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Male-female differences in households' resource allocation and decision to seek healthcare in south-eastern Nigeria: Results from a mixed methods study

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**1 Abstract**

2 Ability to influence household decision-making has been shown to increase with  
3 improved social capital and power and is linked to better access to household  
4 financial resources and other services outside the household including healthcare.

5 To examine the male-female differences in household custody of financial resources,  
6 decision-making, and type of healthcare utilised, we used a mixed methods  
7 approach of cross-sectional household surveys and focus-group discussions  
8 (FGDs). Data was collected between 10 January – 28 February 2011. We analysed  
9 a sample of 411 households and a sub-sample of 223 households with a currently  
10 married head. We conducted six single-sex FGDs in 3 communities (1 urban, 2 rural)  
11 among a random sub-sample of participants in the survey. We performed univariate,  
12 bivariate, and logistic regression analyses with a 95% confidence interval. For the  
13 qualitative data, we performed thematic analysis where broad themes relevant to the  
14 research objective were abstracted.

15 In all households and in those with a married head, sick male members were less  
16 likely to forgo healthcare (aOR<sub>all</sub>0.87, 95% CI 0.80-0.90; aOR<sub>married</sub>0.52, 95% CI  
17 0.18-0.83) and more likely to utilise formal healthcare relative to female sick  
18 members (aOR<sub>all</sub>3.36, 95% CI 3.20-3.87; aOR<sub>married</sub>19.50, 95% CI 9.62-39.52).

19 Formal healthcare providers are medically trained while informal providers are  
20 untrained vendors that dispense medications for profit. There were more reports of  
21 sole custody of household resources among men within households with married  
22 heads. Joint decision-making on healthcare expenditure improved women's access  
23 to healthcare but is not reflective of unhindered access to household financial  
24 resources. Qualitatively, women spoke of seeking permission from male household

25 head before expenditure was incurred, while male heads spoke of concealing  
26 household financial resources from their spouse.

27 Gender constructs and male-female differences have important effects on household  
28 resource allocation and healthcare utilisation.

29 Keywords: Nigeria; Gender; Sex; household decision-making; healthcare access;  
30 household resources allocation

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## 50 **Introduction**

51 Globally, there is increasing interest in how household factors contribute to  
52 healthcare access (Goudge et al., 2009; Monteiro et al., 2017). This is informed by  
53 evidence which suggests that household-level factors play an important role in  
54 determining household members' access to healthcare (Pylypchuk & Kirby, 2017).  
55 While there are many barriers to healthcare access (Goudge et al., 2009), in many  
56 low-and-middle income countries (LMICs), economic cost (predominantly user fees  
57 and lost income) of healthcare is still a major barrier (Leive & Xu, 2008; Onah &  
58 Govender, 2014). Added to this are household-level characteristics including gender,  
59 employment status and members' autonomy in decision-making which have been  
60 found to exacerbate these barriers to healthcare access, with the most vulnerable  
61 being females and children within poor households (Aregbeshola, 2016).

62 According to the World Health Organisation (WHO), gender refers to the "socially  
63 constructed characteristics of women and men – such as norms, roles and  
64 relationships of and between groups of women and men" (WHO, 2011, pg. 79). By  
65 this definition, gender ascribes different value and roles firstly between boys and girls  
66 and subsequently between men and women (Dasgupta, 2016). This further creates a  
67 male-female divide in the societal values and roles assigned to males and females  
68 (Quisumbing, 1996). While there are many enabling effects of male-female  
69 ascriptions, in the context of agency and autonomy in LMICs, there is concern that  
70 these ascriptions have the potential to create inequalities and inequities between  
71 men and women (Bolt & Bird, 2003; Khera et al., 2014). In addition, these male-  
72 female gaps have adverse consequences for the development of women and their  
73 access to opportunities including healthcare (Adler et al., 2016).

74 Economically, in many LMICs, women still lag behind in education, employment, and  
75 income generation opportunities hence perpetuating these male-female inequalities  
76 (Wiig, 2013). Sen and Östlin (2008) found that a woman's ability to participate in  
77 household decision-making and exercise autonomy through unhindered access to  
78 household resources is based on her ability to earn enough income to contribute to  
79 household economic status. In LMICs, since women earn lower wages, their ability  
80 to contribute towards household economic decision-making is restricted (Acharya et  
81 al., 2010; Tiwari, 2015). In rural agrarian Nigeria, financial proceeds from farming are  
82 held with the male heads who decide on what commodities to consume (NBS, 2009).  
83 This has impact on women's autonomy in food and healthcare consumption  
84 decisions, and by extension, their health and developmental outcomes (Becker et al.,  
85 2006).

86 Healthcare providers vary considerably in cost and in quality in many LMICs. With  
87 the introduction of user-fees in many public health facilities in LMICs including  
88 Nigeria, healthcare costs have continued to increase and undermine access for the  
89 poor and most vulnerable (Meessen et al., 2009). While there are a few official  
90 exemptions to user-fees, informal user fees exist for utilisation of some of these  
91 services and non-hospital costs and drug costs have to be paid out-of-pocket (Hone  
92 et al., 2017). In addition, households may also be induced to use private sector and  
93 alternative providers in situations where public facilities face budgetary difficulties  
94 and non-availability of medications (WHO, 2016). We found limited published  
95 literature on household utilisation of a mix of healthcare providers as a potential  
96 coping mechanism when faced with healthcare costs. While this can help  
97 households cope with increasing healthcare expenditure, literature from LMICs have  
98 shown that some of these low-cost healthcare providers are unregulated (patent

99 medicine vendors and *chemists*) (Webster, 2017) and hence utilisation can have  
100 adverse health consequences (Peters & Bloom, 2012; Uzochukwu et al., 2014).  
101 Furthermore, there is limited published literature on the determining effects of male-  
102 female differences on type of healthcare utilised during an illness episode.

103 While studies have investigated the influence of women's agency within households  
104 and utilisation of sex-specific healthcare (Matsumura & Gubhaju, 2001; WHO, 2005),  
105 fewer studies have investigated the male-female differences in the household-level  
106 decision to seek care and type of healthcare provider utilised. This dynamic is  
107 important to understand considering that there is even more limited published  
108 research in west Africa where there are prevailing norms about roles, agency and  
109 healthcare needs for male and females. To contribute to this limited literature, our  
110 research objective is to examine the extent to which there are existing male-female  
111 differences in access to healthcare services and type of facility utilised by different  
112 household members. In addition, we aim to examine the male-female differences in  
113 access and custody of resources within households in LMICs like those found in  
114 south-eastern Nigeria. We theorize that these differences are more pronounced  
115 when there are existing male-female differences in socioeconomic status (economic  
116 activities, and income-generation abilities) of different household members.

## 117 **Methods**

### 118 **Study design**

119 This is a cross-sectional mixed-methods study where the quantitative component is a  
120 household survey and the qualitative component is focus group discussions (FGDs).  
121 The study was approved by the Faculty of Health Sciences human research ethics  
122 committee at the University of Cape Town, South Africa (HREC REF: 200/2010).

123 Data was collected between 10 January – 28 February 2011. All participants were 18  
124 years and older and provided both oral and written consent.

### 125 **Study site**

126 The study was conducted in Nsukka Local Government Area (NLGA) in south-  
127 eastern Nigeria. NLGA comprises one urban and 14 rural communities, with a  
128 population of almost 310,000, comprising approximately 63, 705 households (NBS,  
129 2007). The urban community is a university town with a broader range of healthcare  
130 providers which include formal providers (namely public and private hospitals),  
131 primary healthcare centres and pharmacies, and informal providers (namely patent  
132 medicine vendors, PMVs, and *chemists*). According to the definition proposed by  
133 Oladepo and Lucas (2013, pg. 106), a PMV is “a person without formal training in  
134 pharmacy and who sells orthodox pharmaceutical products on a retail basis for  
135 profit”. A *chemist* in this context is defined as a provider (predominantly a nurse) who  
136 has a kiosk where orthodox pharmaceutical drugs are sold, in contrast to PMVs who  
137 do not have any medical or pharmaceutical training. In the rural communities,  
138 primary health centres and PMVs are the predominant healthcare providers.  
139 *Chemists* and PMVs are unregulated. If there is need for hospital care, people will  
140 need to cover between 18-30 kilometres to the nearest urban area.

### 141 **Sampling and data collection**

142 To examine the proportion of the population with outcomes of interest in-line with our  
143 study objectives, we adopted the following approach to determine the sample size.

144 Since NLGA comprised 63,705 households in 2006, the population and number of  
145 households were extrapolated to 2010 figures using an annual 3% population



146 growth-rate (NBS, 2009). Using Taro Yamane sample size specification (Taro, 1967),

$$147 \quad n = \frac{N}{1+N(e)^2} = \frac{69,705}{1+69,705(0.05)^2} = 397 \text{ households}$$

148 the minimum representative sample size required was 397 households within a 5%  
149 error margin and 95% confidence interval. The sample size was increased to 411  
150 households to allow for incomplete questionnaires.

151 A multi-stage sampling method was used to select households for the survey. We  
152 classified the one urban and 14 rural communities into enumerator areas (EAs)  
153 based on the established EAs used by the Nigerian National Bureau of Statistics  
154 (NBS, 2009). To ensure appropriate representation of urban and rural EAs, we  
155 stratified NLGA into urban and rural communities to represent 30% and 70% of the  
156 population respectively. In total, we selected 24 EAs (3 urban, 21 rural) based on  
157 probability-proportional to size (PPS) (Rosén, 1997) and 39 and 21 households  
158 were sampled in each of the urban and rural EAs respectively. More households  
159 were sampled in urban areas than in rural areas to account for the urban/rural  
160 percentage representation. In the second stage, we used a simple systematic  
161 random sampling method to identify survey households from each of the EAs. The  
162 sample of households was appropriately weighted in analysis using the inverse  
163 probability weighting method which denotes the inverse of the probability that the  
164 observation is included in the analysis due to the chosen sample design. We  
165 administered the questionnaires preferably to the household head or the spouse and  
166 in their absence, a senior household member.

167 Conceptually, we defined a household head as an individual who is identified or self-  
168 identifies as the head based on primary-income status and decision-making within  
169 households. This strategy combines two popular approaches to eliciting household

170 headship: self-identification, and verification of status (Haddad, Hoddinott, &  
171 Alderman, 1997; Modell & Hareven, 1973). There is no consensus on the processes  
172 involved in identifying household heads, age, sex, income, and gender are often  
173 used to elicit household headship based on the prevailing cultural and contextual  
174 norms within a study setting (Budlender, 2003). Age and sex was not a major  
175 consideration in our study since the average age of head of households was 51  
176 years which we considered to fall within the economically productive age group, and  
177 over 70% of households had only one adult male member. We determined the head  
178 of each household by asking our first point of contact to identify who was considered  
179 the head of the household. We then verified the status with the identified person,  
180 based on primary-income status, and decision-making roles. When the identified  
181 head was unavailable, we administered the questionnaire to the spouse, and if  
182 unavailable, to a senior household member. We piloted these questions to ensure  
183 that the definition of headship was well captured and appropriately translated in the  
184 questionnaires. We utilised trained field workers for data collection and instruments  
185 were translated, piloted, and adapted. The quantitative questionnaire was adapted  
186 from a previous study (Onwujekwe et al., 2010) in the same setting and translated to  
187 the local language. The questionnaire collected information on household  
188 sociodemographic characteristics including income earning, decision-making,  
189 custody of financial resources, and health seeking patterns.

190 We conducted six single-sex (three male, three female) FGDs in three communities  
191 (one urban, two rural). The FGDs were conducted among a sub-sample of the  
192 participants in the household surveys. Each FGD consisted of 8 to 11 participants.  
193 We considered single-sex FGDs to be more appropriate given the focus of the  
194 research where sensitive issues will likely to be spoken of more freely and without

195 fear of reproach in a single-sex group. We distributed invitations to participate in the  
196 FGDs to household heads and spouses in the surveyed households. We conducted  
197 the FGDs on a separate day from the quantitative survey to ensure that participants  
198 did not know of the participation of their counterparts. During data collection, we  
199 grouped participants to ensure that participants in the FGDs had similar economic  
200 background and activities (traders, teachers, farmers, women's religious and trading  
201 groups). We conducted the FGDs in participant's local language and this was  
202 captured using a voice recorder. We transcribed and translated the FGDs to English.  
203 Themes developed prior to conducting the FGDs included male-female differences in  
204 healthcare needs and utilisation, household decision-making, custody of financial  
205 resources, healthcare utilisation, and coping strategies due to healthcare  
206 expenditures.

## 207 **Data analysis**

208 To investigate the male-female differences in healthcare access and utilisation, and  
209 to also examine gender differences in household income, custody of financial  
210 resources, and decision making, we performed two analyses on the total sample of  
211 411 and on a sub-sample of 223 households where the household heads are  
212 married or have a live-in spouse. We applied this strategy since exploring gender  
213 differences in household income, custody of financial resources, and decision  
214 making among households with widowed and single household heads within this  
215 study was not feasible. However, male-female differences in healthcare access and  
216 utilisation were explored for all households since we assumed that male-female  
217 differences would be of interest in all households not withstanding the gender  
218 dynamics between the head and the spouse.

219 We analysed the quantitative data using Stata statistical software while we used  
220 NVivo to manage the FGDs transcripts. We constructed a cumulative socioeconomic  
221 status (SES) index using household assets by performing a principal component  
222 analysis. To construct the asset index, we pooled together information on ownership  
223 of electronic equipment (electric lamp, fridge, radio, television, electricity generators),  
224 transport (bicycles, motorcycles, cars), sources of energy (electricity), dwelling type  
225 (brick or mud house) and bank accounts. These assets indicated some variations in  
226 household SES and hence were pooled together to construct a SES index. We then  
227 stratified the study population into four SES quantiles: first, second, third, and fourth  
228 quarters with the first quantile representing the lowest socioeconomic group. In  
229 conducting the principal component analysis, the first component factor was used to  
230 represent the asset index. The asset index was adapted from the Demographic and  
231 Health Surveys methodology for creating a household wealth index (Rutstein &  
232 Johnson, 2004).

233 We collected information on the health outcome variables by asking if “any”  
234 household member was sick in the month preceding the study. If Yes, did they seek  
235 care? And if Yes, what type of facility was visited? It is possible that more than one  
236 household member was sick and did (or not) seek healthcare, but we collected  
237 information only on the first-mentioned event in the previous month. For the first  
238 outcome variable, we created a dichotomous variable called “healthcare seeking” as  
239 1 if households had a sick member in the month preceding the study and sought  
240 healthcare and 2 if households had a sick member but did not seek healthcare. For  
241 the second outcome variable, we created a dichotomous variable called “type of  
242 healthcare utilised” by categorising all the different facilities visited by households  
243 when a member was sick in the month preceding the study. We grouped formal

244 healthcare providers including public and private hospitals and clinics, pharmacies  
245 and primary health centres into one category called “formal healthcare” and grouped  
246 informal and unregulated provides including PMVs and *chemists* into “informal  
247 healthcare”. None of the sampled respondents reported accessing services from  
248 pharmacies. We used the two categories following published literature in Nigeria and  
249 within the study area which indicate the types of healthcare facilities that are  
250 considered to be formal or informal (Oladepo & Lucas, 2013). Age was stratified  
251 based on WHO definitions where individuals aged 0-9 years were categorised as  
252 children, 10-19 years as adolescents, and 20 years and above as adults (World  
253 Health Organization, 2011a).

254 We conducted exploratory data analysis to describe sample statistics and applied a  
255 battery of statistical significance test where appropriate. We calculated crude odds  
256 ratios (OR) to determine the strength and direction of associations between our  
257 independent predictor and outcome variables. To control for potential effects of  
258 confounding variables, we performed an adjusted logistic regression analysis.  
259 Variables included in the adjusted model were those with significant associations in  
260 the crude analysis as well as those cited in the literature. Multi-collinearity was  
261 assessed among independent variables in the adjusted logistic regression models  
262 using the variance inflation factor (Chen et al., 2003). A probability value of  $p \leq 0.05$   
263 was selected as the level of significance. The coefficients from all regression models  
264 were reported as aOR (aOR<sub>all</sub> for all sampled households, and aOR<sub>married</sub> for  
265 households with heads that are married or have a live-in spouse) with 95% CI.

266 Using thematic analysis, the FGD transcripts were read and broad themes relevant  
267 to the study objectives were abstracted. The FGDs was transcribed by one of the  
268 trained fieldworkers with skills in data transcription and a native speaker of the local

269 language, under the supervision of the lead author who is also a native speaker of  
270 the local language in the study setting. The lead author in collaboration with the  
271 study team developed the codes for the themes used in the transcription. New  
272 themes which were identified during the review of the transcripts were also captured  
273 and coded. Transcripts were reviewed by the research team and enquiries resolved  
274 through discussions where consensus were reached.

275 Since the goal of this study was to apply a mixed-methods approach in investigating  
276 the study objectives, data was collected in a manner to ensure that both survey and  
277 FGDs datasets complemented each other. This strategy was used throughout the  
278 study stages including analyses, interpretation, and write-up.

## 279 **Results**

280 On average, the heads of households were 51 years old and had low education  
281 levels (70% had less than secondary school education), see Table I. The average  
282 household had low rates of health insurance (9%), with more households located in  
283 the lowest quartile (35%) according to their asset index. In addition, households were  
284 also likely to be engaged as subsistence farmers (58%):

285 Eighty percent of households reported a member being sick in the month preceding  
286 the study. Of those individuals who were sick, equal numbers of males and females  
287 were affected. Sixty percent of households with a sick member reported utilising  
288 formal healthcare during the ill-health episode. For those that utilised healthcare,  
289 households on average spent 1972 *Naira* (USD14) on individual healthcare. The  
290 predominant healthcare payment method was out-of-pocket (91%), although  
291 households reported combinations of other payment mechanisms which included

292 health insurance (8%) and instalments (19%). Households could report multiple  
293 sources of payment.

294 Fifty-four percent of households had a head that was married or living with a spouse.  
295 Ninety-six percent of these households with a married head were male headed while  
296 four percent were female headed. Of the eight households with a female head, six  
297 heads earned more than their (male) spouse while two earned less than their  
298 spouse. Out of the 215 households headed by a male, 108 reported earning more  
299 than their spouse, 62 earned less than their spouse, 37 earned around the same  
300 income as their spouse while nine reported that their spouse did not bring in any  
301 income (Figure I and II). Of the eight households headed by a female, all reported  
302 joint custody of household financial resources. One hundred and eighty-seven  
303 households with a male head had sole custody of their household income, nine  
304 reported that their spouse had custody of financial resources, while 19 reported joint  
305 custody of household financial resources. Sixty-eight percent of households with a  
306 male head reported sole decision-making on healthcare expenditure and half of  
307 households with a female head reported the same. While it is somewhat unusual for  
308 a woman to head households in this context, this occurs where the woman earns  
309 more than the spouse and even when this happens, there was no case where  
310 women had sole custody of household resources.

311 The FGDs provide a more in-depth analysis of the gender dynamics in household  
312 decision-making on general and health-related expenditures, and on custody of  
313 household resources. Discussions around decision-making revolved mainly around  
314 household expenditure, including expenditure on health, school fees, food and  
315 clothing. We also observed that generally, men made decisions alone in rural areas,

316 while there were more reports of joint decision-making in urban areas. For  
317 households that reported joint decision-making, there was a clear male-female divide  
318 between decision-making and custody of household financial resources:

319 *I give her instructions to use the money gotten from sale of produce to*  
320 *buy other needed essentials. I tell her what to use the money she gets*  
321 *from the sale of our farm produce to buy – 46-year-old male (rural).*

322 *I and my husband decide on what to buy. He then gives me money to*  
323 *go to the market - 39-year-old female (urban).*

324 In the first quotation, authority and power clearly rest with the man. In the second  
325 quotation, while there is joint decision-making, the power of control and  
326 disbursement of money also rests with the man. In households where women are  
327 employed in the formal sector and earned an income, joint decision-making is  
328 spoken of. This is also more prevalent in urban areas:

329 *My wife works for the government and even has a bank account. We*  
330 *have joint decision on monetary expenditures on school fees and other*  
331 *expenses – 29-year-old male trader (urban).*

332 Decisions on healthcare utilisation were often jointly made. Also, due to the  
333 importance given to health care, the need to consult with the spouse when faced  
334 with a health care utilisation decision was sometimes deemed unnecessary. This  
335 was reported in both male and female FGDs. However, the FGDs provided an  
336 illustration of the difference in access to household financial resources when  
337 healthcare expenditure is sought:

338 *When my son was sick, I took him to the clinic and called my husband*  
339 *to bring money - 49-year-old female (urban).*

340 *When her son had jaundice, we took him to the clinic and our husband*  
341 *had to pay when he returned from work - 20 and 25-year-old females in*  
342 *polygamous homes (rural).*



343 A similar pattern to that of decision-making was observed in relation to control over  
344 savings and resources. Men were typically the sole custodians of household savings  
345 and in some instances the lack of control by women over savings and money was  
346 attributed to the perception that women 'spend unnecessarily', an indication of  
347 gender stereotyping. In some cases, men also considered women's healthcare  
348 needs as frivolous and hence the type of healthcare utilised was restricted to  
349 informal healthcare:

350 *Women do not understand that paying for care at the clinic is*  
351 *expensive. My daughters always want to go and see the doctor for*  
352 *girls' talk. I cannot pay for it. They must go to the chemist if it is serious*  
353 *– 40-year-old male (urban).*

354 *My husband holds the money in the family. I don't want him to*  
355 *complain that I spend money unnecessarily - 46-year-old female*  
356 *(urban).*

357 In the case of polygamous households, respondents either spoke of men controlling  
358 or even 'hiding' money or pooling together of financial resources as a means of co-  
359 opting households. This is an indication of the different dynamics that exist in  
360 different household structures:

361 *We men also have to hide the money we have from our wives,*  
362 *because if they know that there is money, they will start to make*  
363 *demands – 65-year-old polygamous male (rural).*

364 *We have a common pool where we keep our money – 20-and 25-year-*  
365 *old females in polygamous homes (rural).*

366 In relation to health and ill-health, both men and women spoke of women's  
367 vulnerability to illness, with implications for treatment seeking behaviour. Of interest  
368 is the perception that women are weaker than men, more susceptible to illness and  
369 hence in need of more frequent healthcare. In addition, women attributed their

370 increasing healthcare needs to changing economic circumstances which now  
371 demand that women perform more strenuous jobs:

372 *Female healthcare is more expensive to treat than male's. You know*  
373 *we are weaker by nature but these days we even do men's work and*  
374 *are more exposed to illness – 20-year-old female (urban).*

375  
376 *I have told my girls to always stay inside after 6pm so that mosquitos*  
377 *do not bite them. I don't have the money to spend on hospital bills and*  
378 *with girls, it always costs more – 45-year-old male (rural).*

379 Tables II and III provide information on the predictors of healthcare utilisation both for  
380 all sampled households and for a subsample of households with a head that is  
381 married or have a live-in spouse. Findings from the household survey show that 18%  
382 of households had at least one member who was sick in the month preceding the  
383 study but did not seek healthcare. Results from the multivariable analysis (Table II)  
384 indicate that while holding the effects of other covariates constant, households  
385 located in rural areas were more likely to have reported forgone healthcare (aOR<sub>all</sub>  
386 1.21, 95% CI 1.18-1.34; aOR<sub>married</sub> 1.71, 95% CI 1.32-8.97). Households with a sick  
387 male member were less likely to report forgone healthcare relative to a sick female  
388 member (aOR<sub>all</sub> 0.87, 95% CI 0.80-0.90; aOR<sub>married</sub> 0.52, 95% CI 0.18-0.83).  
389 Households located on the lowest quantile (as defined by their asset index) were  
390 more likely to report forgone healthcare during an illness episode relative to  
391 households on the highest quantile (aOR<sub>all</sub> 2.53, 95% CI 2.49-2.58).

392 For households with a head that is married or have a live-in spouse, where the  
393 spouse earns more than the head, households were also less likely to report forgone  
394 healthcare during an illness episode relative to households where the head earns  
395 more than the spouse (aOR<sub>married</sub> 0.75, 95% CI 0.022-0.97). This is the same for  
396 households where the head and the spouse earn about the same income (aOR<sub>married</sub>

397 0.41, 95% CI 0.19-0.93). Households where the financial resources were jointly held  
398 between the head and spouse were less likely to forgo healthcare during an illness  
399 episode relative to when financial resources are held solely by the head (aOR<sub>married</sub>  
400 0.79, 95% CI 0.75-0.81)

401 Results also indicate that holding the effects of other covariates constant,  
402 households where the spouse earns almost the same as the head were more likely  
403 to utilise formal healthcare relative to households where the head earns more than  
404 the spouse (aOR<sub>married</sub>1.76, 95% CI1.47-3.14). Households where the spouse was in  
405 custody of financial resources were more likely to utilise formal healthcare compared  
406 to households where the head had the sole custody of financial resources  
407 (aOR<sub>married</sub>1.48, 95% CI 1.36-1.78). Households where decisions on healthcare  
408 expenditure were jointly made by household head and spouse, were more likely to  
409 utilise formal healthcare when any household member was sick compared to  
410 households where the healthcare expenditure decision was made solely by the head  
411 (aOR<sub>married</sub>1.31, 95% CI 1.09-2.99) (Table III). Also, households where the head and  
412 spouse jointly held custody of financial resources were more likely to utilise formal  
413 healthcare (aOR<sub>married</sub>1.82, 95% CI 1.19-4.07) relative to households where the head  
414 had sole custody of financial resources.

415 Results also indicate that when household member that is sick is male, households  
416 were more likely to utilise formal healthcare relative to when the sick household  
417 member is female (aOR<sub>all</sub>3.36, 95% CI 3.20-3.87; aOR<sub>married</sub>9.59, 95% CI 7.20-  
418 19.72). Households with a higher number of female children were more likely to  
419 utilise formal healthcare (aOR<sub>all</sub>3.89, 95% CI 3.51-3.94; aOR<sub>married</sub>2.09, 95% CI 1.06-  
420 3.14). A higher number of male children had a similar effect (aOR<sub>all</sub> 2.20, 95%

421 CI 2.17-2.61;  $aOR_{\text{married}} 1.21$ , 95% CI 1.04-2.39). On the other hand, households with  
422 more male adolescents were more likely to utilise formal healthcare ( $aOR_{\text{all}} 2.65$ ,  
423 95% CI 2.41-2.88;  $aOR_{\text{married}} 3.11$ , 95% CI 1.91-4.00), while female adolescent  
424 members had no significant effect. Finally, holding the effects of other covariates  
425 constant, households that paid for healthcare out-of-pocket were less likely to utilise  
426 formal healthcare relative to households that do not pay out-of-pocket  
427 notwithstanding the sex of the sick household member ( $aOR_{\text{all}} 0.62$ , 95% CI 0.54-  
428 0.67;  $aOR_{\text{married}} 0.33$ , 95% CI 0.14-0.62).

## 429 Discussion

430 This study provides evidence of the prevalent male-female differences in access to  
431 household resources and determinants of healthcare utilisation, and contributes to  
432 the discourse on how household dynamics discriminate against women and girls in  
433 LMICs (Fredman et al., 2016). Our study found strong evidence of male-female  
434 differences in custody of and access to household resources and in healthcare  
435 utilisation. In rural settings, men are usually the custodians of household resources  
436 and many times, allocation of household finances is based on the decision of the  
437 male head. As evidenced from the FGDs, men also conceal household financial  
438 resources from their spouse in a bid to curtail what they considered to be the  
439 possibility of frivolous expenditures.

440 However, joint custody of household financial resources was reported when women  
441 were employed in the formal sector (predominantly in urban settings). Due to the dire  
442 nature of ill-health, some households reported joint decision-making in healthcare  
443 access. Of importance is the distinction between decision-making and access to  
444 household financial resources. While women spoke of ability to make decisions to

445 seek healthcare for themselves or their children, they also detailed how men were  
446 asked to provide the financial resources for healthcare expenditure. This further  
447 illustrates that women's empowerment in decision-making regarding expenditures for  
448 themselves and their children do not reflect unhindered access to household  
449 finances. This is in-line with the argument proposed by Mitra and Singh (2007),  
450 where women's empowerment in decision-making and other social constructs should  
451 not be assumed to encompass unhindered access to financial resources at the  
452 household level.

453 Although there are limited studies that have looked at household resource allocation  
454 and general healthcare utilisation, there is established literature which has shown the  
455 relationship between household decision-making and sex-specific healthcare  
456 utilisation, predominantly maternal healthcare (Adjiwanou & LeGrand, 2014; Hou &  
457 Ma, 2013). Also, a study found that sociodemographic characteristics including age,  
458 income level, number of children, and duration of marriage are important contributory  
459 factor to heterosexual couples' decision to share financial resources and income,  
460 and to cooperate in expenditure decision-making (Cochard, Couprie, & Hopfensitz,  
461 2016). These studies found that social and economic power is crucial to women's  
462 decision-making power and this impacts on access to household resources and  
463 utilisation of services including maternal services. Numerous studies have also  
464 investigated the role of sex differences in household decision-making (Iyengar &  
465 Ferrari, 2015; Kastner & Stern, 2015). In-line with our study findings, a study in  
466 Southern Sulawesi Indonesia found that balance of power in household decision-  
467 making was positive for women when gender norms are less restrictive, greater  
468 equality of women in financial decision-making is reinforced and a narrower gap in  
469 gender differences in income earning power exists (Colfer et al., 2015). Our study

470 also found that when a spouse earns an income similar to the male head, such  
471 households are more likely to utilise formal healthcare. These findings indicate that  
472 ability to earn an income for a woman is a determinant to her participating in  
473 household decision-making in resource allocation and healthcare utilisation.

474 Also, our study provides evidence of the determinants of non-utilisation of healthcare  
475 during illness. While our study found high rates of forgone healthcare, male  
476 household members were significantly more likely to seek care and utilise formal  
477 healthcare relative to female household members. This indicates that female  
478 household members are discriminated against both in seeking care and in utilisation  
479 of quality healthcare. This is since informal healthcare providers (PMVs and  
480 *chemists*) are unregulated in Nigeria (Abimbola et al., 2016; Brieger et al., 2004) and  
481 provide care and dispense drugs based on affordability without adhering to drug  
482 regimens and prescriptions (Oladepo & Lucas, 2013; Sieverding, Liu, & Beyeler,  
483 2015). This poses a significant challenge to the health outcomes of those that utilise  
484 their services (Kaur et al., 2015; Uzochukwu et al., 2014). Studies are now calling for  
485 better regulations in drug dispensing (Ajayi & Ajuwon, 2015), and also in training and  
486 incorporating these unregulated vendors into a more formal structured and regulated  
487 health system since they have a far reach among communities especially in rural  
488 areas (Beyeler, Liu, & Sieverding, 2015).

489 Our study found that while sick male and female children within households were  
490 equally likely to utilise formal healthcare, male adolescents were more likely to utilise  
491 formal healthcare with female adolescents having no significant effect. This might be  
492 attributed to the perception of female healthcare and the cost implications as  
493 reported in the FGDs. Other studies have also argued that there is a gap in nutrition  
494 and healthcare for males and females within households (Dasgupta, 2016; Tolhurst,

495 et al., 2008). While in India, Dasgupta (2016) found that the preference for a male  
496 child is a significant contributory factor to gender differences in children's and  
497 adolescent's nutrition and healthcare, Tolhurst et al. (2008) found that in Ghana,  
498 male gender-biased authorisation for healthcare expenditure is an important  
499 contributor to the gender differentials in healthcare utilisation.

500 Finally, our study found that notwithstanding the gender of the sick household  
501 member, poor households were more likely to forgo healthcare relative to richer  
502 households. Also, when payment for healthcare is out-of-pocket (predominantly user  
503 fees), households are less likely to utilise formal healthcare. This is in-line with the  
504 findings of several studies (Buor, 2004; Leive & Xu, 2008) including those conducted  
505 in Nigeria (Onoka et al., 2011; Onwujekwe et al., 2010) which illustrates the  
506 catastrophic nature of direct payment for healthcare utilisation which has the  
507 potential of pushing households into poverty (Aregbeshola, 2016; McIntyre et al.,  
508 2006).

509 Our study experienced several limitations. We did not ask respondents for the  
510 number of episodes of sickness in the month preceding the study nor the type of  
511 illness experienced. This we believe would have provided more information on the  
512 type of healthcare utilised when faced with different types of illness and the cost  
513 implications. We also did not collect data on the exact age of the sick household  
514 member but focused on broad age groups and gender which gave us enough  
515 information that shed some light on household male-female dynamics and  
516 healthcare utilisation. We also did not distinguish between the nature of healthcare  
517 utilised (inpatient and outpatient care). This we believe would provide the context on  
518 the different decision-making process when faced with different healthcare needs  
519 (including gender-specific healthcare). We did not collect data on the household

520 composition (monogamous and polygamous) in the quantitative survey which would  
521 have provided more information on household decision-making and resource  
522 allocation. Finally, we did not verify household asset ownership hence the data might  
523 experience some information bias. However, considering these limitations, our study  
524 contributes to the limited literature on household gender differences in resource  
525 allocation and healthcare utilisation.

526 In conclusion, this study confirms the role of male-female differences in household  
527 resources allocation and healthcare utilisation and calls for efforts to redress these  
528 prevalent inequities. We recommend that interventions that seek to improve  
529 women's agency and autonomy should incorporate strategies to reduce prevalent  
530 sex-related norms, and household-level male-female differences and inequalities.

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547 **References**

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711 **Tables**712 Table I: Characteristics of sampled households (percentages, except where otherwise  
713 specified)

	Variable	All household (n=411)	Household with a married head (n=223)
demographic factors	Education level of household head		
	<i>None</i>	42	30
	<i>Primary education</i>	28	37
	<i>Secondary education</i>	17	20
	<i>Post-secondary education</i>	13	13
	Household size (average)	4 (SD 1.94)	4 (SD 1.64)
	Location		
	<i>Urban</i>		23
<i>Rural</i>	73	77	
socioeconomic factors	Insured Household (%)	9	13
	Asset index (quantiles)		
	<i>First</i>	35	41
	<i>Second</i>	15	12
	<i>Third</i>	25	22
	<i>Fourth</i>	25	25
	Employment status of household head		
	<i>Unemployed/pensioner</i>	4	3
	<i>Petty trading/hawking</i>	9	11
	<i>Formally employed (private/public sector)</i>	11	18
	<i>Self-employed</i>	8	10
<i>Farmer (subsistence)</i>	58	50	
<i>Trader</i>	10	8	
healthcare utilisation	Sick in the past month ( <i>Yes</i> )	80	84
	Sex of sick household member: <i>Male</i>	49	50
	<i>Female</i>	51	50
	Type of healthcare used: <i>Formal healthcare</i>	51	61
	<i>Informal healthcare</i>	49	39
	Cost of care (average)	1972Naira USD14 (SD 20)	1847Naira USD 12* (SD 18)
	Payment for healthcare**: <i>Out-of-pocket</i>	91	94
	<i>National Health Insurance</i>	8	11
<i>Instalments</i>	19	18	

714 \*mean, \*\*respondents could report more than one payment source for healthcare, for the  
715 same illness episode; italics indicate subcategories

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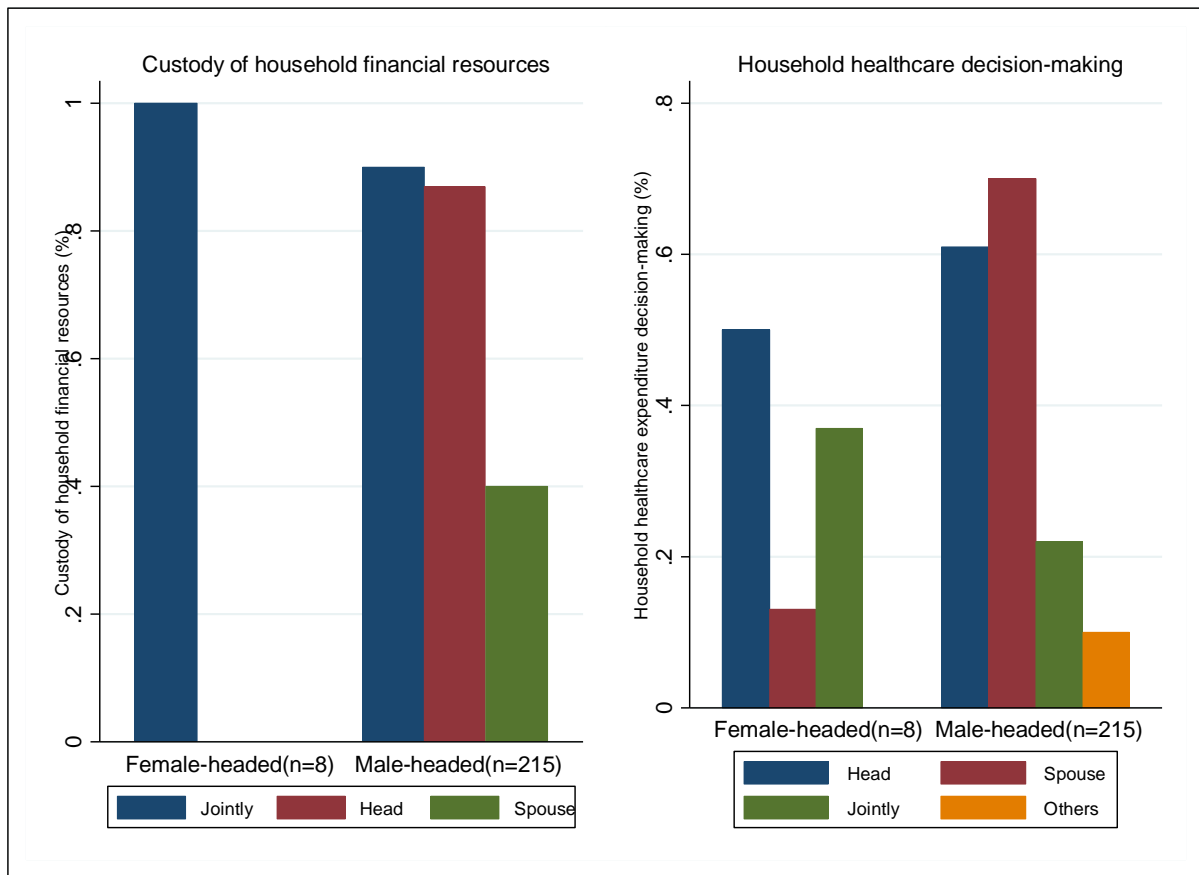
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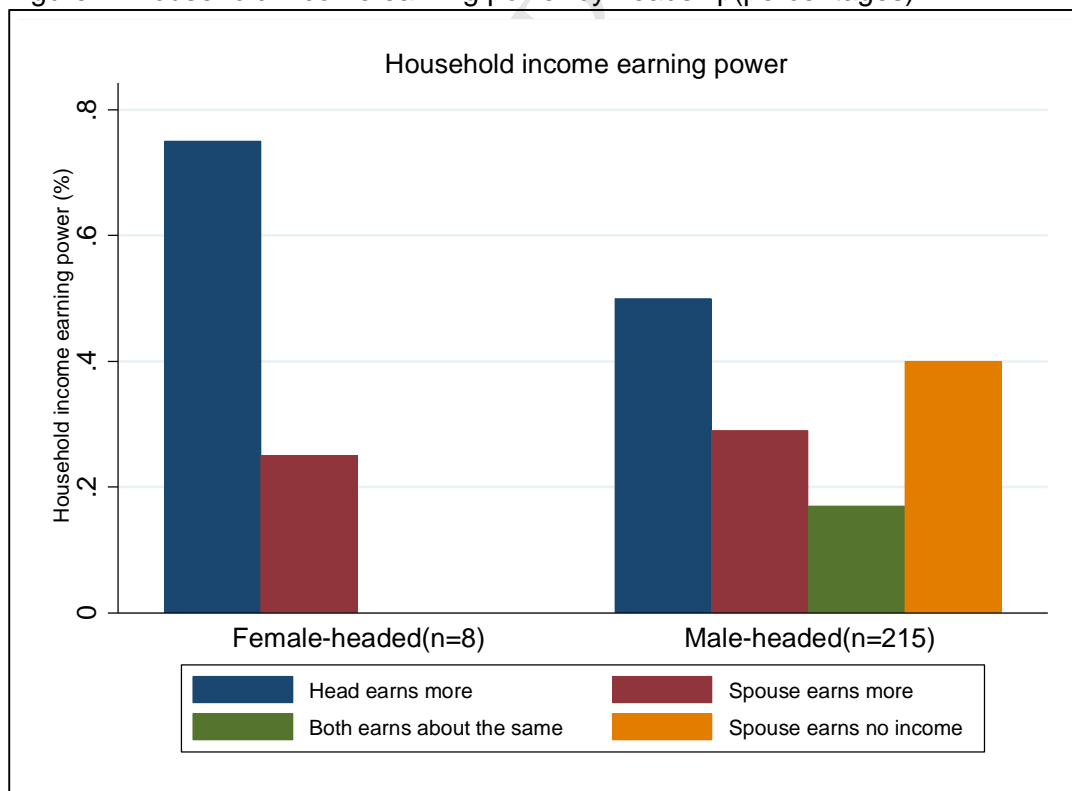
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726 Figure I: Household healthcare decision-making and custody of financial resource by  
 727 headship (percentages)



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 729 Figure II: Household income earning power by headship (percentages)



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734 Table II: Multivariable associations between predictor variables and healthcare utilisation

	<i>Sick and not seek healthcare</i>	
	Household with married head	All households
	<i>aOR<sub>married</sub> (95% CI)</i>	<i>aOR<sub>all</sub> (95% CI)</i>
Household expenditure decision-making <sup>#</sup> : <i>Spouse [ref: head]</i>	1.16 (0.20-6.67)	-
<i>Joint between head and spouse [ref: head]</i>	0.61 (0.53-1.88)	-
Household income earning power <sup>#</sup> : <i>Spouse earns more than head [ref: Head earns more]</i>	<b>0.75 (0.22-0.97)**</b>	-
<i>Head earns about the same as spouse [ref: Head earns more]</i>	<b>0.41 (0.19-0.93)**</b>	-
<i>Spouse doesn't earn any income [ref: Head earns more]</i>	0.53 (0.13-2.11)	-
Custody of household resources <sup>#</sup> : <i>Spouse [ref: Head]</i>	0.79 (0.75-1.81)	-
<i>Jointly between head and spouse [ref: Head]</i>	<b>0.88 (0.81-0.91)**</b>	-
Location: <i>Rural [ref: Urban]</i>	<b>1.71 (1.32-6.97)*</b>	<b>1.21 (1.18-1.34)*</b>
Female sick household member [ref: Male]	<b>0.52 (0.18-0.83)*</b>	<b>0.87 (0.80-0.90)*</b>
Number of female children	0.64 (0.61-2.69)	0.44 (0.41-4.48)
Number of male children	0.77 (0.75-1.79)	0.52 (0.50-1.58)
Number of teenage female	0.51 (0.44-1.80)	0.68 (0.61-1.52)
Number of teenage male	0.44 (0.40-2.65)	0.53 (0.51-2.59)
Ownership of National Health Insurance	0.86 (0.82-1.67)	0.34 (0.29-2.95)
Household size	1.17 (0.90-1.52)	1.04 (0.89-2.56)
Asset index(quantiles) <sup>#</sup> : <i>Third [ref: Fourth]</i>	<b>6.27 (1.21-32.40)**</b>	1.23 (0.94-2.22)
<i>Second [ref: Fourth]</i>	2.45 (0.36-16.70)	2.98 (0.87-3.40)
<i>First [ref: Fourth]</i>	2.43 (0.61-9.59)	<b>2.53 (2.49-2.58)**</b>

735 \*significant at  $p \leq 0.05$ ; italics indicate subcategories; \*\*significant at  $p \leq 0.025$  (estimation

736 adjusted using Holm-Bonferroni correction); #coefficient is significant in some cases

737 dependent on chosen reference category

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748 Table III: Multivariable associations between predictor variables and type of healthcare  
 749 utilised

	Formal healthcare utilised [ref: Informal]	
	Household with married head	All households
	aOR <sub>married</sub> (95% CI)	aOR <sub>all</sub> (95% CI)
Household expenditure decision-making <sup>#</sup> : <i>Spouse [ref: Head]</i>	2.22 (0.88 - 11.04)	-
<i>Joint between head and spouse [ref: Head]</i>	<b>1.31 (1.09 - 2.99)**</b>	-
Household income earning power <sup>#</sup> : <i>Spouse earns more than head [ref: head earns more]</i>	0.78 (0.32-2.44)	-
<i>Head earns about the same as spouse [ref: Head earns more]</i>	<b>1.76 (1.47-3.14)**</b>	-
<i>Spouse doesn't earn any income [ref: Head earns more]</i>	0.17 (0.07 – .47)	-
Custody of household resources <sup>#</sup> : <i>Spouse [ref: Head]</i>	<b>0.48 (0.36 – 0.78)**</b>	-
<i>Jointly between head and spouse [ref: Head]</i>	<b>1.82 (1.19 – 4.07)**</b>	-
Household size	0.73 (0.43 – 1.61)	<b>0.62 (0.61-0.78)*</b>
Male sick household member [ref: Female]	<b>9.59 (7.20 – 19.72)*</b>	<b>3.36 (3.20-3.87)*</b>
Number of female children	<b>2.09 (1.06 – 3.14)*</b>	<b>3.89 (3.51-3.94)*</b>
Number of male children	<b>1.21 (1.04 – 2.39)*</b>	<b>2.20 (2.17-2.61)*</b>
Number of teenage female	0.88 (0.01 – 2.41)	0.91 (0.88-1.63)
Number of teenage male	<b>3.11 (1.91- 4.00)*</b>	<b>2.65 (2.41-2.88)*</b>
Cost of care	1.00 (0.99 - 1.01)	1.22 (0.94-1.78)
Out-of-pocket payments	<b>0.33 (0.14 - 0.62)*</b>	<b>0.62 (0.54-0.67)*</b>
National health insurance	1.01 (0.28 - 3.66)	1.11 (0.71-1.90)
Asset index(quantiles) <sup>#</sup> : <i>Third [ref: Fourth]</i>	3.01 (0.74-16.21)	2.53 (0.87-2.74)
<i>Second [ref: Fourth]</i>	1.16 (0.28-4.75)	2.20 (0.64-3.56)
<i>First [ref: Fourth]</i>	4.13 (0.21-8.35)	0.83 (0.65-2.29)

750 \*indicates significance at  $p \leq 0.05$ ; italics indicate subcategories; \*\*significant at  
 751  $p \leq 0.025$  (estimation adjusted using Holm-Bonferroni correction); # coefficient is significant in  
 752 some cases dependent on chosen reference category

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**Research highlights**

- In households, sick males more likely to utilise healthcare relative to females
- Sick males also more likely to use formal healthcare relative to females.
- Men were more likely to be reported as having sole custody of household resources.
- Joint decision-making on healthcare use improve women's access to formal healthcare
- Joint decision-making is not reflective of unhindered access to household resources