Community awareness towards cesarean section delivery and its associated factors in Enderta woreda, Tigray Ethiopia, 2017: community based mixed study design

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Abstract

**Objective:** To assess community awareness towards cesarean section delivery and associated factors in Enderta woreda, Tigray, Ethiopia, 2017. When cesarean section is decided during labor, most of the women fear and refuse the decision. There are studies in some African countries assessing factors that affect women's awareness on cesarean section, but they are institutional based and quantitative only. In this research the study is at the community level and in addition to the quantitative part, it has qualitative design to explore the community feeling.

**Results:** Three hundred eighteen (95.2%) of the study participants were aware of caesarean section. Monthly income (AOR 18.822: 95% CI 1.463-24.228: P=0.048), and educational status of the mother (AOR 12.443: 95% CI 1.025-22.905: P = 0.024) had significant association with awareness towards cesarean delivery. Most of the participants replied cesarean section saves the life of mother and fetus and the main reason for mothers to refuse in decision is they don’t know well about cesarean section.

Introduction

Cesarean section is delivery of a fetus through an incision in the abdominal and uterine wall. Cesarean sections have a great role in lowering maternal and perinatal morbidity and mortality rates. Its initial purpose was to preserve the life of the mother with obstructed labor. Nowadays Cesarean delivery is indicated when labor is unsafe for either mother or
fetus, even it can be done after maternal death to save life of the fetus Postmortem cesarean delivery (1).

Cesarean section is considered an appropriate intervention for obstetric complications that causes maternal mortality like, antepartum hemorrhage, prolonged or obstructed labor, pre-eclampsia or eclampsia and intrapartum fetal distress (2). It can be elective cesarean section which is planned and done before onset of labor or can be emergency when urgent indication or complication happened (3).

World Health Organization national target toward maternal mortality, is no country should have maternal mortality greater than 140 per 100 000 live births, and outlines a strategic framework for achieving these ambitious targets by 2030 (5). Decision-to-delivery interval of emergency cesarean section is considered an important determinant of maternal and perinatal outcome and has become a measure of standard of care (20,21).

An estimated global total of 10.7 million women have died in the 25 years between 1990 and 2015 due to maternal causes. Over the course of that time, however, the world has made steady progress in reducing maternal mortality. The global MMR has fallen by 44% from the 1990 level of 385 to the 2015 level of 216 of this estimated global maternal deaths developing countries account for approximately 99% Sub-Saharan Africa alone accounting 66% (6).

Ethiopia is one of 10 high-performing countries among china, Bangladesh, Rwanda...that are considered on the fast track in 2013 to reduce maternal mortality (7). There is data showing, steady decline in the MMR: from 871 deaths per 100,000 live births in the 2000 EDHS, to 673 deaths per 100,000 live births in the 2005 EDHS, and to 676 deaths in the 2011 EDHS, to reach 412 deaths per 100,000 live births in the 2016 EDHS (8).

Methodology

A community based cross sectional study design containing mixed methods mainly
quantitative supplemented by qualitative design was conducted to collect information among 366 pregnant women’s in Enderta woreda. For the quantitative study design Study participants were selected by simple random sampling technique from the selected kebele. A structured, pre tested questionnaire was prepared and filled through trained interviewer. Data was checked and entered in to Epi-info version 3.5.1 ,cleaned and analyzed using SPSS window version 21 and logistic regression analysis was used .For qualitative design key in-depth interview was used and data from key informant was transcribed and translated to English. The findings from quantitative and qualitative were triangulated.

**Definition of terms**

**Cesarean section:** delivery of fetus through incision in uterine and abdominal wall.

**Community:** a group of people living in the same place or having a particular characteristic in common.

**Awareness:** A woman was considered to be aware of caesarean section if she had ever heard about it as an alternative to vaginal delivery.

**Results**

During the study period, 366 respondents were assumed to participate in the study from pregnant cohort list registration of each kebelle. Eight of them were already delivered their baby, 24 of the pregnant mother were not available during study period and 334 were finally included in the study.

**5.1 Socio-demographic characteristics data of respondents**

The age of the respondents ranged from 19 to 47 years with a mean age of 30.84 ± 6.75 while the common age of the respondents was between 30-34 years followed by 25-29 years. Two hundred and seventy nine (83.5.0%) were married with 55 (16.5%) being widowed and divorced. Three hundred and twenty four (97%) being orthodoxy Christian
followers the rest being Muslim. One hundred and twenty nine (38.6%) had primary education, 34 (10.2%) with secondary education, only 7(2.1%) had tertiary education. 164 (49.1%) were illiterate. Of the husbands, Only 114 (34.1%) had primary education and 193 (57.8%) of them were illiterate. Two hundred and thirty five (70.4%) were housewives, 25(7.5%) were daily laborers (Table 1).

5.2 Obstetric characteristics of the study participants

Majority of our study participants, 282 (84.4%) were having gravidity more than one and 52 (15.6%) of them were pregnant for the first time. Two hundred and eighteen (65.3%) gave birth for more than one times and 235 (83.3%) of them gave birth via vaginal delivery while 28 (9.9%) was instrumental delivery.

5.3 Awareness of the study participants to cesarean section

Three hundred eighteen (95.2%) of study participants were aware of cesarean section out of which 19 (6.7%) had experienced it. Respondents recognized that prolonged labor (183/334; 54.8%), big baby (107/334; 32%), bleeding per vagina before delivery (38/334; 11.4%) as major indications for C/S. Majority of them, 235(70.4%) knew that vaginal delivery is possible after caesarean section, but 99(29.6%) did not know this. Two hundred and eighty five (85.3%) were willing to undergo c/s delivery, but 49 (14.7%) of them were not willing to undergo C/S delivery even with indication. Fear of subsequent infertility, 19 (5.7%) and fear of death 15 (4.5%) were some of the reasons for not undergoing C/S delivery. One hundred fifty two (45.5%) of the study participants heard about C/S from their family, 110 (32.9%) from health institution and 56 (16.8%) from mass media (Table 3).

5.4 Factors that affect community awareness towards cesarean delivery
Bivariate analysis revealed three statistically significant variables associated with the awareness of caesarian section: monthly income more than 3000 was around 6 times aware than low income once (COR 6.357: 95% CI 1.165-34.681: P = 0.033). Pregnant mother whose educational status is between grades 9-12 were 2 times more aware for caesarian delivery than illiterate once. (COR 2.25: 95% CI 2.32-76.55: P= 0.040). The study also found that pregnant mothers whose husband having secondary educational status were having around 11 times more aware of caesarian delivery than illiterate once (COR 10.625: 95% CI 1.92-58.783: P= 0.042) (table 4).

However multivariate analysis showed that only monthly income and educational status of the mother had significant association with awareness towards caesarian delivery in our study. Pregnant mothers with monthly income more than 3000 were having around 19 times more awareness than mother with low income once (AOR 18.822: 95% CI 1.463-24.228: P=0.048). According to this study pregnant mothers with secondary educational status were having 12 times higher awareness than illiterate once (AOR 12.443: 95% CI 1.025-22.905: P = 0.024) (table 4).

### 5.4 Result of qualitative data

When asked about awareness on cesarean section their responses were...

‘‘I have heard about cesarean section from health extension workers, it means saving the life of the mother, but since we are from rural area we don’t know its advantage. I know those urban women’s elect cesarean section by their option so as not to become tired by labor pain, it’s our misunderstanding to refuse cesarean section.’’ *(Village A and D mothers)*
“Indication for cesarean section is if the presentation of the fetus is abnormal or if the mother is tired. personally I accept cesarean section its helping life of the mother and fetus but in our society they don’t accept, they said that doctors are hurry to decide cesarean section they want to do practice at them .” (Village E women development army)

“I accept cesarean section it’s not bad but mothers fear when they are told to sign for the procedure ,they assume the signature as that is for death.so teaching mothers at antenatal care ,cesarean section as option of delivery can help them in decision .” (Village A husband)

“Although I have no complication, I feel bad because I have never heard of cesarean section before. This is my seventh child, I gave birth my first four children at home with no complication I don’t know why this girl wants to come out through my abdomen. Health professionals have to told us at antenatal care about cesarean section, for whom allowed so that we can reset our mind cesarean section as an option.” (Village B mother)

“We need more children so I prefer normal vaginal delivery for my wife, with cesarean section they are limited.” (Village C husband)

Most of the participants replied cesarean section saves the life of mother and fetus and the main reason for mothers to refuse in decision is they don’t know well about cesarean section. They heard about cesarean section from the community and the information they get can be correct or incorrect, its better if health professionals teach about cesarean section during antenatal care so that mothers cannot refuse decision of seniors.

Discussion
Three hundred eighteen (95.2%) of the participants were aware of cesarean section. This is similar with study done in Ghana 304 (96%) had ever heard about cesarean section. This finding is also similar with study done in Nigeria in which 376 (93.8%) of the pregnant mothers were aware of caesarean section (12, 18). This similarity can be explained because of all those studies are done in developing countries.

Two hundred thirty five (70.4%) knew that vaginal delivery is possible after caesarean section, but 99 (29.6%) did not know this, which is similar with study done in Nagpur, when asked about C/S 73.4% believe that vaginal birth after cesarean section is possible (15).

In our study educational status of the mother had significant association with awareness towards caesarian delivery, secondary educational status were having 12 times higher awareness than illiterate once (AOR 12.443: 95% CI 1.025-22.905;P= 0.024). This is in line with a study done in Chile by Angeja AC. et. al. which showed that mothers with higher level of degree have higher awareness to the method of delivery including cesarean section (23). This finding is consistent with another study done in Nagpur which shows women who had the highest level of education had higher level of awareness cesarean section (15).

This is also similar with study done in India by Shewli Shabnam (22). Qualitative study in Nigeria showed that women without formal education were nearly 4 times more likely to refuse CS than those with higher degree education (OR 3.6; CI 1.12-11.53) (24). This can be explained by the fact that educated women are more interested in acquiring knowledge about the delivery methods including cesarean section.

Multivariate analysis showed that monthly income had significant association with awareness towards cesarean delivery in our study. Pregnant mothers with monthly income more than 3000 were having around 19 times more awareness than mother with low
income once (AOR 18.822: 95% CI 1.463-24.228: P=0.048). This is similar with another study done in India which shows that mothers with higher socioeconomic status had higher awareness to cesarean delivery. They can also easily access and afford the cost of cesarean section. This finding is also in line with study done in Addis Ababa (Ethiopia), CS rate increases with rise in household wealth index CS rate among women from the ‘rich’ households was significantly higher than those from the ‘poor’ and ‘middle’ households P = 0.016 (14). This may be explained by the fact that mother with higher socioeconomic status may have higher level awareness and knowledge towards methods of delivery including cesarean delivery.

Conclusions
In our study, majority of pregnant mothers were aware of cesarean delivery, which is a good experienced in other developing countries like Ghana and Nigeria. Educational status of the mother and monthly income had significant association with awareness towards caesarian delivery in our study. The main reason for mothers to refuse cesarean section is they don’t know well about it.

Limitations
Some of the pregnant mothers were not available at home since it was cross sectional study.

Declarations

**abbreviation**

ANC- antenatal care
C/S- cesarean section
EDHS –Ethiopian demographic health survey
FMOH-federal ministry of health
MMR – maternal mortality rate
WHO– World Health Organization

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Availability of data and material

The datasets during and/or analyzed during the current study available from the corresponding author on reasonable request

Ethics approval and consent to participate

Ethical clearance was obtained from Mekelle University, college of health science; Ethical Review Board. Additionally permission was obtained from enderta woreda health administration. Respondents were provided with written consent and were assured that they have full right to participate or withdraw from the study. All the respondents were
assured that information given was treated with strict confidentiality.

Consent for publication

Not applicable for this section

Competing interests

*The authors have declared that no competing interests exist.*

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Tables

Table1. Socio-demographic characteristics data of respondents, Enderta, Tigray, 2018 (n = 334)
| Variable                          | Number | Percent |
|----------------------------------|--------|---------|
| **Age**                          |        |         |
| 15-19                            | 7      | 2.1     |
| 20-24                            | 68     | 20.4    |
| 25-29                            | 74     | 22.2    |
| 30-34                            | 86     | 25.7    |
| 35- 40                           | 60     | 18      |
| >40                              | 39     | 11.7    |
| **Educational status of husband**|        |         |
| Illiterate                       | 193    | 57.8    |
| grade 1 to 8                     | 114    | 34.1    |
| grade 9-12                       | 23     | 6.9     |
| greater than 12                  | 4      | 1.2     |
| **Occupation of husband**        |        |         |
| Farmer                           | 231    | 69.2    |
| civil servant                    | 8      | 2.4     |
| business man                     | 67     | 20.1    |
| daily laborer                    | 25     | 7.5     |
| **Educational status of mother** |        |         |
| Illiterate                       | 164    | 49.1    |
| grade 1 to 8                     | 129    | 38.6    |
| grade 9-12                       | 34     | 10.2    |
| greater than 12                  | 7      | 2.1     |
| **Occupation of mother**         |        |         |
| house wife                       | 235    | 70.4    |
| civil servant                    | 14     | 4.2     |
| business women                   | 60     | 18.0    |
| daily laborer                    | 25     | 7.5     |
| **Marital status**               |        |         |
| married                          | 279    | 83.5    |
| divorced                         | 18     | 5.4     |
| widowed                          | 37     | 11.1    |
| **Religion**                     |        |         |
| Orthodox                         | 324    | 97      |
| Muslim                           | 10     | 3       |
| **Ethnicity**                    |        |         |
| Tigrian                          | 334    | 100     |

Table 2 Obstetric characteristics of the study participants in Enderta, Tigray, 2018 (n = 334)
| Gravidity          |        |        |        |
|--------------------|--------|--------|--------|
|                    | one    | 52     | 15.6   |
|                    | more than one | 282 | 84.4   |

| Parity             |        |        |        |
|--------------------|--------|--------|--------|
|                    | no     | 52     | 15.6   |
|                    | one    | 64     | 19.2   |
|                    | more than one | 218 | 65.3   |

| Mode of delivery   |        |        |        |
|--------------------|--------|--------|--------|
|                    | vaginal birth | 235 | 83.3   |
|                    | vaginal assisted with instrument | 28  | 9.9    |
|                    | cesarean section | 19  | 6.7    |

Table 3. Awareness of the study participants to cesarean section in Enderta, Tigray, 2018 (n = 334)
| Variable                                      | Number | Percentage |
|----------------------------------------------|--------|------------|
| **have you ever heard c/s**                  |        |            |
| yes                                          | 318    | 95.2       |
| no                                           | 16     | 4.8        |
| **is vaginal delivery possible after cesarean section** |        |            |
| yes                                          | 235    | 70.4       |
| no                                           | 99     | 29.6       |
| **are you willing to undergo cesarean section** |        |            |
| yes                                          | 285    | 85.3       |
| no                                           | 49     | 14.7       |
| **Reason for not willing**                   |        |            |
| fear of death                                | 15     | 4.5        |
| fear of subsequent infertility               | 19     | 5.7        |
| difficult to decide                          | 13     | 3.9        |
| other                                        | 2      | 0.6        |
| **From where did you hear**                  |        |            |
| Television                                   | 28     | 8.4        |
| health institution                           | 110    | 32.9       |
| family                                       | 152    | 45.5       |
| radio                                        | 28     | 8.4        |
| **For whom c/s indicated**                   |        |            |
| big baby                                     | 107    | 32.0       |
| vaginal bleeding before delivery             | 38     | 11.4       |
| prolonged labor                              | 183    | 54.8       |
| other                                        | 6      | 1.8        |
| **Who will decide c/s**                      |        |            |
| My self                                      | 254    | 76         |
| My husband                                   | 51     | 15.3       |
| My relatives                                 | 29     | 8.7        |

Table 4. Bivariate and multivariate logistic regression analysis of factors that affect community awareness towards cesarean section delivery in Enderta, Tigray, 2018
| Variables                          | COR                       | AOR                       |
|-----------------------------------|---------------------------|---------------------------|
| **Monthly income**                |                           |                           |
| < 1000                            | 1                         | 1                         |
| 1001 - 2000                       | 0.365 (0.292-7.856)       | 0.459 (0.361-34.385)      |
| 2001 - 3000                       | 0.459 (0.029-6.409)       | 2.523 (0.849-3.690)       |
| > 3000                            | 6.357 (1.165-34.681)*     | 18.822 (1.463-24.228)*    |
| **Educational status of mother**  |                           |                           |
| Illiterate                        | 1                         | 1                         |
| 1-8 grade                         | 1.382 (0.398-4.796)       | 0.981 (0.678-34.89)       |
| 9-12 grade                        | 2.52 (2.32-7.655)*        | 12.443 (1.025-22.905)*    |
| Higher education                  | 3.758 (0.561-5.508)       | 3.440 (0.645-36.978)      |
| **Educational status of husband** |                           |                           |
| Illiterate                        | 1                         | 1                         |
| 1-8 grade                         | 0.606 (0.120-3.052)       | 0.606 (0.120-3.052)       |
| 9-12 grade                        | 10.625 (1.92-58.783)*     | 12.443 (1.025-22.905)*    |
| Higher education                  | 4.2 (0.798-12.543)        | 4.2 (0.798-12.543)        |
| **Parity**                        |                           |                           |
| Para one                          | 1.364 (0.499-3.728)       |                           |
| More than one                     | 1.677 (0.618-4.548)       |                           |
| **Age**                           |                           |                           |
| 15-19                             | 0.500 (0.044-5.637)       |                           |
| 20-24                             | 1.333 (0.283-6.292)       |                           |
| 25-29                             | 0.944 (0.223-4.001)       |                           |
| 30-34                             | 0.940 (0.230-3.847)       |                           |
| >35                               | 1.167 (0.247-5.521)       |                           |
| **Marital status**                |                           |                           |
| Married                           | 1.758 (0.561-5.508)       |                           |
| Single                            | 0.606 (0.120-3.052)       |                           |
| **Mode of delivery previously**   |                           |                           |
| Vaginal                           | 2.090 (0.315-2.983)       |                           |
| Caesarian section                 | 1.542 (0.243-1.784)       |                           |
| **Gravidity**                     |                           |                           |
| One                               | 0.984 (0.374-2.365)       |                           |
| More than one                     | 3.000 (0.275-3.743)       |                           |

*p < 0.05