthy, or on the other hand, were not willing to articulate the experience of poor health. Anecdotal reports suggest that people in these settings tend to avoid stating negative health problems, preferring to 'wish them away' due to religious or other convictions.

Potential selection bias was minimized by including in the analysis all women in the original cohorts for each site, and not just women who reported that they worked outside the home (Shah, 2009). However, it is important to state that this analysis did not assess change, and although data were harnessed from two waves of the study, they were treated as repeated cross-sectional studies due to the data limitation whereby women's work status was not measured in detail in the first wave.

Future longitudinal studies should power their samples to take into account higher than expected attrition due to mobility, and to allow for subgroup analyses by demographic variables of interest. For instance, it would be of interest to the field to know if the relationship between mother's work, her caregiving roles and her self-reported health differ

significantly by demographic characteristics such as her age and the specific type of work she does. Although tested, these interactions were not statistically significant in the present analysis, possibly because the original study was not powered to answer these questions. Another limitation was the quality of the data on height and weight, variables that could have been used to adjust for body mass index, but had to be excluded from the data set due to out-of-range and missing values close to 10%. Despite these limitations, we feel these data add to the small body of literature on how mothers' work and their family roles are associated with their self-reported health in two peri-urban settings in SSA, using three different outcome measures.

Conclusion

Even though associations were weak, working mothers reported better health than their non-working counterparts, especially in Ethiopia. It is clear that an empirically informed foundation for family wellbeing in the SSA region is in need of expanded and in-depth investigation. An important area of continued research investment is women's multiple roles to better understand the social, psychological and physiological pathways that can affect their maternal health and economic contributions over their life course. The findings of this study suggest that policies and programmes in these and similar settings should continue to encourage women's involvement in the formal labor force, as well as their cash compensation. The protective effect of having children under 2 years on good health suggests mothers are able to receive social or workplace support for their family childrearing roles. Thus, programmes such as crèches in the workplace and community should be encouraged to support working mothers.

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Authors' guarantee

All authors (FMO, AT, EO, AS, ET, FS) have contributed sufficiently to the work submitted. The content of this manuscript has never been published elsewhere.

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