

▪ **Basic Research**

**Effect of Nursing Guidelines on Hemorrhoids Symptoms among Pregnant Women**

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**Abstract**

**Background:** Hemorrhoids (also known as ‘piles’) are swollen varicose veins located around the anus. Hemorrhoids are a common condition in pregnancy. The main reported symptoms caused by hemorrhoids are burning, itching, perianal pain, and bleeding **Aim:** The study aimed to assess the effect of nursing guidelines on hemorrhoids symptoms among pregnant women. **Design:** A Quasi experimental design was used for conducting the study. **Setting:** The study was conducted in the obstetrics and gynecology antenatal outpatient clinic at Benha University Hospital. **Sample:** A purposive sample of 120 pregnant women divided to 2 equal groups study group and control group were selected according to inclusion criteria. **Tools:** two tools were utilized for data collection 1) A structured interviewing questionnaire 2) The Colorectal Evaluation of Clinical Therapeutics Scale. **Results** of this study showed that **knowledge** and healthy practices there was insignificant relation between study and control groups pre intervention guidelines while high statistically significant relation between both groups post intervention guidelines, also high statistically significant correlation between knowledge and healthy practice with severity of hemorrhoidal symptoms post intervention in both groups. **Conclusion:** significant improvement knowledge, healthy practice, and significant improvement of severity hemorrhoids symptoms post intervention guidelines. **Recommendations:** health education program regarding general healthy practice during pregnancy and dietary education program during antenatal visits. Replication of the current study on a large representative sample to achieve generalization of the results.

**Key words:** Hemorrhoids Symptoms, Nursing Guidelines, Pregnant Women

**Introduction:**

Hemorrhoids are one of the most common problems in pregnancy, especially in the second and third trimesters. In the absence of timely treatment and proper follow-up, the problem leads to a chronic disease that can impose harmful effects on the individual, the family and society. Normal components of the human anal canal are anal cushions. They consist of a thickened submucosa, blood vessels, smooth muscle fibers, and connective tissue above the dentate line. Hemorrhoids are a disease that manifests with symptoms of bleeding from the cushions, their prolapse or vascular space thrombosis (**Poskus et al., 2022**).

Anatomically, the hemorrhoids can be divided into external hemorrhoids (below the dentate line) and internal hemorrhoids (above the dentate line) or mixed. In Goligher's classification, internal hemorrhoids are further graded based on the degree of prolapse Grade I: Bleeding but non-prolapsing hemorrhoids; Grade II: hemorrhoids prolapse on straining but reduce spontaneously; Grade III: Hemorrhoids prolapse but require manual reduction; and Grade IV: Irreducibly prolapsing hemorrhoids (**Alameri et al., 2021**).

Risk factors commonly associated with hemorrhoidal disease include low fiber diet, chronic constipation, chronic diarrhea, chronic straining during defecation, pregnancy, sedentary lifestyle, habit of postponing the bowel movements, obesity, and spinal cord injuries. Pregnancy and vaginal birth predispose women to develop symptomatic hemorrhoids for several reasons: Hormonal changes, constipation, straining at stool, prolonged sitting or standing, prolonged straining during the second stage of labor for more than 20 minutes and giving birth to a baby with a weight over 3800 g (**Murray et al., 2019**).

The signs and symptoms of hemorrhoids depend on the type of present. Internal Hemorrhoids often result in painless, bright red rectal bleeding when defecating. Blood can be found on the toilet paper, dripping into the bowl, or even dramatically spraying across the toilet bowl. Another frequent symptom is the sensation of tissue prolapse. Prolapsed internal hemorrhoids may accompany mild fecal incontinence, mucus discharge, sensation of perianal fullness, and irritation of perianal skin. External hemorrhoids often result in pain and swelling in the area of the anus. If bleeding occurs it is usually darker (**Badal & Sharma, 2019**).

Nursing guidelines are tools to improve the quality of care based on the best available evidence to assist nurses and patients in deciding to carry out the most appropriate and effective nursing care in special clinical situations and can cover all aspects of care from prevention to self-care and interventions (**Salarvand et al., 2020**). Antenatal nurses should educate the pregnant women on the need to change lifestyle to reduce the symptoms of hemorrhoids such as improving anal hygiene, corrective toilet positioning (knees higher than hips, leaning forwards, elbows placed on knees), not sitting on the toilet for long periods of time, not straining on the toilet during defecation, increasing the intake of dietary fiber and fluid to prevent constipation, Avoidance diarrhea can reduce

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the size of hemorrhoids and avoiding prolonged seating or standing (**Lawrence, et al., 2021**). ).

### **Significant of the study:**

Hemorrhoids are a very common condition affecting pregnant women worldwide and representing a major medical and socioeconomic problem (**Shirah et al., 2018**). The prevalence of hemorrhoid among Egypt patients subjected to colonoscopy was 18%. Hemorrhoid symptoms are common in pregnancy, particularly in the second and third trimesters, afflicting more than half of all pregnant women. Symptoms of pain, itching, and intermittent bleeding from the anus from hemorrhoid; affect pregnant women quality of life can vary from mild physical and psychological discomfort to difficulty in dealing with everyday activities, depending on the severity of pain (**Kibret et al., 2021**). Therefore, the researchers found the importance and the existence of a guide to reduce the symptoms of hemorrhoids and reduce drug use during pregnancy.

### **Aim of the study:**

This study aimed to evaluate the effect of nursing guidelines on hemorrhoids symptoms among pregnant women.it will be achieved through:

1. Assessing pregnant women's knowledge and health practice about hemorrhoid (pre intervention).
2. Designing and implement nursing guidelines to pregnant women.
3. Evaluating the effect of nursing guidelines (post intervention)

### **Research Hypotheses**

H1- Knowledge level among study group may be significantly higher than the control group.

H2- Practice level among study group may be significantly higher than the control group.

H3-Study group may experience a significant improvement in hemorrhoidal symptoms severity than the control group.

H4-There may be significant correlation between knowledge, practice, and degree of hemorrhoidal symptoms severity.

### ***Subject and methods***

#### ***Research design***

A quasi-experimental research design was used to conduct the research (Study group and control group).

#### ***Research setting***

This research was conducted in the Obstetrics and Gynecology Antenatal Outpatient Clinic at Benha University Hospital Qalyubia, Egypt.

#### ***Sampling***

**Sample type:** A purposive sampling was used to recruit studied pregnant women.

**Sample size:**

This sample size was calculated based on the flow rate of pregnant women complained from hemorrhoids at the studied setting for a year (2020-2021); the flow rate was 1200 pregnant women.

The sample size was 10% of the total pregnant women (120) selected according to inclusion and divided to study group (60 pregnant women) and control group (60 pregnant women)

**Inclusion criteria**

- Pregnant women at the third trimester of pregnancy
- Women with symptoms of haemorrhoids
- Pregnant women with low-risk pregnancy with no evidence of complications.

**Sample technique:**

The sample of this study included pregnant women (one hundred twenty pregnant women) who attended antenatal outpatient clinic of obstetrics and gynaecology department, according to inclusion criteria were divided randomly into equal groups.

- **Group I (control group):** consisted of (60) pregnant women who received routine care.
- **Group II (study group):** consisted of (60) pregnant women who received nursing guidelines.

**Tools of the study:**

Two tools were used in this study.

**I. A Structured Interviewing Questionnaire**

The researcher developed it after reviewing related literature it was written in simple Arabic language in the form of closed and open-end questions and divided into four parts:

Part 1: Socio-demographic characteristics of studied pregnant women, included 4 items e.g; age, residence, education level, occupation.

Part 2: Anthropometric measurements included (weight, height, and BMI)

Part 3: Past, present obstetrics history, medical and surgical history included nine items (Gravida, gestational weeks, Para, abortion, Type of delivery, twins, prolonged labor, Presence of comorbid disease and Previous surgery)

Part 4: Bowel habit: This part was designed to assess bowel movement, onset of haemorrhoids, anorectal symptoms, previous treatment, and symptoms increase with pregnancy.

**Part4: Characteristic of Hemorrhoids:** Hemorrhoid Stages Assessment: It contained multiple choice questions in which the researchers asked the patients to determine (onset and the stage of hemorrhoid by selecting the suitable symptoms from the following: (1) Hemorrhoids that bleed but not prolapsed. (2) Hemorrhoids that prolapsed and retracted on their own (with or without bleeding). (3) Hemorrhoids that prolapsed but must be pushed back in by a finger. (4) Hemorrhoids that prolapsed and cannot be pushed back in.

**Part5: Assessment of pregnant women's knowledge regarding haemorrhoids (pre and post intervention.)** It developed by the researchers after an extensive reviewing of the local and international related literatures (Murray et al., 2019) to assess pregnant women's knowledge about haemorrhoids .it included eight questions (definition, classification, risk factors, Causes, signs and symptoms, Complications, Treatments, and preventive measures).

**Scoring System:**

The questions scored as the following: score (2) given for the correct answer, score (1) for the incorrect or do not know before and after implementation of program. The total knowledge score (16) was classified as the following: Adequate knowledge if  $\geq 75\%$  ( $\geq 12$ ) and Inadequate knowledge if  $< 75\%$  ( $< 12$ )

**Part 6: Healthy practices for reduction hemorrhoid symptoms Assessment tool:** the health practices was developed by the researcher after reviewing the literature to assess women's practices for reduction hemorrhoid symptoms, it included 20 items with 4 parts: first part about general health practice including six items, second part about dietary habits including six items, third part about healthy bowel practices including 3items and fourth part about hygienic care, including 5 items (Assess Pre and post intervention)

**Scoring system for healthy practices:** Each item was scored 2 for done and 1 for not done.

**Tool II: The Colorectal Evaluation of Clinical Therapeutics Scale (CORECTS), adopted from Lim et al. (2015) consisted** of a six-item questionnaire, was completed by pregnant women from the control and study groups prior to initiation of intervention, and after intervention at two and fourth week. This scale has been used to assess five major symptoms of hemorrhoid – pain, itching, swelling, bleeding and discomfort – each rated on a 0–10 scale, where 0 indicates no symptoms and 10 indicates worst possible symptoms. It also accounts for quality of life with an ‘impact on well-being score’, which measures the impact of hemorrhoidal symptoms on well-being, and ranges from 0 (no impact) to 10 (best possible impact). The CORECTS also assesses the total improvement in symptoms following nursing intervention with an ‘overall improvement’ score, with a score of 0 indicating no improvement at all and 10 indicating maximal improvement comparable to the healthy state.

**Supportive material: A guide booklet** was designed by the researchers using simple Arabic languages and different illustrated pictures to facilitate pregnant women understanding it contain knowledge about haemorrhoids. (Definition, classification, risk factors, causes, signs and symptoms, preventive measures, treatments and complications and healthy practices for reduction hemorrhoid symptoms such as general healthy practices, diet habits, healthy bowel practices and hygienic care

**Tools validity and reliability:**

Content validity of tools was ascertained by five experts (two experts from the obstetrics and gynecology nursing, one from medical surgical nursing and one from community health nursing / Faculty of Nursing Benha - University, one expert from obstetrics and gynecology department faculty of medicine Benha university,). The expertise reviewed the tools for clarity of sentences, consistency and appropriateness of content, the sequence of items, accuracy, relevance, comprehensiveness, simplicity, and applicability of the tools. No modifications were done. Reliability of tools was done by cronboch's Alpha Test, and it was for knowledge questionnaire (0.894) and in health practice (0.720), indicating good reliability.

**Administrative design:** An official permission was obtained from both dean of Benha Faculty of Nursing and the Hospital authorities in the identified setting to collect the necessary data and implement the study.

**Ethical Considerations:**

The current research was conducted under the approval of the Faculty of Nursing Ethical Committee, Benha University. An informed consent was used to obtain agreement to participate in the study after explaining the purpose of the study. The aim of the study was explained to each pregnant woman before applying the tools to gain their confidence and trust. The data was collected and treated confidentially. No harm happened to women. Each participant was free to withdraw at any time of data collection without obligation.

**Pilot Study:**

It was carried out on 10 % of the total study sample (12 pregnant women) who met the criteria of selection. The purpose of the pilot study was to test the clarity, objectivity, feasibility, and applicability of tools. Based on the pilot study results, the researcher rephrased some questions and sentences then set the final fieldwork schedule. Sample of the pilot study was excluded from the main study sample.

## **Field work**

The process of data collection was implemented for eight months, from the beginning of January 2022 to the end of August 2022.

**The Preparatory Phase:** It was the first phase of the study, and it included reviewing current and past national and international relevant literatures including books, articles, periodicals, internet, and magazines. This was necessary for the researchers to become oriented about aspects of the research problem, as well as, to assist in the development of the data collection tools and the preparation of instruction guidelines.

**Assessment phase:** The researcher introduced herself to the pregnant women and explained the purpose and procedure of the study. Formal consent was obtained from all participants. Each participant was informed that participation in the study was voluntary, and she can withdraw at any time. The researcher used instrument I to collect basic data and assess knowledge and health practice of pregnant women. average time for completion interviewing 30-45 min, and instrument II Colorectal Evaluation to assess hemorrhoid pain, itching swelling, bleeding and discomfort and effect on wellbeing the average time for completion interview 15- 20 min. the number of assessed per/week from 3 to 4 pregnant women.

### **Planning phase:**

Based on the assessment phase and reviewed of relevant literature the researchers design nursing instruction guideline about care of hemorrhoid during pregnancy supported by figures in an Arabic language.

### **Implementation phase:**

The researchers visited the outpatient clinic two days / week (Sunday – Wednesday) from 9.00 AM to 12:00 PM and repeated until predetermine sample size obtained. The pregnant women were selected during their antenatal follow up according to inclusion criteria. During this phase, the developed guideline was distributed to each pregnant woman with symptoms of hemorrhoids according to individualized needs. educational intervention implemented through 3 sessions; the first session included introduction about pregnancy and physiological changed during pregnancy in GIT, definition hemorrhoid, types and causes of hemorrhoid, the second session included risk factors of hemorrhoid, symptoms of hemorrhoid, how prevention from hemorrhoid and health practice during pregnancy to reduce symptoms of hemorrhoids. It took about 20-30 minutes, the third session included hygienic care, nursing intervention of pain relieve hemorrhoid during pregnancy and treatment. Each session takes 30-40 min.

**Evaluation phase:** During this phase, the effect of nursing guidelines was evaluated (posttest). The follow up was limited in the final session. Each woman was evaluated two times

during the study period utilizing the study tools. The first evaluation was done two weeks after implementation of the program, and the second evaluation was done two weeks after the first evaluation. The same data collection tools were used in the two evaluations.

### **Statistical Analysis:**

Data were analyzed using the statistical package for social science (SPSS), version 25. Numerical data were expressed as mean, standard deviation (SD) and range. Qualitative data were expressed as frequency and percentage. The Chi-square test was used to examine the difference between qualitative variables, and the student t-tests for comparing the difference in quantitative variables between two different groups. Correlation between different numerical variables was tested using Pearson product-moment correlation coefficient. A p-value < 0.05 was considered significant, and <0.001 was considered highly significant.

### **Results:**

**Table 1** shows distribution of studied pregnant women according to their socio-demographic characteristic and reveals that 50% of study group age between 20-<30 while 41.7% in control group age <20 with the mean age  $29.00 \pm 0.71$ ,  $26.83 \pm 0.81$  in study and control group .also reveals 60%, 58.3% of them in study and control group lived in rural area ,their educational level 51.7 % of them had secondary education in study group while , 51.7 % of them high education in control group. Besides 56.7%, 51.7% of them were employed in study and control group with insignificant difference regarding socio-demographic characteristic between study and control group respectively.

**Table 2** clarifies pre pregnancy anthropometric measurements of the studied pregnant women, demonstrates that height Mean  $\pm$  SD  $155.87 \pm 6.04$ ,  $155.47 \pm 4.66$  in study and control group, weight Mean  $\pm$  SD  $72.55 \pm 11.19$ ,  $70.22 \pm 7.21$  in study and control group and body mass index Mean  $\pm$  SD  $29.52 \pm 2.29$ ,  $28.93 \pm 1.89$  in study and control group with insignificant difference between study and control group respectively. Also reveals 48.3%, 41.7% obsess class I in study and control group with insignificant difference between both groups.

**Table 3** reveals distribution of studied pregnant women according to their past and present obstetric, medical, and surgical history. It demonstrates that 66.7%, 58.3% of studied pregnant women had multigravida 2-3 times and in third trimester in study and control group and 18.3%, 15% of them primigravida in study and control group with insignificant difference between both groups. Also shows 40.8%, 39.2% of them multipara, 76.7%, 63.3% of them no history of abortion in study and control group with insignificant difference between both groups. In addition, 59.2%, 68.6% of them history mode of delivery cesarean section in study and control group. regarding medical history 41.7% suffered from piles in study group while 46.7% suffered from anemia in control group. Moreover 56.0%, 52.6% of them had surgical history of anal fissure.

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**Table 4** shows the bowel habit and anorectal symptoms and clarifies that bowel habit 36.7% , 51.7% of them straining at stool in study and control groups, also demonstrates onset of hemorrhoids 43.4% during third trimester in study group while 41.7% during second trimester and 100% of them anorectal symptoms anal pain and itching in study and control groups while 58.3%, 68.3% of them no previous treatment and 61.7%, 70% Symptoms increase with pregnancy in study and control groups with statistically insignificant difference between both groups.

**Figure 1** illustrated distribution of studied pregnant women according to their characteristics of hemorrhoids, 40.1% of study groups hemorrhoids that prolapsed and retracted on their own (Stage II) while 33% Hemorrhoids that prolapsed but must be pushed back in by a finger (stage III) in control groups with statistically insignificant difference between both groups.

**Table 5** shows Statistically differences of pregnant women's knowledge regarding hemorrhoids pre and post intervention, it identifies that insignificant relation between study and control groups pre intervention guidelines while high statistically significant relation between study and control groups post intervention guidelines.

**Table 6** demonstrates Statistically differences of pregnant women's healthy practices for reduction of hemorrhoid symptoms and reveals that insignificant relation between study and control groups pre intervention guidelines while high statistically significant relation between study and control groups post intervention guidelines.

**Table 7** shows Statistically differences of pregnant women's according to Colorectal Evaluation of Clinical Therapeutics Scale (CORECTS) to assess level of severity and improvement of hemorrhoidal symptoms. It reveals that statistically insignificant relation between study and control groups pre intervention and total mean pre intervention  $24.65 \pm 2.35$  in study group and  $24.62 \pm 1.67$  in control group with statistically insignificant relation between both groups while high statistically significant relation between study and control groups post intervention and total mean  $1.42 \pm 1.03$  in study group while  $14.67 \pm 0.91$  in control group with high statistically significant relation post intervention between both groups. Also shows 94.23% improvement in study group while 40.41% improvement in control group.

**Table 8** reveals correlation between knowledge and practice with severity of hemorrhoidal symptoms pre and post intervention, it shows no significant statistical correlation between knowledge, practice, and severity of hemorrhoidal symptoms during preintervention period in both groups. While there was a high statistically significant correlation between knowledge and severity of hemorrhoidal symptoms post intervention in both groups. Also, statistically significant correlation between practice and severity of hemorrhoidal symptoms in study group and while high statistically significant correlation in control group post intervention. Moreover, statistically insignificant correlation between knowledge and healthy practice in both groups preintervention while high statistically significant correlation post intervention.

**Table 1. Distribution of studied pregnant women according to their socio-demographic characteristics, study group (n=60), and control group (n= 60).**

Socio-Demographic characteristics	Study group No=60		Control group No=60		X <sup>2</sup>	p-value
	(No.)	%	(No.)	%		
<b>Age/years</b>						
- <20	15	25.0	25	41.7	4.500	0.105 <sup>n.s</sup>
- 20-	30	50.0	20	33.3		
- 30-<40	15	25.0	15	25.0		
<b>Mean ± SD</b>	29.00 ± 0.71		26.83 ± 0.81		t-test= (- 1.200) p value = (0.233 <sup>n.s</sup> )	
<b>Residence</b>						
- Rural	36	60.0	35	58.3	0.034	0.853 <sup>n.s</sup>
- Urban	24	40.0	25	41.7		
<b>Education level</b>						
-Primary level	6	10.0	9	15.0	4.158	0.125 <sup>n.s</sup>
-Secondary level	31	51.7	20	33.3		
-High level	23	38.3	31	51.7		
<b>Occupation</b>						
- House wife	26	43.3	29	48.3	0.302	0.583 <sup>n.s</sup>
-Employee	34	56.7	31	51.7		

(n.s) Not Significant (P&gt;0.05) t: independent t test

**Table 2. Distribution of studied pregnant women according to anthropometric measurements, study group (n=60), and control group (n= 60).**

Anthropometric measurements	Study group No=60	Control group No=60	Test	p-value
	Mean ± SD	Mean ± SD		
<b>Height</b>	155.87 ± 6.04	155.47 ± 4.66	t-test (0.406)	0.685 <sup>n.s</sup>
<b>Weight</b>	72.55 ± 11.19	70.22 ± 7.21	t-test (- 1.357)	0.177 <sup>n.s</sup>
<b>BMI (kg/cm<sup>2</sup>)</b>				
Normal weight (18.5–24.9)	25 (41.7)	22 (36.7)	χ <sup>2</sup> =5.426	0.143 <sup>n.s</sup>
Overweight (25–29.9)	3(5.0)	11(18.3)		
Obese class I (30 -34.9)	29 (48.3)	25(41.7)		
Obese class II (35 -39.9)	3 (5.0)	2(3.3)		
<b>BMI</b>	29.52 ± 2.29	28.93 ± 1.89	t-test (- 1.535)	(0.128 <sup>n.s</sup> )

BMI: Body mass index (n.s) Not Significant (P&gt;0.05) t: independent t test

**Table 3. Distribution of studied pregnant women according to their past and present obstetric, medical, and surgical history study group (n=60), and control group (n=60).**

Past and present obstetric, medical, and surgical history	Study group No=60		Control group No=60		$\chi^2$	p-value
	(No.)	%	(No.)	%		
<b>Gravida</b>						
Primigravida	11	18.3	9	15.0	2.493	0.287 <sup>n.s</sup>
2-3	40	66.7	35	58.3		
≥ 4	9	15.0	16	26.7		
<b>Gestational weeks</b>						
second trimester	20	33.3	25	41.7	0.889	0.346 <sup>n.s</sup>
third trimester	40	66.7	35	58.3		
<b>Para</b>	(n=49)					
1-2	14	28.6	15	29.4	2.320	0.313 <sup>n.s</sup>
3-4	15	30.6	20	39.2		
>4	20	40.8	16	31.4		
<b>Abortion</b>						
- No abortion	46	76.7	38	63.3	2.540	0.111 <sup>n.s</sup>
-Once	14	23.3	22	36.7		
<b>Type of delivery</b>	(n=49)		n=51		1.358	0.244 <sup>n.s</sup>
Normal	20	40.8	16	31.4		
Cesarian section	29	59.2	35	68.6		
<b>Twins</b>						
Yes	9	15.0	5	8.3	1.294	0.255 <sup>n.s</sup>
No	51	85.0	55	91.7		
<b>Prolonged labor</b>	(n=49)					
Yes	19	38.8	26	50.9	2.980	0.394 <sup>n.s</sup>
No	30	61.2	25	49.1		
<b>Medical history</b>						
<b>Presence of comorbid diseases#</b>						
- diabetes mellites	11	18.3	22	36.7	4.528	0.104 <sup>n.s</sup>
- Hypertension	11	18.3	10	16.7		
- Anemia	22	36.7	28	46.7		
- Piles	25	41.7	19	31.7		
<b>Surgical history</b>						
<b>Previous surgery</b>	(n=25)		n=19			
-Piles	11	44.0	9	47.4	2.970	0.227 <sup>n.s</sup>
-Anal fissure	14	56.0	10	52.6		

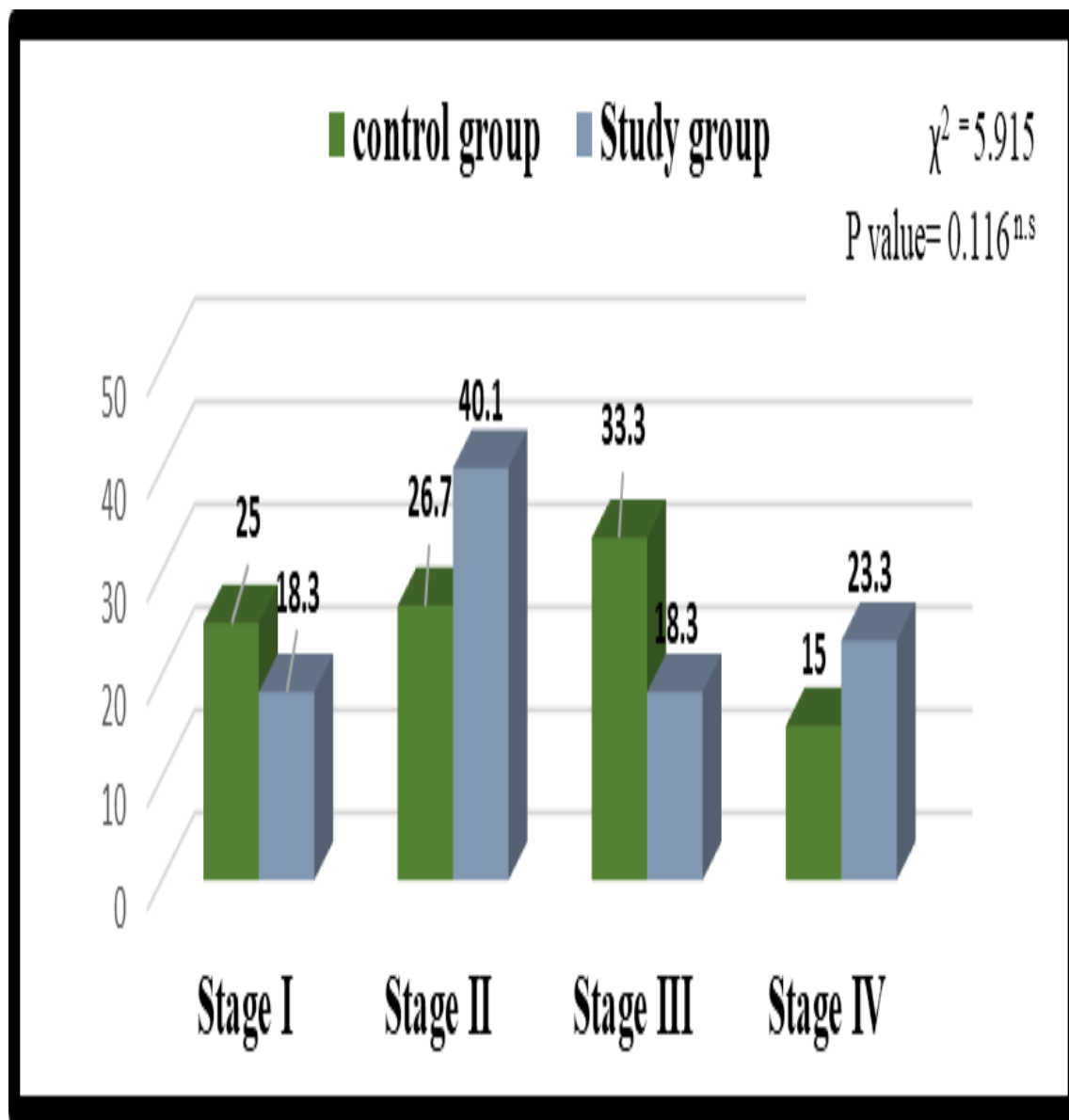
(n.s) Not Significant (P&gt;0.05) (#) Not mutually conclusive

**Table 4. Distribution of studied pregnant women according to their Bowel habit and Anorectal symptoms, study group (n=60), and control group (n= 60).**

Bowel habit and Anorectal symptoms	Study group No=60		Control group No=60		$\chi^2$	p-value
	(No.)	%	(No.)	%		
<b>Bowel habit</b>						
-Hard consistency of stool	18	30.0	9	15	4.528	0.104 <sup>n. s</sup>
-incomplete bowel empty feeling	20	33.3	20	33.3		
-straining at stool	22	36.7	31	51.7		
<b>Onset of hemorrhoids</b>						
- Pre pregnancy	14	23.3	15	25.0	1.373	0.503 <sup>n. s</sup>
- Second trimester	20	33.3	25	41.7		
- Third trimester	26	43.4	20	33.3		
<b>Anorectal symptoms #</b>						
-Anal pain	60	100.0	60	100.0	2.030	0.566 <sup>n. s</sup>
-Itching	60	100.0	60	100.0		
-Swelling	34	56.7	25	41.7		
-PR (per rectum bleeding)	26	43.3	22	36.7		
<b>Previous treatment.</b>						
-Yes	25	41.7	19	31.7	1.292	0.256 <sup>n. s</sup>
- No	35	58.3	41	68.3		
<b>Symptoms increase with pregnancy.</b>						
-Yes	37	61.7	42	70.0	0.926	0.336 <sup>n. s</sup>
- No	23	38.3	18	30.0		

(n.s) Not Significant (P&gt;0.05)

#) Not mutually conclusive



**Figure (1):** Distribution of studied pregnant women according to their characteristics of hemorrhoids study group (n=60), and control group (n= 60). According to research hypothesis No.1. Knowledge level among study group may be significantly higher than the control group (table 5).

**Table (5): Statistically differences of pregnant women's knowledge regarding hemorrhoids (pre and post intervention), study group (n=60) and control group (n=60).**

Study periods knowledge	Responses	Pre intervention		$\chi^2$ tests P value	Post intervention		$\chi^2$ tests P value
		Study Group	Control group		Study group	Control group	
		No (%)	No (%)		No (%)	No (%)	
Definition	Correct	8(13.3)	15(25.0)	1.768 FE	49(81.7)	28(46.7)	15.983 FE (<0.001 **)
	Incorrect	52 (86.7)	45(75.0)	(0.268 n. s)	11(18.3)	32(53.3)	
Classification	Correct	16(26.7)	10(16.7)	0.519 FE	46(76.7)	25(41.7)	15.211 FE (<0.001 **)
	Incorrect	44(73.3)	50(83.3)	(0.632 n. s)	14(23.3)	35(58.3)	
Risk factors	Correct	16(26.7)	9(15.0)	2.476 FE	49(81.7)	22(36.7)	25.145 FE (<0.001 **)
	Incorrect	44(73.3)	51(85.0)	(0.177 n. s)	11(18.3)	38(63.3)	
Causes	Correct	9(15.0)	12(20.0)	0.519 FE	60(100.0)	28(46.7)	43.636 FE (<0.001 **)
	Incorrect	51(85.0)	48(80.0)	(0.632 n. s)	0(0.0)	32(53.3)	
Signs and symptoms	Correct	24(40.0)	32(53.3)	2.143 FE	60(100.0)	34(56.7)	33.191 FE (<0.001 **)
	Incorrect	36(60.0)	28(46.7)	(0.200 n. s)	0(0.0)	26(43.3)	
Complications	Correct	10(16.7)	19(31.7)	3.683 FEP	60(100.0)	34(56.7)	33.191 FE (<0.001 **)
	Incorrect	50(83.3)	41(68.3)	(0.087 n. s)	0(0.0)	26(43.3)	
Treatments	Correct	23(38.3)	17(28.3)	1.350 FE	45(75.0)	28(46.7)	10.108 FE (0.003*)
	Incorrect	37(61.7)	43(71.7)	(0.333 n. s)	15(25.0)	32(53.3)	
Preventive measures	Correct	10(16.7)	3(5.0)	4.227 FE	49(81.7)	23(38.3)	23.472 FE (<0.001 **)
	Incorrect	50(83.3)	57(95.0)	(0.075 n. s)	11(18.3)	37(61.7)	
Total	Adequate $\geq$ 75%	15(25.0)	15(25.0)	0.000 FE	60(100.0)	38(63.3)	26.939 FE (<0.001 **)
	Inadequate < 75%	45(75.0)	45(75.0)	(1.000 n. s)	0(0.0)	22(36.7)	

n.s not Significant at >0.05  
statistically significant at  $\leq$ 0.001

\* Significant at <0.05  
FEP: p value for Fisher exacts for chi square.  
\*\*highly

According to Research hypothesis No. 2. Practice level among study group may be significantly higher than the control group (Table 6).

**Table (6): Statistically differences of pregnant women's healthy practices for reduction of hemorrhoid symptoms (pre and post intervention), study group (n=60) and control group (n=60).**

women's healthy practices	Pre intervention		t – test	P value	Post intervention		t- test	P value
	Study group	Control group			Study group	Control group		
	$\bar{X} \pm SD$	$\bar{X} \pm SD$			$\bar{X} \pm SD$	$\bar{X} \pm SD$		
<b>General health practices</b>								
avoid standing long time	1.10 $\pm$ 0.30	1.20 $\pm$ 0.40	1.536	0.127 n. s	2.82 $\pm$ 0.39	1.60 $\pm$ 0.49	-14.97	<0.001**
Avoid Sitting long time	1.33 $\pm$ 0.48	1.33 $\pm$ 0.48	0.000	1.000 n. s	2.60 $\pm$ 0.72	1.67 $\pm$ 0.48	- 8.397	<0.001**
Get regular and safe exercise	1.33 $\pm$ 0.48	1.20 $\pm$ 0.40	-1.657	1.00 n. s	2.63 $\pm$ 0.48	1.83 $\pm$ 0.81	- 17.000	<0.001**
If sitting is uncomfortable, get a donut-shaped pillow	1.57 $\pm$ 0.49	1.53 $\pm$ 0.50	-0.364	0.716 n. s	2.75 $\pm$ 0.44	1.33 $\pm$ 0.48	- 17.000	<0.001**
Lie on one side when sleeping, reading	1.52 $\pm$ 0.50	1.57 $\pm$ 0.50	0.546	0.568 n. s	3.00 $\pm$ 0.00	2.42 $\pm$ 0.49	- 9.088	<0.001**
Try not to weight gain than recommended	1.33 $\pm$ 0.48	1.33 $\pm$ 0.48	0.000	1.000 n. s	2.60 $\pm$ 0.72	1.67 $\pm$ 0.48	- 8.397	<0.001**
<b>Dietary habits</b>								
Have high fiber diet	1.53 $\pm$ 0.50	1.47 $\pm$ 0.50	-0.726	0.469 n. s	2.85 $\pm$ 0.36	1.48 $\pm$ 0.50	- 17.092	<0.001**
avoid refined flour like white bread	1.18 $\pm$ 0.39	1.12 $\pm$ 0.32	-1.019	0.311 n. s	2.85 $\pm$ 0.36	1.42 $\pm$ 0.49	- 18.086	<0.001**
Avoid Fried, Salty and Spicy foods	1.32 $\pm$ 0.65	1.67 $\pm$ 0.38	-1.546	0.125 n. s	2.67 $\pm$ 0.48	1.38 $\pm$ 0.49	- 14.556	<0.001**
Choose a food-based prenatal vitamin	1.52 $\pm$ 0.50	1.57 $\pm$ 0.50	0.546	0.568 n. s	3.00 $\pm$ 0.00	2.42 $\pm$ 0.49	- 9.088	<0.001**
Drinking more water and liquids	1.62 $\pm$ 0.49	1.67 $\pm$ 0.47	0.567	0.572 n. s	2.60 $\pm$ 0.49	1.93 $\pm$ 0.78	- 5.602	<0.001**
Avoid drink caffeinated drinks	1.15 $\pm$ 0.36	1.08 $\pm$ 0.28	-1.134	0.259 n. s	2.82 $\pm$ 0.39	1.15 $\pm$ 0.36	-24.314	<0.001**
<b>healthy bowel practices</b>								
Don't delay going to the bathroom when feeling urge	1.62 $\pm$ 0.49	1.67 $\pm$ 0.48	0.567	0.572 n. s	2.88 $\pm$ 0.32	1.82 $\pm$ 0.39	-16.296	<0.001**
don't sit on the toilet longer than necessary	2.00 $\pm$ 0.61	1.88 $\pm$ 0.87	-0.853	0.395 n. s	2.57 $\pm$ 0.49	1.92 $\pm$ 0.77	-5.507	<0.001**
Check for blood in stools	1.10 $\pm$ 0.30	1.13 $\pm$ 0.34	0.565	0.573 n. s	2.18 $\pm$ 0.39	1.42 $\pm$ 0.49	-9.396	<0.001**

**Table (6) Cont'd: Statistically differences of pregnant women's healthy practices for reduction of hemorrhoid symptoms (pre and post intervention), study group (n=60) and control group (n=60).**

Hygienic care								
Keep Personal hygiene (perianal hygiene)	2.65 ±0.73	2.43 ±0.67	-1.687	0.094 n. s	2.87 ±0.34	2.47 ±0.75	-3.769	<0.001**
Stay clean and use soft, to avoid more irritation in the affected area	1.67 ±0.48	1.60 ±0.64	-0.646	0.520 n. s	2.67 ±0.48	1.85 ±0.36	-10.607	<0.001**
Use Cold therapy help reduce swelling and bring temporary relief	1.10 ±0.30	1.12 ±0.32	0.291	0.771 n. s	2.42 ±0.49	1.33 ±0.48	-12.199	<0.001**
Soak in warm water several times a day	1.63 ±0.48	1.52 ±0.50	-1.291	0.199n.s	2.82 ±0.39	1.67 ±0.47	-14.484	<0.001**
Applied topically to help alleviate itching.	1.25 ±0.44	1.40 ±0.49	1.762	0.081n.s	2.52 ±0.50	2.08 ±0.67	-3.999	<0.001**
<b>Total</b>	27.30 ±1.94	26.65 ±2.53	01.579	0.117 n. s	48.53 ±2.02	30.77 ±2.27	-45.253	<0.001**

n.s Not Significant at >0.05

\*\* highly statistically significant at ≤0.0

**According to H3-Study group may experience a significant improvement in hemorrhoidal symptoms severity than the control group table7).**



**Table (7): Statistically differences of pregnant women's according to Colorectal Evaluation of Clinical Therapeutics Scale (CORECTS) to assess level of severity of hemorrhoidal symptoms (pre and post intervention) and improvement (post intervention), study group (n=60) and control group (n=60).**

Study periods	Pre intervention		t – test P value	Post intervention		t- test P value	% of improvement in study group		% of improvement in control group	
	Study group	Control group		Study group	Control group		Mean decrease in score (SD)	% decrease	Mean decrease in score (SD)	% decrease
	$\bar{X} \pm SD$	$\bar{X} \pm SD$		$\bar{X} \pm SD$	$\bar{X} \pm SD$					
Pain	6.62±0.98	6.92±1.43	1.786 (0.077 <sup>n.s</sup> )	0.52±0.50	5.73±1.36	27.793 (<0.001 **)	6.00(1.28)	92.14 %	1.18(0.67)	17.19%
Itching	3.05±1.11	3.18±0.91	0.719 (0.474 <sup>n.s</sup> )	0.33±0.48	1.85±0.36	19.699 (<0.001 **)	2.71(0.71)	95.01	1.33(0.95)	41.82%
Swelling	1.62±1.55	1.20±1.34	-1.575 (0.118 <sup>n.s</sup> )	0.33±0.48	0.83±0.99	3.514 (0.001 **)	1.28(1.18)	79.62%	0.36(0.58)	30.83%
Bleeding	0.87±0.99	0.60±0.92	- 1.517 (0.132 <sup>n.s</sup> )	0.00±0.00	0.00±0.00	NA	0.86(0.99)	100.0%	0.60(0.92)	100.0%
Discomfort	4.75±1.38	4.80±0.98	0.228 (0.820 <sup>n.s</sup> )	0.23±0.43	2.73±0.45	31.381 (<0.001 **)	4.51(1.22)	95.15%	2.06(1.13)	43.12%
Well-being	5.22±1.23	5.21±1.73	0.000 (1.000 <sup>n.s</sup> )	0.00±0.00	3.52±1.19	22.969 (<0.001 **)	5.21(1.23)	100.0%	1.70(0.72)	32.43%
The overall improvement	-	-	-	9.33±0.73	2.87±0.81	-45.899 (<0.001 **)	-	-	-	-
Total	24.65±2.35	24.62±1.67	-0.090 (0.929 <sup>n.s</sup> )	1.42±1.03	14.67±0.91	74.520 (<0.001 **)	23.23(1.99)	94.23%	9.95(1.45)	40.41%

\* Significant at &lt;0.05,

\*\* highly statistically significant at ≤0.001

NA: Not applicable

According to research hypothesis No.4. There may be significant correlation between knowledge, practice, and degree of hemorrhoidal symptoms severity (Table 8).

**Table (8): Correlation between knowledge and practice with severity of hemorrhoidal symptoms pre and post intervention among pregnant women, study group (n=60) and control group (n=60).**

Variables Studied groups		Study periods	Severity of hemorrhoidal symptoms		Knowledge	
			r- test	p-value	r- test	p-value
Knowledge	Study group	Pre intervention	-0.246	0.070 n.s	-	-
		Post intervention	-0.943	<0.001**	-	-
	Control group	Pre intervention	-0.094	0.473n.s	-	-
		Post intervention	-0.638	<0.001**	-	-
Practices	Study group	Pre intervention	-0.087	0.511 n.s	0.109	0.501 n. s
		Post intervention	-0.337	0.009*	0.444	<0.001**
	Control group	Pre intervention	-0.253	0.060 n.s	0.164	0.211 n. s
		Post intervention	-0.637	<0.001**	0.848	<0.001**

(n.s) not statistically significant at > 0.05

(\*) Statistically significant at ≤0.05  
≤0.001

(\*\*) Highly statistically significant at

## Discussion

Hemorrhoids are common in pregnancy, the cause in pregnancy is related to increasing circulating volume, hormonal changes and increased intra-abdominal pressure resulting from the gravid uterus, causing compression of the superior rectal veins, constipation, straining during defecation, prolonged sitting or standing, prolonged straining during the labor. Hemorrhoids result from distal displacement of the anal cushions, prominence of anal mucosa formed from connective tissue, smooth muscle and both arterial and venous blood vessels (**Story et al., 2021**). The study aimed to evaluate the effect of nursing guidelines on hemorrhoids symptoms among pregnant women.

Regarding the socio demographic characteristics of studied pregnant women, the present study shows non- statistically significant differences between both study and control groups concerning all sociodemographic characteristics assessed, revealing the homogeneity among study subjects regarding their characteristics before study conduction. The present study found that half of the study group age ranged between 20- <30 while more than two fifths of control group age was <20 with the mean age ( $29.00 \pm 0.71$  &  $26.83 \pm 0.81$ , respectively), also, more than half of them in the study and control group lived in rural area, and attained secondary level of education in the study group while high education in control group, as well as were employed. These findings were consistent with (**Zhang et al., 2021**) who conducted study about socio-demographic characteristics and outcomes of pregnant women who delivered prior to and after the termination of the one-child policy in China: a comparative study which revealed that, the mean age of the childbearing women was  $28.80 \pm 4.72$  years and received at least a secondary education.

Regarding anthropometric measurements of the studied pregnant women, in study and control group it was revealed that Mean  $\pm$  SD of the body mass index ( $29.52 \pm 2.29$  &  $28.93 \pm 1.89$ , respectively) with insignificant difference between both groups. Also found that less than half of them obese class I in both groups. This is in the same line with **Kibret et al. (2021)**. Who studied Prevalence and associated factors of hemorrhoids among adult patients visiting the surgical outpatient department in the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia and founded that overweight increased the odds of having hemorrhoids. This could be attributed to an increase in the intra-abdominal pressure due to the high body weight and visceral fats which are thought to give rise to the venous congestion of the distal rectum.

Regarding the past and present obstetric, medical, and surgical history the present study found that more than half of studied pregnant women had multigravida 2-3 times and in third trimester in study and control group and about three quarters of them had no history of abortion in study and control group with insignificant difference between both groups. In addition, about three fifths from previous history para delivery mode cesarean section. Moreover, around two fifths of the study group and one third in control group had previous piles. Moreover, two fifths in study group and one third in control had previous

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surgical history, more than half of them had surgical history of anal fissure in both groups. This result is consistent with previous study done by **Lohsiriwat, & Jitmonggan (2022)**. Who studied strategies to reduce post-hemorrhoidectomy pain: a systematic review and mentioned that there was relationship between symptoms of hemorrhoids and obstetric history of pregnant women, which could be a result of multiple pregnancies and labors. Also due to pregnancy, some women suffer from hemorrhoids during their first pregnancy and those who have it once and been pregnant are more likely to get it during their next pregnancies. Furthermore, women may also get hemorrhoids during the second stage of labor, during childbirth. On the other hand, this result contradicted with **He and Shi (2021)** who studied the effect of vaginal delivery and caesarean section on the anal sphincter complex of primipara based on optimized three-dimensional ultrasound image and nuclear regression reconstruction algorithm and mentioned that women who give birth naturally (normal delivery) and in whom instrumental delivery is used are more likely to develop hemorrhoids as compared to women that undergo cesarean section. The difference may be due to other risk factors of hemorrhoid as unhealthy practice and poor dietary habits during pregnancy.

Regarding the bowel habit and anorectal symptoms, the present study reported that about one third of the study group and more than half of control group had straining during defecation, also the onset of hemorrhoids more than two fifths of study group during third trimester while in control group onset during second trimester. All both groups had anorectal symptoms anal pain and itching while more than half in study group and two thirds of control groups had no previous treatment, also about two thirds of them had symptoms increase with pregnancy with statistically insignificant difference between both groups. This result agrees with **Beksac et al., (2018)** who studied Hemorrhoids and related complications in primigravid pregnancy and reported that statistically significant relationship between external hemorrhoids/perianal complications and constipation and a statistically significant increase in the prevalence of external hemorrhoids/perianal complications by gestational age.

Regarding to characteristics of hemorrhoids of studied women reported that two fifths of study group hemorrhoids prolapsed and retracted on their own (Stage II) while about of one third Hemorrhoids that prolapsed but must be pushed back in by a finger (stage III) in control groups with statistically insignificant difference between both groups supported by **Simillis et al. (2015)** who studied Systematic review and network meta-analysis comparing clinical outcomes and effectiveness of surgical treatments for hemorrhoids and stated that classically, the first grades of development are the subject of outpatient medical treatment and only exceptionally that of surgery, therefore having less impact on both the consumption of resources and patient discomfort when hospitalized.

Regarding the Statistically differences of pregnant women's knowledge regarding hemorrhoids pre and post intervention, found that there was insignificant difference between study and control groups pre intervention guidelines while highly statistically

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significant difference post intervention guidelines. This finding was similar with that of **Joseph and Pohekar (2019)** Who assessed “the Effectiveness of Planned Teaching on Knowledge Regarding Prevention of Hemorrhoids Among General Population” and stated that the majority of participant have poor with a not significant knowledge and information about hemorrhoids pretest and statistically significant posttest, supporting the first research hypothesis. This might be due to the implementation of guidelines for intervention groups having a positive effect on enhancing their knowledge.

Concerning Statistically differences of pregnant women’s healthy practices for reduction of hemorrhoid symptoms found insignificant difference between study and control groups pre intervention guidelines while high statistically significant difference between study and control groups post intervention guidelines. This finding is supporting the second research hypothesis, revealing the efficacy of intervention guidelines on improving the healthy practices among studied women. These findings were supported by a study conducted by **Cox and Granne, (2020)** who studied common symptoms in pregnancy and mentioned that hemorrhoid symptoms can be alleviate by measures as avoid constipation, avoiding standing for long periods and regular exercise may help symptoms, using iced water can help to ease any pain and Avoiding straining on opening bowels, that was significantly higher level among intervention group than in control group.

Moreover, the current study findings were consistent with previous study conducted by **Zagriadskii et al. (2018)** who conducted study about “Conservative Treatment of Hemorrhoids: Results of an Observational Multicenter Study Received” and indicated that general principles for both the prevention and conservative treatment of patients with HD include modification of dietary regimen and increase in fiber intake, which helps to avoid straining during defecation. In addition, this result supported by **Ward., et al (2016)** who stated that actions to minimize hemorrhoidal discomfort Include assisting the patient to aside- lying position in bed and teaching her to sit on flat, hard surfaces and to tighten her buttocks before sitting. Soft surfaces and pillows such as donut rings should be avoided because they separate the buttocks and decrease venous flow, intensifying the pain. If the hemorrhoids are severe, the patient the patient can be taught how to manually reposition the hemorrhoids back into the rectum.

Concerning the level of severity of hemorrhoids, the current study found that there was statistically insignificant difference between study and control groups pre guidelines with a total mean  $24.65 \pm 2.35$  in study group and  $24.62 \pm 1.67$  in control group, while highly statistically significant relation between study and control groups post intervention guidelines. Supporting the third research hypothesis, pointing out the impact of complying with the given instructions in intervention guidelines. This result in the same line with **Poskus, et al. (2022)** who studied Preventing hemorrhoids during pregnancy: a multicenter, randomized clinical trial, BMC Pregnancy and Childbirth and reported that

intervention significantly reduces hemorrhoids in pregnancy and can be safely recommended to pregnant women.

Finally, the result of the present study found that there was insignificant statistical correlation between knowledge, practice and severity of hemorrhoidal symptoms during pre-intervention guidelines in both groups while high statistically significant correlation between knowledge and severity of hemorrhoidal symptoms post intervention in both groups, and statistically significant correlation between practice and severity of hemorrhoidal symptoms in study group and high statistically significant correlation in control group post intervention guidelines. Moreover, statistically insignificant correlation between knowledge and healthy practice in both groups preintervention guidelines while high statistically significant correlation post intervention guidelines. supporting the fourth research hypothesis. This result consistent with **Muthulakshm et al. (2015)** who conducted a study to assess ‘the effectiveness of information, education, and communication package ‘in terms of knowledge and knowledge on practice regarding lifestyle modification among anal fissure patients in Ashwin hospital, Coimbatore and stated that education and communication program has significant correlation with the improvement of knowledge on practice regarding lifestyle modification of anal fissure. Also was supported by **Shirah et al., (2018)** who reported in their study about ‘Hemorrhoids during pregnancy: Sitz bath vs. ano-rectal cream: A comparative prospective study of two conservative treatment protocols’ that hemorrhoids often have a self-limiting course in non-pregnant adults, the course during pregnancy tends to be more prolonged, and hemorrhoids could resolve completely only in the postpartum period.

#### **Conclusion:**

Based on of the current findings and research hypothesis: that most of the study and control groups had inadequate knowledge and unsatisfactory health practice with insignificant difference between both groups pre intervention guidelines compared post intervention high statistically significant difference between both groups. also, significant improvement hemorrhoids severity symptoms among study group post intervention guidelines than control group and no significant statistical correlation between knowledge, health practice and severity of hemorrhoidal symptoms pre intervention in both groups, while there was a high statistically significant correlation between knowledge, health practice and severity of hemorrhoidal symptoms post intervention in both groups. These results support the current research hypothesis.

**Recommendations:** Based on the findings of the present study, the following recommendations are suggested:

- Health education program regarding general healthy practices during pregnancy include dietary and hygiene.
- Replication of the current study on a large representative sample to achieve generalization of the results.

### Further research

- Educational program regarding prevention hemorrhoids during pregnancy
- Preconception counseling about health practice during pregnancy

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### الملخص العربي

## تأثير دليل الإرشادات التمريضية على أعراض البواسير بين السيدات الحوامل

**الخلفية:** البواسير هي دوالي منتفخة حول فتحة الشرج وتعتبر حالة شائعة أثناء الحمل وتتسبب في ظهور أعراض رئيسية وهي الحرقان والحكة والألم حول الشرج والنزيف.

**الهدف:** تهدف الدراسة إلى تقييم دليل الإرشادات التمريضية على أعراض البواسير بين السيدات الحوامل.

**تصميم البحث:** تم استخدام تصميم شبه تجريبي لإجراء الدراسة

**مكان الدراسة:** أجريت الدراسة في العيادة الخارجية لأمراض النساء والتوليد بمستشفى جامعة بنها.

**العينة:** تم اختيار عينة غرضية 120 امرأة حامل مقسمة إلى مجموعتين متساويتين في مجموعة الدراسة ومجموعة المراقبة وفقاً لمعايير الاشتمال.

**الأدوات:** تم استخدام أداتين لجمع البيانات (1) استبانة المقابلات الشخصية (2) تقييم القولون والمستقيم لمقياس العلاجات السريرية.

**النتائج:** أظهرت نتائج هذه الدراسة أن المعلومات والممارسات الصحية لم تكن ذات دلالة إحصائية بين مجموعة الدراسة والمجموعة الضابطة قبل التدخل بدليل الإرشادات التمريضية بينما كانت هناك علاقة ذات دلالة إحصائية عالية بين المجموعتين ما بعد التدخل بدليل الإرشادات التمريضية، وكذلك ارتباط عالي إحصائياً بين المعلومات والممارسات الصحية مع شدة أعراض البواسير بعد التدخل في كلا المجموعتين.

**الخلاصة:** وجود تحسن كبير في المعلومات والممارسات الصحية وتحسن كبير في تخفيف شدة أعراض البواسير بعد التدخل بدليل الإرشادات التمريضية.

**التوصيات:** بناء على نتائج الدراسة توصى بإعداد برنامج تثقيف صحي فيما يتعلق بالممارسات الصحية العامة أثناء الحمل وبرنامج تثقيف غذائي أثناء زيارات متابعة الحمل. تكرار الدراسة الحالية على عينة كبيرة لتحقيق تعميم النتائج.