

***Children's Health and Well-Being: An Analysis of Female Headed Households
in Northern Ghana***

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EXECUTIVE SUMMARY

This study is categorized into three chapters. Chapter one reviews literature on children's health and wellbeing in both FHHs and MHHs. This examines the efforts that are made by each household to ensure that the health and wellbeing of children are promoted at all levels. The chapter also looks at various conditions associated with either FHHs or MHHs that might impede the health or efforts that are made in order to enhance the health and wellbeing of children at the household level.

Conventional literature and knowledge that downplays the ability of FHHs to lead households and promote the health and wellbeing of children U5 are also addressed in this chapter.

Chapter two uses the Ghana Malaria Indicator Survey of 2019 to understand the differences between FHHs and MHHs in terms of prevention and testing for malaria among children U5 who are found in their households. The chapter also looks at the sociodemographic differences between FHHs and MHHs, taking variables like wealth and level of education into consideration. Insecticide treated bednet ownership and other variables that relate to malaria behavior between FHHs and MHHs are also discussed as well as malaria prevention strategies and initiatives that are used by FHHs and MHHs to prevent malaria among children U5.

Chapter three presents next steps for future research. Through the literature review and conclusions drawn at the end of the study, several pressing questions were identified and suggested as worthy of further research. These questions revolve around approaches that are adopted to examine child health and wellbeing in FHHs

and MHHs, general and basic assumptions on FHHs and MHHs, and even the lack of a universal definition of the term FHH. Questions that relate to policies and their proposed impact on FHHs and MHHs are also presented in this chapter. Questions about the recently approved RTS, S malaria vaccine that might be used to prevent U5 malaria are also discussed in this chapter. Given current challenges in vaccine uptake, as illustrated by the COVID-19 vaccine, strategies to encourage both FHHs and MHHs to accept a malaria vaccine for their children U5 is a particularly salient priority.

CHAPTER ONE

Introduction

Many studies have been conducted to assess the well-being of children and their access to healthcare in female headed households (FHHs) compared to male headed households (MHHs) around the world. Most of these studies conducted in the African continent and other developing continents conclude that FHHs are impoverished due to their inability to access as many productive resources and other investment opportunities as MHH; (Buvinić & Gupta, 1997a) and that FHHs are greatly constrained in access to income generating opportunities as a result of labor and credit market discrimination (Buvinić & Gupta, 1997a). As a result of this discrimination, Buvinic et al., (1997) concluded that FHHs are likely to be poorer. The trajectory of feminization of poverty has long existed over decades, and it is still perpetuated in recent scholarly discourse. The feminization of poverty that is basically identified with single female household heads is based on the idea that the responsibility of raising children is often left to women (Chant, 2015). While women are indeed sometimes left to carry the responsibility of bringing up children without any assistance, there is not enough evidence to associate poverty with all FHHs. Thus, it is not necessarily fair to question the ability of FHH to adequately take care of children in the household setting.

Nonetheless, scholars and policy makers who study developing countries such as Ghana expect that households headed by a single adult female with the responsibility of raising children should be poor, suffer food insecurity, have poor health or limited

access to healthcare, and low nutritional status. The following review of the literature seeks to explore and document the evidence regarding females as effective household heads with regard to their children's health. It also explores the limited literature focused on malaria testing among children under age 5 as an illustrative example of the type of health issue that may be impacted by FHH vs. MHH.

Literature Review

1.1 Evidence against females as effective household heads for promoting children's health and well-being

Much scholarly work illustrates the changing trends in the role of women over time. A study conducted on fragile families and children's well-being in America shows that children raised by a single parent are likely not to do as well in society compared to those with both parents present. According to the study, the issue becomes worse if the family is not stable as it may increase the vulnerability of the children within that household (Waldfogel et al., 2010). Though the study indicated that the number of single-parent households in a society reflects how stable or unstable the society is, I do not completely agree with the assertion because even households with an adult couple present sometime face challenges that destabilize the family and subsequently affect the upbringing of children. In the same way, a study conducted Snyder et al., on the composition of households and poverty among female headed households with children in America, indicates that poverty is more prevalent in households that are

headed by a single female and those that are headed a single grandmother (Snyder et al., 2006). The issue of poverty subsequently affects children's access to health due to the inability of the household heads to provide the basic and essential needs, ranging from food to education and shelter.

Also, some of literature indicates that single women might not sufficiently meet the needs of the household because they make lifestyle choices that reduce expenditures for the well-being of household members. For instance, Handa (1996) analyzes female headed households in Jamaica and shows that just like men, women that head households also tend to spend more resources on personal priorities at the expense of household needs.

Some literature suggests that households that are run by females without another adult partner have low socio-economic status and have low probability of keeping livestock compared to households that are run by males or have both couples present. Keeping livestock could possibly serve as a source of protein thereby promoting the nutritional status of the household (Duku et al., 2012). For example, some findings indicate that households with adult men present are better off in terms of nutritional and dietary wellbeing compared to those under the headship of women. It is associated with the fact that men own more land than women, and they use portions of the land to farm vegetables for family consumption (Ochieng et al. 2017). According to Ochieng (2017), while poultry, fish, beef, and other nutritious foods are consumed in both MHHs and FHHs, FHHs are more likely to be linked to cereals, vegetables, legumes, and nuts.

The above literature conclude that female headed households (FHHs) do not have access to productive opportunities and other critical resources necessary for well-being. This conclusion extends to give a general impression that FHHs lack of access to resources and other opportunities implies poverty in FHHs, which then leads to the conclusion that children in FHHs do not have access to healthcare, therefore resulting to malnutrition and ill-health. Though this conclusion is based on evidence from field studies conducted, a critical component of the will of FHHs and women in general that place children's access to healthcare and general well-being as a priority before any other activity or household task has been ignored. Women who head households, regardless of the financial and resource availability, take deliberate steps and initiatives that aim to better the lives of children and the entire household (UNICEF, 2006). This implies that the ability of females in household headship positions to lead households in this manner calls for the need to pay attention to FHHs, as they provide a unique touching point to reducing and subsequently eliminating poverty.

The above studies considered variations in access to resources between FHHs and MHHs to draw their conclusions. The studies did not consider the will and significant contributions that FHHs are probably making to ensure that children under their watch have access to healthcare and other critical needs that are necessary for human survival. The next section explores literature that examined the ability of FHHs to meet their role and responsibilities as HHs with regard to ensuring children have access to healthcare, regardless of the vulnerabilities that are outlined above.

1.2 Evidence that supports females as effective household heads for promoting children's health and well-being

Although many studies have concluded that children within FHHs are likely not to have adequate access to healthcare and the needed nutritional supply, some studies support the ability of FFHs to effectively manage household needs amidst inadequate access to resources. Some such studies are discussed below. One study that tries to assess the livelihoods strategies adopted by both FHHs and MHHs in Ghana indicates that both FFHs and MHHs adopted similar livelihood strategies. This notwithstanding, the study shows that FHHs are more food secure because they allocate a good percentage of the household budget for their needs and that of their children, whereas men spend more on entertainment for themselves only (Levin et al., 1999).

Hence, emerging evidence is beginning to challenge negative assumptions about FHHs. Some of these perspectives suggest that households that are run by women without a male adult present do better in terms of access to healthcare and nutritional status of children in the household. For instance, Lloyd & Gage-Brandon, (1993) show that women that serve as household heads are able to maintain and promote the general welfare of the family. Also, Islam et al., (2017) argues that the changing roles women take up during disasters promote their resilience in the face of difficult times as household heads, therefore enabling them to single handedly take on the responsibility as the leader of a household even in more uncertain times. This shows

the potential that women have, and they are ever ready to explore them when the opportunity is available.

Further, with regard to the current status of women in society, most literature still reveals the need for women to be further empowered since this will promote the general well-being of the household and the society at large. Malapit & Quisumbing, (2015) in their study to identify the dimensions of women's empowerment required to improve nutrition in Ghana shows that women should be empowered and be given the necessary support in the agricultural sector. According to Malapit & Quisumbing, this is not only a requirement for household wellbeing but will also contribute to the aim to end hunger and poverty across the globe.

In addition, a synthesis of recent research on household decisions, gender, and development conducted by Katz (Katz, 2007) indicate that in households where women are allowed to make independent decisions pertaining to the food budget of the family and participate in the decision-making processes regarding other purchases leads to a household whose basic essentialities are all met, thereby producing a household fit for society. These and several other studies including (Zereyesus, 2017), (Pickbourn, 2016), (Clark, 2015), (Appleton, 1996), among others all speak to the ability of women to run households while still promoting the well-being of the household as a priority.

Akpalu et al., (2012) conducted a study to examine women's access to microfinance and intra household business decision making and its implication for efficiency of female owned enterprises in Ghana and shows that women who have access to

microfinance which enabled them to establish businesses are able to run the business more effectively if there is no spousal influence. It is also evident that women in this position are able to take care of the household needs without any other adult partner present, if they have access to the resources that they need. This contributes to household wellbeing. In this study, in as much as Akpalu acknowledges the influence that men might have over women's investment decision making, the study does not highlight the cultural complexities that elevate men over women in this setting.

According to Nii Ardey Codjoe, (2010), comparing food crop production in male- and female-headed households in Ghana indicates that food crop production in households run by males is higher than in households run by females. But women who run households without another adult partner are able to produce more agricultural products than men despite the fact that some of them do not readily have access to land, coupled with inadequate financial strength to acquire some of the agricultural inputs that are needed for production. The study suggests that female headed households should be supported since they have the ability to help Ghana achieve food security (Nii Ardey Codjoe, 2010).

Nii Ardey Codjoe, (2012) also indicates that the rise in women's household leadership in Ghana has reduced social vices commonly found in society. He argues that this is due to the fact that women who are household heads take absolute control of the wellbeing of the family, and as part of the responsibilities make it a point to ensure that children within their household have access to the education, they need in order fit well in society. Pickbourn (2016) argues that remittances work better for

households that are headed by women. The study shows that compared to male-headed households, females who receive remittances from other females spend more than twice the amount that men do on the education of their children. Similar to Onyango's finding described earlier, Pickbourn (2016) pays attention to the ability of women to effectively manage resources for the social, economic, health and cultural wellbeing of the family but minimal attention is paid to sources of funding of the family.

Other studies seek to affirm the stance that children in a female headed household do better nutritionally than those in households with both male and female adult co-running the affairs of the household. For instance, a study conducted by (Onyango et al., 1994) on household headship and child nutrition in Western Kenya revealed that children found in households that are run by only women without another adult partner appear to have higher nutritional status than those found in households where two adults are present. According to the study, this is due to the fact that women endeavor to spend the resources they have at their disposal to provide for all the needs of the family. Onyango et al. generalized the nutritional well-being of children in female headed households without considering the source of income. For instance, they said that the *de facto* female households regularly receive remittances from their husbands who have migrated to cities and urban areas to work. A generalization of this sort makes the study insufficient to appropriately examine the children's access to health and nutritional status of children within female headed households where male partners are not at all involved. Though this study confirms the ability of female household heads to improve the nutritional status of children, the general

conclusion without regard for household funding calls for the need to conduct a study that will examine the healthcare access and nutritional status of children within independent female headed households. The methods and findings of this study raise an important question that has not been directly addressed in the literature: given the heterogeneity of what it means to be a female-headed household, how do we account for this diversity in comparing research studies? This issue, while fundamental, has not been explored and is worthy of future research.

Some studies consider material status as a determinant of children's access to healthcare and nutritional status. In this sense, household headship (male or female) could be used as a proxy for marital status. However, some research like Borooah's 2004 study (Borooah, 2004) show a positive association between female household headship and access to healthcare as well as nutritional status of children that are found within such households. Borooah associates this to the literacy level of the mother in that, when the mother is literate, it reduces the risk of children being malnourished while opposite or no impact is the case when the male is literate.

Women make use of hospitals and other healthcare providing facilities in a quest to ensure the welfare of the children in the household. Supporting the above study, researchers looking at good care practices in Accra, Ghana, indicate that children that are found in households where the mother has less than secondary education have similar nutritional status to children in households with highly literate mothers. (Ruel et al., 1999) Ruel et al. attribute the wellbeing of the children in lower literacy households to good care practices that are adopted by less educated mothers. This gives the sense that even though a woman leading a female-headed household may

have minimal education, she may be still literate enough to meet the needs of the household.

Exceptions to the role of female headed households in enhancing the nutrition of children is the quantity of time such women spend on other work such as farming. Komatsu et al. (Komatsu et al., 2018) shows that in families where women spend most of their time working on other activities aside from domestic activities, children within such households are likely to experience low nutritional status because the time that might be required in order to ensure all the nutritional needs of the children are provided will be lacking. Komatsu et al's study was conducted in Ghana, Mozambique, Bangladesh, Nepal, and Cambodia. In Ghana, female household heads who happen to spend more time on farming activities contribute to a higher nutritional status of the children in the household because they grow a variety of farm produce that can meet the nutritional needs of the children. This supports the argument of this study that under certain conditions, the increase in female headed households is likely to lead to improvement of the nutritional wellbeing of the children. These studies were conducted in different study areas. That lays the foundation of this study to investigate this phenomenon by comparatively examining households that are run by a female without another adult partner and those that have both members of the couple present.

Observers have often noted differences in well-being between households run by both a man and a woman and those run by a single female (Johnson & Rogers, 1993). As a result of the disparities between both male and female headed households and single

female headed households, international agencies such as the United Nations and activists have sought to promote greater independence and well-being of females. Member countries and international non-governmental organizations like the Global Fund for Women (GFW) and the Women's Global Empowerment Fund (WGEF) have championed policies that seek to include women in decision making and allow them to take on responsibilities usually accorded to men (*UN-Women-1.3. Pdf, 2016*).

These efforts transcend the global village to influence continents all over the world. The results of the effort have drastically changed the roles of women, especially on the African continent, where they typically face several inequities. For instance, according to Barros et al., (1997), women are underrepresented in leadership, and have low educational attainment compared to men. Since women in urban Brazil manage and sustain 30 percent of households (Barros et al., 1997), international efforts to support them potentially can have a significant impact especially on female headed households.

Further, Handa, (1996) assesses expenditure patterns and the welfare of children in female headed households in Jamaica and shows that women that head households, just like men, also have personal priorities that they tend to spend discretionary resources on besides household needs. For instance, the study revealed that women spend more of the household budget on their personal items and shoes, potentially reducing the household budget and leading to deficiency in household food, health, and nutritional needs. Notwithstanding, the study concludes that there is a significant positive variation in health and nutrition between households that are headed by

females and those with male heads, due to the deliberate effort made towards household well-being by female heads. Despite the deliberate effort made by female household heads to promote child access to healthcare and other necessities, they still do not have access to some investment and important opportunities that are well enjoyed by their male counterparts.

1.3 Malaria in FHHs and MHHs

The burden of malaria in Sub-Saharan Africa (SSA) has attracted a lot of scholarship in public health epidemiology due its devastating impact on economic development and the numerous lives that are lost as a result of its prevalence in that part of the world. Despite efforts made by governments of nations and the international agencies to eliminate malaria, it remains the one of the leading causes of morbidity and mortality in Sub-Saharan African, with 93% of all malaria cases globally coming from sub-Saharan Africa, and 94% of all malaria deaths coming from the region (*WHO Urges Countries to Move Quickly to Save Lives from Malaria in Sub-Saharan Africa, 2020*). Out of this percentage, children under the ages of five year constitute 70% of malaria related deaths (Berendsen et al., 2019).

The persistence of malaria in SSA remains puzzling to some scholars because there exist several malaria prevention initiatives that are relatively inexpensive to adopt in the fight against malaria. Some of these malaria prevention strategies as indicated by Ghana Malaria Indicator Survey (GMIS, 2019) include the use of insecticide treated bednets, use of mosquito repellents, keeping surroundings clear and clean, filling out

stagnant waters (puddles), spraying homes with insecticides, use malaria prevention medication among others. It is indicated by scholarly work in SSA that some of these malaria prevention initiatives like the insecticide treated bednets, spraying homes with insecticides and others are provided free of charge by governments of the nations to the people (Njau et al., 2013).

Considering the availability of the malaria prevention strategies to households and individuals, malaria prevention and testing provides a unique window into potential differences between FHHs and MHHs. This will help to clearly ascertain the difference between FHHs and MHHs regarding efforts that are made to avert malaria in the household, especially among children U5. In the light of this, this thesis investigates the difference between FHHs and MHHs and prevention and testing for malaria among children U5 using the Ghana Malaria Indicator Survey.

1.4 Malaria recognition and testing among children under 5

Malaria is one of the diseases that can show different symptoms among different infected individuals, sometimes making it difficult for recognition and therefore delaying seeking healthcare in a timely manner. Yet the most common ways by which malaria is recognized among children U5 include “hot body” (increase in the body temperature), headache, restlessness, changes in eye color and others (Malik et al., 2006). In many settings, any febrile incident among a child (fever) is assumed to be malaria until proven otherwise.

The most common for testing for malaria among children U5 is taking a blood sample from the finger or heel prick to determine malaria parasitemia, and often the level of hemoglobin is tested at the same time to determine anemia, which can increase a child’s risk of complications from malaria. This is mostly done in a formal health facility setting or by individuals with expertise. Household heads who are educated and can easily identify the symptoms of malaria listed above are typically those that use this service.

1.5 Summary

The research summarized above reflects a broad and general literature that illustrates the dynamics between FHHs and MHHs in terms of children’s health and wellbeing. Based on this literature review, Chapter 2 narrows down to examine the sociodemographic differences between FHHs and MHHs, how they prevent and test for malaria among children under five (U5) using unanalyzed data from the Ghana Malaria

Indicator survey (GMIS), 2019. This analysis helps generate a clear and concise picture of the difference between FHHs and MHHs in Ghana with regard to preventing and testing for malaria among U5 children in their households.

CHAPTER TWO

2.1 Abstract

Background: Globally, 94% of malaria deaths occur in sub-Saharan Africa, and children under age 5 account for 70% of malaria-related mortality in the region. This study sought to examine differences between female-headed households (FHHs) and male-headed households (MHHs) with regard to malaria prevention and testing among children under age five (U5) in Ghana.

Methods: This cross-sectional study used publicly available data from the 2019 Ghana Malaria Indicator Survey (GMIS). Frequencies and descriptive statistics were calculated for all key variables. Bivariate analyses comparing FHHs and MHHs were conducted using t-tests and Chi-square analysis. A p-value of 0.05 was taken for statistical significance.

Results: 5181 household were identified, of which 1938 (37.4%) were female-headed and 3243 (62.6%) were male-headed. 51.7% of FHHs included a child U5, whereas 67.8% of MHHs included a child U5. MHH were significantly more likely to own an ITN than FHH (83.1% vs. 78.3%, $p < 0.001$), whereas FHH were more likely to report taking malaria prevention steps such as spraying the house with insecticide, filling in stagnant puddles, and keeping surroundings clear (all significant at $p < 0.001$). U5

children in MHH were more likely to sleep under a bednet the night preceding the survey (51.0%) than U5 children in FHH (44.8%), although the finding was not statistically significant. The rates of fevers in the previous two weeks among children U5 were similar across MHH and FHH (24.2% vs 22.3%), and the rates of testing for malaria among those who experienced a febrile episode were also similar across MHH and FHH (39.0% vs 41.3%). Of those tested, the percent of U5 children who tested positive for malaria was also similar across MHH and FHH households (63.9% vs. 63.0%).

2.3 Conclusions: Both FHHs and MHHs in Ghana make a concerted effort to prevent and test for malaria among children U5 in their households. Despite differences in malaria prevention strategies, there were no significant difference in febrile episodes, malaria testing, and rates of positivity, suggesting that malaria prevention is challenging for all households in Ghana. In the face of a newly developed malaria vaccine, future research is warranted to ensure adequate uptake across all households.

2.2 Introduction

Malaria continues to be a significant problem in Sub Sahara Africa (SSA), despite substantial efforts focused on prevention, screening, and treatment. In 2018, there were 228 million reported cases of malaria and 405,000 deaths in SSA (Mordecai et al., 2020). The World Health Organization indicated that 94% of malaria deaths occurred in Sub Saharan Africa (Dao et al., 2021).

Although malaria affects all age groups, it is specifically problematic for children under age five (U5). (Carneiro et al., 2010). Though the prevalence of malaria among children under age five in SSA dropped by 18% between 2000 and 2016, children still constitute 70% of malaria-related deaths in SSA (Papaioannou et al., 2019).

In Ghana, malaria cases account for 10.4 million outpatient visits per year, 4.2% of which are children U5 (Ejigu & Wencheke, 2021). This percentage looks small but requires attention since malaria infection is said to claim the live of one child under five years of age in every two minutes in the country (Domechele et al., 2020). By the first quarter of 2020, Ghana had recorded more than one million malaria cases, with 54 children under the age of five years losing their lives to malaria (Dadzie et al., 2020).

With the persistent prevalence of malaria among children U5 in Ghana, the government and other international agencies have given critical attention to strategies that will help prevent malaria in the country. Malaria prevention in Ghana

is often characterized by the use of insecticide-treated bednets (ITNs), mosquito repellents, filling in stagnant waters (puddles), among others. Public health education and provision of financial support is granted to families and individuals to ensure that such malaria prevention strategies are well adopted and used (Boateng et al., 2021).

Previous studies have suggested a strong correlation between the use of insecticide treated bed-nets and the presence of children U5 in FHHs (Aberese-Ako et al., 2019), but it is not known how FHHs compare to MHHs with regard to malaria prevention and testing. This study sought to accomplish three aims: 1) To compare the sociodemographic characteristics of female-headed households and male-headed households in Ghana; 2) To determine differences between FHHs and MHHs with regard to malaria preventive behaviors such as ownership and use of ITNs; and 3) To determine differences between FHHs and MHHs with regard to malaria symptoms, testing, and rates of positivity.

2.3 Methods

This cross-sectional study was conducted using de-identified, publicly available data from the 2019 Malaria Indicator Survey in Ghana. The Ghana Malaria Indicator Survey (GMIS) is part of the Demographic and Health Survey (DHS) program, which a program that collects, analyzes and disseminates nationally representative data on populations, health, HIV, and nutrition across more than 90 countries.

The GMIS was conducted in Ghana, a nation in west Africa located along the Gulf of Guinea, a few degrees north of the equator. The geography of Ghana is variable, ranging from coastal plains in the south to dry, arid regions in the north. The economy of Ghana is agriculturally driven, with over 60% of the population of the country working in agriculture and many families reliant upon subsistence farming.

The GMIS reflects nation-wide sampling of households, and it assessed demographic and health-related variables (Darteh et al., 2019). Key variables used in this study included: household leadership (female-headed households, male-headed households), demographics of the household head (e.g., age, education, rural/urban residence, etc.), presence of children under age 5 in the household, ownership of insecticide-treated bed-nets (ITNs), children under 5 sleeping under ITN in the night before the survey, febrile episodes among children under 5, malaria testing among children under 5, malaria results among children under age 5.

The GMIS was conducted in 2019 using 52 field workers who went through training from 2nd to 21st of September 2019. Field workers visited randomly selected households within the 10 enumeration regions reflective of Ghana's 2010 Population Census. Field workers administered the GMIS survey to all women aged 15-49 who were either permanent residents of the selected households or visitors who stayed in the household the night before the survey (Darteh et al., 2019). Malaria testing was conducted using Rapid Diagnostic Testing with blood samples taken from the finger or heel prick and test results were confirmed using microscopy at the Nation Public

Health and Reference Laboratory. Treatment was sought immediately for the children whose test results came out positive for malaria.

2.4 Data Analysis

R and Stata 16.0 analytical programs were used to calculate frequencies and descriptive statistics for all key variables. Bivariate analyses comparing female-headed households and male-headed households were conducted using t-tests and Chi-square analysis. A p-value of 0.05 was taken for statistical significance.

2.5 Results

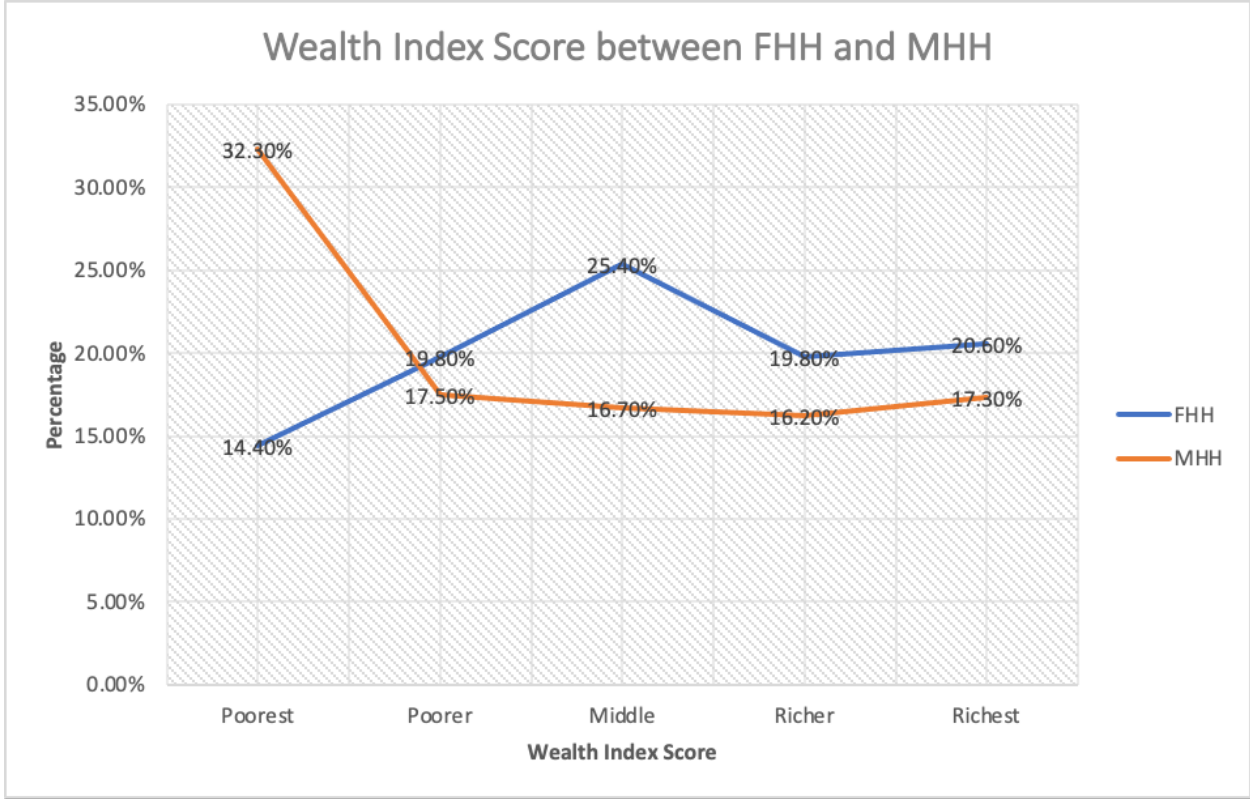
The GMIS included 5,181 households, 62.6% (N=3243) of which were male-headed and 37.4% (N=1938) of which were female-headed. (See Table 1.) In comparing female-headed households (FHHs) and male-headed households (MHHs) (per Aim 1), male-headed households had more individuals living in the household ($p < 0.001$) and more children under age 5 living in the household ($p < 0.001$). FHHs were more likely to be located in an urban area, female household heads were likely to be better educated than male household heads, and FHHs had higher overall wealth index scores than MHHs ($p < 0.001$).

Table 1: Household demographics from 2019 Ghana Malaria Indicator Survey, unweighted (N=5181)

Variable	Female-Headed Households (N=1938)	Male-Headed Households (N=3243)	Test Statistic / P Value
Mean Age (+/- SD)	29.4 (+/- 9.8)	29.9 (9.5)	P=0.08
Mean # of individuals in household	4.5 (+/- 2.5)	6.4 (+/- 3.5)	P<0.001
# of children 5 and under in household	0.8 (+/- 0.95)	1.2 (+/- 1.2)	P<0.001
% in Urban Residence	58.5 (1134)	40.3 (1306)	<0.001
Highest Level of Education	3.2 (1.4)	2.9 (1.4)	<0.001
No Education	14.3 (277)	26.4 (856)	
Primary	16.4 (318)	19.8 (642)	
Secondary	60.3 (1168)	48.2 (1564)	
Higher	9.0 (175)	5.6 (181)	
Wealth index combined	3.1 (1.3)	2.7 (1.5)	<0.001
Poorest	14.4 (279)	32.3 (1047)	
Poorer	19.8 (383)	17.5 (567)	
Middle	25.4 (493)	16.7 (542)	
Richer	19.8 (383)	16.2 (526)	
Richest	20.6 (400)	17.3 (561)	

Figure 1 illustrates the differences in wealth between female-headed and male-headed households. This figure reflects a cumulative wealth index score that was divided into quintiles and labeled with the categories of poorest, poorer, middle, rich and richest. Notably, MHHs are much more likely to fall in the ‘poorest’ category than female-headed households, with 32.3% of male-headed households labeled as ‘poorest’ in comparison to only 14.4% of female-headed households. (See Figure 1.)

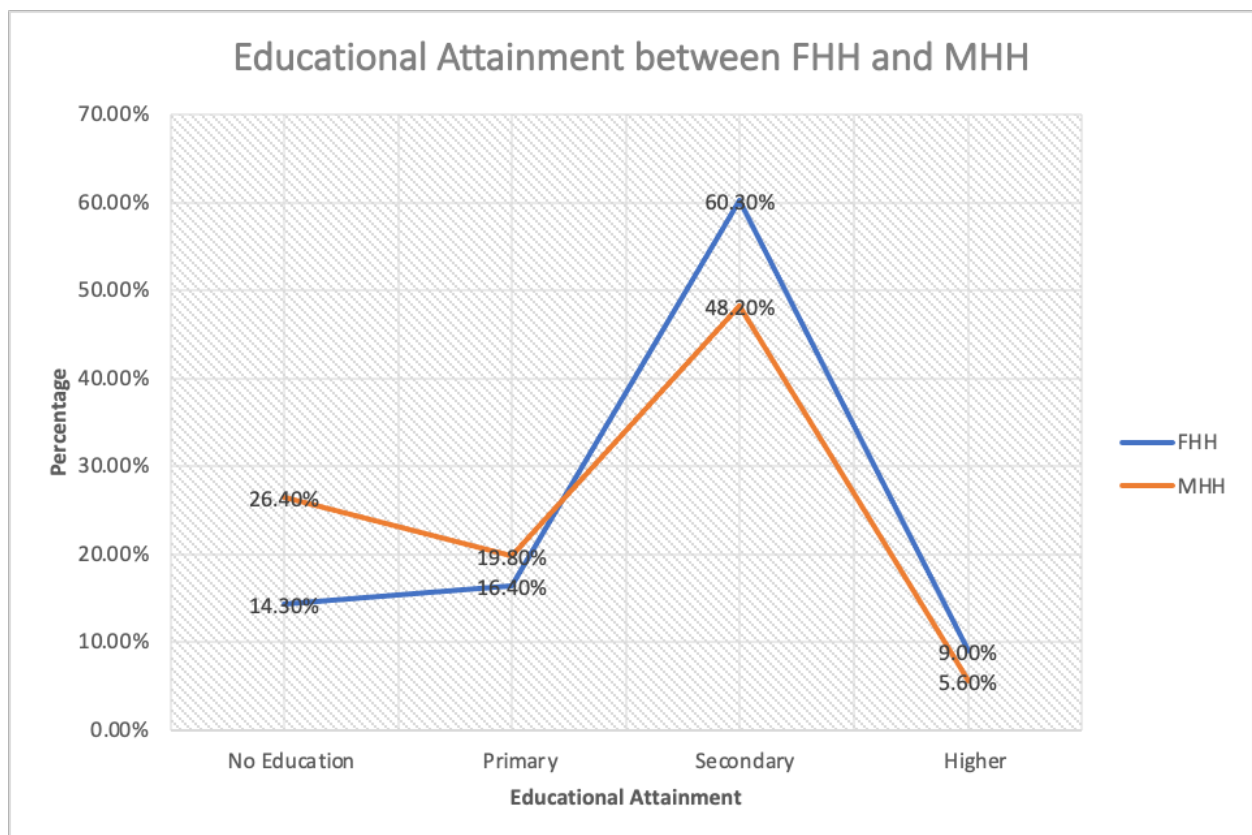
Figure 1: A comparison of wealth across female-headed and male-headed households, 2019 GMIS



Source: GMIS, 2019

Figure 2 is an illustration of the differences in educational attainment across FHHs and MHHs. The educational attainment between FHHs and MHHs are assessed based on those who had no education, those who had up to primary education, those with secondary education and higher. Overall, women in male-headed households were less educated than women in female-headed households, with 26.4% of women in male-headed households having no education, compared to 14.3% of FHH. (See Figure 2.)

Figure 2: Differences in educational attainment between female-headed and male-headed households, 2019 GMIS



Source: GMIS, 2019

In terms of Aim 2, determining the differences between FHH and MHH with regard to malaria preventive behaviors such as ownership and use of ITNs, and Aim 3, determining the differences between FHH and MHH with regard to malaria symptoms, testing, and rates of positivity, Tables 2 and 3 illustrate the malaria-related variables we examined. MHHs were more likely to own an insecticide treated bed-net (ITN) and were slightly more likely to report that all children under age 5 slept under an ITN the previous night, although this was not statistically significant. There was no difference between MHHs and FHHs with regard to the percent whose children under 5 had a fever in the previous two weeks, were tested for malaria, or who tested positive for malaria. (See Table 2.)

Table 2: Malaria-related variables from 2019 Ghana Malaria Indicator Survey, unweighted

Variable	Female-Headed Households (N=1,938) % (N)	Male-Headed Households (N=3,243) % (N)	Test Statistic / P Value
Owns an ITN	78.3 (1518)	83.07 (2694)	<0.001
Has child under 5 living in household	51.7 (1002)	67.8 (2200)	
All children under 5 slept under an ITN last night	44.8 (449)	51.0 (1122)	P=0.45
Children under 5 with fever in the last 2 weeks before the survey	22.3 (223)	24.2 (533)	P=0.97
% of children under 5 with a fever who had a blood test for malaria	41.3 (92)	39.0 (208)	P=0.40
% of children tested who tested positive for malaria	63.0 (58)	63.9 (133)	P=0.594

Table 3 illustrates malaria prevention related variables adopted by both FHHs and MHHs. Taking malaria prevention medication, sleeping under a mosquito net, and using mosquito repellent are equally likely across FHH and MHH, with no statistically significant difference. However, FHH are significantly more likely to spray their households with insecticides and fill in stagnant waters (puddles) as well as keep surrounding clean compared to MHHs. This is statistically significant at $p < 0.001$. A slightly higher percentage of MHHs don't know any malaria prevention ways compared to the FHHs. (See Table 3.)

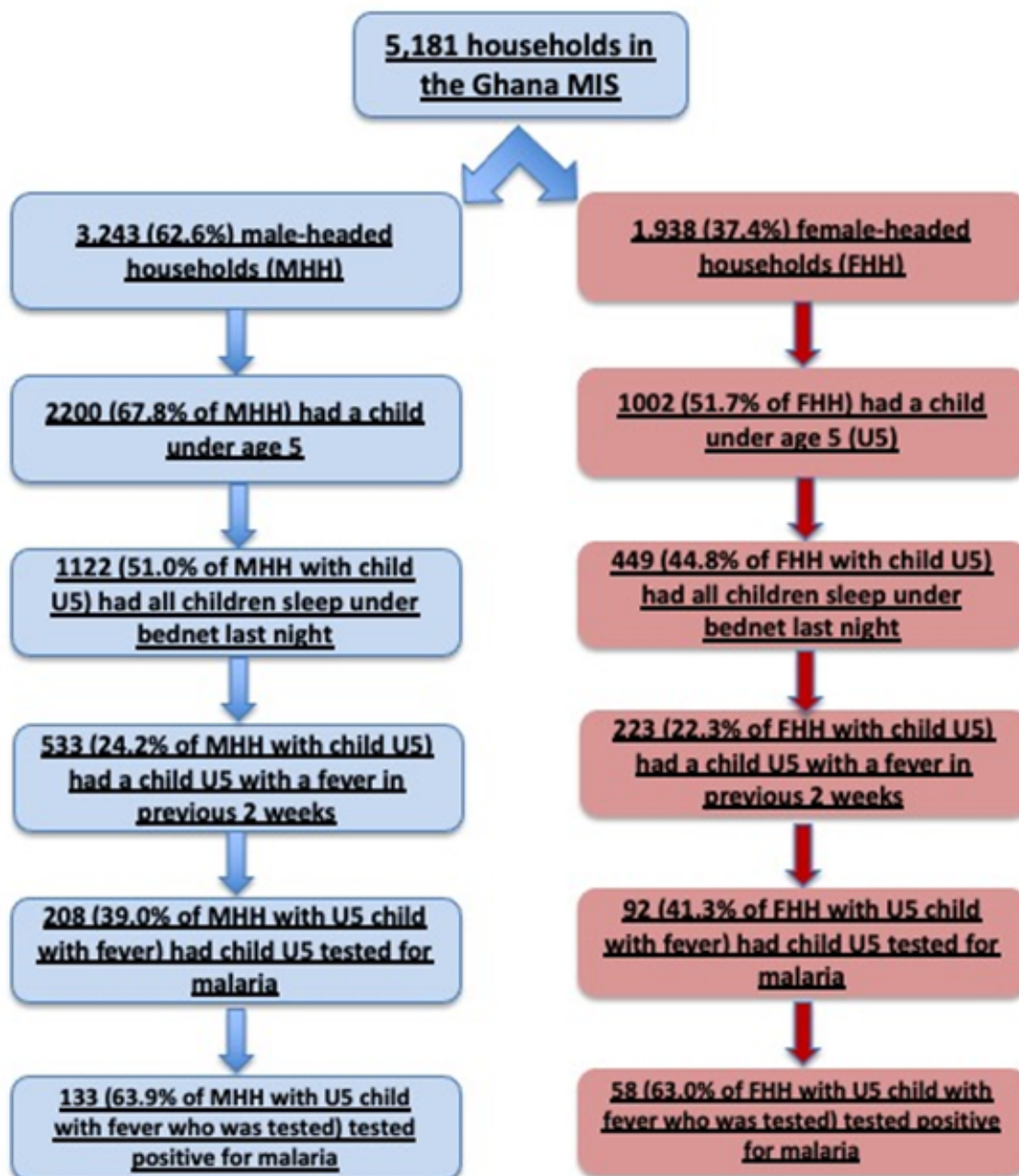
Table 3: Malaria preventive behaviors by household type, 2019 GMIS

Malaria Prevention Variable	Female-Headed Households (N=1938)	Male-Headed Households (N=3243)	Test Statistic/P value
Take malaria prevention medication	4.13 (80)	3.45 (112)	P=0.214
Sleep under mosquito net	39.53 (766)	38.05 (1234)	P=0.292
Used mosquito repellent	12.33 (239)	11.35 (368)	P=0.286
Spray house with insecticide	20.33 (394)	14.99 (486)	P<0.001
Fill in stagnant waters (puddles)	26.21 (508)	20.84 (676)	P<0.001

Keep surrounding clear	57.43 (1113)	49.21 (1596)	P<0.001
Put mosquito screen on windows	0.88 (17)	0.59 (19)	P=0.222
Other	5.16 (100)	4.50 (146)	P=0.281
Don't know	1.55 (30)	3.21 (104)	P<0.001

Figure 3 illustrates the summary of the differences between household types with regard to the percentage who have children under age 5 in the household, percentage whose children under age 5 slept under a bed-net the previous night, percentage whose U5 child had a fever in the previous 2 weeks, and percentage whose child with a fever was tested for malaria, and the percentage of those whose child was tested were indeed positive for malaria. (See Figure 3)

Figure 3: Ghana 2019 Malaria Indicator Survey Summary of Household Comparisons



2.6 Discussion

While female-headed households with children U5 report a greater likelihood of malaria prevention strategies such as spraying the house with insecticide, filling in stagnant puddles around their household, and keeping surrounding areas clear, male-headed households with children U5 were more likely to own insecticide-treated bednets. Nonetheless, there was no significant difference between FHH and MHH in terms of the number of U5 children with fevers in the previous 2 weeks, the number who sought malaria testing as a result, or the number who tested positive for malaria. These findings run counter to significant sociodemographic differences across MHH and FHH, with female household heads having greater education, higher wealth, and a higher likelihood of living in an urban area - all factors that one might assume would predispose FHH to have lower rates of fevers and malaria among children U5.

Our findings confirm other studies conducted in Ghana that compared FHHs and MHHs using the consumption expenditure approach and found that FHHs are wealthier than MHHs (Kpoor, 2015), yet our findings contradict later studies by the same author Kpoor, (2019) who examined assets and livelihood of FHHs and MHHs in Ghana and showed that FHHs do not have access to key assets and therefore are poor. Some of the factors that limit FHH's access to assets include tradition and role differentiation for women and men. (Kossoudji & Mueller, 1983) With regard to testing and treatment for malaria, our findings are consistent with other studies in Ghana showing that FHHs who were committed to hospital maternal visits during pregnancy continued to take their children to the hospital for check-up and malaria related tests after their pregnancies. (Quakyi et al., 2019).

2.7 Significance of these findings

This study has several important implications. First, we found that MHH and FHH engaged in different types of malaria-prevention behaviors, yet they ultimately did not affect the proportion of U5 children in either type of household who experienced febrile episodes, were tested for malaria, or tested positive for malaria. This raises questions about the utility of the malaria prevention methods being promoted - or whether additional implementation science research is warranted to determine if the interventions are being conducted as intended.

These findings also provide support for rapid and widespread deployment of the newly developed malaria vaccine, RTS, S/AS01_E, even though it has shown to prevent severe infections by only 30% (RTS, S Clinical Trials Partnership, 2015; Adepoju, 2019). While additional trials have shown that combining the vaccine with seasonal malaria prophylaxis can significantly boost its protective effects (Chandramohan et al., 2021), widespread adoption and uptake will be necessary across both male- and female-headed households if U5 malaria death rates are to be reduced.

We also found that MHH and FHH differed significantly in terms of wealth, education, rural/urban status, number of children U5, and ownership of bednets. Yet none of these sociodemographic variables seemed to matter in terms of malaria infection. This is an important finding because efforts to target low-income, rural Ghanaians may miss higher-income, urban families who are equally at risk.

2.8 Limitations of this study

This study has several limitations. First, the Ghana Malaria Indicator Survey (GMIS) is based on self-reported data, which may be subject to both recall bias and social-desirability bias. In addition, malaria is seasonal, and thus the timing of the GMIS may affect its results. Despite an initial household sample size of more than 5,000 households, the number of households with children under 5 who had a fever within the previous 2 weeks and who sought a malaria test for the child is relatively small. It is possible there was insufficient power to detect a statistically significant difference between MHH and FHH households in this exploratory analysis.

2.9 Conclusions / implications

Ghana Malaria Indicator Survey Data suggest that both FHHs and MHHs in Ghana make a concerted effort to prevent and test for malaria among children under five in their households. While we found differences between FHH and MHH in terms of the malaria prevention strategies they employ, there were no significant differences in febrile episodes, malaria testing, and rates of positivity, suggesting that the issues surrounding malaria prevention, infection, and treatment are universally challenging for all households in Ghana. In the face of a newly developed malaria vaccine, future research is warranted to ensure adequate uptake across all households.

CHAPTER THREE

NEXT STEPS FOR FUTURE RESEARCH

While the research literature review and the findings from the GMIS study answered several questions regarding the potential differences between MHH and FHH, this research has also raised many questions that are beyond the scope of this thesis. Future research is warranted across several different areas, the most salient of which are presented below.

3.0 Definition and assumptions

3.1 Definition

Perhaps the most important questions raised by this research relate to the definition and assumptions underlying female headed households (FHHs) versus male headed households (MHHs). It is commonly held that female headed households (FHs) are single-headed households, and MHHs have two parents. Thus, is it the female head of

household that is the key difference, or is it that the household has a single head instead of having two parents? What might it look like if we compared single-male-headed households with single female-headed households? Or how might female-headed households with two females compare to male-headed households with two adults? Most studies do not clarify how they define female-headed households, and thus viable comparisons across studies are difficult, and it is difficult to determine exactly what is being compared.

In the work of Buvinić & Gupta, (1997b), the term “female headed household” and “single mother” are used interchangeably. This raises questions as to whether a single mother automatically serves as the head of the household. This is certainly not the case in every situation, and it cannot be assumed to be universal because of national, geographic, and cultural differences. The World Bank data on female headed households indicated that a female cannot be considered the head of a household if there an adult male in the household (*Glossary | DataBank, 2020*). Some studies indicate that the contribution of the female to the maintenance of the household might even be more than the contribution of the male, but cultural reasons would not allow the female to serve as the head of the household. Cultural practices in many countries such as the payment of bridal wealth reduces the status of the female, equating her to an acquired property therefore not in a position to lead a household (Kambarami, 2006). According to Kambarami, (2006), the cultural practices of most countries are in line with the modern law system which together makes it more difficult, if not impossible for the female to become head of a household.

Furthermore, in practice, the definition of FHHs is probably quite variable. That is, are households led by grandmothers, multiple aunts, or a single young woman considered identical when talking about FHHs in academic discourse? An operational definition of the term FHHs is required in order to identify and adequately measure the differences between the categories of households. It is important to clarify this foundational definition to adequately inform and direct policy efforts.

3.2 Assumptions

One common assumption made by conventional literature is that females have dual responsibility in the household. This encompasses the upbringing of children and the general maintenance of the household. The dual responsibility of females is the basis for the feminization of poverty in households that are headed by a female (Winchester, 1990).

It is also often assumed that gender discrimination also makes FHHs poor (Female-Headed-Fact-Sheet-2016). While gender discrimination indeed disproportionately affects women and FHHs, gender discrimination rarely occurs absent other kinds of discrimination that may equally affect male-headed households, such as discrimination based on race, ethnicity, or socioeconomic status. Future research that explores how poverty and single-parent households of both genders interacts is

needed. A future study that considers a balance between these categories of households is likely to inform effective gender policy discourse.

Another assumption underlying many discussions of female headed households versus male headed households relates to the issue of land and other resources ownership by women. It is commonly asserted that females around the world own only 1% of the world's land (Doss et al., 2018). Based on this finding and other assumptions about asset ownership, it is often concluded that females in household leadership positions do not have sufficient assets - in the form of land or other resources - to meet the needs of the children and the household in general. While this may or may not be true, such an underlying assumption certainly influences the way FHH are conceptualized, measured, and addressed in national policy decisions.

3.3 Mechanism of Action

Another key area that provides grounds for further research is the issue of mechanism of action - in other words, what is it about MHH vs FHH that creates observed differences? If there are differences between FHHs and MHHs, what is the root of the difference? Can these differences be traced to economics? Is it more about access to education or other productive resources? The findings of my research suggest that at least in Ghana, FHH are likely to be more educated, wealthier, and more likely to live in urban areas. At the same time, I did not find significant differences between MHH

and FHH in such things as the percentage of children under 5 who had a fever in the previous two weeks (evidence of illness), the percentage who obtained a malaria test (evidence of care seeking), or the percentage who actually tested positive for malaria (evidence of illness). The Ghana Malaria Indicator Survey did not allow for stratification of households by single-male vs. single-female households, thus it is not possible to determine the true contribution of MHH vs FHH. Further research that addresses such issues is needed.

The findings of my research vary from other studies conducted in other countries, which raises questions about how FHH versus MHH differ by cultural setting, country, among others. While the findings of my study support the findings of other studies that measure the differences between FHHs and MHHs on the basis of education, wealth, and urban status, other studies also measure the differences on the basis of gender and age, and found that females within reproductive age live in poor households (Munoz Boudet et al., 2018).

Ozawa & Lee, (2006) in their study that examines the net worth of FHHs in comparison with other forms of households such as households that are co-run by married couple, cohabiting couple households as well as MHHs. The findings of their study show that households that are co-run by married couple and MHHs have higher net worth than cohabiting couple households and FHHs. Cohabiting couple households also appeared to have higher net worth than FHHs but not as co-run and male headed households. As I indicated earlier, will the findings be the same if the FHHs had other aunts, grandparents and other females that helped in running the household? This

question needs to be answered in order to provide empirical findings that will enable scholar to clearly see the status of FHHs and what policies are needed to support FHHs.

3.4 Measurement Issues

Another factor that might affect the level at which FHHs vs MHHs differ is in the area of measurement. This is not only limited to how they are defined, but also by how they are characterized in terms of the kind of approach that is used in the study. For instance, a study of FHHs and MHHs that uses the asset approach produces different results compared to a study that uses the consumption expenditure approach, likewise the livelihood approach. Even with the same approaches, different studies produce different results depending on the location and context. These approaches are discussed in detail below.

3.5 The Asset Approach to studying FHHs and MHHs

According to Baffoe & Matsuda (Baffoe & Matsuda, 2018), who conducted an empirical assessment of rural livelihood assets from a gender perspective in Ghana, the level of livelihood assets for FHHs are higher than the livelihood assets of MHHs. The term ‘livelihood assets’ refers to the overall resource base of a community or a group of

people. These resources constitute the main source through which the community draws their livelihood from. Baffoe & Matsuda indicate that the livelihood of FHHs witnessed a 22.7% increment of financial accumulation over the past five years while MHHs on the other hand experienced a decline within the same period. The asset approach to studying FHHs and MHHs looks at the rate at which each of the categories of households have access to assets and how they use those assets for the wellbeing of the household. In most cultural settings where females are treated as assets and do not have right to own their own assets and property, using the asset approach to study the differences between FHHs and MHHs may produce result that might not be applicable in other communities or countries with different cultural believe systems.

However, other studies that used the asset approach to study FHHs and MHHs in other countries revealed that FHHs do not have access to productive assets compared to MHHs (Debela, 2017). The differences in findings despite using the same approach being used also speaks to the distinctive cultural belief system practiced in different parts of the world. It revealed why it might not be culturally appropriate to generalize or infer the findings of one place to the other.

3.6 The Consumption Expenditure Approach to studying FHHs and MHHs

The consumption expenditure approach is one of the most used approaches to study how FHHs differ from MHHs. Studies that employed this approach have found FHHs to

be better than MHHs in terms of the general wellbeing of children and the entire household. This approach has been criticized because most scholars believe it is one-sided and therefore does not cover all the relevant components of both FHHs and MHHs that are required in order to make an unbiased conclusion that reflects the true status of these households. The consumption expenditure approach is also criticized on the basis that it appears not to give a complete picture of the deprivation that FHHs face when it comes to access to assets.

The Ghana Living Standard Survey, which is an annex of the Ghana Statistical Service, conducted a survey on FHHs and MHHs in Ghana using the consumption expenditure approach, and found that FHHs are better-off than those that are under the headship of men (Kpoor, 2015).

3.7 The Livelihood Approach to studying FHHs and MHHs

The livelihood approach is another approach that is used to examine the differences between FHHs and MHHs. This approach is believed to be multidimensional, therefore it will be able to cover all the components of livelihood strategies that both FHHs and MHHs adopt. Kpoor (2015) adopted this approach to assess the livelihood strategies that are used by female and male headed households. Kpoor's study revealed that human capital, financial, and economic assets appear to be greater assets in MHHs than they are in FHHs. FHHs on the other hand appear to have greater social capital

assets. Even though income generation in both FHHs and MHHs is lower, both households have different levels of access to assets that serve their purpose. The question that comes to while considering these approaches to studying FHHs and MHHs is, to what extent can the findings of an approach be deemed more appropriate and worth considering over the findings of other approaches that might also be used? Should culture be considered as an important determinant when using any of these approaches to study FHHs and MHHs?

3.8 Policies and their Impact

As a result of the growing conventional literature that suggests that FHHs are disadvantaged, vulnerable and poor, governments of developing countries and other international agencies like the World Health Organization, the United Nations Development Program and others promulgated policies and interventions that aim to protect and promote the wellbeing of women in the developing world. In the case of Ghana, some of these policies and initiatives include the distribution of free insecticide treated bednets to women, free maternal healthcare, and others. These policies target exclusively at FHHs with no provision for MHHs in such policies.

My study found that MHHs have slightly more access insecticide treated bednets than FHHs. The findings of Dizon-Ross et al., (2017) also confirms how MHHs access the free insecticide treated bednets that are meant for FHHs. This therefore questions policies and how such affirmative policies will achieve the intended purpose of

promoting the wellbeing of women. How will these policies affect FHH differentially? In order to ensure that policies address the specific purposes for which they are promulgated, I suggest that further research should investigate the impact that affirmative policies have on the wellbeing of all kinds of households that are under the headship of females.

3.9 Different Prevention Strategies for Malaria in children U5

My study found that both FHHs and MHHs adopt different strategies to prevent malaria among children U5 in their households. For instance, FHHs are more likely to use malaria prevention medication to avert U5 malaria, have U5 children sleep under an insecticide treated bednet, use mosquito repellent, spray their homes with insecticide, fill in stagnant waters (puddles), keep their surroundings clear and also put mosquito screens on their windows. Despite the variations between FHHs and MHHs in terms of using these malaria prevention strategies, the rates of U5 malaria positivity of FHHs and MHHs are nearly identical. This raises questions about the utility of the malaria prevention methods being promoted - or whether additional implementation science research is warranted to determine if the interventions are being conducted as intended.

Aside from this, my study also found that MHHs are more likely to own an insecticide treated bednet than FHHs (83.07% and 78.03% respectively). This notwithstanding, the

findings of the study revealed that FHHs are more likely to have their U5 children sleep under an insecticide treated bednet than MHHs (39.53% and 38.05%) correspondingly. Though the difference is not statistically significant, why do U5 children in MHHs appear not to sleep under insecticide treated bednet meanwhile they have more access to insecticide treated bednets? In the same way, U5 children in FHHs sleep under insecticide treated bednet meanwhile FHHs do not have access to insecticide treated bednets compared to MHHs. Importantly, more than 1 in five households did not appear to own an insecticide treated bednet, and among those households with children under age 5, less than 40% of either MHH or FHH had their children sleeping under a bednet the night prior to the survey. These findings raise questions about the impact and effectiveness of the free bednet distribution policies and the education around the importance of bednet usage. Clearly the message has not reached at least 60 percent of households, regardless of the gender of the household head.

While the Ghana Malaria Indicator Survey assessed whether U5 children slept under an insecticide treated bednet the night before the survey was conducted, it was not possible to verify respondents' self-reported answers. Similarly, when respondents said that they sprayed their households with insecticides, it was not possible to determine if and when did they sprayed, what kind of insecticide was used, and how much was used? This necessitates thinking about the gap between what we know works for malaria prevention, what people say they do, and what people actually do to prevent malaria. In the light of this, further research is required to investigate and

identify other strategies that are adopted by FHHs to prevent malaria among U5 children and the entire household.

3.10 The RTS, S Malaria Vaccine and Malaria Prevention in FHHs and MHHs

The fight against malaria has reached a critical new milestone with the approval of the RTS, S malaria vaccine in October 2021 by the World Health Organization for use in children. A few studies that have been conducted on the RTS, S malaria vaccine posit that combination of the RTS, S vaccine with other malaria prevention strategies such as Seasonal Malaria Chemoprevention (SMC) could be very effective in the prevention of seasonal malaria among children, especially in West Africa where malaria is a seasonal infection. The combination of the RTS, S vaccine and the SMC is postulated to have reduced 70% of seasonal malaria deaths among children.

Considering the high expectation of the RTS, S malaria, I recommend that future research should examine the likelihood of FHHs to get their children under 5 vaccinated against malaria compared to MHHs. Will FHH be more or less likely to seek immunizations for their children than MHH? Are their barriers and perceived benefits of the vaccine different? Will single FHH be more likely than single MHH to get their children immunized? A study of this kind is important considering the recent resistance of countries and different groups of people against the COVID-19 vaccine. Such a study will help determine the incentives that might motivate both FHHs and

MHHs to consider vaccination as another strategy to prevent malaria among U5 children.

3.11 Conclusion

This study reviewed the literature on the difference between FHHs and MHHs in terms of children's health and wellbeing including the female in household headship position. The review explored research that examined the ability of females to effectively serve as heads of households and meeting all the healthcare needs and other essential needs of the children and the household. The literature established that though females face a lot of challenges and discriminations in society, they still make sacrificial investments to ensure that the health needs of children and other members of the household are met, contrary to conventional literature. The discrimination that females face such as access to productive resources, access to education, access to credit facilities and other resources set the basis for females in household headship position adopt different livelihood strategies at the same time in order to enhance their ability to cope.

Following the review, this research focused on data from the Ghana Malaria Indicator Survey to understand the difference between female- and male-headed households and their prevention and testing for malaria among children under 5 (U5). This study revealed that FHHs are richer, they are likely to obtain higher education and they are

more likely to live in urban areas, however, they have a small number of children U5 in their household compared to MHHs.

The study also revealed that MHHs have greater access to insecticide treated bednets than FHHs, they also have more children U5, a higher number of their children U5 slept under an insecticide treated bednet the night before the survey. This notwithstanding, children U5 in FHHs are more likely to be tested for malaria compared to those in MHHs, although the difference was not statistically significant. Despite the fact that MHHs had greater access to insecticide treated bednets and their children U5 more likely to sleep under an insecticide treated bednet, the rates of malaria positivity of FHHs and MHHs are nearly identical (63.0% and 63.9%) respectively.

With regard to malaria prevention behavior between FHHs and MHHs, this study finds that FHHs are more likely to prevent malaria using malaria prevention medication, have their children U5 sleep under an insecticide treated bednet, use mosquito repellent, keep their surrounding clean, spray their homes with insecticides, fill stagnant waters (puddles), use mosquito repellents as well as put mosquito screens on their windows compared to MHHs.

Female headed households dominated in all the malaria prevention strategies that were used in the survey questionnaire to collect data. The malaria prevention strategies presented in the survey are those relatively cheaper to acquire with minimal financial dedication and self-commitment. So, the ascendancy of FHHs in all these strategies does not reflect the financial strength of FHHs but rather indicate

their commitment towards promoting the wellbeing of children U5 and the entire household. This implies that females can head households and promote the wellbeing of the children and the whole household even with the limited resources and the discriminations they are faced with in society.

3.12 Recommendations

The tremendous efforts made by FHHs to promote the wellbeing of children U5 and other members of the household gives enough reason for them to be given consideration in policies and development initiatives in society. If this is given policy and space in development discourse, it will go a long way to strengthen the women and FHHs in households and leadership positions that they occupy.

Affirmative policies should also be enacted that will deliberately give women and FHHs access to important and productive resources such as land, equal access to education, access to credit facilities among other. If this is done, it will go a long way to reduce the poverty and other forms of difficulty that they are exposed to. The stereotype of women not being able to lead households and other entities, which is usually associated with financial situation of women would also be eliminated if this is done.

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