

## ORIGINAL ARTICLE

**Assessment of Causes and Clinical Symptoms of Menorrhagia and Its Co-relation with BMI in Western Nepalese Women - An Observational Study**

Farhat Banu<sup>1\*</sup>, Upendra Pandit<sup>1</sup>, Shakil Ahmad<sup>2</sup>, Grisuna Singh<sup>3</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, <sup>2</sup>Department of Pediatrics, <sup>3</sup>Department of Anaesthesia, Nepalgunj Medical College and Teaching Hospital, Nepal

**Abstract:**

**Background:** Menorrhagia is defined subjectively as heavy menses lasting for more than 7 days or objectively as a mean menstrual blood loss of >80 ml during three consecutive menses. It can occur due to organic causes like fibroids, polyps, cervicitis, ovarian cysts, adnexal masses, uterine cancer or systemic causes like hypothyroidism, bleeding disorders, pregnancy and prolapse or dysfunctional uterine bleeding. Body Mass Index may have a correlation with menorrhagia. **Aim and Objectives:** This study was carried out in western Nepalese women to assess the causes of menorrhagia; report most common symptoms associated with it and assess the correlation of causes of menorrhagia with BMI. **Material and Methods:** A hospital based observational study was carried out between 1<sup>st</sup> January 2015 to 31<sup>st</sup> January 2016 on 157 volunteer women who consulted the Department of Gynaecology and Obstetrics for menorrhagia. Data were collected via interview and with the help of a questionnaire. Height and weight of the patients were recorded for calculation of BMI. The data was analysed with SPSS 17 version. Mean, Standard Deviation and Chi-square test were applied and p value <0.05 was considered to be statistically significant. **Results:** In our study, maximum patients were from the age group of 36-40 years (51 {32.48%}) followed by 31-35 years (38 {24.2%}) whereas the least number of patients (6 {3.8%}) belonged to the age group of 51-55 years. Uterine fibroids was the most common etiology for menorrhagia seen in 76 (48.4%) patients with maximum cases (24 {31.6%}) being in 36-40 years age group and minimum (4 {5.3%}) in 51-55 years age group. Dysfunctional uterine bleeding (24 {15.3%}) was the second most common etiology with

6 (25%) cases being in 31-35 years age group. No statistically significant association was observed between BMI and etiology of menorrhagia. Backache, abdominal distension, pain abdomen, breast pain, headache, weakness and pelvic pressure were the seven most common symptoms experienced by patients with menorrhagia. All the seven symptoms showed statistically significant association with menorrhagia (p<0.05). **Conclusion:** Menorrhagia is most prevalent among the age group of 31-35 and 36-40 years with uterine fibroids and dysfunctional uterine bleeding being the most common etiologic factors. There seems to be no clear association of menorrhagia with BMI. It is significantly associated with common symptoms like backache, abdominal pain, breast pain, weakness, abdominal distension, pelvic pressure and headache which considerably affect the quality of life of patients.

**Keywords:** Body Mass Index, Fibroids, Menorrhagia.

**Introduction:**

Menstrual cycle is a determinant of women's health [1]. Menorrhagia is one of the most common gynecological conditions which adversely affect the quality of life of women. It is defined subjectively as heavy menses lasting for more than 7 days or objectively as a mean menstrual blood loss of >80 ml during three consecutive menses [2]. Menorrhagia is largely responsible for iron deficiency and iron deficiency anemia both of which have negative effects on women's health [3].

Menorrhagia has different causes including endometriosis, uterine cancer, polyps,

hypothyroidism, pregnancy and prolapse and bleeding disorders [4]. A majority of cases of menorrhagia have no identifiable cause and hence are described as 'dysfunctional'. The exact mechanism of menorrhagia is poorly understood. It is thought to result from increased activity of prostaglandins or the endometrial fibrinolytic activity [5].

Body Mass Index (BMI) is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in metres ( $\text{kg}/\text{m}^2$ ) [6]. Studies have shown that BMI levels correlate with body fat and with future health risks [7]. A statistically significant relationship was observed between BMI and menstrual pattern [8]. Hence, this study was carried out in western Nepalese women, to assess the causes of menorrhagia, report the most common symptoms associated with it and assess the correlation of causes of menorrhagia with BMI.

#### **Material and Methods:**

A hospital-based observational study was carried out between 1<sup>st</sup> January 2015 to 31<sup>st</sup> January 2016 on 157 volunteer women who consulted the Department of Gynaecology and Obstetrics, Nepalgunj Medical College and Teaching Hospital, Nepal for menorrhagia after obtaining a written consent. A written ethical approval was obtained from the Institutional Review Board where the study was conducted. A written informed consent was taken from all the participants. Women who were pregnant, had attained menopause, and were on oral contraceptive pills or those who suffered from any systemic or bleeding disorders were excluded from the study.

Data were collected via face to face interview with the participants with the help of a questionnaire prepared by the researcher. It included questions regarding age, demographics, obstetric history,

and history of systemic or bleeding disorders and clinical symptoms of the patient. Height and weight of the patients were recorded for calculation of BMI. Individuals with BMI below 18.5 were considered underweight, between 18.5 and 24.9 were considered normal, between 25 and 29.9 were considered overweight and 30 and above were considered obese [7].

The data were analysed with SPSS 17 software. Quantitative variables were assessed by mean and standard deviation. Chi square test was applied to analyse the association between etiology of menorrhagia and BMI and the clinical symptoms experienced by the patient. In all statistical analysis  $p < 0.05$  was considered to be statistically significant.

#### **Results:**

In the present study, maximum patients were from the age group of 36-40 years (51 {32.48%}) followed by 31-35 years (38 {24.2%}) whereas the least number of patients (6 {3.8%}) belonged to the age group of 51-55 years. Uterine fibroids was the most common etiology for menorrhagia seen in 76 (48.4%) patients with maximum cases (24 {31.6%}) being in 36-40 years age group and minimum (4 {5.3%}) in 51-55 years age group. Dysfunctional Uterine Bleeding (DUB) (24 {15.3%}) was the second most common etiology with 25% cases being in 31-35 years age group. Cervicitis was seen in 14 (8.9%) patients, endometrial polyp in 13 (8.3%), ovarian cysts in 12 (7.7%), cervical polyp in 9 (5.7%) and adnexal masses in 9 (5.7%) of the total patients (Table 1).

No statistically significant association was observed between BMI and etiology of menorrhagia. There was an equal number of normal and overweight patients (49 {31.21%}) reporting with complains of menorrhagia whereas 30 (19.1%) patients were in the obese category and 29 (18.5%) in underweight category. Uterine fibroid was the major etiologic factor in each

**Table 1: Association between Cause of Menorrhagia and Age Group**

Causes	Age group (in years)						Total N (%)
	25-30 N (%)	31-35 N (%)	36-40 N (%)	41-45 N (%)	46-50 N (%)	51-55 N (%)	
<b>DUB</b>	03(12.6)	06(25)	05(20.8)	05(20.8)	04(16.6)	01(4.2)	24(15.3)
<b>Fibroid</b>	09(11.8)	19(25.0)	24(31.6)	11(14.5)	09(11.8)	04(5.3)	76(48.4)
<b>Cervitis</b>	03(21.4)	02(14.3)	05(35.7)	02(14.3)	02(14.3)	–	14(8.9)
<b>Ovarian cyst</b>	01(8.3)	04(33.3)	04(33.3)	02(16.8)	01(8.3)	–	12(7.7)
<b>Cervical polyp</b>	–	03(33.3)	04(44.5)	01(11.1)	01(11.1)	–	09 (5.7)
<b>Adnexal mass</b>	–	02(22.2)	05(55.6)	–	02(22.2)	–	09(5.7)
<b>Endometrial polyp</b>	–	02(15.4)	04(30.9)	05(38.5)	01(7.6)	01 (7.6)	13(8.3)
<b>Mean±SD</b>	4±3.5	5.4±6.1	7.3±7.4	4.3±3.7	2.9±2.9	2±1.7	22.4±24.2
<b>Sub total</b>	16	38	51	26	20	6	157

category (14 {18.4% } in underweight, 25 {32.9% } in normal, 24 {31.6% } in overweight and 13 {17.1% } in obese category). Dysfunctional uterine bleeding was seen in 8 (33.3%) cases in normal and overweight category, 3 (12.6%) in underweight category and 5 (20.8%) in obese category. Maximum cases of cervicitis (6 {42.9% }) were in normal weight group followed by 4 (28.6%) in overweight group, 3 (21.4%) in obese group and 1 (7.1%) in underweight group. Four (30.9%) cases of endometrial polyp were in underweight and obese group, 3 (22.8%) in normal and 2 (15.4%) in overweight group. Four (33.3%) cases of ovarian cyst were in overweight category, followed by 3 (25%) cases in normal and obese category and 2 (16.7%) in underweight category. Adnexal masses were most commonly seen in overweight patients (4 {44.5% }) followed by 3 (33.3%) cases in underweight category and only 1 (11.1%) case in normal and obese category. Maximum cases (3 {33.3% }) of cervical polyp were in normal and overweight category, 2 (22.3%) cases in underweight and only 1 (11.1%) case in obese category (Table 2).

Backache, abdominal distension, abdominal pain, breast pain, headache, weakness and pelvic pressure were the seven most common symptoms experienced by patients with menorrhagia. All the seven symptoms showed statistically significant association with menorrhagia. Most commonly associated symptoms ( $p < 0.0001$ ) were backache (severe in 23 {14.7% } cases, moderate in 65 {41.4% } and mild in 57 {36.3% } cases), abdominal pain (severe in 33 {21% } cases, moderate in 68 {43.4% } and mild in 47 {29.9% } cases), breast pain (severe in 12 {7.6% } patients, moderate in 52 {33.2% } and mild in 47 {29.9% } patients) and weakness (severe in 26 {16.6% } cases, moderate in 49 {31.2% } and mild in 77 {49% } cases). Patients also reported abdominal distension (severe in 11 (7%) cases, moderate in 39 {24.8% } and mild in 58 {36.9% } cases), pelvic pressure (severe in 19 {12.1% } patients, moderate in 43 {27.4% } and mild in 39 {24.8% } patients) and headache (severe in 9 {5.7% } cases, moderate in 42 {26.8% } and mild in 44 {28% } cases) (Table 3).

Table 2: Association between Cause of Menorrhagia and BMI

Cause	BMI (kg/m <sup>2</sup> )				Total n (%)	$\chi^2$	p-value
	Underweight (<18.5) N (%)	Normal (18.5-24.9) N (%)	Overweight (25.0-29.9) N (%)	Obese ( $\geq$ 30.0) N (%)			
DUB	03(12.6)	08(33.3)	08(33.3)	05(20.8)	24 (15.3)	0.67	0.8
Fibroid	14(18.4)	25(32.9)	24(31.6)	13(17.1)	76 (48.4)	0.45	0.9
Cervicitis	01(7.1)	06(42.9)	04(28.6)	03(21.4)	14 (8.9)	1.81	0.6
Ovarian cyst	02(16.7)	03(25)	04(33.3)	03(25)	12 (7.7)	0.44	0.9
Cervical polyp	02(22.3)	03(33.3)	03(33.3)	01(11.1)	09 (5.7)	0.42	0.9
Adnexal mass	03(33.3)	01(11.1)	04(44.5)	01(11.1)	09 (5.7)	3.23	0.3
Endometrial polyp	04(30.9)	03(22.8)	02(15.4)	04(30.9)	13 (8.3)	3.61	0.3
Mean $\pm$ SD	4.14 $\pm$ 4.5	7 $\pm$ 8.3	7 $\pm$ 7.7	4.3 $\pm$ 4.1	22.4 $\pm$ 24.2	–	–
Sub total	29	49	49	30	157	–	–

Table 3: Clinical Symptoms of the Participants (n=157)

Clinical symptoms	Yes			No N (%)	$\chi^2$	p-value
	Mild N (%)	Moderate N (%)	Severe N (%)			
Backache	57(36.3)	65(41.4)	23(14.7)	12(7.6)	79.79	<0.0001
Abdominal distension	58(36.9)	39(24.8)	11(7)	49(31.3)	14.26	0.0002
Abdominal pain	47(29.9)	68(43.4)	33(21)	09(5.7)	87.94	<0.0001
Breast pain	47(29.9)	52(33.2)	12(7.6)	46(29.3)	17.45	<0.0001
Headache	44(28)	42(26.8)	09(5.7)	62(39.5)	4.23	0.03
Weakness	77(49)	49(31.2)	26(16.6)	05(3.2)	99.6	<0.0001
Pelvic pressure	39(24.8)	43(27.4)	19(12.1)	56(35.7)	8.11	0.004
Mean $\pm$ SD	52.7 $\pm$ 12.7	51.1 $\pm$ 11.4	19 $\pm$ 8.9	34.1 $\pm$ 24.5	–	–

\*Statistically significant (P-value &lt;0.05)

**Discussion:**

Menorrhagia has been a major health hazard for which women seek medical assistance. It is a significant cause of iron deficiency and iron deficiency anemia. Menorrhagia adversely affects the quality of life of women and considerably interferes with their daily activities. Endometrial assessment by endometrial biopsy or curettage is indicated in the perimenopausal and postmenopausal years in order to exclude endometrial hyperplasia or carcinoma [9].

In the present study on 157 patients of menorrhagia, maximum patients were in 36-40 years age group followed by 31-40 years group. This is in contrast with the study by Sawke *et al.* [10] where the dominant age group was 41-50 years. On the other hand, in a study on 241 endometrial samples of patients with abnormal uterine bleeding, by Abid *et al.* [11], the prevalence was higher in earlier age group of 18-39 years.

Uterine fibroid was found to be the major etiology (76 {48.4%} patients) of menorrhagia in our study. This is in contrast with the study by Rani *et al.* [9] where DUB was found to be the major cause of menorrhagia. This could be due to difference in the dominant age group of patients which was 40-45 years in their study as compared to 36-40 years in our study. The cumulative incidence (based both on ultrasonographic detection of fibroids in women with an intact uterus and evidence of prior fibroids among women who have had hysterectomies) increases with age, but the rate of increase slows at older ages. This suggests that the older premenopausal uterus is less susceptible to fibroid development [12].

Maximum cases (24 {31.6%}) of uterine fibroids were seen in 36-40 years age group in our study which is in sharp contrast with the studies

conducted by Sawke *et al.* [10], Shaheen *et al.* [13] and Mackenzie *et al.* [14] where most of the cases were in the age group of 41-51 years.

In our study DUB was the second most common etiology (24 {15.3%} cases). This is in contrast with study by Praveen *et al.* [15] who reported that DUB is responsible for 80% of menorrhagia. It is caused by an ovulation or oligovulation [16] and diagnosed after exclusion of all other organic and systemic conditions. Sajjad *et al.* [17] in their study observed 39% cases of leiomyomas, followed by adenomyosis in 19% cases. Only 5% cases showed dual pathology consisting of both leiomyomas and adenomyosis.

In the present study, equal number of patients (49 {31.21%}) was seen in normal and overweight category and no statistically significant association was seen between menorrhagia and BMI. In a study by Deshpande *et al.* [18], maximum number of patients (59%) with menorrhagia presented with normal BMI. In another study by Thapa *et al.* [19], 61.3% of the respondents belonged to normal weight distribution, 22.9% were under weight and 15.8% were overweight. Their results stated no statistically significant association between BMI and menorrhagia. Uterine fibroid remained to be the major etiologic factor in each category (14 {18.4%} in underweight, 25 {32.9%} in normal, 24 {31.6%} in overweight and 13 {17.1%} in obese category).

Seven common symptoms seen in patients with menorrhagia were: backache, abdominal distension, abdominal pain, breast pain, headache, weakness and pelvic pressure. All of them showed a statistically significant association with menorrhagia ( $p < 0.05$ ). Most of the patients experienced these symptoms in moderation. The most common symptoms were backache,



abdominal pain, breast pain and weakness ( $p < 0.0001$ ). Uterus is a hormonally responsive organ leading to various symptoms that arise due to the complex interplay of hormones. Uterine fibroids have been known to cause a multitude of symptoms such as abnormal heavy uterine bleeding, a feeling of pelvic pressure, urinary incontinence or retention, or pain [20]. In a systematic review by Shankar *et al.* [21] it was indicated that health related quality of life is adversely affected in women with menorrhagia in general and in those with inherited bleeding disorders. Hormones (oral contraceptive pills, progesterone pills, gonadotrophin hormones, progesterone intrauterine device, etc) are the main stay of medical treatment of symptoms. Hysteroscopic endometrial ablation is good for heavy bleeding per vagina. Hysterectomy remains the mainstay of definitive treatment for menorrhagia [22].

However, this study excluded patients on oral contraceptive pills or those with systemic or bleeding disorders. Such patients form a major portion of population seeking help for menorrhagia. Further studies with larger sample size should be carried out considering these etiologic factors also and their co-relations with age and BMI.

### Conclusion:

Conclusively, menorrhagia was seen to be the most prevalent among the age group of 31-35 and 36-40 years with uterine fibroids and DUB being the most common etiologic factors. There seems to be no clear association of menorrhagia with BMI. Menorrhagia is significantly associated with common symptoms like backache, abdominal pain, breast pain, weakness, abdominal distension, pelvic pressure and headache which considerably affect the quality of life of patients.

### References

1. Canadian health measures survey 2009-2011. WHO.
2. Trasi SA, Pathare AV, Shetty SD, Ghosh K, Salvi V, Mohanty D. The spectrum of bleeding disorders in women with menorrhagia: A report from Western India. *Ann Hematol* 2005; 84(5): 339-42.
3. Gokyildiz S, Aslan E, Beji NK, Mecdi M. The effects of menorrhagia on women's quality of life: A case-control study. *ISRN Obstet Gynecol* 2013; 1-7.
4. Philipp CS, Dilley A, Miller CH, Evatt B, Baranwal A, Schwartz R, *et al.* Platelet functional defects in women with unexplained menorrhagia. *J Thromb Haemost* 2003; 1(3):477-84.
5. Smith SK, Abel MH, Kelly RW, Baird DT. Prostaglandin synthesis in the endometrium of women with dysfunctional bleeding. *Br J Obstet Gynecol* 1981; 88(4):434-42.
6. "BMI Classification". Global Database on Body Mass Index. World Health Organization. 2006. Retrieved July 27, 2012.
7. Body Mass Index: Considerations for Practitioners. Centers for Disease Control and Prevention. [http://www.cdc.gov/healthyweight/assessing/bmi/adult\\_bmi/english\\_bmi\\_calculator/bmi\\_calculator.html](http://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/english_bmi_calculator/bmi_calculator.html).
8. Dars S, Sayed K, Yousufzai Z. Relationship of menstrual irregularities to BMI and nutritional status in adolescent girls. *Pak J Med Sci* 2014; 30(1):141-4.
9. Shobha Rani MS, Mallika M. Histopathological study of perimenopausal abnormal uterine bleeding. *Sch Acad J Biosci* 2016; 4(1):33-7.
10. Nilima GS, Gopal KS, Hanisha J. Histopathology findings in patients presenting with menorrhagia: A study of 100 hysterectomy specimen. *J Midlife Health* 2015; 6(4):160-3.
11. Mariam A, Ali HA, Babar M, Saroona H, Naveen F, Muzzammil EM *et al.* Clinical pattern and spectrum of endometrial pathologies in patients with abnormal uterine bleeding in Pakistan: need to adopt a more conservative approach to treatment. *BMC Women's Health BMC series* 2014; 14:132.
12. Laughlin SK, Schroeder JC, Baird DD. New directions in the epidemiology of uterine fibroids. *Semin Reprod Med* 2010; 28(3): 204-17.

- 
13. Shaheen S, Akhtar S, Utman N. Cause of menorrhagia and its pathological diagnosis by dilatation and curettage. *J Postgrad Med Inst* 2005; 19(1):62-6.
  14. MacKenzie IZ, Bibby JG. Critical assessment of dilatation and curettage in 1029 women. *Lancet* 1978; 2(8089): 566-8.
  15. Perveen F, Hashim HA. Dysfunctional uterine bleeding: A histopathology study. *J Coll Physicians Surg Pak* 1999; 9:318-20.
  16. Shwayder JM. Pathophysiology of abnormal uterine bleeding. *Obstet Gynecol Clin North Am* 2000; 27(2): 219-34.
  17. Sajjad M, Iltaf S, Qayyum S. Pathological findings in hysterectomy specimens of patients presenting with menorrhagia in different age groups. *Ann Pak Inst Med Sci* 2011; 7:160-2.
  18. Deshpande H, Burute SB, Dahiya P. Relationship of body mass index and body fat percentage with menstrual cycle pattern in adolescents. *Int J Pharm Biomed Sci* 2013; 4:114-7.
  19. Thapa B, Shreshtha T. Relationship between body mass index and menstrual irregularities among the adolescents. *Int J Nursing Res Prac* 2015; 2(2):7-11.
  20. Khan AT, Shehmar M, Gupta JK. Uterine fibroids: current perspectives. *Int J Women's Health* 2014; 6:95-114.
  21. Shankar M, Chi C, Kadir RA. Review of quality of life: menorrhagia in women with or without inherited bleeding disorders. *Haemophilia* 2008; 14(1):15-20.
  22. Miheso JS. Menorrhagia and the Levonorgestrel Intrauterine System, Hysterectomy, Ayman Al-Hendy (Ed.), 2012, ISBN: 978-953-51-0434-6, InTech, Available from: <http://www.intechopen.com/books/hysterectomy/menorrhagia-and-levonorgestrel-intrauterine-system>.
- 

\***Author for Correspondence:** Dr. Farhat Banu, Department of Obstetrics and Gynecology, Nepalgunj Medical College and Teaching Hospital, Nepal Email: [drpranam@gmail.com](mailto:drpranam@gmail.com)