

# Global Research in Gynecology and Obstetrics

## Research Article

### Prevalence and Associated Factors of Utero-Vaginal Prolapse at Governmental Hospitals in Addis Ababa, Ethiopia: A Cross-Sectional Study

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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 uterovaginal prolapse. The mean prevalence of pelvic organ prolapse in developing countries is 19.7%. The prevalence of utero vaginal prolapse among all gynecological operations in Ethiopia is 18.55%. Uterovaginal prolapse is a source of severe morbidity and psychological upheaval to the patient. It negatively affects socioeconomic and reproductive activity of affected women.

**Methodology:** institution based cross-sectional study was employed retrospectively in Addis Ababa city governmental hospitals by reviewing the medical chart of women admitted in gynecology ward for two years, from March 2017 to February 2019 G.C. A randomly selected 400 medical charts of women admitted in gynecology wards were included in the study. The data was entered to EpiData 4.4 and analyzed using SPSS version 24 statistical package. Bivariate and multivariate logistic regression were carried out.

**Result:** The prevalence of utero-vaginal prolapse is 12.8 % per total number of patients who admitted at gynecology ward of Addis Ababa city governmental hospitals. The determinants of utero-vaginal prolapse were menopause (AOR = 2.611), age > 40 years (AOR = 2.143), parity of >4 (AOR = 4.201), age at first delivery <20 years old (AOR = 7.988) and home delivery (AOR = 1.380).

**Conclusion:** the prevalence of uterovaginal prolapse in this study was high. The leading determinants were menopause, having >4 deliveries, age >40 years, age at first delivery <20 years old and home delivery.

**Key Words:** Utero-vaginal prolapse, Risk factors, Ethiopia

## Introduction

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 and connective tissue of the urogenital membrane [2].

According to simplified Pelvic Organ Prolapse Quantification (S-POPQ) staging system, there are five stages of utero-vaginal prolapse (0 through IV): Stage 0: No prolapse is demonstrated, Stage I: the most distal portion of the prolapse is >1 cm above the level of the hymen, Stage II: The most distal portion of the prolapse is <1 cm proximal to or distal to the plane of the hymen, Stage III: The most distal portion of the prolapse is >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 uterovaginal prolapse is different in different countries. The exact prevalence of uterovaginal prolapse is difficult to be determined because many women are asymptomatic, and many women feel shy or do not reveal the presence of uterovaginal prolapse due to the social reason [4].

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

In the United States of America, the prevalence of uterine prolapse is 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 uterovaginal prolapse has been reported to be 10% in Indian Women [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 is 18.55% of all major gynecological operations [8].

The etiology of uterovaginal prolapse 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 for the development of uterovaginal prolapse [1]. The collagen content of connective tissue supporting pelvic organs decreases in women after menopause. Changes in collagen or estrogen and 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 uterovaginal prolapse [9].

Prolonged labor at home before going to a health facility or conduct of labor by unskilled attendants are risks for uterine prolapse. 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 uterovaginal prolapse [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 do 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 prolapse 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]. Uterovaginal prolapse 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.

The prevalence and associated risk factors of UVP were not studied and documented enough yet in Ethiopia. so, this study investigated the prevalence and determinants of uterovaginal prolapse in women admitted to Addis Ababa city governmental hospitals.

## Materials and Methods

### Study setting and study population

Institution based cross-sectional study was conducted retrospectively at Gandhi memorial hospital, St Paul's hospital and Tikur Anbessa specialized hospital of Addis Ababa, Ethiopia. These hospitals are selected purposively from 11 governmental hospitals in Addis Ababa. The selected hospitals are teaching referrals, covers large catchment area, and high patient flow. The study was conducted from April to July 2019 G.C. During the study period 3,949 women were admitted in gynecology ward of selected hospitals. Among those, 400 women were selected randomly and included in this study. Sample size was estimated using a single population proportion formula, taking  $p = 18.55\%$  (which is obtained from a study conducted in Gondar hospital and Gandhi memorial hospital, Addis Ababa, Ethiopia) [8]. 4 % level of precision (d) with 95 % confidence interval. All women whose medical information was entered into the registry book of gynecology ward of the study hospitals during the study period were included under the study whereas Women with incomplete records and women whose medical charts are lost from the medical record archive of the hospitals were excluded from the study.

### Data collection

Data was collected by using a well-structured 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. Finally, based on the inclusion and exclusion criteria of the study, the medical record charts which had all the variables for the study was used.

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

To ensure good quality data, training of data collectors, pre-testing

of data collection instrument and continuous supervision were carried out.

### Data analysis

The data was 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 deviation. Bivariate and multivariate logistic regression analysis were carried out to distinguish the relationship between dependent and independent variables. A  $p$ -value  $< 0.05$  was considered as statistically significant.

### Ethics approval and consent to participate

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

### Role of the funding source

This study was funded by Addis Ababa University. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

## 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, the diagnosis of 51 cases was utero vaginal prolapse, making the prevalence of UVP 12.8 % among the total gynecologic admissions from the study hospitals during the study period.

### Socio-demographic Characteristics

Mean and standard deviation of the age of respondents was  $51.34 \pm 12.96$  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 illiterate 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 Agriculture (Table 1)

### Obstetrical characteristics of study participants

The mean parity of the respondents was 5.53 with the standard deviation of 2.85. Nearly half of the respondents (50.6 %) were

**Table 1: Socio-demographic characteristics of women admitted at gynecology ward of governmental hospitals of Addis Ababa, Ethiopia.**

Characteristics (n=400)	Frequency	Percent
<b>Age group in years</b>		
<30	32	8.00%
30-39	65	16.30%
40-50	83	20.80%
>50	220	55.00%
Total	400	100%
<b>Ethnicity</b>		
Amhara	125	31.30%
Oromo	147	36.80%
Gurage	59	14.80%
Total	331	82.60%
<b>Religion</b>		
Orthodox	188	47.00%
Muslim	133	33.30%
Protestant	76	19.00%
Others	3	0.80%
Total	400	100%
<b>Educational status</b>		
Illiterate	254	63.30%
Literate	133	33.30%
Missing	13	3.30%
Total	400	100%
<b>Occupational status</b>		
Housewife	201	50.30%
Agriculture	93	23.30%
Merchant	42	10.50%
Others	53	13.25%
Total	400	100%

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 with a standard deviation of 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 mothers was multiparous, 61.8 % of mothers being grand multipara and only 4.3 % were nullipara. Most (72.3 %) of the mothers delivered at home and the vaginal route was the mood 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 are menopausal. (Table 2)

### Staging of UVP according to S-POPQs and Duration of Illness of women with uterovaginal prolapse

Of the 51 patients with utero vaginal prolapse, the majority (52.9 %) had third-degree UVP, 31.5% fourth-degree, 11.7 % second degree and 3.9% first degree. Sixteen (31.3 %) of the women had had utero-vaginal prolapse 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 menopause. (Table 3)

### Bivariate and multivariate analysis for the determinants of utero-vaginal prolapse.

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 status of women were analyzed first by using binary logistic regression to observe their significance; variables which had a P-value  $\leq 0.2$  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 are considered as significant. Age group  $\leq 30$  and parity group 1-4 were references. Variables which were significant in binary logistic model were entered to multiple logistic regression equation model.

Independent variables in the multiple logistic regression model were tested for their significance with UVP; those variables with p-value  $\leq 0.05$  at 95 % C.I including; menopause, age groups 41-50, age of >50, parity 5-9, parity of mothers  $\geq 10$ , age at first delivery <20 years old and home delivery were considered as significant.

**Table 2: Obstetrical characteristics of women admitted at gynecology wards of governmental hospitals in Addis Ababa, Ethiopia**

Characteristics (n=400)	Frequency	Percent
<b>Age at first delivery</b>		
<20	191	47.80%
≥20	188	47.00%
Missing data	21	5.30%
Total	400	100%
<b>Parity</b>		
0-4	153	38.25%
9-May	218	54.50%
>10	29	7.25%
Total	400	100%
<b>Mood od Delivery</b>		
Virginally	355	88.80%
CS	28	7.00%
Total	383	95.80%

**Table 3: The staging of UVP according to S-POPQs and Duration of Illness of women with uterovaginal prolapse admitted at gynecology wards of governmental hospitals in Addis Ababa, Ethiopia.**

Characteristics (n=51)	Frequency	Percent
<b>Degree of UVP</b>		
First degree	2	3.90%
Second degree	6	11.70%
Third degree	27	52.90%
Fourth degree	16	31.50%
Total	51	100%
<b>Duration of illness</b>		
<1 year	10	19.60%
1-5years	17	33.50%
6-9 years	8	15.60%
>10 years	16	31.30%
Total	51	100%
<b>Menopausal status</b>		
Age of < 50 years	12	23.50%
Age of > 51 years	39	76.50%
Total	51	100%

Postmenopause women have an odds ratio of 2.611 (at 95 % CI: 1.531, 4.838) times higher risk of uterovaginal prolapse than pre-menopause women. Women with the age at first delivery of <20 years have an OR = 7.988(2.682, 23.792) times higher risk of UVP than their counter parts.

Women with 5-9 deliveries have OR= 4.133 (at 95 5 CI: 1.461, 11.694) and women with ten or more deliveries have OR= 9.376 (at 95 % CI: 2.905, 30.262) times higher risk of UVP than women with less than 4 deliveries. Grand multiparas' women (p≥5) have had an odds ratio of 4.686 (at 95 % CI 2.919, 8.443) times higher risk of developing uterovaginal prolapse compared with mothers 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) times higher risk of developing UVP than age group of <30years, and age of >50 years have an OR = 3.380 (at 95 % CI 1.719, 8.989), which means mothers with the age of 50 years or more are 3.38 times higher risk of developing utero vaginal prolapse than mothers with in the age of <30 years. (Table 4)

## Discussion

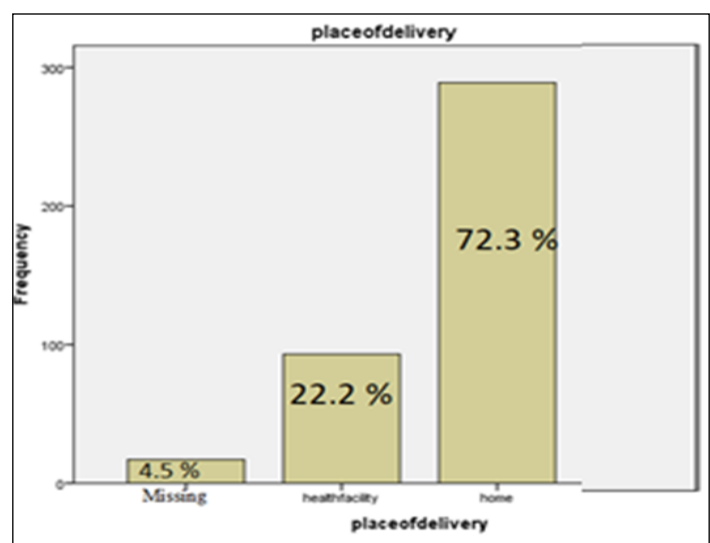
Based on this study on the prevalence and associated risk factors of utero-vaginal prolapse in Addis Ababa city governmental hospitals, the prevalence of utero vaginal prolapse of 12.8% from this study is comparable with a study in Nepal; which reported that the prevalence of UVP was 13.7% [14], in United States, in the Women's Health Initiative Hormone Replacement Therapy Clinical Trial reported that the prevalence of UVP was 14.2% [5], in India; reported an incidence of 10 % [4] and in Ghana, the prevalence of UVP prolapses was 12.07% [15]. But, lower than that of other earlier reports from other parts of the country, at Gonder utero vaginal prolapse accounted for 19.9 % while in Gandhi memorial hospital 17.2% [8] and in 16 low-income and lower-middle-income countries revealed that the mean incidence of UVP accounted 19.7% [7]. however, it was greater than the research done in Dabat district, North West Ethiopia showed that the prevalence of UVP was 6.3 % [16], in a study done in France reported an incidence of 8.5% [2] and in Egypt; revealed that the incidence of UVP was 7.9 % [17].

**Table 4: Results of bivariate and multivariate analysis for the determinants of utero-vaginal prolapse of women admitted at governmental hospitals in Addis Ababa, Ethiopia.**

Independent variables	Frequency (percentage)	Bivariate analysis		Multivariate analysis
		COR (95% C.I for COR)	P-value	AOR (95% C.I for AOR)
<b>Menopause</b>				
Pre-menopause	180(45 %)	1		1
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		1
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	2.024(1.372, 5.479)
>50	220 (55.0 %)	3.232(1.741, 14.093)	0	3.380 (1.719, 8.989)
<b>Parity</b>				
0	16 (4.0 %)	0	0.01	0
1-4	137 (34.3 %)	1		1
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	9.376 (2.905, 30.262)
<b>Place of delivery</b>				
Health institution	93 (23.3 %)	1		1
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		1
Vaginally	346(86.5 %)	1.208(0.268, 5.450)	0.208	1.037(0.572, 3.456)
<b>Age atfirst delivery</b>				
≥20	188(47.0%)	1		1
<20	191(47.8%)	12.573(4.404,35.897)	0	7.988(2.682,23.792)

Differences in prevalence among other studies may be due to cultural differences, type of population studied, ignorance due to lack of education, the attitude of people towards illness, and the influence of health facilities available.

In this review, women within the age group of 41-50 years have an odds ratio of 2.024 (at 95 % CI: 1.372, 5.479) times higher risk of developing UVP than age group of <30 years, and age of >50 years have an OR = 3.380 (at 95 % CI: 1.719, 8.989), which means women with the age of 50 years or more are 4 times higher risk of developing uterovaginal prolapse than women with the age of <30 years old, which is lower than the study done in Bench Maji Zone, Ethiopia which showed that age groups of 41-50 years have OR = 11.10(95% CI: 2.54, 48.49) and above 50 years (OR = 35.42: 95 % CI: 6.94, 180.85) as compared with those who were less than



**Figure 1: Place of delivery of women admitted in gynecology wards of governmental hospitals in Addis Ababa, Ethiopia.**

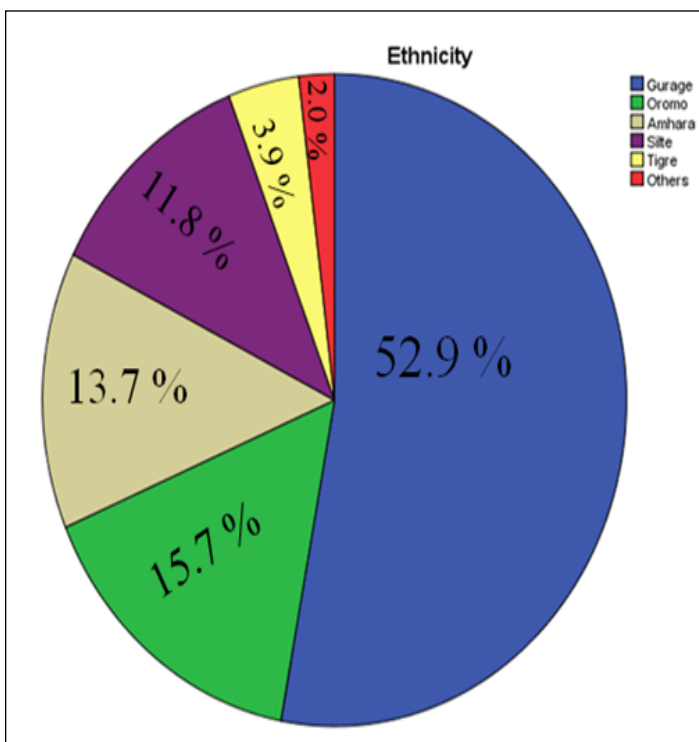


Figure 2: Ethnicity of women with uterovaginal prolapse admitted in the gynecology ward of Addis Ababa city governmental hospitals, Ethiopia.

30 years[18].

This association gap may be due to the difference in population studied, economic and sociocultural differences of the study population.

In this study, multipara women (parity  $\geq 4$ ) have an odds ratio of 4.201 (at 95 % CI 1.652, 10.685) and age of women  $>40$  years have an odds ratio of 2.143 (95 % CI: 1.496, 6.602) times more likely to have UVP compared with their counterparts. Which is consistent with a study done in Bahir Dar, Northwest Ethiopia, reported that parity ( $\geq 4$ ) OR = 4.5 (95 % CI: 2.26, 9.10), and age of women ( $>40$  years) OR = 3.0(95 % CI: 1.22, 7.82) [19].

In this study, from women who had uterovaginal prolapse, 31.3 % of the women had had the prolapse for the last 10 or more years, including 0.8 % (3/51) who had lived with the condition for more than 20 years. Which is lower than a study done in Amhara region, Ethiopia which revealed that approximately half of the women had had uterovaginal prolapse for the last 10 years or more, including

29 % who had lived with the condition for more than 20 years. Living with UVP for a long time without disclosing the problem is due to fear of social stigma and discrimination from the society and this resulted in them into an advanced stage of UVP and other complications [19].

The difference in duration of illness may also be more related to the type of population studied and due to inadequate sample size of those researchers.

In this review, the majority (54.9 %) of women with UVP were from Gurage Zone of SNNP region of Ethiopia and women in this community are more highly likely to involve in making Kocho (traditional diet in Gurage region, made from “enset”), which is a physically demanding job. This burden 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 goes in line with a study done in JUSH, Ethiopia revealed that 55.8 % of participants were diagnosed with third-degree UVP (24) and in contrast to studies done in India, 80.8 % of study participants with UVP were fourth degree [4], and in Nigeria, 83.3 % were second degree [19], and in Ghana, 33.3 % were second degree uterovaginal prolapse [15]. These differences might be due to the awareness gap towards uterovaginal prolapse and different accessibility of health facilities.

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

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