

Prevalence, Characteristics and Risk Factors relating to Urinary Incontinence in Gynecology Polyclinic using Questionnaire for Urinary Incontinence Diagnosis (QUID) Indonesian Version

Imam Ahmadi Farid¹, Surahman Hakim², Joedo Prihartono³

¹Department of Obstetrics and Gynecology, Faculty of Medicine, Hasanuddin University, Makassar, Indonesia

²Division of Urogynecology and Reconstructive Pelvic Surgery, Department of Obstetrics and Gynecology, Faculty of Medicine, Indonesia University, Dr. Cipto Mangunkusumo National Central Referral Hospital, Jakarta, Indonesia

³Community Health Department, Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia, Indonesia.

ABSTRACT

Background: The virtue of QUID is that there are only six short questions, they are all consistent in length, and their values adjust when symptoms become better. Urinary incontinence examinations can be carried out in a variety of ways to make a more thorough diagnosis, including history taking, directed physical examinations, urinalysis and residual volume, post-urine voiding, and special examinations. Using a urinary incontinence diagnosis questionnaire, it is ideal to be able to identify the type and level of urinary incontinence that occurs. Numerous languages, including Indonesian, have had their translations of QUID put to the test.

Methods: Utilizing a QUID device that has undergone validity and reliability testing, the study was carried out using a cross-sectional observational survey method to determine the prevalence rate of urinary incontinence. It then moved on to an internal comparative analysis to determine the relationship between risk factors and the incidence of urinary incontinence.

Results: Urinary incontinence was a complaint made by 40 persons (10%). Only age remained as a variable that only influences the probability of urine incontinence after performing a multivariate analysis using the logistic regression method. Age 51 to 60 is anticipated to have a 4.280 times higher risk of urinary incontinence than age 18 to 50, which is statistically significant ($p=0.002$). In the meantime, those over 60 were statistically significant ($p=0.000$) and at risk up to 21.4 times more than those between age 18 and 50.

Conclusions: Both medical and paramedical staff can use the QUID questionnaire and recommend it for wider usage, particularly in primary care or level I health institutions for screening, as this treatment can still be started in early.

KEYWORDS: urinary incontinence, bladder dysfunction, QUID, urogynecology

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INTRODUCTION

According to the International Continence Society (ICS) in 2002, Urinary Incontinence (IU) is the loss of urine that cannot be controlled or controlled consciously. The previous ICS definition in 1982 stated that urinary incontinence is an involuntary loss of urine that can be objectively demonstrated and is a social or hygienic problem. IU is a health problem that is very common in both men and women, both children, adults and the elderly. IU is rarely complained by patients or

families because it is considered something normal, embarrassing or taboo to be told to other people or to doctors is considered something natural and does not need to be treated. IU itself is not a disease but a symptom causing health, social, economic and sexual and psychological problems that can lead to a lowered quality of life. In general, the prevalence of urinary incontinence in adult women is estimated at 25-45%, where the most obtained is the type of Stress Urinary Incontinence (SUI) which is 10-39%

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explained by MIX Urinary Incontinence with 7.5-25% and finally Urge Urinary Incontinence (UII) with 1-7%.^{1,2} Research by Sumardi (2008) et al in several Indonesian teaching hospitals describes the overall IU prevalence of 13.0% consisting of pressure type IU (4.0%), pressure IU / wet OAB (4.1%), dry OAB 1.8%, mixed IU (1.6%), overflow IU (0.4%), enuresis (0.4%), other IU (0.7%).⁴ Research abroad describes the prevalence of urinary incontinence varies, Spain 23%, Germany 41%, UK 42% and France 44%.^{4,5} Data on IU in Indonesia according to the results of Rijal's research (2013) at the Jakarta Welfare Home explained that the prevalence was around 34.2% with the distribution of urinary incontinence types, namely: mixed type urinary incontinence 67 people (70.5%), pressure urinary incontinence 17 people (17.9%) and urge urinary incontinence 11 people (11.6%).³ Research by MCKenzie et al in Australia in women who are active in sports, involving 361 women who often exercise in the gym, it turns out that 49.3% reported the presence of SUI where it was found or moderate.⁶ The method of diagnosis that is currently considered the gold standard is urodynamics. Urodynamic examination is difficult to carry out because it is invasive, expensive, specialist and only available in large hospitals.⁷ The Urinary Incontinence Diagnosis Questionnaire (QUID) is a questionnaire that has been recognized in the diagnosis and type of IU, also recognized as a responsive urinary incontinence diagnostic method, so that its use has proven to be useful for doctors and patients.⁸ The advantage of QUID lies in the number of questions that are short (6), consistent, and the value changes according to symptom improvement. From the examination using a urinary incontinence diagnosis questionnaire, ideally, it is possible to determine the type and level of urinary incontinence that occurs, while to achieve a more comprehensive diagnosis, urinary incontinence examination can be carried out through several aspects, namely: history taking, directed physical examination, urinalysis and residual volume, post-urine. voiding and special examinations.^{8,9} QUID has been translated into various languages including Indonesian and tested for accuracy. The validity and reliability testing has also been carried out in Indonesia several times, one of them by Rijal and Hakim. The Indonesian version of QUID will be very useful for women in Indonesia to detect urinary incontinence disorders as early as possible, so that they can provide effective treatment.³ In Indonesia, especially in Jakarta, data on the prevalence of urinary incontinence is still minimal, so the prevalence is not certain about towards the problem. This may be due to the lack of reports from patients about this problem so that health workers, both doctors and other medical personnel, cannot understand the handling of IU patients properly. In fact, IU is a health problem that can be

solved. This is the reason for researchers to explain the prevalence, characteristics and risk factors associated with IU in Jakarta by taking samples from the central hospital in Jakarta in this case conducted on visitors to the gynecology polyclinic.

METHODS

The study was conducted using a cross-sectional observational survey method to see the prevalence rate of Urine Incontinence and continued with an internal comparative analysis to see the relationship between risk factors and the incidence of Urine Incontinence, using a QUID device that has been tested for validity and reliability. The study was conducted at the Dr. Cipto Mangunkusumo National Central Referral Hospital,. The study was started after obtaining approval from the ethics committee. This research was conducted from September 2017 to November 2017. The study population was gynecological polyclinic patients who met the research criteria consisted of patients who visited the Gynecology polyclinic of Cipto Mangunkusumo Hospital between September and November 2017, willing to take part in research, patients who have not been diagnosed with SUI, UII or MIX urinary incontinence before. The exclusion criteria is the patient had known vesicovaginal fistula before, known criteria for Transient Incontinence (Delirium, Infection, Atrophic vaginitis, Drugs, Endocrine, Restricted mobility, Stool Impaction - DIAPERS) and the patient who had mental retardation, severe psychiatric disorders. Sample selection was done by consecutive sampling where every patient who met the research criteria was included in the study until the number of samples was met. Questionnaire to assess urinary incontinence index consisting of 6 questions to assess stress index and urgency index. This questionnaire is called the Questionnaire for Urinary Incontinence Diagnosis (QUID) which has been tested for validity and reliability.^{8,9} The data is processed and arranged in the form of frequency distribution tables and cross tables according to the research objectives using SPSS version 20.

RESULTS

The research subjects in this study were all members of the population who met the inclusion criteria to be used as research samples who visited the gynecology polyclinic of Cipto Mangunkusumo Hospital, totaling 400 respondents. The subject descriptions were carried out based on age (age), education level, occupation, parity, mode of delivery, menopause status, smoking habits and nutritional status. Based on the results of the study, the description of the subject can be presented as follows. The subject distribution shown in Table 1.

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Table 1. Subject distribution according to characteristic (n=400)

Characteristic	Amount	Percentage
Age		
18 - 50 years	341	85,2
– 60 years	38	9,5
≥61 years	21	5,3
Education		
Low	26	6,5
Middle	209	52,2
Higher	165	41,3
Occupation Category		
Heavy	43	10,75
Moderate	160	40,00
Light	197	49,25
Smoking Habit		
Heavy Smoker	0	0,0
Moderate Smoker	0	0,0
Light Smoker	9	2,3
Non-smoker	391	97,7
Nutritional Status		
Under weight	21	5,3
Normo weight	295	73,7
Over weight	84	21,0
Paritas		
Nuli para	146	36,5
Primi para	84	21,0
Multi para	156	39,0
Grande multi para (>4)	14	3,5
Birth Method History		
Never	146	36,5
Sectio caesaria	52	13,0
Normal	183	45,7
Vaccum/forceps	19	4,8
Menopause		
Yes	59	4,8
Not yet	341	85,2

Based on table 1 of 400 people who became respondents in this study, it was found that respondents aged 18-50 years were 341 people (85.2%), respondents aged 51-60 years were 38 people (9.5%) and respondents aged 51-60 years, more or equal to 61 years as many as 21 people (5.3%). The subject description was categorized by education level which divided into three, respondents who took education up to elementary school (low) were 26 people (6.5%), respondents who took education up to junior high/high school (middle) were 209 (52.2%), and respondents who took education level up to university (higher) as many as 165 people (41.3%). Subject description based on smoking habits, of the 400 subjects who participated in this study, there were no subjects in the category of heavy and moderate smokers. It was found that 9 subjects (2.3%) had a light smoking habit and 391 people (97.7%) did not have a smoking habit. The subject description

based on nutritional status distributed based on respondents' characteristics was based on nutritional status according to BMI. The distribution of normal BMI (normoweight) was 295 people (73.7%) while the distribution of abnormal nutritional status was 105 people (26.3%) consisting of 21 (5.3%) underweight and over (26.3%) BMI. overweight) as many as 84 people (21.0%). Subject described by parity status, from table 1 it was found that most of the subjects in this study gave birth who had never given birth (nullipara) as many as 146 people (36.5%), subjects who had given birth for the first time (primipara) as many as 84 people (21.0%) who had given birth as many as 2 to 4 times (multipara) as many as 156 people (39.0%), and those who gave birth more than 4 times (grande multipara) were 14 people (3.5%). According to the individuals in this study, 183 (45.7%) had a normal delivery, 19 (4.8%) required vacuum or forceps assistance, 52

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(13%) underwent abdominal delivery (C-section), and 146 (36.5%) had never given birth before according to the subject's description based on the history of birth. Most of the subjects involved in this study had not experienced menopause 341 people (85.2%) while those who had experienced menopause were 59 people (14.8%) based on the subject description based on menopausal status Subject

described based on occupation with the largest number of work categories was in the light category, namely 197 people (49.25%), followed by 160 people (40%) in the medium category. While the smallest proportion is in the heavy category with 43 people (10.75%) Furthermore, bivariat analysis was done based on the data which had shown in the Table 2

Table 2 . Relations between risk factor dan Urine Incontinence event in general

Determining Factor	Urine Incontinence		P	OR	95% CI	
	Pos	Neg			Low	High
Age						
≥ 61 year	12	9	0,000	21,40	7,33	63,63
51 – 60 year	8	30	0,003	4,28	1,58	11,38
18 - 50 year	20	321				
Education						
Low *)	9	17	0,000	9,18	2,86	29,81
Middle	22	187	0,077	2,04	0,86	4,93
Higher	9	156				
Occupation						
Heavy *)	8	36	0,016	3,39	1,17	9,73
Moderate	20	141	0,040	2,16	0,97	4,88
Light	12	183				
Smoking Habit						
Light Smoker *)	1	8	1,000	1,13	0,02	8,80
Non-Smoker	39	352				
Nutritional Status						
Over weight	13	71	0,059	1,98	0,91	4,28
Under weight *)	2	19	0,697	1,14	0,12	5,18
Normo weight	25	270				
Parity						
Grande multi para *)	5	9	0,003	8,46	1,96	36,34
Multi para	22	134	0,023	2,50	1,05	6,10
Primi para *)	4	80	0,773	0,76	0,19	2,82
Nuli para	9	137				
Last birthing method						
Spontaneous+Act	29	173	0,016	2,55	1,11	6,02
SC *)	2	50	0,731	0,61	0,09	3,18
Never	9	137				
Menopause						
Yes *)	18	41	0,000	6,37	2,98	13,61
Not yet	22	319				

Based on Table 2, the age of the subject is significant to the risk of urinary incontinence. Subjects aged over 61 years were statistically significant ($p = 0.000$) had a risk of experiencing urinary incontinence by 21.4 times compared to the age group under 51 years (95% CI 7.33 – 63.63), while the age group 51- 60 years have a risk of 4.28 times (95% CI 1.58-11.38) with $p=0.003$. Among relationship level of education with the incidence of urinary incontinence , the education variable, it was seen that subjects with low education were statistically significant ($p=0.0000$) with 9.18 times risk than subjects with

higher education (OR 9.18). While secondary education is not statistically significant with $p = 0.077$ with OR 2.04 (95% CI 0.86-4.93). From the relationship between occupational categories and the incidence of Urinary Incontinence variable, it can be seen that the subject of the heavy work category was statistically insignificant ($p = 0.217$) with a risk of 2.12 times compared to the subject in the light work category (95% CI 0.68-6.42). Meanwhile, mothers with medium occupation category were not statistically significant ($p=0.123$) with OR 1.87 (95% CI 0.86-4.06). Smoking habits

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have no effect on the risk of urinary incontinence. Only 9 light smokers were found, with 1 positive for urinary incontinence and 8 not. There were 39 subjects who were not smokers who were positive for IU. The results of bivariate analysis showed $p=1,000$, with an OR of 1.13, (95% CI 0.02-8.80) based on The relationship between smoking and urinary incontinence. From the nutritional status side, subjects who are overweight have a risk of urinary incontinence of 1.98 times (0.91-4.28) but not statistically significant ($p=0.059$). Likewise, underweight has a risk of 1.14 times compared to normoweight (95% CI 0.91-4.28). The relationship between parity and urinary incontinence showed the number of deliveries experienced can affect the risk of urinary incontinence, where grande multipara has a risk of 8.46 times (95% CI 1.96-36.34) with $p = 0.003$ which is statistically significant, while multiparas have a risk of 2.5 times (95% CI 1,05-6,10) with $p=0,023$ and also statistically significant. Relationship history of mode of delivery with the incidence of urinary incontinence, In the variable of mode of delivery, it can be seen that normal delivery has a risk of 2.87 times (95% CI 1.24-6.78) compared to the group that has never given birth and is statistically significant ($p=0.006$). Of the subjects who underwent cesarean section, the risk was found to be 0.61 times compared to subjects who had never given

birth but it was not statistically significant ($p=0.731$). Meanwhile, out of 19 subjects who underwent surgical labor, none experienced IU, therefore the OR cannot be calculated. The relationship between menopausal status and the incidence of urinary incontinence shown subjects who had experienced menopause turned out to have a risk of 6.37 times (95% CI 2.98-13.61) compared to subjects who had not experienced menopause, which was statistically significant with $p = 0.000$

Multivariate logistic regression analysis was done and showed the results of multivariate analysis that only the elderly variable was significantly associated with the incidence of urinary incontinence ($p=0.000$). While the variables at risk of childbirth, multiparity, smoking habits, menopause, abnormal nutrition as controlling variables. The results of the analysis showed that the Odds Ratio (OR) of the elderly variable was 5.4 (95% CI: 2.13-13.87), meaning that elderly patients will have five times higher odds (at risk) of urinary incontinence. compared to patients who are not old after controlling for risky delivery variables, multiparity, smoking habits, menopause, abnormal nutrition. The most dominant variable associated with the incidence of urinary incontinence is the elderly and can be seen in Table 3 and Table 4.

Table 3. Multivariate Logistic Regression Analysis

Predictor Variable	B	p	OR	95% CI	
				Low	High
Advanced Age	1,693	0.000	5,436	2,130	13,872
Risky birth	0,024	0.955	1,024	0,455	2,304
Multi parity	0,122	0.756	1,129	0,524	2,437
Smoking habit	0,030	0.979	1,030	0,114	9,322
Menopause	-0.537	0,483	0,584	0,130	2,621
Abnormal Nutrition	-.054	0,806	1,055	0,687	1,622
Constant	-2,927				

Table 4. UI Predictor Model according to Multivariate Logistic Regression Analysis

Predictor Variable	B	P	OR	95% CI	
				Low	High
Age 51 – 60 years	1,454	0.002	4,280	1,738	10,540
Age above 60 years	3,063	0,000	21,400	8,070	56,746
Constant	-2,776				

Multi-variate analysis using logistic regression method by including 6 (six) independent variables including age, mode of delivery, parity, smoking habits, menopause history and nutritional status on the incidence of urinary incontinence backward stepwise, it turns out that only age is the only variable that has a pure effect. the risk of urinary

incontinence. The age of 51-60 years is predicted to have a risk of urinary incontinence 4.280 times compared to the age of 18-50 years and is statistically significant ($p=0.002$). Meanwhile, those aged over 60 years were 21.4 times more at risk than those aged 18-50 years and were very statistically significant ($p=0.000$).

Table 5. Risk Probability of Urine Incontinence based on age.

Age	Probability
18-50 year	5,86%

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51-60 year	21,05%
≥ 61 year	57,13%

From Table 5 Based on the above urinary incontinence risk modeling formula, it can be estimated that in the future the risk of urinary incontinence in the age group under 51 years is only about 5.86%. If the subject is aged between 51-60 years, this risk increases to 21.05% and at the age above 60 years the risk increases drastically to 57.13%

DISCUSSION

In a previous study by Peyrat, et al (2002), from 1700 female respondents there was a prevalence of IU as much as 467 (27.5%), with the type of complaint IU pressure type 210 (12.4%), pressure IU 28 (1.6%), and mixed IU 229 (13.5%).⁶⁵ Sumardi et al (2008) research in several Indonesian teaching hospitals found that the overall prevalence of IU was 13.0%, of which the highest prevalence was complaints of pressure type IU (4.0%). The prevalence of other types of complaints found complaints of IU urge / wet OAB (4.1%), dry OAB 1.8%, mixed IU (1.6%), overflow IU (0.4%), enuresis (0.4%), other IU (0.7%).⁴ The prevalence of urinary incontinence in women in the world ranges from 10-58%, while in Europe and America 29.4%. The Asia Pacific Continence Advisor Board (APCAB) in 1998 determined the prevalence of urinary incontinence in Asian women was 14.6% and Indonesian women 5.8%.¹³ Based on the studies that have been done, there are differences in prevalence, this is due to differences in the clear definition of IU. The International Continence Society has established a clinical definition, but different research procedures or studies lead to wide gaps in the reported prevalence rates.¹⁷ Wiratmoko (2003) also stated that the difference in the prevalence of urinary incontinence in several studies was due to differences in definitions, methodologies, age group, country, and ethnicity studied.¹⁴ Urinary incontinence affects physical activity, self-confidence, emotional disturbances, changes in activities of daily living, social activities. This will lead to a poor quality of life.²² Therefore, one of the aims of this study was to determine the risk factors associated with urinary incontinence. Urinary incontinence usually presents in a variety of ways. This method is a representation of several risk factors that cause IU. There are several risk factors for urinary incontinence. According to Danford et al, there are multiple risk factors that lead to an increased chance of urinary incontinence.¹² Risk factors for urinary incontinence include anything that can cause muscle and tissue weakness around the pelvic organs including: childbirth and menopause, being overweight, increasing age, and behaviors such as smoking.²⁵ Reddy (2015) stated that urinary incontinence is a common problem in women in all age groups, and has a huge impact on quality of life. The incidence of urinary incontinence in middle-aged women between 26-55 years is common in

western countries.¹¹ In this study, the most dominant variable in the multivariate analysis was the elderly variable, with the results of the Odds Ratio (OR) of the elderly variable being 5.4 (95% CI: 2.13-13.87), meaning that patients with advanced age will have a risk of experiencing urinary incontinence by five times higher than patients who are not elderly. Based on the modeling of urinary incontinence risk, it was also found that the risk of urinary incontinence in the age group under 51 years was only about 5.86%. If the subject is aged between 51-60 years, this risk increases to 21.05% and at the age above 60 years the risk increases drastically to 57.13%. Urinary incontinence in the elderly is a medical and socioeconomic problem.¹⁹ Age in women has the effect of bringing about hormonal changes, especially after childbirth.¹² People with bladder dysfunction who are up to 65 years of age usually have a functional bladder defect.¹⁹ While the ability of the urogenital system in old age is mainly influenced by changes in neurogenic control and weakened muscle mechanisms. The increase in urinary incontinence with age can also be explained by the theory of apoptosis (programmed cell death), where these cells have a limited life span. Although dead cells will be replaced by new cells, this ability will decrease in old age. With age, the pelvic floor muscles become weak, reducing pelvic organ support. Urinary incontinence is a very distressing and disabling condition that causes significant morbidity, affecting social, psychological, work, household, physical & sexual life of more than 15-30% of women of all age groups. This leads to poor quality of life and mental status.²² In this study, elderly patients have an increased risk of urinary incontinence, related to elderly patients experiencing degeneration, especially in the urogenital system and reduced production of estrogen, in a hypoestrogenic state, collagen will also reduce collagen metabolism so that the regeneration ability of muscle cells will decrease. decrease. The pelvic floor muscles normally stabilize the urethra but when they become weak they can affect stabilization. As abdominal pressure increases, it compresses the urethra and due to pelvic floor weakness, stress urinary incontinence occurs. Looking at the pathophysiology, because there is a decrease in muscle function, neurological can also be affected due to thinning of the mucosal layer so that nerve endings can be more easily stimulated either from infection, inflammation, temperature, or pressure, it will also easily occur Urge Incontinence. So in conclusion, parents can have SUI, UUI or MIX types.²² Urinary incontinence is one of the major problems affecting the elderly population. This condition is often left untreated due to the misconception that the disease is part of the normal aging process. Most elderly patients with urinary incontinence may not seek treatment because of the misconception, they can see that it is part of the normal aging

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process. Others may not come because of embarrassment, fear of surgery, fear of rising costs or the belief that no effective treatment is available. Among the age-related causes of urinary incontinence are decreased bladder elasticity, reduced strength of the bladder detrusor muscles, excessive detrusor activity and detrusor muscle weakness. Factors associated with estrogen deficiency in women such as atrophic vaginitis, external urinary sphincter atrophy and prostate enlargement in men are known to cause urinary incontinence.²⁸ From the results of this study, it was found that out of 400 respondents, most of them had secondary education level 209 (52.5%), and of them there were 22 positive IU, but not statistically significant. What was statistically significant was the low level of education ($p=0.0000$). There were 26 people with low education level, of which 9 people suffered from urinary incontinence. The results of this study are in line with the results of Saadia's research (2015) which states that the level of education in women is very influential on the level of education. For participants with urinary problems, the majority (55.86%) were at the primary level of education, or below, ($n = 62$) and 36.94% were illiterate ($n = 41$). From the results, it was found that subjects with no school/illiteracy and low school level were statistically significant ($p<0.001$).¹²

Smoking has also been associated with an increased risk of urinary incontinence. Studies by Hannestad et al and Bump and McClish have shown the relative risk of pressure-type IU to be between 1.8 and 2.92 for current smokers. Smoking is the cause of a causal relationship with IU pressure. The prevalence of smoking and smoking-related diseases has increased among women since the early 1960s. Between 1970 and 1994, cancer deaths among women in the United States nearly tripled. This trend suggests that an increase in the prevalence of pressure-type IU-associated smoking among women can be expected.¹⁷ However, this study showed that out of 400 respondents, only 9 people were smokers, and even then only light smokers and only 1 smoker suffered from urinary incontinence. Those who suffered the most IU turned out to be non-smokers, namely 39 people. This result can also show that Indonesian women are, on average, non-smokers. The results of statistical tests obtained P value = 1,000, meaning that there is no significant relationship between smoking and the incidence of IU. The results of this study differ from the large study conducted by Hannestas, et al. which stated that there was a significant relationship between the number of cigarettes smoked and the incidence of IU. His study is the first to demonstrate the dose-response effect of smoking on incontinence in an unselected population and to investigate its effect in different types. Based on this study, it was found that ever smoking and heavy smoking (more than 20 cigarettes a day) had a relationship with the incidence of urinary incontinence, but the incidence of severe urinary incontinence had a weak relationship with the number of cigarettes used by smokers. A significant dose-response

effect was found for the mixed IU type. This study demonstrates the additional effect of smoking, the cause of coughing.¹⁰ Smoking is considered a factor that can cause urinary incontinence in women. There are several possible explanations for this relationship including sphincter neurologic, anatomic damage and adverse effects of smoking on blood vessels, aesthetic level and collagen synthesis.²¹ Smoking causes damage to the sphincter, nervous system and anatomy caused by hard coughing due to the effects of smoking on blood vessel synthesis and collagen estrogen levels. For example, smoking has been shown to directly interfere with collagen synthesis. Regarding the antiestrogenic effect of hormones, smoking can affect collagen quality and reduce smooth muscle tone caused by depletion of adrenergic receptor activity. Nicotine, an essential and addictive component of cigarette smoke, has been shown to produce phasic contractions in the bladder muscles of isolated animals in vitro. Case-control study data on 80 individuals established a strong statistical association between smoking and urinary continence. Every type of nicotine in our body will affect the pelvic floor muscles and cause their weakness.²²

This study showed that of 400 respondents, the subjects who were overweight found 84 people (21%) and 13 people suffering from IU. The results of statistical tests obtained P value = 0.059, it can be concluded that there is no significant relationship between nutritional status and the incidence of IU. Differences in research results can be caused because most of the respondents who participated in this study were respondents with normal weight (normo weight), so the relationship could not be seen. However, in previous studies that have been carried out nutritional status that meets the relationship to the incidence of urinary incontinence, namely being overweight. Body Mass Index was associated with stress incontinence and severe incontinence in middle age, excluding effects of aging, childhood enuresis, kidney infection, labor characteristics, menopausal status, GP visits and educational qualifications.²⁰ A number of epidemiological studies have revealed that increased body mass index is a significant and independent risk factor for UI of all types. Evidence suggests that with BMI, the prevalence of UUI and SUI increases. Hypothetically, an increase in intra-abdominal pressure corresponding to an increase in a high BMI results in higher intravesical pressure. This high pressure exceeds the urethral closing pressure and leads to stress incontinence.²³

High Body Mass Index can cause mechanical stress on urogenital tissue. Noblet et al. have found a strong correlation between Body Mass Index and intra-abdominal pressure and intravesical pressure which suggests obesity may lead to a chronic state of elevated pressure. This supports the theory that Body Mass Index may act as an aggravating condition rather than an actual risk factor. It was found that a higher proportion of long-term overweight or obese women had

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symptoms of severe incontinence at the time of first report at age 48 years compared with underweight or normal weight women. This difference widens at the age of 54 indicating that the symptoms may worsen over time. The impact of an excessive Body Mass Index of those who are overweight or obese early in life as adults have more than double the risk of severe incontinence compared to women whose Body Mass Index remains below 25 kg/m².²⁰ Stress urinary incontinence is closely related to Body Mass Index. Obese women have increased intra-abdominal pressure, which puts pressure on the pelvic floor and causes urinary incontinence.²² Women who were overweight or obese throughout the study period had an increased risk of developing stress incontinence. Women who were overweight or obese at age 20 had a higher risk of incontinence than those who were first classified as overweight or obese at age 43. Weight gain appears to be a very strong factor for incontinence in women.^{20,22}

Obese women with diabetes were more likely to have stress urinary incontinence [OR] obese women without diabetes had the next highest incidence of urinary incontinence (OR 2.62).²⁶ The results of this study showed that of the 400 respondents, most were with multipara parity 156 (39%), and 22 of them were positive for IU. The statistical test results obtained $P = 0.023$, so it can be concluded that there is a significant relationship between parity and the incidence of IU. Likewise, 14 Grande Multiparas showed a significant relationship with $p = 0.003$. The results of this study are in line with the results of research by Wiratmoko (2003) which states that women with parity less than five do not experience urinary incontinence, while parity more than five experience urinary incontinence. The results of the statistical test showed that there was a relationship between the number of parity more than five and the incidence of urinary incontinence ($p=0.034$).¹⁴ Another study conducted by Saadia (2015) found that for participants with urinary problems, the majority (54.05%) had a high parity 8 and above ($n = 60$), 35.14% had a parity level between 4 and 7 ($n = 39$), and 10.81% had a parity level less than 4 ($n = 12$). For subjects without urinary problems, 84.0% had a parity level of less than 4 ($n = 84$). The results of the statistics showed that a significant difference in the frequency of urinary problems did exist between parity levels (less than 4, 4-7, and 8 and above). That is, for parity levels less than 4, there was a significant number of participants ($p < 0.001$) without urinary problems ($n = 84$, 84.0%) compared with urinary problems ($n = 12$, 10.81%). However, for parity levels between 4 and 7, there were a greater number of participants with significant urinary problems ($p = 0.003$) than those without urinary problems ($n = 16$, 16.0%). And for parity level 8 and above, there was a very big difference ($p < 0.001$) in the number of participants with urinary problems ($n = 60$, 54.05%) and those without ($n = 0$).

Parity also contributes to the risk of urinary incontinence. The greater the number of parities, the greater the likelihood of

urinary incontinence. Parity causes a weakening of the pelvic floor muscles. The development of pelvic floor abnormalities such as urinary incontinence, vaginal discharge and pelvic organ prolapse have been associated with pregnancy and vaginal delivery. The prevalence of urinary incontinence is reported to be up to 34% after vaginal delivery and is associated with denervation injury to the pelvic floor or mechanical trauma to the urethral sphincter mechanism. A study shows that pregnancy, number of offspring and childbirth cause urinary incontinence in adult women. Another study concluded that parity is an important risk factor for female urinary incontinence in every stage of a woman's life.²² The pathophysiology of urinary incontinence is related to parity, namely that it may be based on muscle or neuromuscular dysfunction caused by childbirth. In a clinical neurophysiological study, Snooks et al found that most urinary incontinence after vaginal delivery was due to pelvic muscle nerve injury, most notably in multiparous women. This means that the parity level increases a woman's chances of experiencing incontinence.^{12,24}

Trauma during childbirth is one of the main causes of functional urinary incontinence. During labor, the pelvic floor is pushed, stretched and partially torn. This damage causes abnormalities in the location of the bladder. The muscles around the base of the bladder and the neck of the bladder are injured (Wiknjastro. 2009).¹⁸ In a study conducted by Fakhrizal et al (2016), it was found that vaginal delivery increased the incidence of postpartum pressure IU. More women who underwent vaginal delivery experienced pressure type IU (14.1%) than women who underwent cesarean section (7.1%) with OR = 2.1 (95% CI = 1.05-4.31). This is in line with the results of this study which found that out of 400 respondents, 183 (45.7%). The results of statistical tests obtained P value = 0.006, so it can be concluded that there is a significant relationship between the mode of delivery and the incidence of IU. Previous studies have shown that urinary incontinence symptoms have been reported after vaginal delivery and cesarean delivery. However, the prevalence of stress urinary incontinence is greater after multiple vaginal deliveries indicating that cesarean delivery reduces the risk. Vaginal delivery is associated with pelvic floor weakness leading to urinary incontinence. A cohort study showed that the occurrence of incontinence during the postpartum period was associated with an increased risk of incontinence during pregnancy and vaginal delivery. Rortveit et al found an increase in moderate or severe stress incontinence with vaginal delivery compared with cesarean section. A study was conducted on the effect of mode of delivery and the incidence of incontinence which proved that vaginal delivery increases the risk of incontinence.²² In the case of vaginal delivery or due to other risk factors, the support for the proximal urethra and bladder neck becomes damaged or weakened, resulting in hypermobility of the bladder and proximal urethra. When intra-abdominal pressure increases

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suddenly, this pressure will be transmitted to all visceral organs including the bladder, bladder and proximal urethra. Transmission pressure on the bladder will be higher than the transmission pressure on the bladder and urethra.²²

The causes of pelvic floor dysfunction are multifactorial. Many studies reveal a higher prevalence of IU in multiparous women compared to nulliparous women. These factors are associated with damage to the pudendal nerve after delivery. In this study, it was concluded that labor was a risk factor for IU.²⁷ The results of this study showed that from 400 respondents, 18 of which were menopausal subjects suffered from urinary incontinence, with Fisher's absolute test. Statistical test results obtained P value = 0.000, so it can be concluded that there is a significant relationship between menopause and the incidence of IU. Based on previous research, many have stated that menopause is a risk factor for IU, related to a decrease in the hormone estrogen. Low estrogen levels cause the urethra and trigone mucosa to become atrophic and thin so that the nerves are more sensitive, so they are more easily stimulated.¹⁴ The bladder and proximal urethra are supported by the anterior vaginal wall, levator ani muscles, pubocervical fascia, pubourethral fascia and archustendinus pelvic fascia, and pubourethral fascia. Due to a decrease in hormone levels, especially estrogen, in menopausal women it will cause changes in the entire reproductive system including the urogenital tract. All structures of the tract have estrogen receptors but their biologic activity varies. Receptor affinity for estrogen is different for each organ. The estrogen receptor affinity for the uterus is 100% while the estrogen receptor affinity for the urogenital tract is as follows: 60% in the vagina, 40% in the urethra and 25% in the levator ani muscle and pelvic floor ligaments. Decreased estrogen levels can cause problems experienced by elderly women in the form of menstrual disorders, cessation of menstruation, climacteric complaints, systemic and local disorders. Previous research conducted by Wiratmoko (2003) showed that there was a significant relationship in women who experienced menopause > 10 years with the incidence of urinary incontinence ($p = 0.048$).¹⁴ The high rate of voiding dysfunction after a woman enters the postmenopausal years explains that separating the effects of hypoestrogenism from the effects of aging is difficult in women. High-affinity estrogen receptors have been identified in the bladder trigone, pubococcygeal muscle and urethra. So it can be linked between the hypoestrogenic-collagen changes and the decrease in urethral vascularization and muscle volume together can contribute to impaired function that will cause urogenital atrophy resulting from estrogen deficiency which is thought to be responsible for the incidence of urinary incontinence.²³ In the subject of this research found many kinds of jobs and professions. In several studies, such as in Korea by Kim, 2016, examined the relationship between work and work environment with urinary incontinence. One of the results obtained by Kim, women who work as salesgirls

have an OR of 1.62 compared to women who do not work and is statistically significant with $p = 0.001$. Although the work in this case varies widely, the author categorizes it as light, moderate and heavy based on the physical activity undertaken by each job/profession. The prevalence of urinary incontinence was initially thought to be increased in women workers who do heavy lifting, and work in improper positions. Several studies also claim in their research on the prevalence of urinary incontinence in nurses that physical activity – such as brisk walking, carrying weight, and walking up stairs – that puts pressure on the abdomen, can increase the risk of urinary incontinence. However, sometimes it is difficult for working women to work properly and protect themselves from such activities. Therefore, it is necessary to conduct appropriate interventions for women working with urinary incontinence who have a vulnerable occupational status and/or workplace environment. However, the results obtained from this study, it turns out that there is no significant relationship between work categories and urinary incontinence.²⁹

Every research sought to have some limitations. Using the Indonesian version of the Questionnaire for Urinary Incontinence Diagnosis, this observational analytic study intends to identify the characteristics, prevalence, and risk factors related to patients with urinary incontinence at the gynecological clinic (QUID). Data were collected by measuring body weight and height and completing a questionnaire; hence, the accuracy and reliability of the data heavily depend on the respondents' cooperation, perceptions, and sincerity in responding to the survey's questions. Additionally, survey responses may not accurately reflect the respondents' perceptions of the situation.

CONCLUSION

In this study, the prevalence rate of urinary incontinence was 10%. With the most frequent types, pressure incontinence (SUI), urge urinary incontinence (UUI) and mixed type urinary incontinence (MIX) respectively. The characteristics of the sample are mostly 18-50 years old, secondary education level, employee/student occupation, non-smoker, normal weight, multiparity parity, normal delivery, and not yet menopause. The most influential variable on the incidence of urinary incontinence is age where the older a woman is, the higher the likelihood of suffering from urinary incontinence, other significant variables are low education, parity grande multipara and multipara, spontaneous labor, and menopause. The use of QUID questionnaire can be recommended for widespread use, especially in primary care or level I health facilities for screening, both by medical and paramedical personnel and can be consulted so that it is not too late to be treated.

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