ORIGINAL RECEARCH ARTICLE

Institutional delivery utilization and associated factors among delivered women in Dawuro Zone, Southern Nation Nationalities Peoples Region

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Abstract

Globally, around 13.6 million maternal deaths occurred in the last 25 years. Ethiopia accounts one of the highest global maternal deaths, with more than 50% of births taking place at home. Hence, the aim of this study was to determine institutional delivery utilization in Waka town. Community based cross sectional study is the study design chosen. The study was conducted, on mothers having a history of at least 1 birth within the last 2 years, who were selected by a systemic random sampling (K=2), from both kebeles, which is selected by a simple random sampling from the 2 kebeles in the study area. For data collection, an interview with questionnaire containing both closed and open-ended questions, along with non-participant observation method was employed. For analysis, descriptive statistics, along with bivariate and multivariate analytical method was computed. Statistical significance was considered at p < 0.05, and the strength of statistical association was assessed by odds ratio (OR) with 95% confidence interval. The prevalence of institutional delivery service utilization in Waka town was found to be 89.4%. Educational status, marital status, intention of the pregnancy, ANC follows up, and Knowledge of birth complications have shown significant association. *(Afr J Reprod Health 2023; 27 [9]: 76-86).*

Keywords: Waka town, institutional delivery

Dans le monde, environ 13,6 millions de décès maternels ont eu lieu au cours des 25 dernières années. L'Éthiopie connaît l'un des taux de mortalité maternelle les plus élevés au monde, avec plus de 50 % des naissances ayant lieu à domicile. Par conséquent, le but de cette étude était de déterminer l'utilisation des prestations institutionnelles dans la ville de Waka. L'étude transversale communautaire est le modèle d'étude choisi. L'étude a été menée auprès de mères ayant des antécédents d'au moins 1 naissance au cours des 2 dernières années, sélectionnées par un échantillonnage aléatoire systémique (K = 2), parmi les deux kebeles, sélectionnées par un échantillonnage aléatoire simple parmi les 2. kebeles dans la zone d'étude. Pour la collecte des données, un entretien avec un questionnaire contenant à la fois des questions fermées et ouvertes, ainsi qu'une méthode d'observation des non-participants ont été utilisés. Pour l'analyse, des statistiques descriptives, ainsi qu'une méthode analytique bivariée et multivariée ont été calculées. La signification statistique a été considérée à p <0,05 et la force de l'association statistique a été évaluée par le rapport de cotes (OR) avec un intervalle de confiance de 95 %. La prévalence de l'utilisation des services de prestation institutionnels dans la ville de Waka était de 89,4 %. Le statut éducatif, l'état civil, l'intention de grossesse, le suivi des soins prénatals et la connaissance des complications à la naissance ont montré une association significative. *(Afr J Reprod Health 2023; 27 [9]: 76-86).*

Mots-clés: Ville de Waka, prestation institutionnelle

Introduction

Globally, around 13.6 million maternal deaths occurred only in the last 25 years, and Ethiopia is one of the few countries which accounted for most of the global maternal deaths[1]. Low institutional delivery is considered to attribute significantly to high maternal mortality results in many countries, particularly in low income countries. In contrast, in SSA, where the burden of maternal mortality is the highest, only 57% of deliveries take place at health facilities[2] as compared to a large proportion of babies (>98%) are delivered in health facilities in high- income countries.

In Ethiopia still more than 50% of births continue to occur at home, with unskilled attendants[3]. Ethiopia was ranked as the lowest in the world as the average skilled birth attendance for

developing countries is 59%, which makes it hard for the country to achieve the maternal health goals set by itself as well as the SDG3[2]. Other different studies have also came up with different institutional delivery service utilization prevalence results, which are all low and range from 4%–51.1% in Ethiopia[3,19-21,24-27,23] and 6.2% - 47.6% in SNNPR[28-29].

Several studies confirmed there are a lot of factors that affect the likelihood of a mother's institutional delivery service utilization include; illiteracy, poverty, distance from a health facility, parity, household decision maker etc. But there is a wide contextual difference concerning the type of associated factors and the significance of each of those factors on institutional delivery utilization[5-9].

The country has a long way to go, and a lot of work to do, if it is to achieve the SDG3, as well as its own set goals on improving maternal health. Knowing the current magnitude of the problem and the underlying factors affecting the issue can help to understand how successful previous works have been, and how much more work is required. The importance of contextual-based local studies at lower administrative levels understands the context-specific local problems affecting mother's care-seeking behavior in that particular area. So then, intervention programs that could meet the need of the specific locality can be designed. As such; this study assessed the prevalence of institutional delivery utilization and the associated factors in Waka town, Maraka Woreda.

Methods

Study area

The study was conducted in Waka town, Dawro Zone, SNNPR. Waka is a town in southwest Ethiopia, and is the urban center of Maraka woreda. Mareka is located 500KMs south west of Addis Ababa, the capital city of Ethiopia and two roads connect it to the outside world, one to Chida 73 kilometers in length and the other to Sodo 75 kilometers long.

Based on figures from Maraka woreda municipality, Waka has an estimated total population of 45,303, of whom 22,198 are men and 23,104 are women. Additionally, it has two kebeles, namely; kebele 01, and kebele 02, and within the town there is only one Health center (Waka health center). A community based cross sectional study was employed. The study was conducted from November first 2020 G.C to January thirtieth of 2021 G.C. The study population was all child bearing women, who gave birth within the last one year in Waka town. The inclusion criteria were: Woman who gave birth after 28 weeks of pregnancy from the last menstrual period which includes, those who had still births, and neonatal deaths, within 12 months preceding the study. Woman who gave birth before their 28th week of pregnancy and woman who had an abortion excluded from the study.

Sample size determination

Single population proportion was used based on the assumption of P value=0.33 (taken from a study done in Dallocha town[14], margin of error 5%, confidence level 95%, and 10% non-response rate.

$$n = \frac{(z)^2 \times p(1-p)}{d^2}$$

$$n = \frac{(1.96)^2 \times 0.33(1-0.33)}{(0.05)^2}$$

$$n = \frac{(3.84) \times (0.22)}{0.0025} = 340$$

Based on the national conversion factor expected women who got delivery service should be 1504 (45,303* 3.4%) which is below 10,000. We can consider catchment child bearing eligible population is below 10,000. We further continued to determine sample size based on finite population correction formula

$$nf = \frac{no}{1 + no/N} = 340/1 + 340/1504 = 340/1.9 = 180$$

Where
n_o -sample estimated
N—total eligible population
Considering the above parameters and formula the final sample size was 180.

Sampling technique

A probability sampling techniques that gave equal chance to different characteristics was employed. Kebeles were selected from each selected districts by simple random method. Finally, the proportionally allocated sample size of each selected kebeles with child bearing age women in the last two years was determined, and then the participants fulfilled the inclusion criteria was enrolled to the study during data collection period until the sample size allocated is obtained.

Figure 1: The map of the study site

Equal chance of involvement with random selection ensured from the beginning until the final steps. For more clarification you can see Figure 1.

Data collection procedures

Data was collected through face to face interview. Interviews were made using structured and pre-tested questionnaires, prepared in English which was translated to Amharic language for convenience. The questionnaire was contain questions concerning demographic and economic conditions, health information access, and obstetric history related factors that have been suggested by several studies for having effect on utilization of institutional delivery. Tape recorders was used to allow the respondents express any other missed factors in the questionnaire that affected their decision, to or to not to utilize a facility, and for this part of the interview. The data collection including the interviews was conducted by the principal investigators, who are public health students and who will take a short training prior to the study, by a willing instructor who have expertise in the area. Aside from questionnaires, a non-participant observation method will also be employed, mainly to determine health facility availability, quality, and its distance, and also to make sure the accuracy of information obtained from the participants.

Data quality assurance

To assure the quality of the data, orientation to the interviewers was provided by field supervisor about questionnaire, and observational methods to avoid respondent bias. The questionnaire was adopted from studies done on similar topic, and modified as necessary based on supervisor's review. And the collected data was revised by the supervisor and the investigators prior to analysis for its completeness, accuracy, and clarity.

Data analysis procedures

Data was statistically analyzed using SPSS version 20. It was described, summarized and presented using tables and graphs. Additionally, binary and multivariable logistic regression analyses were computed to examine the adjusted association between the outcome variable and the independent variables. Variables significant at the 5% significance level ($P < 0.05$) were retained and reported along with their adjusted odds ratio (AOR), and corresponding 95% confidence interval (CI).

Variables

Dependent variables

Institutional delivery service utilization.

Independent variables

Predisposing factors

Age, eduational status, occupational status, parity, household decision maker, cultural beliefs,

information accessibility, maternal knowledge, attitude towards facility delivery, ethnicity, religion, and marital status,

Enabling factors

Income, place of residence, quality of services, and distance,

Need factors

ANC service utilization, pregnancy intention, birth preparedness, and previous experience of difficult child birth.

Operational definitions

Knowledge: based on correct responses to the knowledge questions; respondents who know about the risks of pregnancy, and the importance of institutional maternal services. Those who answer>75% of correct knowledge question was classified as well, 50%-75% fair, and <50% as poor.
Far from health facility: If travelled ≥30 min walking to reach health care facility.
Skill birth attendance: having an accredited health professional, including a midwife, doctor, or nurse, who has been trained in the skills needed to manage uncomplicated, and notice at the least complicated pregnancy and childbirth.
Institutional delivery: means any delivery at health facility (Hospital or health center).
Woman's autonomy: If a woman decided on the place to give birth by herself or with her husband jointly.

Ethical considerations

Ethical clearance was obtained from Wolaita Sodo University Dawuro Tarcha campus Institutional Review Board (IRB). Permission paper was obtained from the Zonal, and the Maraka wereda health department, confirming there is no known risk posed by the study to the study participants, or the study area. The questionnaire contains no names and anything that can identify the study participants. Instead of name, code was used. Informed consent was obtained from each study participant and they were disclosed as it is their right to participate or not.

Results

Socio-demographic characteristics

In this study, 180 mothers who have a history of at least one delivery within the last two years were included, out of which all 180 were successfully interviewed, with a respondent rate of 100%. The mean age of the respondents was 26.65 years ($\pm$ 3.9 SD), and the age of most; 101 (56.1%) of the mothers was between the ranges of 25-29. Majority of the respondents, 76 (42.2%) of the mothers were with educational history of secondary level & 81 (45%) of the respondents were government employees (Table 1). Regarding marital status, majority; 176 (97.8%) of the mothers were married, 1 (0.65) were divorced, and 3 (1.7%) were unmarried. Out of the married 176 women, the husbands of 8 (4.5%) cannot read and write, while the husbands of 70 (39.8%) had an educational history of first degree and above. The husbands of all 176 (100%) married women had a job, out of which majority; 91 (51.7%) were government employees, 66 (37.5%) had private jobs, and 19 (10.8%) were farmers. Concerning spousal age, the husbands of most; 100 (56.8%) of the married women were between the ranges of 25-34. And, most 95 (52.85%) of the interviewed women had a family monthly average income of more than 5000, while 47 (26.1%) of the respondents had a family monthly average income of less than 1000 Table 1.

Obstetric related characteristics

Among the study participants, 130 (72.2%) of the mothers were multiparous/ have had more than one child delivery experience, out of whom, majority; 94 (72.3%) have had 1-2 previous deliveries, while only 2 (1.5%) mothers have had 5 or more than 5 previous deliveries. Out of all the multiparous mothers, 101 (77.7%) of the mothers delivered all of their previous children at a health facility, while 15 (11.5%) of the mothers delivered all of their previous children at home. 97 (74.6%) of the multiparous mothers have never had any delivery-related complications during their previous child deliveries, while 33 (25.4%) have had previous experiences of delivery related complications (Table 2).

Table 1: The socio demographic characteristics of mothers (n=180) in Waka town, SNNPR-2020

Variable	Category	Frequency	Percentage
Ethnicity	Dawuro	169	93.9
	Wolaita	8	4.4
	Amhara	1	0.6
	Oromo	2	1.1
Religion			
	Protestant	119	66.1
	Orthodox	61	33.9
Age			
	15-19	3	1.7
	20-24	36	20
	25-29	101	56.1
	30-34	30	16.7
	35-39	10	5.6
Educational status			
	Illiterate	10	5.6
	Primary school	44	24.4
	Secondary school	76	42.2
	1st degree and above	50	27.8
Occupational status			
	Housewife	56	31.1
	Government employee	81	45
	Private worker	41	22.8
	Student	2	1.1
Average monthly income			
	<1000	47	26.1
	1000-5000	38	21.1
	>5000	95	52.8
Marital status			
	Married	176	97.8
	Divorced	1	0.6
	Unmarried	3	1.7
Spousal Educational status (176)			
	Illiterate	8	4.5
	Primary school	20	11.4
	Secondary school	78	44.3
Spousal Occupational status (176)	1st degree and above	70	39.8
	Government employee	91	51.7
	Private worker	66	37.5
	Farmer	19	10.8
Spouse's age			
	15-24	13	7.4
	25-34	100	56.8
	35-44	51	29
	45-54	12	6.8

The most recent pregnancies of most; 159 (88.3%) of the respondents occurred intentionally, while the pregnancies of the rest were unintended. During those pregnancies, all 180 (100%) of the respondents were prepared for delivery, and 163 (90.6%) of them had at least one ANC follow- up visit. 47 (26.1%) of the respondents have had experienced pregnancy- related complications during their recent pregnancies. Majority, 159 (88.3%) of the women decided their place of child delivery together with their husbands Table 2. The last child delivery of 161 (89.4%) of the

Table 2: Obstetric related charactertics of mothers (n=180) in Waka town, SNNPR-2020

Variable	Category	Frequency	Percentage
Previous deliveries	Yes	130	72.2
	No	50	27.8
Number of previous deliveries (130)	1-2	94	72.3
	3-4	34	26.1
	≥5	2	1.5
Previous institutional deliveries (130)			
	All	101	77.7
	Some	14	10.8
Previous history of birth complications (130)	None	15	11.5
	Yes	33	25.4
	No	97	74.6
Occurrence of recent pregnancy			
Birth preparedness	Intended	159	88.3
	Unintended	21	11.7
ANC follow up	Yes	180	100
	No	0	0
Number of ANC visits			
	Yes	163	90.6
	No	17	9.4
	1-2	10	6.1
Pregnancy complications	3-4	131	80.3
	≥5	22	13.5
Place of recent delivery	Yes	47	26.1
	No	133	73.9
Reason for home delivery (19)	Home	19	10.6
	Institution	161	89.4
	Distance	7	36.8
	Tradition/experience of previous safe home deliveries	7	36.8
Satisfaction with facility delivery service (161)	Unprecedented labor	4	21.1
	Wrongly sent home for false labor	1	5.3
Knowledge of birth complications	Very satisfied	113	70.2
	Satisfied	48	29.8
Attitude towards institutional delivery	Not satisfied	0	0
	Knowledgeable	126	70
	Not knowledgeable	54	30
	Favorable	180	100
	Unfavorable		

respondents occurred at a health institution. And, out of the 19 (10.6%) mothers who had their last delivery at home, 7 (36.8%) mentioned tradition, and previous safe home delivery experiences to be the reason for their home delivery, the other 7 (36.8%) mentioned long- distance residence from health institution in association with lack of transport. And, out of the 161 mothers who utilized
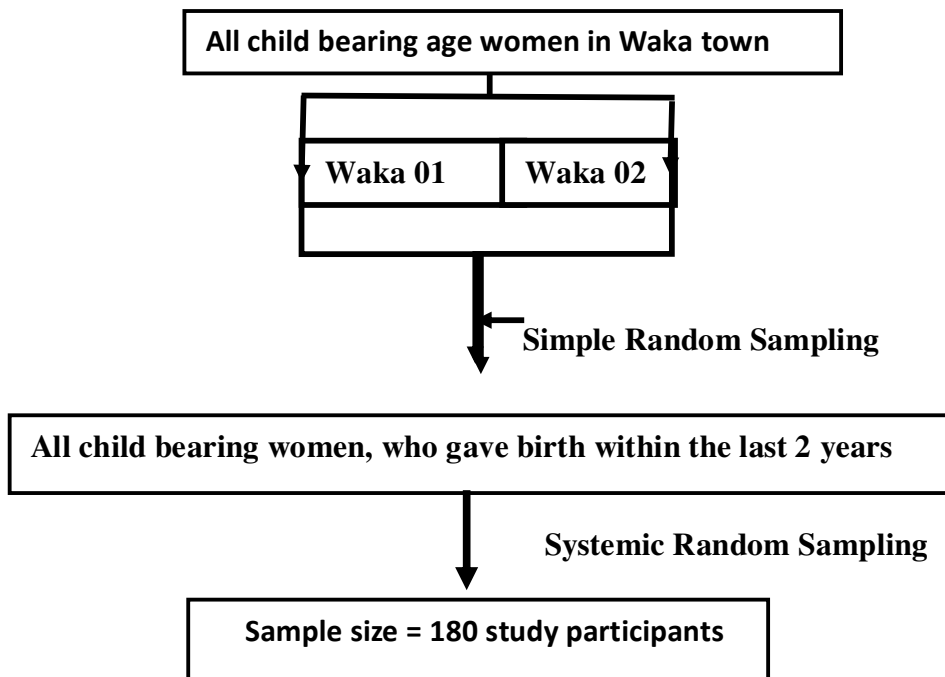
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┌─────────────────────────────────────────────────┐
│   All child bearing age women in Waka town        │
└─────────────────────────────────────────────────┘
          ┌──────────────────────────────┐
          │                              │
          │  ┌───────────┬───────────┐   │
          │  │  Waka 01  │  Waka 02  │   │
          │  └───────────┴───────────┘   │
          │                              │
          └──────────────────────────────┘

                    ↓  Simple Random Sampling

┌─────────────────────────────────────────────────┐
│ All child bearing women, who gave birth within    │
│            the last 2 years                        │
└─────────────────────────────────────────────────┘

                    ↓  Systemic Random Sampling

      ┌─────────────────────────────────────┐
      │  Sample size = 180 study participants │
      └─────────────────────────────────────┘
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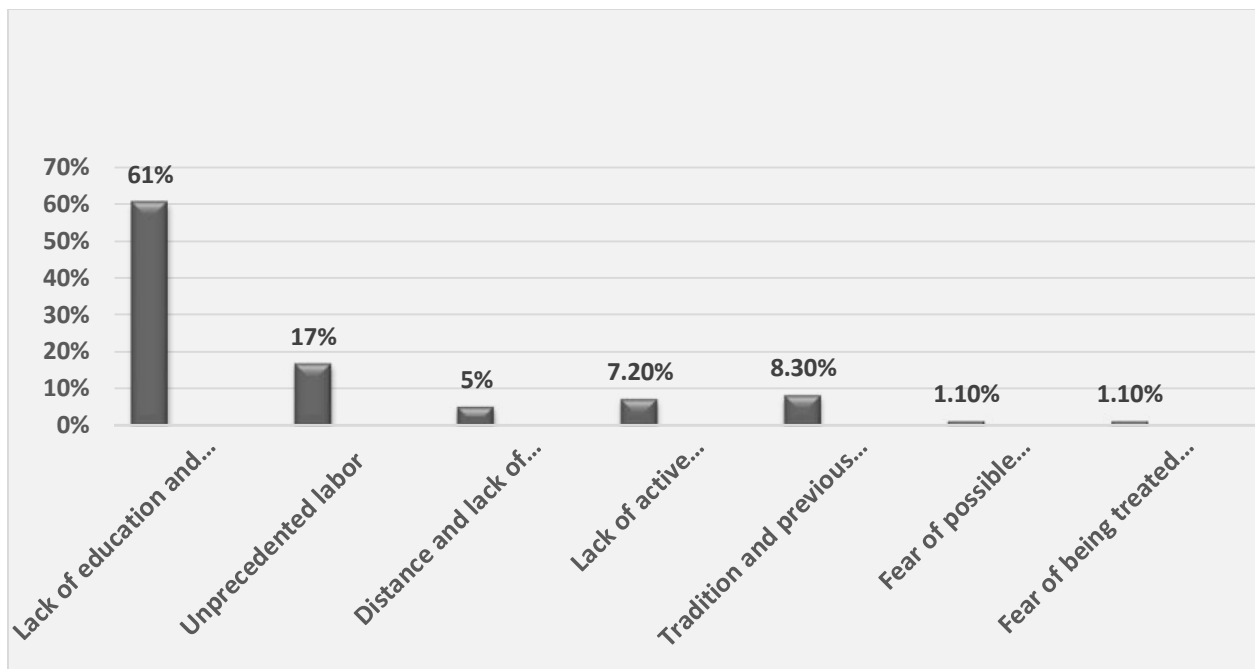**Figure 2:** Sampling technique

Figure 3: Response results of open question, on possible reasons behind home delivery in Waka town, SNNPR-2020

health facilities for their last delivery, 113 (70.2%) were very satisfied with the service they received Table 2. Concerning knowledge of birth complications, 126 (70%) of the studied mothers were knowledgeable, and were able to mention at least one major possible complication of birth. And, all 180 (100%) of the respondents had favorable attitude towards institutional delivery.

During the survey interview all the respondents were asked to mention all the possible

Table 3: Health service related factors in Waka town (2020)

Variable	Category	Frequency	Percentage
Distance time taken to a HI by walking	>30 minutes	82	45.6
	<30 minutes	98	54.4
Television accesses			
	Yes	151	83.9
	No	29	16.1
Radio accesses			
	Yes	113	62.8
	No	67	37.2
Newsletter accesses			
	Yes	34	18.9
	No	146	80.1
HEW			
	Present	173	96.1
	Not present	7	3.9
HE concerning institutional delivery (173)			
	Yes	133	76.9
Satisfaction with the HE received	No	40	23.1
	Very satisfied	79	59.4
	Satisfied	54	40.6
	Not satisfied	0	0

Table 4: Multivariate analysis of factors associated with institutional delivery in Waka town, SNNPR (2020)

Place of delivery								
	At Home		At Institution					
Variables	N	%	N	%	AOR (CI=95%)			p-value
Educational status								
Illiterate	6	3.3	4	2.2	1			.000
Primary school	9	5.0	34	18.9	5.462	(1.812,	6.469)	.003
Secondary school	4	2.2	73	40.6	7.551	(8.062,	14.153)	.000
1st degree and above	0	0	50	27.8	2.30			.996
Occupational status								
Yes	13	7.2	102	56.7	3.100	(0.882,	7.703)	.000
No	6	3.3	59	32.8	1			
Marital status								
Married	17	9.4	159	88.3	4.353	(2.238	, 9.095)	.002
Unmarried	2	1.1	2	1.1				
Spouse occupation								
Government employee	5	2.8	91	51.7	3.920	(1.190	, 8.458)	.000
Private worker	6	1.7	58	33.0	2.800	(0.788	, 9.704)	.006
Farmer	6	1.7	10	5.7				
Monthly income								
Low income	12	6.7	30	23.3				
Medium income	5	2.8	36	22.8	2.880	(1.277,	6.496)	.011
High income	2	1.1	97	53.9	4.922	(2.034,	9.91)	.000
distance time taken								
>30 minutes	15	8.3	67	37.2				
<30 minutes	4	2.2	94	52.2	5.261	(0.639,	13.836)	.000
health education provided								
Yes	4	2.3	126	72.4	6.29 (0.90,		12.383)	.000
No	15	8.6	29	16.7				
TV access								

Yes	7	3.9	147	81.7	4.80	(3.379	, 8.669)	.000
No	12	6.7	14	7.8				
Occurrence of the pregnancy								
Intended	12	6.7	143	79.8	4.873	(2.304,	7.305)	.000
Unintended	7	3.9	18	9.6				
ANC follow up								
Yes	6	3.3	159	88.3	7.250	(5.874	11.965)	.000
No	13	7.2	2	1.1				
Knowledge toward birth complications								
Knowledgeable	4	2.2	117	65.0	5.972	(4.403	9.584)	.000
Unknowledgeable	15	8.3	44	24.4				

reasons in their knowledge, about why women in their area, other than themselves may prefer to deliver at home, for which the most mentioned answers are presented in this result. Majority, 109 (60.6%) of the respondents responded with; lack of education and awareness, which most explained with lack of modern education, and lack of HEWs reachability to all, because HEWs tend to focus on the community living at the center of the town, the other most mentioned answer was unprecedented labor without enough preparation, which most explained with inaccurate delivery date predictions at ANC follow ups, mentioned by 30 (26.7%) of the respondents (Figure 2)

Health service related characteristics

Health institution was accessible within a distance of 30 minutes' walk for 98 (54.4%) of the respondents. And, concerning accessibility of health information sources, 151 (83.9%) of the respondents had access to a television, 113 (62.8%) of the respondents had accesses to a radio, and 34 (18.9%) of the respondents had access to a news latter. Additionally, 173 (96.1%) of the respondents reported the presence of a Health Extension Worker (HEW) in their area, out of whom; 133 (76.9%) reported having received a Health Education concerning institutional delivery from the HEW, while the rest 40(23.1%) reported having never received such education. And, out of the women who reported receiving a Health Education concerning institutional delivery, 79 (59.4%) were very satisfied with the education Table 3.

Multivariate analysis of factors associated with institutional delivery

Different factors have been identified to have association with utilization of institutional delivery service. On multivariate analysis of the selected factors with institutional delivery; educational, economic and marital status of the mother, spouse occupation, distance time taken, health education provision, Information source availability, intendedness of the pregnancy, ANC follow up, and Knowledge of birth complications were found to be significantly associated.

In this study Married women were found to be 9.3 times more likely (OR= 9.3; CI: 1.8-16.4) to deliver at a facility compared to unmarried women, women with high income status were 4.9 times more likely, (OR=4.922; CI: 2.0-11.9) and women with medium income were 2.8 times more likely (2.8; CI: 1.3-6.5) than women with low- income. Women who had intended pregnancies were found to be 4.8 times more likely (OR=4.8; CI: 2.3-10.3) than those with unintended pregnancies, women with government employee husbands were 10.9 times more likely (OR=10.9; CI: 4.2- 28.5) to deliver at a facility than women whose husbands were farmers.

Discussion

Among respondents, majority (89.4%) delivered their last child in health facility. This result was higher than studies done in different study areas including the previous study which was conducted in Jima Zone; containing the current study town

(33%)[10]. It is also higher than the report of the 2019 mini EDHS which reported 48% at country level and 14.9% for SNNPR region[3], as well as the report of a 2019 study done in Dallocha town SNNPR (74%)[14]. Also higher than studies done in Bench Maji zone SNNPR[15], a study done in Tigray region[16], also a study done in Liben district, Guji zone, Oromia[17] etc…This high prevalence result may be attributed to the increased attention given to home deliver reduction by the town health center and the increased deployment of HEWs in the society, with strict supervision by the health center. In this study concerning spouse occupation, women with spouses who were government employees were 9.8 times more likely to deliver at a facility than women with farmer husbands, which is higher than what was reported by Birhanu Butas thesis report, which states 5.2 times likelihood[14]. Educational status of the women was another major associated factor, as shown in this study women with educational level of primary school and secondary school were when compared with illiterate women, similarly higher likelihood of educated women was reported in the 2019 mini EDHS, and the same association was reported by many other studies too[3,18-23.] Regarding economic status, the high-income level were almost 5 times more likely, and the middle classes were almost 3 time more likely than the low- income achiever women, which again goes along with the report of the 2019 mini EDHS[3].

Conclusion

Institutional delivery services in Waka town was shown to be relatively better compared to other studies in the region and in Ethiopia even though it is still below the Health Sector Transformation plan of Ethiopia to increase skilled delivery to 90% by 2019/20. In this study educational, economic and marital status of the mother, spouse occupation, distance time taken, health education provision, Information source availability , extendedness of the pregnancy, ANC follow up, and knowledge of birth complications have shown significant association with institutional deliver service utilization.

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