

# One in ten Women who visited Health Facilities for various Reason have Pelvic Organ Prolapse in Harari Regional State, Eastern Ethiopia

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## Research Article

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# Abstract

**Background:** Pelvic organ prolapse remains neglected a public health problem in developing countries. The burden of pelvic organ prolapse varies by region and ranges from 9% to 20%. It poses an impact on women's quality of life, and affect their role at community and family level. Although it has negative consequences and extensive burden, the true feature of pelvic organ prolapse is not well known among ever-married women attending health facility for various reason in the study area. Therefore, this study was aimed to assess the magnitude of pelvic organ prolapse and associated factors among ever-married women attending healthcare services in public Hospitals, Eastern Ethiopia.

**Methods:** A facility based cross-sectional study design was conducted from March 4<sup>th</sup> to April 5<sup>th</sup>, 2020 among 458 ever-married women attending public Hospitals in Ethiopia. The study participants were approached through face-to-face interview using standardized questionnaire. Data were analyzed using SPSS version 22 (IBM SPSS Statistics, 2013). The prevalence was reported by proportion and summary measures. Predictors were assessed using multivariable logistic regression analysis model and reported using adjusted odds ratio with 95% CI. Statistical significance was declared at p-value <0.05.

**Result:** Of 458 women enrolled in the study, 10.5% [95%CI (7.6, 13.5)] of them had pelvic organ prolapse based on women's reporting of symptoms. History of lifting heavy objects [AOR=3.22, 95%CI (1.56, 6.67)], history of chronic cough [AOR=2.51, 95%CI (1.18, 5.31)], maternal age of greater than and equal to 55 years [AOR=3.51, 95% CI(1.04, 11.76)], history chronic constipation (AOR=3.77, 95%CI(1.54, 9.22) and no history of contraceptive utilization [AOR= 2.41, 95%CI (1.13, 5.05)] were significantly associated with pelvic organ prolapse.

**Conclusion:** In this study, one in ten women suffer from pelvic organ prolapse. Modifiable and non-modifiable risk factor were identified as a predictor. This result provides a cue to give due consideration on primary and secondary prevention through various techniques.

## Introduction

Pelvic organ prolapse (POP) remains a public health challenge in developing world [1]. POP affects around 9% of women worldwide [2]. The prevalence of POP varies by region and methods of assessment. The prevalence ranges from 12–65% [3, 4]. Multiparity [5, 6], advanced maternal age[7], prolonged labor[8, 9], lifting of heavy objects[4, 10] and obesity[11] are identified as a risk factors for POP.

In developing countries like Ethiopia the situation is far worse [12, 13], especially in a setting where high fertility rate of more than 4.6 is reported [14]. In addition, the trends with early marriage soon after followed by early childbearing that leads many vaginal deliveries for her life time and home delivery contributed to more than 80% of the problem [15] and frequent heavy lifting related to socioeconomic role of women make the problem unbearable[11]. The lifetime risk of surgery for POP in the general female population is about 19–20% [16, 17]. In addition, POP become one of the three major indication for hysterectomy, which account for about 23%[18]. In Ethiopia, one in five women suffer from pelvic floor

disorder, of which 9.5% is attributed to POP[19] and about 15–40.7% of major gynecologic operations are due to POP [20, 21].

Furthermore, POP has been affecting women's health and quality of life alarmingly [22–24]. In Africa, large number of women with pelvic organ prolapse and obstetric fistula delayed in seeking medical treatment because of the fear of disclosing the problem due to social stigma [25, 26], and more than 67.7% of women with advanced POP had symptoms of depression and mental dysfunction [27, 28]. In Ethiopian government has not yet developed and enrolled POP as one of maternal health indicator on demographic and health survey of the country that will help to put a separate strategy to prevent and manage POP in health sectors. Although rare studies have identified with different study type, still there is scarcity of locally generated evidence regarding magnitude and risk factors of POP in Eastern Ethiopia. Therefore, this study was aimed to assess the magnitude of POP and associated factors among ever-married women attending healthcare services in public hospitals of Eastern Ethiopia.

## Methods

### Study setting, period and design

A facility-based cross-sectional study was employed in two public hospitals (Hiwot Fana Specialized University hospital and Jugal hospital) found in Harar town, Eastern Ethiopia from March 4<sup>th</sup> to April 5<sup>th</sup>, 2020. Harar town is the capital city of Harari regional state, which is located 526km away from the capital city of Ethiopia, Addis Ababa. According to the 2007 census conducted by the Central Statistics Agency (CSA) in Ethiopia, the total population of the town is 183,415 where 92,316 males and 91, 099 females. In the town, there are 45 health facilities (34 health posts, 8 health centers, 5 hospitals and Family guidance Association). Among these five hospitals, there are 45 health facilities (34 health posts, 8 health centers, and 5 hospitals). Among the five hospitals found in the town, only two of them are giving service as public hospitals. This study was conducted in two public hospitals, where different and multidimensional health care services are being provided to the patient [29].

### Population, Eligibility criteria and Sampling procedures

All ever-married women attending healthcare services in public hospitals of Harari Regional State were considered as source population. Ever-married women who came for healthcare services at Family planning unit, Adult outpatient Department (OPD), Gynecologic OPD and Expanded Program of Immunization (EPI) unit were considered for enrollment. Thus, all eligible ever-married women attending healthcare services during the data collection period were studied. Women with the following preconditions (pregnant women, critically ill women and women with mental problems) were excluded from the study. The sample size was calculated using double population proportion formula by considering prolonged labor as an exposure variable[30] with the following assumptions. Proportion of outcome among unexposed (had no history of prolonged labor)(P= 50.7%), proportion of outcome

among exposed (had history of prolonged labor) ( $P= 64.7\%$ ), 95% confidence level, 80% power. Adding 5% contingency for non-response rate, finally 460 study participants were obtained.

Two public hospitals (Jugal Regional Hospital (JRH) and Hiwot Fana Specialized University Hospital (HFSUH)) from Harari Region were selected as the study site. The total sample size ( $n=460$ ) was proportionally allocated to both hospitals. Accordingly, 216 samples were allocated to Jugal Regional Hospital and 244 were allocated to Hiwot Fana Specialized University hospital. Finally, the data were collected from eligible participants until the required sample size was achieved.

## Data collection Tools and Procedures

Data were collected using structured interviewer administered questionnaires. First, the questionnaires were prepared in English language and translated into local languages (Afan Oromo and Amharic) by bilingual expert. Then, they were translated back in to English version to check for consistency. These structured questionnaires have different parts: Socio demographic characteristics, obstetric and gynecologic history, medical history and Pelvic Organ Prolapse Simple Screening Inventory questionnaires. The questionnaires were extracted and adopted from different literatures [13, 19]. Data were collected by six (6) female Bachelor of Science (BSc) nurse professionals who had previous data collection experiences. Two (2) supervisors (BSc public health professionals) were selected to supervise the data collectors and data collection process. The data collectors interviewed the participants after they fully decided to enroll in to the study. The interview was conducted at separated area during waiting time and exit time to assure the privacy. Screening for privacy was assured.

## Study variables and measurement

In this study, the dependent variable was Pelvic Organ Prolapse (POP). This outcome variable was dichotomized based on the symptoms of women's report. Accordingly, when a woman's answer was "Yes" for the question (Do you feel or see a bulge in the vagina or that something is falling out from your vagina?) Plus at least one of the three Pelvic Organ Prolapse simple screening inventory (POPSSI) [13] questions such as: (Do you experience urinary incontinence with laughing, sneezing or coughing?), (Do you experience urinary urgency?) and, (Do you feel pain during defecation?) [13, 31], the woman has genital prolapse and if the woman's answer was "No" for the above questions (Do you feel or see a bulge in the vagina? and, for the rest three POPSSI questions), the woman has no genital prolapse.

The explanatory variables were: Socio-demographic characteristics (age, religion, ethnicity, marital status, residence, educational status and occupation). Reproductive history related variables (age at first marriage, history of using family planning, menopause). Obstetric and gynecologic history factors (Number of pregnancy (gravidity), history of abortion, number of child birth (parity), mode of delivery at first child birth, ever had vaginal delivery, place of delivery, prolonged labor, time since last birth, family

history of POP). Medical history related variables (history of chronic cough, chronic constipation, and maternal obesity).

## Measurements

Mother with pelvic organ prolapse (POP): Pelvic organ prolapse, or genital prolapse, is the descent from or through the vaginal opening of one or more pelvic structures from the normal anatomy. The pelvic structure include the vagina, uterus, bladder, urethra, and rectum[6, 32].

In this study, the outcome variable (POP) was assessed based on women's report of symptoms related to genital prolapse. These symptoms explored by asking, "Do you have a sensation that there is a bulge in your vagina or that something is falling out from your vagina?"[19], and by asking more questions using three Pelvic Organ Prolapse simple screening inventory(POPSSI)[13] questions such as: ("Do you experience urinary incontinence with laughing, sneezing or coughing?"), ("Do you experience urinary urgency?") and, ("Do you feel pain during defecation?") [13, 31]. Accordingly, if the women responded "Yes" for the above questions, they were categorized as "have POP" and if their responses were "No", the they were categorized as " have no POP".

## Data quality control

Before the actual data collection performed, pretested was conducted on 23 samples (5% of the total sample size) of the questionnaire. The original questionnaire was prepared in English language and later translated into the local languages (Amharic and Afan Oromo) for the purpose of data collection. Finally, they were translated back to English version. Moreover, the data collectors along with the supervisors were trained for two days regarding purpose of the study, data collection procedures and data handling techniques. A close supervision of the data collectors was made on daily basis. The collected data were checked by supervisors and principal investigator for completeness, and consistency. Double data entry was done by two independent data clerks, and the consistency of the entered data was cross-checked. Simple frequencies were run to check any missing values and outliers and crosschecked with hard copies of the collected data before analysis.

## Data processing and analysis

The collected data were coded, cleaned and entered in to Epi-data version 3.1, and exported to SPSS version 22 (IBM SPSS Statistics, 2013) for further analysis. Descriptive analysis was done using frequency tables, proportion with 95% CI and summary measures. Bivariable logistic regression analysis was carried out to select candidate variables for multivariable analysis and those variables with p-value less than 0.25 were considered for final model of multivariable analysis based on the assumption of selection criteria[33]. The multivariable analysis was performed to identify the true effects of the selected

predictor variables on Pelvic Organ Prolapse. Multi-collinearity was checked using variance inflation factor (VIF) and tolerance, and no collinearity effect was detected. The model adequacy was checked using Hosmer-Lemeshow goodness of fitness test and the result was found to be insignificant ( $p = 0.677$ ) which indicates the model was fitted. Finally, the strength of associations between the outcome variable and predictor variables was assessed using Adjusted Odds Ratio (AOR) with 95% Confidence Intervals (95%CI), and the significance of the association was declared at p-value of less than 0.05.

## **Ethical considerations**

Ethical clearance was obtained from Institutional Health Research Ethical Review Committee (IHRERC) of College of Health and Medical Sciences, Haramaya University. A permission letters that obtained from school of graduate studies were submitted to Hiwo Fana Specialized University hospital and Jugal Hospital. Informed, voluntary, written and signed consent was also obtained from each study participants after explaining the purpose of the study. The study participants were clearly informed about their full right to withdraw from the study at any time. They were also informed that there would be no harm or direct benefit of being participating in this study. All the information from the respondents was kept confidential.

## **Results**

### **Socio-demographic characteristics of the study participants**

A total of 458 participants were enrolled in the study with a response rate of 99.5%. The mean age of the mothers was 36.3years (SD= $\pm$ 14.6) ranged from 15 to 69 years. More than half, 257(56.1%) of the participants were Muslim. Nearly one-fourth of the study participants (22.9%) were not attended formal education and one-fourth of the women, 117(25.5%) were government employees. The majority of women, 301(65.7%) were from urban setting (Table 1).

### **Obstetric/gynecologic history related characteristics**

Among 458 ever-married women enrolled in the study, a vast majority, 375(81.9%) had a history of previous pregnancy, and one-hundred-four (27.7%) of them had a history of abortion, and around 368(98.1%) of women had a history of childbirth. More than half, 220(59.8) of the participants were primiparous. Of 368 women who had history of childbirth, a vast majority, 326(88.6%) of them had vaginal delivery for the first childbirth. Nearly half of the study participants (44.0%) had a history of home delivery, and around 88 (23.9%) of them had a history of prolonged labor (Table 2).

### **Reproductive health and medical history related characteristics**

Of 458 the women enrolled in the study, around two-thirds (81.4%) of them were currently married, and more than half, 253(55.2%) of the women got first married at the age less than 18 years. About 74(16.2%) of the participants had a history of married more than once. Concerning family planning services, more than one-fourth (26.6%) of the women had no history of family planning utilization. Of 458 participants enrolled in the study, around 72(15.7%) of them had history of chronic cough, and 40(8.7%) of them had a history of chronic constipation (Table 3).

## Magnitude of pelvic organ prolapse

Overall, the proportion of Pelvic Organ Prolapse was 48(10.5%) [95% CI (7.6, 13.5)] based on the women's reporting of symptoms. Moreover, 48(10.5%) women reported that they had felt or seen a bulge in the vagina, around 26(5.7%) attributed to sneezing or coughing followed by urinary incontinence with laughing and urinary urgency 22(4.8%), and pain during defecation 21(4.6%).

## Factors associated with pelvic organ prolapse

In the bivariable logistic regression, women's age  $\geq 55$ , place of residence, lifting heavy objects, maternal parity, history of prolonged labour, and family history of pelvic organ prolapse, history of contraceptive utilization, history chronic cough and chronic constipation were significantly associated with POP. Based on the assumption of selection criteria, all variables with a p-value of  $< 0.25$  [33] in bivariate analysis were included in the final model of multivariable analysis. However, two variables (maternal parity and history of prolonged labor) were omitted from the final model of multivariable analysis because of small sample (n=368) comparing to other predictors (n=458), and the assumption of multiple logistic regression considered only those variables with full sample size (Table 4).

In final model of multivariable analysis, variables such as women's age  $\geq 55$ , lifting heavy objects, history of contraceptive utilization, history chronic cough and chronic constipation were remained statistically significantly associated with POP. Accordingly, the likelihood of POP was 3.5 times higher among women aged greater or equal to 55 years compared to women whose age was 25 to 34 years [AOR=3.51, 95%CI(1.04, 11.76)]. Women who had history of lifting heavy objects were 3.2 times more likely to encounter POP compared to women who had no history of lifting heavy objects [AOR=3.22, 95% CI(1.56, 6.67)]. Likewise, the odds of having POP was 2.4 times higher in women who had no history of contraceptive utilization compared to their counterpart (contraceptive users) [AOR= 2.40, 95%CI(1.13, 5.31)]. In addition, the likelihood of encountering POP was 2.5 times higher in women who had a history of chronic cough comparing to their counterpart [AOR= 2.51, 95%CI(1.18, 5.31)]. Similarly, the odds of POP was nearly four times higher among women reporting a history of chronic constipation than those who had no chronic constipation [AOR= 3.77, 1.54, 9.22]] (Table 5).

## Discussion

In this study, the overall prevalence of POP was 10.5%. In other words, one in ten women had pelvic organ prolapse in Eastern Ethiopia. This current proportion of POP is nearly comparable to previous research reports from Eastern Ethiopia (9.5%) [19], Benchi Maji Zone of Southern Ethiopia (13.3%) [29], Ghana (12.1%) [34], Tanzania (14.4%) [35], China (9.10%) [36], and North Carolina (12.6%) [17]. However, the proportion of Pelvic Organ Prolapse reported in this study was higher compared to previous studies done in different parts of the world like 6.3% in Gondar, Northwest Ethiopia [30], 3.6% in France [37], and 5.4% in Nigeria [38], and 1.4% in Sokoto [8]. The possible justification for this discrepancy might be due to socio-demographic characteristics of the study populations. In Eastern Ethiopia, women are more engaged in heavy workload such as carrying Khat and other cash crops to the market because of socio-economic and cultural characteristics of the Eastern part of the country. Moreover, health service accessibility and exposure to information regarding healthcare services might be lower in the former study population because the majority of current study participants were from marginalized rural women of Eastern Ethiopia.

In contrast, the result of this study is encouraging as the current prevalence of POP is comparatively lower than the previous studies reports like in Ethiopia (46.7%) [39], Arab United Emirates (29.6%) [40], South Africa (57%) [24], and Tanzania (64.4%) [4]. The possible justification for this differences can be explained by the time gap between study periods, geographical setting of the study population, and difference in the sample size of the study. In addition, the difference in estimates might be attributed to the tool utilized to determine women with POP in case of Dabat district, Ethiopia and Tanzania were home-based questionnaire interviews, and the women were subsequently invited to the nearest health clinic for pelvic examination. Another possible explanation might be because currently the government is increasing the number of health extension workers in the rural community and introduced community health insurance program, which is motivating communities towards health services utilization, and the women accessed to the healthcare before the problem is getting worse.

In the final model of multivariable analysis, the odds of POP was more than three times higher among women aged 55 and above compared to women aged 25 to 34 years. This is comparable with the finding of previous study conducted in Baherdar, Ethiopia [41], Uganda [42], and Nepal [43]. The justification for this is because the risks of Pelvic Organ Prolapse increases with advanced maternal age and, this is because as women's age getting advance, the pelvic floor muscles become weaken to support pelvic organs, which may leads to utero-vaginal prolapse. However, this result is inconsistent with study conducted in Bench Maji Zone in which age group 31-40 years and 41-50 years were also risk for pelvic organ prolapse [29]. This inconsistency might be because of socio-economic factors of the study participant such as nutritional status.

In this study, lifting heavy objectives was found to be an independent predictor of POP. Women who had a history of lifting heavy objects were 3.2 times more likely to encounter pelvic organ prolapse than those with no history of lifting heavy load. This is supported by studies done in Dabat district [30] and Bahir-dar [41], Ethiopia. It is also consistent with previous studies report from Tanzania [4], Australia [35], Addis Ababa, Ethiopia [13]. The possible explanation for this might be due to the fact that lifting heavy object

may increase intra-abdominal pressure and causes damage to the pelvic floor muscles. This can weaken the muscles responsible for supporting the pelvic organs because of pressure effect from hanging down[44]. In addition, pelvic floor muscles that support the pelvic organs become stretched, damaged or weakened, causing the organs they support to drop downward.

In addition, history of chronic cough was another factor independently associated with POP. The odds of POP was 2.5 times higher in women with history of chronic cough compared to their counterpart. This result is in line with studies conducted in Jimma Ethiopia[20], Nigeria[9], United Arab Emirates[40], and China[36]. The possible explanation could be justified by women who have chronic cough are at risk of genital prolapse because of long-term effect of chronic cough that increases intra-abdominal pressure. Likewise, having a history of chronic constipation is also independently associated with POP. The odds of pelvic organ prolapse was nearly four times higher among women reporting a history of chronic constipation than those who had no chronic constipation. This finding is also supported by studies conducted by Forner et al, Australia[35], Akmel et al, Ethiopia[20], Elege et al, Nigeria[9], and Li et al, China[36]. This is because chronic straining with bowel movements due to constipation can increase risk of utero-vaginal prolapse.

Furthermore, in this study, women who had no a history of contraceptive utilization were more likely to encounter Pelvic Organ Prolapse compared to those who utilized the services. The possible justification for this might be because using contraception can reduce short birth interval and multiple childbirth, which may increase the risks of Pelvic Organ Prolapse.

Furthermore, although we did not report in the final model of multivariable analysis, multiparity and prolonged labour were factors independently associated with POP in bivariable analysis. These are also reported in multivariable analysis of previous literatures conducted elsewhere [8, 39, 45]. This might be because labor by itself can cause a damage to the pelvic floor muscle, especially during second stage of labor when fetal head places the pelvic floor muscles under considerable stretch and when it is prolonged, the damage is extent[44]. Similarly, with multiple vaginal deliveries, the muscles and ligaments around the uterus can be weaken, and so that they can no longer support the weight of uterus.

## **Strengths And Limitations**

Using validated data collection tools is the strength for this study. Limitations: Since the cross-sectional survey, the real causal association could have not be determined. The study was conducted only among women who visited public hospitals; women who attended private health facilities were not enrolled. Since we have not done pelvic examinations, classification of types of pelvic organ prolapse was ascertained.

## **Conclusion**

The study revealed that one in ten women suffer from pelvic organ prolapse in Eastern Ethiopia. This finding shows how staggering number of women suffering from pelvic organ prolapse. Women's age greater than and equal to 55 years, history of lifting heavy objects, having history of chronic cough and chronic constipation were independent predictors of POP. Therefore, efforts are needed to emphasize on the prevention and treatment of chronic medical conditions like chronic and chronic constipation. Healthcare providers should give due attention to women exposed to heavy workload especially those in advanced age. Further studies with pelvic examination using POP-Q staging to know the true effects of contributing factors to POP are also needed.

## **Abbreviations**

ACOG: American College of Obstetricians and Gynecologists; CSA: Central Statistics Agency; POP: Pelvic Organ Prolapse; HFSUH: Hiwot Fana Specialized University Hospital, ICS: International Continence Society; POP-Q: Pelvic organ prolapse-quantification; POPSSI: Pelvic organ prolapse simple screening inventory; SPSS: Statistical Package for Social Science; WHO: World Health Organization

## **Declarations**

## **Ethics approval and consent to participate**

Ethical clearance was secured from Haramaya University, College of Health and Medical Sciences, Institutional Health Research Ethics Review Committee (IHRERC). Informed, voluntary, written and signed consent was obtained from hospital administrators before the data collection. Prior to the data collection informed, voluntary, written and signed consent was obtained from each respondent and participant's parent/legally authorized representative of minor participants. The information sheet was offered and study title, objective, procedure, risk and benefit was clearly explained for participants and finally the respondent's confidentiality was maintained and assured. They were informed well that they have full right to totally refuse to participate and/or with draw from the study at any time, anonymity was maintained by using the identified number instead of the patient's names. Besides, all data extracted were kept confidential and not used for any other purpose than the stated objective and all methods were carried out per ethical guidelines.

## **Consent to publication**

Non-applicable

## **Availability of data and materials**

The data set generated or analyzed during the current study are not publicly available due to the privacy of the participants and institution restriction but are available from the corresponding author on

reasonable request.

## Conflict of interest

There is no conflict of interest

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This study was funded by Jigjiga University. The funding organizations had no role in the study design, data collection, data analysis and writing up of the manuscript.

## Contribution of author

Dawit Abebe, the corresponding author, worked on designing the study, trained, and supervised the data collectors, checked the completeness of collected data, entered, analyzed, and interpreted the result, and prepared the manuscript. The co-authors namely Mohammed Abdurke, Enku Afework, Sinetibeb Mesfin, Melake Demena and Merga Dheresa played their role in re-analyzing and writing the final draft of the results. Moreover, the co-authors wrote the manuscript. All authors were involved in reading and approving the final manuscript.

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## Tables

**Table 1**

Socio-demographic characteristics of the women who attended healthcare services in public hospitals of Harari Regional State, Eastern Ethiopia, 2020 (n=458)

Characteristics	Categories	Frequency (n)	Percentage (%)
Age (years)	15-24	94	20.5
	25-34	130	28.4
	35-44	87	19.0
	45-54	51	11.1
	= >55	96	21.0
Ethnicity	Oromo	236	51.5
	Harari	66	14.4
	Amhara	80	17.5
	Tigre	47	10.3
	Other*	29	6.3
Religion	Muslim	257	56.1
	Orthodox	152	33.2
	Protestant	32	7.0
	Other**	17	3.7
Educational status	No formal education	105	22.9
	Can read and write	85	18.6
	Primary (1-8)	69	15.1
	Secondary (9-12)	101	22.1
	Collage and above	98	21.4
Occupation	House wife	108	23.6
	Government employee	117	25.5
	NGO employee	27	5.9
	Farmer	78	17.0
	Self-employee	84	18.3
	Other***	44	9.6
Residence	Rural	157	34.3
	Urban	301	65.7

**Key:** \*=Gurage, Woliyita, Somali; \*\*=Catholic, Wakefata, Adventist; \*\*\*= Student, daily laboror; NGO=Non-governmental Organizations

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## Table 2

Obstetric and gynecologic history related characteristics of women attending healthcare services in public hospitals of Harari Regional State, Eastern Ethiopia, 2020

Characteristics	Categories	Frequency (n)	Percentage (%)
Ever got pregnant (n=458)	Yes	375	81.9
	No	83	18.1
Number of pregnancy(gravidity) (n=375)	1	225	60
	2-4	56	14.9
	>5	94	25.1
Ever had history of abortion (n=375)	Yes	104	27.7
	No	271	72.3
Ever had child birth(n=375)	Yes	368	98.1
	No	7	1.9
Number of child birth(parity) (n=368)	Primiparous	220	59.8
	Multiparous	148	40.2
Mode of delivery at first child birth(n=368)	Vaginal delivery	326	88.6
	Caesarean delivery	42	11.4
Ever had vaginal birth(n=368)	Yes	343	93.2
	No	25	6.8
Ever had caesarean delivery(n=368)	Yes	89	24.2
	No	279	75.8
Place of delivery (n=368)	Institutional delivery	206	56.0
	Home delivery	162	44.0
History of prolonged labor ( $\geq 2$ days)(n=368)	Yes	88	23.9
	No	280	76.1
Time since last birth (n=368)	6-12 months	109	29.6
	$\geq 12$ months	259	70.4
Family history of Pelvic Organ Prolapse (n=458)	Yes	40	8.7
	No	418	91.3

**Table 3**

Reproductive health and medical history related characteristics of the women attending healthcare services in public hospitals of Harari Regional State, Eastern Ethiopia, 2020

Characteristics	Categories	Frequency (n)	Percent (%)
Marital status (n=458)	Currently married	373	81.4
	Divorced/widowed	85	18.6
Age at first marriage(n=458)	< 18	253	55.2
	≥18	205	44.8
Had history of marriage more than once (n=458)	Yes	74	16.2
	No	384	83.8
History of family planning utilization (n=458)	Yes	336	73.4
	No	122	26.6
Menopausal age (n=458)	Yes	112	24.5
	No	346	75.5
Had history of chronic cough (n=458)	Yes	72	15.7
	No	386	84.3
Had history chronic constipation (n=458)	Yes	40	8.7
	No	418	91.3
Had history of heavy lifting s(n=458)	Yes	74	16.2
	No	384	83.8

**Table 4**

Bivariable logistic regression analysis of factors associated with POP among women attended healthcare services in Harari Regional State, Eastern Ethiopia, 2020

Characteristics	Categories	POP		COR (95%CI)
		Yes (%)	No (%)	
Age(years) (n=458)	15-24	8(8.5)	86(91.5)	1.64(0.57, 4.68)
	25-34	7(5.4)	123(94.6)	1
	35-44	12(13.8)	75(86.2)	2.81(1.06, 7.46)
	45-54	7(13.7)	44(86.3)	2.80(0.93, 8.42)
	>=55	14(14.6)	82(85.4)	3.01(1.16, 7.75)
Residence (n=458)	Urban	24(8.0)	277(92.0)	1
	Rural	24(15.3)	133(84.7)	2.08(1.14, 3.80)
Parity (n=368)	Primiparous	13(5.9)	207(94.1)	1 <sup>b*</sup>
	Multiparous	35(23.6)	113(76.4)	4.91(2.50, 9.7)
Had history of lifting heavy objects(n=458)	Yes	18(24.3)	56(75.7)	3.81(1.98, 7.26)
	No	30(7.8)	354(92.2)	1
Family history of Pelvic Organ Prolapse(n=458)	Yes	8(20.0)	32(80.0)	2.36(1.02, 5.48)
	No	40(9.6)	378(90.4)	1
History of contraceptive utilization(n=458)	Yes	29(8.6)	307(91.4)	1
	No	19(15.6)	103(84.4)	1.95(1.05, 3.63)
Menopausal age (n=458)	Yes	14(12.5)	98(87.5)	1.31(0.68, 2.54)
	No	34(9.8)	312(90.2)	1
History of chronic cough (n=458)	Yes	15(20.8)	57(77.2)	2.82(1.44, 5.51)
	No	33(8.5)	353(91.5)	1
History of chronic constipation (n=458)	Yes	10(25.0)	30(75)	3.33(1.51, 7.34)
	No	38(9.1)	380(90.9)	1 <sup>b*</sup>

History of prolonged labor (n=368)	Yes	24(8.6)	64(72.7)	4.01(2.13, 7.51)
	No	24(27.3)	256(91.4)	1
<b>Key:</b> *=p-value<0.01, **=p-value<0.001				

**Table 5**

Multivariable logistic regression analysis of factors associated with POP among ever-married women attended healthcare services in public hospitals of Harari Regional State, Eastern Ethiopia, 2020

Characteristics	Categories	POP		COR (95%CI)	AOR (95%CI)
		Yes (%)	No (%)		
Age (years)	15-24	8(8.5)	86(91.5)	1.64(0.57, 4.68)	1.41(0.43, 4.61)
	25-34	7(5.4))	123(94.6)	1	1
	35-44	12(13.8)	75(86.2)	2.81(1.06, 7.46)	3.16(0.94, 10.69)
	45-54	7(13.7)	44(86.3)	2.80(0.93, 8.42)	2.91(1.05, 8.23)*
	>=55	14(14.6)	82(85.4)	3.01(1.16, 7.75)	3.51(1.04, 11.76)*
Residence	Urban	24(8.0)	277(92.0)	1	1
	Rural	24(15.3)	133(84.7)	2.08(1.14, 3.80)	1.91(0.97, 3.74)
History of lifting heavy objects	Yes	18(24.3)	56(75.7)	3.81(1.98, 7.26)	3.22(1.56, 6.67)***
	No	30(7.8)	354(92.2)	1	1
Family history of Pelvic Organ Prolapse	Yes	8(20.0)	32(80.0)	2.36(1.02, 5.48)	2.14(0.85, 5.40)
	No	40(9.6)	378(90.4)	1	1
History of contraceptive utilization	Yes	29(8.6)	307(91.4)	1	1
	No	19(15.6)	103(84.4)	1.95(1.05, 3.63)	2.40(1.13, 5.05)***
History of chronic cough	Yes	15(20.8)	57(77.2)	2.82(1.44, 5.51)	2.51(1.18, 5.31)***
	No	33(8.5)	353(91.5)	1	1
History of chronic constipation	Yes	10(25.0)	30(75)	3.33(1.51, 7.34)	3.77(1.54, 9.22)**
	No	38(9.1)	380(90.9)	1	1
Menopausal age	Yes	14(12.5)	98(87.5)	1.31(0.68, 2.54)	0.60(0.23, 1.58)
	No	34(9.8)	312(90.2)	1	1
<b>Key:</b> 1= Reference category * =p-value<0.05, ** =p-value<0.001, *** =p-value<0.001, COR= Crude odds Ratio, AOR= Adjusted Odds Ratio					