Influence of Women's Empowerment on Maternal Health and Maternal Health Care Utilization: A Regional Look at Africa

Kavita Singh and Shelah Bloom

Background

This paper addresses the important issues of whether women's empowerment plays a role in 1) maternal health (low BMI) and 2) the utilization of maternal health services (facility delivery) in Africa. Much of the literature on women's empowerment in developing countries has focused largely on Asia, and few studies have explored the impact of women's empowerment on low BMI and facility delivery. A handful of studies have indicated the influence of empowerment on low BMI (Hindin 2000, 2006, IIPS and Macro International 2007). In contrast studies on the influence of women's empowerment on facility delivery have shown both an association (Mistry et al. 2006, Fosto et al. 2006) and no association (Woldenmicael 2007). Low BMI can be a sign of chronic energy deficiency (CED), and women with CED have been shown to have increased morbidity (Garcia and Kennedy 1994) and decreased work capacity (Ferro-Luzzi 1985; Shetty and James 1984). CED and low maternal weight are also risk factors for low birth weight babies, who in turn have higher mortality risks than normal weight babies. Because the majority of pregnancy complications that lead to mortality cannot be predicted or prevented promoting access to skilled delivery at a facility is being promoted as a key to reducing maternal mortality.

Africa only accounts for an estimated 14% of the world's population but 51% of maternal deaths. According to the WHO 2005 estimates, maternal mortality varies from 15/100,000 in Mauritius to 1500/100,000 in Chad (WHO 2007). Because women's empowerment varies with cultural norms that differ, a regional exploration is done. The analysis looks at diverse African countries (for which recent DHS data is available) – both English and French speaking – from North, South, East and West Africa. DHS data will be examined for eight countries – Democratic Republic of the Congo (2008), Egypt (2008), Ghana (2008), Liberia (2007), Mauritania (2006), Nigeria (2009), Uganda (2006) and Zambia (2007). Liberia was chosen because it is post-conflict, while the Democratic Republic of the Congo was chosen because many parts of the country are currently experiencing conflict.

If it is seen that more empowered women have better health and greater ability to access and utilize crucial health services, then we will have documented the programmatic and policy relevance of women's empowerment in efforts to improve maternal health (and birth outcomes) and to reduce maternal mortality in Africa.

Measures and Methods

Bivariate logistic regression was used to study the association between each of the socioeconomic and empowerment variables alone with each of the outcome variables – low BMI and facility delivery. Multivariate logistic regression was used to study the effect of women's

empowerment on the outcomes of interest after controlling for the socioeconomic variables. For each country and each outcome there are two Models. Model 1 contains the socioeconomic variables while Model 2 contains the socioeconomic variables and the women's empowerment variables. Several socioeconomic variables were studied - age, parity, residence (urban/rural), education level, wealth quintile and working status

The DHS includes questions on three dimensions of empowerment - household decision-making, financial decision-making and attitudes regarding inequalities in gender roles. Questions on decisions regarding health care, major household purchases, daily household purchases and visiting friends/relatives were used to make a household-decision-making index. Women who made all decisions either alone or jointly were categorized as having high decision-making authority. Those who were not involved in all four decisions were categorized as having low decision-making authority.

The DHS includes two questions on financial decision-making - decisions regarding one's own earnings and decisions regarding a husband's earnings. Both were included separately in the bivariate analysis, but only decisions regarding a husband's earnings were included in the multivariate analysis. (Many women do not work for cash, thus there would have been a substantial reduction in sample size for the multivariate analysis.) Women who made these decisions alone or jointly were classified as having high financial decision-making authority while those not involved in these decisions were classified as having low financial decision-making authority.

Two indicators for capturing social norms were used in this analysis – attitudes towards wife beating and whether a wife is justified in refusing sex. Respondents who indicated that a husband is not justified in beating his wife for any of the five specific reasons (goes out with telling husband, neglects children, argues with husband, refuses sex, and burns food) in the DHS were categorized together as believing wife beating is not acceptable. Those who indicated that wife beating is justified for at least one of the three reasons listed in the DHS (knows husband has a STI, knows husband has sex with other women and is tired/not in the mood) where classified as indicating that wife beating is acceptable. Respondents who indicated that a wife could refuse sex for all of the three reasons in the DHS were classified together as believing wife is justified in refusing sex. Women indicating that a wife could not refuse sex for at least one of three reasons were classified together as believing wife beating is unacceptable.

Findings from the Multivariate Analysis for Low BMI[1]

Socioeconomic variables were significant in Model 1 and Model 2 for Liberia, Nigeria and Uganda. In Liberia only parity was significant while in Uganda age and wealth were significant. In Nigeria age, education and wealth were all significant. Education and wealth were protective

[1] Multivariate analysis of low BMI could not be done for the Egyptian sample of women because of a lack of variation in the outcome variable. Only 1% of the sample was of low BMI.

factors while the effect of age was different in Nigeria than in Uganda. In Nigeria women 35+ were less likely to be of low BMI than women in the reference category, 24-34, but in Uganda women 35+ were more likely to be of low BMI. In Nigeria women 15-19 were also significantly more likely to be of low BMI than women in the reference category.

In Ghana, Uganda and Zambia participating in decisions regarding husband's earnings lowered the odds of a woman having low BMI. In the DRC women with high household decision-making authority had a lower odds of being of low BMI than women with low household decision-making authority (OR=0.6, SE=0.4, P<0.05). See table 1 for the preliminary presentation of Model 1.

Findings from the Multivariate Analysis for Facility Delivery

Categories of all the socioeconomic variables were significant for both Model 1 and Model 2 for Egypt, Nigeria and Uganda. In Mali categories of all socioeconomic variables except for age were significant in both Models 1 and 2. In Liberia education, residence, wealth and working status were significant in both models, while age was only significant in Model 1. In Ghana parity, education, residence and wealth were significant in both models while age was only significant in Model 1. In Zambia parity, education, residence and wealth were significant in both Models 1 and 2, while in the DRC parity, education and wealth were significant in both models. Overall more educated, wealthier women in urban areas were more likely to have a facility delivery. There was evidence of a dose-response relationship for both the education and wealth variables. The odds ratios for women with secondary or higher education compared to no education where much higher than the odds ratios for women with primary education compared to no education. The women in the richest quintile had the highest odds of a facility delivery in each of the eight countries. The odds ratios for the richest women compared to the poorest were 12.8 in Nigeria, 10.4 in the DRC and 10.1 in Zambia. Women having their first birth were also more likely to have a facility delivery as were older women 35+ compared to women 25-34. In some countries young women were significantly less likely to have a facility delivery than women 25-34. Significant findings for working status were split. In Egypt, Mali and Nigeria women who were working were more likely to have a facility delivery than non-working women while the opposite was true for Liberia.

In Model 2 women's empowerment variables were significantly associated with facility delivery in three countries. In Nigeria three of the four variables of women's empowerment were significant – household decision-making, attitudes towards wife beating and attitudes about a wife refusing sex. Women with high household decision-making authority were more likely to have a facility delivery than those with low decision-making authority (OR=1.6, SE=0.1, p<0.001). Women who believed that wife beating was not justified were more likely to have a facility delivery than those who felt that wife beating was justified (OR=1.2, SE=0.07, p<0.05). Women who felt that a wife was not justified in refusing sex had a lower odds of facility delivery than women who felt it was justified (OR=0.77, SE=0.4, p<0.001). In Uganda women who felt

that a wife was not justified in refusing sex also had a lower odds of a facility delivery than women who felt it was justified (OR=0.83, SE=0.07, $p<0.05$). The same was true for women in Ghana (OR=1.43, SE=0.19, $p<0.05$). See table 2 for the preliminary presentation of Model 2.

Conclusions:

Multivariate analysis indicated that after controlling for socioeconomic variables, having high financial or household decision-making authority were protective factors against low BMI in the DRC, Ghana, Uganda and Zambia. Analysis for facility delivery indicated financial and household decision-making and attitudes towards gender roles were significantly associated with facility delivery in Nigeria. Attitudes towards gender roles were significant for both Ghana and Uganda. Important socioeconomic variables for all countries included wealth and education for facility delivery, while findings for low BMI were mixed. These results indicate the importance of taking a regional approach when studying women's empowerment in Africa. The influence of women's empowerment and which dimensions of empowerment impact maternal health and the utilization of services varies by country, but overall should be seen as an important distal determinant for programs and policies to reduce maternal mortality and improve overall maternal health.

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Table1. Model 2: Multivariate Logistic Regression for Low BMI

	DRC OR 95%CI	Egypt OR 95%CI	Ghana OR 95%CI	Liberia OR 95%CI	Mali OR 95%CI	Nigeria OR 95%CI	Uganda OR 95%CI	Zambia OR 95%CI
Age								
15-19	1.34 (0.56, 3.22)	NA	0.49 (0.09, 2.59)	1.28 (0.52, 3.13)	1.15 (0.75, 1.76)	1.23 (0.96, 1.59)	0.24 (0.14, 1.33)	1.21 (0.52, 2.82)
20-24	1.09 (0.67, 1.76)		0.90 (0.41, 1.99)	1.35 (0.80, 2.28)	1.02 (0.73, 1.42)	1.11 (0.93, 1.33)	0.59 (0.26, 1.33)	0.89 (0.54, 1.48)
25-34	Ref		Ref	Ref	Ref	Ref	Ref	Ref
34+	0.82 (0.49, 1.38)		1.61 (0.88, 2.93)	1.37 (0.82, 2.28)	1.07 (0.83, 1.38)	0.76**(0.66, 0.88)	2.49**(1.47, 4.21)	0.94 (0.59, 1.51)
Parity								
1	Ref	NA	Ref	Ref	Ref	Ref	Ref	Ref
2-3	0.78 (0.46, 1.34)		1.50 (0.61, 3.71)	0.41**(0.23, 0.74)	0.86 (0.62, 1.20)	0.99 (0.82, 1.20)	1.32 (0.51, 2.29)	0.91 (0.47, 1.75)
4+	1.08 (0.54, 2.15)		1.29 (0.44, 3.80)	0.51*(0.27, 0.95)	0.77 (0.48, 1.24)	1.17 (0.94, 1.45)	0.66 (0.22, 2.02)	0.96 (0.48, 1.91)
Education								
None	Ref	NA	Ref	Ref	Ref	Ref	Ref	Ref
Primary	0.93 (0.60, 1.45)		1.0 (0.58, 1.73)	1.12 (0.72, 1.74)	0.84 (0.60, 1.18)	0.70** (0.599, 0.82)	0.69 (0.41, 1.16)	1.08 (0.71, 1.64)
Secondary or higher	1.01 (0.59, 1.73)		1.02 (0.54, 1.94)	0.74 (0.38, 1.42)	0.71 (0.41, 1.21)	0.60**(0.48, 0.75)	0.62 (0.22, 1.76)	0.87 (0.48, 1.59)
Residence								
Urban	Ref	NA	Ref	Ref	Ref	Ref	Ref	Ref
Rural	0.78 (0.41, 1.50)		1.09 (0.54, 2.20)	1.49 (0.86, 2.59)	1.13 (0.79, 1.63)	0.92 (0.75, 1.14)	0.91 (0.28, 3.02)	1.27 (0.72, 2.25)
Working								
No	Ref	NA	Ref	Ref	Ref	Ref	Ref	Ref
Yes	1.19 (0.76, 1.86)		2.10 (0.81, 5.47)	0.88 (0.55, 1.42)	0.75**(0.61, 0.93)	0.91 (0.81, 1.04)	0.49 (0.16, 1.55)	0.99 (0.70, 1.40)
Wealth Index								
Poorest	Ref	NA	Ref	Ref	Ref	Ref	Ref	Ref
Poor	0.70 (0.41, 1.18)		1.57 (0.91, 2.70)	0.79 (0.45, 1.39)	1.27 (0.97, 1.65)	0.80**(0.69, 0.92)	0.59 (0.33, 1.05)	1.16 (0.76, 1.76)
Middle	0.87 (0.52, 1.46)		1.95 (0.98, 3.86)	0.61 (0.33, 1.11)	1.20 (0.91, 1.58)	0.61**(0.51, 0.74)	0.47* (0.26, 0.85)	1.49 (091, 2.43)
Rich	0.51 (0.26, 1.00)		0.18*(0.04, 0.95)	0.76 (0.40, 1.45)	1.09 (0.80, 1.50)	0.61**(0.48, 0.77)	0.39**(0.20, 0.78)	1.21 (0.64, 2.29)
Richest	0.54 (0.24, 1.22)		0.84 (0.23, 2.98)	1.27 (0.48, 3.34)	1.20 (0.65, 2.20)	0.44**(0.31, 0.63)	0.36 (0.12, 1.08)	1.50 (0.64, 3.52)
Household Decision-Making Authority (12-23 months)								
High	Ref	NA	Ref	Ref	Ref	Ref	Ref	Ref
Low	0.62*(0.40, 0.97)		1.03 (0.64, 1.67)	1.11 (0.49, 2.49)	1.10 (0.85, 1.42)	0.70**(0.58, 0.84)	1.25 (0.81, 1.94)	1.31 (0.94, 1.81)

Financial Decision-Making Husband/Other Alone/Jointly	Ref n/a	NA	Ref 0.58*(0.36, 0.94)	Ref 0.80 (0.54, 1.20)	Ref n/a	Ref 1.07 (0.88, 1.31)	Ref 0.59*(0.38, 0.94)	Ref 0.59**(0.40, 0.85)
Attitudes Towards Wife Beating Acceptable Never acceptable	Ref 0.88 (0.58, 1.33)	NA	Ref 0.89 (0.57, 1.41)	Ref 0.85 (0.50, 1.26)	Ref 0.86 (0.68, 1.09)	Ref 0.91 (0.80, 1.03)	Ref 1.04 (0.65, 1.64)	Ref 1.12 (0.83, 1.53)
Wife Has Right To Refuse Sex Yes No	Ref 1.03 (0.69, 1.51	NA	Ref 1.36 (0.85, 2.18)	Ref 0.81 (0.50, 1.30)	Ref 1.13 (0.83, 1.54)	Ref 1.14 (0.99, 1.30)	Ref 1.04 (0.65, 1.64)	Ref 1.29 (0.93, 1.79)

Table 2. Model 2: Multivariate Logistic Regression for Facility Delivery

	DRC OR 95%CI	Egypt OR 95%CI	Ghana OR 95%CI	Liberia OR 95%CI	Mali OR 95%CI	Nigeria OR 95%CI	Uganda OR 95%CI	Zambia OR 95%CI
Age								
15-19	0.75 (0.44, 1.27)	0.95 (0.68, 1.33)	0.70 (0.32, 1.56)	1.50 (0.65, 2.04)	1.01 (0.80, 1.28)	0.65**(0.50, 0.85)	0.71 (0.45, 1.10)	0.96 (0.59, 1.56)
20-24	1.08 (0.79, 1.47)	0.85*(0.73, 0.99)	0.81 (0.522, 1.26)	0.97 (0.70, 1.36)	0.91 (0.76, 1.10)	0.62**(0.53, 0.72)	0.77*(0.60, 1.00)	0.86 (0.66, 1.11)
25-34	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
34+	1.08 (0.79, 1.48)	1.44**(1.20, 1.73)	1.24 (0.89, 1.72)	1.25 (0.93, 1.67)	0.94 (0.77, 1.16)	1.26**(1.13, 1.42)	0.85 (0.69, 1.04)	1.02 (0.79, 1.30)
Parity								
1	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
2-3	0.61**(0.44, 0.85)	0.48**(0.40, 0.58)	0.60*(0.39, 0.94)	0.79 (0.50, 1.25)	0.75**(0.61, 0.92)	0.63**(0.54, 0.75)	0.54**(0.40, 0.71)	0.63*(0.44, 0.91)
4+	0.59**(0.44, 0.85)	0.31**(0.25, 0.39)	0.45**(0.28, 0.75)	0.67 (0.42, 1.08)	0.72*(0.57, 0.92)	0.42**(0.35, 0.51)	0.35**(0.25, 0.49)	0.49**(0.32,0.74)
Education								
None	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Primary	1.28 (0.99, 1.67)	1.23*(1.01, 1.49)	1.65**(1.17, 2.34)	1.04 (0.80, 1.35)	2.60**(2.06, 3.28)	3.01**(2.59, 3.50)	1.48**(1.21, 1.82)	1.68**(1.20,2.35)
Secondary or higher	2.27**(1.47, 3.51)	1.50**(1.28, 1.75)	2.33**(1.63, 3.34)	1.75** (1.22, 2.52)	4.18**(2.68, 6.50)	5.96**(5.00, 7.12)	3.01**(2.19, 4.14)	2.28**(1.55,3.37)
Residence								
Urban	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Rural	0.47 (0.22, 1.00)	0.70**(0.58, 0.85)	0.35**(0.23, 0.52)	0.40**(0.26, 0.60)	0.27**(0.18, 0.39)	0.712**(0.59, 0.87)	0.36**(0.20, 0.64)	0.35**(0.24,0.50)
Working								
No	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Yes	1.20 (0.84, 1.74)	1.38**(1.10, 1.72)	1.17 (0.71, 1.92)	0.68* (0.50, 0.92)	1.48**(1.19, 1.85)	1.58**(1.38, 1.81)	0.50**(0.34, 0.73)	0.98 (0.78, 1.23)
Wealth Index								
Poorest	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Poor	1.0 (0.76, 1.30)	1.51**(1.27, 1.80)	2.51**(1.82, 3.45)	1.15 (0.75, 1.77)	1.05 (0.83, 1.32)	1.77**(1.39, 2.25)	1.04 (0.82, 1.32)	0.99 (0.76, 1.29)
Middle	1.39 (0.91, 2.14)	2.35**(1.94, 2.84)	3.13**(2.11, 4.62)	1.73*(1.05, 2.84)	1.07 (0.84, 1.37)	2.24**(2.49, 4.21)	1.04 (0.80, 1.34)	1.19 (0.91, 1.57)
Rich	2.67** (1.38, 5.19)	3.73**(2.91, 4.77)	5.71**(3.54, 9.22)	2.38**(1.32, 4.29)	1.58**(1.18, 2.12)	5.99**(4.54, 7.89)	1.59**(1.21, 2.08)	2.59**(1.78,3.76)
Richest	10.44**(4.81,22.68)	9.47**(6.86, 13.07)	9.00**(4.23,19.10)	3.13**(1.67, 5.88)	2.90**(1.77, 4.74)	12.80**(9.45,17.35)	2.94 (2.03, 4.25)	10.1**(5.42,18.8)
Household Decision-Making Authority (12-23 months)								
High	0.76 (0.57, 1.23)	1.03 (0.89, 1.18)	1.03 (0.77, 1.40)	1.74 (0.96, 3.16)	1.0 (0.79, 1.28)	1.65**(1.44, 1.89)	0.98 (0.82, 1.16)	1.13 (0.92, 1.40)
Low	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Financial Decision-Making								
Husband/Other	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Alone/Jointly	n/a	1.02 (0.88, 1.19)	1.14 (0.86, 1.49)	0.88 (0.66, 1.18)	n/a	1.05 (0.92, 1.20)	0.91 (0.77, 1.07)	1.19 (0.98, 1.44)
Attitudes								

Towards Wife Beating								
Acceptable	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Never acceptable	1.10 (0.73, 1.67)	1.13 (0.98, 1.29)	1.44**(1.11, 1.86)	0.97 (0.75, 1.27)	0.95 (0.76, 1.19)	1.15*(1.02, 1.29)	1.12 (0.95, 1.33)	1.15 (0.93, 1.42)
Wife Has Right To Refuse Sex								
Yes	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
No	0.85 (0.69, 1.06)	n/a	0.84 (0.64, 1.09)	0.92 (0.69, 1.23)	1.16 (0.94, 1.44)	0.77**(0.70, 0.86)	0.83, 0.70, 0.98)	0.89 (0.74, 1.08)