Relationship between Empowerment and Wealth: Trends and Predictors in Kenya between 2003 and 2008–09

Delia Voronca, PhD,

Emmes, Vaccine and Infectious Diseases, 401 North Washington Street, Suite 700, Rockville, Maryland USA 20850-0401

Rebekah J. Walker, PhD, and

Department of Medicine, Division of General Internal Medicine and Geriatrics, Medical College of Wisconsin, Milwaukee, WI

Leonard E. Egede, MD, MS

Department of Medicine, Division of General Internal Medicine and Geriatrics, Medical College of Wisconsin, Milwaukee, WI

Abstract

Objectives—This study aimed to examine the association between women's empowerment and wealth overtime in Kenya.

Methods—Kenya Demographic and Health Surveys (DHS) for 2003 and 2008–09 were used. Eligible women and men were married or living with a partner. Two scales were used for empowerment: female participation in decision-making, and attitudes toward domestic violence against female partners. Hierarchical linear models were used based on theoretical blocks of covariates.

Results—In a sample of 9,847 women and 3,207 men, results showed empowerment increased over time. After adjustment, female partners' reporting greater empowerment on either scale remained significantly associated with increased wealth, (urban: $\beta=0.04$, p-value<0.05; $\beta=-0.06$, p-value<0.01) and (rural: $\beta=0.04$, p-value<0.01, $\beta=-0.07$, p-value<0.01). Based on male partners' responses, female partners' participation in decision-making was associated with increased wealth in rural regions ($\beta=0.04$, p-value<0.01), and agreement with domestic violence towards a female

partner was significantly associated with a decrease in wealth in urban regions (β=−0.08, p-value<0.01).

Conclusions—Women's empowerment has increased over time in Kenya and is associated with increased family wealth. The association varies by gender of respondent and rural/urban residence.

INTRODUCTION

Empowerment can be defined in a variety of ways depending on the context in which it is used. Considered broadly, it is "the process by which the powerless gain greater control over the circumstances of their lives." (Kishor and Lekha 2008) Inherent to this definition is the idea that empowerment does not convey power over others, but the ability to make choices and life decisions to overcome personal circumstances. (Kishor and Lekha 2008, Kabeer 2001) Women's empowerment, as defined by the World Health Organization, is "increased political, social, and economic status, which enables equal access to resources and guarantees women the right to make strategic decisions over their own lives." (WHO 2008) Because gender represents both the biological sex of a person and the rights, roles, and obligations a society place on different sexes, women's empowerment changes based on cultural context, and can differ across disciplines. (Malhotra et al. 2002, WHO 2008, Grabe 2011, Upadhyay and Karasek 2012, Mullinax et al. 2013) For instance, efforts to increase women's empowerment may focus structures and ideology, such as land ownership or gender ideology; personal agency, such as household decision making, autonomy, or partner control; or outcomes of empowerment, such as self-esteem. (Malhotra et al. 2002, Grabe 2011) As a result, it is recommended to consider multiple measures of empowerment, for example, the internationally collected Demographic and Health Surveys (DHS) collect information on both household decision making as an indicator of individual agency, and attitudes towards domestic violence against a female partner, as an indicator of power and gender relations. (Kishor and Lekha 2008, Grabe 2011)

Women's empowerment is of interest to healthcare and public health because by understanding their value to society, women are better equipped to understand their right to access quality health services and promote their own well-being. (WHO 2008) In addition, to their own health, the health and nutrition of the household is often most overseen by women, and factors influencing their decisions have an impact on the well-being of those in their household. (Malhotra et al. 2002, Kishor and Lekha 2008, Na et al. 2015) For example, better feeding patterns for children, better child nutrition, and fewer pregnancy related problems were associated with higher maternal empowerment. (Na et al. 2015, Cunningham et al. 2015, Moonzwe et al. 2014) In addition, more empowered women show more health seeking behavior, higher utilization of maternal services, more adequate use of antenatal care, better control over fertility, and better health outcomes. (Mainuddin et al. 2015, Lailulo et al. 2015, Berti et al. 2015, Sado et al. 2014, Sipsma et al. 2013, Sipsma et al. 2014, Corroon et al. 2014, Upadhyay et al. 2014) Empowerment is shown to attenuate the impact

of circumstances on mental health status, such as persistent depression or the severity of post traumatic stress disorder after experiencing violence. (Rahman et al. 2012, Perez et al. 2012) Further, when women are empowered, they have been shown to be effective health promotion partners, expanding the reach of healthcare programs into their communities. (Kar et al. 1999, Mitroi et al. 2016)

In addition to health implications, women's empowerment has been associated with the wealth of a family. While the association between empowerment and contraception use is widely acknowledged, it has been shown that this relationship is moderated by wealth. (Crissman et al. 2012) Women in higher wealth quintiles are shown to have more say in decision-making, more involvement in large household and daily purchases, and are more likely to have a final say in their own health care. (Boateng et al 2014) Decreased income is also associated with measures of empowerment, such as domestic violence against a female partner or intimate partner physical violence (IPPV). (Kwagala et al. 2013) Many empowerment programs have focused on economic empowerment through income generation, the use of loans, or creation of cooperatives. (Rajamma 1993) Income generation, however, does not automatically confer empowerment to women. (Samarasinghe 1993, Ackerly 1995, Albee 1996) Control over resources, such as participation in decisions regarding household purchases, is as important to empowerment as the ability to generate income. (Samarasinghe 1993) In addition, women are often more concerned with improving the health of a community as increasing their own income (Rajamma 1993), and providing income support without directly addressing empowerment can create communities reliant on external agents, still lacking personal empowerment. (Barimah and Nelson 1993)

Growing attention is being given to the need to account for gender roles, needs, and relations in the design of programs and policies. (Kishor and Lekha 2008) Given the range of cultural and social contexts around gender relations, when developing programs, it is necessary to understand what factors are predictive of increased empowerment and develop strategies for building empowerment in the target population. (Ackerly 1995, Albee 1996) Therefore, the aim of this analysis was to examine the association between women empowerment and wealth, and to determine which variables drive change overtime.

METHODS

Data

Kenya Demographic Health Survey (KDHS) was used in this analysis. Women, men and household files for the years 2003 and 2008–09 were merged to create one dataset. The KDHS surveys are population-based and involve clustering by urban or rural region, as well as a systematic sampling of households from the national master sample frame. Sampling weights, cluster and strata information are provided in all KDHS files. Eligible women and men of ages 15 to 49 years, that were married or living with a partner were considered for this analysis. Information on empowerment and demographic variables specific to the individual were available in both women's and men's surveys for years 2003 and 2008–09. The wealth index was created from the household file and then matched to the individual files.

Ethics and Consent

Approval was obtained from the DHS program to download and use applicable DHS datasets. The study did not require ethics approval because DHS data is publicly available and contains deindentified data.

Construction of the wealth index

Wealth index served as the outcome in all models. In order to have comparable wealth index for both years (2003 and 2008–09), we created a harmonized wealth index. (Staveteig and Mallick 2014) We first identified common household assets across years, second we harmonized the categories of each asset such that same categories are used for both years, and third we performed a factor analysis to generate wealth scores for each household. The household assets used for the construction of wealth index were whether the household had electricity, radio, television, refrigerator, bicycle, the source of drinking water, type of toilet facility, main floor material, main roof material, number of people sleeping per room, and whether the household had a domestic worker. Similar to the creation of Demographic Health Survey (DHS) wealth index (Rutstein and Johnson 2004) provided in the datasets, an indicator variable was created for each category and missing values were replaced with zero. If the variable was continuous, the mean of observed values was used instead. We used the indicator variables and the continuous variable in a factor analysis based on principle component in order to generate scores of wealth index for each household.

Each subject from the women's and men's files was matched with the corresponding household (using the cluster number hv001, and the household number hv002 which is available for all files) and assigned a wealth index. Of note, survey questions that measure rural wealth more accurately, (cattle or size of land owned, for example), are not available for both years and therefore the wealth index is more urban specific (Rutstein 2008). The software used to construct the wealth index was Stata 13.

Empowerment scales

Empowerment scales served as the main independent variables for our statistical models. As suggested in the KDHS final reports (Kenya National Bureau of Statistics 2014), two scales were used to analyze women empowerment. The first scale measured female partner's participation in decision-making, whereas the second scale measured attitude toward domestic violence against a female partner. The survey questions specific to female partner's participation in decision making records the number of decision that the female partner is part of and include: major household purchases, purchase of daily household needs, visiting female partner's family or relatives, money female partner earns, and own heath care/how many children to have. The questions specific to attitude toward domestic violence against a female partner records the number of reasons the responder agrees beating of a female partner is acceptable and include: whether female partner burns the food, argues with male partner, goes out without telling the male partner, neglects the children, refuses sexual intercourse with the male partner. Both scales range from 0 to 5. A higher number for the female partner's participation in decision-making suggests more empowerment, whereas a higher number for the attitude toward domestic violence against a female partner suggests less empowerment. Both sets of questions were asked to women and men, so data is

presented based on responses from women and responses from men concerning their female partners.

Covariates

Adjusted models included covariates of: year (2003 and 2008–09), current age grouped in five categories (15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49 years), working status (currently working or not), number of living children (0, 1–2, 3–4, 5 or more), five levels of educational attainment (no education, incomplete primary, complete primary, incomplete secondary, complete secondary, higher), residence (urban or rural), and province (Nairobi, Central, Coast, Eastern, Nyanza, Rift Valley, Western, Northeastern). Covariates were measured for both KDHS 2003 and KDHS 2008–09 and are specific to the respondent.

Statistical analysis

First, we looked at descriptive statistics for both men and women and compared variables across years using a design adjusted chi-squared test for categorical covariates or design adjusted ANOVA for wealth index. Second, we ran correlations between the continuous covariates and wealth index and one-way ANOVA between the wealth index and the categorical covariates. Third, we fit unadjusted and adjusted models between the wealth index, primary independent, and covariates of interest. Hierarchical models were used adding covariates in blocks. Block 1 included demographics, Block 2 included demographics and education, and Block 3 included demographics, education, and region/province. Variables included in blocks were based on theoretical considerations, in order to determine which variables have the most influence in changing the association between empowerment on wealth. After adjustment for rural/urban residence significance changed in models based on men's responses and therefore a second set of analyses were run, stratified by urban and rural region of the respondent.

The statistical analyses are adjusted for complex survey design in order to get population level inference by using the cluster variable (v021, mv021), strata variable (v022/mv022) and sampling weights (v005/mv005) provided by DHS in each data file. The statistical analyses were performed in SAS 9.4 using PROC SURVEYFREQ, SURVEYMEANS and SURVEYREG.

RESULTS

Sample demographics

In Table 1 we present sample demographics for men and women. The weighted total sample size for women pooled over the two years was 9,847 and the total sample size for men was 3,207. The average age for the interviewed women was 28.2 years, and the average age for the interviewed men was 29.5. Unemployment for women increased over time but not significantly (p-value=0.63) whereas the unemployment for men decreased significantly (p-value<0.01). There was an increase in the percentage of women with complete primary education and above over time (from 52.6 % in 2003 to 59.3% in 2008–09. A similar increase in education levels was noted for men (from 66.5% in 2003 to 74.3% in 2008–09).

On average, men had higher education levels comparative to women. The increase in wealth over time was significant for both men (p-value=0.001) and women (p-value=0.02).

The two empowerment scales reported by women suggested that 45.2% of women participated in all decision making and 37.8% of women did not agree with any of the reasons for domestic violence towards a female partner. Based on men's reported empowerment scales, 34% reported women participating in all decisions, and 53% did not agree with any reason for domestic violence towards a female partner. Men perceived women as having participation in fewer decisions compared to women's responses, however, men showed lower approval for domestic violence towards a female partner than women. Across years, there was a significant increase in women's empowerment, based on both women's and men's responses (p-value<0.001).

Empowerment and wealth

In Table 2 we present coefficients for hierarchical regression models for women's and men's responses to both empowerment scales. Based on women's responses, more empowerment (female partner's participation's in decision making) was associated with more wealth, whereas less empowerment (agreement with domestic violence towards a female partner) was associated with less wealth. Similar results were seen for men's responses. After adjustment, significance changed in models based on men's responses, so additional models stratified by urban/rural residence were run.

In Table 3 we present coefficients for hierarchical regression models stratified by rural/urban residence. After adjusting for demographics (Model 1), results remained similar to the unadjusted analyses. After adjusting for education (Model 2), the effect of empowerment measured by agreeing with domestic violence towards a female partner from the male partner's perspective in the rural area became insignificant (β=0.00, p-value>0.05). In addition, the effect of empowerment measured by female partner's participation in decision making from the male partner's perspective in the urban area becomes insignificant (β=0.02, p-value>0.05). After adjusting for district (Model 3), based on women's responses, both scales of empowerment remained significantly associated with wealth, for both urban (β=0.04, p-value<0.05; β=−0.06, p-value<0.01) and rural regions (β=0.04, p-value<0.01, β= −0.07, p-value<0.01). However, based on male partner's responses in the rural region, only a female partner's participation in decision making was associated with increased wealth (β=0.04, p-value<0.01), and in the in the urban region, only agreeing with domestic violence towards a female partner was significantly associated with a decrease in wealth (β=−0.08, p-value<0.01).

DISCUSSION

Based on this study, empowerment in Kenya has increased over time and is associated with increased family wealth. Women reported more participation in decision making than men reported for their female partners (56.7% of women compared to 43.7% of men), and men reported less support for domestic violence towards a female partner than women reported (7.6% for women compared to 2.2% for men). Empowerment was associated with higher wealth, as women making more decisions in the home was associated with increased family

wealth, and agreement with domestic violence towards a female partner was associated with decreased family wealth. Associations between measures of empowerment and wealth varied by rural/urban residence, specifically when men responded to the questions. Education may be one reason to explain this association, but only explains the association when men responded. Finally, women's agreement with domestic violence towards a female partner is more detrimental to family income than having low decision-making power in the home. Additionally, women's agreement with domestic violence towards a female partner is more detrimental to family income than men agreeing with domestic violence towards a female partner, and this association is stronger in urban areas.

This study offers insight into the association between wealth and women's empowerment in low- and middle- income countries, such as Kenya. Efforts to increase women's empowerment has often focused on providing economic opportunities, however, research is showing successful interventions are associated with increased empowerment, not simply the ability to increase income. (Ackerly 1995) It is necessary for programs to occur within the context of the community in which women live, and take into consideration their understanding of gender equality. (Mullinax et al. 2013) This study suggests that addressing women's acceptance of domestic violence towards a female partner, may have the most impact on family income and views held by women about themselves has a greater impact than views held by men. Not only was the association with family wealth stronger based on women's acceptance of domestic violence towards a female partner, but they showed more acceptance for reasons to justify domestic violence towards a female partner. It is important to recognize empowerment must be self-generated, and the role programs and policies play should be to facilitate conditions that are conducive to self-empowerment. (Kasente 2014, Garba 1999) Additionally, results suggest there are differences by rural/urban residence, and providing general empowerment messages may not be as effective as directly addressing gender and rural/urban differences in views surrounding empowerment. As education was only a partial explanatory factor, and was only significant when men responded to questions surrounding empowerment, increasing the level of general education in a community is not likely to result in automatic empowerment of women in that community. Similar to the views of empowerment differing across countries, these results show that views of empowerment may differ across rural and urban environments, requiring targeted efforts to directly address the underlying influences on family wealth.

Healthcare provides a unique opportunity to address issues surrounding empowerment. (Mitroi et al. 2016) By removing efforts to increase empowerment from the political and legal framework, it may be possible to address the cultural context of empowerment within a locality, while at the same time providing medical knowledge and increasing the capacity of women to care for themselves and their children. (Mitroi et al. 2016) Involvement in healthcare has been shown to provide a voice and platform for women where they otherwise would have had little power or influence. (Horton 2010) In addition, it encourages women to create health communities, which have been shown to increase knowledge about topics beyond healthcare, such as governmental structures and national programs. (Tripathy et al. 2010) The presence of community resources and community support in itself has been associated with empowerment. (Ketchen et al. 2009) As a result, inclusion of empowerment

efforts alongside health care interventions can offer far-reaching impact on communities. (Mitroi et al. 2006)

Though this analysis used a population-based sample, and based measures on accepted constructs to increase generalizability, there are some limitations. First, data was collected in a series of cross-sectional samples, and therefore results cannot be used to make inferences on causation. Secondly, factors that were not measured in the DHS dataset could influence the association between wealth and empowerment, so additional work should be done to understand the relationship. Finally, since empowerment changes based on culture and context, relationships should not be generalized beyond populations with similar culture and context for women's empowerment. Qualitative research on this area to better understand the context of responses, and the dynamics between participation, empowerment, and violence against women will be an important next step.

In conclusion, women's empowerment has increased over time in Kenya and is associated with increased family wealth. The association can be partially explained by education, but varies by rural/urban residence, and by whether women or men respond to questions. Women's acceptance of domestic violence towards a female partner is the most detrimental association with wealth examined in this analysis, and should be addressed through ongoing efforts in the healthcare field and through facilitating self-generated empowerment targeted for the region and gender of recipients.

Acknowledgments

References

Ackerly BA. Testing the tools of development: credit programmes, loan involvement, and women's empowerment. IDS Bull. 1995; 26(3):56–68. [PubMed: 12290966]

Albee A. Beyond "banking for the poor": credit mechanisms and women's empowerment. Gend Dev. 1996; 4(3):48–53. [PubMed: 12347715]

Barimah KB, Nelson G. Empowerment in a supplementary food program in a rural community in ghana. Int Q Community Health Educ. 1993; 14(2):173–190. [PubMed: 20841004]

Berti PR, Sohani S, Costa E, Klaas N, Amendola L, Duron J. An adequacy evaluation of a maternal health intervention in rural Honduras: the impact of engagement of men and empowerment of women. Rev Panam Salud Publica. 2015; 37(2):90–97. [PubMed: 25915013]

Boateng GO, Mumba D, Asare-Bediako Y, Boateng MO. Examining the correlates of married women in Zambia. African Geographical Review. 2014; 33(1):1–18.

Corroon M, Speizer IS, Fotso JC, et al. The role of gender empowerment on reproductive health outcomes in urban Nigeria. Matern Child Health J. 2014; 18(1):307–315. [PubMed: 23576403]

Crissman HP, Adanu RM, Harlow SD. Women's sexual empowerment and contraceptive use in Ghana. Stud Fam Plann. 2012; 43(3):201–212. [PubMed: 23185863]

Cunningham K, Ruel M, Ferguson E, Uauy R. Women's empowerment and child nutritional status in South Asia: a synthesis of the literature. Matern Child Nutr. 2015; 11(1):1–19.

Garba PK. An endogenous empowerment strategy: a case-study of Nigerian women. Dev Pract. 1999; 9(1–2):130–141. [PubMed: 12349039]

Grabe S. An empirical examination of women's empowerment and transformative change in the context of international development. Am J Community Psychol. 2011; doi: 10.1007/s10464-011-9453-y

Horton R. The continuing invisibility of women and children. Lancet. 2010; 375:1941–1942. [PubMed: 20569823]

Kabeer, N. Reflections on the measurement of women's empowerment. In: Kabeer, N., editor. Discussing Women's Empowerment – Theory and Practice, Sida Studies. Stockholm: Novum Grafiska AB; 2001.

Kasente D. Training and capacity building for the empowerment of women: challenges and options for the future. INSTRAW News. 1997; 27:21–23.

Kar SB, Pascual CA, Chickering KL. Empowerment of women for health promotion: a meta-analysis. Soc Sci Med. 1999; 49(11):1431–1460. [PubMed: 10515628]

Kenya National Bureau of Statistics. DHS Final Reports: Kenya DHS. Ministry of Health, National AIDS Control Council, Kenya Medical Research Institute, National Council for Population and Development, Nairobi, Kenya, and The DHS Program, ICF International; Rockville, Maryland, USA: 2014.

Ketchen B, Armistead L, Cook S. HIV infection, stressful life events, and intimate relationship power: the moderating role of community resources for black South African women. Women and Health. 2009; 42(2):197–214.

Kishor, S., Lekha, S. DHS Comparative Reports No. 20. Calverton, Maryland, USA: Macro International Inc; 2008. Understanding Women's Empowerment: A Comparative Analysis of Demographic and Health Surveys (DHS) Data.

Kwagala B, Wandera SO, Ndugga P, Kabagenyi A. Empowerment, partner's behaviours and intimate partner physical violence among married women in Uganda. BMC Public Health. 2013; 13:1112. [PubMed: 24289495]

Lailulo YA, Susuman AS, Blignaut R. Correlates of gender characteristics, health and empowerment of women in Ethiopia. BMC Womens Health. 2015; 15:116. [PubMed: 26643729]

Mainuddin A, Ara Begum H, Rawal LB, Islam A, Shariful Islam SM. Women Empowerment and Its Relation with Health Seeking Behavior in Bangladesh. J Family Reprod Health. 2015; 9(2):65–73. [PubMed: 26175761]

Malhotra, A., Schuler, SR., Boender, C. Measuring Women's Empowerment as a Variable in International Development. Background Paper Prepared for the World Bank Workshop on Poverty and Gender: New Perspectives; 2002.

Mitroi LR, Sahak M, Sherzai AZ, Sherzai D. The Women's Health Care Empowerment Model as a Catalyst for Change in Developing Countries. Health Care Women Int. 2016; 37(3):273–287. [PubMed: 24945243]

Moonzwe Davis L, Schensul SL, Schensul JJ, Verma RK, Nastasi BK, Singh R. Women's empowerment and its differential impact on health in low-income communities in Mumbai, India. Glob Public Health. 2014; 9(5):481–494. [PubMed: 24766149]

Mullinax M, Higgins J, Wagman J, et al. Community understandings of and responses to gender equality and empowerment in Rakai, Uganda. Glob Public Health. 2013; 8(4):465–478. [PubMed: 23463914]

Na M, Jennings L, Talegawkar SA, Ahmed S. Association between women's empowerment and infant and child feeding practices in sub-Saharan Africa: an analysis of Demographic and Health Surveys. Public Health Nutr. 2015; 18(17):3155–3165. [PubMed: 26347195]

Perez S, Johnson DM, Wright CV. The attenuating effect of empowerment on IPV-related PTSD symptoms in battered women living in domestic violence shelters. Violence Against Women. 2012; 18(1):102–117. [PubMed: 22411301]

Rahman A, Sikander S, Malik A, Ahmed I, Tomenson B, Creed F. Effective treatment of perinatal depression for women in debt and lacking financial empowerment in a low-income country. Br J Psychiatry. 2012; 201(6):451–457. [PubMed: 23137731]

Rajamma G. Empowerment through income-generating projects. Focus Gend. 1993; 1(3):53–55. [PubMed: 12320734]

Rutstein, SO., Johnson, K. DHS Comparative Reports No. 6. Calverton, Maryland, USA: ORC Macro; 2004. The DHS wealth index.

Rutstein, SO. DHS Working Papers No. 60. Calverton, Maryland, USA: Macro International; 2008. The DHS wealth index: Approaches for rural and urban areas.

Sado L, Spaho A, Hotchkiss DR. The influence of women's empowerment on maternal health care utilization: evidence from Albania. Soc Sci Med. 2014; 114:169–177. [PubMed: 24929918]

Samarasinghe V. Puppets on a string: women's wage work and empowerment among female tea plantation workers of Sri Lanka. J Dev Areas. 1993; 27(3):329–339. [PubMed: 12286574]

Sipsma H, Callands TA, Bradley E, Harris B, Johnson B, Hansen NB. Healthcare utilisation and empowerment among women in Liberia. J Epidemiol Community Health. 2013; 67(11):953–959. [PubMed: 23929617]

Sipsma H, Ofori-Atta A, Canavan M, Udry C, Bradley E. Empowerment and use of antenatal care among women in Ghana: a cross-sectional study. BMC Pregnancy Childbirth. 2014; 14:364. [PubMed: 25361525]

Staveteig, S., Mallick, L. DHS Methodological Reports No. 15. Rockville, Maryland, USA: ICF International; 2014. Intertemporal comparisons of poverty and wealth with DHS data: A harmonized asset index approach.

Tripathy P, Nair N, Barnett S, Mahapatra R, Borghi J, et al. Efect of a participatory intervention with women's groups on birth outcomes and maternal depression in Jhakhand and Orissa, India: a cluster-randomised controlled trial. Lancet. 2010; 375:1182–1192. [PubMed: 20207411]

World Health Organization (WHO). Women's Empowerment and Gender Equality: Essentials Goals for Saving Women's Lives. World Health Organization, Department of Gender, Women and Health; Geneva, Switzerland: 2008.

Upadhyay U, Karasek D. Women's empowerment and ideal family size: an examination of DHS empowerment measures in Sub-Saharan Africa. International Persp on Sexual and Rep Health. 2012; 38(2):78–89.

Upadhyay UD, Gipson JD, Withers M, et al. Women's empowerment and fertility: a review of the literature. Soc Sci Med. 2014; 115:111–120. [PubMed: 24955875]

Sample Demographics, Kenya between 2003 and 2008–09

Variable	Married Women				Married Men		
	2003 (N=4919)	2008/09 (N=4928)	p-val		2003 (N=1615)	2008/09 (N=1592)	p-val
Female partner's decisions							
0	8.7	2.6	<.001		14.4	6.5	<.001
1	13.7	6.8			15.2	8.9	
2	11.7	6.2			17.7	11.2	
3	15.9	9.2			13.0	12.7	
4	16.2	18.5			15.4	17.0	
5	33.7	56.7			24.3	43.7	
Domestic violence towards a female partner							
0	28.9	46.6	<.001		43.2	60.6	<.001
1	15.2	13.3			12.5	13.3	
2	15.4	12.1			13.0	10.1	
3	16.9	11.0			14.1	9.4	
4	12.8	9.4			9.8	4.3	
5	10.7	7.6			7.4	2.2	
Current Age							
15–19	6.8	4.3	<.001		0.7	0.2	<.017
20–24	19.6	19.4			7.8	6.3	
25–29	21.5	22.1			19.6	18.6	
30–34	17.7	19.5			20.9	24.1	
35–39	14.0	14.1			22.2	18.5	
40–44	12.4	11.1			17.5	17.5	
45–49	7.9	9.5			11.5	14.8	
Currently Working							
No	35.0	35.9	.633		6.0	2.2	<.001
Yes	65.0	64.1			94.0	97.8	

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Voronca et al.

Page 12

Variable	Married Women			Married Men		
	2003 (N=4919)	2008/09 (N=4928)	p-val	2003 (N=1615)	2008/09 (N=1592)	p-val
Living Children						
0	7.2	6.0	.206	7.4	7.7	.268
1–2	34.8	35.8		35.8	35.3	
3–4	29.9	31.7		29.9	33.7	
5+	28.1	26.5		26.8	23.3	
Education						
Higher	5.4	6.7	.015	13.1	11.9	.032
Complete secondary	11.4	14.1		17.8	22.9	
Incomplete secondary	9.1	9.4		9.1	11.8	
Complete primary	26.7	29.1		26.5	27.6	
Incomplete primary	31.9	29.2		25.9	21.0	
No education	15.5	11.5		7.5	4.8	
Residence						
Rural	77.8	76.6	.736	73.1	67.2	.232
Urban	22.1	23.4		26.9	32.8	
Province						
CENTRAL	13.3	10.8	.972	13.6	9.5	.698
COAST	8.5	8.7		7.4	9.8	
EASTERN	15.9	17.1		13.8	13.4	
NEASTERN	2.5	2.6		2.2	2.2	
NYANZA	15.8	16.9		14.2	15.5	
R.VALLEY	24.1	25.9		26.4	30.5	
WESTERN	11.4	10.5		10.4	8.9	
NAIROBI	8.5	7.4		12.0	10.3	
Wealth Index	−0.15 (0.03)	0.02 (0.05)	.021	−0.05 (0.04)	0.23 (0.07)	.001

Int J Public Health. Author manuscript; available in PMC 2019 June 01.

Table 2

Hierarchical model for relationship between wealth index and empowerment, Kenya between 2003 and 2008–09

	Women's Response			Men's Response		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Decision-Making	0.08 ***	0.04 ***	0.02 ***	0.09 ***	0.03 *	0.02
Domestic violence towards a female partner	−0.13 ***	−0.07 ***	−0.04 ***	−0.08 ***	−0.02	−0.03 *

Outcome = wealth index; Primary Independent = Empowerment defined by 2 variables

a. female partner making decisions in home (range 1–5), higher numbers = more decisions

b. agreement with domestic violence towards a female partner (range 1–5), higher numbers = more agreement

Model 1 adjusted for year, age, employment status, number of living children

Model 2 adjusted for Model 1 covariates plus education

Model 3 adjusted for Model 2 covariates plus rural/urban residence and province

*
p<0.05

**
p<0.01

***
p<0.001

Table 3

Hierarchical model for relationship between wealth index and empowerment stratified by rural/urban residence, Kenya between 2003 and 2008–09

Rural Residence

	Women's Response			Men's Response		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Decision-Making	0.05 ***	0.03 ***	0.04 *	0.08 ***	0.05 ***	0.04 **
Domestic violence towards a female partner	−0.07 ***	−0.03 ***	−0.06 ***	−0.03 *	0.00	−0.01

Urban Residence

	Women's Response			Men's Response		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Decision-Making	0.08 ***	0.05 **	0.04 *	0.08 ***	0.02	−0.01
Domestic violence towards a female partner	−0.17 ***	−0.10 ***	−0.07 **	−0.13 **	−0.07 **	−0.08 **

Outcome = wealth index; Primary Independent = Empowerment defined by 2 variables

a. female partner making decisions in home (range 1–5), higher numbers = more decisions

b. agreement with domestic violence towards a female partner (range 1–5), higher numbers = more agreement

Model 1 adjusted for year, age, employment status, number of living children

Model 2 adjusted for Model 1 covariates plus education

Model 3 adjusted for Model 2 covariates plus rural/urban residence and province

*
p<0.05

**
p<0.01

***
p<0.001