

# Factors influencing women's utilization of public health care services during childbirth in Malawi Public health facility utilization.

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## Abstract

**Background:** Maternal mortality remains a public health challenge claiming many lives at the time of giving birth lives. However, there have been scanty studies investigating factors influencing women's use of public health facilities during childbirth.

**Objective:** The aim of the study was to explore the factors associated with women choice of public health facility during childbirth.

**Methods:** The study used 2010 Malawi Demographic Health Survey dataset and a binary logistics regression analysis to estimate the determinants influencing women's use of public health facilities at the time they give birth.

**Results:** Of 23020 women respondents, 8454(36.7%) chose to give birth in public health facilities. Multivariate analysis reported that frequency of antenatal care (ANC), birth order, women's education, wealth status and quality of care were the major predictors increasing women's choice to use public health facilities at childbirth.

**Conclusion:** There is need to use multimedia approach to engage women on significance of utilizing public health facilities during childbirth and promote quality of care in facilities if their health outcome is to improve in Malawi.

**Keywords:** Childbirth, public health, health care, Malawi.

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## Introduction

Maternal mortality remains a public health challenge across many developing countries around the world. For instance, in 2013, about 289,000 women died to causes related to childbirth. Out of these deaths, about 179,000 were from developing countries<sup>1</sup>. In sub-Saharan Africa, women's lifetime risk of dying in childbirth stands at 1 in 38 relative to 1 in 3700 from developed countries.

In sub-Saharan Africa, Malawi reported the highest maternal mortality rated at 510 deaths per 100,000 live births which implied that 1 in every 34 women died during child birth, in the same year<sup>2,1</sup>. Previous scholars asserted this public health challenge to preventable direct causes upon women's timely seeking of maternal health care services during and after gestation period<sup>3-5</sup>. Among the direct

causes include hypertensive disorder, abortion, obstructed labour, haemorrhage, sepsis among others and indirect causes such as malaria and anaemia which are often times aggravated due to women's pregnancy condition<sup>5</sup>.

Overtime, government of Malawi adopted programmes and initiatives fundamentally intended to improve maternal health in order to reduce maternal mortality to 150 death per 100,000 live births<sup>6</sup>. The initiatives such as the focussed antenatal care programme aimed at promoting women's health seeking behaviour at pregnancy to post-delivery period<sup>7</sup>, road map to accelerate reduction of maternal and neonatal mortality which target availing skilled health workers to attend women during antenatal, child delivery and postpartum period using public health facilities as a medium<sup>8</sup>.

However, despite such initiatives, maternal health outcome is not only gradually improving in the Malawi but also there is underutilization of public health facilities during pregnancy, childbirth and after child delivery<sup>1,9</sup>. Therefore, it is imperative to assess factors associated with women's utilization of public health care service during childbirth in order to redirect on strategies to improve maternal health in general in Malawi.

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## Methods

### Data sources

The study employed 2010 Malawi Demographic and Health Survey (MDHS) dataset which was a national representative data of women aged 15 - 49. The data was supplied by ICF and Macro international<sup>9</sup>.

### Sampling frame and sampling criteria

The 2010 MDHS adopted a sampling frame used for 2008 Malawi National population census. In this sampling frame, 849 clusters were identified that were comprised of 158 urban and 691 rural. From these clusters, 27,345 households were listed from which 23020 women of reproductive age participated.

### Measures

The dependent variable “public health facility child delivery” was derived from a question which asked women’s place of delivery. Respondents that indicated having delivered their babies from any public health facility were coded 1 and 0 for otherwise.

Additionally, other explanatory variables used included women’s age, ANC visits, timing of ANC visits, birth order, women’s education, religious affiliation and employment status for individual variables; Distance to health facility, media exposure, cost of accessing drugs, transport access to seek health care and household wealth status were household variables; place of residence, availability of community health workers and quality of care as community variables.

### Statistical analysis

The study used three approaches: univariate analysis, to describe respondent’s characteristics; bivariate analysis, to show the degree of association between dependent variable and each explanatory variable and binary logistic regression for multivariate analysis. STATA version 12 was used for analysis and  $p < 0.1$  was employed to test the study hypothesis.

## Results

### Characteristics of study population

The study population included a total of 23,020 women of which 8454 (36.7%) of them gave birth in public health care facilities and 63.3% gave birth elsewhere. At individual level, almost 45% of these women had a mean age of 25-34 years while 53.8% had attended ANC clinics below the recommended 4 times to ensure better health outcome. About 74.2% started visiting ANC clinics between 4 to 6 months after conception. On education status, about 68.5% of the women reported to have reached primary school level whereas over two thirds of the women (69.1%) were Protestants. At household level, 56.4% of the women reported to have problems with access to public health facilities for maternal health care due to distance between their places of abode and health care facilities while almost half the number (48.2%) of women were exposed to reproductive health information either through radio or television. Slightly above half of the number of women studied, reported having problems with accessing either drugs or transport to support their maternal health care. On economic status, about 17.4% of the studied women were from rich households. At community level, 86.0% of the women were from rural communities. Table 1 below illustrates detailed background characteristics of respondents.

<b>Table 1: Background characteristics of study population</b>			
	n=14 566	n=8454	n=23 030
	No	Yes	Total
	Column %	Column %	Column %
<i>Individual factors</i>			
<b>Age</b>			
15-24	44.1	35.6	41.0
25-34	25.9	45.3	33.0
35-49	30.0	19.1	26.0
<b>ANC frequency</b>			
less than 4	85.1	53.8	73.6
4 and more	15.0	46.2	26.4
<b>Timing of ANC</b>			
less than 3 months	68.6	14.8	48.8
4 - 6 months	26.0	74.2	43.7
7 months +	5.4	11.0	7.5
<b>Birth Order</b>			
0	34.2	0.0	21.6
1	8.1	19.9	12.5
2	9.9	19.2	13.3
3	10.2	16.9	12.7
4	9.5	14.1	11.2
5	7.9	10.3	8.8
6 or higher	20.2	19.6	20.0
<b>Women education</b>			
no education	15.3	13.8	14.7
Primary	65.6	68.5	66.6
secondary or higher	19.1	17.8	18.6
<b>Religion</b>			
Catholics	21.0	19.0	20.3
Protestants	67.1	69.1	67.8
Moslems	10.9	11.2	11.0
Others	1.0	0.7	0.9
<b>Women employment category</b>			
None	28.0	24.5	26.7
All seasoned	23.5	25.0	24.0
Seasonal	39.2	42.0	40.3
Occasional	9.3	8.5	9.0
<b>Household factors</b>			
<b>Distance to health centre</b>			
Problem	58.6	56.4	57.8
not a problem	41.4	43.6	42.2
<b>Media exposure</b>			
Neither radio nor television	41.2	41.4	41.3
Radio or Television	45.2	48.2	46.3
Radio and Television	13.6	10.4	12.4
<b>Cost to access drugs</b>			
Problem	53.5	51.0	52.5
not a problem	46.6	49.0	47.5
<b>Transport to access Health</b>			
Problem	56.7	54.1	55.8
not a problem	43.3	45.9	44.3
<b>Wealth</b>			
Poor	39.0	39.8	39.3
Middle	39.8	42.9	40.9
Rich	21.2	17.4	19.8
<b>Community Factors</b>			
<b>place of residence</b>			
Rural	13.0	14.0	13.3
Urban	87.1	86.0	86.7
<b>Health workers availability</b>			
Problem	22.4	20.7	21.8
not a problem	77.6	79.3	78.2
<b>Quality of Care</b>			
Inadequate	65.2	0.8	41.5
Moderate	18.6	52.1	30.9
Adequate	16.2	47.2	27.6

### Bivariate analysis

Table 2 illustrates the bivariate association between variables using Pearson chi-square. The overall outcome indicates that distance to health facility, place of residence,

and availability of the community health workers related significantly to public health care facilities' service utilization at  $p < 0.05$ . On the same, other variables were found to be significantly associated at  $p < 0.001$ .

**Table 2 illustrates the pearson chi-square measure of association between dependent and independent variables**

	Utilization of public health facility during childbirth		Chi-square (p-value)
	Yes	No	
<b>Individual factors</b>			
<b>Age</b>			
15-24 ( R )	3011	6421	945.23***
25-34	3828	3775	
35-49	1615	4370	
<b>ANC frequency</b>			
less than 4 ( R )	4545	12 389	2700***
4 and more	3909	2177	
<b>Timing of ANC</b>			
less than 3 months ( R )	1,249	9,985	6200***
4 -6 months	6,272	3,789	
7 months +	933	792	
<b>Birth Order</b>			
0 ( R )	0	4,979	4200***
1	1,683	1,186	
2	1,620	1,447	
3	1,426	1,489	
4	1,195	1,378	
5	870	1,151	
6 or higher	1,660	2,936	
<b>Women education</b>			
no education ( R )	1164	2226	20.28***
primary	5787	9552	
secondary or higher	1503	2788	
<b>Religion</b>			
Catholics ( R )	1,607	3063	19.51***
Protestants	5,839	9775	
Moslems	948	1582	
Others	60	146	
<b>Women employment status</b>			
Not employed ( R )	2,109	3416	43.51***
All seasoned	3,554	5716	
Seasonal	720	1360	
Occasional	2,071	4074	
<b>Household factors</b>			
<b>Distance to health centre</b>			
Problem ( R )	4,771	8533	10.11**
not a problem	3,683	6033	
<b>Media exposure</b>			
Neither radio nor television ( R )	3,500	5995	54.36***
Radio or Television	4,075	6590	
Radio and Television	879	1981	
<b>Cost to access drugs</b>			
Problem ( R )	4,309	7785	13.16***
not a problem	4,145	6781	
<b>Transport to access facility</b>			
Problem ( R )	4,573	8261	14.9***
not a problem	3,881	6305	
<b>Wealth</b>			
Poor ( R )	3,362	5683	52.23***
Middle	3,623	5797	
Rich	1,469	3086	
<b>Community factors</b>			
<b>place of residence</b>			
Rural ( R )	1,182	1886	4.95**
Urban	7,272	12680	
<b>Availability of health workers</b>			
Problem ( R )	1751	3260	8.75**
not a problem	6703	11566	
<b>Quality of care</b>			
Inadequate ( R )	65	9490	9100***
Moderate	4,403	2714	
Adequate	3,986	2362	
<b>Total = 23,020</b>	<b>8554</b>	<b>14556</b>	

### Multivariate analysis

Model 1 in Table 3 depicts the odds ratio estimates of individual, household and community level for public health care services delivery utilization in Malawi. In this case, the odd ratio and an asterisk denoting the significant are illustrated. The study found that respondents aged between 25-34 and 35-49 years were less likely and signifi-

cantly chose public health care facilities during child birth as compared to younger women aged 15-24 years noted with an OR= 0.99, 95% CI [0.97-1.001], p<0.05 and OR=0.98, 95% CI [0.78-1.001], p < 0.10, respectively. In the same vain, women who indicated to belong to other religious affiliations (other than catholics) were less likely to deliver at the public health care facilities as presented by OR=0.95, CI [0.90-1.006], p <0.001.

On timing of ANC service utilization after conception, study found that women that delayed utilization of antenatal care services and indicated to have their first ANC after 7 months or at a later stage of their pregnancy were less likely to utilize public health care facilities during childbirth (OR=0.96, 95% CI [0.93-0.99],  $p < 0.001$ ). Furthermore, still at individual level, the study found that birth order and education status increased likelihood of women using public health care facilities during child birth significantly.

Distance had no statistical difference between women

who reported to have problems in accessing public health care facilities relative to women who reported not to have a problem in as far as distance was concerned. This was observed to have a significant unity in odd ratios. In as far as wealth status was concerned; the study concluded that women belonging to either the middle or rich households had an increased and significant likelihood of delivering their children in public health care facilities relative to women from the poor households. Model 1 illustrates an OR=1.02, 95% CI [0.99-1.036],  $p < 0.001$  and OR=1.03, 95% CI [0.97-1.049],  $p < 0.05$  among women from middle income and rich households, respectively.

**Table 3: Multivariate binary logistic regression results of the factors influencing utilization of public health facilities during childbirth in Malawi.**

	Odds Ratio
<b>Individual factors</b>	
Age	
15-24 (R)	1
25-34	0.99**
35-49	0.98*
<b>ANC frequency</b>	
less than 4 (R)	1
4 and more	1.03***
<b>Timing of ANC</b>	
less than 3 months (R)	1
4 - 6 months	1.00
7 months +	0.96***
<b>Birth Order</b>	
0 (R)	1
1	1.09***
2	1.05***
3	1.04**
4	1.04**
5	1.01
6 or higher	1.03**
<b>Women education</b>	
No education (R)	1
Primary	1.02*
Secondary or higher	1.03*
<b>Religion</b>	
Catholics (R)	1
Protestants	1.00
Moslems	1.01
Others	0.95***
<b>Women Employment Status</b>	
Not employed (R)	1
All seasoned	1.00
Seasonal	0.99
Occasional	1.01
<b>Household factors</b>	
<b>Distance to health centre</b>	
Problem (R)	1
not a problem	1.00***
<b>Media exposure</b>	
Neither radio nor television (R)	1
Radio or Television	0.99**
Radio and Television	0.98*
<b>Cost to access drugs</b>	
Problem (R)	1
not a problem	1.01
<b>Transport to access facility</b>	
Problem (R)	1
not a problem	1.01**
<b>Wealth</b>	
Poor (R)	1
Middle	1.02***
Rich	1.03**
<b>Community factors</b>	
<b>place of residence</b>	
Rural (R)	1
Urban	0.91***
<b>Availability of Health workers</b>	
Problem (R)	1
not a problem	0.99
<b>Quality of Care</b>	
Inadequate (R)	1
Moderate	1.79***
Adequate	1.82***

Hint: \* $p < 0.05$ , \*\* $p < 0.01$  and \*\*\*  $p < 0.001$  and R implies reference category

Similarly, the study found that women who indicated not to have experienced problems with lack of transport to seek maternal health care attention had an increased likelihood of delivering their children in public health care facilities relative to women who indicated to have encountered transport problems (OR = 1.01, 95% CI [0.98-1.027],  $p < 0.05$ ). However, the study found that women's exposure to media has a decreasing effect on influencing women to deliver their babies in public health care facilities. It was also noted that there was less likelihood among women who were exposed to either radio or television and those exposed to both radio and television, OR=0.99, 95% CI [0.97-1.001]  $p < 0.05$  and OR=0.98, 95% CI [0.95-1.00],  $p < 0.1$ , respectively.

The study found that women classified as predominantly urban dwellers, were less likely and significantly associated with public health care facilities use during childbirth as compared to their rural counterparts (OR=0.91, 95% CI [0.88-0.94],  $p < 0.001$ ). Quality of ANC services that were received by women in their previous encounters increased their likelihood of making childbirth choice in public health care settings. For instance, those women who rated quality of ANC care delivery as moderate had an increased likelihood of utilizing public health care facilities during childbirth relative to women that rated the quality of care as inadequate (OR=1.79, 95% CI [1.7-1.82],  $p < 0.001$ ). Similarly, it was observed that those women who rated quality of ANC delivery as adequate were found to be more likely and significantly associated with an increased odd of using public health care facilities during childbirth as compared to reference category (OR=1.82, 95% CI [1.78-1.87],  $p < 0.001$ ).

## Discussion

The fundamental aims of the study were to investigate individual, household and community factors associated with women's childbirth in public health care service facilities using 2010 Malawi Demographic and Health Survey data set. The study indicated that the proportion of women who chose to deliver their children in the public health care facilities was 36.7%. The multilevel analysis results show that age affects women choice of public health care service facility for childbirth negatively at an individual level. Similarly, women that reported to have started their ANC clinic service utilization, 7 months after con-

ception, and those that indicated to be affiliated to other religious groups, were less likely to deliver their children in public health care facilities. Moreover, women's birth order and education status were positively associated with public health care childbirth. At household level, distance to the health care facility, transport availability in facilitating access to maternal health care and wealth status were positively associated with public health care childbirth delivery. Finally, at community level, it was observed that women that accessed ANC services and reported to moderate and high, in as far as quality of ANC care was concerned, were found to be positively associated with public health care childbirth.

The study showed that public health care childbirth stood at 36.7% in Malawi which implies that almost 4 in every ten women were found to deliver their children in a public health care facility. This trend concurs with what other studies in Ethiopia, Nigeria and Zambia have found, that is, in every 10 women delivery in these countries, about 4 of them do occur in health care facility<sup>10-12</sup>. Conversely, the study reveals that the position of Malawi in terms of women uptake of delivering their babies in the health care facility was slightly lower as compared to findings of other studies conducted in neighbouring Tanzania (46.7%) and Zambia (42.8%)<sup>13,11</sup>. Thus in Malawi, women's health seeking behaviour to deliver their children across public health care facilities is far much lower than that of their counterparts in these two mentioned neighbouring countries. The study indicates that often times, such differences in the rate of utilization of maternal health care services, more importantly during childbirth, is not only attributed to disparities in education statuses but also in quality of service delivery.

At an individual level, the study found that as women grow older, their likelihood to use public health care services decline less significantly. This study's findings are consistent with what other early studies that found that younger women are hesitant in making use of institutions to deliver their babies, as a result of fear of childbirth compared to older women in Ethiopia<sup>14, 15</sup>, Kenya<sup>16</sup> and Afghanistan<sup>17</sup>. This implies that the need to educate older women in order to increase their health seeking behaviour is paramount if institutional childbirth delivery is to be utilized universally regardless of the age variances in Malawi.

Furthermore, the study revealed that as women delay in utilizing prenatal care service facility during their pregnancy, their likelihood of delivering at the health care facility decreases. The findings are in tandem with what other scholars attributed to traditional practices and cultural beliefs which are said to be harmful and affect women's decision making on seeking modern maternal health care services in public health care facilities<sup>18,19</sup>. In order to suppress the attitude imbalances caused by cultural and traditional practices in seeking modern maternal health care, community based educative programmes and promotions based on couple-based approach need to be employed as a way of cross-cutting cultural barriers associated with delays among women in seeking timely ANC visits, immediately after conception. This approach may assist in educating women important on topics associated with improved maternal health outcome. The topics include pregnancy induced conditions such as diabetes, high blood pressure, anaemia, urinary tract infections, sexual transmitted diseases, et cetera, as well as other important general topics such as birth preparedness, nutrition and family planning<sup>4</sup>. A study conducted in Nigeria concluded that quality of maternal health care was the major predictor associated with under utilization and delay in use of ANC services in public based health care facility<sup>20</sup>.

The study found women with birth order of 1 to 4 had a positive association with public health care delivery in Malawi. Contrary to this finding, recent literature indicates that as the birth order of a woman increases, their likelihood in seeking institutional based child birth, most importantly the main stream health care facilities, declines<sup>21</sup>. The findings made in Malawi, tally with those made in other developing countries where birth order was a consistent predictor of facility-based childbirth that includes mainstream based facility<sup>22,23</sup>. The most proxy reason is that as the number of children per woman increases, their level of confidence increases and this raises likelihood of choosing public health care facilities other than non-institutional based facilities<sup>21</sup>. This entails making an untiring effort aimed at motivating women with different birth order so as to improve their choice of delivery at health facility based environment and this remains a major strategy of achieving universal utilization of health care facilities.

The study revealed that women who obtain basic primary education or higher were more likely to utilize public health facilities. Previous literature asserts that education provides women with an opportunity cost of not only become knowledgeable of reproductive health processes but also provides women with an opportunity to seek income outside their households thereby supporting their own health<sup>24</sup>.

Women affiliated to other religious grouping had challenges to delivering their children in public health care facilities relative to the catholics. Consistent with previous scholars, the study indicates that religious affiliation, which is a cultural and traditional practice, affects women's right to access modern maternal care, a common practice in most developing countries<sup>25,26</sup>.

The study revealed that women having problems of distance in accessing maternal health care was not an issue in influencing choice of childbirth at a public health facility. This contradicts results of previous scholars who found distance not only separating women from the health care facility but also influencing their subsequent desire to seek modern maternal health care<sup>27-29</sup>.

The study also noted that women having no problems in accessing transport were more willing to deliver their babies in public health care facilities. This study finding agrees with what was stated by other authorities that availability of transport among women has a positive influence in motivating them to seek institutional-based health care<sup>30-32</sup>. Therefore, the need to improve transport availability has the potential of encouraging women to continue pursuit of maternal health care facility services.

In this study, women's exposure to media has proved to have less impact in influencing use of public health facility during childbirth. For instance, women who were exposed to radio or television were less likely to deliver their babies in public health facilities. Similarly, those with both radio and television access were less likely to deliver in public health facilities. The study finding concurs with what was previously postulated that less exposure to media among women relates strongly to low utilization of maternal health services in Indonesia<sup>33</sup>. Contrarily, women media exposure increased their maternal health seeking behaviour in general<sup>34</sup>.

Regarding quality of ANC care services, women that rated the quality of ANC care as either moderate or higher were highly associated with public health facilities childbirth. This concurs with an earlier finding that moderate care supported with basic medical resources motivates women's use of maternal health care services and reduces their subsequent delay in health care acquisition when in need<sup>35,30</sup>.

The study found that women resident in urban areas were less likely to deliver their babies in public health facilities compared to their rural counterparts. In Ethiopia, a study found that urbanisation influenced women to seek childbirth in modern health facilities than the rural women, contrary to the present study findings<sup>14</sup>. In Malawi, an earlier study attributed the challenge of urban women not seeking health care on public health facilities to shortage of health workers, and quality of care challenges such as inadequate beds and medicines which discourage them from seeking institutional care services during childbirth<sup>36</sup>. Such challenges affect quality of services in public health facilities<sup>37</sup>.

### Conclusion

The choice of utilization of public health facilities during childbirth is influenced by a number of factors in Malawi. The study revealed that distance to the health and availability of transport has no negative influence on women's use public health facilities for childbirth. On the same note, frequency of ANC, birth order, women education, wealth status and quality of care were associated with increasing the women's likelihood of choosing public health facility during childbirth. There is need to use multimedia approach to engage women in the significance of using public health facilities during childbirth. Additionally, the study suggests that strategies aimed at promoting quality of care in public health facilities if improved maternal health outcomes are to be ascertained in Malawi.

### Conflict of interest

None.

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