

Prevalence of Urinary Incontinence in Perimenopausal Females

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ABSTRACT

Urinary Incontinence is defined as the complaint of any involuntary leaking of urine which is a social & hygiene problem. The term "perimenopause" which also refers to as "menopausal transition", is the stage in a woman's life that occurs before menopause. Perimenopause can last for several years and ends when a woman reaches menopause and it can lead to various symptoms such as irregular menstrual cycles, hot flashes, night sweats, mood swings, vaginal dryness, and changes in libido.

Total 177 peri-menopausal females were recruited based on inclusion criteria. They were explained about the study, its purpose and informed written consent was taken. A Validated questionnaire was given out to them which included Demographic data and QUID questionnaire with prior written consent. The data was then analysed and interpreted.

According to our study, 46.89% females were found to have Urinary Incontinence. Out of which 34.67% females had stress Urinary Incontinence, and 19.27% females had urge Urinary Incontinence.

Our study concludes that there is a high prevalence of Urinary Incontinence in perimenopausal females and a lack of healthcare seeking behaviour for it.

Keywords: Prevalence, Stress Urinary Incontinence, Urge Urinary incontinence, perimenopause, QUID questionnaire, Menopause.

INTRODUCTION

The International Incontinence Society has standardized the definition of Urinary Incontinence as "the complaint of any involuntary leaking of urine". ⁽¹⁾ It is a health problem affecting the quality of women's lives (QOL) at various life stages. ⁽²⁾ The prevalence rate of Urinary Incontinence in women is known to be 5% to 69% worldwide as per various studies. One's quality of life can be significantly impacted by Urinary incontinence (UI), a medical disease which is widespread but frequently under-reported. ⁽³⁾

Most common types of urinary incontinence are Stress Urinary Incontinence followed by Mixed Urinary Incontinence and Urge Urinary Incontinence. Stress urinary incontinence (SUI) is the unintentional and sudden loss of urine brought on by increased intra-abdominal pressure from actions like laughing, pushing, sneezing, and coughing. ⁽⁴⁾ Urge urinary incontinence (UUI) is the involuntary leakage of urine associated with a sudden compelling urge to void. ⁽⁵⁾ Mixed urinary incontinence (MUI) is the involuntary loss of urine associated with the

sensation of urgency and with exertion, effort, sneezing, or coughing. ⁽⁶⁾

Menopause is the point when a woman has not had a menstrual period for 12 consecutive months. ⁽⁷⁾ The term 'perimenopause' which also refers to as "menopausal transition", is the stage in a woman's life that occurs before menopause. ⁽⁸⁾ One of the most prevalent symptoms of perimenopause is urinary incontinence (UI), which lowers quality of life and limits social activities. Perimenopause can last for several years and ends when a woman reaches menopause. ⁽⁹⁾

Females undergo some changes during the menopausal transition such as Irregularity or skipping of periods - Blood flow may be mild to heavy, periods may come and go, and the duration between them may change as ovulation becomes more erratic. Females might be in the early stages of perimenopause if there is a consistent shift in the length of the menstrual cycle of seven days or more, Sleep issues and hot flushes- Perimenopause is a typical time for hot flushes. The degree, duration, and regularity differ. Hot flushes and night sweats are common causes of sleep issues, but they are not always the cause. Pain and dryness in the vagina - vaginal tissues may become less supple and lubricated when oestrogen levels drop, which could make sexual activity uncomfortable. Females may also be more susceptible to vaginal or urinary infections if they have low oestrogen. Urinary incontinence may be caused by a decrease in tissue tone. Declining rate of conception - Chances of getting pregnant decline as ovulation becomes sporadic, Loss of bone - Reduced oestrogen levels lead bone to break more easily than it grows back, which raises risk of osteoporosis, a condition that results in brittle bones, Change in cholesterol levels - Reduced oestrogen levels can cause negative alterations in blood cholesterol levels, such as an elevation in low-density lipoprotein (LDL) cholesterol, also known as the "bad" cholesterol, which raises the risk of heart disease. In addition, as women age, their levels of high-density lipoprotein (HDL) cholesterol, or the "good" cholesterol,

tend to decline, raising their risk of heart disease, Mood fluctuations such as irritability, depression or mood swings - During the Perimenopause, mood swings, irritation, or an increased risk of depression may occur. These symptoms could be brought on by hot flashes interfering with sleep. Aside from hormone changes associated with perimenopause, other factors can also contribute to mood swings. ⁽⁹⁾

Frequency and Severity of symptoms depends individual ages, the muscles in bladder and urethra lose some of their strength which reduce the bladder capacity to hold and increase the chances of involuntary urine release, Women are more likely to have stress urinary incontinence due to pregnancy, childbirth, menopause and normal female anatomy. However, men who have prostate gland problems are at increased risk of urge and overflow urinary incontinence, extra weight increases pressure on the bladder and surrounding muscles, which weakens them and allows urine to leak out during cough or sneeze, Family history, Smoking, Neurological disorder or diabetes, Sluggishness, Constipation. ⁽¹⁰⁾

QUID (The Questionnaire for Urinary Incontinence Diagnosis) is one of the most often used self-report surveys. QUID has acceptable psychometric characteristics and maybe used as a Urinary Incontinence outcome measure in clinical trials. ⁽¹¹⁾ The 6-item questionnaire has two sub scales to assess the severity of urge urinary incontinence (UUI) and stress urinary incontinence (SUI) symptoms and to differentiate between the two types of urinary incontinence.

Aim of this study was to assess the prevalence of Urinary Incontinence in Perimenopausal Females and the Objectives were to determine the prevalence of Urinary Incontinence in Peri-menopausal Females, to find out the prevalence of different types of Urinary Incontinence in Peri-menopausal Females.

MATERIALS & METHODS

Ethical committee clearance was obtained before starting the study. Questionnaire and informed consent form were translated by 3 language experts in Hindi and Marathi language & validated. The participants fitting the inclusion and exclusion criteria were recruited. The participants were informed about the research and an informed consent form was taken. Participants were asked to fill out a Question Form which included Demographic data consisting of Name, Age, Symptoms of Perimenopause, Awareness about UI, Medical help taken for UI and QUID Questionnaire. Along with that a Google Form was also constructed which included the same. The data collected was systematically entered into a Microsoft Office Excel sheet and was analysed along with charts and tables accordingly.

STATISTICAL ANALYSIS

Study Design: Cross sectional study.
 Sampling techniques: Purposive sampling.
 Study set up: Community
 Software used: Excel spreadsheet
 Sample size: 177 which was calculated by using the formula:
 $n = Z^2 P (1 - P) / d^2$.
 [n = sample size
 Z = 1.96 (value associated with confidence)
 P = 0.372 (guess of population <1)

d = 0.074 (absolute precision less than P)] 177 individuals participated in this survey intended to assess the existence of Urinary Incontinence and related variables. For this study QUID questionnaire was used which included Demographic data and 6 questions to assess the score.

First 3 questions summed for stress score and next 3 questions summed for urge score. Each item scores 0 (None of the time), 1 (Rarely), 2(Once in a while), 3(Often), 4(Most of the Time) or 5(All of the time). Responses to items 1, 2 and 3 are summed for the Stress score; and responses to items 4, 5, and 6 are summed for the Urge score.

After the value was obtained, the percentage for each option was calculated by the following formula:

(Number of participants answered/Total number of participants) ×100

Then prevalence percentage of each question was calculated by the formula:

(Total sum of Participants selecting “rarely +Once in a while +Often +Most of the time +All of the time”)/Total number of Participants ×100

For the first question, out of the 177 participants, 95 selected "None of the time", 03 selected "Rarely", 15 selected "Never", 05 selected "always", 31 selected "most of the time" and 28 selected "frequently". [tab 1.1]

Tab 1.1- Percentage calculated for leakage of urine (even small drops) while coughing or sneezing.

	Number of participants answered	formula	percentage
none of the time	95	95/177*100	53.67%
rarely	03	3/177*100	1.69%
once in a while	15	15/177*100	8.47%
often	28	28/177*100	15.81%
most of the time	31	31/177*100	17.51%
all of the time	05	5/177*100	2.82%

**Total Prevalence Percentage = 3+15+28+31+5/177*100
 = 82/177*100
 = 46.32%**

For the second question, out of the 177 participants, 96 selected "None of the time", 31 selected "Rarely", 17 selected "Never", 27

selected "always", 06 selected "most of the time" and 00 selected "frequently". [tab 1.2]

Tab 1.2- Percentage calculated for leakage of urine (even small drops) while bending down or lifting something heavy up

	Number of participants answered	formula	percentage
none of the time	96	96/177*100	54.23%
rarely	31	31/177*100	17.51%
once in a while	17	17/177*100	9.60%
often	27	27/177*100	15.25%
most of the time	06	6/177*100	3.38%
all of the time	00	0/177*100	0.00%

$$\begin{aligned} \text{Total Prevalence Percentage} &= 31+17+27+6+0/177*100 \\ &= 81/177*100 \\ &= 45.76\% \end{aligned}$$

For the third question, out of the 177 participants, 117 selected "None of the time", 44 selected "Rarely", 12 selected "Never", 04 selected "always", 00 selected "most of the time" and 00 selected "frequently". [tab 1.3]

Tab 1.3- Percentage calculated for leakage of urine (even small drops) while walking quickly, jogging or doing exercise.

	Number of participants answered	formula	percentage
none of the time	117	117/177*100	66.10%
rarely	44	44/177*100	24.85%
once in a while	12	12/177*100	6.77%
often	04	4/177*100	2.25%
most of the time	00	0/177*100	0.00%
all of the time	00	0/177*100	0.00%

$$\begin{aligned} \text{Total Prevalence Percentage} &= 44+12+4+0+0/177*100 \\ &= 60/177*100 \\ &= 60.33\% \end{aligned}$$

For the fourth question, out of the 177 participants, 135 selected "None of the time", 18 selected "Rarely", 09 selected "Never", 06 selected "always", 07 selected "most of the time" and 02 selected "frequently". [tab 1.4]

Tab 1.4- Percentage calculated for leakage of urine (even small drops) while undressing to use the toilet.

	Number of participants answered	formula	percentage
none of the time	135	135/177*100	76.27%
rarely	18	18/177*100	10.16%
once in a while	09	19/177*100	5.08%
often	06	6/177*100	3.38%
most of the time	07	7/177*100	3.95%
all of the time	02	2/177*100	1.12%

$$\begin{aligned} \text{Total Prevalence Percentage} &= 18+9+6+7+2/177*100 \\ &= 42/177*100 \\ &= 23.72\% \end{aligned}$$

For the fifth question, out of the 177 participants, 119 selected "None of the time", 17 selected "Rarely", 13 selected "Never", 14 selected "always", 10 selected "most of the time" and 04 selected "frequently". [tab 1.5]

Tab 1.5- Percentage calculated for leakage of urine (even small drops) while getting strong and uncomfortable need to urinate before reaching the toilet

	Number of participants answered	formula	percentage
none of the time	119	119/177*100	67.23%
rarely	17	17/177*100	9.60%
once in a while	13	13/177*100	7.34%

often	14	$14/177*100$	7.90%
most of the time	10	$10/177*100$	5.64%
all of the time	04	$4/177*100$	2.25%

$$\begin{aligned} \text{Total Prevalence Percentage} &= 17+13+14+10+4/177*100 \\ &= 58/177*100 \\ &= 32.76\% \end{aligned}$$

For the last question, out of the 177 participants, 114 selected "None of the time", 17 selected "Rarely", 10 selected "Never", 11 selected "always", 15 selected "most of the time" and 10 selected "frequently". [tab 1.6]

Tab 1.6- Percentage calculated for leakage of urine (even small drops) while rushing to the bathroom because of sudden and strong need to urinate.

	Number of participants answered	formula	percentage
none of the time	114	$114/177*100$	64.40%
rarely	17	$17/177*100$	9.60%
once in a while	10	$10/177*100$	5.64%
often	11	$11/177*100$	6.21%
most of the time	15	$15/177*100$	8.47%
all of the time	10	$10/177*100$	5.64%

$$\begin{aligned} \text{Total Prevalence Percentage} &= 17+10+11+15+10/177*100 \\ &= 63/177*100 \\ &= 35.59\% \end{aligned}$$

After calculating the above data, stress and urge score was calculated. It was calculated by using the following formula:

(Total stress score i.e., first three questions/ Total score) ×100

$$\text{Stress score} = 518/1494*100 = 34.67\%$$

(Total urge score i.e., last three questions/Total score) ×100

$$\text{Urge score} = 288/1494*100 = 19.27\%$$

After that total Prevalence was calculated.

The formula for prevalence used was:

(Total number of participants reporting UI/Total number of participants) ×100

$$= 83/177 \times 100$$

$$= 46.89\%$$

This gave the percentage of perimenopausal females experiencing urinary incontinence

Then, percentage of participants who were aware about Urinary Incontinence was calculated by:

(Total number of participants aware about UI/Total number of participants) ×100

$$= 45/177 \times 100$$

$$= 25.42\%$$

At last, percentage of participants who sought medical help for treating UI was calculated by: (Total number of participants who sought medical help/Total number of participants reporting UI) ×100

$$= 15/83 \times 100$$

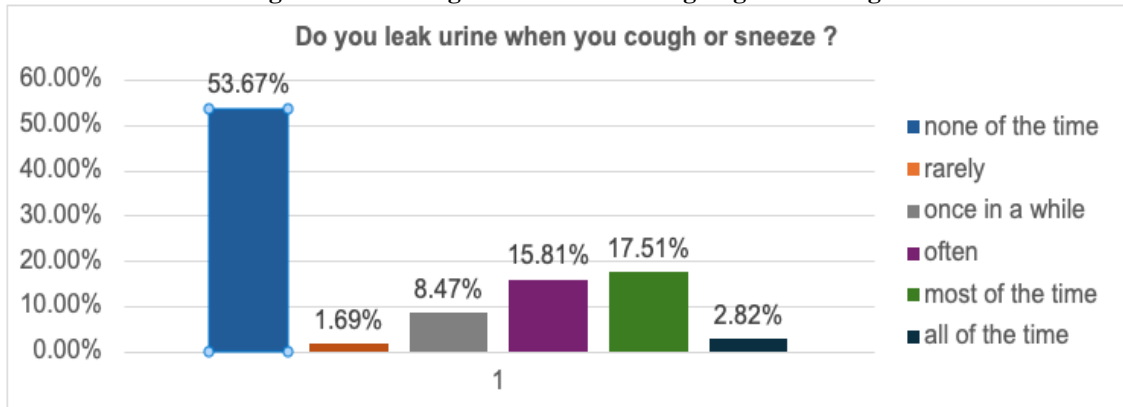
$$= 18.07\%$$

RESULT

In this study 177 participants filled in the questionnaire which showed that 46.89% of participants were reported having Urinary Incontinence. Out of which 41.24% were between 40-45 years, 54.8% were between 45-50 years and 8.47% were between 50-55 years of age. Based on QUID scoring participants reported leakage of urine with stress Urinary Incontinence (34.67%) being the most prevalent one followed by urge Urinary Incontinence (19.27%).

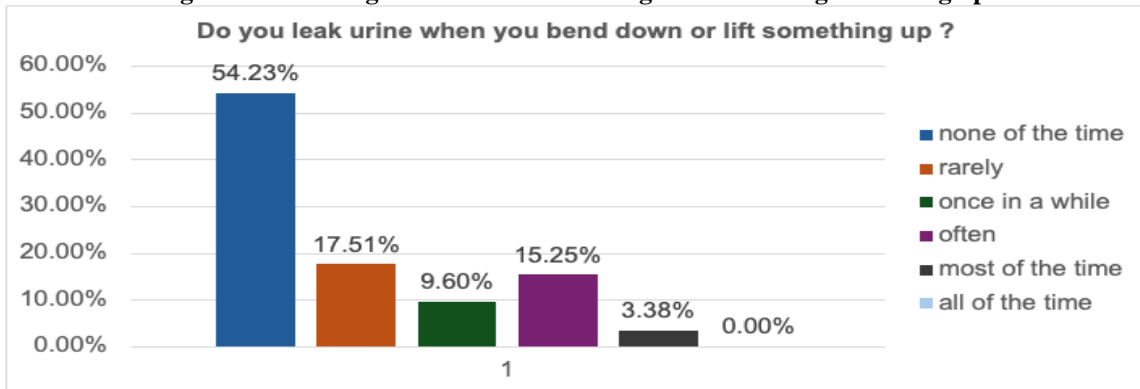
46.32% of participants had leakage of urine while coughing or sneezing due to increased intra-abdominal pressure. [Fig 1.1]

Figure 1.1- Leakage of urine while coughing or sneezing.



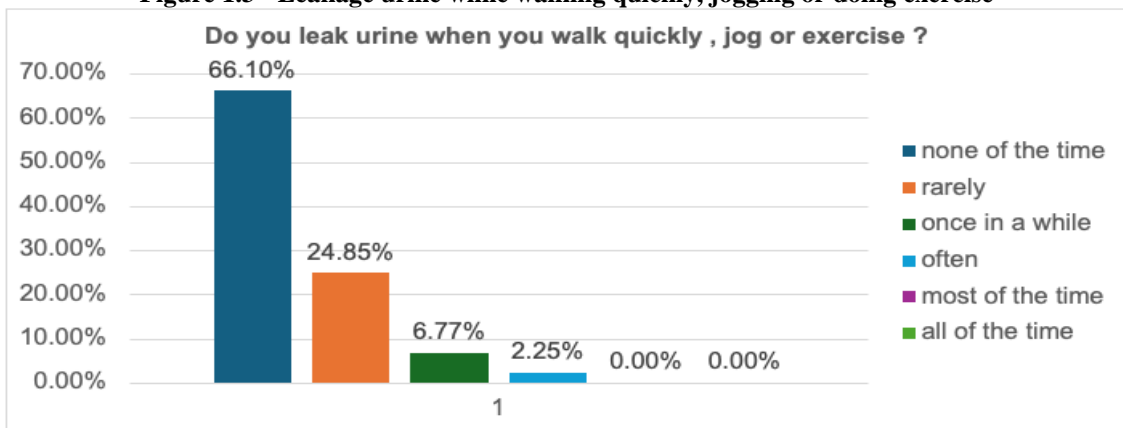
45.76% of female participants had leakage of urine while bending down or lifting something heavy up. [Fig 1.2]

Figure 1.2 - Leakage of urine while bending down or lifting something up.



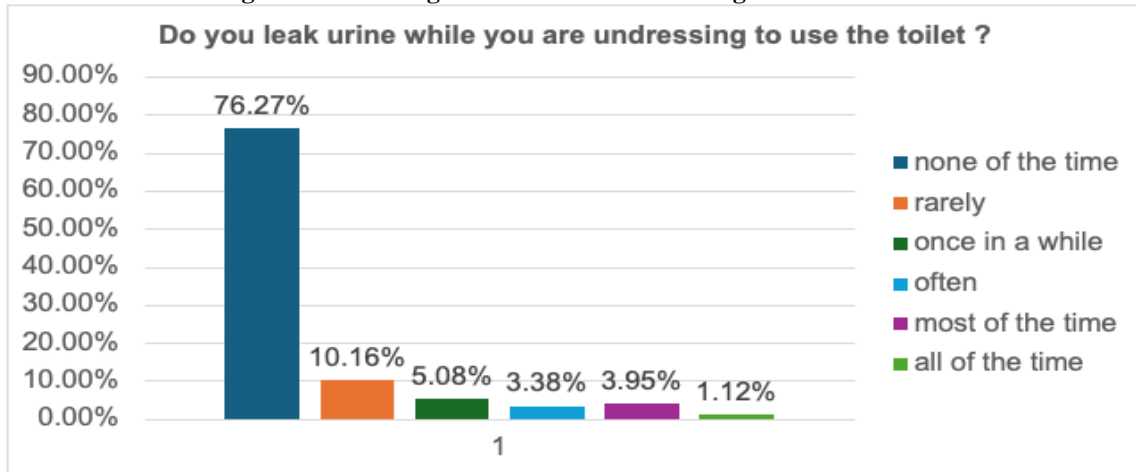
60.33% of participants had leakage of urine while walking quickly, jogging or doing exercise. [Fig 1.3]

Figure 1.3 - Leakage urine while walking quickly, jogging or doing exercise



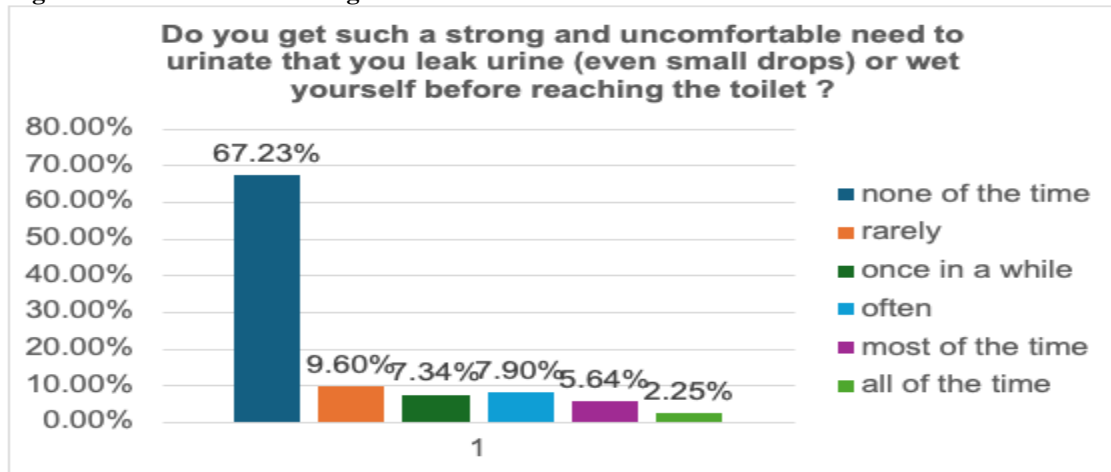
23.72% of participants had leakage of urine while they were undressing to use the toilet. [Fig 1.4]

Figure 1.4 - Leakage of urine while undressing to use the toilet.



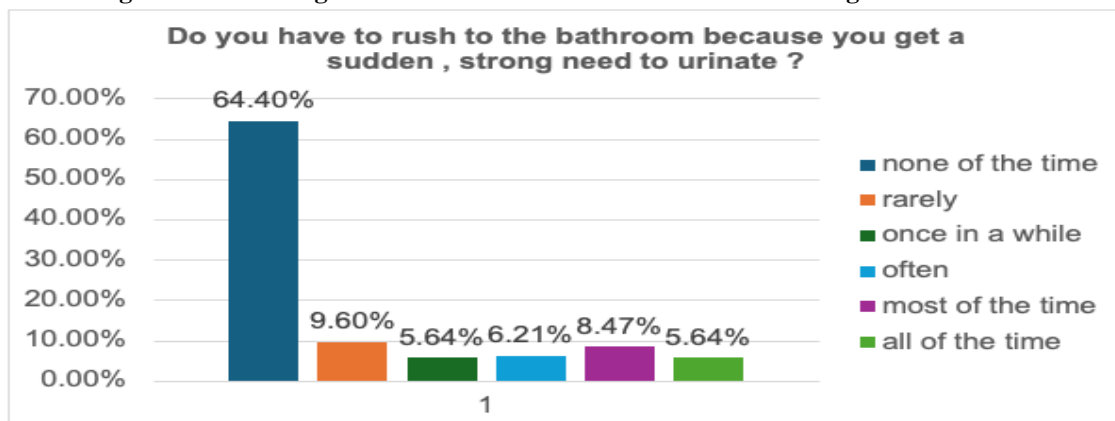
32.76% of participants had a strong and uncomfortable need to urinate that they leak urine (even small drops) or wet themselves before reaching the toilet. [Fig 1.5]

Figure 1.5- Strong and uncomfortable need to urinate that causes leakage of urine (even small drops) or wetting themselves before reaching the toilet



35.59% of participants need to rush to the bathroom because of sudden and strong need to urinate. [Fig 1.6]

Figure 1.6 - Rushing to the bathroom because of sudden and strong need to urinate



Out of 177 participants most of them had poor knowledge regarding Urinary Incontinence and out of those participants only some of them sought medical help. [Tab 1.2]

Table 1.2 - Awareness about UI

Awareness regarding UI	25.42%
Medical help taken	18.07%

DISCUSSION

The purpose of this study was to find out the Prevalence of Urinary Incontinence in perimenopausal females. Urinary Incontinence affects perimenopausal females, according to various published research. (12) Urinary Incontinence was reported using the QUID questionnaire in this cross-sectional investigation and the diagnosis was made based on responses to questions describing symptoms of Urinary Incontinence. The 6-item questionnaire has two sub scales to assess the severity of stress urinary incontinence (SUI) and urge urinary incontinence (UI) symptoms and to differentiate between the two types of urinary incontinence.

Our study found that 46.89% of perimenopausal females experienced Urinary Incontinence. This agrees with the previous studies done by He Huang et al. which reported a prevalence rate of 41.8% of perimenopausal females of China. (13) Likewise, in a study done by Shi Lu et al. in Wuhan, the prevalence rate of UI was 37.2%. (14)

In a related study, "Urinary incontinence predictors and life impact in ethnically diverse perimenopausal women," done by Carolyn M. Sampsel et al. found that the mean age of the participants was 46.4 years, and the prevalence of UI was 57%, with roughly 15% classified as moderate and 10% as severe. The most significant risk factor for severity was determined by biologic characteristics, notably the difference in odds between perimenopausal and premenopausal state, body mass index, diabetes mellitus, and current smoking. (12)

The proportions of stress and urge in this study were found out to be 41.24% and 20.33% respectively. In accordance with this study, Uma Singh et al. shows stress UI as the most predominant type followed by mixed and Urge UI. (15) In related study, done by Mishra G Det al. shows that stress

incontinence was more common in women who went through perimenopause (also known as "pre-peri") or perimenopause for more than a year (also known as "peri-peri") while both stress and urge incontinence were related to increasing age. (16) In another study done by Tao Li et al. found that the prevalence of Stress UI among Chinese perimenopausal females was 33.2% being the most prevalent one. (17)

Stress urinary incontinence is more common in perimenopausal women because of hormonal fluctuations and the effects of obesity, vaginal delivery, climacteric symptoms, diabetes and reduced strength of the pelvic floor muscles. This is proven by a study done by He Huang et al. (13) Another study done by Rebecca Daniel et al. Found that, due to variables such as hormonal changes, vaginal births, and postmenopausal status, which weaken the pelvic floor muscles and support structures and cause urine leakage which increases stress incontinence in perimenopausal females. (18) Hormonal fluctuation of GRH, FSH, LH, oestradiol and inhibin B leads to urinary incontinence. Ovulation and menstruation stop during the menopausal transition, the ovaries lose their follicles, and the production of oestradiol and inhibin B decreases.

Gonadotropin release hormone (GRH), FSH, and L are produced in greater amounts when ovarian sensitivity to follicle-stimulating hormone (FSH) and luteinizing hormone (LH) is lost, along with the loss of oestradiol and inhibin B's negative feedback on the hypothalamic-pituitary unit. Postmenopausal elevated FSH levels are especially distinct. (19)

Vaginal delivery leads to pelvic floor muscle weakness leading to incontinence in perimenopausal females. (20) A study proves that women who had only experienced caesarean births had the lowest likelihood of urinary incontinence, while women who had both vaginal and caesarean births had the most severe and second highest likelihood of urinary incontinence. (21) A study done by Radnia Nahid et al. Shows that Pelvic floor

muscle Physiotherapy and Kegels exercise can improve stress incontinence.⁽²²⁾ Another study proves that Urinary incontinence (UI) was more common in women with diabetes than in those without the disease, with a prevalence of 50.3% in the former group and 39.3% in the latter.⁽²³⁾ A study done by Giulia Trotti et al. demonstrated that, UI. has a high prevalence in females with obesity.⁽²⁴⁾ Even though Urinary Incontinence is quite common, very little is known about it; for this reason, it is known as the 'silent epidemic'⁽²⁵⁾ In this present study only 1 out of 5 women with UI sought medical help. The major reason for seeking assistance was the concern that the symptoms may worsen. They were also concerned about the severity of the symptoms, such as increased frequency of urination and wetness of garments from pee passage, and the possibility that UI is a sign of a more serious illness. These individuals were forced to seek medical attention when their UI symptoms grew bothersome.

The findings of the present study about severity of symptoms being one of the reasons for seeking help were like the findings of a study conducted by Lonese Charmaine Jacobss.⁽²⁶⁾ A study by Rashidi Fakari et al. found that patients' decreased quality of life was because of the intensity of their symptoms, as well as encouragement and supportive feedback from their spouse and family, were the main factors in their decision to seek medical attention.⁽²⁷⁾ Contrary to the findings of this study, encouragement from the family was not a prominent finding in the present study. According to the results of the current study, 74.58% of participants had poor knowledge regarding UI and had never sought medical attention. These results are consistent with research done by B S Suchithra in which 88% of women reported having inadequate knowledge of urine incontinence (UI) and just 12% reported having average knowledge.⁽²⁸⁾ This could be because of the stigma associated with the subject or the misconception that women who are going through perimenopause typically have this

illness. It becomes imperative for the experts to educate people of all ages about the illness and how to manage it.

CONCLUSION

Our study concludes that there is a high prevalence of Urinary Incontinence in perimenopausal females which is 46.89% and a lack of healthcare seeking behaviour for it. We found that only 25.42% were aware about Urinary Incontinence and only 18.07% sought medical help for the same. We also learned about the individual perspectives from this study, but in order to apply healthcare methods, it is also necessary to understand the opinions of healthcare professionals. Further scope of our study is to carry out the research on a bigger scale to investigate how perimenopausal women's quality of life is affected by urinary incontinence and to investigate the disparities in attitudes between men and women about getting medical attention for incontinence.

Declaration by Authors

Ethical Approval: Approved

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