



Characteristics Of Stress Urinary Incontinence (SUI) Patients In Dr. Mohammad Hoesin General Hospital On 2019 To 2021

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ABSTRACT

Introduction. Stress urinary incontinence (SUI) is a condition where urine comes out accidentally due to intraabdominal pressure increase when sneezing, coughing, laughing, or weightlifting. SUI often occurs in women and has a negative impact on quality of life. However, not many patients visit the hospital for treatment. This research aims to describe the characteristics of SUI patients in Dr. Mohammad Hoesin General Hospital 2019-2021. **Methods.** This research is a descriptive observational study with a cross-sectional approach using patient's medical records in Dr. Mohammad Hoesin General Hospital 2019-2021. The sample in this study are 15 samples taken by total sampling. **Results.** This study found that SUI was common in patients aged 41-60 years (66,7%). The majority of patients were multiparous (93,3%) and had experienced menopause (86,7%). Most of the patients gave birth spontaneously (80,0%), were obese (53,3%), had a duration of the second stage labor >1 hour (60,0%), had given birth to a baby with birth weight ≥ 3.000 g (80,0%), and has had an episiotomy (73,3%). The majority of SUI patients had no history of neurological disorders (93,3%). Every SUI patients were treated with anterior colporrhaphy (100,0%). **Conclusion.** SUI often occurs in patients aged 41-60 years, multiparous, menopausal, obese in BMI, has a history of >1 hour second stage labor, has given birth to a baby with a birth weight ≥ 3.000 g, and has had an episiotomy. SUI patients at Dr. Mohammad Hoesin General Hospital were treated with anterior colporrhaphy.

1. Introduction

Urinary incontinence is defined as the state in which urine discharges involuntarily. There are three types of urine incontinence that often occur, namely, stress urinary incontinence (SUI), urge urinary incontinence (UII), and mixed urinary incontinence (MUI). SUI is characterized by accidental discharge of urine that occurs due to increased intra-abdominal pressure when sneezing, coughing, laughing, exercising, or lifting weights.^{1,2}

According to The Asia Pacific Continence Board (APCB), the prevalence of urinary incontinence in women is 15,1%, of which 24,9% have SUI. The prevalence of urinary incontinence in Indonesia is 13%. SUI is the most common type of urinary incontinence. A study revealed that about a third of women experienced SUI 5 years postpartum. From a study conducted by Fakhrizal et al., the prevalence of postpartum SUI was 8,8% in Pekanbaru, Riau. Women who gave birth spontaneously (14,1%) had more SUI than women who had a cesarean section (7,1%).^{3,4,5}

The causes of the occurrence of SUI in women are

multifactorial. Trauma from the labor process is one of the most important risk factors. Factors predisposing to SUI include age, parity (especially spontaneous childbirth) and obesity. Such factors are associated with a weakening of the supporting structure of the pelvic floor leading to hypermobility of the urethra. Parity affects the innervation of the bladder and urethra due to stretching or suppression of the nerves as the fetus goes through the delivery duct, so it can cause SUI.¹

The prevalence of SUI in Palembang is still undetermined. Although the symptoms of SUI that are frequently shown considered as are severe symptoms, only a few patients visit the hospital for treatment. SUI is not a life-threatening disease, but it has a devastating impact on the quality of life of the patients. Urine incontinence can cause uncomfortable feelings due to constant wetness, irritation, and odor. Therefore, the author is interested in conducting research on the characteristics of SUI at Dr. Mohammad Hoesin General Hospital on 2019-2021 with the hope that the data obtained can provide an overview of the characteristics of SUI that are often

experienced and can be used as an intervention to prevent the incidence of SUI in patients.⁵

2. Methods

The research is an observational descriptive study with a cross sectional design. The research was conducted in November 2022 at the Medical Record Installation of Dr. Mohammad Hoesin General Hospital Palembang. This research has been validated ethically with protocol number 196-2022 and has received research permission with the number LB.02.03/XVII.2.2/1735/2022.

The sample of this study are pelvic organ prolapse patients who experienced stress urinary incontinence in outpatient and inpatient installations of the Obstetrics and Gynecology Section of Dr. Mohammad Hoesin General Hospital Palembang in 2019-2021

which was collected using the total sampling technique. The data used in this study is secondary data taken from the medical records of the obstetrics and gynecology department of Dr. Mohammad Hoesin General Hospital Palembang. The collected data was processed using IBM SPSS Statistics 25 (IBM, Armonk, United States). The processed data is presented as a frequency distribution table and then analyzed and explained in narrative form.

3. Results

During the sampling period in November 2022, the number of pelvic organ prolapse patients recorded in the medical records of Dr. Mohammad Hoesin General Hospital Palembang in 2019-2021 amounted to 95 patients with 16 patients experiencing SUI. The patients who met the criteria as a sample in this study were 15 people.

Table 1. Distribution of SUI Patients

Characteristics	Stress Urinary Incontinence	
	Number (n)	Percentage (%)
Age		
20-40 years	0	0,0
41-60 years	10	66,7
>60 years old	5	33,3
Parity		
Nullipara	0	0,0
Primipara	1	6,7
Multipara	14	93,3
Status Menopause		
Not yet menopause	2	13,3
Menopause	13	86,7
BMI		
Underweight	0	0,0
Normal	5	33,3
Overweight	2	13,3
Obesity	8	53,3
Labor Methods		
Spontaneous delivery	12	80,0
Cesarean section	0	0,0
Sponataneous delivery and cesarean section	3	20,0
Duration of Second Stage of Labor		
≤1 hour	6	40,0
>1 hour	9	60,0
Birth Weight		
<3.000 g	3	20,0
≥3.000 g	12	80,0
History of Episiotomy		
Yes	11	73,3
No	4	26,7

Characteristics	Stress Urinary Incontinence	
	Number (n)	Percentage (%)
History of Nervous System Disease		
Yes	1	6,7
No	14	93,3
Treatment Methods		
Conservative treatment		
Yes	0	0,0
No	15	100,0
Midurethral slings		
Yes	0	0,0
No	15	100,0
Urethral bulking agents		
Yes	0	0,0
No	15	100,0
Anterior colporrhaphy		
Yes	15	100,0
No	0	0,0
Posterior colporrhaphy		
Yes	10	66,7
No	5	33,3
Kelly plication		
Yes	3	20,0
No	12	80,0

Table 1 shows the characteristics of all SUI patients. This study found that SUI is more common in patients aged 41-60 years (66,7%). SUI patients were more prevalent in multipara patients (93,3%). Most of the patients had experienced menopause (86,7%). Based on their BMI, the majority of patients were obese (53,3%). In table 1, it can be seen that patients who gave birth spontaneously experienced the most SUI (80,0%). The majority of SUI patients had a history of >1 hour second stage of labor (60,0%), giving birth to a baby with a birth weight of ≥ 3.000 g (80,0%), and episiotomy (73,3%). There was only 1 SUI patient (6,7%) who had a history of nervous system disease. From table 1, it was found that the most common treatment method performed in SUI patients was anterior colporrhaphy (100,0%), followed by posterior colporrhaphy (66,7%), total vaginal hysterectomy (60,0%), sacrospinous fixation (26,7%), and kelly plication (20,0%).

4. Discussion

Based on the results of the study, it was found that SUI is more often experienced by patients who were aged 41-60 years. The corresponding results were obtained from a study conducted by Sharfina et al. where SUI most often occurs in patients in the age group of 40-59 (71,4%). Research by McKellar and Abraham suggests that patients aged 40-65 years experience SUI more often with a percentage of 64,2% compared to patients aged ≥ 66 years or ≤ 39 years. According to Dayili et al., SUI often occurs in

women over the age of 50 with a percentage of 66,3%.^{3,6,7}

The increase in age affects the changes in the lower urinary tract structurally and functionally. According to Akkus and Pinar, aging in women affects the level of the hormone estrogen. Estrogen stimulates blood flow to the pelvic region which increases pelvic muscle strength. A decrease in estrogen levels leads to a decrease in total collagen concentration as well as an increase in collagen turnover in the periurethral tissue. This results in muscle tone being reduced progressively. The muscles do not have enough strength to hold the bladder canal closed during the onset of pressure so that intrinsic sphincter deficiency (ISD) occurs.^{8,9}

In this study, multipara patients experienced SUI more often. Similar results were found by Sharfina et al. in two villages in Jatiningor in 2017 stating that patients with a history of giving birth to ≥ 2 babies were more often exposed to SUI with a percentage of 85,7%. In the research conducted by Pratiwi et al. revealed that SUI patients were more commonly found in multipara patients, at 72,2%. Gabilondo et al., also revealed results that are in line with this study where 74,6% of SUI patients were multipara.^{3,10,11}

During childbirth, the fetus presses on the birth canal causing postpartum trauma and emphasis on the birth canal and pelvic floor. Vaginal delivery can contribute to the pelvic muscles weakening and can injure the bladder support structure in women. Pelvic

floor muscles, vagina, and ligaments serve to support the bladder. If these structures are weakened, the position of the bladder may be lowered, pushing slightly out of the pelvic floor towards the vagina. As a result, SUI may occur. Patients who are multipara are more susceptible to developing SUI due to repeated exposure to pressure that causes the pelvic floor muscles to weaken.¹²

Based on the results of this study, it was found that patients who had menopause more often experience SUI. This study shows results that are in line with a research conducted by Djusad et al. at Cipto Mangunkusumo Hospital in 2021 where almost all SUI were found in patients who had experienced menopause (88,9%). In addition, based on research conducted by Ng et al., in Singapore, SUI was found in 64,4% of patients who were menopausal, higher than in patients who were perimenopause and premenopause.¹³

Menopause can cause lower urinary tract dysfunction. This can occur due to a decrease in estrogen levels which results in atrophy of the epithelium and supporting tissues of the urethra and the urethra's mobility increased. In addition, estrogen deficiency also affects the synthesis of collagen fibers, which are the main components of the supporting tissues of the pelvic floor. Changes in collagen composition can weaken the supporting tissues of the pelvic organs and increase the risk of SUI.^{14,15,16}

This study found that SUI are more commonly found in patients who are obese. Based on a research conducted by Zhang et al., SUI were found in 47,8% of obese patients. Similar results were also found in a study conducted by Khullar et al. which stated that SUI often occurs in patients with a BMI of ≥ 25 with a percentage of 59%.^{16,17}

A high BMI is followed by an increase in intraabdominal pressure (IAP). In normal condition, the urethra in females has a length of approximately 4 cm. Overweight patients will tend to experience urethral shortening and muscle tone weakening. Overweight patients will also experience increased IAP which compresses the muscles on the pelvic floor and presses the bladder so that urine is easily pushed into the urethra and causes urethral hypermobility. Excess weight can also disrupt blood flow and innervation to the bladder and urethra. This contributes to the development of SUI.¹⁸

Based on the results of this study, the majority of SUI patients have a history of vaginal delivery. These results are in line with a 2019 study conducted by Waqiah et al. which said that patients who gave birth by vaginal delivery experienced SUI more often (94,7%). According to the research of Zhang et al. conducted in 2021, the percentage of SUI patients with a history of childbirth through vaginal delivery was also greater than that of patients who chose the cesarean section, which was 82,9%. Meanwhile, according to a research conducted by Nygaard et al., in patients who give birth by two methods (vaginal

delivery and cesarean section), SUI occurs with a percentage of 17,2%. Huser et al., revealed that the percentage of SUI in patients who gave birth spontaneously (31%) was twice as large as in patients who gave birth with cesarean section (15%). In a study using 18 observational cohort studies revealed that the prevalence of SUI in patients who gave birth with cesarean section was 10-15% lower than that of patients who gave birth by the vaginal delivery method.^{16,19,20,21}

According to the theory, by the time a mother gives birth by the spontaneously, the birth canal tissue can stretch excessively and the levator ani muscle can weaken and be damaged. This then results in the levator ani muscle not being able to maintain proper function in closing the urethra from bladder pressure. During labor, pressing and stretching not only occurs in the levator ani muscle, but also occurs in the bladder neck, urethral sphincter muscle and its ligaments. During the process of childbirth, especially during two childbirths, there can be damage to the pudendal nerve due to suppression by the fetus which results in disruption of the urethral sphincter. Cesarean section, performed before delivery and before entering two deliveries, was associated with a lower incidence of SUI compared to pervaginal delivery.²²

The results of this study found that most SUI patients had a history of childbirth with a duration of second stage of labor >1 hours. According to the research of Gao et al., similar results were obtained, namely the relationship between the second stage of labor ≥ 1 hour and 30 minutes and the occurrence of SUI. The results obtained from the research of Fakhri et al. also stated that the corresponding results, namely the duration of second stage of labor ≥ 1 hour affected the incidence of SUI by 52,4%. In a study conducted by Gabilondo et al. in Spain, the incidence of SUI was found in patients who had a duration of second stage of labor ≥ 1 hour with a percentage of 40,9%.^{4,11,23}

Repeated increases in IAP such as during straining at the second stage of labor can cause pelvic floor muscles to weaken. Weakened pelvic floor muscles can cause a lowering in the bladder and in the bladder neck resulting in SUI that occurs due to ISD. In addition, the childbirth process improves the mobility of the bladder neck and can damage the innervation of pelvic floor muscles such as the pudendal nerve. Stretching the pudendal nerve during the second stage of labor can cause irreversible damage to the pudendal nerve.²³

From the results of the study, it was found that SUI patients were dominated by patients who had given birth to babies with a birth weight of ≥ 3.000 g. Based on previous research conducted by Fakhri et al. in 2016, there were many SUI patients who gave birth to babies with a birth weight of ≥ 3.360 g, which was (62,8%). In line with the research of Gao et al. revealed that there is a relationship between the

weight of babies born ≥ 3.000 g and the incidence of SUI. Suppression and stretching of pelvic muscles by the fetus during spontaneous delivery is one of the causes of muscle damage. Therefore, a heavier baby will cause greater pressure so that the trauma produced is also greater. Heavier babies have been linked to electromyographic evidence of pudendal nerve damage in the pelvic floor after spontaneous delivery.^{5,10,23,24}

The results of this study found that most SUI patients had undergone episiotomy. This study has results that are in line with the study conducted by Diez-Itza in 2020 of patients who had a history of having an episiotomy (69,4%). Handa et al. also mentioned in their study conducted in 2012 that there were more SUI patients who have had episiotomy than patients who had never had an episiotomy (54,9%). If done well and carefully, episiotomy is often performed during spontaneous delivery to facilitate a smooth delivery, improve the woman's quality of life, and protect the female from urogenital complications during subsequent pregnancies. Episiotomy causes an incomplete state of the perineum as a result of the suppression of the birth canal by the baby's head. This results in the tissues in the birth canal undergoing lacerations and ruptures. Perineal damage due to episiotomy, which is poorly treated and does not heal properly, can lead to long-term complications, such as SUI, POP, and dysentery. Episiotomy can also cause urinary retention as a result of a decrease in the sensation of urination and the appearance of pain. This overdistention bladder weakens the contraction of the detrusor muscle and compresses the urethral sphincter so that SUI can occur.^{23,25,26,27,28}

The study found most SUI patients had no history of neurological disorders. Neurogenic stress urinary incontinence (nSUI) is a SUI that occurs as a result of congenital lesions or lesions that occur in the sacral or subsacral that cause the inability of the urethral closure mechanism. The disease occurs in patients who experience lower urinary tract dysfunction due to lesions of lower motor neurons involving the sacral spinal center or its efferent pathways. Lesions below the pons and above sacral have disrupted the pathways that should allow the contraction of the detrusor muscle and the simultaneous relaxation of the urethral sphincter. This disorder thus generates a detrusor sphincter dyssynergia and an uncoordinated relationship between the contraction and relaxation of the detrusor muscle with the contraction of the urethral sphincter. Sacral neurological abnormalities can vary in depending on the injury to the parasympathetic, sympathetic, or somatic part of the neurological tract. Common causes of somatic nerve disorders include disc hernia, diabetes, multiple sclerosis, and sacral tumors.^{29,30}

From the results of this study, all SUI patients were treated using the anterior colporrhaphy method. In 2019-2021, the SUI treatment methods applied at Dr.

Mohammad Hoesin General Hospital are anterior colporrhaphy, posterior colporrhaphy, sacrospinous fixation, total vaginal hysterectomy, and kelly plication. The majority of pelvic organ prolapse patients who experienced SUI at Dr. Mohammad Hoesin General Hospital, 11 out of 15 patients, were diagnosed with uterine prolapse, cystocele, and rectocele. One patient can be treated with a combination of several methods according to the disease experienced. At Dr. Mohammad Hoesin General Hospital, there are 2 patients who are treated with a combination of 4 methods, 8 patients who are treated with 3 methods, 4 patients who are treated with 2 methods, and 1 patient who is carried out with 1 treatment method. The most commonly used combined methods are anterior colporrhaphy, posterior colporrhaphy, with kelly plication.

Kelly plication, performed by Howard A. Kelly in 1900, was the first surgical technique used in treating SUI. This technique involves anterior colporrhaphy and folding of the bladder across the endopelvic fascia thereby narrowing the posterior urethrovesical angle to improve continence. In this procedure, a vertical incision is made in the vaginal wall and dissected laterally. The endopelvic fascia are sutured together to create a bridge of tissue in the midline to support the bladder neck and proximal urethra. But long-term results have not had good results with a 5-year goal success rate of 37% and an SUI goal rate of 46,81% at 5 years.³¹

Despite some reports of low long-term success rates of anterior colporrhaphy with kelly plication, this method is still used by doctors in various hospitals as a treatment method of SUI, including at Afzalipour Hospital in Iran. In one study, a comparison between Burch's colposuspension and anterior colporrhaphy with Kelly plication showed a 75% success rate after six months and there was no significant difference between the two procedures.³²

Patients who have a cystocele and moderate or severe SUI can be treated with anterior colporrhaphy. This operation is performed by dissecting the vaginal mucosa below the urethra which ends just in front of the cervix, then 1-3 sutures are placed in the periurethral tissue and pubocervical fascia to support and elevating the bladder neck. The American Society of Urology Female Stress Urinary Incontinence Clinical Recommendations Panel reports that the success rate of anterior colporrhaphy is 61%. Meanwhile, according to Zullo et al., anterior colporrhaphy is more effective in restoring the anatomical position of the anterior vagina with a success rate of 97 %, but the success rate of anterior colporrhaphy for SUI is low at 42%,^{33,34,35,36}

In women who experience uterine prolapse but wish to preserve the uterus, sacrospinous fixation can be the treatment of choice. Sacrospinous fixation is performed by suturing the posterior vaginal wall to the sacrospinous ligament. Patients treated with the sacrospinous fixation method only require a short

hospitalization time and recover more quickly and can return to their daily activities in a short of time. This operation showed improvement in most of the symptoms experienced including difficulty urinating, SUI, and overactive bladder. Sacrospinous fixation has a cure rate of 96–98%.^{33,37,38,39}

SUI patients with rectoceles can be managed using posterior colporrhaphy. The goal of this procedure is to narrow the vaginal canal and genital hiatus to allow for a suspension to form. Bohlin et al., reported that the success rate of posterior colporrhaphy is between 56–100%. According to a study conducted by Galvind et al in Denmark 28 women were operated on with only anterior colporrhaphy (45%), only posterior colporrhaphy (22%), vaginal hysterectomy with suspension (16%), and other operations (17%). From these results, 7 patients achieved continence after surgery, 17 women experienced a decrease in incontinence symptoms, and 4 women experienced worsening. In that study, no women experienced de novo SUI.^{33,40,41,42}

Total vaginal hysterectomy is the surgical removal of the uterus and cervix through the vagina. This hysterectomy method does not require an incision in the abdomen. This operation is performed in 90% of patients with uterine prolapse, pelvic pain, fibroids, and those with abnormal uterine bleeding. Gustafsson et al., found that there was a decrease in SUI symptoms after patients underwent total vaginal hysterectomy. SUI symptoms decreased from 44% before surgery to 31% after 3 years ($p = 0.003$).⁴³

5. Conclusion

Patients who experienced SUI at Dr. Mohammad Hoesin General Hospital Palembang in 2019-2021 period were mostly from the age group of 41-60 years old, multipara, already experienced menopause, obese, and having pervaginam delivery. The incidence of SUI is mostly found in patients with a history of two >1 hours, giving birth to babies with a birth weight of ≥ 3.000 g, having a history of episiotomy, not having a neurological disorder, and receiving anterior colporrhaphy treatment.

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