

Urinary Incontinence in Women: A Review

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Abstract – Urinary incontinence (UI) is a prevalent clinical problem that affects women of all ages and from a wide range of cultures and ethnicities. UI was described as "the complaint of any involuntary urine leakage" by the International Continence Society (ICS). An abnormality in the bladder or the sphincter system can cause urinary incontinence (UI). When it comes to the most prominent reasons of UI (stress, want and mixed), stress is the most prevalent. Urinary incontinence, pelvic floor, function of pelvic floor, muscles perineum, type of incontinence, and stress urinary incontinence are all discussed in this study.

Key Words – Urinary Incontinence, Women, Muscles, Pelvic Floor

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1. INTRODUCTION

The term "incontinence" refers to the inadvertent loss of one's bodily fluids. You may experience stress incontinence if you engage in strenuous activity that exerts strain on your bladder, causing you to leak pee. Incontinence is not caused by psychological stress. There is a difference between stress incontinence and urgency incontinence and hyperactive bladder (OAB). There is a quick need to urinate when you have urgency incontinence or OAB, since your bladder muscle spasms. Women are more likely to suffer from stress incontinence than males. It is common for people who suffer from stress incontinence to feel self-conscious, isolate themselves, or limit their social and professional activities. You can also forgo athletic and recreational pursuits, if you like. Stress incontinence may be managed with therapy, and your general health will likely improve as a result.

UI's prevalence is difficult to estimate, and there are no reliable statistics on the number of persons who suffer from this condition. Data gathered during the 6th International Consultation on Incontinence (ICI) shows that between 4% and 8% of the general population suffers from urinary incontinence (UI).¹ There has been a steady rise in the number of persons worldwide who are affected by this ailment over the past decade. There were 346 million cases of UI in 2008, and 383 million in 2013. In 2018, it was anticipated that there will be 420 million individuals worldwide with UI – 300 million women and 120 million males – with UI.

2. THE PELVIC FLOOR AND MUSCLES OF THE PELVIS:

Together with the pelvis, the pelvic floor serves as a flexible support system for the abdominal and pelvic

organs. Muscle, fascia, and ligaments make up its structure. In 1980, Zacharine was the first to describe the pelvic floor's features using the phrase "pelvic trampoline." From deepest to thinnest, the pelvic floor is made up of the following components.

The endo pelvic fascia: Collagen, elastin and smooth muscle fibres together make up the endopelvic fascia. It serves as a link between the side walls of the pelvis and the pelvic organs. There's no stress on fascia when the levator ani muscle is working normally.

The levator ani muscle: The pelvic diaphragm, or pubovisceralis, is another name for it (pubococcygeus and iliococcygeus). Striated muscle fibres make up their structure. They are covered by the fascia on both sides. The urogenital hiatus is the only anterior midline cleft. Hiatus: The urethra, the urethra, and the anorectum all travel through.

The perineal membrane: Also known as the triangle ligament or the urogenital diaphragm. The hymenal ring and the perineal membrane are both located at the same level, however the levator ani is located above it. When the levator ani muscles are relaxed, it might give even more support.

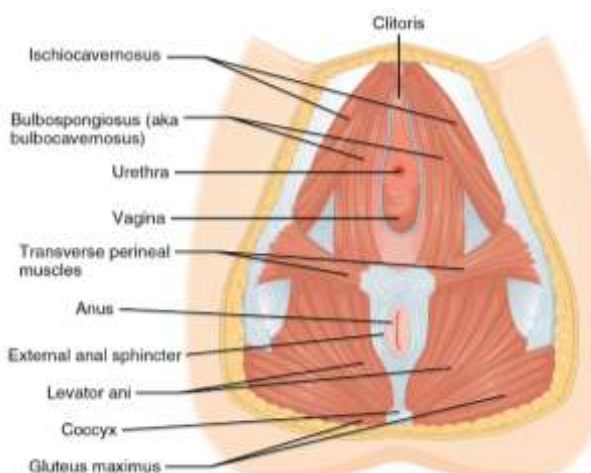
The external genital muscles: Ischiocavernosus, bulbocavernosus, and transverse perineal muscles make up the group. They're sexually significant. Skin and external genitalia.

3. FUNCTION OF PELVIC FLOOR MUSCLES

The urethra, vagina, and rectum all rest firmly on the pelvic floor muscles, which are there to support them.

- To keep the other pelvic muscles, both smooth and striated, in good condition, it is essential that this muscle function properly. Unlike other skeletal muscles, the pubococcygeus may regain physiologic tension and, after many years of inactivity and partial atrophy, it can restore its function.
- A portion of the pelvic outflow is protected by the levator ani and coccygei muscle groups. The pelvic viscera and the perineal body are stabilised by the levator ani.
- Maintaining continence of the bladder and rectum is supported by the levator ani and coccygei during coughing, sneezing and other muscular activities.
- One pelvic outlet is open during micturition/defecation/parturition, while fibres contracting around other outlets oppose an increase in intra-abdominal pressure, keeping the pelvic floor from prolapsing.
- Coccygei pull the coccyx forward after it has been pulled backward during faeces or parturition, so that it does not collapse (child birth).
- To support pelvic viscera and elevate intra-abdominal pressure, much of the muscular pelvic diaphragm is formed by the levatores, which contract with abdominal muscles and the abdomino - thoracic diaphragm. Like the diaphragm, they are a source of inquisitiveness. As a result, pelvic floor muscular contractions while exhaling are recommended.

4. MUSCLES OF PERINEUM



1. **Ischiocavernosus:** It covers the crus penis or crus clitoris. It is smaller in the female.

- **Origin:** Ramus ischiae's medial surface (behind attachments of the crus). Posterior membrane of the perineum
- **Insertion:** As the fibres go forward and spiral over the anterior half of the crus, they are implanted into its sides and underside.
- **Nerve supply:** Perineal branch of the pudendal nerve.
- **Actions:** By squeezing the crus, it helps to keep the penis erect.

2) **Bulbospongiosus:** It covers the bulb of the vestibule in females. The vagina and urethra divide the muscles of the two sides. Penis bulb is covered by it in men. A median raphe connects the right and left muscles.

- **Origin:** Perineal body and Median raphe over the bulb of the penis.
- **Insertion:** The bulb's posterior end is surrounded by posterior fibres. The perineal membrane is where they are implanted. The upper side of the middle fibres is inserted into the raphe, where it surrounds the bulb and the corpus spongiosus. The penis is completely covered by the anterior fibres. The raphe on the penis's dorsal surface is where they're placed.
- **Nerve supply:** Perineal branch of pudendal nerve.
- **Action:**

1. It helps in ejecting the last drops of urine at the end of micturition.
2. The erection of the corpus spongiosum penis depends on the middle fibres, which act as a compression on the bulb.
3. The deep dorsal vein of the penis is compressed by anterior fibres, which aid in the erection of the penis.

3) **Superficial transverse perineal:** Before the Anus, a thin slip may be found running transversely on either side.

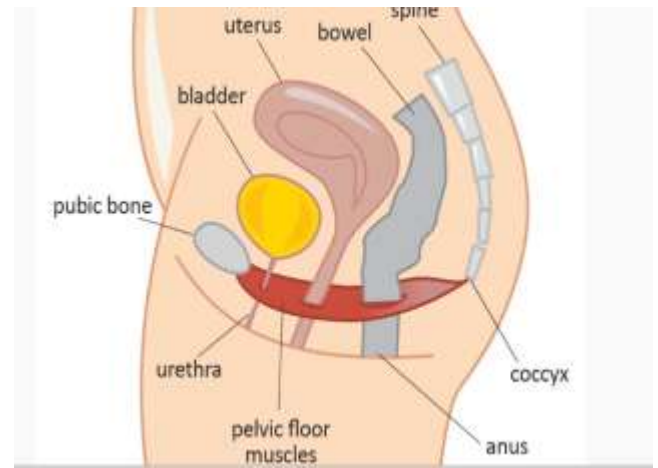
- **Origin:** Medial surface of the roots of the ischial ramus.
- **Insertion:** Intertwined with other muscles that converge on this body in the perineum.
- **Nerve supply:** Perineal branch of pudendal nerve.
- **Action:** Steadies the perineal body.

4) **Sphincter urethrae (External urethral sphincter):** The membrane portion of the urethra is surrounded by it. It extends from the two-ischio- pubic rami to the pubic bone. It is pierced by Urethra.

- **Origin:** The transverse perineal ligament is where the superficial fibres come from. The urethra is surrounded by a ring of deep fibres.
- **Insertion:** Fibers from the superficial layer are introduced into the perineum. Some decussate between the urethra and the vagina in the female.
- **Nerve supply:** Perineal branch of pudendal nerve.
- **Action:** By squeezing the membranous urethra, it aids in ejecting the final drops of pee at the conclusion of urination.

5) **Deep transverse perinei:** A narrow slip lying deep to the superficial transverse perinei.

- **Origin:** It arises from the facial sheath of the pudendal vessels over the ischial ramus.
- **Insertion:** Into the Perineal body.
- **Nerve supply:** Perineal branch of pudendal nerve.
- **Action:** Steadies the perineal body



In order for the stomach and pelvic viscera to rest on a solid foundation, the pelvic floor must be robust enough. They also aid in the ability to empty, defecate, engage in sexual activity, and give birth.

Lifter ani, Ischiococcygeus, Obturator Internus and Piriformis are all key pelvic floor muscles that may be trained with physiotherapy. Neither the vagina nor the anal sphincter are directly involved. Obturator fascia is thickened by the Arcus Tendineus Fascia of the Pelvis (ATFP).

5. URINARY INCONTINENCE

The term "incontinence" refers to the inadvertent loss of one's bodily fluids. You may experience stress incontinence if you engage in strenuous activity that exerts strain on your bladder, causing you to leak pee. Incontinence is not caused by psychological stress. There is a difference between stress incontinence and urgency incontinence and hyperactive bladder (OAB). There is a quick need to urinate when you have urgency incontinence or OAB, since your bladder muscle spasms. Women are more likely to suffer from stress incontinence than males. It is common for people who suffer from stress incontinence to feel self-conscious, isolate themselves, or limit their social and professional activities. You can also forgo athletic and recreational pursuits, if you like. Stress incontinence may be managed and your overall health can be improved with therapy.

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6. TYPES OF INCONTINENCE

1. **Stress Incontinence:** The involuntary flow of urine caused by increased intra-abdominal pressure is known as stress incontinence. Intraabdominal pressure can be increased by activities such as coughing and sneezing, laughing, heavy weight lifting, bending from the waist, and quick walking or running. Urinary leakage is termed as Stress Urinary Incontinence when a person has a significant rise in the urethral closure pressure.

Pelvic floor muscles are thought to help keep the urethra's external sphincter closed and prevent leaking in certain situations. Due to increasing intra-abdominal pressure, weak PFM are regarded to be the primary cause of SUI in females, since they are unable to withstand the increased bladder pressure. There is no movement of the detrusor muscles in cases of leaks like this.

2. **Urge incontinence:** Involuntary urination is the result of an overly sensitive bladder. In certain situations, women have a strong desire to urinate. Urge Incontinence may be caused by Interstitial Cystitis or other Urinary Tract Infections. Although the terms "overactive bladder" and "urge incontinence" are sometimes used interchangeably, there is a significant difference in their definitions. An overactive bladder is not a medical diagnosis, however it is associated with symptoms such as urgency, frequency, nocturia, and incontinence.
3. **Mixed incontinence:** It's a combination of stress and incontinence that causes it. Women are more likely to suffer from mixed incontinence than males.
4. **Overflow incontinence:** Overflow incontinence is characterised by a constant stream of urine dribbling or leaking out of the bladder. Bladder outlet blockage, impaired detrusor contractility, or other neurogenic bladder disorders may be to blame for this.
5. **Functional Incontinence:** Incontinence produced by reasons other than the lower urinary tract is known as non-urethral incontinence. Functional incontinence can be caused by a lack of movement and cognitive impairment.
6. **Giggle Incontinence:** When a teenager laughs, she is more likely to wet the bed than she is when she's not (giggle). The exact reason is unknown, however factors such as increased pressure on the bladder during laughter and a weak PFM may contribute to

urine leakage. It is recommended that patients learn pelvic floor exercises if no other issues are discovered. Girls who want to gain muscular mass and stamina should do these workouts on a regular basis. In addition, they should be taught to clench their pelvic floor muscles before and while they giggle. The overactivity of the detrusor is one of the possible causes of laugh incontinence.

7. **Nocturnal Enuresis:** When a person who is supposed to be dry has "bed wetting" incontinence when they are supposed to be sleeping (after 5 years of age). 15–20 percent of 5-year-olds and 2 percent of young people are affected by this condition at some point. Sleepovers and school excursions may be difficult for your child. This can also lead to incidents of child abuse.

7. STRESS URINARY INCONTINENCE

Stress urinary incontinence is the most common kind of urine incontinence in most surveys. The symptoms of SUI are not the same in every case. Temporary involuntary leaking of urine occurs as abdominal pressure increases. "Stress incontinence" is a term that is used to describe many conditions and symptoms.

The symptom: There are several ways to describe a patient's symptoms. When the patient is coughing, sneezing, or exercising, he or she notices that pee leaks from the abdomen. Genuine Stress Incontinence is defined by the absence of detrusor activity during such leakages, as determined by urodynamic tests (GSI). The detrusor contractions caused by these activities may possibly be a factor.

The sign: A symptom is anything that a doctor notices. When a patient coughs or engages in activities that increase intra-abdominal pressure, a medical expert notices leakage ranging from a few drops to the entire bladder. During a cough or stress test, the leaking indication might be seen. Full bladders are required for these tests. There are a number of activities that may produce dribbling, such as coughing, sprinting and bending or leaping. In this case, Genuine Stress Incontinence is a condition in which the detrusor muscles do not contract, resulting in the spilling of pee. With or without detrusor contraction, leakage of urine occurs when intravenous pressure is greater than the urethra's pressure. Detrusor inactivity is a form of SUI that falls under the umbrella word SUI, but GSI falls under that umbrella category as well.

Patho-Physiology of Stress Urinary Incontinence: For continence to be maintained, it is necessary for the bladder, urethra, pelvic muscles, and surrounding connective tissues to work together. In order to maintain a normal bladder capacity, the urethra must be closed and the bladder must be

relaxed. The bladder neck and smooth muscles of the urethra are responsible for the closing of the bladder's exit. The voluntary control (somatic) of a skeletal muscle rhabdosphincter aids in the closure of the outlet. The rhabdosphincter contracts as intra-abdominal pressure rises, keeping the urinary outlet shut. The mucosa of the urethra also plays an essential function in securing the urethra's opening. Problems with the urethra and bladder can occur concurrently. Several additional processes, on the other hand, are in place to make up for their absence. SUI is mostly caused by a weak pelvic floor muscle, according to the vast majority of research. J. Motwin has shown that when women's pelvic floor muscles are relaxed, the detrusor overactivity is linked to SUI. This implies that in order to prevent urine from leaking out of the bladder, the pelvic floor muscles must be tensed. As a result, the likelihood of SUI increases if the pelvic floor muscles are weak.

8. CONCLUSION

Urinary incontinence is a public health issue that must be addressed. There may be a lack of community continence centres or other patient difficulties to blame in some circumstances. A wide variety of illnesses can be effectively treated using non-pharmacological, pharmacological, and surgical therapy. Women's lives can only be improved by better understanding how incontinence affects them.

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