

**ORIGINAL ARTICLE****Prevalence and Factors Associated with Pelvic Organ Prolapse among Pedestrian Back-Loading Women in Bench Maji Zone****Andualem Henok<sup>1\*</sup>****OPEN ACCESS**

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**ABSTRACT**

**BACKGROUND:** It is common to see women carrying heavy loads on their back in developing countries including Ethiopia. This may have an effect on pelvic organ prolapse. The objective of this study was to determine prevalence and factors associated with pelvic organ prolapse among pedestrian back-loading women in Bench-Maji Zone, 2016.

**METHODS:** The study was conducted in Bench-Maji Zone, Southwest Ethiopia, from January to March 2016. Cross-sectional study design was employed. The sample size was calculated to be 422. Women were selected by using convenient sampling technique. Interviewer-administered questionnaire was used to collect data. Binary logistic regression was used to determine factors associated with pelvic organ prolapse.

**RESULT:** Fifty-six (13.3%) of the study participants had pelvic organ prolapse. The likelihood of pelvic organ prolapse was higher among women whose ages were between 31-40 years (AOR= 6.88: 95% CI 1.68, 28.23), 41-50 years (AOR= 11.10: 95% CI 2.54, 48.49) and above 50 years (AOR= 35.42: 95% CI 6.94, 180.85) as compared with those who were less than 30 years. The likelihood of pelvic organ prolapse was also higher among those whose BMI was less than 18.5 (AOR= 2.37: 95% CI 1.25, 4.51) and duration of work greater than 10 years (AOR= 4.01: 95% CI 1.81, 8.89).

**CONCLUSION:** The prevalence of pelvic organ prolapse was high. Age, BMI and duration of work were significantly associated with pelvic organ prolapse. Urgent attention is needed from concerned bodies.

**KEYWORDS:** Pelvic organ prolapse; Back loading; Factors, Utero Vaginal Prolapse, Ethiopia

**INTRODUCTION**

Manual material handling is still quite prevalent in most occupations and virtually unavoidable during daily activities. All methods of transporting heavy loads are believed to have evolved intuitively, but major differences exist between nations and sometimes between cultures or tribes in the same nation (1).

It is common to see women carrying heavy loads on their backs in developing countries including Ethiopia. Bench MajiZone is found in Southwest Ethiopia and is known in its dense forest. Many women lead their lives by selling firewood to residents in urban areas. They carry the wood on their back and walk on foot to homes of urban residents.

Heavy physical work has been defined as work that has high energy demands or requires some measure of physical strength. Some biomechanical studies interpret heavy work as jobs that impose large compressive forces on the spine (2).

Uterine prolapse is a condition in which the muscles and supporting ligaments holding the uterus in place get too weak to keep the uterus in position. Risk factors for uterine prolapse include, among others, pregnancy and delivery, improper delivery techniques, heavy work during and soon after pregnancy and heavy weight lifting (3).

Pelvic organ prolapse is an anatomic support defect of the pelvic viscera. It may result from a series of long term failure of the supporting and suspension mechanisms of the uterus and the vaginal wall (1). The defect in the support structures results in downward displacement of structures that are normally located adjacent to the vaginal vault (4)

This maternal health condition, besides causing great physical pain, also disrupts marital and sexual relations. Women suffering from uterine prolapse often receive physical and verbal abuse from their husbands and mothers-in-law because of the condition, with some husbands leaving or threatening to leave their wives; others incorrectly consider it indicative of venereal disease. Shy and afraid of the consequences, many women who suffer from this disease hide their problem from others for decades (5). Very high prevalence of genital and uterine prolapse has been reported among women of reproductive age throughout Sub-Saharan Africa which can be problematic, particularly for populations that are already nutritionally vulnerable (6). Risk of uterine prolapse is heightened by arduous work load and carrying heavy loads (5).

Despite the impact of heavy loading on pelvic organ prolapse, there is no study conducted on prevalence and factors associated with pelvic organ prolapse among pedestrian back loading women in Bench MajiZone. Therefore this study is expected to fill the gap.

## METHODS

**Study area and period:** The study was conducted in Bench MajiZone, Southwest Ethiopia from January to March 2016.

**Study design:** Cross-sectional study design was employed.

**Source population and Study population:** The source population was all females in Bench MajiZone who worked on firewood sales with back-loading. The study population was all females in the Zone who worked on fire woods during the data collection period.

**Sample size and sampling technique:** The sample size was calculated by using single population proportion formula by considering 5% margin of error and 50% proportion. We also added 10% non-response rate. Thus, the final sample size was 422.

The towns found in the zone were selected to find women who sell firewoods with back-loading. In the selected towns, women were selected by using convenient sampling technique. To avoid repetition, their names were included temporarily.

**Inclusion and exclusion criteria:** Ages greater than 15 years were included in the study. Non-regular workers (women carrying wood not for the purpose of selling) were excluded from the study.

**Data collection technique:** Interviewer-administered questionnaire was used to collect data. In addition, the weights of loads and the weights of women were measured to determine weight of load to women ratio. The questionnaire contains background characteristics, reproductive history and reproductive health problems. Data collection was done by trained health professionals. Beam balance was used to measure the weights of the loads and the weights of women. To diagnose pelvic organ prolapsed, the WHO questions to assess pelvic organ prolapse were used. Since the data collectors met the study

participants in towns while they were loaded with firewood, it was impossible to diagnose them by using physical examination. Therefore, the diagnosis was made based on history. Each woman was asked if she had a dragging lump coming down in the vagina, lump coming out of vagina or lump felt or seen outside vagina. The presence of any of these symptoms were considered to indicate the presence of POP in this study. This was followed by other questions to determine the severity of the condition, other vaginal symptoms (7). Data was collected by two BSc (Bachelor of Science) female midwives and supervised by one MSc (Master of Science) female midwife.

**Data analysis procedures:** Cleaned and coded data were entered into Epidata 3.1 and exported to SPSS version 20 for analysis. Descriptive analysis was conducted to determine frequencies and percentages. Binary logistic regression was used to identify factors associated with pelvic organ prolapse. P-value less than 0.05 was considered to declare statistical significance. The data was presented in tables and pie chart.

**Data quality assurance:** Data quality was assured by using standardized questionnaire, by training data collectors and by recruiting trained professionals.

**Ethical clearance:** The ethical clearance was approved by the Research and Ethical Committee of the College of Health Sciences, Mizan-Tepi University. Official letter was requested from Bench-MajiZone administration. Informed consent was taken from the study participants. Names were used only for research purpose and removed immediately after checking repetition (double participation). Study participants were informed on the objective of the study. They were on load, and data collection was done after they were unloaded. They were paid 50 Birr (Ethiopian Currency) in compensation of the lost time.

## RESULTS

**Background characteristics of study participants:** Among the 422 participants who were involved in this study, 173(41%) were in the age group of 19-34 years and 130(30.8%) were between 35-49 years. Seventy (16.6%) were in the age range of more than 50 years. The mean age of the study participants was  $34.84 \pm 12.75$  years.

In this study, the majority, i.e., 340(80.6%) of the study participants were protestants and 71(16.8%) followers of traditional religions. Regarding the educational status, the majority 339(80.3%), of the participants were illiterate. Data was collected from four towns: MizanTown (50.2%), Sheko, Bachuma and Sheybench; each accounted for 70(16.6%) of the participants. Regarding weight of women, 181(42.9%) of the study participants' weight was less than 40 kgs. The mean weight was  $43.68 \pm 7.45$  k.g.s. In nearly half, 212(50.2%), of the study participants, weight of load was less than 25 kgs. during data collection. The mean weight of load was  $26.89 \pm 7.85$  kgs. More than half, 251(59.5%), of the study participants had heights of less than 150 cms (Table 1).

**Working Habits of study participants:** Among the study participants, 156(37%) worked this job (selling firewoods in back loading) for less than 2 years, while 128(30.3%) worked for 5-10 years. The mean year was  $6.92 \pm 7.76$  years. Nearly half, 219(51.9%), of the study participants reported that it took 30 minutes to 2 hours to reach to the town from their home, and more than one-third, 148(35.1%) reported more than two hours. Regarding the frequency of carrying wood, it was one to two times per week in 192(45.5%) and three to four times per week in 193(45.7%) of the study participants. Most of participants (88.4%) in this study had jobs other than carrying firewood. Among these, 349(93.6%) were farmers (Table 2).

Table 1: Back ground characteristics of Back loading women in Bench MajiZone, 2016 (N=422).

Variables	N	%
Age		
< 18 years	49	11.6
19-34 years	173	41
35-49 years	130	30.8
>50 years	70	16.6
Total	422	100
Mean + SD	34.84 ± 12.75 years	
Religion		
Orthodox	11	2.6
Protestant	340	80.6
Traditional	71	16.8
Total	422	100
Educational status		
Unable to read and write	339	80.3
Read and write	3	0.7
1 to 4	74	17.5
Above 4	6	1.4
Total	422	100
Town		
Mizan	212	50.2
Sheko	70	16.6
Sheybench	70	16.6
Bachuma	70	16.6
Total	422	100
Weight of women		
Less than 40	181	42.9
41-60	221	52.4
Above 60	20	4.7
Total	422	100
Mean + SD	43.68±7.45	
Weight of load (k.g)		
Less than 25	212	50.2
26-30	147	34.8
31-40	21	5
Above 41	42	10
Total	422	100
Mean + SD	26.89±7.85	
Height of women (c.m)		
Less than 150	251	59.5
151-170	150	35.5
More than 170	21	5
Total	422	100
Mean + SD	152.61±9.6	

Table 2: Working habits of pedestrian back loading women in Bench MajiZone, 2016.

Variables	N	%
Work experience		
Less than 2 years	156	37
2-4 years	72	17.1
5-10 years	128	30.3
More than 10 years	66	15.6
Total	422	100
Mean + SD	6.92±7.76	
Time to town from home		
Less than 30 minutes	55	13
31-120 minutes	219	51.9
More than 120 minutes	148	35.1
Total	422	100
Mean + SD	126.33±60.76	
Frequency per week		
One to two times	192	45.5
Three to four times	193	45.7
More than four times	37	8.8
Total	422	100
Mean + SD	2.77±1.5	
Frequency per day		
Once	395	93.6
Twice	27	6.4
Total	422	100
Have other job		
Yes	373	88.4
No	49	11.6
Total	422	100
What other job		
Farmer	349	93.6
Merchant	24	6.4
Total	373	100

**Reproductive history:** The majority of the women (88.4%) were married and 354(83.9%) had children. Of the latter, 159(44.9%) had more than four children. Among these, 3(0.8%) gave birth by caesarian section. Of those who had children, nearly one-third (33.4%) passed 6-12 months since the last birth, and 35(9.9%) passed less than

six months since the last birth. Sixty-nine (16.4%) ever faced abortion. Among these, nearly half (49.3%) experienced it twice. Among the study participants, 18(4.3%) were pregnant during the data collection. Of these, 10(55.6%) were at the second trimester, while 8(44.4%) were at the third trimester (Table 3).

Table 3: Reproductive history of pedestrian back loading women in Bench Maji zone, 2016.

Variables	N	%
Marital status		
Married	373	88.4
Single	49	11.6
Total	422	100
Have Children		
Yes	354	83.9
No	68	16.1
Total	422	100
Number of children		
1-2	105	29.7
3-4	90	25.4
Above 4	159	44.9
Total	354	100
Mean + SD	4.82±2.91	
Mode of delivery		
Normal	351	99.2
C/s	3	0.8
Total	354	100
Time since last birth		
Less than 6 months	35	9.9
6-12 months	118	33.4
Above 12 months	200	56.7
Total	353	100
Mean + SD	21.04±15.57	
Ever faced abortion		
Yes	69	16.4
No	353	83.6
Total	422	100
Frequency of abortion		
Once	35	50.7
Twice	34	49.3
Total	69	100
Mean + SD	1.49±0.5	
Current pregnancy		
Yes	18	4.3
No	404	95.7
Total	422	100
Gestational age		
First trimester	0	0
Second trimester	10	55.6
Third trimester	8	44.4
Total	18	100
Mean + SD	6.11±1.08	

**Reproductive health problems:** Regarding the reproductive health problems, 71(16.8%) had pain around the genitalia, while 42(10%) and 98(23.2%) had abnormal vaginal discharge and abnormal vaginal bleeding, respectively. Fifty-six (13.3%) had pelvic organ prolapse. Among those who

faced reproductive health problems, 56(83.6%) reported as it prevented them from work, but around two third (65.7%) did not seek treatment for the problem (Table 4). Nearly one-third of the study participants (31.8%) were underweight according to calculated BMIs.

Table 4: Reproductive health problems of pedestrian back loading women in Bench Maji zone, 2016

Reproductive health problems	Number	Percent
Pain around genitalia		
Yes	71	16.8
No	351	83.2
Total	422	100
Have abnormal discharge		
Yes	42	10
No	380	90
Total	422	100
Have abnormal vaginal bleeding		
Yes	98	23.2
No	324	76.8
Total	373	100
Have pelvic organ prolapse		
Yes	56	13.3
No	366	86.7
Total	422	100
Prevent from work		
Yes	56	83.6
No	11	16.4
Total	128	100
Seek treatment		
Yes	48	34.3
No	92	65.7
Total	140	100

**Factors associated with pelvic organ prolapse:**

In bivariate logistic regression analysis, the odds of experiencing pelvic organ prolapse was higher among women whose ages were between 31-40 years (COR= 16.07: 95% CI 4.47, 57.73), 41-50 years (COR= 20.81: 95% CI 6.05, 71.56) and above 50 years (COR= 56.67: 95% CI 15.34, 209.34) as compared with those who were less than 30 years. The odds of pelvic organ prolapse was also higher among women whose BMIs were less than 18.5 (underweight) (COR= 2.91: 95% CI 1.64, 5.15), those who worked for more than 10 years (COR= 4.68: 95% CI 2.27, 9.65) as

compared to those women whose BMIs were normal and worked for less than 2 years, respectively.

A multivariate logistic regression was done to assess factors associated with pelvic organ prolapse. After adjusting for potential the confounding factor of age, BMI and duration of work were significantly associated with pelvic organ prolapse. The likelihood of pelvic organ prolapse was higher among women whose ages were between 31-40 years (AOR= 6.88: 95% CI 1.68, 28.23), 41-50 years (AOR= 11.10: 95% CI 2.54, 48.49) and above 50 years (AOR= 35.42:

95% CI 6.94, 180.85) as compared with those who were less than 30 years. The likelihood of pelvic organ prolapse was also higher among those whose BMIs were less than 18.5 (AOR= 2.37:

95% CI 1.25, 4.51), duration of work greater than 10 years (AOR= 4.01: 95% CI 1.81, 8.89), and experiencing of abortion (AOR= 2.39: 95% CI 1.10, 5.19) (Table 5).

Table 5: Multivariate analysis table showing associations between pelvic organ prolapse and other factors among pedestrian back loading women in Bench Maji zone, 2016.

Variables	COR (95% CI)	AOR*(95% CI)
Age		
≤30 years	1.00	1.00
31-40 years	<b>16.07(4.47, 57.73)</b>	<b>6.88(1.68, 28.23)</b>
41-50 years	<b>20.81(6.05, 71.56)</b>	<b>11.10(2.54, 48.49)</b>
>50 years	<b>56.67(15.34, 209.34)</b>	<b>35.42(6.94, 180.85)</b>
Parity		
≤2	1.00	1.00
2-4	1.18 (0.43, 3.29)	0.67(0.19, 2.32)
≥5	4.08(1.82, 9.12)	0.79(0.26, 2.42)
BMI		
Underweight	<b>2.91(1.64, 5.15)</b>	<b>2.37(1.25, 4.51)</b>
Normal	1.00	1.00
Duration of work		
Less than two years	1.00	1.00
2-10 years	0.81(0.40, 1.67)	1.15(0.49, 2.69)
More than 10 years	<b>4.68(2.27, 9.65)</b>	<b>4.01(1.81, 8.89)</b>
Time to town from home		
Less than 30 minutes	1.00	1.00
31-120 minutes	1.90(0.71, 5.11)	2.42(0.78, 7.54)
More than 120 minutes	1.21(0.42, 3.48)	01.39(0.27, 1.17)

\*Adjusted for time from home, duration of work, weight of women, and age

## DISCUSSION

Among the study participants, all the 422 completed the study giving a response rate of 100%. Their ages ranges from 15 years to 65 years, with mean age of  $34.84 \pm 12.75$ . This may indicate that this job is practiced among all age groups of females. In this study, the data was collected from 4 towns: Bench MajiZone (50.2% of the study participants were from Mizan Town). It was observed that the way of carrying wood was different in BachumaTown and the other three towns.

The mean weight of women was  $43.68 \pm 7.45$  kilograms, and the mean weight of loads was  $26.89 \pm 7.85$  kilograms. This result shows that women were carrying heavy loads as compared with their weight. This heavy load may burden them with different health problems. The burden

may come not only from the heavy nature of the load but from the duration of the. The mean duration of work was  $6.92 \pm 7.76$  years and 45.9% worked for more than 5 years. The minimum was 1 year and the maximum was 30 years. The long period of time given the heavy nature of the loads may affect the health of women negatively. In addition, the distance from home to town where they sold the wood should also be considered. More than one-third (35.1%) walked to town for more than 2 hours, and in more than half (51.9%), it took 30 minutes to two hours to reach to the town. Of course, this duration of time may not explain the actual burden. Since there is no specified place to sell wood, they travel a long distance for a long period of time from home to home within town until they sell it. In addition, the frequency of selling wood also matters. More than half of the study participants do this job for more than three times a week, and 6.4% do it twice a

day. In fact, for most (88.4%) of the study participants, this is not the only job. They also have other jobs in their homes. The majority of them (93.60%) were farmers. All these are possible burdens which may affect the health of women.

On top of this, 88.4% of the women were married and 83.9% had children. Among these, 44.9% had more than 4 children. These characteristics of the study participants may aggravate the problems particularly reproductive health and musculoskeletal health problems.

In addition to wood, many women also carry their small kids when they go to town. In other cases, there were women who carried wood while they were pregnant. This may have a dangerous effect on both the women and their fetuses. This study revealed that 4.3% of the women were pregnant, and of these, 44.4% were at the third trimester. In fact, women at first trimester were reported to be 0. This could be due to lack of knowledge about whether they are pregnant or not. This is because in rural Ethiopia, many women do not know the last date of their menstrual period.

In this study, 56(13.3%) of the women had pelvic organ prolapse. This magnitude is higher than the study conducted in ImuState University Teaching Hospital (Nigeria) which indicated that 3.9% of total gynecological admissions had pelvic organ prolapse (8). It is also higher a study conducted in TribhumUniversity Teaching Hospital (Nepal) which indicated that 2.6% of had pelvic organ prolapse (9).

A systematic review done on epidemiology and outcome assessment of pelvic organ prolapse showed that pelvic organ prolapse was 3-6%. This is lower than the finding of our study (10). This may be due to the difference in population, since the population in this study was carrying heavy loads for long periods of time.

In this study, age was significantly associated with pelvic organ prolapse. This goes in line with the study conducted in NmandiAzikweUniversity Teaching Hospital (SE Nigeria) (11) and a community based study done in Kaski district of Nepal (12).

As limitation of the study, since diagnosis was made entirely based history the magnitude of

pelvic organ prolapse may be under estimated. This is because the early stages may be missed. It is also difficult to classify types of pelvic organ prolapse.

This study showed that lower BMI was significantly and positively associated with pelvic organ prolapse. This is supported by findings from other study (13). Based on the result of this study, we conclude that the prevalence of pelvic organ prolapse was high. Age, BMI and duration of work were significantly associated with pelvic organ prolapse. Therefore, the local government should work to empower women to search for other sources of income. Health institutions should provide education on the importance of early treatment for pelvic organ prolapse. The local media need to provide education on health risk of carrying heavy wood. The local government should also allocate special market place to sell wood.

## REFERENCES

1. Babatunde O, Adegoke A, Regina O. et al. Spinal deformities among professional load porters in a Nigerian urban market. *Journal of Environmental and Occupational Science* 2014; 3(2): 109-13. DOI: 10.5455/jeos.20140328035014
2. Centers for Disease Control and Prevention. Musculoskeletal Disorders and Workplace Factors: A Critical Review of Epidemiologic Evidence for Work-Related Musculoskeletal Disorders of the Neck, Upper Extremity, and Low Back 1997.
3. Thapa B, Rana G, Gurung S. Contributing Factors Of Utero-Vaginal Prolapse Among Women Attending In Bharatpur Hospital. *Journal of Chitwan Medical College* 2014; 4(9):38-42.
4. Gumanga S, Munkaila A and Malechi H. Social Demographic Characteristics Of Women With Pelvic Organ Prolapse At The Tamale Teaching Hospital, Ghana. *Ghana Med J* 2014; 48(4): 208-13. Doi: <http://dx.doi.org/10.4314/gmj.v48i4.7>
5. Wan, Colfer C, And Powell B. Forests, women and health: opportunities and challenges for

- conservation *International Forestry Review* 2011;13(3):369-87.
6. Porter G, Hampshire K, and Dunn C.etal. 'Health impacts of pedestrian headloading : a review of the evidence with particular reference to women and children in sub-Saharan Africa.*Social science medicine.* 2013; 88: 90-97. <http://dx.doi.org/10.1016/j.socscimed.2013.04.010>
  7. World Health Organization. Measuring reproductive morbidity: report of technical working group. Division of Family Planning 1989, (WHO/MCH/90.4).
  8. Emmanuel C, Ephraim I, Frederick C, Akujiobi C, Chimezie C. Uterovaginal prolapse at a University Teaching Hospital in South-East Nigeria. *Orient Journal of Medicine*, 2013; 25 (3-4):107-12
  9. Safe Motherhood Network Federation Prevalence of Uterine Prolapse amongst Gynecology OPD Patients in Tribhuvan University Teaching Hospital in Nepal and its Socio-Cultural Determinants 2012
  10. Matthew D. Barber M and Christopher M. Epidemiology and outcome assessment of pelvic organ prolapse. *IntUrogynecol J* 2013;24:1783–1790 DOI 10.1007/s00192-013-2169-9
  11. Eleje G, Udegbumam O, Ofojebe C, and Adichie C Eleje. Determinants and management outcome of pelvic organ prolapse. *Annals of Medical and Health Sciences Research*, 2014; 4 (5): 796-801
  12. Tamrakar A. Prevalence of uterine prolapse and its associated factors in Kaski district of Nepal. *JHAS*, 2012; 2(1):38-41.
  13. Progetto Menopausa Italia Study Group. Risk factors for genital prolapse in non-hysterectomized women around menopause: Results from a large cross-sectional study in menopausal clinics in Italy. *Eur J ObstetGynecolReprodBiol*, 2000;93(2):135-40.