

# Assess the Urinary Incontinence's Risk Factors among Pregnant Women

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**Abstract:** pregnant women's health and quality of care are essential aspects of clinical practice. Urinary incontinence (UI) during pregnancy is a social problem that necessitates special care and management. **Aim:** The current study aimed to assess the urinary incontinence's risk factors among pregnant women. **Design:** A descriptive design was used in this study. **Setting:** the study was conducted at antenatal clinic in Helwan general hospital at Cairo, Egypt. **Sample:** Purposive sampling was utilized in the present study to recruit 128 pregnant women. **Tools:** two tools for data collection. **First tool:** structured interviewing questionnaire which used to assess socio-demographic data obstetric and family planning history. **Second tool:** assess the risk factors of urinary incontinence among pregnant women. **Result:** The significant factors predisposing for the development of urinary incontinence during pregnancy were unhealthy urination habits, poor personal hygiene, poor sexual hygiene, history of vaginal infection, increase rate of body mass index, previous use of contraception specially intra uterine device, inadequate socioeconomic status, constipation, minor of pregnant women have low nutritional habits and family history of urinary incontinence. The result illustrate that the most common type of urinary incontinence was mixed urinary incontinence of pregnant women have urge urinary incontinence. **Conclusion:** the study was concluded that the most common risk factors predisposed for the development of urinary incontinence during pregnancy were unhealthy urination habits, poor personal hygiene, poor sexual hygiene, history of vaginal infection, increase rate of body mass index, previous use of contraception specially intra uterine device, inadequate socioeconomic status such as low family monthly income, constipation, family history of urinary incontinence and low nutritional habits. The most common type of urinary incontinence during pregnancy in the study was stress urinary incontinence. **Recommendations:** Educational program for pregnant women in antenatal clinic to prevent urinary incontinence during pregnancy.

**Keywords:** Pregnant women, risk factors, urinary incontinence.

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## 1. INTRODUCTION

The international continence society defined urinary incontinence as the involuntary urinary leakage has detrimental effect on women's health (social, physical and psychological well-being) along with placing a burden on health resources (Habib, Ccaudhary, 2016). Urinary incontinence (UI) during pregnancy is a social problem that necessitates special care and management (Beksac, et al., 2017). Prevalence of urinary incontinence during pregnancy in the world during is 23% in first trimester of pregnancy, from 6 months up to 1 year post-partum is from 6% to 29% and at the end of pregnancy is 67% (Nigam, et al., 2016).

Common causes of urinary incontinence during pregnancy include pressure during cough, sneeze, exercise and laugh. These physical movements put extra pressure on bladder; changing hormones during pregnancy can affect the lining of bladder and urethra. Medical conditions include diabetes, multiple sclerosis, anxiety, constipation, neurological disorder as stroke, urinary tract infections and tumor along urinary tract can block normal flow of urine (South-Paui, 2017). The symptoms depend on the type of urinary incontinence. Stress urinary incontinence refers to physical pressure not to

mental stress. The bladder and muscles involved in urinary control are placed under sudden extra pressure, the women complain of involuntary loss of urine. Urge incontinence is a sudden, involuntary contraction of the muscular wall of the bladder that causes an urge to urinate that cannot be stopped. The women have a very short time before the urine is released, regardless of what women try to stop urine (Wieland, et al., 2017).

Urinary incontinence is classified as stress urinary incontinence (SUI). SUI is defined as involuntary leakage of urine due to pelvic floor muscles weakness during coughing, laughing, sneezing. Urge urinary incontinence (UI) is involuntary urinary leakage accompanied with sudden compelling desire to pass urine, which is tough to defer. Mixed urinary incontinence (MUI) is a combination of UI and SUI (Nigam, et al., 2016). The risk factors of urinary incontinence during pregnancy are eleven items. The risk factors consist of anxiety, depression, age, body mass index (BMI), panic attacks, childhood enuresis, sexual activities, eating disorder, constipation and combined oral contraception (Almoussa, Loon, 2017). The maternal and neonatal complications of a UI during pregnancy can be devastating. If untreated may develops UTI cystitis then may be develop to pyelonephritis this infection can lead to intrauterine growth retardation and low birth weight infants and premature labor known as labor onset before 37 weeks of gestation (Miller, et al, 2016).

Nursing consultations during the pregnancy is the ideal time to educate women regarding their health to prevent urinary incontinence. At this stage a woman has constant contact with various health professionals and is encouraged to improve her physical condition during the pregnancy (Bezerra, et al., 2016). The nurse should investigate urinary symptoms and guide pregnant women about maintain a healthy weight by good care and keeping weight under control, may be able to decrease risk of urinary incontinence. Practice Kegel exercises because pregnancy can weaken the urinary sphincter and pelvic floor muscles, avoid bladder irritants, such as caffeine, alcohol and acidic foods, prevent constipation, stop smoking and eat more fiber (Stewart, et al., 2017). Self-care and coping skills problems with urine leakage taking extra care to keep skin clean and dry. May need to use a washcloth to clean and dry the skin. Products such as powders, moisturizers and deodorizing tablets are available that can help to feel clean and eliminate urine odor (Tyralla, Seweryn, Krysta, 2017).

#### Significance of the study:

Urinary incontinence during pregnancy imposes a significant Psychological impact on Women. That result loss of self-esteem, decrease ability to maintain independent lifestyle consequently, excursions outside the home, social interaction with friends and family as well as sexual activity may be restricted or avoided entirely (Habib, Ccaudhary, 2016). Prevalence of urinary incontinence in the world during the first trimester of pregnancy is 23%; the second trimester is 6% and at the end of pregnancy is 67% (Nigam, et al., 2016). The overall prevalence of urinary incontinence among pregnant women in Egypt was 22.2%. The prevalence of stress urinary incontinence is 5.7%; urge urinary incontinence is 5.1% and mixed urinary incontinence is 11.4% (Bahloul, et al., 2017).

#### Aim of the study:

The aim of current study is to assess the urinary incontinence's risk factors among pregnant women. This aim will be achieved through the following objectives:

- 1- Assess the risk factors of urinary incontinence among pregnant women.
- 2- Determine the most type of urinary incontinence during pregnancy.

#### Research question:

The objectives of the study will be achieved through answering the following questions:

- 1- What are the associated the risk factors of urinary incontinence among pregnant women?
- 2-What is the most type of urinary incontinence occur during pregnancy?

## 2. SUBJECTS AND METHODS

### 1- Technical design:

The technical design for this study includes the research design, study setting, subject of the study, and tool s of data collection.

**Research Design:**

A descriptive research design was used to achieve the aim of the study.

**Setting:**

The study was conducted at the outpatient antenatal clinic in Helwan General Hospital.

**Subjects (sampling):**

**Sample type:** A Purposive sampling was used to collect the study subjects according to the following inclusion and exclusion criteria.

**Inclusion criteria:**

- 1- Pregnant women with single pregnancy.
- 2- Women's age from 18 to 35 years.
- 3- Gestational age (second trimester) from 13 to 28 week.

**Exclusion criteria:**

- 1- Past history of urinary incontinence.
- 2- High risk pregnancy.

**Sample size:** The total number of pregnant women was 128 pregnant women with 95% confidence level. The sample size was calculated through the epi-info program based on the number of pregnant women with urinary incontinence who had visited the outpatient clinics of Helwan general hospital during the year 2018 (192 pregnant women). The sample size was calculated according to Population survey or descriptive study using random (not cluster) sampling.

**Sampling technique:** Pregnant women were collected from hospital registration book in outpatient antenatal according to the inclusion and exclusion criteria till reach the determined sample size.

**Tools of data collection:**

Two tools were used for data collection in the present study:

**Tool I: Structured interviewing questionnaire:**

This tool consists of two parts as follows:

**Part I:** Consisted of sixteen questions used to assess the socio-demographic data of pregnant women as; women's age, residence, education level, occupation, type of occupation, family monthly income, smoking, play sports, type of sport such as running or basketball, anthropometric measurements (weight, height, body mass index), crowding index, water supply type, bathroom condition, and sewage system.

**Part II:** Consisted of eight questions used to assess the obstetric history of pregnant women such as; gravidity, parity, number of abortion, living children number, gestational age, previous family planning methods, the type of method and child spacing.

**Tool II: Assessment the risk factors of urinary incontinence among pregnant women:** this tool was adapted from (Nygaard and Heit 2004), and modified by the researcher for the sake of this study and composed of five parts:

**Part I:** Consisted of twelve questions used to assess the nutritional risk factors of pregnant women as; amount of liquid per day, regular eating of main three meals, eating sweets, fast food, pickles, milk products, regular eating of protein, vegetables, fruits, drink tea, coffee, taking vitamins, minerals, the type of vitamin, mineral and present of constipation.

**Scoring system:**

All variable were weighted according to items included from question, each item was given a score (2) for the correct answer and score (1) for the incorrect answer. The total score of nutritional risk factors of pregnant women were (24) scores classified as the following;

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-High dietary habits if score is  $\geq 75\%$ .

-Moderate dietary habits if score is 60 - 75%.

-Low dietary habits if score is  $< 60\%$ .

**Part II:** Consisted of eighteen questions used to assess the general hygienic behavior risk factors of pregnant women as; hand washing before, after urination, defecation, type of hand hygiene product, washing the perineum after urination, defecation, type of perineum hygiene product, drying perineum, perineum wiping practice after urination, defecation, material using of drying perineum, time of washing towel if pregnant women use towel, material, size of underwear, frequency of changing the underwear, using of the feminine hygienic product frequency, type of bath, using the pad and frequency of changing the pads.

### Scoring system:

All variable were weighted according to items included in questions number 37,39,41,43,45,49,50,52,53, each item was given a score (2) for the correct answer and score (1) for the incorrect answer. All variable were weighted according to items included in questions number 38,40,42,44,46,47,48,51,54 each item of them was given a score (3) for the correct and complete answer, score (2) for the correct and incomplete answer and score (1) for the incorrect and incomplete answer. The total score of general hygienic behavior risk factors of pregnant women were (45) scores classified as the following;

-Good hygiene if score is  $\geq 75\%$ .

-Average hygiene if score is 60 - 75%.

-Poor hygiene if score is  $< 60\%$ .

**Part III:** Consisted of eleven questions used to assess the clinical finding for symptomatic pregnant women as; urination habits per day, volume of urine voiding, pain, burning sensation during urination, urination before sleeping, urge to go to toilet, voluntary delaying of voiding, duration of delaying urination, presence minor leaks, dribbles of urine on clothes, presence mixed incontinence.

**Part IV:** Consisted of nine questions used to assess the sexual hygiene and sexual activity of pregnant women as; frequency of sexual intercourse per week, urination before, after coitus, times of urination before, after, washing pregnant women, husband of genitalia before and after coitus.

### Scoring system:

All variable were weighted according to items included from question, each item was given a score (2) for the correct answer and score (1) for the incorrect answer. The total score of nutritional risk factors of pregnant women were (18) scores classified as the following;

-Good sexual hygiene if score is  $\geq 75\%$ .

-Average sexual hygiene if score is 60 - 75%.

-Poor sexual hygiene if score is  $< 60\%$ .

**Part V:** Consisted of eight questions used to assess the gynecological risk factors, history of urinary tract infection and family history of urinary incontinence of pregnant women as; history of vaginal infection, time of infection, history of urinary tract infection (UTI), frequency, treatment, monitoring after treatment, presence family history of UI.

### Tools validity and reliability:

The data collection tools were reviewed by a panel of five experts in maternal and newborn health nursing department at Helwan University, Cairo University and Ain Shams University to ensure applicability, comprehensiveness, understanding and ease of implementation of the tools. Each of the experts was asked to examine tools for content coverage, relevance, clarity, wording, length, format and overall appearance. Modifications were done according to the expert's comments and recommendations; minor modifications had been made such as rephrasing and rearrangements of some sentences Testing reliability of the proposed tools was done statistically by Alpha Cronbach test.

Items	Cronbach test
Obstetric risk factors	0.754
Nutritional risk factor	0.768
Personal hygiene	0.687
Clinical finding for symptomatic pregnant women	0.712
Sexual hygiene	0.699

### **Ethical consideration:**

The research approval was obtained from a scientific, ethical committee in the Faculty of Nursing, Helwan University before starting the study. The researcher was obtained verbal consent from pregnant women. The researcher clarified the aim and objectives of the study to each pregnant woman. The researcher was assured anonymity and confidentiality of subject's data. Pregnant women were informed that allowed to choose to participate or not in the study and that they have right to withdrawal from the study at any time.

### **II- Operational design:**

#### **Preparatory phase:**

During this phase the researcher reviewed the current, local and international related literatures of various aspects of the study using books, periodicals journals, magazines and internet. This helped the researcher to be more acquainted with the study, and with the process of tools' designing. Then tools were designed and tested for being valid and reliable.

#### **Pilot study:**

A pilot study was carried out on 10% (13) pregnant women and was conducted to test the applicability of the tools and feasibility of the study. According to the result of the pilot study, items was corrected, modified, omitted or added. It also helped in determined the time needed for interviewing and evaluating the suitability of settings to perform the interview. All modification was done and women participated in the pilot study were excluded from the study sample.

#### **Field of work:**

- This study carried out in the Helwan general hospital. The process of data collection was carried out in the period from the beginning of February 2019 to the end of July 2019.
- The researcher attended the antenatal clinic in Helwan general hospital three days per week from 9.00 a.m to 2.00 p.m to collect data till the sample size researched the pre-determined number.
- The researcher introduced herself to the physician and the nurse in antenatal clinic.
- The researcher met pregnant women when enter the antenatal clinic before examination.
- At beginning of interview the researcher introduced herself to pregnant women and explained to the participants the aim of the study and then the oral consent of the women was obtained.
- The researcher interviewed each woman individually in antenatal clinic to fill tool (I) which consisted of two parts. 1st part includes questions related to pregnant women's socio-demographic data, 2nd part includes questions used to assess obstetric history and family planning history. The time taken to complete this data was 5-10 minutes.
- Then the researcher used tool (II) their questions used to assess risk factors of urinary incontinence which consisted of five parts. 1st part includes questions related to nutritional risk factors. 2nd part includes questions related to personal hygiene. 3rd part includes questions related to clinical finding for symptomatic pregnant women. 4th includes questions related to sexual hygiene and sexual activity. 5th part includes questions related to gynecological risk factors, history of urinary tract infection and genetic risk factors of urinary incontinence. The time taken to complete this data was 10-15 minutes.

- The researcher given the pregnant women handout about urinary incontinence and its management during pregnancy and explain the handout content to the pregnant women.

### III- Administrative design:

Official letters, including the title and aim of the study were issued from the Faculty of Nursing Helwan University, a letter which was issued from Ministry of health approval after ethics committee and submitted to the director of Helwan General Hospital for conducting the study.

### IV- Statistical design:

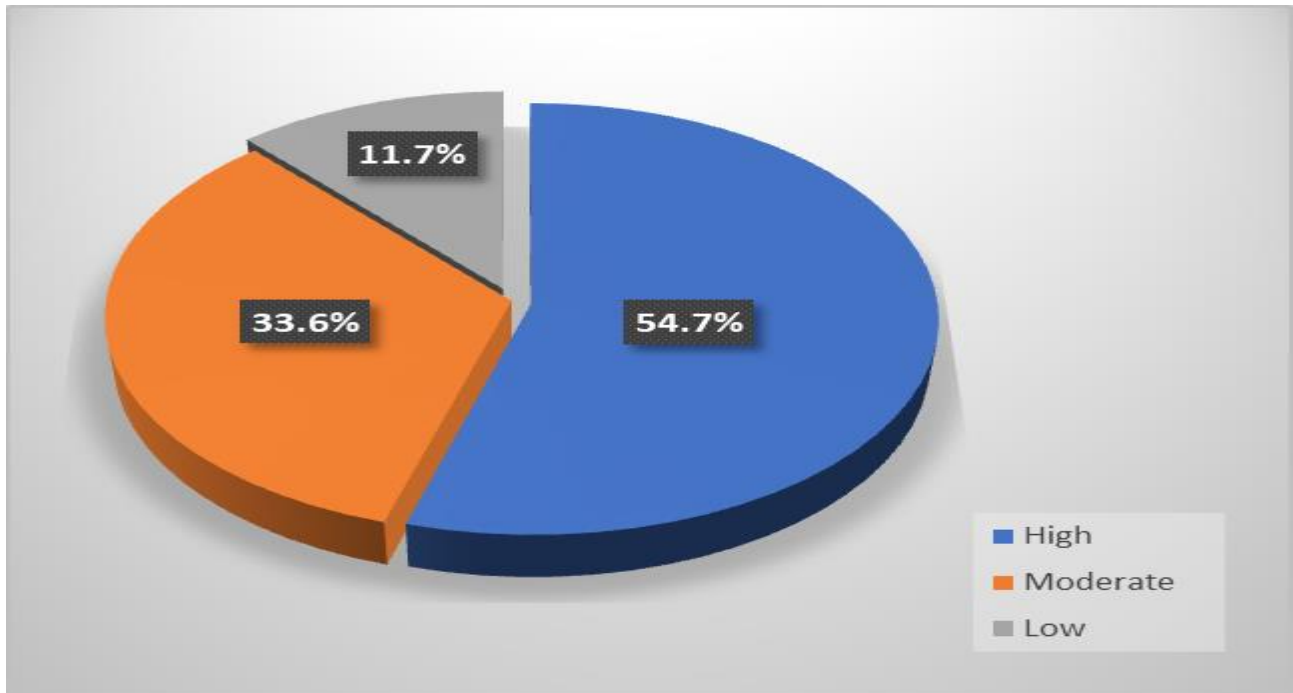
Data was analyzed using the Statistical Package for Social Science (SPSS) version 22. Qualitative data was presented as numbers and percentages. Relations between different qualitative variables were tested using Chi-square test ( $X^2$ ). Relation between quantitative variables was tested using Pearson correlation coefficient (r). Probability (p-value) < 0.05 was considered significant and < 0.001 was considered highly significant.

## 3. RESULTS

**Table (1): Distribution of the pregnant women according to their socio-demographic data n=128.**

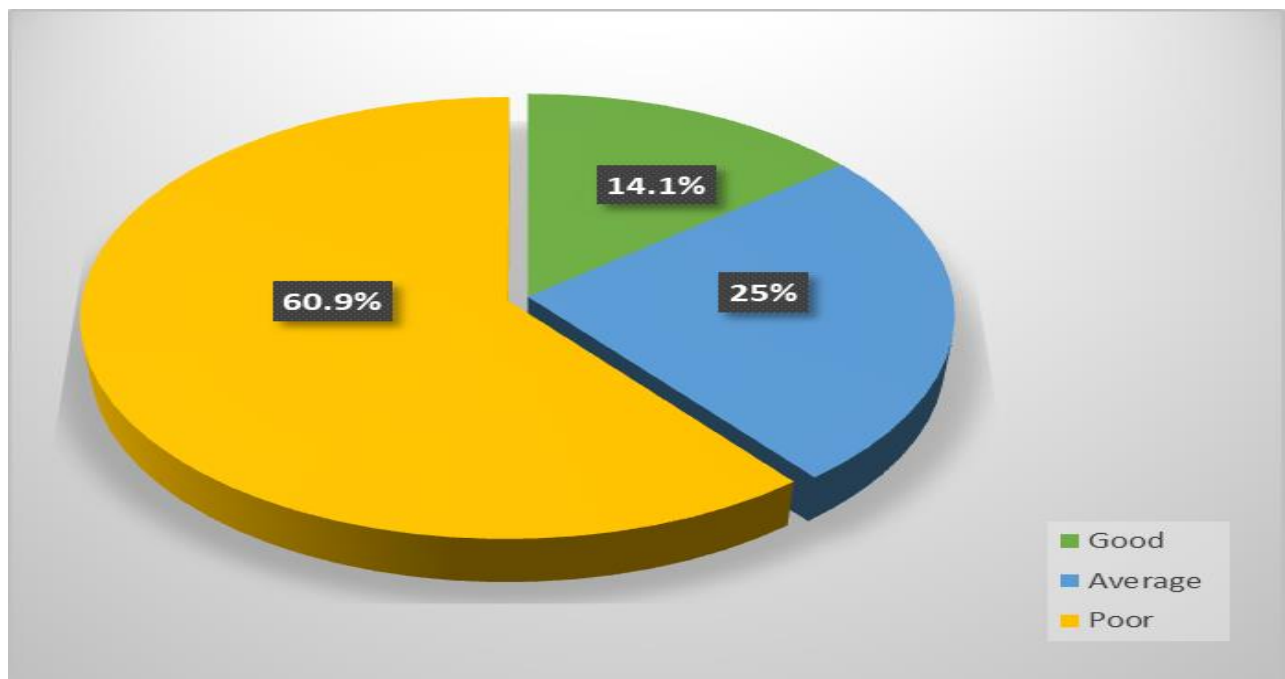
Variables	No	%
<b>Age (year):</b>		
< 20 Year	12	9.4
20-<25 Year	48	37.5
25-<30 Year	36	28.1
30- 35 Year	32	25
<b>Mean <math>\pm</math>SD</b>	<b>25.2 <math>\pm</math>4.68</b>	
<b>Residence:</b>		
Rural	84	65.6
Urban	44	34.4
<b>Occupation:</b>		
Housewife	102	79.7
Worker	26	20.3
<b>Type of pregnant women's work: (n=26)</b>		
Simple Work	4	15.4
Hard work	22	84.6
<b>Family monthly income:</b>		
Not sufficient	90	70.3
Sufficient	32	25
Sufficient and saved	6	4.7

Table (1) this table shows the socio-demographic data of the pregnant women. Demonstrates that 37.5% of the pregnant women their age range from 20-<25 years with mean 25.2  $\pm$ 4.68 years. Moreover, 65.6% of the pregnant women residing in rural areas. Also, demonstrate that 20.3% of the pregnant women are working, 84.6% of them do hard work. Also, demonstrate that 70.3% of pregnant women had insufficient family monthly income.



**Figure (1): Distribution of the pregnant women according to their total nutritional risk factors (n=128).**

Figure (1) shows that 54.7% of the studied sample is high in total nutritional risk factors. Moreover, 33.6% of the pregnant women are moderate in total nutritional risk factors. While, 11.7% of the pregnant women are low in total nutritional risk factors.



**Figure (2): Distribution of the pregnant women according to their total personal hygiene (n=128)**

Figure (2) shows that 60.9% of the pregnant women are poor in total personal hygiene. Moreover, 25% of the pregnant women are average in total personal hygiene. While, 14.1% of the pregnant women are good in total personal hygiene.

**Table (2): Distribution of the pregnant women according to their symptomatic clinical finding n=128.**

Variables	No	%
<b>How many urination habits/day:</b>		
Three	4	3.1
Four	8	6.3
Five	16	12.5
Six or more	100	78.1
<b>Volume of Urine which voiding in toilet each time:</b>		
Small	75	58.6
Medium	35	27.3
Large	18	14.1
<b>Presence of pain during urination:</b>		
Never	12	9.4
Rarely	16	12.5
Sometimes	20	15.6
Frequently	26	20.3
Always	54	42.2
<b>Presence of burning sensation during urination:</b>		
Never	12	9.4
Rarely	16	12.5
Sometimes	20	15.6
Frequently	26	20.3
Always	54	42.2
<b>urination before sleeping:</b>		
Yes	25	19.5
Sometimes	36	28.1
No	67	52.4
<b>Present Strong urge to go to toilet to evacuate bladder:</b>		
Yes	11	8.6
No	117	91.4

Table (2) this table explains urinary condition of the pregnant women. The results show that more than three quarter (78.1%) of the pregnant women urinate six or more times / day. Moreover, 58.6%, 52.4% of the pregnant women voiding small amount of urine each time and don't urinate before sleeping, respectively. Also, 8.6% of them have a strong urge to go to toilet to evacuate bladder.

**Table (3): Distribution of the pregnant women according to their urinary condition n=128.**

Variables	No	%
<b>Voluntary delaying of voiding urine:</b>		
Yes	117	91.4
No	11	8.6
<b>Long time pregnant women voluntary delay in voiding urine: (n=117)</b>		
< 5 minute	48	41
5-<10	38	32.5
10-<15	22	18.8
≥ 15	9	7.7
<b>Co-factor urinary incontinence (minor leaks, dribbles of urine on clothes)</b>		
During cough	44	34.4
During sneezing	35	27.3
When hold heavy things	40	31.3



Others	9	7
<b>Amount of urine leakage</b>		
Small leakage	25	19.5
Medium leakage	36	28.1
Large leakage	67	52.4
<b>Present mixed urinary incontinence</b>		
Yes	11	8.6
No	117	91.4

Table (3) this table explains urinary condition of the pregnant women. The results show that 91.4% and 41% of the pregnant women voluntary delay in voiding urine and delay in voiding urine < 5 minute, respectively. Moreover, 34.4% of the pregnant women dribble of urine on clothes during cough. Also, 8.6% of pregnant women have mixed incontinence.

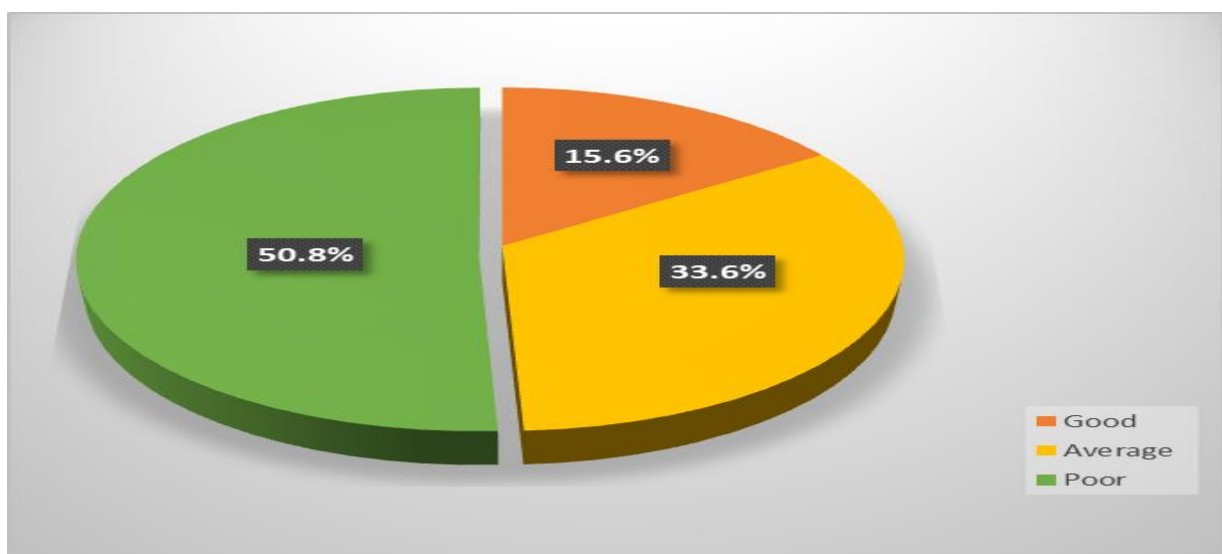


Figure (3): Distribution number and percentage of the pregnant women according to their total sexual hygiene and sexual activity (n=128)

Figure (3) shows that 50.8% of the pregnant women are poor in total sexual hygiene and sexual activity. Moreover, 33.6% of the pregnant women are average in total sexual hygiene and sexual activity. While, 15.6% of the pregnant women are good in total sexual hygiene and sexual activity.

Table (4): Distribution of the pregnant women according to their risk factors of urinary incontinence n=128.

Variables	No	%
<b>Past history of vaginal infection:</b>		
Yes	75	58.6
No	53	41.4
<b>If yes, since when week before urinary incontinence symptoms? (n=75)</b>		
One week	15	20
Two week	20	26.7
Three week	30	40
Four week	10	13.3
<b>Presence previous history of urinary tract infection:</b>		
Yes	83	64.8
No	45	35.2
<b>Frequency of urinary tract infection during the past 12 months: (n=83)</b>		
One	63	76
Two	12	14.4
Three	5	6

more	3	3.6
<b>Presence previously treated from urinary tract infection:</b>		
Yes	83	64.8
No	45	35.2
<b>If yes, The course of the last prescribed treatment finished completely: (n=83)</b>		
Yes	28	33.7
No	55	66.3
<b>Visiting the doctor for follow up after take treatment of urinary tract infection: (n=83)</b>		
Yes	28	33.7
No	55	66.3
<b>Presence first-degree female relatives (mother, sisters) diagnosed with urinary incontinence?</b>		
Yes	60	46.9
No	40	31.2
Don't know	28	21.9

Table (4) this table summarizes gynecological risk factor, history of urinary tract infection and genetic risk factors of urinary incontinence for the pregnant women. The results show that 58.6% of the pregnant women have past history of vaginal infection. Moreover, 64.8% of the pregnant women have previous history of urinary tract infection. Also, 64.8% of the pregnant women previously treated from urinary tract infection, 66.3% of them don't finish the course of the last prescribed treatment.

Table (5): Relation between socio-demographic data of the pregnant women and their total personal hygiene.

Variables		Total personal hygiene						Chi-square	
		Good (n=18)		Average (n=32)		Poor (n=78)			
		N	%	N	%	N	%	X2	P-value
Age	< 20 year	2	11.1	4	12.5	6	7.7	7.92	0.03*
	20-<25 year	3	16.7	15	46.8	30	38.5		
	25-<30 year	6	33.3	10	31.3	20	25.6		
	30-35 year	7	3.9	3	9.4	22	28.2		
Residence	Rural	3	16.7	12	37.5	69	88.5	10.47	0.02*
	Urban	15	83.3	20	62.5	9	11.5		
Educational Level	Illiterate	0	0.0	3	9.4	13	16.7	16.17	.000**
	Read and write	0	0.0	5	15.6	39	50		
	Primary	1	5.6	6	18.8	11	14.1		
	Preparatory	1	5.6	8	25	9	11.5		
	Secondary	5	27.7	9	28.1	6	7.7		
	High education	9	50	1	3.1	0	0.0		
Occupation	Housewife	16	88.9	28	87.5	58	74.4	3.92	0.124
	Worker	2	11.1	4	12.5	20	25.6		
Family monthly income	Not sufficient	2	11.1	20	62.5	68	87.2	15.16	.000**
	Sufficient	10	55.6	12	37.5	10	12.8		
	Sufficient and saved	6	33.3	0	0.0	0	0.0		
Body Mass Index	Under weight	2	11.1	1	3.1	1	1.3	8.10	0.02*
	Normal weight	4	22.2	6	18.8	10	12.8		
	Above weight	5	27.8	15	46.8	60	76.9		
	Obese	7	3.9	10	31.3	7	9		

> 0.05 insignificant \*≤ 0.05 significant \*\*≤ 0.001 highly significant

Table (5) shows that there is highly statistically significant relation between total personal hygiene, their educational level, family monthly income at  $P = < 0.01$ . Moreover, there is statistically significant relation between total personal hygiene and their age, body mass index and residence at  $p = < 0.05$ . While, there is statistically insignificant relation between total personal hygiene and occupation at  $p = > 0.05$ .

**Table (6): Relation between socio-demographic data of the pregnant women and their total sexual hygiene and sexual activity.**

Variables		Total sexual hygiene and sexual activity						Chi-square	
		Good (n=20)		Average (n=43)		Poor (n=65)			
		N	%	N	%	N	%	X <sup>2</sup>	P-value
Age	< 20 year	1	5	5	11.6	6	9.2	9.12	0.01*
	20-<25 year	2	10	18	41.9	28	43.1		
	25-<30 year	5	25	11	25.6	20	30.8		
	30-35 year	12	60	9	20.9	11	16.9		
Residence	Rural	8	40	20	46.5	56	86.2	9.87	.000*
	Urban	12	60	23	53.5	9	13.8		
Educational Level	Illiterate	0	0.0	5	11.6	11	16.9	14.94	.000*
	Read and write	0	0.0	7	16.3	37	57		
	Primary	1	5	8	18.6	9	13.8		
	Preparatory	1	5	9	20.9	8	12.3		
	Secondary	7	35	13	30.3	0	0.0		
	High education	9	45	1	2.3	0	0.0		
	Post graduate	2	10	0	0.0	0	0.0		
Occupation	Housewife	17	85	38	88.4	47	72.3	10.24	0.02*
	Worker	3	15	5	11.6	18	27.7		
Family monthly income	Not sufficient	9	45	25	58.1	56	86.2	3.16	0.21
	Sufficient	9	45	16	37.2	7	10.7		
	Sufficient and saved	2	10	2	4.7	2	3.1		
Body Mass Index	Under weight	2	10	1	2.3	1	1.5	2.18	0.14
	Normal weight	5	25	7	16.3	8	12.3		
	Above weight	6	30	30	69.8	44	67.7		
	Obese	7	35	5	11.6	12	18.5		

> 0.05 insignificant    \* ≤ 0.05 significant    \*\* ≤ 0.001 highly significant

Table (6) shows that there is highly statistically significant relation between total sexual hygiene, sexual activity, residence, educational level at  $P = < 0.01$ . Moreover, there is statistically significant relation between total sexual hygiene, sexual activity, their age and occupation at  $p = < 0.05$ . While, there is statistically insignificant relation between total sexual hygiene, sexual activity, body mass index and family monthly income at  $p = > 0.05$ .

**Table (7): Correlation between total nutritional risk factors of the pregnant women and their total personal hygiene and sexual hygiene and sexual activity.**

Variables	Total personal hygiene		Total sexual hygiene and sexual activity	
	r	P- value	r	P- value
Total nutritional risk factors	0.362	.000**	0.214	.000**
Total personal hygiene	————	————	0.275	.000**

(\*) Statistically significant at  $p < 0.05$ .

Table (7) illustrates that there is positive correlation between total nutritional risk factors of the studied subjects and their total personal hygiene and total sexual hygiene and sexual activity.

#### 4. DISCUSSION

Regarding the socio-demographic characteristics of the pregnant women, the finding of the current study revealed that, the mean age of the pregnant women was  $25.2 \pm 4.68$  year. This result similar with the result of study performed by (Bekele, Adefris, Demeke, 2016), about Urinary incontinence among pregnant women, following antenatal care at University of Gondar Hospital, who stated that, the mean age of the pregnant women was  $25.9 \pm 3.08$  year. The researcher thinks that this result might be due to this age group considered high risk for exposure to urinary incontinence as the incidence of urinary incontinence increases age child-bearing age (15–49 years old) are commonly affected. Regarding the residence, slightly less than two thirds of pregnant women residing in rural areas. While, more than one third of them were from urban areas. This results are accordance with (Abdullah, et al., 2016), in their study entitled "Urinary incontinence in primigravida: the neglected pregnancy predicament" which revealed that majority of sample were from rural areas. The results disagreement with the study achieved by (Almoussa, van Loon 2018), about the prevalence of urinary incontinence in nulliparous adolescent, middle-aged women and the associated risk factors, who found that, more than two thirds of the studied sample residing in urban areas. This may be due to lack of health care in rural areas and take more time to diagnose.

Regarding occupation more than three quarters of the pregnant women were housewife. While, one fifth of the pregnant women were working, the majority of them do hard work. This result approved with the study performed by (Sumardi, et al., 2016), which entitled "Prevalence of urinary incontinence, risk factors and its impact", who stated that more than three quarters of the studied sample had no work. While, one fifth of them were working. Concerning family monthly income, the finding of the current study revealed that, less than three quarters of pregnant women under study had insufficient final monthly income. While, one quarter of them had sufficient income. These results supported with the study done (Agarwal, 2017), about urinary incontinence prevalence, risk factors, impact on quality of life and treatment seeking behavior among middle aged women, who found that, more than two thirds of pregnant women had insufficient income. These results may be due to more than three quarters of the pregnant women had no work. Therefore, the pregnant women didn't have health insurance.

Regarding total nutritional risk factors, the finding of the current study revealed that, more than half of the studied sample was high in total nutritional risk factors. Moreover, one third of them were moderate in total nutritional risk factors. While, more than tenth of them were low in total nutritional risk factors. These results supported with the study done by (Dadi, Desyibelew, 2019), about Under nutrition and its associated factors among pregnant mothers, who stated that, more than half of the studied sample were high in total nutritional risk factors, but these results disagreement with the study achieved by (Morsy, Alhady, 2016), about nutritional status and socio-economic conditions influencing prevalence of anemia in pregnant women, who stated that, more than half of the studied sample were moderate in total nutritional risk factors. These results may be due to inadequate knowledge about the food item, ignorance, lack of husband support and forgetfulness.

Regarding total personal hygiene, the finding of the current study revealed that, more than three fifth of the pregnant women were poor in total personal hygiene. Moreover, one quarter of pregnant women were average in total personal hygiene. While, more than tenth of them had good in total personal hygiene. These results supported with the study done by (Bo, et al., 2016), about the prevalence of urinary incontinence in pregnancy among a multi-ethnic population resident in Norway, who stated that, more than three fifth of the pregnant women were poor in total personal hygiene. But these results disagreement with the study achieved by (Yaqub, Habib, Shaheen, 2019), about Frequency of urinary incontinence and its associated risk factors in pregnant population, who stated that, two third of the pregnant women were average in total personal hygiene. These results may be due to low socio-economic status, unawareness, lack of water and laziness of the pregnant women.

According to clinical finding for symptomatic pregnant women, the finding of the current study revealed that, more than three quarters of the pregnant women urinate six or more times / day. Moreover, more than half of them voiding small amount of urine each time and didn't urinate before sleeping. Also, the majority of pregnant women didn't have a strong urge to go to toilet to evacuate bladder. Hormonal changes make the blood flow to the kidneys more quickly, filling the bladder more often – which causes more frequent urination during pregnancy. These results supported with the study done by (Dinc, 2018), about Prevalence of urinary incontinence during pregnancy and associated risk factors, who stated that,

more than three quarters of the pregnant women urinate six or more times / day. Moreover, more than half of them voiding small amount of urine each time and didn't urinate before sleeping. While, more than three quarters of them have a strong urge to go to toilet to evacuate bladder. But these results disagreement with the study achieved by **Sangsawang (2019)** which entitled risk factors for the development of stress urinary incontinence during pregnancy in primigravidae, who stated that, more than three quarters of them have a strong urge to go to toilet to evacuate bladder.

The majority and more than two fifth of the pregnant women voluntary delay in voiding urine and delay in voiding urine < 5 minute, respectively. Moreover, more than one third of the pregnant women dribble of urine on clothes during cough. Also, less than tenth of pregnant women have mixed incontinence. These results similar with the results of study performed by **Andersen, (2019)**, which entitled Urinary Tract Infections: Prevention, who stated that, the majority and more than two fifth of the pregnant women voluntary delay in voiding urine and delay in voiding urine < 5 minute, respectively. Moreover, more than one third of the pregnant women dribble of urine on clothes during cough. While, tenth of pregnant women have mixed incontinence.

Regarding total sexual hygiene and sexual activity of the pregnant women, the finding of the current study revealed that, more than half of the pregnant women were poor level in total sexual hygiene and sexual activity. Moreover, one third of them were average level in total sexual hygiene and sexual activity. While, less tenth of them were good level in total sexual hygiene and sexual activity. These results supported with the study done by (**Elzayat, et al., 2017**), about the prevalence of urinary incontinence in pregnancy among a multi-ethnic population resident in Norway, who stated that, more than half of the pregnant women were poor in total sexual hygiene and sexual activity.

Moreover, more than third of them were average in total sexual hygiene and sexual activity, but these results disagreement with the study achieved by (**Livingstone et al., 2018**), about Sexual behavior in pregnancy among antenatal women attending a secondary hospital, who stated that, more than half of the pregnant women were average in total sexual hygiene and sexual activity. This finding could be attributed to high prevalence of urinary tract infection in pregnant women was primarily caused by bacteria from the stool *Escherichia coli* (*E. coli*) and that hygiene habits, and sexual behavior may play a role in UTI in pregnant women.

Regarding history of urinary tract infection and urinary incontinence, the current study revealed that, less than three fifth of the pregnant women had past history of vaginal infection during the past four week. Moreover, less than two thirds of them had previous history of urinary tract infection. UTIs are common during pregnancy because the growing fetus can put pressure on the bladder and urinary tract. This findings is similar with the results of study performed by (**Nigam et al., 2017**), in their study about Prevalence and risk factors for urinary incontinence in pregnant women during late third trimester. Their reported that, more than half of the pregnant women had past history of vaginal infection. Moreover, two thirds of them had previous history of urinary tract infection. The results revealed also that, less than two thirds of the pregnant women previously treated from urinary tract infection, two thirds of them didn't finish the course of the last prescribed treatment. This result may be due to low socio-economic status. This finding is similar with the results of study performed by **Davidson & Kruger (2018)** in their study about Prevalence of urinary incontinence during pregnancy. Who reported that, more than half of the pregnant women previously treated from urinary tract infection, two thirds of them didn't finish the course of the last prescribed treatment.

Regarding the relation between socio demographic characteristics of the pregnant women and their total nutritional risk factors, the present study revealed that, there were highly statistically significant relation between total nutritional risk factors of pregnant women and their body mass index and family monthly income. Pregnant women with above weight and insufficient monthly income had high nutritional risk factors more than normal weight and sufficient monthly income. These findings agree with the study of **Sangsawang, (2014)**, about risk factors for the development of stress urinary incontinence during pregnancy in primigravidae, who mentioned that pregnant women with above weight and insufficient monthly income had high nutritional risk factors more than normal weight and sufficient monthly income. The results may be due to pregnant women had enough monthly income had the opportunity to acquire more knowledge than who had not enough monthly income.

According the relation between socio-demographic data of the pregnant women and their total personal hygiene, the present study revealed that, there were highly statistically significant relation between total personal hygiene of the pregnant women and their educational level and family monthly income. Also, there were statistically significant relation between total personal hygiene and their age, body mass index and residence.

Regarding the relation between socio-demographic data of the pregnant women and their total sexual hygiene and sexual activity, the present study revealed that, there were highly statistically significant relation between total sexual hygiene and sexual activity of pregnant women and their residence and educational level. Also, there were statistically significant relation between total sexual hygiene and sexual activity and their age and occupation. The pregnant women residing in urban areas, working had high level of educational had good sexual hygiene and sexual activity more than pregnant women residing in rural areas, not working and low level of educational., the pregnant women`s age decreased, sexual hygiene and sexual activity decrease. This result agreement with the study achieved by (**Livingstone, et al. 2019**), who mentioned that, there were highly statistically significant relation between total fatigue of patients and their occupation. Also, there were statistically significant relation with their age and monthly income. there were highly statistically significant relation between total sexual hygiene and sexual activity of pregnant women and their residence and educational level. In addition, this result agreement with the study achieved by (**Davidson, Kruger 2018**), who mentioned that, there were statistically significant relation between total sexual hygiene and sexual activity of pregnant women and their age and occupation.

Regarding the correlation between total nutritional risk factors of the pregnant women and their total personal hygiene, and sexual hygiene and sexual activity, the present study revealed that, there was highly significant positive correlation between total nutritional risk factors of the pregnant women and their total personal hygiene. While there was highly significant positive correlation between total nutritional risk factors of the pregnant women and their total sexual hygiene and sexual activity. This could be explained as low total nutritional risk factors was more encountered among those pregnant women with good personal hygiene, and good sexual hygiene and sexual activity. This result supported with the study performed by (**Milsom, Gyhagen, 2019**), about The prevalence of urinary incontinence, who stated that, there was highly significant positive correlation between total nutritional risk factors of the pregnant women and their total personal hygiene. There was highly significant positive correlation between total nutritional risk factors of the pregnant women and their total sexual hygiene and sexual activity.

Regarding the correlation between total personal hygiene of the pregnant women and their sexual hygiene and sexual activity, the present study revealed that, there was highly significant positive correlation between total personal hygiene of the pregnant women and their total sexual hygiene and sexual activity. This could be explained as good personal hygiene pregnant women were more encountered among those pregnant women with good sexual hygiene and sexual activity. This result supported with the study performed by (**Chang, 2019**) about Long- Risk factors for the prevalence and cumulative incidence of urinary incontinence during pregnancy, who stated that, there was highly significant positive correlation between total personal hygiene of the pregnant women and their total sexual hygiene and sexual activity.

## 5. CONCLUSION

Based on the findings of the study, this study concluded that the significant factors predisposing for developing of urinary incontinence during pregnancy were unhealthy urination habits, poor personal hygiene, poor sexual hygiene, history of vaginal infection, increase rate of body mass index, previous use of contraception specially intra uterine device, inadequate socioeconomic status such as low family monthly income, constipation, low nutritional habits and family history of urinary incontinence. The most common type of urinary incontinence during pregnancy in the study was stress urinary incontinence.

## 6. RECOMMENDATION

In the light of the finding of this study, the following recommendations are suggested;

- Proper screening of pregnant women with urine culture for early detection of urinary tract infection and proper treatment.

### Further researches:

- Future research should be conducted to examine the effect of apply structured education program regarding UI on the pregnant women.
- The study should be replicated on a large sample and different hospital in order to generalize the result.

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