

Women empowerment and the current use of long acting and permanent contraceptive: Evidence from 2010 Malawi Demographic and Health Survey

ME Palamuleni, and AS Adebawale

North West University

Abstract

Background

Both contraceptive use and fertility rates are high fertility in Malawi. Status of women remains low and is believed to affect reproductive health decisions including use of Long Acting and Permanent Contraceptives Method (LAPCM).

Objective

This study seeks to examine the relationship between women empowerment and LAPCM. A measure of women's empowerment is derived from the women's responses to questions on the number of household decisions in which the respondent participates, employment status, type of earnings, women's control over cash earnings and level of education.

Methods

The study is based on a sub sample of 5,948 married women from the 2010 Malawi Demographic and Health Survey. Data was analysed using descriptive statistics, Chi-square and multinomial logistic regression models ($\alpha=5\%$).

Results

The prevalence of current use of LAPCM was 20.0% and increases with increasing empowerment level ($p<0.001$). Mean age and empowerment score of women who are currently using LAPCM were 38.53 ± 6.2 years and 6.80 ± 2.9 respectively. Urban women (22.2%) were more currently using LAPCM than rural women (19.4%) $p<0.001$. Women who belong to Seven Day Adventists/Baptist were 1.51(C.I=1.058-2.153; $p=0.023$) more likely and Muslims were 0.58(C.I=0.410-0.809; $p=0.001$) less likely to currently use LAPCM than Catholic women. Being in the richest wealth quintile (OR=1.91; C.I=1.362-2.665; $p<0.001$) promotes current use of LAPCM than poorest. The likelihood of currently using LAPCM was higher among women who have access to FP programmes on media and increases consistently with increasing women empowerment level even when other potential confounding variables were used as control.

Conclusion

In Malawi, LAPCM is still underutilized and more than half of the women are not adequately empowered. Women empowerment, wealth quintile and access to FP programmes are key factors influencing the use of LAPCM. Programmes that address these determinants are urgently needed in Malawi.

Background

Consistently high fertility is still a problem in Malawi despite the increasing trend in contraceptive use¹. On one hand, Total Fertility Rate (TFR) has declined from 6.7 children per woman in 1992 to 6.4 children per woman in 2000 and 6.0 children per woman in 2004¹⁻⁴. The 2010 Demographic and Health Survey estimate TFR to be 5.6 children per woman¹. These estimates indicate a decline of 1.1 children in 18 years. On the other hand, the contraceptive prevalence rate (CPR) has increased six-fold between 1992 and 2010, from 7% in 1992 to 22% in 2004 and 46% in 2010¹⁻⁴. Long acting and permanent contraceptives method (LAPCM) which include, intra-uterine device (IUD), progestogen implant, male and female sterilization are widely known as effective measures to either halt or delay fertility⁵. Gender inequality including subordination of women in Malawi, particularly in relation to fertility decisions and Family Planning (FP), constitutes a challenge to the use of LAPCP⁶⁻⁹. Studies that link the

relationship between women empowerment and LAPCM are scarce in Malawi. Our study, which focused on women empowerment and current use of LAPCM among Malawian married women, was conducted to add to existing research in this field.

The terms women empowerment, status of women and gender equality have attracted a lot of attention in recent demographic literature¹⁰⁻¹⁷. However, universally acceptable definitions of the concepts are rare as the concepts are multidimensional in scope, meanings, interpretations and conceptualization¹⁸⁻²⁰. The most widely acceptable definition of the term empowerment was presented by World Bank which defines it as the "expansion of freedom of choice and action to shape one's life"²¹. Since the 1994 International Conference on Population and Development (ICPD), women's empowerment has been acknowledged as a significant hurdle to accessibility and acceptability of women to family planning and other reproductive health services^{16,22}. In some parts of sub-Saharan Africa including Malawi, many women still find it difficult to openly discuss and make important decisions on issues on family planning practices⁶. The 4th principle of the ICPD Programme of Action clearly pointed out that the ability of women to control their own fertility is essential to women's empowerment and advancement of gender equality²³. Also, theme 4 of Millennium Development Goals, gender equality and women empowerment, emphasises the need for women empowerment^{11,24}.

Researchers are consistent with the view that if a woman can plan her family, with respect to her decision on the timing, spacing and number of children she bears without discrimination, her family would be more financially established and her children are educated and healthy. Moreover, she would be in good physical shape, productive and actively involved in the societal development^{23,25,26}. Effective and efficient use of contraceptives, particularly LAPM, is central to achieving these goals. Promoting equitable access to the full range of modern contraceptive methods is essential for the women's health and their development^{23,26}. One of the major challenges to the use of modern contraceptive including LAPCM in most sub-Saharan African countries is the lack of women empowerment²⁷. Studies indicate a positive relationship between women empowerment and use of LAPCM. Women with the highest empowerment score are between 1.31 and 1.82 times more likely than those with a null empowerment score to use modern contraception¹⁸.

This study examines the associations between women's empowerment and LAPCM in Malawi. It hypothesized that women who are highly empowered are more likely to use LAPCM compared to their counterparts who are either less or not empowered. The purpose of this study is to add to the evidence base of the associations between women's empowerment and the LAPCM in Malawi. Exclusively, we aim to examine the relationship between women empowerment and use of LAPCM.

Methods

Study Setting

Malawi is a small country in the South East Africa sharing borders with Mozambique, Zambia and Tanzania. The women living in this country have experienced great challenges in gaining access to political and leadership positions. Since Malawi attained multi-party democracy in 1994, it has achieved some gains in women's participation in the political domain, particularly an increase in women's parliamentary representation. However, the country compares poorly with many of its African neighbours, in terms of development of gender equality. Patrimonial rhetoric remains prevalent and constrains Malawian women who seek to engage in political and governance spheres. Spaces for women to participate and make their voices heard are very limited.

According to the 2008 population census, of the 13.1 million people living in Malawi, 17% of the population resides in urban areas. Like many developing sub-Saharan countries, Malawi continues to struggle with very poor socio-economic and demographic indicators. The Human Development Index declined from 0.404 in 2009 to 0.400 in 2011^{28,29}. On the basis of HDI Malawi was ranked 166 out of 178 countries in 2009 and 171 out of 187 countries in 2011. For the Gender Inequality Index Malawi received a score of 0.594, placing the country at 120 out of 146 countries with data. In 2012, the World Economic Forum placed Malawi on position 36 out of 135 countries in its 2011 Global Gender Report, with a score of 0.7166 where 0 represents inequality and 1 represents equality²⁹.

Data Collection Procedures

The study uses secondary data collected during the 2010 Malawi Demographic and Health survey conducted by the National Statistical Office with financial and technical assistance from ICF Macro¹. During the survey, a multi-stage probability sampling was utilized to select 23,020 women of reproductive age. However, the current study focused on a sub sample of 5,948 currently married women who are not currently pregnant, not currently breast feeding, not menopausal and had sexual intercourse in the last 4 weeks preceding the survey. Detailed report of the methodologies involved in data collection can be obtained from the appropriate survey report¹.

Definition of Variables

Measurement of the dependent variable

The dependent variable for this analysis, use of LAPCM, was obtained from questions in the section on contraception in the individual women's questionnaire. Women were asked whether or not they were currently using contraception. For those who responded that they were currently using contraception they were further asked to mention the type of contraceptive method they are currently using. In particular, the respondents were asked to choose from the list of contraceptives, which included the LAPCM (implant, intra-uterine devices and sterilization). The responses to contraceptive use were coded into four categories as follows: 0 if the women were not using any contraceptive method, 1 if the woman was using traditional methods, 2 If she uses any other modern method (pills, injectable, condom) and 3 if a woman is currently using at least one of the long-term/permanent methods (implants, IUD and sterilisation).

Generation of key independent variable: Women empowerment status

The index of women's empowerment is derived from the women's responses to questions on the number of household decisions in which the respondent participates, employment status, type of earnings, women's control over cash earnings and level of education. The study also identifies some notable predictors of use of LAPCM. Decision-making can be a complex process. The ability of women to make decisions that affect their personal circumstances is essential for their empowerment. To assess women's decision-making autonomy as part of women empowerment, the 2010 MDHS collected information on women's participation in different types of household decisions: respondent's own health care; making major household purchases; making household purchases for daily needs; Decision on how to spend family money and visits to family or relatives. Women are considered to participate in decision-making if they make decisions alone or jointly with their husband or someone else. Other variables used in generating women empowerment indicators are; woman's level of education, her economic activity, refusal to have sex with partners and perception on asking partner to use condom. However, the principal component analysis factored out some other variables that could have been involved in generation of women empowerment as an index.

The women empowerment scores are as described in table 1. The overall total score for an individual was disaggregated into four categories as highly empowered (scores $\geq 70\%$ of the total score); fairly empowered (scores in the range of 50-59% of the total score); poorly empowered (scores in the range of 40-49% of the total score) and not empowered if the total score is less than 40%.

Control Variables

Based on previous studies on determinants of contraceptive use other factors were included as control variables³⁰. These included individual-level variables such as age, educational level, household wealth, religious affiliation, number of living children, exposure to family planning messages in mass media (newspapers, radio and TV) and knowledge of modern contraceptives (number of methods known). In addition community-level variables such as rural versus urban residence and province of residence were also included in the analyses.

Data analysis procedures

Data were analysed using Stata Software version 12.0. In order to ensure representativeness of the study sample as a result of cluster sampling method that was used during the data collection, the data was weighted. The weighting variable was created from the existing sampling weight and was activated before we began the statistical analysis. The analysis began with Chi-square model which was used to determine association between "currently" using contraceptive method, women empowerment scores and independent variables such as age, region, religion, place of residence, number of existing children etc. Thereafter, statistically significant variables ($\alpha=5\%$) were entered into multinomial logistic regression model to determine the strength of the associations between the dependent and independent variables.

TABLE 1: Framework for the generation of women empowerment indicators

Background Characteristics	Score				Max. Score
	0	1	2	3	3
<u>Education</u>					
None	x				3
Primary		x			
Secondary			x		
Higher				x	
<u>Current Work Status</u>					
No	x				1
Yes		x			
<u>Husband Desire for children</u>					
Both want the same		x			1
Husband wants more	x				
Husband wants fewer	x				2
<u>Decision maker for contraceptive use</u>					
Mainly respondent			x		
Mainly husband/partner	x				
Joint decision		x			2
Others	x				
<u>Final say on own's health care</u>					
Respondents alone			x		
Respondent and husband/partner		x			
Respondent and other person		x			
Husband/partner alone	x				
Someone else	x				2
Others	x				
<u>Final Say on making Large Household expenses</u>					
Respondents alone			x		
Respondent and husband/partner		x			
Respondent and other person		x			
Husband/partner alone	x				
Someone else	x				
Others	x				2
<u>Final Say on making Household daily expenses</u>					
Respondents alone			x		
Respondent and husband/partner		x			
Respondent and other person		x			
Husband/partner alone	x				
Someone else	x				
Others	x				2
<u>Final say on visit to family or relatives</u>					
Respondents alone			x		
Respondent and husband/partner		x			
Respondent and other person		x			
Husband/partner alone	x				
Someone else	x				
Others	x				2
<u>Final say on who decides on how to spend family money</u>					
Respondents alone			x		
Respondent and husband/partner		x			
Respondent and other person		x			
Husband/partner alone	x				
Someone else	x				
Others	x				1
<u>Can respondent refuse sexual intercourse?</u>					
No	x				1
Yes		x			
<u>Can ask partner to use condom?</u>					
No	x				1
Yes		x			

Multivariate analysis

The classification of the dependent variable into four necessitates the use of multinomial regression. The multinomial model uses maximum likelihood estimation to evaluate the probability of categorical membership of each type of contraceptive method used.

In view of the fact that the dependent variable has 4 categories (non-use, use of traditional methods, use of other modern methods, use of LAPCM), this requires the calculation of $4-1=3$ equations, one for each category relative to the reference category (not using any contraceptive method) to describe the relationship between long-term/permanent

contraceptive use and the women empowerment status. We chose the first category (non- users) as the reference, then,

$$\text{for } j = 2, 3, 4 \quad \ln \left\{ \frac{p(\xi_i = j)}{p(\xi_i = 1)} \right\} = \alpha_j + \sum_{k=1}^K \beta_{jk} X_{ik} = Z_{ji}$$

Hence, for each case, there will be 3 predicted log odds, one for each category relative to the reference category. When there are more than 2 groups, computing probabilities is a little more problematical than it was in logistic regression.

$$\text{For } j = 2, 3, 4 \quad p(\xi_i = j) = \frac{\exp(Z_{ji})}{1 + \sum_{\eta=2}^4 \exp(Z_{\eta i})}$$

For the reference category;

$$p(\xi_i = 1) = \frac{1}{1 + \sum_{\eta=2}^4 \exp(Z_{\eta i})}$$

Bivariate multinomial regression was used to examine relationships between use of long acting and permanent contraceptive use and independent variables. Multivariate multinomial regression was employed to identify associations between women's empowerment, its various dimensions and use of long acting and permanent contraceptives, with (Model 2) and without (Model 1) controlling for individual- and community-level variables that may affect the outcome.

Results

Characteristics of the study population

The majority of the study population lived in rural areas (78%), is in the Southern Region (45%) followed by Central Region (43%) and then Northern Region (12%) and was Christian (88%). The majority of the study population has at least primary education (63%), 17% had secondary and higher education and 19% had no education.

The bar chart as shown in figure represents the distribution of women with respect to their women empowerment scores. The distribution is an indication that the scores are normally distributed with mean score of 6.62 ± 2.9 . About 60% and 91.4% of the respondents scored below 50% and 70% of the total score respectively, while 46.7% scored below 40% of the total score. The highest proportion of the women scored 7 and 8 points, whereas none of the respondents had 0 score.

Figure 1: Bar chart of the women empowerment score

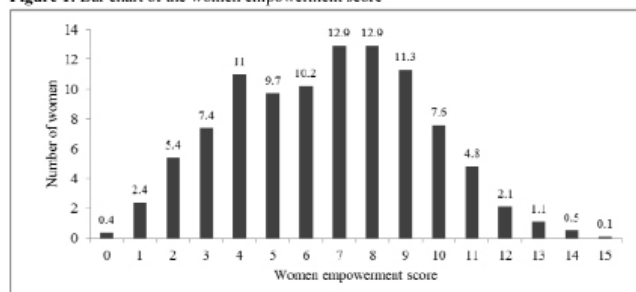


TABLE 2: Women Empowerment Scores and Current Modern Contraceptive Use

Women Empowerment Scores	Modern Contraceptive Use			χ^2 -value	p-value
	Any other Modern	Long term or Permanent	Total		
Total	30.8(1831)	20.0(1191)	100.0(5948)		
Education*				1600	p<0.001
0	19.6(221)	23.1(261)	100.0(1129)		
1	31.0(1173)	20.5(775)	100.0(3780)		
2	43.3(406)	13.9(130)	100.0(937)		
3	30.4(31)	24.5(25)	100.0(102)		
Work Status*				47.974	p<0.001
0	28.2(618)	17.8(389)	100.0(2189)		
1	32.3(1213)	21.3(802)	100.0(3758)		
Husband Desire for children*				1015	p<0.001
0	35.2(1591)	26.2(1187)	100.0(4525)		
1	16.9(241)	0.3(4)	100.0(1424)		
Decision maker for contraceptive use*				4686	p<0.001
0	5.4(164)	5.5(168)	100.0(3052)		
1	57.6(1423)	35.5(876)	100.0(2471)		
2	57.3(246)	34.5(148)	100.0(429)		
Final say on own's health care*				58.224	p<0.001
0	26.8(658)	19.2(471)	100.0(2452)		
1	32.8(830)	20.1(508)	100.0(2533)		
2	35.7(344)	22.0(212)	100.0(964)		
Final Say on making Large Household expenses*				43.161	p<0.001
0	26.8(658)	19.2(471)	100.0(2452)		
1	32.8(830)	20.1(508)	100.0(2533)		
2	35.7(344)	22.0(212)	100.0(964)		
Final Say on making Household daily expenses*				35.516	p<0.001
0	29.2(762)	18.4(481)	100.0(2614)		
1	31.7(344)	20.7(225)	100.0(1086)		
2	32.3(725)	21.6(485)	100.0(2247)		
Final say on visit to family or relatives*				39.334	p<0.001
0	28.7(526)	16.9(309)	100.0(1832)		
1	31.8(843)	21.2(563)	100.0(2650)		
2	31.6(463)	21.7(319)	100.0(1467)		
Final say on who decides on how to spend family money**				22.752	0.001
0	30.1(1147)	19.6(746)	100.0(3811)		
1	31.8(460)	21.2(307)	100.0(1447)		
2	32.4(200)	19.7(122)	100.0(618)		
Can respondent refuse sexual intercourse?				2.996	0.392
0	29.4(453)	21.3(328)	100.0(1541)		
1	31.3(1379)	19.6(863)	100.0(4408)		
Can ask partner to use condom*				40.364	p<0.001
0	24.5(350)	21.8(311)	100.0(1427)		
1	32.8(1482)	19.5(880)	100.0(4522)		
Women Empowerment (Overall)*				111.2	p<0.001
Not empowered	25.8(551)	19.3(412)	100.0(2138)		
Poorly empowered	29.1(396)	19.0(259)	100.0(1360)		
Fairly empowered	37.0(690)	20.7(386)	100.0(1867)		
Highly empowered	33.3(168)	22.6(114)	100.0(504)		
Mean Score*	7.02 ± 2.8	6.80 ± 2.9	6.62 ± 2.9		p<0.001

TS: Total Score; *Significant at 0.1%; **Significant at 1%

In Table 2, the data show that the mean women empowerment score was lower among those who are currently using LAPCM (6.80 ± 2.9) than those currently using any other contraceptive methods (7.02 ± 2.8). Only 20.0% of the respondents were currently using LAPCM while 30.8% were currently using any other modern contraceptive methods. About 24% of the respondents scored 3 points for education among those who are currently using LAPCM as against 30.4% of those using any other modern contraceptive methods. Across all the indicators of women empowerment; women who are currently using any other modern contraceptive methods are more empowered than those who are using LAPCM. Among the respondents who are currently using LAPCM, 19.3% and 19.0% had an empowerment score of 0-39% and 40-49% of the total score respectively whereas, 20.7% scored between 50-59% and about 23% scored 70%+.

The mean age of the women was 33.21 ± 8.7 years and a significant difference exists between the mean ages of women who are currently using any modern method (30.26 ± 6.8 years) and those who are using LAPCM (38.53 ± 6.2 years). In Table 3, the data show that the proportion of women who are currently using LAPCM increases with age, increase in number of surviving children, increase in marital duration, increase in husband/partner's level of education and increase in wealth quintile ($p < 0.001$). For instance, with respect to age, the prevalence of current use of LAPCM ranges from 2.5% among the youths to 33.2% among those 35 years and above. Also, higher proportion of LAPCM use was reported

among women who had heard about family planning program in the previous one month (21.1%) than those who did not (17.9%) $p < 0.001$. Women who were living in urban areas (22.2%) are more likely to be using LA/PC method than their counterparts residing in the rural areas (19.4%) $p < 0.001$. Variation exists in the current use of LAPCM between different religious groups even among Christians. The prevalence of the use of LAPCM was highest among women who do not belong to any religious group (36.6%) and least among Muslims (10.7%).

TABLE 3: Current Modern Contraceptive Use according to Socio-demographic Characteristics

Background Characteristics	Modern Contraceptive		Total	χ^2 -value	p-value
	Any other Modern	Long term or Permanent			
Total	30.8(1833)	20.0(1192)	100.0(5951)		
Age*				749.8	$p < 0.001$
15-24	34.4(362)	2.5(26)	100.0(1053)		
25-34	43.1(981)	13.0(296)	100.0(2275)		
35+	18.7(490)	33.2(870)	100.0(2623)		
Mean Age*	30.26±6.6	38.53±6.2	33.21±8.7		$p < 0.001$
Number of living children*				1186.0	$p < 0.001$
None	7.2(37)	0.8(4)	100.0(513)		
1-2	36.9(647)	6.1(107)	100.0(1752)		
3-4	38.8(741)	19.1(364)	100.0(1908)		
5+	22.9(407)	40.3(716)	100.0(1777)		
Marital Duration*				871.2	$p < 0.001$
0-4	29.6(227)	2.6(20)	100.0(767)		
5-9	46.2(471)	4.9(50)	100.0(1020)		
10-14	43.3(498)	14.2(164)	100.0(1151)		
15-19	33.3(328)	25.9(255)	100.0(985)		
20+	15.2(308)	34.6(702)	100.0(2027)		
Heard about Family planning program in the last one month*				24.544	$p < 0.001$
No	29.6(573)	17.9(347)	100.0(1937)		
Yes	31.3(1257)	21.1(845)	100.0(4010)		
Region*				114.02	$p < 0.001$
Northern	30.1(203)	21.3(144)	100.0(675)		
Central	28.8(743)	24.8(640)	100.0(2584)		
Southern	32.9(886)	15.1(407)	100.0(2691)		
Place of Residence*				22.049	$p < 0.001$
Urban	34.3(448)	22.2(290)	100.0(1307)		
Rural	29.8(1384)	19.4(901)	100.0(4642)		
Religion*				155.9	$p < 0.001$
Catholic	32.6(398)	19.6(240)	100.0(1222)		
CCAP	33.9(339)	25.1(251)	100.0(999)		
Anglican	36.3(53)	19.2(28)	100.0(146)		
SDA/Baptist	36.7(155)	22.3(94)	100.0(422)		
Other Christian	29.1(697)	19.9(476)	100.0(2395)		
Muslim	25.1(170)	10.7(72)	100.0(676)		
No religion	12.2(5)	36.6(15)	100.0(41)		
Others	27.9(12)	32.6(14)	100.0(43)		
Wealth Index*				92.762	$p < 0.001$
Poorest	24.7(186)	15.3(115)	100.0(754)		
Poorer	29.4(300)	17.7(181)	100.0(1022)		
Middle	31.5(365)	19.7(228)	100.0(1158)		
Richer	33.4(468)	19.9(279)	100.0(1400)		
Richest	31.8(513)	24.0(388)	100.0(1615)		
Partner's Education*				151.4	$p < 0.001$
No education	20.1(122)	21.2(129)	100.0(608)		
Primary	28.8(1009)	20.1(703)	100.0(3499)		
Secondary	38.9(612)	17.8(280)	100.0(1575)		
Higher	33.2(81)	31.1(76)	100.0(244)		
Don't know	33.3(5)	0.0(0)	100.0(15)		

*Significant at 0.1%; CCAP: ;SDA: Seventh Day Adventists

Multinomial regression

All the variables that were found to be statistically significant in the bivariate analyses were used to examine the determinants of use of LAPCM among married women through the execution of a multivariate analytical technique based on logistic regression. The results of this exercise are presented in Table 4. In general the results indicate that being empowered is a protective factor for current use of LAPCM. The odd ratio of LAPCM use increases consistently with the women empowerment score even when other potential confounding variables were used as a control.

The other factors that were found to significantly affect use

of LAPCM were religion, wealth status, husbands' education, information about family planning and number of living children. Women who belong to Seventh Day Adventists/Baptist were 1.51(C.I.=1.06-2.15; $p=0.02$) more likely to use LAPCM than Catholic women whereas Muslims were 0.58(C.I.=0.41-0.81; $p=0.001$) less likely to currently using LAPCM method than their counterparts who are Catholics. The odd ratio of use of LAPCM method shows positive increasing relationship with wealth quintile. It is evident that women who belong to the richest wealth quintile category (OR=1.91; C.I.=1.36-2.67; $p < 0.001$) were more likely to currently be using LAPCM method than those in the poorest. The likelihood of not using LAPCM method was more common among women whose husbands have lower level of education. For instance, women whose their husbands have higher education were approximately thrice more likely to be using LAPCM method than those whose husbands have no formal education. The odd ratio of currently using LAPCM was significantly higher among those who heard about family planning program on media recently. Lastly, the use of LAPCM was significantly related to the number of living children. Women with 1-2 living children were 10.90 more likely than women with no living children to use LAPCM. Women with 3-4 and 5+ were 41.17 and 107.64 more likely than women with no living children to use LAPCM.

TABLE 4: Multiple logistic regression of Current Use of long term/permanent contraceptive method

Background Characteristics	Model 1 (Unadjusted Odds Ratio)		95% C.I. for Exp(B)		Model 2 (Adjusted Odds Ratio)		95% C.I. for Exp(B)	
	Exp(B)	p-value	Lower	Upper	Exp(B)	p-value	Lower	Upper
Women Empowerment (Overall)								
Not Emp.	1.00				1.00			
Poorly Emp.	1.09	0.38	0.90	1.30	1.02	0.88	0.82	1.26
Fairly Emp.	1.46*	0.00	1.23	1.72	1.33**	0.01	1.08	1.64
Highly Emp.	1.62*	0.00	1.25	2.10	1.58**	0.01	1.15	2.18
Age								
15-24					1.00			
25-34					1.08	0.80	0.61	1.92
35+					1.37	0.34	0.72	2.58
Number of living children								
None					1.00			
1-2					10.90*	0.00	3.88	30.66
3-4					41.17**	0.00	14.51	116.80
5+					107.64*	0.00	37.71	307.26
Marital Duration								
0-4					1.00			
5-9					0.88	0.70	0.47	1.67
10-14					1.54	0.21	0.79	3.01
15-19					1.98	0.05	0.99	3.94
20+					1.43	0.33	0.70	2.93
Region								
Northern					1.00			
Central					1.21	0.16	0.92	1.60
Southern					0.90	0.46	0.68	1.19
Place of Residence								
Urban					1.00			
Rural					0.80	0.07	0.64	1.02
Religion								
Catholic					1.00			
CCAP					1.34	0.02	1.03	1.75
Anglican					1.53	0.15	0.86	2.74
SDA/ Baptist					1.51***	0.02	1.06	2.15
Other Christian					1.05	0.69	0.84	1.30
Muslim					0.58**	0.00	0.41	0.81
No religion					1.77	0.16	0.80	3.93
Others					1.90	0.14	0.81	4.43
Wealth Index								
Poorest					1.00			
Poorer					1.52**	0.01	1.12	2.07
Middle					1.68**	0.00	1.24	2.28
Richer					1.77*	0.00	1.31	2.39
Richest					1.91*	0.00	1.36	2.67
Partner's Education								

Discussion

The study indicates that about one fifth of the respondents were currently using LAPCM in Malawi. The prevalence of LAPCM is much higher when compared to findings from other countries in Sub-Saharan Africa. For instance, a study in Ethiopia reported that 3% of women are using LAPCM.5,31 Across all the indicators of women empowerment; women who are currently using any other modern contraceptive methods are more empowered than those who are using LAPCM. The mean age of the women was 33.21±8.7 years and mean age of women who are currently using any modern contraceptive method was strikingly higher than those currently using LAPCM.

Findings from this study indicate that the use of LAPCM methods was significantly associated with women empowerment even after controlling for background variables. Women who are highly empowered are more likely to use LAPCM methods. This finding is in agreement with that of Asya and colleagues conducted in Oman where it was concluded that empowered women were more likely to use contraception^{14,32}. In a similar study, a strong relationship between the use of contraceptives and women empowerment was reported, even after adjusting for demographic predictors of contraceptive use³³. The empowerment of women naturally indicates their independence on decision making and the right on childbearing and rearing.

Other factors associated with the use of LAPCM are number of living children, religion, household wealth status, partners' education and heard family planning in the last twelve months. These factors should be considered when repositioning family planning programmes in Malawi.

The study found that Religion was positively associated with use of LAPCM methods. A wide discrepancy exists in the current use of LAPCM among various religious organisations, with the highest prevalence recorded among women who do not belong to any religion and least among Muslims. The likelihood of using LAPCM was higher among women who belong to Seventh Day Adventist/Baptist than Catholic women. Women who belong to Islamic religion were less likely to use LAPCM than their counterparts who are Catholics. Overall, use of LAPCM was higher among married women belonging to protestant churches and no religion and lower among Muslim women. This finding is consistent with studies from other countries which show that the likelihood of Muslim women using contraception is lesser than that of women belonging to other religious groups^{5,14}. One of the most frequently cited reason for non-use of contraceptives in general and LAPCM in particular is the apparent opposition of religious teachings. Christians often cite Genesis 1 verse 28 "be fruitful and multiply" or Genesis 9 verse 7 "as for you be fruitful and increase in number". There is therefore need to involve religious leaders to help create a favourable environment for communications campaigns.

The study also found that use of LAPCM increased with the number of living children. Women with more living children were more likely to use LAPCM than women with no living children. Similar findings are also observed in other countries⁵. The importance of the number of living children in as far as use of LAPCM methods is concerned could be related to the observation that women tend to use family planning in order to achieve their desired number of children and to have children by proper spacing of the pregnancy.

Another important result of the study is the finding that use of LAPCM is influenced by wealth status of the household. In particular, this study has shown that poor women are less likely to use LAPCM than rich women. This result is consistent with findings from other studies in Africa that showed that poverty was a major factor for non-use of family planning services¹⁴. It is often argued that availability of cash for transport is an important determinant of whether or not health facility delivery is sought³⁴.

Women whose husbands or partners have no formal education or lower educational level stand higher risk of not using LAPCM. This finding underscores the importance of

involving men in the use of LAPCM. The importance of male involvement in family planning has been emphasized by various studies in the region³⁰. Malawian society is largely male-dominated, even with regard to female reproductive health. Therefore, men's involvement in family planning can be hardly over-emphasized. One of the crucial factors which have hindered a successful implementation of the family planning programme in Malawi is minimal male involvement. The establishment of more family planning programmes for men, at work-places, would help to increase the participation of men in reproductive health programmes.

Having heard about family planning programmes recently, promotes the use of LAPCM. This study deepens our awareness of the wide ranging, strong and persistent associations of listening to media programmes on family planning and contraceptive use^{25,30}.

In this study, there was no significant association between use of LAPCM and age, region of residence, type of residence and marital duration. As expected, the prevalence of current use of LAPCM was found to be higher among older women. Use of LAPCM is high in Central Region and low in Southern Region. Living in rural areas inhibits the use of LAPCM. It is expected that women contraceptive decision making supremacy to be lower in the rural areas where women's level of literacy is low and economic dependence is high³⁰. In contrast to this finding, study in Ethiopia found that rural women were more likely than urban women to make an independent decision on current use of contraceptive³³.

This study has implications for policies and programs that seek to improve family planning services in Malawi. First, in order to increase the number of women that use LAPC, there is a need to improve on the status of women in terms of education and socio-economic status. Women's empowerment is an important indicator in development strategies that focus on poverty reduction, an improved standard of living, and good governance. In recognition of the importance of improving the status of women, the United Nations included gender equality and women empowerment as one of the eight millennium development goals²⁴. Third, there is need to strengthen the national family planning programme by improving the provision of health education to men and women on the need to use maternal health services during pregnancy and delivery. Lastly, more studies should be conducted to investigate the characteristics of women who use and those who do not use health facilities during pregnancy and delivery. The reasons behind their choices should also be investigated. Future studies should not only be multidisciplinary but also qualitative in nature.

Limitation

Measurement of women's empowerment is always a difficult task because it is a process, its multidimensional nature and the concept operates at various levels³⁵. Thus, there is no current scientific consensus on the construct of women's empowerment. The empowerment variable used in our analyses might not be the only validated measure of women's empowerment but will provide an insight into the mechanisms underlying the construct of this index. The reliability of our study would be better if we had focused on women who do not have intention to bear more children. Restricting the sample to this set of women would have drastically reduced the sample size in this study. We, therefore, included other women who met the study inclusion criteria pre-set for the study. However, our study is justified in the sense that some

of the women might want to use long acting method to delay but not to permanently halt childbearing. The determination of women empowerment score in our study is limited in the number of variables utilized, as more variables which are not available in DHS data could not be factored into the computation. Further research is needed in this regard.

Conclusion

In conclusion, our findings suggest that substantial increase in the use of LAPCM services can be achieved by accelerating women empowerment. LAPCM is still underutilized and more than half of the women are not adequately empowered. Women empowerment, wealth quintile and access to FP programmes are key factors influencing the use of LAPCM. Programmes that address these determinants are urgently needed in Malawi. Intervention programmes aimed at increasing the use of LAPCM should involve making LAPCM more available and acceptable. It is also important to promote discussions of fertility preferences and family planning among couples. We suggest that women empowerment is needed at all levels, in anticipation that this would enhance a swift achievement of the national family planning programme goals in Malawi.

Acknowledgements

The authors are grateful to Macro-International U.S.A for allowing us to use the 2010 MDHS data for this study.

References

1. National Statistical Office (NSO) and ICF Macro. Malawi Demographic and Health Survey 2010. Zomba, Malawi, and Calverton, Maryland, USA: NSO and ICF Macro; 2011
2. National Statistical Office (NSO) and ICF Macro. Malawi Demographic and Health Survey 1992. Zomba, Malawi, and Calverton, Maryland, USA: NSO and ICF Macro; 1994
3. National Statistical Office (NSO) and ICF Macro. Malawi Demographic and Health Survey 2000. Zomba, Malawi, and Calverton, Maryland, USA: NSO and ICF Macro; 2002
4. National Statistical Office (NSO) and ICF Macro. Malawi Demographic and Health Survey 2004. Zomba, Malawi, and Calverton, Maryland, USA: NSO and ICF Macro; 2006
5. Alemayehu M, Belachew T, Tilahun T. Factors associated with utilization of long acting and permanent contraceptive methods among married women of reproductive age in Mekelle town, Tigray region, north Ethiopia. *BMC Pregnancy Childbirth* 2012; 12(6)
6. Takele A, Degu G, Yitayal M. Demand for long acting and permanent methods of contraceptives and factors for non-use among married women of Goba Town, Bale Zone, South East Ethiopia. *Reprod Health* 2012; 9(26)
7. Tiessen R. Re-inventing the gendered organization: staff attitudes towards women and gender mainstreaming in NGOs in Malawi. *Gend Work Organ* 2004; 11: 689–708
8. Schatz EJ. Numbers and narratives: making sense of gender and context in rural Malawi [dissertation]. Philadelphia: University of Pennsylvania; 2002
9. Kabeer N. Gender equality and women's empowerment: a critical analysis of the third millennium development goal. *Gend Dev* 2005; 13(1): 13-24
10. Alsaawi M, Adamchak DJ. Women's status, fertility and contraceptive use in Kazakhstan. *Genus* 2000; LVI(1-2): 99-113
11. Shaw D. Women's right to health and the millennium development goals: promoting partnerships to improve access. *Int J Gynaecol Obstet* 2006; 94(3): 207-15
12. Rose M. Women's empowerment vital for economic development and peace. United Nations News Centre. 2010 May 17 [cited 2013 Aug 28]. Available from: http://www.un.org/apps/news/story.asp?NewsID=34718&Cr=migiro#_VCmkq_SSxEk
13. Riyami AA, Afifi M, Mabry RM. Women's autonomy, education and employment in Oman and their influence on contraceptive use. *Reprod Health Matters* 2004; 12(23): 144-54
14. Do M, Kurimoto N. Women's empowerment and choice of contraceptive methods in selected African countries. *Int Perspect Sex Reprod Health* 2012; 38(1): 23–33
15. Black D, Bucio A, Butt C, Crangle M, Lalonde A. Improving sexual and reproductive health: integrating women's empowerment and reproductive rights. 2nd ed. Ottawa: The Society of Obstetricians and Gynaecologists of Canada (SOGC); 2011
16. Ahmed S, Creanga AA, Gillespie DG, Tsui AO. Economic status, education and empowerment: implications for maternal health service utilization in developing countries. *PLoS ONE* 2010; 5(6)
17. Balamoune-Lutz M. Globalisation and gender inequality: is Africa different? *J Afr Econ* 2007; 16(2): 301-48
18. Crissman HP, Adanu RM, Harlow SD. Women's sexual empowerment and contraceptive use in Ghana. *Stud Fam Plann* 2012; 43(3): 201–12
19. Malhotra A, Schuler SR, Boender C. Measuring women's empowerment as a variable in international development. World Bank Gender and Development Group and Social Development Group: Paper Prepared for the World Bank Workshop on Poverty and Gender: New Perspectives, June 28, 2002
20. Scrutton C, Luttrell C. The definition and operationalisation of empowerment in different development agencies [Internet]. Geneva: Swiss Agency for Development and Cooperation; 2007 [cited 2013 Aug 28]. Available from: <http://www.poverty-wellbeing.net/en/Home/Resources/Archive/Empowerment/document.php?itemID=1546&langID=1>
21. Hoemeke L. Women use contraception for a better life. We need to support their goals [Internet] RH Reality Check; 2012 [cited 2013 Aug 28]. Available from: <http://rhrealitycheck.org/article/2012/09/30/why-does-woman-use-contraception-better-life/>
22. Hubacher D, Kimani J, Steiner MJ, Solomon M, Ndugga MB. Contraceptive implants in Kenya: current status and future prospects. *Contraception* 2007; 75(6): 468-73
23. United Nations Population Information Network (POPIN). Programme of action of the international conference on population and development (ICPD). In: Report of the international conference on population and development; 1994 Sep 5-13; Cairo. New York: POPIN; 1994. p. 4-119
24. United Nations. United Nations Millennium Declaration [Internet]; 2000 Sep 6-8; New York. New York: 2000 [cited 2013 Aug 28]. Available from: http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/55/2
25. Gharaibeh MK, Oweis A, Shakhathreh FMN, Froelicher ES. Factors associated with contraceptive use among Jordanian Muslim women: implications for health and social policy. *J Int Womens Stud* 2011; 12(3): 168-84
26. Duflo E. Women empowerment and economic development. *J Econ Lit* 2012; 50(4): 1051–79
27. Van Lith LM, Yahner M, Bakamjian L. Women's growing desire to limit births in Sub-Saharan Africa: meeting the challenge. *Glo Health Sci Prac* 2013; 1(1): 97-107
28. United Nations Development Programme. Human Development R Hausmann R, Tyson LD, Zahidi S. The Global Gender Gap Report Palamuleni ME. Socio-economic and demographic factors affecting contraceptive use in Malawi. *Afr J Reprod Health* 2013; 17(3): 91-104

31. Bogale B, Wondafrash M, Tilahun T, Girma E. Married women's decision making power on modern contraceptive use in urban and rural southern Ethiopia. *BMC Public Health* 2011; 11(342)
32. Asya AR, Afifi M, Marby RM. Women's autonomy, education and employment in Oman and their influence on contraceptive use. *Reprod Health Matters* 2004; 12(23): 144-54
33. Haile A, Fantahun M. Demand for long acting and permanent contraceptive methods and associated factors among family planning service users, Batu town, Central Ethiopia. *Ethiop Med J* 2013; 50(1): 31-42
34. Mrisho M, Schellenberg JA, Mushi AK, et al. Factors affecting home delivery in rural Tanzania. *Trop Med Int Health* 2007; 12(7): 862-72
35. Alsop R, Bertelsen MF, Holland J. Empowerment in Practice: From Analysis to Implementation. Washington, DC: The International Bank for Reconstruction and Development/The World Bank; 2006
36. WHO, Department of Reproductive Health and Research. Strategies to increase use of long-acting and permanent contraception [Internet];. Geneva: World Health Organization; 2012 [cited 2013 Aug 28]. Available from: http://apps.who.int/iris/bitstream/10665/75161/1/WHO_RHR_HRP_12.20_eng.pdf?ua=1