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Factors associated with birth preparedness and complication readiness among antenatal clinic attendants in selected public Hospitals in Addis Ababa, Ethiopia: Institution based cross sectional study

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Birth preparedness and complication readiness is a comprehensive strategy aimed in promoting timely access to skilled maternal and neonatal services. It also facilitates active preparation and decision making for delivery by pregnant women. The aim of this study was to assess birth preparedness and complication readiness plans of antenatal clinic attendees in selected public Hospitals of Addis Ababa. Institution based cross-sectional design was used. Single population proportion formula was used to calculate sample size for the study. Bivariate and multivariate logistic regression analysis used to identify the association between the dependent and independent variables. This study revealed, among the study participants 72.60% stated that they were prepared for birth and its complication. Birth preparedness and complication readiness was found to have a statistically significant association with family income (AOR= 4.167, 95% CI, (1.092, 15.89) and knowledge about preparation for birth and its complications. In conclusion, majority of the study participants had planned birth preparedness and complication readiness but their preparation was not all rounded. Birth preparedness and complication readiness has statistically significant association with family about preparation for birth and its complication. Community education about birth preparation and its complication readiness; and improvement of the community economic status are recommended.

Key words: Birth preparedness, complication readiness, ante natal clinic attendants, public hospitals, cross sectional study.

INTRODUCTION

Globally, an estimated 211 million pregnancies and 136 million births occur every year. Among those pregnancies 529,000 deaths occur worldwide, from those deaths sub-Saharan covers 1 in 16, whereas the developed

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country covers 1 in 2800 pregnancies. In Ethiopia, the levels of maternal and infant mortality and morbidity are among the highest in the world, with 673 maternal deaths for every 100,000 live births (Luchia, 2011; Gurmesa, 2007; Hailu, 2011).

Complications of pregnancy and childbirth are the leading causes of disability and death among women in the reproductive age groups in developing countries. The causes of maternal death are remarkably consistent among the developing world. Direct obstetric complications account for 80% and indirect obstetric complications account for 20% of maternal deaths. An obstetric complication constitutes one of the world's most urgent and intractable health problems (Hailu, 2011).

Despite the great potential of birth preparedness and complication readiness in reducing the maternal and newborn deaths, its status is not well known in most of sub-Saharan Africa. Birth preparedness and complication readiness also reduces delays in receiving appropriate care. It calls on providers and facilities to be prepared attend to births and ready to treat complications. Birth preparedness has been globally endorsed as an essential component of safe motherhood programs to reduce delays for maternal care (Luchia, 2011; Mihret, 2008).

Birth preparedness is not easy to achieve. Many people in developing countries live on less than US $1 a day, which is hardly sufficient for them to feed and clothes themselves let alone put aside money for the possibility of an obstetric emergency. In rural areas, the situation is even more complex: even if transportation (and the money to pay for it) is available in the case of an obstetric emergency, distance and lack of maintained road may still cause delays sufficient to put the life of the woman in danger (WHO, 2006).

According to Ethiopian Demographic and Health Survey of 2011 only 10% of births in the past five years were delivered by a skilled provider. More than six women in every ten stated that a health facility delivery was not necessary, and three in every ten stated that it was not customary (CSA, 2011). When complications occur, the unprepared family will waste a great deal of time in recognizing the problem, getting organized, getting money, finding transport and reaching the appropriate referral facility.

Majority of pregnant women and their families do not know how to recognize the signs of complications, nor do they know what to do and where to get help. Delay in decision to seek care: lack of information about problems/warning signs, social factors, and delay in reaching care: having transportation, road conditions delay in receiving care: lack of equipment or personnel at facility, lack of funding, poor attitude of personnel. These delays can be addressed by birth preparedness and complication readiness plan, as time of labor or time of emergency is not the time to decide what to do (Luchia, 2011; Markos, 2014; Yared, 2003).

Therefore, this research is designed to assess the plan for birth preparedness and complication readiness and factors associated with the planning among antenatal care clients, in selected public hospitals Addis Ababa.

Operational definitions

Birth preparedness and complication readiness

A woman was considered as prepared for birth if she can identified place of delivery, arrange mode of transportation and saved money.

Knowledge of birth preparedness and complication readiness plan

A woman was considered as knowledgeable if she can identify the place of delivery, arrange mode of transport and save money otherwise she is not knowledgeable.

METHODOLOGY

Study area

Addis Ababa, the capital city of Ethiopia, is located in central part of Ethiopia. This city is currently serving as the federal capital city of Ethiopia. It is chartered city stretching on an area of 540 Km^2, between 9 degrees latitude and 38 degrees east longitude with altitude ranging from 2200 to 2800 meters above sea level (Argomal, 2010). Addis Ababa has three layers of Administration: City Government at the top, 10 Sub City Administrations in the Middle, and 116 Woreda administrations at the bottom. The city has 49 hospitals of which 6 are owned by Addis Ababa Health Bureau (AAHB), 4 by federal ministry of health, 1 by Addis Ababa University (AAU), 3 by non-governmental Organizations (NGO's), 3 by defence force and Police and 32 by the private owners. There are 69 health centers of which 63 are owned by the city administration, 5 by NGO's and 1 by the public (Moran, 2006).

Study design and study period

Institution based cross-sectional study was carried out from March 1st to 30th March, 2015.

Source population and study population

All antenatal clinic attending mothers in all public hospitals in Addis Ababa were considered as source population while pregnant mothers who were attending antenatal clinics of the public hospitals and selected for the study were considered as study population.

Sample size determination

The required sample size was determined by using single population proportion and taking into account the major associated

factors with birth preparedness and complication readiness. Moreover, the following assumptions were considered 95% CI, 5% marginal error (d) and 22% proportion (p) of birth preparedness and complication readiness (CSA, 2011), and 5% non-response rate. Then final sample size was 277.

Sampling procedure

All ANC providing public Hospitals in Addis Ababa were considered for this study. The sample size for each public hospital were allocated based on the proportion to size of pregnant mothers enrolled in each public hospital for ANC follow up. The individual study participant was selected by using systematic random sampling technique. Sampling frame was prepared based on estimated client flow of each hospital for one month and the sampling interval (k) was obtained by dividing the sampling frame (N) to the total number of sample size (n) from each public hospitals. Every (k) clients who satisfies the inclusion criteria were included until the required sample size was reached in each hospital.

Study variables

Dependent variable

Plan for birth preparedness and complication readiness.

Independent variables

Socio demographic and socioeconomic factors (age, educational status, marital status, monthly income, occupation, religion), parity, knowledge about birth preparedness and complication readiness, complication experience, husband and family influence, prior experience to the health facility, availability and cost of transportation, and availability and cost of health facility

Data collection tool and data collection procedure

Questioner was adopted after reviewing relevant literature. The questionnaire was pretested on 15% ANC attending mothers of public hospital which was not the study area. The findings from the pre-test was used to modify and made an adjustment for the data collection tool and interviewing technique. Data collection tool was translated to Amharic language back to English to check for its consistency. Four diploma were deployed for data collection and two BSc nurses were deployed for supervision of data collections process. After recruitment of the data collectors and supervisors two days training was given on the objectives of the study, data collection tools and data collection techniques.

Data processing and analysis

Data entry was done by using Epi info version 3.5 and data analysis was done using statistical package for social sciences (SPSS) version 20. A descriptive analysis was conducted to get summary values of birth preparedness and complication readiness plan as well as to check for outliers, inconsistencies and missed values. Moreover, bivariate and multivariate logistic regression analyses performed to identify factors associated with birth preparedness and complication readiness, to multivariate logistic regression. Whereas, the variables in multivariate logistic regression, P ≤0.05 was considered as significant.

Data quality control

The data collection questionnaires were pretested and revised based on the feedback obtained from pre-test. Data collectors and supervisors were trained for two days on the data collection tool and data collection procedure. The principal investigator and the supervisors strictly followed the overall data collection process. After collection of the data, each questionnaire was thoroughly reviewed for completeness and consistency by the supervisors and researchers. Missing and inconsistent data was checked by the data collectors and the supervisors whereas the outlier data was checked by the researchers. Entered data was checked for any skips and errors by the investigator, and this was corrected before running data analysis.

Inclusion criteria and exclusion criteria

Pregnant mothers who were attending ANC in the selected public hospitals were included in the study whereas ANC attending mothers who were attending ANC in public hospitals who are not physically and mentally capable for being interviewed were excluded from the study.

Ethical clearance

Ethical clearance and approval for this study was obtained from the Jimma University Ethical Committee. Written permission letter from Addis Ababa regional health bureau to the selected public Hospitals was also obtained. In addition, client's privacy, and confidentiality of the information obtained during interview are carefully explained before the administration of questionnaires and their verbal consent was sought.

RESULTS

Socio demographic characteristics of mothers

Out of the total 277 pregnant women planned for the study, 270 were successfully interviewed yielding the response rate of 97.47%. Most of the respondents were between the age group of 20 and 25 years (127(47.0%)) with a mean age of 27.4 (SD ± 4.5) years. Orthodox Christian religion followers accounted for 42. 6% and among the study participants most of them were housewife (155 (57.4%)) and government employee (47 (17.4%)) while 117 (43.3%) were Amhara by ethnicity. Three fourth of the study participants had attended primary school and secondary school, 124 (45.9%) and 98 (36.3%) respectively. Of the study participants, 239 (88.5%) of them were married. The mean family size of the participants was 2.8 (SD± 1.1) and the monthly income of the majority of the participants were less than 1000 ETB (Table 1).

Table 1. Socio demographic characteristics of ANC attendees in public hospitals of Addis Ababa, March 1st to 30th 2015.

Variable	Category	Frequency (n=270)	Percentage
Age	20-25	127	47.0
	26-30	61	22.6
	31-35	72	26.7
	36-40	10	3.7
Marital status	Married	239	88.5
	Single	31	11.5
Religion	Orthodox	115	42.6
	Protestant	84	31.1
	Muslim	42	15.6
	Catholic	29	10.7
Ethnicity	Amhara	117	43.3
	Oromo	95	35.2
	Tigre	50	18.5
	Gurage	8	3.0
Occupation	Housewife	155	57.4
	Govt. employee	47	17.4
	Private employee	22	8.1
	Business	41	15.2
Educational Status	Illiterate	15	5.6
	Primary school	124	45.9
	Secondary school	98	36.3
	Higher education	33	12.2
Monthly family Income	< 300	34	12.6
	301 – 500	79	29.3
	501 – 1000	94	34.8
	> 1000	63	23.3
Family size	1-2	119	44.1
	3-5	144	53.3
	6 and more	7	2.6

Obstetric characteristics of the respondents

Among the study participants, 142 (52.6%) were in third trimester and 107 (39.6%) of the women were primi gravida (pregnant for the first time). Two-fifth of the study participants were nulli parous 110 (40.70%) and one out of ten mothers had one still birth experience 28 (10.40%) (Table 2).

Knowledge about Birth preparedness and complication readiness

From the study participants, majority of them had heard about BP/CR 266 (98.5%). Half of the study participants get the information from the health professionals (137 (51.5%) and one-third of them get information from mothers (85 (32.0%) (Table 3).

Plan of respondents regarding birth preparedness and complication readiness

Of the 270 participants, 196 (72%) of them had planned for birth and its complication which was computed based on identifying place of delivery, arranging mode of transportation and saved money. Regarding plan of birth preparedness and complication readiness, 246 (91.1%)

Table 2. Obstetric characteristics of ANC attendees in selected public hospitals of Addis Ababa, March 1st to 30th 2015.

Variable	Category	Frequency(n=270)	Percentage
Gestational age in months	First trimester (1-3 months)	8	3.0
	Second trimester (4-6 months)	120	44.4
	third trimester (7-9 months)	142	52.6
Total number of pregnancy (Gravidity)	1	107	39.6
	2-3	151	55.4
	4 and above	12	4.4
Total number of birth (Parity)	0	110	40.7
	1-2	149	55.2
	3 and above	11	4.1
Total no of live birth	0	153	56.7
	1	14	5.2
	2 and above	103	38.1
Total number of still birth	0	227	84.1
	1	28	10.4
	2 and above	15	5.5

Table 3. Knowledge about birth preparedness and complication readiness among ANC attendees in public hospitals of Addis Ababa, March 1st to 30th 2015.

Variable		Frequency (n=270)	Percentage
Have you heard of BP/CR?	Yes	266	98.5
	No	4	1.5
Source of information	Health professional	137	51.5
	TTBA	21	7.9
	CHW	23	8.6
	Mothers	85	32.0
Knowledgeable on BP/CR	-	214	79.3
Not knowledgeable on BP/CR	-	56	20.7

TTBA-Trained Traditional Birth Attendant; CHW- Community Health workers; BP/CR- Birth Preparedness and Complication Readiness.

reported that they save money, 228 (84.4%) identify place of delivery, 212 (78.5%) identify mode of transportation and only 11 (4.1%) prepare blood donor (Table 4).

Factors associated with birth preparation and complication readiness

The factors associated with birth preparedness and complication readiness plan was family income and knowledge about birth preparation and complication readiness. Women who have income greater than 1000 Ethiopian Birr (ETB) per month were 4 times more likely to be prepared for birth and its complication when compared with women who have income less than 1000 ETB (AOR= 4.167, 95%CI (1.092,15.89). Women who were not knowledgeable about birth preparedness and complication readiness were 99% times less likely to be prepared for birth and its complication when compared with those who had knowledge (AOR=0.004, 95%CI (0.001,0.021) (Table 5).

Table 4. Actual birth preparedness and complication readiness practice among ANC attendees in public hospitals of Addis Ababa, March 1st to 30th 2015.

Variable		Category	Frequency	Percentage (%)
Plan of BP/CR		Prepared	192	72
		Not prepared	78	28
Birth prepared by:	Identify place of delivery	Yes	228	84.4
		No	42	15.6
	Save money	Yes	246	91.1
		No	24	8.9
	Prepare essential items for clean delivery and postpartum period	Yes	34	12.6
		No	236	87.4
	Identify skilled provider	Yes	67	24.8
		No	203	75.2
	Being aware of the signs of an emergency and the need to act immediately	Yes	152	56.3
		No	118	43.7
	Designating decision maker	Yes	14	5.2
		No	256	94.8
	Arranging emergency funds	Yes	105	38.9
		No	165	61.1
	Identify a mode of transportation	Yes	212	78.5
		No	58	21.5
	Arranging blood donors	Yes	11	4.1
		No	259	95.9
	Identifying the nearest institution that has 24 h functioning EmOC services	Yes	93	34.4
		No	177	65.6

BP/CR- Birth preparedness and complication readiness; **EmOC-** Emergency and Obstetric care.

Table 5. A multivariate logistic regression analysis for factors associated with birth preparedness and complication readiness plan, ANC attendees in selected Public Hospitals of Addis Ababa, March 2015.

Variable	Category	BP/CR		COR (95% CI)	AOR (95% CI)
		Yes	No		
Educational status	Illiterate	7	8	1	1
	Primary education	83	41	2.314 (0.785,6.821)	1.633 (0.219,12.191)
	Secondary and above	106	25	4.846 (1.607,14.61)*	2.221 (0.280,17.611)
Income	<1000 birr/Month	138	69	1	1
	>1000 birr/Month	58	5	5.800 (2.225,15.12)*	4.167 (1.092,15.89) **
Occupation	House wife	42	5	12.60 (1.680,945.27*	7.916 (0.156,401.442)
	Government employee	99	56	2.652 (0.430,16.349)	3.273 (0.047,228.652)
	Private employee	19	3	9.500 (1.091,82.725*	11.67 (0.031,136.365)
	Business women	34	7	1	1
Knowledge of BP/CR	Knowledgeable	193	21	1	1
	Not knowledgeable	3	53	0.006 (0.002,0.021) *	0.004 (0.001,0.021) **

N.B ** statistically significant at P- Value <0.05.

DISCUSSION

Among the study participants, 72% were prepared for birth and its complication. This finding was consistent with the study conducted in Addis Ababa (Luchia, 2011). The knowledge of respondents about birth preparedness and complication readiness is good indicator of the outcome. This might be attributed to presence or absence of relevant intervention to promote birth preparedness and complication readiness as well as utilization of health care service.

Among the study participants, 98.5% of them heard the term birth preparedness and their source of information from health professionals (51.1%), mothers (32.0%), health extension workers (8.6%) and Trained traditional birth attendants (7.9%). On a study conducted in Kenya, 60% heard it from health professionals (Mutiso, 2008). But a study conducted in Goba, 2011, 53.6% heard about birth preparedness and complication readiness, and 61% of them have heard it from health extension worker (Markos, 2014). This discrepancy might be the current study is conducted in the central part of the country and health professional's number is higher in the study area. The other reason might be because the study conducted at Goba was community based. The slight improvement may be due to the conference of safe mother hood which was healed at every facility one month prior to data collection time.

The most commonly mentioned practice in the study were saving money (91.1%), this finding was higher than the study conducted in Kenya and a study conducted in Addis Ababa (Luchia, 2011; Mutiso, 2008). Whereas, the finding of this study was higher than the study conducted in Adigrat (Mihret, 2008). This might be the fact that this study was conducted in the central part of Ethiopia where better access of health care is available, and the respondents who are attending ANC, have access for information.

Even though when money is available, it can be difficult to secure transportation at the last minute after a complication has occur. Arranging transport earlier reduces the delay in seeking and reaching service. Among the study participants, 78.5% of the respondents were identifying mode of transportation. It is comparable with a study conducted in Kenya (Mutiso, 2008). But the finding of this study was lower than the study conducted in Addis Ababa (Luchia, 2011). Regarding place of delivery, 84.4% of the respondents identified place of delivery. This finding was higher than the study conducted in India and in Addis Ababa (Luchia, 2011; Argomal, 2010).

Women who have monthly income greater than 1000ETB per month were more likely prepared for complication when compared with those receiving less than 1000 ETB per month (AOR= 4.167, 95%CI, (1.092, 15.89). This finding is consistence with the study conducted in Jimma town (Gurmesa, 2014). This might be due to the fact that the family income matter most for the preparations and also those with low income spend most of their time engaging in their daily activities.

Women who were not knowledgeable about birth preparedness and complication readiness are less likely to be prepared for birth and its complication when compared with those who had knowledge (AOR=0.004, 95% CI (0.001, 0.021). This finding is consistence with the study conducted in Goba district (Markos, 2014). This might be related to the awareness that makes them curious and prepare for the complications.

Conclusions

Majority of study participants had plan of birth preparedness and complication readiness but their preparation was not all rounded. Birth preparedness and complication readiness was found to have a statistically significant association with family income and knowledge about preparation for birth and its complication. Addis Ababa health office should incorporate the birth preparedness and complication readiness task with urban health extension program and Addis Ababa Micro and small enterprise development office, NGOs and other stake holders should work on the improvement of economic status of the community.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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