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# Predictors of institutional delivery service utilization, among women of reproductive age group in Dima District, Agnua zone, Gambella, Ethiopia

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**Institutional delivery reduces the risk of complications and infections of the mother and newborn baby. There was inadequate information in the study area that this study intended to provide. The study assessed institutional delivery and predictors in Gambella, Ethiopia. A community-based cross-sectional study was conducted on 798 subjects from February 1 to June 15, 2017 among reproductive age group women who gave birth at the last one year. The study used multistage technique. The response coded was entered into Epi-info version 7.1 and transferred to statistical package for social science (SPSS) version 21, which was also cleared and analyzed. For qualitative data, two focus group discussions and three in-depth interviews were performed and analyzed in a thematic way. 63.1% of the respondents delivered in health institution. Maternal age, education, antenatal care, and residences were significantly associated with institutional delivery. The number of births correlated with institutional delivery with the mean number of births 2.1. The qualitative result showed cultural factors, attitude of health care providers, alternative delivery services, low incomes, transport access and expectations were independent factors. About 37% of mothers gave birth at home. Policy makers, health planners and programmers need to focus on educating females. Previous experience sharing, knowledge transfer, and improvements on emergency transport utilization are important.**

**Key words:** Institutional delivery, maternal health, ante natal care, Gambella.

## INTRODUCTION

Maternal health has profound effects on the health of women, immediate survival of the newborn, predominantly girls and the well-being of relatives. Nevertheless, in many countries and communities, these are also times of great risk to the health and existence of women. The projected annual number of maternal deaths worldwide has surpassed 300,000 amounting to almost 10 million maternal deaths during the past 19 years (Filippi et al., 2006).

The two recent strategies promoted to reduce maternal mortality are institutional skilled birth attendance and emergency obstetric care (Filippi et al., 2006; Ronsmans

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and Graham, 2006). However, even if the capacity to supply emergency obstetric care (EmOC) is the minimum starting point, reduction of delay in receiving service and increasing coverage of the service shall be united with the strategies. Therefore, the delivery care approach constitutes, to date, the mixture of interventions best matched to produce substantial declines in maternal mortality rates with the aims of guaranteeing deliveries in health facilities with midwives and their assistants (WHO, 2005).

These personnel with good midwifery skill are able to provide adequate essential obstetric care to women. However, they must also be able to notice impediments and handle them, either by giving basic EmONC or by referring the most complicated cases to well-equipped hospitals. The performance of any health system, and thus the improvement of a population's health, depends on the productivity, competence, availability and responsiveness of health professionals (Central Statistical Authority, 2011; Central Statistical Authority, 2005; Nepal Health Research Council, 2009; WHO, 2009; WHO, 2006).

Institutional delivery means when a pregnant mother gives birth at health institution like an organized clinic for conducting labour, health center and hospital. Proper medical attention and accessing hygienic conditions during delivery can reduce the risk of complications and infections that can cause the death or serious illness of the mother and/or the newborn baby.

Globally, coverage of skilled attendance at birth was estimated to have reached 73% in 2013. However, more than 40% of births in African and South-East Asia Region were not attended by skilled health personnel, and even disparities among countries associated with differences in socioeconomic status persisting. In Ethiopia, there is only 26.2% of mothers who has access to skilled attendant (Central Statistical Authority, 2016; World Health Organization, 2016). Instance of low coverage institutional delivery service, identifying the problems and knowing magnitude of utilization is crucial for both maternal and prenatal health. Existing evidence suggests that in any population, 1 to 2% of pregnant women were developing life-threatening obstetric conditions during childbirth. If they are unable to receive rapid medical interventions, it is likely to result in a maternal death while complications responsible for most maternal deaths are often unpredictable (Adissalem and Meaza, 2012). Many factors affect the outcome of pregnancy from the onset of any obstetric complication. The outcome is most adversely affected by delayed treatment. Delay in treatment is the result of many factors that are described as the three phases of delay (NHRC, 2009; WHO, 2009; WHO, 2006).

Researchers have devoted considerable attention to the importance of accessibility to health services on health outcome in the country, according to the investigator little is known about the status and determinants of use of delivery service in rural area particularly in Gambella Region. Studies have found that care during pregnancy, delivery, and postnatal period can positively improve the health of the mother and infant; however, the existence of gap among regions in health facilities delivery being low in Gambella region (45%) compared to some other advanced regions like Addis Ababa(96.5%), Tigray (56.9 % ), Diredawa (56.2 ) and Harari (50.2) (Central Statistical Authority, 2016). Hence conducting this study in Gambella region specially the remotest District of Dima was essential.

The information obtained will be use full for the community and decision makers at the district and regional level in planning, implementing and evaluating various interventions related to research findings to increase institutional delivery, in farther to reduce maternal morbidity and mortality.

## OBJECTIVES

### General objective

To find out the prevalence and predictors of institutional delivery among women who gave birth in the last 1 year in Dima District, Gambela, Ethiopia.

### Specific objectives

(1) To measure the prevalence of births in health institution in Dima District in Gambela, Ethiopia.
(2) To determine factors affecting institutional delivery in Dima District in Gambela, Ethiopia.

## MATERIALS AND METHODS

### Study design and period

A community based cross sectional quantitative study supplemented by qualitative study on key informants was conducted from February 1 to June 15, 2017.

### Study area

Dima district is located 450 kilo meter away from the city of Gambella Town to the south. The distance from the center of the country and scarcity of information makes this area important for study on maternal health service.

### Study population

#### *Source population*

This consists of all women of reproductive age group (15 to 49 years) that gave birth in the last one year in Dima District.

#### *Study population*

This consists of all women of reproductive age who gave birth in the last one year.

***Exclusion criteria***

Women who lived <6 months in the study area, mothers who were seriously ill and unable to communicate were excluded from this study.

**Sample size and sampling procedure**

***Sample size determination***

The sample size was determined by using single population proportion formula considering 45% proportion of skilled delivery in Gambella from EDHS (2016) at 95% confidence level and 5% margin of error.

$$n=z\alpha/2^2*p*(1-p)/(d^2)$$

$$n=\frac{1.96^2 x\ 0.45(1-0.45)}{(0.05)^2}=380$$

Where:

n= Sample size, z= the standard z score value at 95% level of significance, P= Proportion of deliveries attended in the institution in the region = 45%, and d= degree of precision 5%. Since it involves multi stage, the design effect compensated multiplying by 2, 5% non–response added and gave final sample size of 798.

***Sampling procedure***

The district was divided into urban and rural administrative *kebeles*. Urban consists of three administrative *kebeles* and the rural consists of nineteen administrative *kebeles*. Lottery method used to take two administrative *kebeles* from urban and 10 administrative *kebeles* from rural area. The study population was divided proportionally among the selected *kebeles*. Having the numbered list of the households from *kebele logbooks*, systemic random sampling used to reach the selected households in the kebeles. Whenever more than one eligible respondent was present in the same sampled household, only one respondent was taken by lottery method. Revisit made where eligible respondents not available at the time of the data collection next taken when third visit failed.

**Qualitative study**

Two focus group discussions (FGDs) and in-depth interview on 3 subjects was carried out. The participants of FGD were selected from three study kebeles. Many different types of clients as possible were recruited to get variety of good representation (primigravida and multigravida, old and young, polygamous and monogamous, educated and uneducated). Nineteen participants were selected purposively from elders, women, and community leaders to involve in the FGD to enrich the information. One discussion was held with groups from koy and Dima sites while the second from Achagna. The participants age range from 22 to 51 years. The individuals were selected from the community and the discussions held in Dima health center. Permission to participate in the discussion was sought prior to the meeting. Each session lasted for 30 to 55 min. It terminated when the information was perceived saturated. The discussion was recorded and noted. The supervisors and principal investigator coached. For in-depth interview, three key informants were selected from Dima Health Center, Health Extension Workers (HEW) and religious leader individually one from each, with interview of 55 to 80 min using a guide them.

**Variable measurement**

***Utilization***

This is the extent to which a given group of people uses a particular service in a year.

***Recently delivered women***

These are the women who had given birth within the period of 1 year during the data collection.

***Maternal death***

Death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes (WHO, 2005).

***Skilled attendants***

These are the people with midwifery skills (midwives, doctors and nurses with additional midwifery education) who have been trained to proficiency in the skills necessary to manage normal deliveries and diagnose, manage or refer obstetric complications' (WHO) (WHO, 2005).

**Unskilled attendants**

This includes attendants for labour by traditional birth attendants, neighbors', relatives, husband, friends, and including self (WHO, 2005; Central Statistical Authority, 2011; Central Statistical Authority, 2005; NHRC, 2009; WHO, 2009; WHO, 2006).

***Key informants***

These are personnel who expected to give sufficient information about utilization of institutional delivery as their level, like health extension worker, health care providers who are working in maternal and new born care unit and health managers.

**Data collection procedures**

The structured questionnaires were adapted from previous similar studies and it was originally in English translated to Amharic and back to English after the questionnaires were field by collectors but still checked to keep the consistency of the questions. Teachers who speak fluent English, *Ameharic* and *Agnua* language were used as data collectors. Previous experience was considered during selection. Face to face interview technique was used for household in order to collect the data. FGD and in-depth interview was done for qualitative study.

**Data quality assurance**

In the study, the quality of data was assured by conducting two days training to all data collectors and supervisors on the objectives

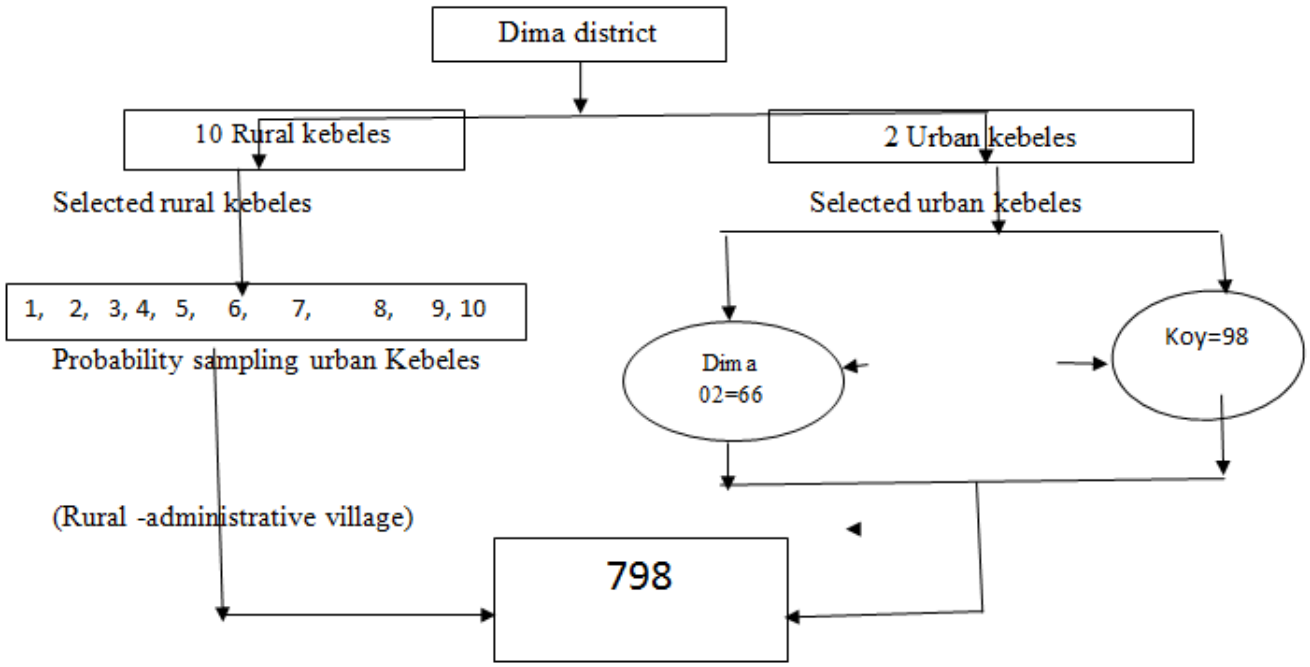


**Figure 1.** Diagrammatic presentation of sampling technique factors for institutional delivery care service among women who gave birth in the last 1 year in Dima District, Gambella Agnua Zone Ethiopia. 1: Ginbab=67; 2: Kechena= 72; 3: Achagna= 75; 4: Towawo=98; 5: Jero=51; 6: Chamo=46; 7: Karkan=49; 8: Odak=48; 9: Akulla=80; 10: Ojuwa=48 (Urban=164 (20.55%) respondents and Rural=634 (79.44%) respondents).

of the study and techniques of data collection. Data collectors were examined, they spoke Agnua and Ameharic to be fluent. Pre-testing of the questionnaire was done on 5% of the sample size out of the study area. Still to ensure the quality of data, principal investigator and supervisors made spot-checking and reviewed the completed questionnaires on daily bases and double data entry was done.

### Data processing and analysis

The data was cleaned and checked for its completeness, consistency and the presence of missed values and variables. Then, it was entered into a pre-designed format in Epi-info version 7.1 and exported to statistical package for social sciences (SPSS) version 21 for further analysis. To see descriptive result, frequency, mean and standard deviation were done. First, bivariate analysis between independent and dependent variables was done, all independent variables that showed statistical significance with p-value < 0.2 in the bivariate analysis was included in the multivariable model. Those determinant with p-value<0.05 in the multivariable analysis, were considered as independent and significant factors associated with institutional delivery.

### Ethical considerations

Ethical approval was obtained from the research office of Arsi University College of Health Science Department of Public Health. Permission to carry out the study was also granted from Dima District Health Office /Gambella Regional State verbally (Figure 1). Individually informed verbal consent was also obtained after brief explanation of the purpose and benefits of the study to each respondent.

## RESULTS

### Quantitative result

#### *Socio-demographic characteristics of the respondents*

A total of 798 mothers who gave birth 12 months before the period of data collection in the district were invited to participate in the study. All of them showed their willingness to participate voluntarily. The proportion of young pregnancy was 18.8 and 43.60% in 20 to 24 years old range. The educational status shows 69% had at least some level of education and 31% unable to read or write. The proportion of participants whose partners were unable to read and write makes up 9.65%. The ethnic group included most in Agnua, Oromo and Amhara; 34.60, 20.30 and 25.80% respectively. Concerning the religion of the participants Protestant, Orthodox and Muslim makes the majority of 43.50, 34.20 and 19.50% respectively (Table 1).

### Maternal health related factors

384 (48.10%) of mothers were married or not-married cohabiting before recent pregnancy. 136 (17 %) of mothers got pregnant before the age of 15 and 328

**Table 1.** Socio-demographic characteristics of mothers in Dima District, Agnua Zone, Gambella Region, Ethiopia (2017 (N=798)).

| Age of respondents ( n=798) | No | Percentage |
|---|---|---|
| 15-19 | 150 | 18.80 |
| 20-24 | 348 | 43.60 |
| 25-29 | 209 | 26.20 |
| 30-34 | 79 | 9.90 |
| ≥35 | 12 | 1.50 |
| **Educational status of mothers who were participated** | | |
| Not formal class | 26 | 3.30 |
| 1-4 completed | 268 | 33.60 |
| 5-8 completed | 208 | 26.10 |
| 9-10completed | 35 | 4.40 |
| $10^{+1}$ ,$10^{+2}$,$10^{+3}$completed | 12 | 1.50 |
| Degree and above | 2 | 0.30 |
| Total educated | 551 | 69.00 |
| Mothers who were not able to read and write | 247 | 31.00 |
| **Religions of respondents (n=798)** | | |
| Orthodox | 273 | 34.20 |
| Muslim | 156 | 19.50 |
| Protestants | 347 | 43.50 |
| Catholic | 5 | 0.60 |
| Angelical | 8 | 1.50 |
| Not have any | 9 | 1.30 |
| **Ethnic group(n =798)** | | |
| Agnua | 276 | 34.60 |
| Oromo | 162 | 20.30 |
| Amhara | 206 | 25.80 |
| Other (SNNPs) | 104 | 13.00 |
| Tigrai | 25 | 3.10 |
| Tamma-koy | 25 | 3.10 |
| **Monthly income of respondents (n=796)** | | |
| <2500 | 498 | 62.56 |
| >25001 | 298 | 37.44 |
| **Media source either of TV/Radio (n=790)** | | |
| Yes | 332 | 41.60 |
| No | 458 | 57.40 |
| **Educational status of husbands** | | |
| Have not formal class | 40 | 5.01 |
| 1-8 class completed | 423 | 53.01 |
| 9-10 class completed | 118 | 14.78 |
| 11-12 and diploma | 130 | 16.29 |
| Degree | 10. | 1.25 |
| Not able to read and write | 77 | 9.65 |

(41%) conceived before 18 years old. Regarding the recent pregnancy, 150 (18.8%) of mothers got pregnant before the age of 20 years. Most, 717 (89.80%) got antenatal care (ANC) follow up, from which 217 (27.20%) and 242 (30%) got ANC four times and above and three times respectively. But 34 (4.30%) and 81 (10.20%) got single ANC visit.

Of all participants of this study, 305 (38.2%) got

**Table 2.** Maternal factors respondents N=798 in Dima District Agnua Zone, Gambella, 2017.

| Variable | Number | Percentage |
|---|---|---|
| **Age of mother (years)** | | |
| < 20 | 150 | 18.80 |
| 21-25 | 348 | 43.60 |
| 26-30 | 209 | 26.20 |
| 31-35 | 79 | 9.90 |
| ≥ 35 | 12 | 1.50 |
| **ANC follow up** | | |
| No | 78 | 9.90 |
| Yes | 720 | 90.10 |
| **Number of ANC visit** | | |
| One and two visits | 259 | 35.97 |
| Three visits | 243 | 33.75 |
| Four and above visits | 218 | 30.28 |
| **Birth order of mothers** | | |
| Para I | 305 | 38.20 |
| Para II | 282 | 35.30 |
| Para III | 112 | 14.00 |
| Para IV and above | 99 | 12.40 |
| **Place of recent delivery** | | |
| Health institution | 504 | 63.10 |
| Home delivery | 294 | 36.90 |
| **Health facility category for recent delivery** | | |
| Own home | 283 | 35.50 |
| Other home | 11 | 1.40 |
| Hospital | 114 | 14.30 |
| Health center | 387 | 48.50 |
| Private clinic | 1 | 0.10 |
| Health post | 2 | 0.30 |
| **Type of assistance** | | |
| Skilled provider | 510 | 63.90 |
| TBAs | 227 | 28.40 |
| None | 29 | 3.60 |
| Family members | 32 | 4.00 |

pregnant for the first time. Almost all, 758 (94.5%) have less than 5 children in their life. Out of all respondents, 503 (63.10%) gave birth at health institution. 387 (35.50%) gave birth at health center and 114 (14.30%) at hospital, 2 (0.30%) in health post and only one mother (0.1%) gave birth in private health institution.

283 (35.50%) of the responded mothers delivered out of health institution either in their home or their families home. Among those who gave birth at home, 227(80.20%) supported with traditional birth attendants (TBAs). 32 (11.30%) were supported by family members (like mother's husbands, with their sister etc) while 29 (10.2%) gave birth alone without any support. Out of 798 mothers who participated in the interview, 771(96.60%) had information about the benefits of giving birth in the health institution with support of health care provider but 27(3.40%) had no idea about the use of health institution and benefit of them. Regarding the source, 467(60.60%) got it from health care providers, 158 (20.50%) from the neighbors, 96 (12%) from their friends, the remaining 50 (6.50 %) from media either from radio or television (TV) (Table 2).

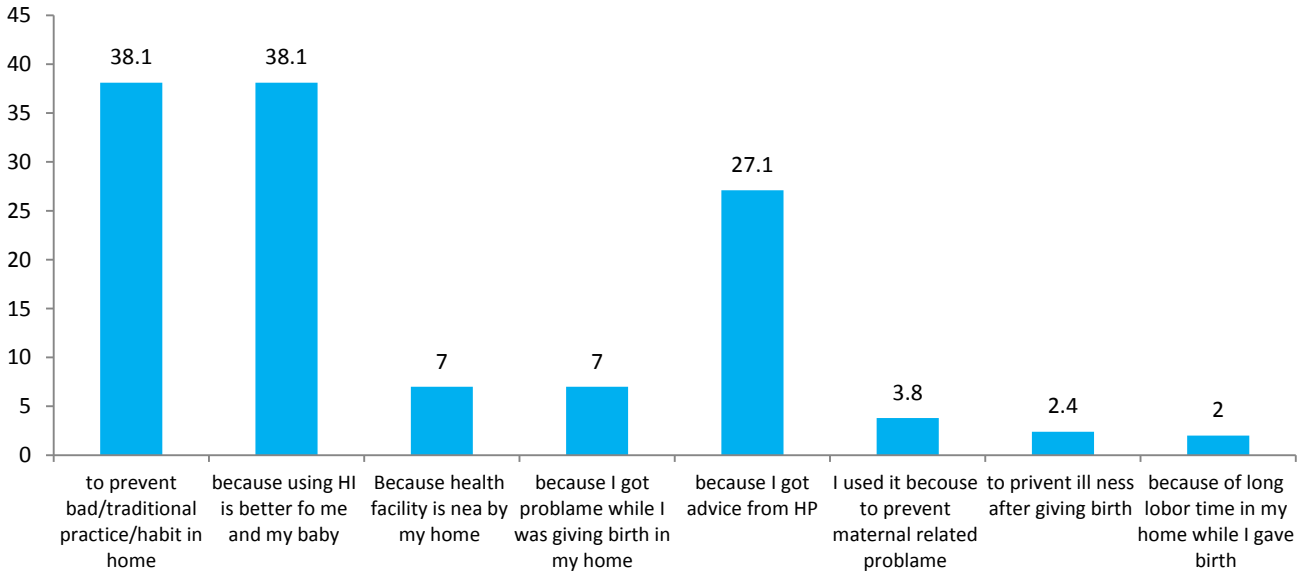


**Figure 2.** Reasons for institutional delivery service utilization for women who delivered in institutions in Dima District, Agnua Zone, Gambella, Ethiopia, 2017.

## Reasons for institutional delivery service utilization

Reasons given for use of institution for delivery as mentioned by mothers who participated are 38% of mothers who reported that they used health facility because they thought it is better for them and their babies health, 216 (27.10%) of mothers responded that because they are advised with health care providers (either while they are on ANC follow up or other time), 17.80 % (142) of mothers reported that to private and minimize bad/traditional/ habits which is performed while giving birth in the home, 56 (7.00%) respondents use health facility because the facility is near their home, and also others 7.00% of mothers said that they use the facility, because they get problem while they are trying to give birth in their home. 28 (3.50%) and 16 (2.00) of mothers attend health facility in order to prevent maternal related problems and to prevent/ or shorten long labour time in the home respectively (Figure 2).

## Reasons respondents not use health institution for delivery service

Reasons of not using health institution delivery services was 13% because of low attention, fast labour time and other related reasons, 8% because of their family choice in giving birth at home, 33 (4.10%) of mothers feeling more comfortable while giving birth at home helped by TBA. 42% percent responded because the facility is not working regularly especially in weekend. Other responses include 1.10% fear cost, 0.4% previous bad experience from facility birth and 0.40% of mother reason that there is no same sex there. According to FGD with key informant religions, shortage of human resource, infrastructures like electricity and also language difference in some specific community are factors for mothers not to use health facility for delivery (Figure 3).

## Factors associated with Institutional delivery service utilization in Dima District, Agnua Zone, Gambella, Ethiopia

The prevalence of institutional delivery was 63.10%. After multi-logistic regression place for residence, and number of prenatal care visits were significantly and independently associated with institutional delivery utilization in the district. Mothers who were living in –rural residence had three odd ratio (AOR= 3.13, 95% CI, 1.10, 7.54) than those of mothers with urban residence. Mothers who had antenatal visit three and four times had AOR= 4.88(95 % CI 2.31, 10.23) and 6.56 (95% CI 3.25, 13.79) respectively. Reading and writing in mother tongue language had odds of 2.55 (Table 3).

## Correlation on factors influencing institutional delivery in Dima District, Gambella, Ethiopia

The mean age of this study and the mean time spent by mothers to reach the health center was 24.70 years and 19.20 min respectively. The aforementioned correlation table showed that number of births was correlated with institutional delivery (p value = 0.014) with the mean number of births which was 2.1 babies (Table 4).

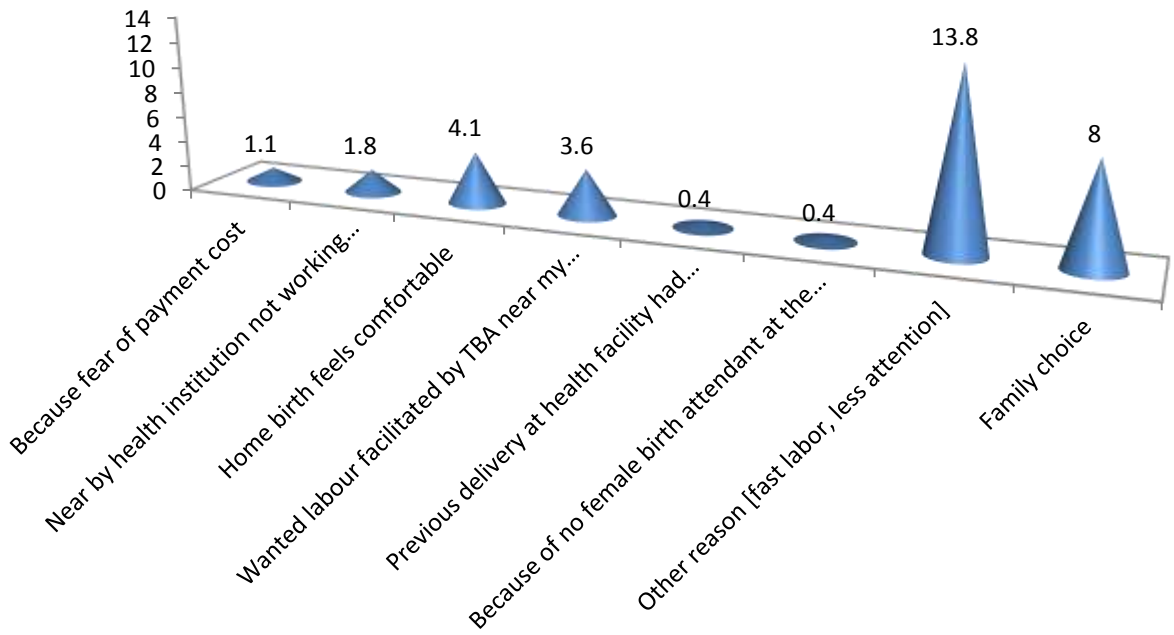


**Figure 3.** Reasons respondents do not use health institution for delivery service in Dima District, Agnua Zone, Gambella, Ethiopia, 2017.

**Qualitative results**

Two FGDs and three in-depth interviews were conducted for supplementing the quantitative study. FGD were conducted involving a total of 19 participants, 9 and 10 in each group respectively, with an age range of 15 to 37 years old. Key informants like health care worker who were currently in maternal and new born care unit, health extension workers from the community and one lactating mother on each site, health center guard and religious leader (one-site), were engaged on discussion. On in-depth interview, one health center staff and two MCH-case team staffs were separately interviewed in three different catchments. There was a variety issue raised on discussion from place to place and catchment to catchment like Dima, koy, Achagna respectively. Most of respondents mentioned that for the questions *"why mothers preferred home as delivery place or not prefer health facility to the delivery service utilizations?",* and almost all who had given birth in recent years gave birth at home with the main reasons they stated as transportation problem; *"if they want to take a woman to health facility the available means of transportation is "foot"*. From the discussion, the reasons given for not delivering at health facility:

(1) Decision of place of delivery made by the husband or partner.
(2) Absence of road, challenge of mobile phone network to call for ambulance, interruption of electric source at nighttime at health facility.
(3) Thinking home is a better place to give birth
(4) Payment to services in health center like laboratory, drugs, iv- fluids and, ambulance service related expense for fuel, perdeim of driver and health care provider accompanying while transporting the mother to health facility and referring to other higher level for further treatment.
(5) Limited or low number of HEW
(6) Problem in getting ambulance utilization, and long stay during maintenance
(7) Long distances from health facility.

A male/29 nurse said that:

*"mothers who give birth at their home and come to health facility for EPI- service responds as some mothers plan to give birth in a health facility during their antenatal follow up time but due to distances, shortage or unavailability of transport they give birth at home. I think, this is why most females fail to achieve their plan… gave birth in the home without supporter*".

**DISCUSSION**

The study revealed that the magnitude of institutional delivery service utilization was 63.1% in the district. More than half of the mothers gave birth in the health facility with a support from an health care provider. The finding is consistent to the study which was conducted in a nearby district study area in Kometa Sub locality Meazan Aman

**Table 3.** Factors influencing institutional delivery in Dima District, Agnua Zone, Gambella, Ethiopia, 2017.

| Socio demographic characteristics | Institutional delivery | | COR (95% CI) | AOR (95% CI) |
|---|---|---|---|---|
| | Yes (%) | No (%) | | |
| **Residence of mothers** | | | | |
| Urban | 142 (86.6) | 22 (13.4) | 1 | 1 |
| Rural | 362 (57.0) | 272 (42.9) | 4.850 (3.01,7.81)* | 3.13 (1.30,7.54)** |
| **Marital status n=796** | | | | |
| Ever Married | 497 (63.1) | 291 (36.9) | 1 | 1 |
| Never married | 5 (62.5) | 3 (37.5) | 0.98 (0.23, 4.12) | 1.75 (0.55, 5.57) |
| **Read and write on mother tongue n=796** | | | | |
| No | 122 (49.4) | 125 (50.6) | 1 | 1 |
| Yes | 380 (69.2) | 169 (30.8) | 2.30 (1.69, 3.14)* | 2.550 (1.07, 6.100)** |
| **Monthly income n=796** | | | | |
| Less than or equal 2500 birr | 303 (60.80) | 195 (39.2) | 1 | 1 |
| Greater than 2500 birr | 199 (66.80) | 99 (33.2) | 1.294 (0.96, 1.75)* | 0.776 (0.43, 1.42) |
| **ANC visits** | | | | |
| One and two visits | 108 (41.70) | 151 (58.30) | 1 | 1 |
| Three visits | 203 (83.50) | 40 (16.20) | 5.69 (3.76,8.62)* | 4.88 (2.31,10.23)** |
| Four and above visits | 175 (80.30) | 43(19.70) | 7.10 (4.67,10.79)* | 6.56 (3.25,13.79)** |
| **Health providers attitude n=530** | | | | |
| Not good | 20 (83.3) | 4 (16.7) | 1 | 1 |
| Good | 448 (88.5) | 58 (11.5) | 1.54 (0.51, 4.68)* | 1.747 (0.55, 5.57) |
| **Husband's attitude to deliver in H/C n=602** | | | | |
| Not supportive | 1 (16.7) | 5 (83.3) | 1 | 1 |
| Supportive | 343 (57.6) | 253 (42.4) | 6.78 (0.79,58.38)* | 1.690-008 |

*= crude odds ratio; **= Adjusted odds ratio.

**Table 4.** Correlation table on factors influencing institutional delivery in Dima district, Gambella, Ethiopia, 2017.

| Variable | Correlation coefficients (2 tailed) and p-value |
|---|---|
| Age | -0.045 (0.208) |
| Number of birth | -0.087 (0.014) |
| Time spent to reach nearby health center in minutes | -0.03 (0.427) |

Town, Southern Nations and Nationality Peoples, in 2016 (Masino et al., 2016). This may be because the district has similar socio-demographic characteristics to each other.

The result of this study is higher than that of EDHS (2016) which was 45.00% in Gamebella Region (WHO, 2016). This might be due to the fact that EDHS (2016) covered the entire region of study while the current work focused on one district. The result obtained in EDHS (2016) was also very high compared to the following: Oromia Dodota District-18.20% and Central District of Kenya 35.00% (Christopher, 2014; Adissalem and Meaza, 2012; Worku et al., 2013). These studies covered institutional delivery in the last five years. The result obtained in this study is however slightly lower than the study conducted in Ghana East Municipality which had a result of 78.90% in 2010 (Esena et al., 2013). This result is still very high compared to other studies conducted in other part of Ethiopia: Banja District in Amehara Region, 15.00% and Semer Seharti District- Tigray 4.10%

(Wolelie et al., 2014; Assfaw, 2010). The inconsistency observed may be due to the different interventional actions which were undertaken at regional levels.

On the other hand, the reviewed study in Africa revealed that, result across the 30 articles published with data from West Africa, facility-based delivery percentages varied widely from country to country; and that only 7.20% of women in rural Burkina Faso and 11.70% of women in one region of Nigeria delivered in a facility. However, nearly two-thirds of women in Northern Ghana (63%) and 78% of women in Senegal delivered in a facility. In Eastern Africa, the lowest rate of facility delivery reported was in Tanzania at 36.00%, whereas, 25 researchers reported that nearly 83% of women deliver in facilities in Uganda (Moyer et al., 2013).

The study revealed that respondents' residence, antenatal care follow up and educational status were significantly associated with institutional delivery utilization in the district. Mothers who were living in rural area in the district were more than three times more likely to give birth (AOR=3.13, 95% CI 1.303, 7.54), than those women who were living in the urban. The findings have not found consistency either local or internationally, this may be due to the fact that more focus is given in the study area to the rural area on mobilization of mothers to give birth in health institution than the urban areas. Mothers who had up to three ANC visits were seven times more likely to deliver in health institutions (AOR= 6.57, 95% CI 3.25, 13, 79) than those who had only one, and mothers who attended four ANC were nearly five times more likely prefer to give birth in health facilities (AOR=4.88 95% CI, 2.32, 10.23) than those mothers who had visited only once. This implies that mothers who had good numbers of prenatal cares prefer to use health institution than those who did not get ANC visits. The result of this study is consistent with that of Dodota of Oromia, Banja District in Amehara, respectively (Adissalem and Meaza, 2012; Wolelie et al., 2014).

Respondents who could not read and write in their mother tongue had more than two and half times chances of giving birth to their babies in their home (AOR=2.55, 95% CI 1.07, 6.10) than respondents who could read and write in their mother tongue**.** It is also consistent with some study in Ethiopia (Central Statistical Agency Authorty, 2014; Baral et al., 2010). The mean time spent for mothers to reach health centers was 24.7 and 19.2 min respectively; this is consistent with the study conducted in Ghana, where half of respondents spent 30 to 40 min to arrive in an health care facility (Esena et al., 2013).

The summary from FGD showed that labor comes suddenly, and where the health facilities are far from home of the mothers, there are no means of transportation at all. Hence, it is impossible to take the mothers to health facilities. Where ambulance is available, it is not properly maintained. Husbands are usually hesitant to leave their wife alone during delivery because of taboos. The result of the discussion showed deep rooted problems of infrastructure and cultural challenges. These findings were consistent with the findings of the previous study in Dodota District in Oromiya (Christopher, 2014). The similarity could be from the fact that most peoples who reside in rural area share similar characteristics on arrival of health facility, needs of male involvements in every decision making and challenges on accessing transportation.

The results from quantitative and qualitative studies well concede each other as residence, educational status and antenatal care follow up were positive determinants of skilled delivery. The effort to address this community life can answer the challenges reflected in the qualitative results. This includes the transportation issues and sociocultural components of the problems.

## Strength of the study

The study was community based survey extracting directly information from the study subjects. It was mixed type, quantitative supplemented with qualitative method. The sampling technique was multistage to increase probability of inclusiveness.

## Conclusion

This study revealed more than a third mothers gave birth at home without support of skilled attendants. Educational level of mothers, family monthly income, maternal decision making, and antenatal follow up have positive effect on the use of institution delivery. Attitude of health care provider, cultural factors, alternative delivery services, transport to service facilities or fuel cost and daily payment in case of free ambulance service, low support of partners in care for mother's health and expectations are factors that negatively influenced their utilization of health facilities for delivery.

## Limitations of the study

This cross sectional study by its nature and design cannot establish cause and effect relationship. The study scope covers only specific area in the administrative zone.

## RECOMMENDATIONS

At district level managers, decision makers and health planners need to recognize the factors that negatively affect institutional delivery. Partners/husbands shall support mothers to use the facility for maternity service. Care providers should create welcoming approach to

mothers in the facility. More efforts are required to empower women. Antenatal follow up and emergency transport utilization need improvement. Further studies are needed in this area to find out more information, and the solution needed.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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