

# Prevalence and Associated Factors of Utero-Vaginal Prolapse in AddisAbaba, Ethiopia: A Cross-Sectional Study.

**Zelalem Mekuria**

Addis Ababa University, Addis Ababa, Ethiopia

**Abdu Mengesha**

Addis Ababa University, Addis Ababa, Ethiopia

**Girma Seyoum** (✉ [girma91@yahoo.com](mailto:girma91@yahoo.com))

Addis Ababa University, Addis Ababa, Ethiopia

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## Research Article

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# Abstract

**Background:** Uterovaginal prolapse (UVP) is a major women's health concern throughout the world. Globally, 2-20% of all women are affected by UVP. The mean prevalence of pelvic organ prolapse in developing countries is 19.7%. The prevalence of UVP in Ethiopia is 18.55% among all gynecological operations. UVP is a source of severe morbidity and psychological upheaval to the patient, who is often socially withdrawn and stigmatized. UVP negatively affects socioeconomic and reproductive activity of affected women. It is, therefore, of interest to study its prevalence and factors associated with the condition.

**Methodology:** Institution-based retrospective cross-sectional study was conducted in selected Addis Ababa city governmental hospitals and the medical record charts of women admitted in the respective gynecology wards were reviewed. The medical records included in this study were those from March 2017 to February 2019 G.C. and 400 records of admitted women were randomly selected. The data were analyzed using SPSS version 24 statistical package. Bivariate and multivariate logistic regression analyses were carried out to determine factors associated with UVP. A p-value < 0.05 was considered as significant.

**Result:** Out of the 3,949 admitted women, the prevalence of UVP was 12.8%. The leading determinants of UVP were menopause (OR = 2.611 (at 95 % CI: 1.531, 3.838), age > 40 years (OR = 2.143 (at 95 % CI: 1.496, 6.602), parity of > 4 (OR = 4.201 (at 95 % CI 1.652, 10.685), age at first delivery of < 20 years old (OR = 7.988(2.682, 23.792) and home delivery (OR = 1.380 (at 95 % CI: 1.212, 2.572).

**Conclusion:** The prevalence of UVP in this study was relatively high. The major risk factors of UVP were menopause, having > 4 deliveries, age > 40 years, age at first delivery < 20 years old and home delivery. Therefore, the findings of this investigation, especially identification of risk factors of UVP, could serve as a basis for taking steps for preventing or reducing the prevalence of UVP and related complications.

## Background

Utero-vaginal prolapse (UVP) is the herniation of the uterus and vaginal segments, such as the anterior wall, the posterior wall or the apex of the vagina into or beyond the vagina [1]. It is due to defects in the support structures of the uterus and vagina namely the uterosacral ligaments, the cardinal ligaments complex pelvic musculature and connective tissue of the urogenital membrane [2].

According to simplified Pelvic Organ Prolapse Quantification (S-POPQ) staging system, there are five stages of UVP designated from 0 through IV: Stage 0: No prolapse is demonstrated, Stage I: the most distal portion of the prolapse is at > 1 cm above the level of the hymen, Stage II: the most distal portion of the prolapse is at < 1 cm proximal to or distal to the plane of the hymen, Stage III: the most distal portion of the prolapse is at > 1 cm below the plane of the hymen but protrudes no further than 2 cm less than the total vaginal length in centimeter and Stage IV: complete eversion of the total length of the lower

genital tract and the distal portion of the prolapse protrudes to at least 2 cm less than the total vaginal length [3].

The reported prevalence of UVP is different in different countries. The exact prevalence of UVP is difficult to determine because many women are asymptomatic, and even if symptomatic, many women feel shy or do not reveal the presence of the problem due to social reasons [4].

Globally, 2-20% of all women are affected by UVP. The incidence of UVP is 17% in Australia and the United States of America, 8.5% in France and 27% in Turkey [2].

In the USA, the prevalence of uterine prolapse was reported to be 14.2% among women in the Women's Health Initiative Hormone Replacement Therapy Clinical Trial [5]. In the United Kingdom, the disorder accounts for 20% of women waiting for major gynecological surgery [6]. In a population-based survey, the prevalence of UVP has been reported to be 10% in Indian [4].

The mean prevalence of pelvic organ prolapses among low-income and lower-middle-income countries were found to be 19.7% [7]. In Ethiopia, the prevalence of UVP was reported to be 18.55% of all major gynecological operations [8].

The etiology of UVP is multifactorial. A weakening of the pelvic support structures may be as a result of either congenital or acquired causes. Older age, family history, menopause, higher parity, vaginal delivery, and prolonged labor are of major risk factors known [1]. The collagen content of the connective tissue supporting pelvic organs decreases in women after menopause. Changes in collagen content or estrogen & progesterone receptor density affect the strength of pelvic organ support. A weakness of uterosacral ligament, which is composed of connective tissue, smooth muscle, and blood vessels, may result in uterovaginal prolapse. Postmenopausal state due to hypoestrogenemia and genital atrophy play the most important role in the pathogenesis of UVP [9].

Prolonged labor or conduct of labor by unskilled attendants is risks for uterine prolapse especially if delivery is at home. Resultant weakness in pelvic floor muscles occurs during the menopause and atrophy of pelvic tissues due to hypoestrogenic state causes significant damage to the pelvic support system resulting in UVP [10].

Women with UVP are not volunteer to disclose their problem due to fear of social stigma or discrimination; and they are not comfortable to have sexual intercourse, as a result, many women got divorced due to this problem. Women with UVP especially in rural areas are facing many difficulties to undertake their daily activities like; childcare, cooking, the fetching of water and collecting of firewood [11].

Existing knowledge on the prevalence, risk factors, and consequences of living with UVP in developing countries including Ethiopia is scanty. The fertility rate is higher, and the access to obstetric care is limited, which have implications for the risk of pelvic floor disorders [12]. UVP greatly affects women's quality of life and result in physical, social, psychological, sexual and economic problems [13]. Knowledge

of risk factors of UVP is very important to prevent or reduce the incidence of UVP and related complications.

Literature regarding the prevalence and associated risk factors of UVP in Ethiopia is very limited. Therefore, this study investigated the prevalence and determinants of UVP in women admitted to Addis Ababa city governmental hospitals.

## **Methods**

### **Study setting and study population**

Institution based cross-sectional study was conducted retrospectively at Addis Ababa city governmental hospitals: Gandhi memorial hospital, St Paul's hospital and TikurAnbessa specialized hospital. These hospitals are selected purposively from 11 governmental hospitals in Addis Ababa. The selected hospitals are tertiary referral & teaching hospitals and have high patient flow. This study was conducted from April to July 2019 G.C. During the study period 3,949 women were admitted in the gynecology wards of the selected hospitals. The sample size calculated using a single population proportion formula was 400 and study subjects' records were selected by random sampling method. All women whose medical information was entered into the registry book of the gynecology wards of the respective study hospitals were included. Women with incomplete records and women whose medical record charts were lost from the medical record charts archive of the hospitals were excluded from the study.

### **Data collection**

Data was collected by using a well-structured, self-prepared & pretested checklist. Data in the check list included were: age, ethnicity, parity, occupation, menopause, place of deliveries, mode of deliveries, age at first delivery and level of education of women.

Nine nurses were assigned to collect the data from medical record charts and three health officers have supervised the data collectors in the process of data collections. Necessary supervision was undertaken by the principal investigator during the entire data collection period.

To ensure good quality data, training of data collectors, pre-testing of the check list and continuous supervision of the data collection process were carried out.

### **Definition of outcome variables and statistical analysis**

In this study, UVP was defined as a diagnosis of admission entered into the study subject's medical record chart and recorded in the admission registry book of gynecology wards of the study hospitals. The check lists were checked after each data collection for completeness. The data was entered into EPI data manager version 4.4 and analyzed by using SPSS Statistics version 24. The results were summarized in the form of proportions and frequency tables for categorical variables. Continuous variables were summarized by using means and standard deviations. Bivariate and multivariate logistic regression

analyses were carried out to determine the relationship between dependent and independent variables. A p-value of < 0.05 was considered as statistically significant.

## Results

### Prevalence of utero-vaginal prolapse

Within the study period, 3,949 patients were admitted at the gynecology wards of the study hospitals, from which 400 study participants were selected. Out of these, 51 patients were diagnosed as cases of UVP, making a prevalence of 12.8 % among the total gynecologic admissions in the study hospitals during the study period.

### Socio-demographic Characteristics

Table1. Socio-demographic characteristics of respondents, (n = 400)

Characteristics(n=400)	Frequency	Percent
<b>Age group in years</b>	32	8.0 %
<30	65	16.3 %
30-39	83	20.8 %
40-50	220	55.0 %
>50	400	100%
Total		

<b>Ethnicity</b>	125	31.3 %
Amhara	147	36.8 %
Oromo	59	14.8 %
Gurage	29	7.3%
Silte	40	10.1%
Others	400	100 %
Total	188	47.0 %
<b>Religion</b>	133	33.3 %
Orthodox	76	19.0 %
Muslim	3	0.8 %
Protestant	400	100 %
Others	254	63.3 %
Total	31	7.75 %
<b>Educational status</b>	55	13.75 %
Cannot read and write	37	9.25 %
Can read and write	10	2.5 %
Primary school	13	3.3 %
High school	400	100 %
College and above	201	50.3 %
Missing data	93	23.3 %
Total	42	10.5 %
<b>Occupational status</b>	11	2.8 %
Housewife	53	13.25 %
Farming	400	100 %
Merchant		
Labor work		
Others		
Total		

Mean age of respondents was 51.34±12.96 years with the range of 18-81 years. Majority (75.8 %) of respondents were over 40 years and only four respondents (1.0 %) were 80 and above years of age.

Majority (63.5 %) of the study participants were unable to read & write while only 47 (11.75%) were high school or college/university graduates. Half (50.3%) of the respondents were housewife and 23.3 % of the respondent's occupation is farming (table 1).

Table 2: Obstetric characteristics of study participants, (n = 400)

	Frequency	Percent
<b>Age at first delivery</b>	191	47.8 %
< 20	188	47.0 %
≥ 20	21	5.3 %
Missing data	400	100%
Total	16	4.0 %
<b>Parity</b>	137	34.25 %
0	218	54.5 %
1-4	29	7.25 %
5-9	400	100 %
≥10	289	72.3%
Total	93	23.3%
<b>Place of delivery</b>	18	4.5%
Home	400	100%
Health facility	355	88.8 %
Missing	28	7.0 %
Total	17	4.2 %
<b>Mode of delivery</b>	400	100 %
Virginally		
CS		
Missing data		
Total		

The mean parity of the respondents was  $5.53 \pm 2.85$ . Nearly half of the respondents (50.6 %) were pregnant for more than 6 times while only 16.3 % were pregnant for less than two times. The mean age of the respondents at first delivery was  $20.75 \pm 3.62$  years and nearly half of the respondents (47.8 %)

delivered their first child before the age of 20 years. Most (95.7 %) of the respondents were multiparous, 61.8 % of them being grand multipara and only 4.3 % were nullipara. (Table 2)

Most (72.3 %) of the respondents delivered at home and the vaginal route was the mode of delivery for most (88.8 %). Most (97.8 %) of the respondents were non-smokers and only 0.8 % have a history of smoking. Two hundred twenty (55%) of the total respondents were menopausal. (Figure 1)

Table 3: Disease characteristics of respondents with UVP, (n = 51)

Characteristics (n=51)	Frequency	Percent
<b>Degree of UVP</b>	2	3.9 %
First degree	6	11.7 %
Second degree	27	52.9 %
Third degree	16	31.5 %
Fourth degree	51	100 %
Total	10	19.6 %
<b>Duration of illness</b>	17	33.5%
<1 year	8	15.6 %
1-5years	16	31.3 %
6-9 years	51	100 %
≥10 years	12	23.5 %
Total	39	76.5 %
<b>Menopausal status</b>	51	100 %
Not in Menopause		
In Menopause		
Total		

Of the 51 participants with UVP, the majority (52.9 %) had third-degree, 31.5% fourth-degree, 11.7 % second degree and 3.9% first degree UVPs, respectively. Sixteen (31.3 %) of the women have had the illness for the last 10 or more years, with 3 (0.8 %) of them living with the condition for more than 20 years. Thirty-nine (76.5 %) of women with UVP were in menopause (Table 3).

Majority (52.9%) of the patients with UVP were from one ethnic group, Guragie. Ethnic Oromo, Amhara, Siltie and Tigre accounted for 15.7%, 13.7%, 11.8% and 3.9%, respectively, while 2.0% were from many other ethnicities. (Figure 2)

Table 4: Results of bivariate and multivariate analysis for the determinants of UVP, (n = 51)

		Bivariate analysis		Multivariate analysis
Independent variables	Frequency (percentage)	COR (95% C.I for COR)	P-value	AOR (95% C.I for AOR)
<b>Menopause</b>				
Pre-menopause	180(45 %)	1.00		1.00
Post-Menopause	220(55%)	3.017 (1.528, 5.956)	0.001	2.611 (1.531, 4.838)
<b>Age in years</b>				
≤30	32 (8.0 %)	1.00		1.00
31-40	65 (16.3%)	0.476(0.064, 3.545)	0.276	0.541 (0.103, 0.826)
41-50	83 (20.8 %)	1.610(1.032, 7.975)	0.000	2.024(1.372, 5.479)
>50	220 (55.0 %)	3.232(1.741, 14.093)	0.000	3.380 (1.719, 8.989)
<b>Parity</b>				
0	16 (4.0 %)	0.000	0.010	0.000
1-4	137 (34.3 %)	1.00		1.00
5-9	218 (54.5 %)	4.176(1.707, 10.215)	0.002	4.133 (1.461, 11.694)
≥10	29 (7.25 %)	11.491(3.747,35.242)	0.000	9.376 (2.905, 30.262)
<b>Place of delivery</b>				
Health institution	93 (23.3 %)	1.00		1.00
Home	289(72.3 %)	1.347(1.098, 6.097)	0.009	1.380 (1.212, 2.572)
<b>Mood of delivery</b>				
Cesarean Section	37(9.3 %)	1.00		1.00
Vaginally	346(86.5 %)	1.208(0.268, 5.450)	0.208	1.037(0.572, 3.456)
<b>Age at first delivery</b>				
≥20	188(47.0%)	1.00		1.00
<20	191(47.8%)	12.573(4.404,35.897)	0.000	7.988(2.682,23.792)
<b>Educational status</b>				
Literate	133(33.25%)	1.00		1.00
Illiterate	254(63.3%)	1.111(0.596,2.073)	0.412	1.359(0.653,2.825)

Among independent variables, menopause, age categories (31- 40, 41-50 and > 50), parity categories (5-9 and  $\geq 10$ ), place of delivery, mood of delivery, age at first delivery and educational level were analyzed first by using binary logistic regression to observe their association with UVP. Variables which showed significant association with UVP, (a P-value  $\leq 0.05$  with 95 % C.I), were menopause, age groups (41-50, and >50), parity groups (5-9, $\geq 10$ ), age at first delivery < 20 years old and home delivery.. Variables which showed significant association in binary logistic regression were entered to multiple logistic regression equation models.

Independent variables in the multiple logistic regression model were tested for their association with UVP. menopause, age groups 41-50, age of >50, parity 5-9, parity of  $\geq 10$ , age at first delivery < 20 years old and home delivery were significantly associated with UVP (a P-value  $\leq 0.05$  with 95 % C.I), whereas age group of 31-40, vaginal delivery and being illiterate were not significantly associated. Postmenopause women had two and half times higher risk (an odds ratio of 2.611 (at 95 % CI: 1.531, 4.838) of UVP than pre-menopause women. Women with age at first delivery of < 20 years have eight times higher risk (an OR = 7.988 (2.682, 23.792) of UVP than their counter parts.

Women with 5-9 deliveries and women with ten or more deliveries had higher risk of developing UVP than women with less than 4 deliveries (OR= 4.133 (at 95 % CI: 1.461, 11.694) and OR= 9.376 (at 95 % CI: 2.905, 30.262), respectively. Grand multiparous women have had an odds ratio of 4.686 (at 95 % CI 2.919, 8.443) interpreted as they had approximately 5 times higher risk of developing UVP compared to mothers who delivered less than five times.

Age group of 41-50 years have an odds ratio of 2.024 (at 95 % CI 1.372, 5.479), two times higher risk of developing UVP than age group of < 30years, and age of >50 years have an OR of 3.380 (at 95 % CI 1.719, 8.989), which means mothers with the age of 50 years or more have four times higher risk of developing UVP than mothers with in the age of < 30 years. (Table 4)

## Discussion

The prevalence of UVP (12.8%) in this study is comparable with a study in Nepal which reported a prevalence of UVP 13.7% [14], A Women's Health Initiative Hormone Replacement Therapy Clinical Trial in the United States, reported a prevalence of 14.2% [5]. Other similar studies in India [4] and in Ghana [15] reported prevalence of 10% and 12.07%, respectively.. However, much higher prevalence, a prevalence of 19.9 % and 17.2% were documented in other parts of the country, in Gondar and Gandhi memorial hospitals[8]. A study in 16 low-income and lower-middle-income countries revealed that the mean prevalence of UVP was 19.7% which is higher than our finding [7]. Conversely, the observed prevalence in our study was greater than those reported by investigations conducted in Dabat district, North West Ethiopia (a prevalence of 6.3 %) [16], in France (8.5%) [2] And in Egypt (7.9 %) [17]. This discrepancy may have been due to the cultural differences among the study subjects, the type of population studied, the difference in the level of education of study subjects, the attitude of people towards illness and the disease, and the influence of health facilities available in the different study areas.

Our findings reveal that women within the age group of 41-50 years had two times higher risk of developing UVP, compared to the age group of < 30 years. Women who were 50 years of age or more had three times higher risk of developing UVP compared to those women in the age group of < 30 years old. However, a study conducted in Bench Maji Zone, Ethiopia, reported that women in the age groups of 41-50 years had eleven times and those above 50 years had 35 times higher risk of developing UVP compared to those who were less than 30 years of age [18]. These observed differences in risks of developing UVP could have resulted from difference in population studied, economic and sociocultural differences of the study population.

In this study, multipara women (parity  $\geq 4$ ) and age of women > 40 years, respectively, were four & two times more likely to have UVP. This finding is consistent with a documented data of a study carried out in Bahir Dar, Northwest Ethiopia, which reported a risk of developing UVP that was 4.5 times and 3 times higher for parity  $\geq 4$  and for women aged > 40 years, respectively [19].

It was also observed that the majority (54.9 %) of women with UVP were from Gurage Zone of SNNP region of Ethiopia, a community where making of Kocho (traditional diet in Gurage region, made from “enset”), which is a physically demanding job, is the sole responsibility of women. This burden of women may be related to this reproductive health problem of women.

Most commonly diagnosed type of UVP in this study was third degree (52.9 %), which was inline with a study done in Jimma University specialized hospital, Ethiopia which reported a 55.8 % diagnosis [20]. However, other studies conducted outside of Ethiopia have reported varying types of UVP as most commonly diagnosed. For example, studies conducted in India 80.8 % of study participants with UVP had fourth degree [4], in Nigeria 83.3 % were second degree [19], and in Ghana 33.3 % were second degree [15]. This variability's might have been due to differences in awareness towards UVP and differences in accessibility of health care facilities.

Resultant weakness in pelvic floor muscles and atrophy of pelvic tissues occurs during the menopause due to the hypo estrogenic state that causes significant damage to the pelvic support system resulting in UVP (9, 10). The findings of this study confirm this, as the mean age of the patients in this investigation was 51.37 years with most of the patients being post-menopausal.

## **Conclusion**

The prevalence of utero-vaginal prolapse was high in Addis Ababa city governmental hospitals. The leading determinants of UVP were being in menopause, having > 4 deliveries, age > 40 years, age at first delivery < 20 years old and home delivery.

## **Recommendation**

Efforts have to be made to avoid the first delivery before the age of 20 years, to increase health facility delivery and to reduce the number of births a woman should have in her life time.

# Declarations

## Ethics approval and consent to participate

The study was conducted after ethical clearance was obtained from Human Anatomy department's Departmental Research Ethics Review Committee (DRERC), and the Institutional Review Board (IRB) of the Addis Ababa University, Ethiopia. Letter of ethical clearance as well as a letter of cooperation was sent for the study hospitals to undertake the data collection.

## Consent to participate:

Informed consent was obtained from all subjects. Individual patient or group of patients have never been identified in any way. Therefore, the confidentiality of the patient/data was maintained at all levels.

We confirm that all methods were carried out in accordance with relevant guidelines and regulations of the journal.

**Consent for publication:** Not applicable

## Availability of data and materials

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

## Competing interests

The authors declare that they have no financial or non-financial competing interests.

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This study was not funded by any agency.

## Authors' contributions

ZM: Developed proposal and data collection sheet, collected data, analyzed it and wrote the draft of the manuscript. AM and GS: conceived the study, supervised the entire research, including the data collection and reviewed the draft of the manuscript. GS is the corresponding author. All the authors read and approved the final version of the manuscript.

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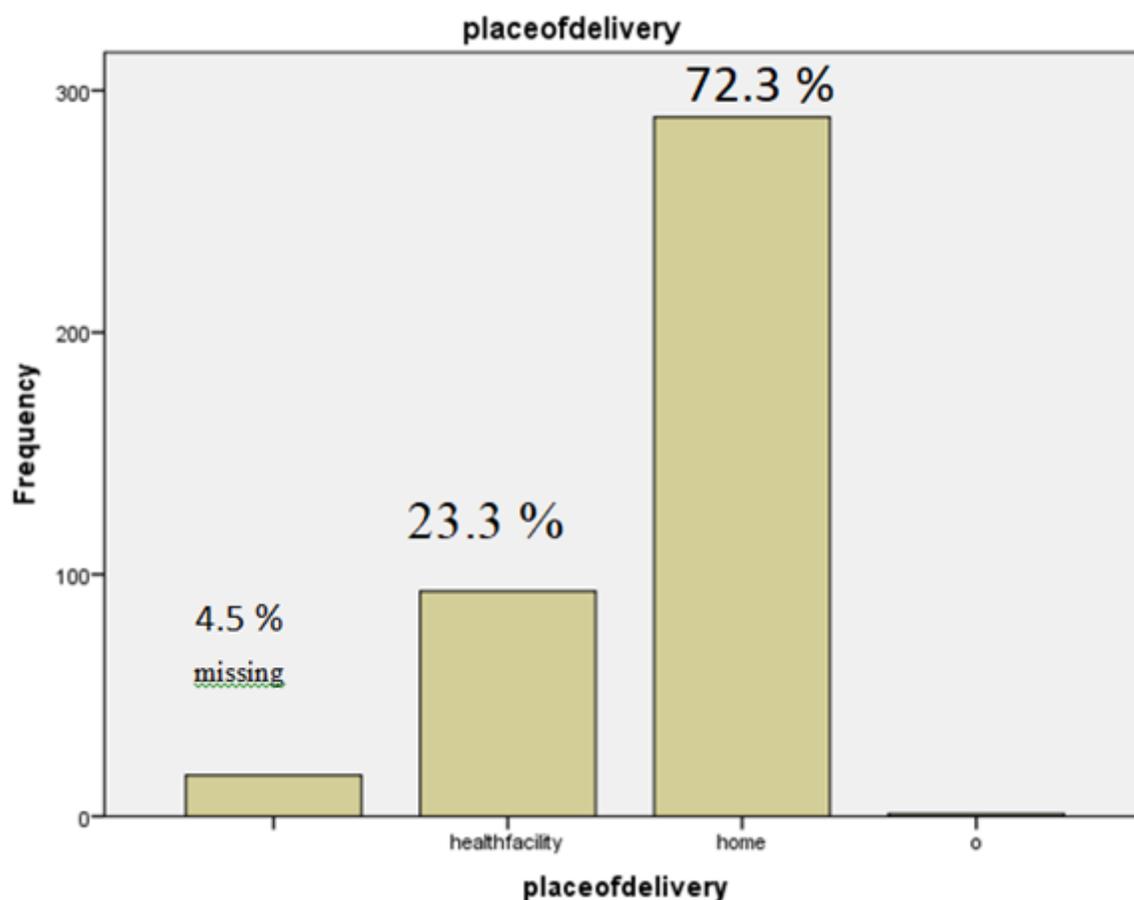
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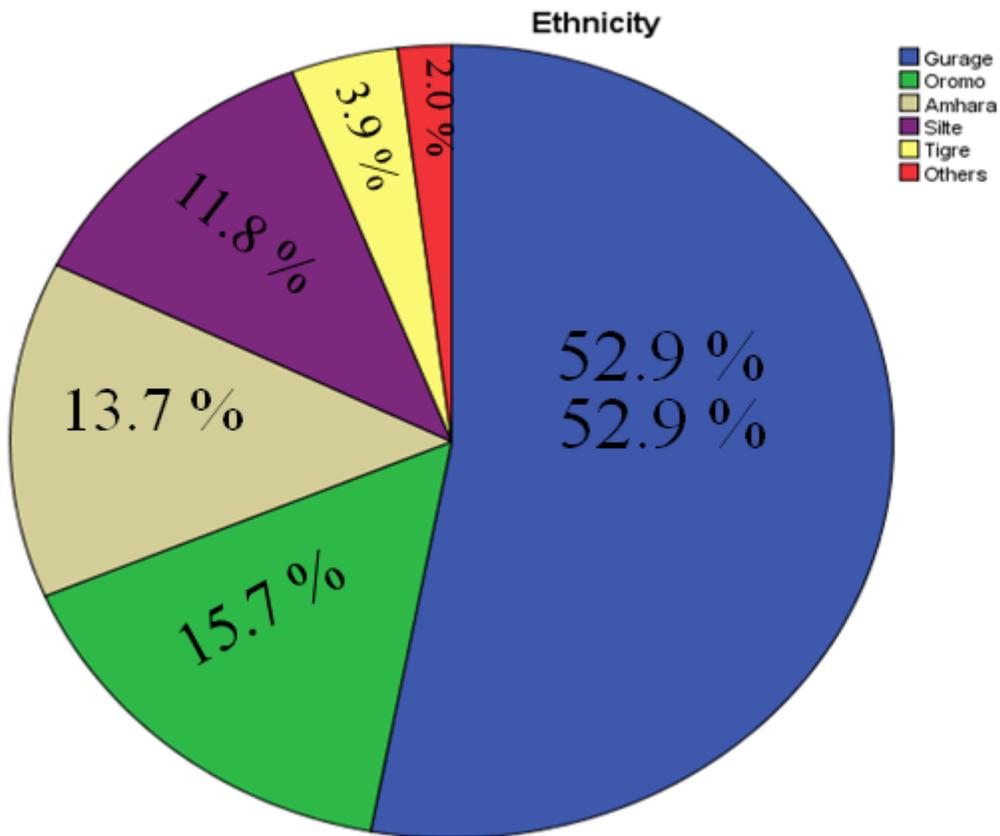
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## Figures



**Figure 1**

Place of delivery of women admitted in gynecology wards of governmental hospitals in Addis Ababa, Ethiopia.



**Figure 2**

Ethnicity of women with uterovaginal prolapse admitted in the gynecology ward of Addis Ababa city governmental hospitals, Ethiopia.