THE TREND OF DEETERMINANTS OF HOME DELIVERY IN ETHIOPIA FROM 1995 TO 2016

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A RESEARCH THESIS SUBMITTED TO: AAU, SCHOOL OF MEDICINE, DEPARTMENT OF OBSTETRICS AND GYNECOLOGY IN PARTIAL FULFILMENT OF THE REQUIRMENTS FOR THE SPECIALTY AND CERTIFICATE OF OBSTETRICS AND GYNECOLOGY

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This is to certify that the research thesis prepared by Liben Alemayehu; **'THE TREND OF DEETERMINANTS OF HOME DELIVERY IN ETHIOPIA FROM 1995 TO 2016'** and submitted in partial fulfillment of the requirements for specialty and certificate of Obstetrics and Gynecology. Complies with the regulations of the university and meets the accepted standards with respect to the originality and quality.

Advisor (Name) **Signature Date**

Dr. Shiferaw Negash

Dr. Seid Arage

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Acronyms and Abbreviations

ANC	Antenatal Care
CPR	Contraceptive Prevalence Rate
CSA	Central Statistical Agency
DHS	Demographic Health Survey
EDHS	Ethiopian Demographic and Health Survey
FBD	Facility Based Delivery
FMoH	Federal Ministry of Health
HD	Home delivery
MDG	Millennium Development Goal
MMR	Maternal Mortality Ratio
OB/GYN	Obstetrics and Gynecology
TBA	Traditional Birth Attendants
UNFPA	United Nation Population Fund
UNICEF	United Nation Children Fund
WHO	World Health Organization

Abstract

Back ground: The world health organization (WHO) has reported that the proportion of deliveries attended by skilled health providers rose from 58% in 1990 to 68% in 2008 worldwide, but remained at only about 50% in Africa. This study therefore tried to identify trends of home delivery and changes in each associated factor over time in Ethiopia.
Objective: To analyze the trend of determinants of home delivery since 1995 to 2016 so as to identify areas of intervention to decrease home delivery in Ethiopia.

Design: Retrospective analytical study design selected to assess the trend of determinants of home delivery rate since 1995 to 2016 so as to identify areas of intervention to decrease home delivery in Ethiopia using 2000, 2005, 2011 and 2016 demographic and health surveys. Analysis done based on 43,029 women who had given birth in the five-year preceding each survey.

Result: Of all respondent 36163 (84%) of them gave birth at home and the remaining 6866(16%) delivered at health institutions. The highest home delivery prevalence is seen in Affar (94.2%), Oromiya (92%) and SNNPR (91%). The Home delivery rate decline is greater in women age greater than 34 years (1.4%/year) than women in other age group. The highest rate of 93.3% was reported among women whose age at first marriage was teenager. Interestingly, home delivery rate trend in women high level of education shows small increment by 0.3% each year. The analysis also found that plateau change of home delivery rate in married women. This study shows home delivery rate decline among women from the 'rich' and 'middle' household (2%/year) but for those women from the 'poor' household (1.1%/year). About 17.6 times decline of home delivery rate in women who watch TV almost every day than who watch TV less than once a week. The trend line for women with no ANC visit almost had no change. Though the trend in rural area was not having change until 2010, but it show major curve (by about 7%) change since then. The steepest decline is seen in Tigray region by more than 3% per year. In Affar, Oromia and Somali regions the analysis show plateau home delivery rate.

Discussion: With the current drop rate of home delivery revealed in this research i.e., 1.3% per year, it will take 32 year to achieve MDGs of universal access to reproductive health. Though history of abortion, contraceptive use and pregnancy plan are interrelated health issue, the finding show home delivery rate is less affected by whether the pregnancy is planned or not than the other two factors

Conclusion: This study underscores that strategies to decrease home delivery prevalence in the country requires a multifaceted approach that encompasses several preventive interventions such as reduce the likelihood that a woman will become pregnant, improving women education, income and access to media, using ANC as utility to decrease home deliver, encouraging low enforcement in preventing teen age marriage and pregnancy and involving religious leaders; specially traditional religious leaders; in implementations of policy and strategy. This study couldn't unknot the real reason of the mothers not to utilize to institutional delivery services. In-depth qualitative study will further help to gain better insight into these.

CHAPTER ONE

1. Introduction

1.1 Background of the study

Interestingly, a large proportion of these maternal deaths could be prevented through timely and appropriate interventions. The presence of skilled delivery service utilization at each birth can significantly reduce maternal morbidity and mortality (1) (2).

Major factor associated with maternal and neonatal mortality is home delivery. These deliveries are largely unplanned, accidental and supported by unskilled birth attendants, if at all. The home environment as a place of delivery in developing countries is shown too unsafe and may have adverse neonatal and maternal outcomes (3).

On the globe, less number of women deliver in health facility; majority delivered outside health institution without the help of skilled birth attendants and exhibit risk of mortality and morbidity. Only about half of mothers in the developing countries have access to skilled delivery attendant (4).

The world health organization (WHO) has reported that the proportion of deliveries attended by skilled health providers rose from 58% in 1990 to 68% in 2008 worldwide, but remained at only about 50% in Africa (5).

There has been no change in the proportion of births taking place in health facilities over the past five years of the first two surveys, 2000 and 2005 which is 5 percent in both data (6). But there has been some change in the proportion of births taking place in health facilities over the past five years of the last three surveys, 2011, 2016 and mini 2019 in which 10 percent,32 percent and 48 percent respectively (7).

Maternal mortality rate is proportional to deliveries by unskilled birth attendance/home delivery, therefore; proportion of home delivery is set as one of the indicators to monitor progress of maternal mortality rate.

Of the 287,000 maternal deaths worldwide, 85% occurred in Sub-Saharan Africa (SSA) and Southern Asia (8). Our country Ethiopia, being part of Sub-Saharan Africa, contributes for maternal mortality rate (MMR) is high (412/100,000 live births), despite the recognition of maternal mortality as a major public health issue (3).

In Ethiopia, maternal mortality level is among the highest in the world. The corresponding figure reported in the Ethiopian demographic health survey 2011 and 2016 was 676 and 412 deaths per 100,000 respectively (8) (3).

Home delivery is associated with young maternal age, low educational attainment, rural residence, low socioeconomic status, high birth order, the absence of ANC services, distance to health facilities and complications during delivery (9) (10) (11).In contrast, having good knowledge of obstetric complications an enhance institutional delivery (12). Still, many studies show that mother's awareness of danger signs of pregnancy is poor and affected by educational status, occupation and residential area (13) (12) (14).

Previous studies have identified many factors hindering maternal delivery care service utilization. However few attempts have been made to show women demographic and socioeconomic factors at individual, house hold level and its trend in each factor.

This study therefore tries to identify trends of home delivery and changes in each associated factor over time. In addition it may show areas of intervention in mitigating to decrease proportion of women deliver at home.

1.2. Statement of the Problem

Globally, an estimated 42% of maternal deaths are intra partum related, that is during birth or the first day after birth in which majority of this occurs in developing countries. In addition, Intra partum-related neonatal death is a key issue during delivery in which almost all intra partum-related neonatal deaths occur in low- and middle-income countries particularly South Asia and Africa with large numbers 73% of all intra partum-related neonatal deaths worldwide. Ethiopia is one of the 10 countries that contribute more than 65% of all intra partum related deaths including: India, China, Democratic Republic of Congo, Pakistan, Nigeria, Bangladesh, Indonesia, Afghanistan, and Tanzania (14).

Community-based investigation of maternal deaths was undertaken in a rural province (Masvingo) and an urban area (Harare) of Zimbabwe in order to assess their preventability. Avoidable factors were identified in 90% of 105 rural deaths and in 85% of 61 urban deaths. Maternal deaths before reaching to health facility were 68% of rural deaths and in 43% of urban deaths (15).

In community based study conducted in Shashemene Town, Ethiopia home delivery rate was found to be 165(68%). The main reason mentioned for home delivery by 75.5% was no labor pain and 5.7% mentioned lack of receiving adequate delivery services from health professionals and 15.1% was due to lack of knowledge about the importance to delivering in health institution (16).

During the past fifteen years, the Federal Ministry of Health (FMoH) has built an impressive framework for improving health for all, including maternal and neonatal health. There are strategies for free maternal and child health services. Activities include deploying Health Officers with MSc training in Integrated Emergency Obstetrics and Surgery (IEOS), improving the availability of safe blood and pharmaceutical supplies and a strong referral system (17).

In addition to these activities, Ethiopian government has undertaken different activities to avert home delivery, including establishing a new structure at the community level below Health Extension Workers (HEW). The "Women Development Army" enables women to talk about pregnancy and delivery, making health facilities more friendly to the community, creating forums for pregnant women, the opening of maternity waiting home at health facilities, increasing the number ambulance services and availing of traditional ambulances for early referrals in case of emergencies (17).

Despite these efforts, the latest Ethiopian demographic and health survey indicates, only 62% of women who gave birth in the five years preceding the survey received antenatal care from a skilled health provider at least once for their last birth. Three in ten women (32%) had four or more ANC visits for their most recent live birth (8) (3). Only 48% of births occur in a health facility; the remaining 52% of births occur at home

So, unsafe delivery care is one of the most important predictor for maternal and neonatal mortality. High unskilled birth attendant and low institutional delivery practice leading to high - risk birth outcomes are emerging as significant problems in our society.

Even though over past years, in Ethiopia, proportion of women who gave birth at home is decreasing, the drop rate was very slow to attain MDGs. So looking in to home delivery rate in each determinant factor might help in identifying rate limiting factor.

Therefore this research tray to find which contributing factor had slow, unchanged or increasing home delivery rate. Hopefully findings are very important in implementing policy and program so as to improve maternal health in the country.

1.3. Significance of the Study

It is believed that, the outcome of the study would be helpful in understanding and describing the trend in home delivery rate and changes of its rate in each factors over time that contribute to high number of home delivery in Ethiopia.

On the other hand by looking on the pace of home delivery rate and contribution of each factor to it, we can see from where we came and to where we are going.

More importantly study findings help the local government and NGOs in understanding in which factor was there slow, unchanged or increasing home delivery rate clearly and to plan a new strategy to come up with a solution and implementation. The study may also be used for regional health administrators to decrease home delivery and mitigate the factors that hinder the community to use the maternal service.

Of interest, I hope this may stimulate health professionals' to look on which contributing factor for the lack of institutional delivery needs special attention.

1.4. Strength and Limitations of the Study

1.4.1 Strength

Demographic health survey uses a well-established methodology that is used in many countries and subject to good quality assurance procedures.

This study is based on a large nationally representative population based survey whose findings are relevant for comprehensive national policy initiatives.

1.4.2 Limitation

Since this a secondary data analysis it cannot provide additional information about many of the other recognized factors related to service utilization such as cultural influences psychological factors, the influence of family and friends ,the quality of health services , the attitude of health care providers towards clients and physical accessibility . Nevertheless, the information collected on the studied variables is valid, and important.

In addition, the DHS data were collected retrospectively and may be associated with recall bias.

1.5 Operational Definition

Home Delivery

Childbirth occurring after 28 weeks of gestation outside the confines of a hospital, rural health center or birthing center either in the woman's own home, the traditional birth attendant's home or the woman's relative's home or indeed any place that does not meet the above mentioned confinement (4).

Home Delivery rate

It is the proportion of home delivery to total delivery in a year among specific group of women.

Traditional Birth Attendant (TBA)

A birth attendant who is not a health professional and is based in the community and may or may not have had the basic orientation on delivering babies (4).

Skilled Birth Attendant (SBA)

A health care professional with midwifery skills who has been educated and trained to manage pregnancy, child birth, the immediate postnatal period and who can identify, manage and refer maternal and neonatal complications (4).

Skilled Attendance

Care rendered to a woman during pregnancy, childbirth and immediately after birth by an accredited and competent health care provider who has at his/her disposal the necessary equipment and supplies and the support of a functioning health system, including transport and referral facilities for emergency obstetric care (4).

Antenatal Care
The care given to a pregnant woman who comes to a hospital or rural health center from the time that conception is confirmed until the beginning of labor (4).

Parity
The condition of a woman with respect to the number of viable (born at 28 weeks of gestation and above) children she has ever born (4).

Maternal Mortality Rate (MMR)
MMR is a health indicator expressed as a ratio or rate within a country, or within an institution. It is calculated as the number of deaths during any one year per 100 000 live births during the same year (4).

CHAPTER TWO

2. Literature Review

2.1. Conceptual literature review

Of all the indicators, for sustainable development of a country, monitored by the United Nation, maternal mortality is the one with the widest discrepancies between the developed and developing countries. However, monitoring progress towards maternal mortality reduction is difficult therefore; indicators set to monitor progress are proportional to deliveries by skilled birth attendance (4).

Skilled attendance is often available at health facility level although there is historical evidence of well-developed home visiting midwives at community level as in Norway, Sweden and also in Holland (9).

Health facility delivery can occur at private or public facility. Public facilities are usually owned and financed by the government and/or supported by some faith based organizations. In these settings costs are usually minimal but available amenities are often sub-optimal. Although private facilities are more expensive, they are often perceived as having the best amenities and offering the best standard of care (18).

Globally, maternal deaths are rare in developed countries but are an everyday event in developing countries. Most life threatening obstetric complications require hospital treatment to avert maternal mortality (19).

In Africa maternal mortality is estimated at 251, 000 women who die annually from pregnancy and child birth related conditions. For every maternal death there are at least thirty women who suffer short or long term disabilities. Most maternal deaths occur during child birth and in the immediate postpartum period (19).

To avert this situation, all women should have access to basic maternity care during pregnancy and delivery, which includes quality antenatal care, clean and safe delivery and post-partum care for mother and child and unlimited access to emergency obstetric care (EmOC) (17).

In developing countries where professional attendants are used at delivery have reduced maternal mortality up to 50 per 100,000 live births. Local traditional birth attendants whether they trained or untrained are not recognized by world health organization because they are generally not trained to deal with birth-related complications (20).

The increased proportion of the deliveries at traditional birth attendant (TBA) homes may also be associated with the prevalent supernatural concept of disease in many African communities. Traditional birth attendants may for economic reasons also rank strongly in the preference of some women as their services have been reported to be more affordable. Additionally, unskilled birth attendants may offer more convenient user charges that allow payment to be spread over a period of time or be made in kind which this is similar with Ethiopian case (21).

There appears a dose response relationship between use of antenatal care and delivery assisted by a health professional both in the urban and rural areas. According to the 2011 data, the proportion of women that delivered in health institution increased from a low of 3.3% among those who did not have any ANC, to 8.8%, 8.9%, 20.1% and 35.2%, respectively, among those who had one, two, three and four or more ANC visits (22).

Previous empirical studies have found that the use of maternal health services is related to demographic, cultural, and socio-economic factors, such as age of women, birth order, size of household, women and husband education, wealth index, place of residence, religious background, employment, women's decision making power, and income level (23).

In many developing countries large proportion of deliveries (47%) take place outside the formal health care system often assisted by a relative or Traditional Birth Attendant (18). Again in developing countries facility deliveries are less than 60% taking place largely in rural areas with unskilled attendants (24).

In Gambia a study on maternal mortality levels, causes and contributing factors, revealed that out of the 18 deaths studied, 5 were home deliveries attended by relatives and trained TBAs. Of these none had live births. Causes of death for 2 women were hemorrhage from retained placenta which cannot be managed effectively by such attendants. Times of death are mostly during the postpartum period. In Gambia a study on emergency obstetric care (EmOC) revealed 30.4% institutional deliveries despite the high antenatal care (ANC) coverage of 96% (9).

Study conducted by two Ethiopian scholars find out high prevalence of skilled assistance at delivery, 49.6% of respondents had delivered without assistance of skilled attendants (25).

Similarly the finding of study conducted in Zala woreda southern Ethiopia ; indicate that 67.6% women gave birth at home for their last pregnancy and the rest, 145 (32.4%) at health facility. Among the 302 mothers who gave birth at home, 78 (24.5%) gave birth at home due to preference of traditional birth attendant (17).

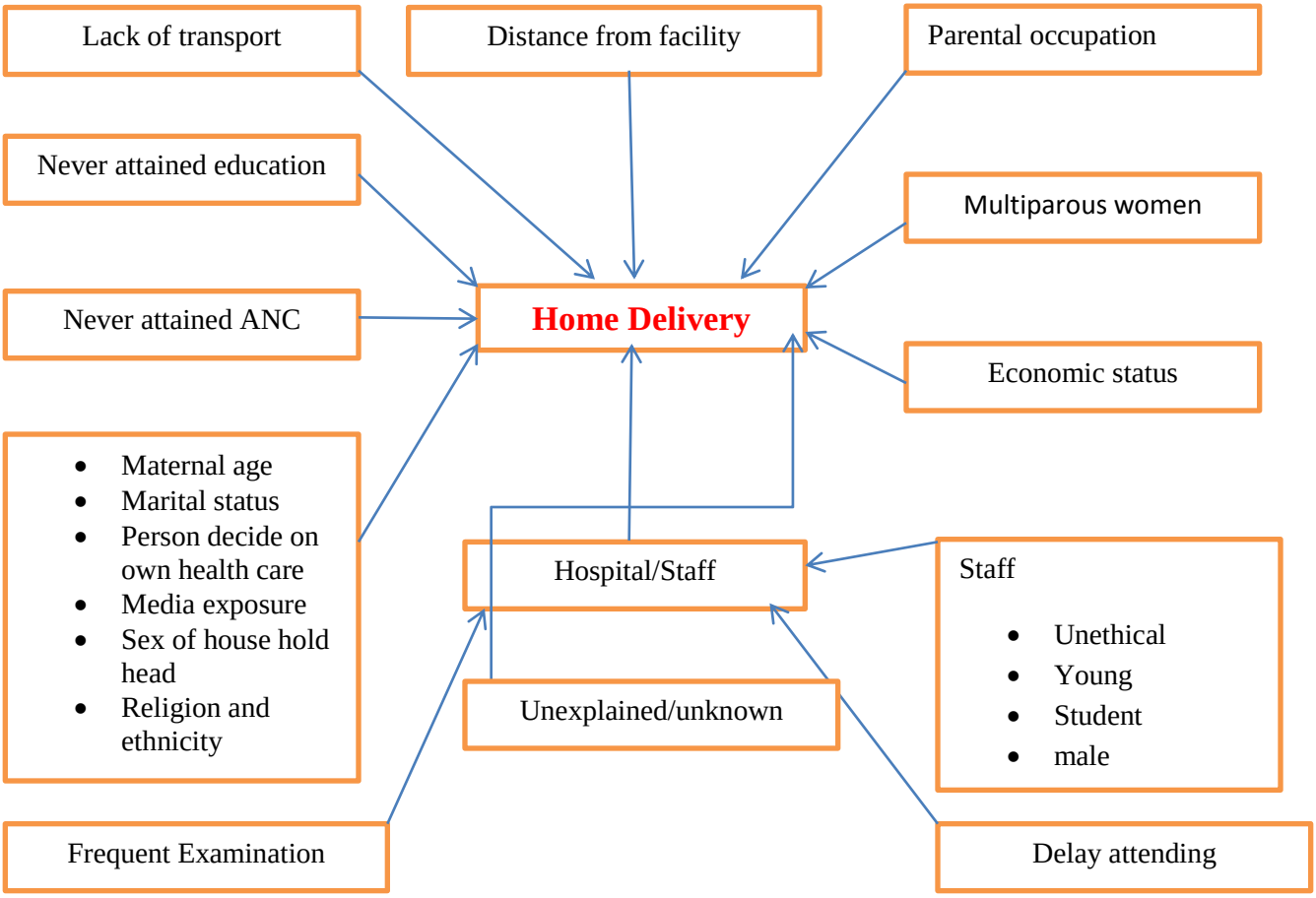
Interestingly, study conducted in Bahir Dar in 2014 showed that 78.8% of women gave birth to their current child at health institutions. This study shows also place of residence, current age of women, employment status of both women and husband, education level of both spouses had significant contribution to mother's delivery in the institution (26).

There appears a dose response relationship between use of antenatal care and delivery assisted by a health professional both in the urban and rural areas. According to the 2011 data, the proportion of women that delivered in health institution increased from a low of 3.3% among those who did not have any ANC, to 8.8%, 8.9%, 20.1% and 35.2%, respectively, among those who had one, two, three and four or more ANC visits (22).

Many of the studies conducted in the purpose of exploring prevalence and associated factors of home delivery in Ethiopia show majority of pregnant women (78%) deliveries are assisted by unskilled birth attendant, despite receiving antenatal care from a health professional. Commonly mentioned factors include beliefs that of unskilled birth attendants are culturally acceptable, high cost associated with hospital deliveries, inaccessibility of health facilities, and poor quality of care and negative experience with hospital staff (22).

2.2. Conceptual frame work

Figure2 1 Conceptual frame work



3. CHAPTER THREE

3. Research Objectives

3.1. General objective

- To analyze the trend of determinants of home delivery since 1995 to 2016 so as to identify areas of intervention to decrease home delivery in Ethiopia.

3.2. Specific Objectives

- To compare Socio-demographic characteristics of women who gave their recent birth in the five-year preceding each survey, since 1995 to 2016 in Ethiopia.
- To compare home delivery rate across various categories of Socio-demographic characteristics, since 1995 to 2016 in Ethiopia.
- To analyze trend of home delivery rate across various categories of Socio-demographic variables, since 1995 to 2016 in Ethiopia.
- To assess trend of home delivery rate across various categories of obstetric factors, since 1995 to 2016 in Ethiopia.
- To determine trend of home delivery rate in urban and rural setting, since 1995 to 2016 in Ethiopia.
- To determine trend of home delivery rate in each region and city administration, since 1995 to 2016 in Ethiopia.

4. CHAPTER FOUR

4. THE RESEARCH METHODOLOGY

4.1 Research setting

Ethiopia, in the Horn of Africa, is a rugged, landlocked country split by the Great Rift Valley. With archaeological finds dating back more than 3 million years, it's a place of ancient culture. With 353,690 square kilometers of land area, the current population of Ethiopia is about 114 Million. Females constitute 49.7% of total population. Majority of female population (64%) is in reproductive age group (15-49years). Ethiopia now is a federal country administratively divided into ten regional states and two city administrations. Currently, there are more than 4 thousand health stations, 16 thousand health posts and 4 hundred hospitals across the country.

The study will be conducted in 2021.

4.2 Source and study population

All women in reproductive age group (15-49) who reported to have given birth in the past five years at the time of each survey and permanent residents of Ethiopia are the source population.

The study population is comprised of women aged between 15-49 years who reported to have given birth in the past five years at the time of each survey living in the selected kebeles.

4.3 Inclusion and exclusion criteria

All women who reported to have given birth in the past five years before each survey are included and who didn't are excluded.

4.4 Data source

This study used data from Ethiopia demographic and health surveys (EDHS) of 2000, 2005, 2011 and 2016. The EDHS is a nationwide survey which was implemented by the Central Statistical Authority under the guidance of the Ministry of Health with technical support from ICF International through the MEASUREDHS program. Permission to use the data is obtained from MEASUREDHS after submission and assessment of the proposal.

The study population is comprised of women aged between 15-49 years who reported to have given birth in the past five years at the time of each survey.

4.5 Research Approach

In this study a non-experimental study approach was used meaning data is collected without manipulation or implementing measure of change.
This research approach is also quantitative in nature and data is obtained from all Ethiopia demographic and health surveys.

4.6 Research Design

Retrospective analytical study design selected to assess the trend of determinants of home delivery rate since 1995 to 2016 so as to identify areas of intervention to decrease home delivery in Ethiopia using 2000, 2005, 2011 and 2016 demographic and health surveys.

4.7 Data collection and Sampling techniques

4.7.1. Data collection

The EDHS data were collected by trained and experienced data collectors. In each survey used standard Measure DHS questionnaire adapted to the context of the country. Prior to the fieldwork, the tool was pretested and necessary modifications were made.
In the primary surveys, data was collected using three questionnaires: a household, woman and man questionnaire. For this study, only selected data collected using the woman's questionnaire were used.

4.7.2. Sampling techniques

In all EDHS sampling was stratified and selected in two stages. Each region was stratified into urban and rural areas. Samples of Enumeration Are-as (EAs)— a cluster that conventionally encompasses 150–200 adjacent households — were selected as primary sampling units from the sampling frame developed based on the 1994 and 2007 censuses and selected independently in each stratum in two stages. Implicit stratification and proportional allocation were achieved at each of the lower administrative levels by sorting the sampling frame within each sampling stratum before sample selection, according to administrative units in different levels, and by using a probability proportional to size selection at the first stage of sampling.
The data from the each survey were pooled into one data file system for analysis. This analysis was based on 43,029 women who had given birth in the five-year preceding the surveys. That were 10873, 9861, 11654 and 10641 in 2000, 2005, 2011 and1016 respectively. At times when women had more than one birth in the reference period, the most recent one was considered.

4.8 Variables Description

In this study one response variable were created from questions included in the maternal health components of the EDHS questioners. The main focus was on number of specific questions asked to women about their delivery.

The response variable of this study is place of delivery of mothers at their last birth which is going to be coded as "0" if a mother gave birth at health institution and "1" if at home.

The choice of these variables was guided by the determinants of home delivery from literature review, conceptual framework and consistence of this variable in each data collection tools of the surveys.

4.8.1. Dependent Variables

- Home delivery

4.8.2 Independent Variables

Socio-demographic and geographic

- Age (years)
- Age at 1st marriage
- Economic status (house hold wealth index)
- Education status
- Employment status
- Marital status
- Residency
- Religion
- Frequency of watching/listening TV/radio

Obstetrics

- Parity
- ANC visit
- Abortion history
- Age at 1st delivery
- Pregnancy wanted or not

4.9. Data Analysis Techniques

The analysis was done using Statistical Package for Social Sciences (SPSS) version 23 for windows.
Based on the specific year of delivery, home delivery rate calculated for each year from 1995 to 2016.Home delivery rate was compared across various categories of socioeconomic and demographic variables using chi-square analysis. Pearson's chi-square and chi-square for trend analyses were used for nominal and ordinal variables, respectively.

The trend of home delivery rate across various categories of socio demographic, geographic and obstetrics variables were assessed using simple linear regression analysis. Prior to the analysis the absence of auto-correlation was checked using Durbin-Watson test. Other assumptions of the analysis (linearity, normally distributed and homoscedastic error terms) were also satisfied. The statistical significance of the trend was evaluated using t-test.

Wealth tertiles (poor, middle and rich) was generated using principal component analysis (PCA). The analysis was made based on 14 variables related to ownership of selected household assets and materials used for housing construction.

4.10 Availability of data and Ethical consideration

The dataset was demanded and retrieved from DHS website after formal online registration and submission of the project title and detailed project description.

Participant consent wasn't necessary as this study involved the use of a previously published de-identified database.

CHAPTER FIVE

5. Result

5.1 Socio-demographic characteristics of study population

From all of first four DHS, information about home delivery was collected from 43029 women who gave their recent birth in the five-year preceding the date of interview i.e. 10873 in 2000, 9861 in 2005, 11654 in 2011 and 10641 in 2016 surveys.

Of all respondent 36163 (84%) of them gave birth at home and the remaining 6866(16%) delivered at health institutions. The mean age (±SD) of the respondents was 29.2 (±6.7) years and 50.3 % were between 25–34 years of age. The median parity was 4 and it ranged from 1 to 18. Majority (92.9%) of women were married. Nearly seven-tenth (72.8%) had no formal education and more than half (65.5%) were unemployed at the time of the surveys. Among women lived in rural areas, 92.7% of them delivered at home and in urban areas, and 40% of them delivered at home. About 92.6% of women with no formal education gave birth at home while only 11.9% of women with a higher education and above delivered at home. According to their wealth index, about 87.4% of poor women delivered at home while 35.4% of women from rich families delivered at home. About 92.2% of mothers who had 5 and more children delivered at home while only 63.9% of pimiparous gave birth at home. Among women who listen radio and watch television almost every day only 59.6% and 23.1% of them had home delivery respectively. Majority (96.1%) of women who hadn't have ANC during their last pregnancy delivered at home. (Table 5.1.1)

The highest home delivery prevalence is seen in Affar (94.2%), Oromiya (92%) and SNNPR (91%).lowest home delivery prevalence is seen in Addis Ababa (20.2%). (Table 5.1.2)

Based on the specific year of delivery, the home delivery rate was calculated for each year from 1995 to 2016, it ranges from 91.1% to 59.8%. (Figure 5.1.1)

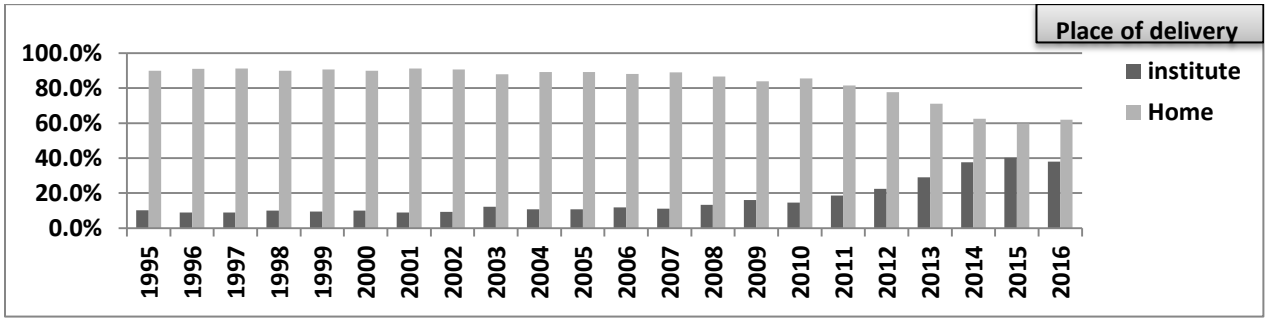


Figure5.1 1 Distribution of place of delivery in each year from 1995 to 2016

Table5.1. 1 Basic covariates of place of delivery for last birth

Variable	category	count	Place of delivery				P-value
			Institution		Home		
			Count	%	Count	%	
Age	15-19	1963	366	18.6	1597	81.4	0.002
	20-24	8885	1688	19.0	7197	81.0	
	25-29	12678	2226	17.6	10452	82.4	
	30-34	8934	1362	15.2	7572	84.8	
	35-39	6690	879	13.1	5811	86.9	
	40-44	2843	273	9.6	2570	90.4	
	45-49	1036	72	6.9	964	93.1	
Residence	Urban	7030	4221	60.0	2809	40.0	<0.001
	Rural	35999	2645	7.3	33354	92.7	
Wealth	poor	37514	3976	10.6	33538	89.4	<0.001
	middle	5165	2664	51.6	2501	48.4	
	rich	350	226	64.6	124	35.4	
Educational	No education	31338	2310	7.4	29028	92.6	<0.001
	Primary	8541	2281	26.7	6260	73.3	
	Secondary	2447	1656	67.7	791	32.3	
	Higher	703	619	88.1	84	11.9	
Listening to radio	Not at all	28885	3093	10.7	25792	89.3	<0.001
	< once a week	8859	1793	20.2	7066	79.8	
	once a week	3528	1275	36.1	2253	63.9	
	Almost every day	1738	702	40.4	1036	59.6	
Watching TV	Not at all	35111	3016	8.6	32095	91.4	<0.001
	< once a week	4351	1291	29.7	3060	70.3	
	Once a week	2815	2007	71.3	808	28.7	
	Almost every day	710	546	76.9	164	23.1	
Parity	1	5570	2012	36.1	3558	63.9	<0.001
	2-4	19606	3454	17.6	16152	82.4	
	5 more	17853	1400	7.8	16453	92.2	
ANC	NO	16200	628	3.9	15572	96.1	<0.001
	1-3	6037	1338	22.2	4699	77.8	
	4 and more	6620	3587	53.7	3033	46.9	
Employment status	unemployed	28163	4240	15.1	23923	84.9	<0.001
	employed	14839	2623	17.7	12216	82.3	
Marital status	never married	254	122	48.0	132	52.0	<0.002
	married	39964	6151	15.4	33813	84.6	
	widowed	719	117	16.3	602	83.7	
	divorced	2094	476	22.8	1616	77.2	

Table5.1. 2 Total distribution of place of delivery in different region, since 1995-2016

		Total delivery		Place of delivery			
				Intuitional		Home	
		Count of the region	% in county	Count	% in region	Count	% in region
Region	Tigray	4332	10.1%	764	17.6%	3568	82.4%
	Affar	3406	8.0%	198	5.8%	3208	94.2%
	Amhara	5348	12.4%	442	8.3%	4906	91.7%
	Oromiya	7468	17.3%	594	8.0%	6874	92.0%
	Somali	3870	8.9%	395	10.2%	3475	89.8%
	Ben-Gumz	3402	7.9%	362	10.6%	3040	89.4%
	SNNPR	6212	14.4%	558	9.0%	5654	91.0%
	Gambela	2686	6.2%	533	19.8%	2153	80.2%
	Harari	2337	5.4%	797	34.1%	1540	65.9%
	Addis	1754	4.1%	1399	79.8%	355	20.2%
	Dire Dawa	2214	5.1%	824	37.2%	1390	62.8%

5.2 Differentials of home delivery rate

The home delivery rate decreases with rise in maternal education and household wealth index. The rates among women with secondary (32.3%) or higher (11.9%) levels of education were nearly eight times lower than the corresponding figures in no formal education (92.6%) and women with primary education 73.3%. (Table 5.2.1)

The home delivery rate among women from the ‘rich’ households (35.4%) was significantly lower than those from the ‘poor’ households (89.4%) and comparable with those from ‘middle’ households (19.5%). (Table 5.2.1)

The home delivery rate among women who had no ANC visit (96.5%) was twice increased as compared to women who had more than 3 ANC visits (46.3%).The home delivery rate increase with increasing parity. (Table 5.2.1)

The lowest rate of 63.9% was reported among primiparous women. The corresponding figures for multiparous and grand-multiparous were 82.4% and 92.2%, respectively. (Table 5.2.1)

Table5.2 1 Differentials of home delivery rate

Variables (n=43029)	Home delivery		X^2 and P value
	Frequency	Rate	
Age(years)			X^2=37.75,p<0.001
<19(n=1963)	1593	81.2%	
20-34(n=30497)	25814	84.6%	
>35(n=10569)	8756	82.8%	
Parity			X^2=260.05,p<0.001
1(n=5570)	3558	63.9%	
2-4(n=19606)	16152	82.4%	
>=5(n=17853)	16453	92.2%	
Educational			X^2=100.63,p<0.001
No (n=31338)	29028	92.6%	
Primary(n=8541)	6260	73.3%	
Secondary(n=2447)	791	32.3%	
Higher(n=703)	84	11.9%	
Employment			X^2=49.78,p<0.001
NO(n=28163)	23923	84.9%	
YES(n=14839)	12216	82.3%	
Household wealth			X^2=63.06,p<0.001
Poor(n=37514)	33538	89.4%	
Middle(n=5165)	2501	48.4%	
Rich(n=350)	124	35.4%	
ANC visits			X^2=76.75,p<0.001
NO(n=16060)	15491	96.5%	
1to3(n=6037)	4699	77.8%	
>3(n=6554)	3033	46.3%	
Wanted pregnancy			X^2=76.75,p<0.001
wanted(n=30583)	25710	84.1%	
wanted later(n=7259)	6031	83.1%	
no more wanted(n=5168)	4404	85.2%	

5.3 Trend of home delivery rate across various categories of Socio-demographic variables

According to the DHS survey reports, the home delivery rate over the preceding 5 years of the surveys had decreased considerably from the level of 95% in 2000 to 94%, 90% and 73% in 2005, 2011 and 2016 respectively (27).

Though the confidence intervals for the 2005 and 2011 surveys overlapped, based on chi-square for trend analysis, the overall increment was statistically significant ($P < 0.001$). As compared to the rate reported in 2000, the home delivery rate in 2016 had decreased by 22%.Year specific figures illustrated that the home delivery rate had decreased from 89.9% in 1995 to 62% in 2016. (Figure 5.3.1)

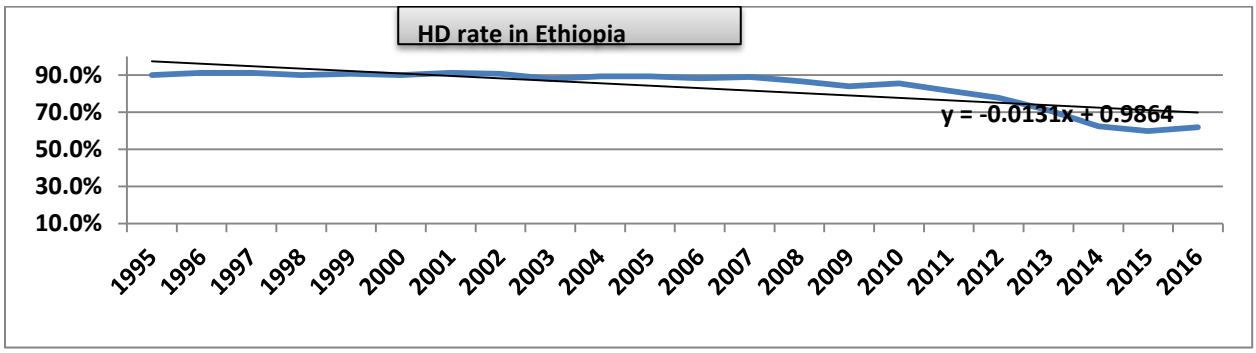


Figure5.3 1 Year specific trend of home delivery rate in Ethiopia

The odds of delivery at home for mothers having the age of 45-49 years were 4.13 times more than mothers with the age of 15-19 years. The odds of home delivery for mothers who were 45-45 years were 2.64 times more than mothers aged 15-19 years (23). The regression analysis also found that on average, over the age from 15 to 49, the rate decreased at rate of 0.2% for every one more age increment. From age 35 and above since 2013, the rates persisted below the level of 70%.The Home delivery rate decline is greater in women age greater than 34 years (1.4%/year) than women in other age group. The corresponding figures for women age less than 20 and age between 20 and 34 was almost the same (1.3%). (Figure 5.3.2)

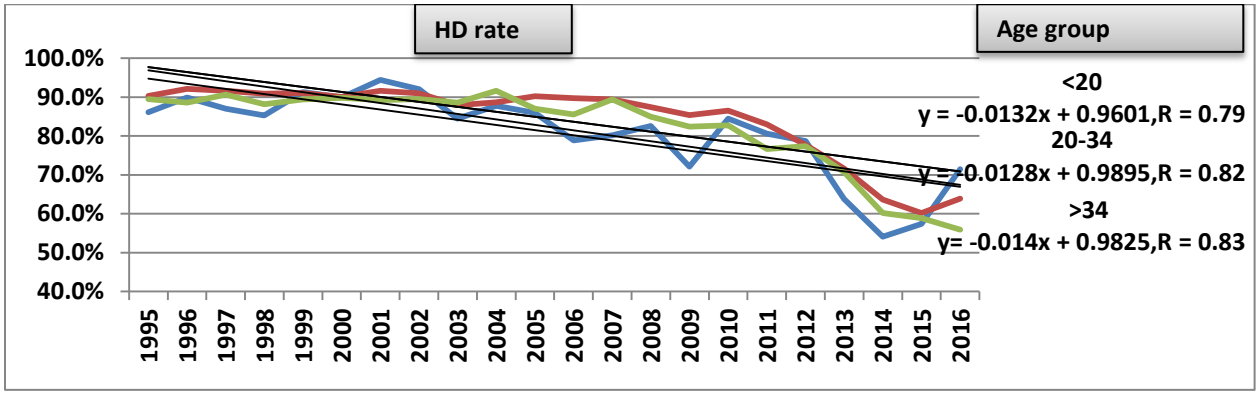


Figure5.3 2 Trend of home delivery rate for different age group

Home delivery rate declines with increasing age at first marriage. The highest rate of 93.3% was reported among women whose age at first marriage was teenager. The corresponding figures for women age at first marriage was in age categories of 20 to 29 and greater than were 81.4% and 33.3%, respectively. (Figure 5.3.3)

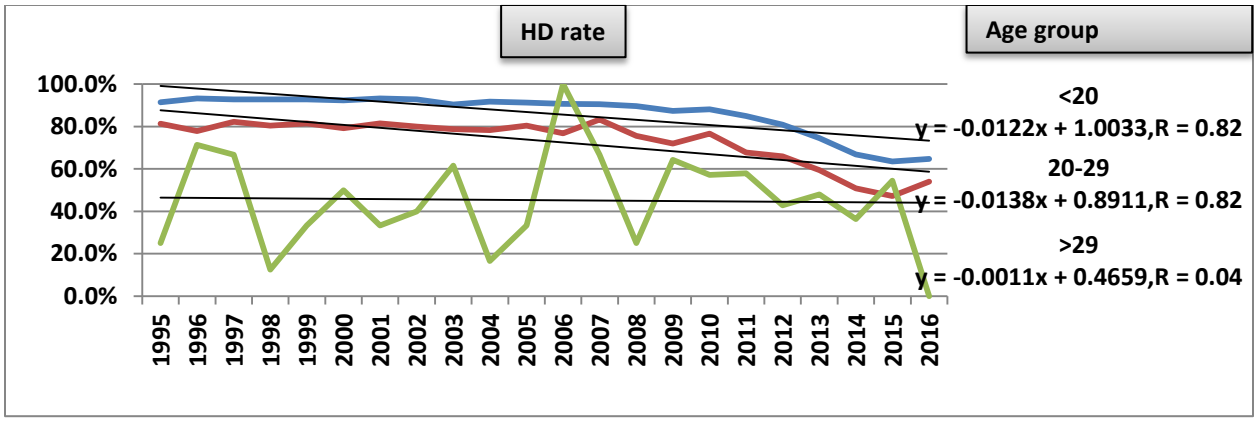


Figure5.3 3 Trend of home delivery rate for different age group of age at first marriage

Educated women had less chance to deliver at home compared to uneducated women. The odds of delivery at home among women with primary education and secondary education and above was 0.48 and 0.28 compared with the odds of illiterate women, respectively. This means that better educated women are less likely to deliver at home compared to low educated women (23).

Linear regression analysis of this study home delivery rate among women who had primary education decline (1.5%/year) was 1.6 times as compared to women with no formal education (0.9%/year) and 2 times as compared to women with secondary level education. Interestingly, home delivery rate trend in women high level of education shows small increment by 0.3% each year. (Figure 5.3.4)

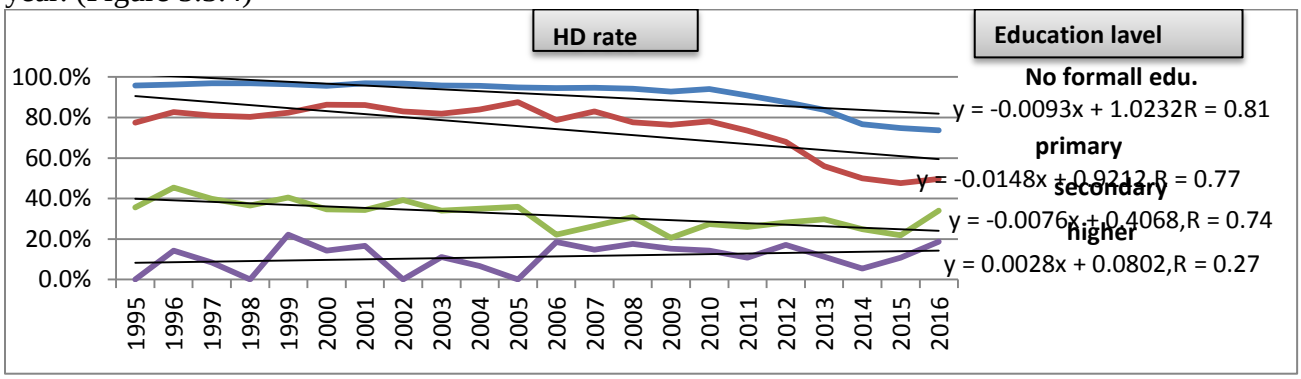


Figure5.3 4 Trend of home delivery rate for maternal educational level

The prevalence of home delivery was predicted using a simple linear regression equation, for employment status of women. At the current pace home delivery rate decline by 1%/year in unemployed women and 1.8%/year in employed women. Home delivery rate in unemployed women was always above national prevalence. (Figure 5.3.5)

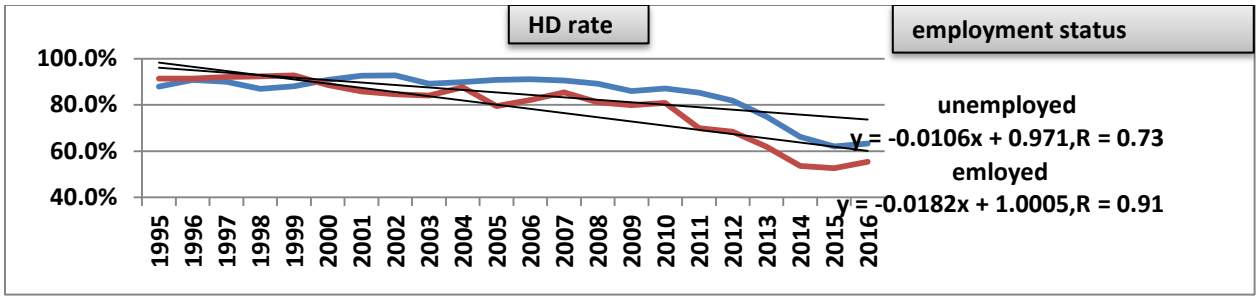


Figure5.3 5 Trend of home delivery rate for maternal employment status

Based on the linear regression analysis with marital status at delivery, the home delivery rate in never married women decrease 3.7 times compered to widowed women married. The regression analysis also found that plateau change in married women. Home delivery rate in married and widowed women is above national prevalence all over past 22 years. (Figure 5.3.6)

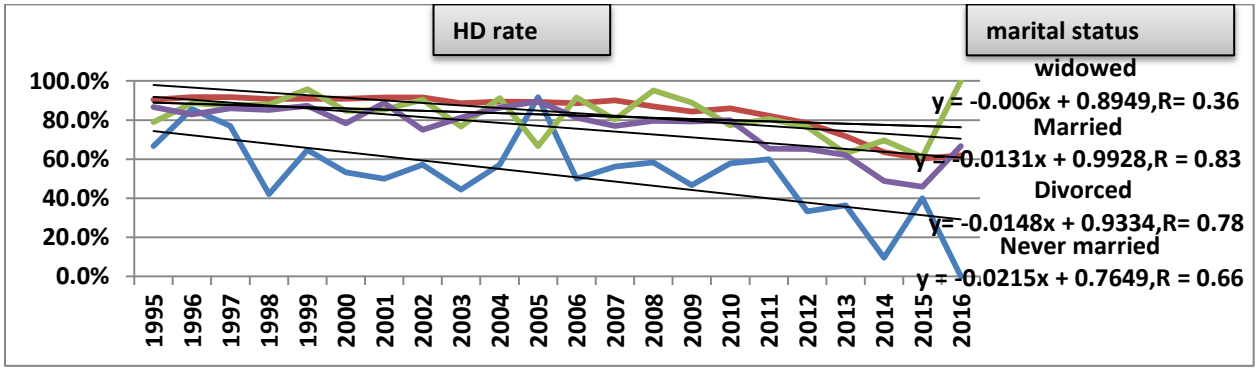


Figure5.3 6 Trend of home delivery rate for marital status

As per EDHS 2016 report births in the highest wealth quintile are almost six times more likely than in the lowest quintile to be assisted by skilled providers (70% versus 11%) (27). Women in the middle (OR=0.61, CI: 0.4868-0.7331) and rich (OR=0.48, CI: 0.3869-0.5731) wealth qunitiles were less likely to deliver at home compared to those in the poor quintile. Rural residents were 3.47 times as likely as their urban counterparts to deliver at home (OR=3.47, CI: 2.6468, 4.2932) (23). This study shows home delivery rate decline among women from the 'rich' and 'middle' household (2%/year) but for those women from the 'poor' household (1.1%/year). (Figure 5.3.7)

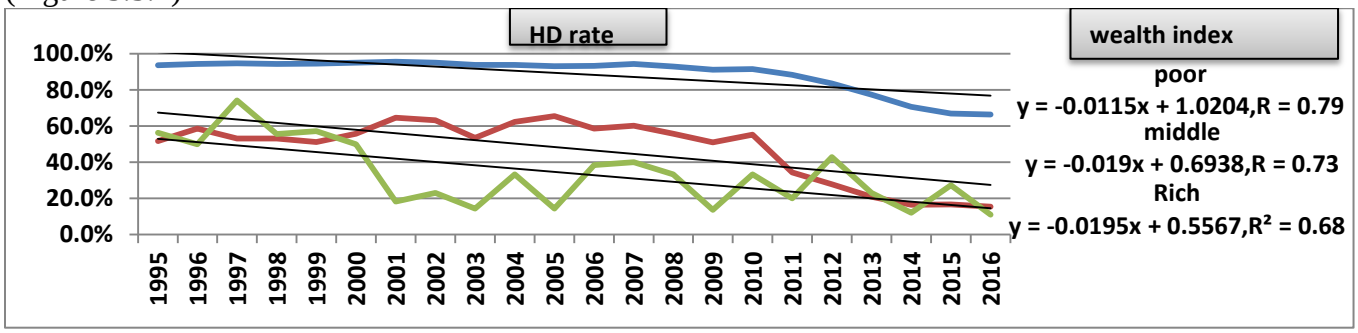


Figure5.3 7 Trend of home delivery rate for household wealth index

Using simple linear regression analysis, I looked at yearly (by year of birth) trend in the proportion of women who reported home delivery in last 5 years preceding the each survey in different categories religion. Decline of home delivery rate was seen in in majority categories, largest decline seen with orthodox religion (2%/year). (Figure 5.3.8)

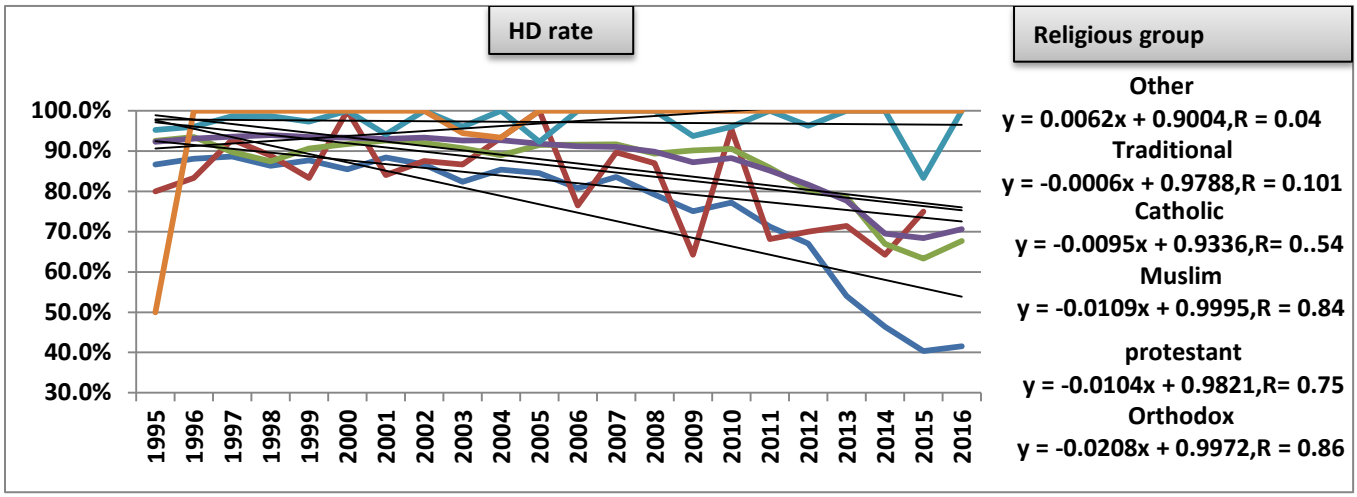


Figure5.3 8 Trend of home delivery rate for different religious group

Based on the frequency of watching TV, the odds of home delivery for women watching TV were sometimes 0.60 times less than women who did not watch TV at all and for women who have watched TV were always 0.31 times less than women who did not watch TV at all. (23)

Linear regression analysis show about 17.6 times decline of home delivery rate in women who watch TV almost every day than who watch TV less than once a week. Home delivery rate in women who did not watch TV at all was always above national home delivery rate. (Figure 5.3.9)

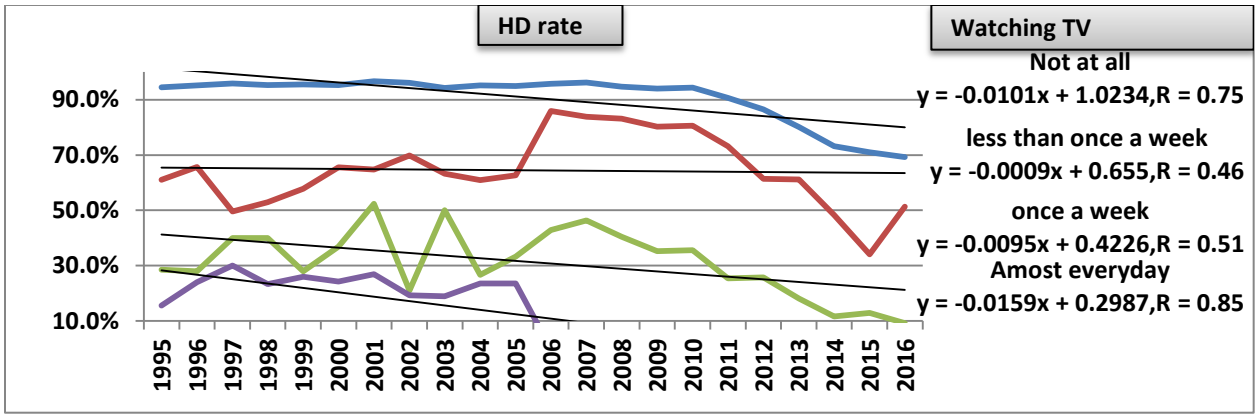


Figure5.3 9 Trend of home delivery rate for frequency of watching TV

There was significant decline in home delivery rate in women who listen to radio almost every day since 2006. But for other categories of frequency of listening to radio there is no significant change in decrease in home delivery rate in each year. Home delivery rate in women who did not listen to radio at all was always above national home delivery rate. (Figure 5.3.10)

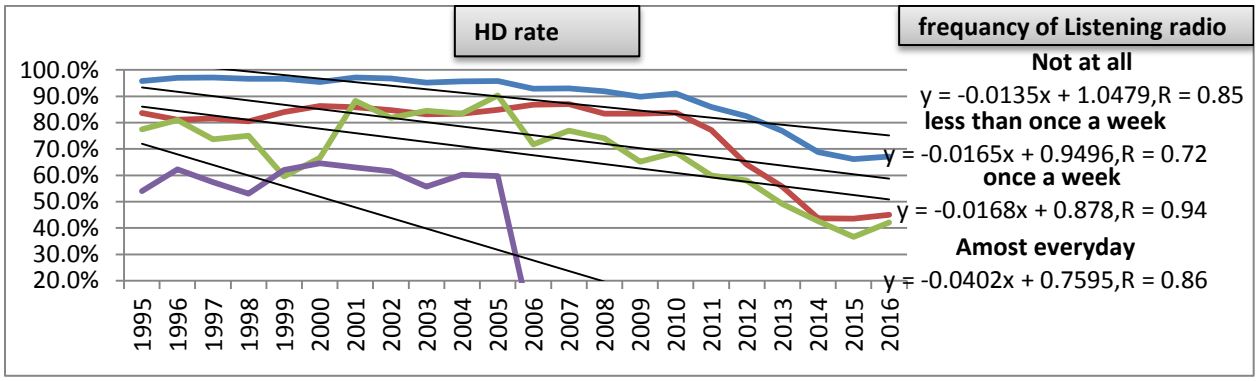


Figure5.3 10 Trend of home delivery rate for frequency of listening radio

5.4 Trend of home delivery rate across various categories of obstetric factors

EDHS 2016 report shows 58% of births to the mother who attended four or more ANC visits were delivered by a skilled attendant comparing to 10%of births to mother with no ANC visit (27).

As per linear regression analysis done based on numbers of ANC visits a woman attended, the trend line for women with no ANC visit almost had no change on home delivery rate (<0.2%/year) from 1995 to 2016. In each year the rate is above national home delivery rate for women with no ANC visit. Home delivery rate dropped significantly in women who had 1 -3 ANC visits (1.3%/year) comparing to those who had 4 and more ANC visits (0.7%/year). Home delivery rate start to drop below national home delivery rate since 2012 in women who had 1 -3 ANC visits. Significant curve drop was seen in home delivery trend between 2010 and 2011 for women who had 1-3 ANC by 7% and women who had 1-3 ANC by 11%. (Figure 5.4.1)

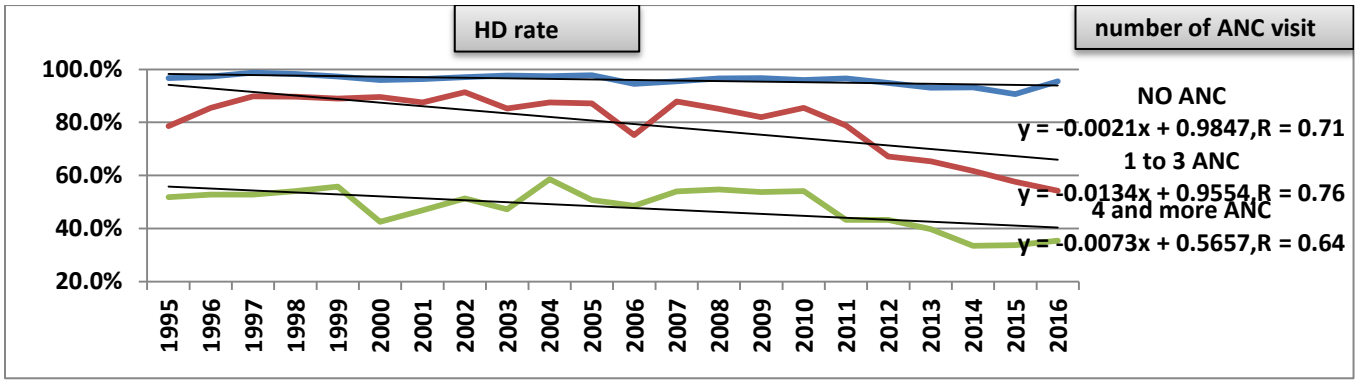


Figure5.4 1 Trend of home delivery rate for number of ANC visit

The EDHS 2011 shows that the women in high-risk were predominantly exposed to high parity (44.2%), followed by older age at pregnancy (16.9%) and closely spaced pregnancies (12.9%) (3).

Decrease on home delivery rate was more in primiprous women (1.6%/year) than women who had 2-4 births (1.3%/year) and least in women who had 5 and more births (0.9%/year).Home delivery rate in women who had 5 and more births is always above national home delivery rate. Major decrease in home delivery rate was seen between 2006 and 2007 in category of primiprous women by about 13%.It has been seen steady decrease in home delivery since 2010 in all categories for parity. (Figure 5.4.2)

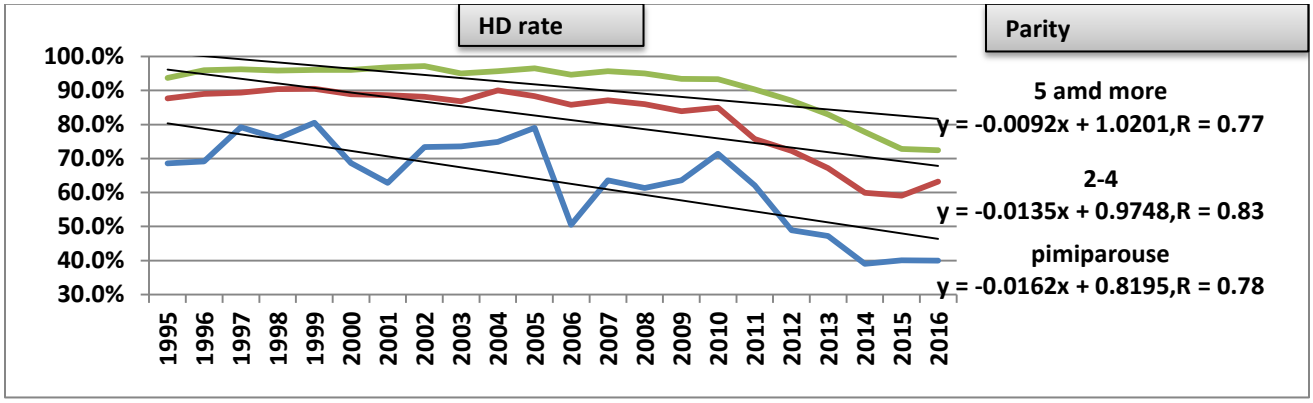


Figure5.4 2 Trend of home delivery rate for parity

In date on which this study conducted, all women who had five or six delivery in the last five years before the interview had home delivery on their last pregnancy. Home delivery rate was increasing by 0.3%/year in the women had 4 delivery in last five years. (Figure 5.4.3)

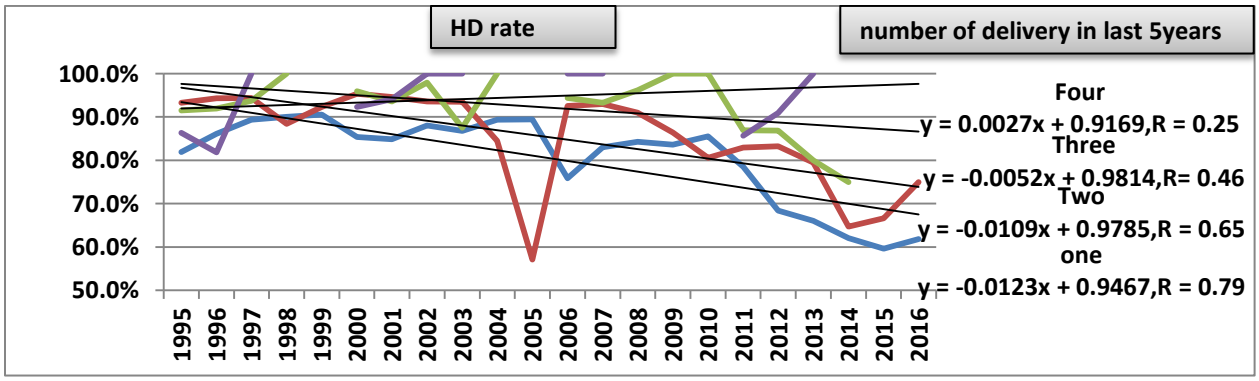


Figure5.4 3 Trend of home delivery rate for number of delivery in last five-year preceding each survey

On linear regression analysis illustrated below there is no significant difference seen in home delivery rate trend between women who had with or without abortion history, it decrease by 1.5%/year and 1.3%/year respectively. As categories for parity steady decrease in home delivery since 2010 was seen in all women with or without abortion history. (Figure 5.4.4)

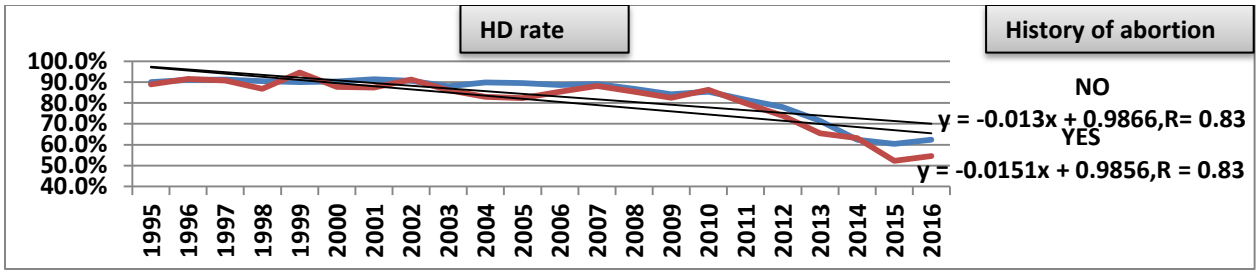


Figure5.4 4 Trend of home delivery rate for mothers with history of abortion

On linear regression analysis illustrated below there is no significant difference seen in home delivery rate trend between women who use or not using any contraceptive, it decrease by about 1%/year for both categories. Baseline home delivery rate for in category of women who are not using contraceptive is greater by about 30% from women who are using contraceptive. (Figure 5.4.5)

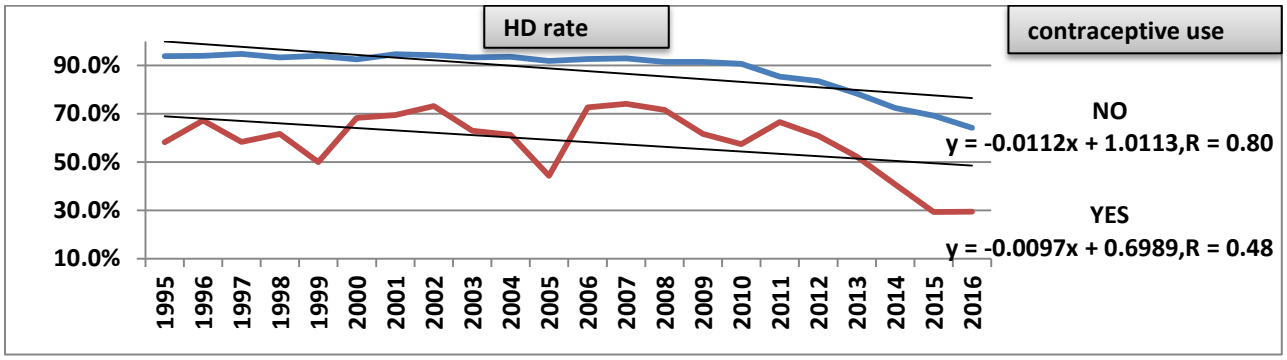


Figure5.4 5 Trend of home delivery rate for mothers with history contraceptive use

Using simple linear regression analysis, it looked at yearly trend in the proportion of women who had home delivery no significant difference seen between women whose last pregnancy wanted or not. (Figure 5.4.6)

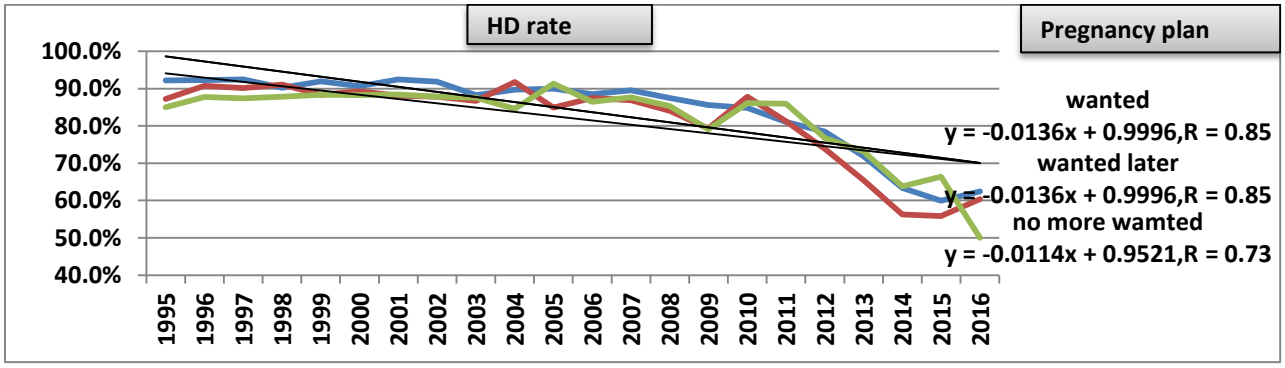


Figure5.4 6 Trend of home delivery rate by mothers' pregnancy plan

Trend in the proportion of women had home delivery during the period 1995- 2016 by year of birth among women who were between 20-29 years old at first birth show decrease by 1.5%/year. There was quite low change in home delivery rate for women who were 19 years old and less at first birth up to 2010. (Figure 5.4.7)

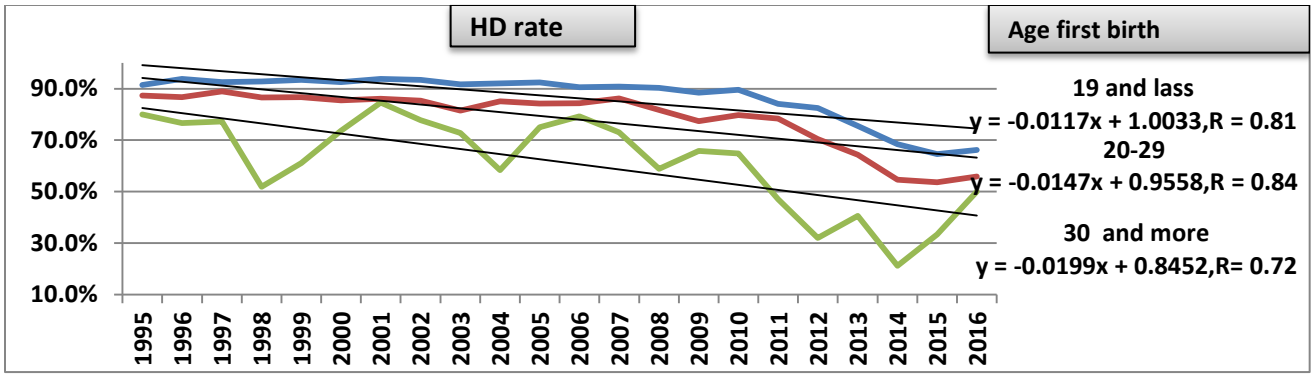


Figure5.4 7 Trend of home delivery rate for mothers' age at first birth

5.5 Trend of home delivery rate in urban and rural

EDHS 2016 report, birth in urban (80%) is more likely to have skilled attendant at birth (27). Based on linear regression analysis done for home delivery rate in urban and rural area, it decrease by about 2% every year for women living in urban. Though the trend in rural area was not having change until 2010, but it show major curve (by about 7%) change since then. (Figure 5.5.1)

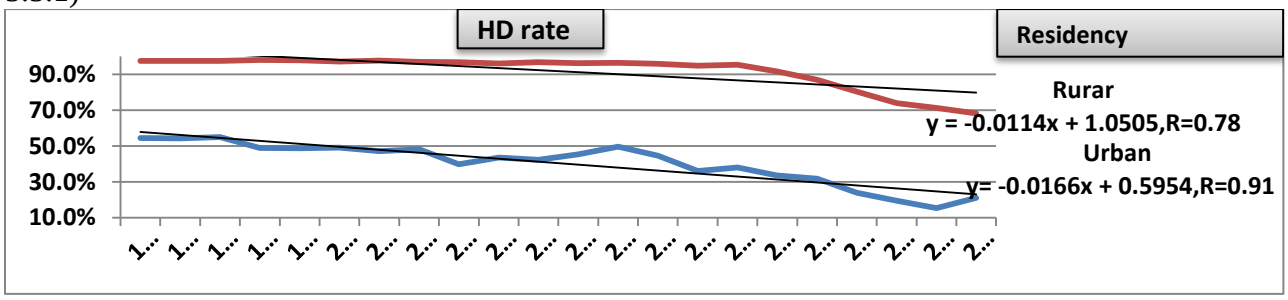


Figure5.5 1 Trend of home delivery rate for urban and rural setting in Ethiopia

Looking in to home delivery trend in urban and rural area of Affar region it has significant difference in the region. In the rural area of region there was increase home delivery rate by about 0.2%/year but the trend in the urban area is comparable with national trend for the same areas. (Figure 5.5.2)

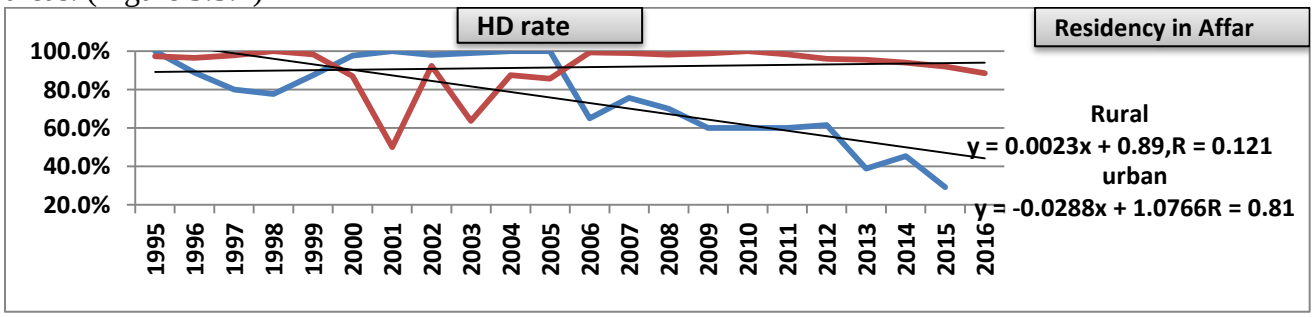


Figure5.5 2 Trend of home delivery rate for urban and rural setting in Affar region

5.6 Trend of home delivery rate by region and city administration

EDHS 2016 report put there are large difference by region in the proportion of births assisted by skilled provider; these range from 97% in Addis Ababa to only 16% in Affar (27).

Lack of disaggregated data on maternal mortality masks regional disparities, making it difficult to track regional performance towards MDG 5. Based on linear analysis for trend of home delivery rate for nine region and two city administration in the country the steepest decline is seen in Tigray region by more than 3% per year. Major curve in decline of home delivery rate is seen in SNNPR and Gambela region by more than 6% between 2010 and 2011. In Affar, Oromia and Somali regions the analysis show plateau home delivery rate; decline is less than 1%.The rate is above national home delivery rate (73%) in these three regions. (Figure 5.6.1-3)

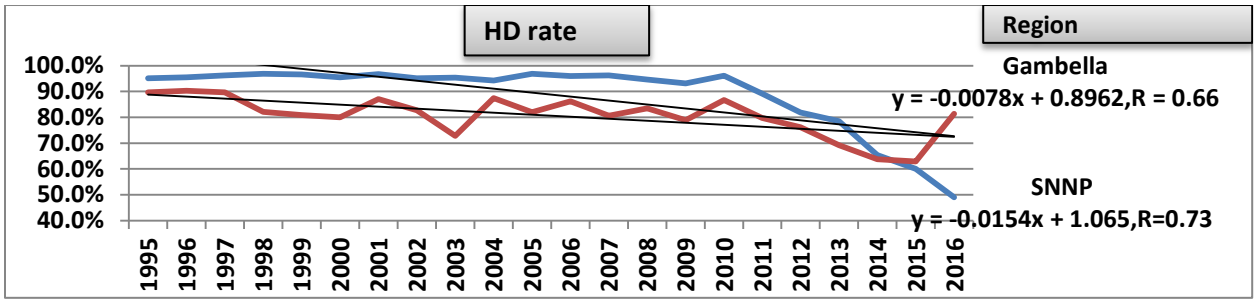


Figure 5.6 1 Trend of home delivery rate for Gambella and SNNP regions

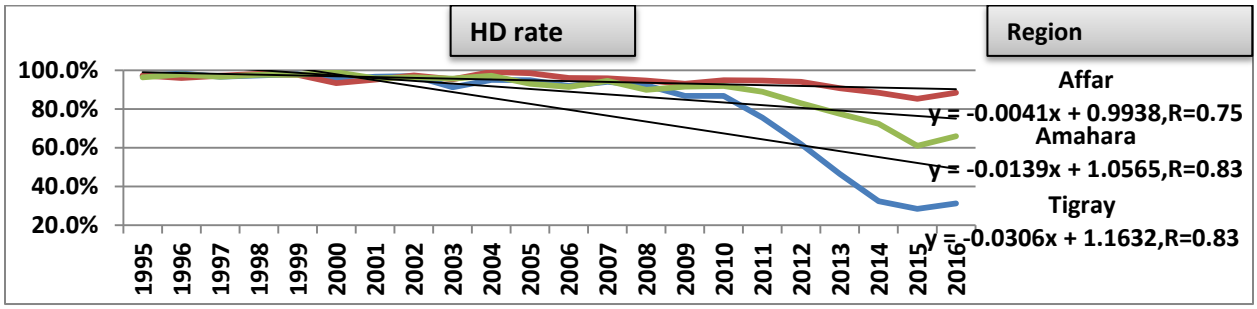


Figure 5.6 2 Trend of home delivery rate for Affar, Amahara and Tigray regions

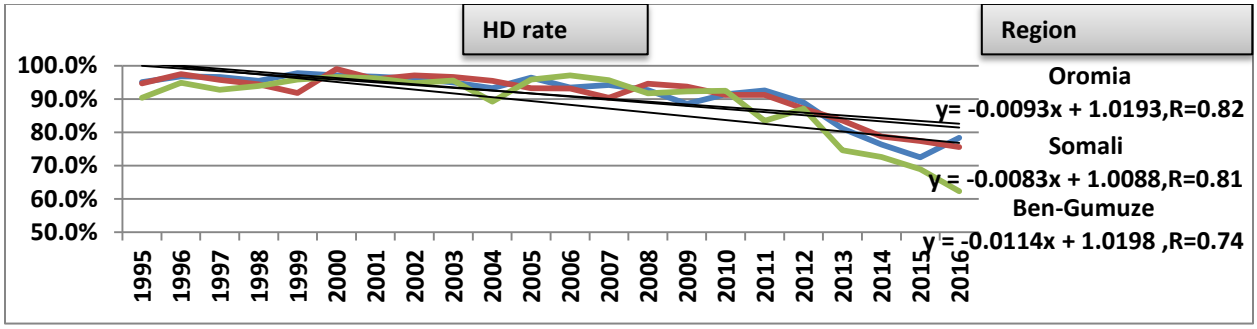


Figure 5.6 3 Trend of home delivery rate for Oromia, Somali and Ben-Gumuze regions

Thought trend of home delivery rate of Addis Ababa is far below Harrari and Dire Dawa citis, the droop rate is comparable for all the three city administrations. Trend in Addis Ababa run far below from those of Harrari and Dire Daw citis almost running together. (Figure 5.6.4)

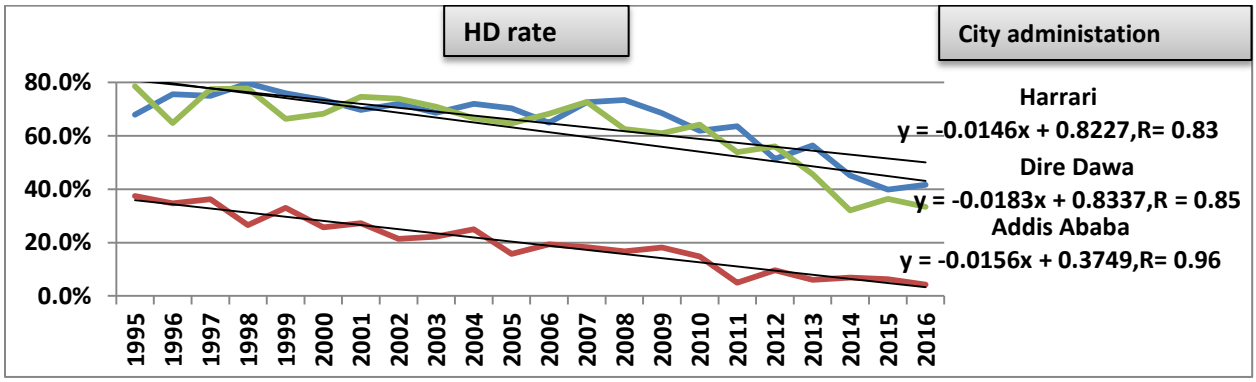


Figure 5.6 4 Trend of home delivery rate for Harrari, Dire Dawa and Addis Ababa cities

CHAPTER SIX

6. Discussion

The main goal of this study was to show the trend of determinants for home delivery of women at their last birth in Ethiopia using linear regression. Factors included in this study were wealth index, frequency of listening to radio, frequency of watching TV, age of mother, age at 1st marriage, age at 1st delivery, marital status of mother, religion, frequency of ANC visit, parity, Pregnancy wanted or not, mothers' level of education, place of residence, history of terminated pregnancy (Abortion history), work status of women, and the outcome variable of interest was place of delivery in the last birth.

The result of the study showed that about 84% of mothers gave birth at home and the remaining 16% delivered at health institution. This result shows that there is improvement from 1995 which included only 10% of mothers who delivered at health institutions and the remaining 90% delivered at home to 40% delivered at health institutions in 2016. But the country couldn't achieve MDGs to have universal access to reproductive health by 2015 (2).

With the current drop rate of home delivery revealed in this research i.e., 1.3% per year, it will take 32 year to achieve MDGs of universal access to reproductive health. But considering only the sharp drop rate, which was the best in the track, since 2010-1016 i.e., 5.1% per year, it will take us about 12 year to achieve MDGs. This is may be the implementation of MDGs; six of the eight MDG goals were successfully achieved. In Ethiopia, the achievements of the remaining two MDGs were also impressive. The two goals not achieved were 1) gender equality and empowerment and 2) improving maternal health. Baseline data on the indicators of these two goals showed very low progress. The government made concerted efforts in cooperation and coordination with other stakeholders to achieve the goals since 2010 (28).

The result of chi-square analysis revealed that being uneducated; primparous, not having ANC, and being poor are predictors of home delivery at 5% level of significance.

In those women with no ANC visit and multiparous (>5 delivery) there was slow decline home delivery rate and fellow far above the national trend line. Amazingly in women who had more than four deliveries in five year interval were having even increasing home delivery rate. Consistent result is also documented by EDHS 1016 report (27).

The result also showed that women in the rich wealth quintiles were less likely to deliver at home compared to those in the poor quintiles. There is also difference in proportion of home delivery in the poor wealth quintiles of women living in urban area, 56.7%, which is much less than poor wealth quintiles of women living in rural area, 94.7%. This is may be due to the reason that even though skilled delivery services are provided freely by government institutions in Ethiopia, there may be directly and indirectly associated costs that women in the richest families

can afford. In broad terms, financial capability of the family and costs of a delivery including transportation costs may not be afforded by women among poor families. This result is consistent with a research conducted in Ethiopia which reported that proportion of births attended by skilled birth attendants in health institutions among women in the richest quintile was about 5.11 times higher than that of women in the poorest quintile (29).

Based on the level of education of mothers, there was a significant difference between educated and no formal educated women on place of delivery. According to this finding, the probability of delivering at home was found to be greater for uneducated women than educated. In women with no formal educated the trend of home delivery rate is always above the country baseline and drop rate is sluggish (<1% per year). This difference may be due to the fact that educated women are also considered to have improved knowledge and attitude and skilled maternity services are provided for them and they have the benefit in using such services. Consistent result is also documented by a research conducted in Bahir Dar.

The odds of delivery at home for mothers having the age of 45-49 years were 4.13 times more than mothers with the age of 15-19 years. The odds of home delivery for mothers who were 45-45 years were 2.64 times more than mothers aged 15-19 years (23). Even though baseline home delivery prevalence was high in older women, decline rate is greater in women age greater than 34 years (1.4%/year) than women in other age group.

Home delivery rate among women who age at first marriage and delivery were teenager is always above the national baseline. It is may be such women are in low socioeconomic status and spouse dependency. In Ethiopia, Inter-African Committee researchers were struck by the lack of interest from elders in the traumas suffered by young girls as a result of early marriages, premature sex and childbearing. These traumas were regarded as an "unavoidable part of life". Girls who run home to their parents may be beaten and sent back to their husbands. Distress is generally endured in silence (30).

The prevalence of home delivery was predicted using a simple linear regression equation, for employment status of women. At the current pace home delivery rate decline by 1%/year in unemployed women and 1.8%/year in employed women. Home delivery rate in unemployed women was always above national prevalence.

This study shows home delivery rate for those women from the 'poor' household run above women from the 'rich' and 'middle' household and has less drop rate. This pattern is the same for women how were unemployed. As per EDHS 2016 report births in the highest wealth quintile are almost six times more likely than in the lowest quintile to be assisted by skilled providers (70% versus 11%) (27). Women in the middle and rich wealth qunitiles were less likely to deliver at home compared to those in the poor quintile (23).

Interestingly the home delivery rate in never married women decrease 3.7 times compered to widowed women married. It might be due to majority (64%) of women in this group were reside in urban area.

Study showed in women who always watch TV and listen radio has significant decline in home delivery rate and run below the national trend. Based on the frequency of watching TV, the odds of home delivery for women watching TV were sometimes 0.60 times less than women who did not watch TV at all and for women who have watched TV were always 0.31 times less than women who did not watch TV at all (23). It can be explained by essential information provided by mass media about health care utilization benefit.

Though history of abortion, contraceptive use and pregnancy plan is interrelated health issue in this research the trend of home delivery rate is less affected by whether the pregnancy is planned or not than the other two factors. Home delivery rate tend in women who never use contraceptive and had history of abortion the trend fellow above the national figure. It has been suggested that about 35 percent of maternal deaths could be eliminated if all women and men had access to contraception to prevent unwanted pregnancies (31).

The trend in home delivery rate in rural was run above the national line and drop in slow pattern. Research conducted in Bahir Dar in 2014 revealed that about 78.8% of mothers delivered at health institutions (26). This huge difference may come from the fact that the study had considered only the capital of Amhara regional state (Bahir Dar) where mothers are assumed to have better access to health institution and good awareness about the advantages of institutional delivery. Even if there was great difference on baseline of home delivery prevalence in rural and urban areas this study show little difference in drop rate between rural (1.1%/year) and urban (1.7/year). Rural residents were 3.47 times as likely as their urban counterparts to deliver at home (23) .

EDHS 2016 report put there are large difference by region in the proportion of births assisted by skilled provider; these range from 97% in Addis Ababa to only 16% in Affar (27).In Affar, Oromia and Somali regions the analysis show plateau home delivery rate tend. It may be because majority of the population is from pastoralist community. The pastoralist community is different from the rest of the population in access and utilization of health care services. Most of the pastoralist women give birth at home, unlike that of the rest of the women. This is because they are mobile and living in remote areas of the country with dispersal in the settlement. The health system is not tailored to their way of living (32).

Generally the slowest decrement in home delivery rate since 1995 to 2016 was in group of women; whose age is less than 20 at marriage and delivery, no formal education, no ANC follow-up, higher parity, rural residency and Affar region; which most of them are interrelated factors.

CHAPTER SEVEN

7.1 Conclusion

Despite the fact that the government tried to lower the rate of home delivery by promoting the importance of institutional delivery, the rate of home delivery is still high in Ethiopia.

The pervasive inequalities in home delivery burden by region, urban- rural residence and socio-economic status of the population further compounded the problem; making efforts to improve maternal health and thereby reduce maternal mortality more challenging.

This study underscores that strategies to decrease home delivery prevalence in the country requires a multifaceted approach that encompasses several preventive interventions such as reduce the likelihood that a woman will become pregnant by increasing knowledge, attitude practice of family planning methods, improving women education, income and access to media, using ANC as utility to decrease home deliver, encouraging low enforcement in preventing teen age marriage and pregnancy and involving religious leaders; specially traditional religious leaders; in implementations of policy and strategy.

Addressing the high home delivery rate among grand multiparous women should constitute among the priority intervention, which has less attention in previous intervention in addressing to decrease home delivery.

Improving population access to health facilities in rural part of the country believed to be among key strategy in the effort to improve home delivery prevalence.

In most of strategy proposal for the reduction of maternal mortality in the country fails to recognize regional disparities in maternal mortality perhaps due to paucity of data. Geographical immensity and socio- cultural diversity in the country mean that maternal mortality can vary across regions, and a one-fit-for-all intervention approach may not be as effective. Maternal mortality reduction strategy in the country can be more effective if it recognizes regional disparities and prioritize intervention accordingly. This is evidenced by steady change despite high prevalence of home delivery rate trend especially in the emerging regions (Affar, Somali, Gambela and Benishangul Gumuz). Any effort to decrease home delivery rate in these regions needs to focus on investigating specific reasons for not delivering in health institutions among women living in this regions.

Generally in attempt in decreasing home delivery rate of the country one should see cultural, socio-demographic and other factors, in making specific strategies.

To understand more in change of home delivery rate of different contributing factors like distance from health facility, labor pain and length, utilization of ambulance and other variable needs to be included in subsequent national survey.

This study couldn’t unknot the real reason of the mothers not to utilize to institutional delivery services. Understanding the socio-cultural and attitudinal barriers to maternal health services use, especially the barriers to institutional delivery, has paramount importance for programming. In-depth qualitative study will further help to gain better insight into these.

CHAPTER EIGHT

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