

Conference Paper

Effect Of Combination Of Kegel's Exercise And Bladder Training In Reducing Urine Incontinency Episodes In Elderly In Persahabatan Hospital, Jakarta

Sumedi¹, Koshy Philip², and Muhammad Hafizurrachman³¹Lincoln University of College, Malaysia²Lincoln University of College, Malaysia³Sekolah Tinggi Kesehatan, Indonesia Maju, Jakarta**ORCID:**Sumedi: <https://orcid.org/0000-0003-2461-1335>**Abstract**

The aging process is defined by the change in the behavior of organisms according to age, which typically results in a decrease in the ability to survive and take care of themselves. This deterioration can, in humans, be influenced by biological, psychological, social, functional and spiritual factors. Urinary incontinence is a condition that typically affects the elderly, and has a huge impact on the daily lives of sufferers. This study considers the effect of a combination of Kegel's exercises and bladder training in decreasing episodes of urinary incontinence in the elderly. This study uses a Quasi-experimental design with a Pretest-Posttest with Control Group design. The results demonstrate that there are significant differences in the average frequency of urination, hold time and frequency of urinary incontinence between the first and second measurements in the treatment group (each value $p=0.0001$). The combination of Kegel's exercise and bladder training is proven to decrease the episode of urinary incontinence in the elderly.

Keywords: Kegel's Exercise, Bladder Training, Urine Incontinency,

Corresponding Author:

Sumedi

medipersahabatan@gmail.com

Published: 15 March 2021

Publishing services provided by
Knowledge E

© Sumedi et al. This article is distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use and redistribution provided that the original author and source are credited.

Selection and Peer-review under the responsibility of the IVCN Conference Committee.

1. Introduction

Kegel's exercise was first introduced by Dr. Arnold Kegel in 1948 as a recommended method for the treatment of urinary incontinence patients [3]. Pelvic muscle training programs have shown increased muscle strength and reduced urinary incontinence. A study conducted by Sampelle et al (1997) on 65 women aged 35-75 years showed significant improvements in the strength of muscle contractions (25%) and the duration of muscle contractions (40%) and significantly reduced the amount of urine leakage (62%), These incontinence episodes were recorded after 16 weeks of pelvic muscle

OPEN ACCESS

training. When pelvic muscle exercises are done correctly and actively, in women with stress urinary incontinence, the rate of improvement is between 45% - 75% [33].

The number of repetitions of pelvic contractions every day is recommended to reach 30-80 contractions per day, consisting of a minimum of 10 seconds followed by the same period for relaxation, a minimum of 8-12 weeks. Sampsel et al [33]. According to Culligan & Heit [9] bladder control can only be achieved after doing Kegel's exercise for 6 to 12 weeks. In a study conducted by Johnson (2000), the results show that there are benefits by performing at least 36 contractions per day. The basic concept of a pelvic muscle exercise program is that the process must include the intensity, duration and frequency to achieve the desired results. In this case, including also ensuring that the patient performs muscle contractions correctly and the patient contracts the muscles with a strong, long, and more often. In women, testing can be done by inserting two fingers into the vagina to assess whether the patient is doing it correctly [33]. In addition to Kegel's exercises, exercises that can be used to overcome urinary incontinence are bladder training both separately and together.

Bladder training is a behavioral therapy for urinary incontinence that uses a urinary schedule to help patients learn to restore normal bladder function. The purpose of bladder training is to increase the amount of time between bladder emptying, increase the amount of fluid that can be retained in the bladder, and reduce the sense of urgency and / or leakage associated with urinary problems [19].

Some evidence-based research articles recommend a bladder training program for patients with urinary incontinence. Patients are encouraged to follow the recommended schedule optimally. Basically, bladder training encourages patients to consistently control urge-to-void and urination schedules at specific intervals, as well as increasing the interval of urination to be longer. Patients can use techniques such as tightening the pelvic floor muscles and distraction and / or relaxation to help reduce urge to void until the interval is reached. The distance of the initial interval must be adjusted to the current habits of the patient, then increase it by adding 15-30 minutes, with the final goal of reaching an emptying distance of 3-4 hours. The process can be carried out anywhere within one to several weeks [33].

According to Fantl et al (1991) in his research the results were obtained that bladder training can reduce or eliminate the symptoms of stress / urge incontinence, treatment rates reach a range of 12% - 90% and according to Jarvis & Millar (1980) subjective improvements are measured and recorded by patients independently, namely 73% to 90% [16]. Similarly, research conducted by Sampsel et al (1997) and Johnson (2000) regarding the effects of Kegel's exercise can reduce episodes of urinary incontinence.

The best first-line action from several forms of action to overcome urinary incontinence is a combination of Kegel’s exercise and bladder training. In a study that had been done, women who used a combination of Kegel’s exercises and bladder training, an average of 50% experienced a decrease in episodes of urinary incontinence and nearly 40% of them achieved complete continence. This exercise is just as effective when used to deal with urge, stress, or mixed incontinence [30]. But researchers have not found research that combines Kegel’s exercises and bladder training conducted in the elderly.

2. Methods and Equipment

2.1. Methods

This research uses quasi-experimental design with Pretest-Posttest with Control Group design. In this study there were two groups, namely the treatment group and the control group. The treatment group gets treatment, while the control group does not get treatment from researchers or only get routine treatment. Data retrieval was carried out on both groups. (Burns & Grove, 1999)

The treatment group and the control group conducted tests before being given the exercise program, the tests included observations of urination frequency, average hold time and 24-hour urine incontinence frequency observed within 2 days. Then the treatment group was given a combination program of Kegel’s exercise and bladder training for 6 weeks using 6 effective days. While the control group did not get a combination program of Kegel’s exercise and bladder training, respondents actively participated in senior gymnastics activities every morning except on Saturdays and Sundays off, reduced drinking at night, and both groups were observed for 6 weeks. Then, treatment groups and control groups conducted tests again after undergoing the program for 6 weeks, which included urination frequency, average hold time, and 24-hour urine incontinence frequency observed within 2 days.

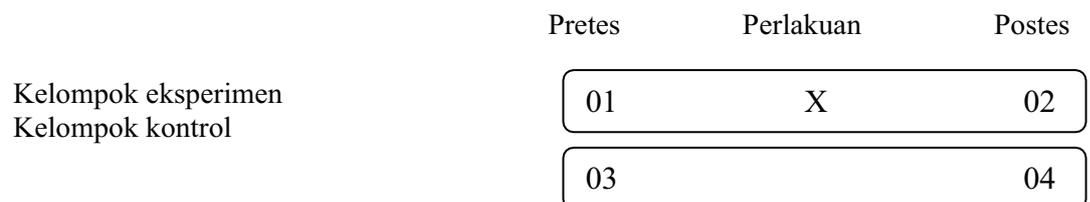


Figure 1: Research Design

Description:

X:	X: a combination treatment of Kegel's exercise and bladder training of urinary incontinence respondents for 6 weeks.
01 & 03:	observational results of urine incontinence episodes before being given treatment include, urination frequency, average hold time and frequency of urinary incontinence within 24 hours assessed based on 24-hour bladder diary.
02 & 04:	: observational results of urine incontinence episodes after treatment include, urination frequency, average hold time and frequency of urinary incontinence within 24 hours assessed based on 24-hour bladder diary.

2.1.1. Population and Sample

The population in this study was all elderly people who experienced symptoms of urinary incontinence who were in Persahabatan Hospital, Jakarta. The number of elderly people experiencing symptoms of urinary incontinence in the period 2008 in both orphanages was 72 people.

Determination of the number of samples (sampling) in this study using the method of restriction is the application of restriction criteria in selecting research subjects. Restrictions are used in both observational and experimental studies. The purpose of restriction is: 1) facilitate the implementation of research; and 2) control perancu factors (Murti, 1997). In this study, restrictions were carried out with the aim of facilitating the implementation of research.

1. Sample criteria

The samples in this study are those that meet the criteria for research inclusion, namely:

- (a) Experiencing symptoms of urinary incontinence including urination frequency ≥ 11 and urgency.
- (b) The cognitive condition of the respondent is strong (in the range of intact intellectual function until mild intellectual impairment).
- (c) Physical ability allows for exercise.
- (d) Have the will to undergo an exercise program to overcome urinary incontinence.

- (e) Not in the period of undergoing a treatment program that affects the condition of urinary incontinence.
- (f) No spinal cord injury.
- (g) Willing to be a research respondent.

While the criteria of exclusion, namely:

- (a) Have a terminal terminal illness in the late stages.
- (b) Experienced pelvic floor prolapse stage IV.
- (c) In a state of pain, or falling ill during the exercise program.
- (d) Experiencing symptoms of urinary tract infections, constipation.
- (e) Uncontrolled hyperglykemi.

2.1.2. Sampling

The number of subjects taken was the total sample selected based on inclusion criteria, taking the minimum number of samples deemed eligible for experimental research which was 15 subjects in each group. (Dempsey & Dempsey, 2002). Anticipating the possibility of subjects dropping out, corrections were made by adding 10% of the sample count so that 17 subjects were found in each group.

The grouping of sample members in the treatment group and control group was not conducted randomly, the treatment group was the subject of selected research located in Persahabatan Hospital, Jakarta Ungaran while the control group was the selected research subject located at Panti Wredha Pucang Gading Semarang.

The number of samples in this study was obtained as many as 21 people in the treatment group in accordance with the inclusion criteria, while in the control group obtained as many as 30 that met the inclusion criteria so that a simple sampling random selection was conducted and obtained 34 subjects that can be analyzed.

2.1.3. Research Site

This research was conducted at Persahabatan Hospital, Jakarta Ungaran and Panti Wredha Pucang Gading Semarang. This place was chosen because the two orphanages have relatively similar characteristics, easy to reach by researchers, and the percentage of elderly people currently detected experiencing urinary incontinence ranges from 35%-37%.

2.1.4. Research Time

The study was conducted from May 14 to June 25, 2008. Furthermore, the creation of research report was conducted during June to July 2008.

2.1.5. Research Ethics

This study involved subjects or respondents who were willing to engage consciously and without coercion. Protection of the rights of respondents is carried out by researchers using informed consent by providing an explanation of the purpose, benefits and procedures of research to the respondent. Next the researcher will ask the respondent to sign informed consent if the respondent agrees and is willing to engage in research.

Ethical aspects to note according to Polit & Hungler (1999) include:

1. Self determination, respondents are given the freedom to determine whether willing or refused to participate in research activities voluntarily. After the respondent is given an explanation of the research to be conducted, the respondent is willing to be asked to sign the agreement as the respondent. On the first day of intervention there were 3 respondents who resigned, then replaced by 3 other willing respondents.
2. Privacy, confidential information obtained from respondents only for research purposes. All respondent information required in the study is strictly confidential and is only used by researchers for the purposes of the research process.
3. Anonymity, guarantees in the use of research subjects by not including the respondent's name on the measuring instrument sheet and simply writing the code on the data collection sheet or the results of the study to be presented. All forms of recording of respondent data use the respondent code to protect the identity of the respondent.
4. Informed consent, all respondents are willing to sign the consent sheet to be the respondent of the study, after the researcher explains the researcher's goals, benefits and expectations of the respondent, as well as after the respondent understands all the explanations of the researcher.
5. Protection from discomfort, respondents are free from discomfort. The research process was attempted not to cause discomfort to the respondent, the exercise

was carried out gradually adjusted to the average ability in the respondent so as not to cause pain or fatigue.

2. Data Collection Tools

Data collection was conducted using demographic data questionnaire and bladder diary 24 hours for 6 weeks (attachment format 5).

Filling a 24-hour bladder diary is carried out by the enumerator selected based on the criteria of living in the orphanage and willing to be a data collector. Before carrying out its duties, prospective data collectors are given an explanation of the 24-hour bladder diary format and how to fill the format. After being briefed, prospective data collectors try to fill in the format directly on respondents who are not respondents. The 24-hour bladder diary format is filled in for each respondent and is performed 2 days before the training program, during the 6-week exercise program, and 2 days after the exercise program.

The International Continence Society's standardization committee recommends that urine incontinence research measurements should use voiding diary at least 3 days (Lose et al., 1998). Nygaard and Holcomb (2000) tested the bladder diary in 7 days, the frequency of urine incontinence episodes between the first 3 days and the last 4 days, the frequency of urination between the first 3 days and the last 4 days obtained validity in the first 3 days of $r=0.887$ and the last 4 days with a value of $r=0.908$ (Kincade et al., 2005). Based on the validity test results it can be said that the bladder diary instrument is valid.

3. Equipment

Before collecting the data, researchers have passed the proposal seminar process in front of the FIK UI thesis tester and applied for permission to the ethics review team. After obtaining a license to research or pass an ethics review from the ethics review team, then the steps in data collection carried out by researchers are as follows:

1. Managing research license from Semarang Social Health Office
2. Identify respondents who experience symptoms of urinary incontinence which include frequency, urgency and leakage of urine then determine the prospective respondent based on the criteria of the study subject (inclusion criteria), to know the cognitive condition that is strong done short portable mental status questioner test (in appendix 7). The selected respondents are those who are in the range of intact intellectual function and mild intellectual impairment.

3. Explain the objectives and benefits and research procedures to prospective respondents. If the prospective respondent has understood and agreed to engage in this study, prospective respondents were asked to sign an informed consent letter in appendix 4.
4. After informed consent was signed, then the researchers pretes the treatment group and control group based on the observation results of each respondent on the 24-hour bladder diary format (see appendix 5).
5. Before the training program began, researchers conducted pretes on treatment groups and control groups using a 24-hour bladder diary (observations were made for 2 days before the exercise began).
6. Perform treatment in the form of Kegel's exercise and bladder training in the treatment group, with the following steps:
 - (a) Before conducting the exercise program, researchers ensured that respondents adhered to recommendations to reduce consumption of diuresis-influenced beverages such as coffee.
 - (b) Provide an explanation to male and female respondents that includes an explanation of how to do Kegel's exercise and bladder training as well as the length of time it takes for the exercise program to take. Each respondent had a note sheet of Kegel's exercise exercise (at appendix 6) and a 24-hour bladder diary.
 - (c) The day before Kegel's exercise and bladder training program was conducted, each respondent performed a pre-workout training on pelvic floor muscle contractions in a way: the respondent lay on his back, with both the knee is flexioned and separated widened. One of the researchers' fingers was placed in the area of the tail bone while the other finger was on the pubic bone area. Then respondents were asked to contract the base muscles of the pelvis (movements such as holding back, until it felt the base muscles of the pelvis attracted upwards), felt the movement of both fingers to the middle or move closer to each other.
 - (d) Respondents slowly contracted and removed the base muscles of the pelvis and were held for 7 seconds, then gently loosened for 7 seconds, recurrence of Kegel's exercise 10 times per session, with frequency 2 times a day in the first 2 weeks of exercise.
 - (e) The number of contractions is increased in weeks 3 and 4 by lifting the pelvic base muscle and held for 10 seconds, then loosening slowly for 10 seconds,

- a repetition of Kegel's exercise 10 times per session, with a frequency of 2 times a day.
- (f) In the last 2 weeks the contraction was scaled back by lifting the pelvic base muscle and held for 10 seconds, then loosening slowly for 10 seconds, a repetition of Kegel's exercise 15 times per session, with a frequency of 2 times a day.
- (g) Bladder training is carried out by planning scheduling gradually to increase the interval between times of springing: respondents start by planning short intervals between themied time (adjusted to the usual respondent's schedule), then gradually improved. The first week used the respondent's schedule as usual, the second week was raised 15 minutes from the previous schedule, the week third to sixth were each raised 30 minutes from the previous week's schedule.
- (h) The exercise program is carried out and observed for 6 weeks with 6 effective days.
- (i) During the exercise program, researchers trained respondents to perform Kegel's exercise and bladder training, an elderly caregiver as an enumerator (two people). If the respondent's condition is not possible to continue the exercise, then the exercise will be stopped.
7. In the control group not given Kegel's exercise and bladder training treatment, respondents were given intervention as usual in the orphanage by using pad's or providing a place to mitigate near the respondent's bed, advocating to reduce drinking at night and active respondents participating in elderly gymnastics activities every morning.
8. After 6 weeks, researchers performed postes on treatment groups and control groups using a 24-hour bladder diary. (observations are carried out for 2 days before the exercise begins).

2.2.

1. Data processing

Data processing is carried out through the following stages:

(a) Editing

Editing is done to assess the suitability of the planned action results and the completeness of the filling, filling error, fill clarity, and observation that has been made.

(b) Coding

Coding is a numerical coded activity (number) to data consisting of several categories. This code is very important when processing and analyzing data using a computer.

(c) Entry data

An activity of entering the data that has been collected into the computer database for further analysis of the data using computer programs.

(d) Cleaning data

The data that has been entered into the computer program is cleaned up so that all data is free from errors before data analysis is performed.

2. Data analysis

(a) Univariate analysis

Univariate analysis was conducted on every variable of the study results, namely demographic data, urination frequency within 24 hours, hold time, and urinary incontinence within 24 hours in treatment groups and control groups. The results of numerical data analysis are presented in the form of mean, median, mode, standard deviation, 95% CI and categorical data are presented in the form of frequency distribution.

(b) Bivariate analysis

Bivariate analysis was conducted to prove the research hypothesis is to look at the difference in urine incontinence episodes before and after Kegel's exercise and bladder training in the treatment group, and the difference in urine incontinence episodes between the treatment group and the control group after kegel's exercise and bladder training in Persahabatan Hospital, Jakarta. Data on urination frequency, hold time and frequency of urinary incontinence in the treatment group and control group, each performed normality testing data using the Kolmogorov-Smirnov one-sided test, the test results as follows:

1. Difference in urination frequency of the first and second measurements in the treatment group

The test result is obtained a value of $p=0.079$ ($p > 0.05$) on the first measurement, while in the second measurement is obtained a value of $p=0.081$ ($p > 0.05$). Thus, data can be inferred on the first and second measurements of the urination frequency of the distributed treatment group normally, and t-paired tests are performed with a 95% confidence level.

2. Difference in frequency of urinary incontinence of the first and second measurements in the treatment group

The test result is obtained a value of $p=0.200$ ($p > 0.05$) on the first measurement, while in the second measurement is obtained a value of $p=0.002$ ($p > 0.05$). The distribution of data on the first measurement is normal, while in the second measurement the data distribution is abnormal, so wilcoxon test is performed on urine incontinence frequency data treatment group.

3. The difference in the first and second measurement hold time in the treatment group The test result is obtained a value of $p=0.200$ ($p > 0.05$) on the first measurement, while in the second measurement is obtained a value of $p=0.200$ ($p > 0.05$). Thus, data can be inferred on the first and second measurements of the normal distributed treatment group hold time, and t-paired tests are performed with a 95% confidence level.

4. Difference in urination frequency of the second measurement in the treatment group and control group

Test results from the treatment group obtained a value of $p=0.081$ ($p > 0.05$) and the p value in the control group was 0.159 ($p > 0.05$). So that it can be concluded that the data in both groups is distributed normally, and t-independent tests are conducted with a 95% confidence level.

5. Difference in frequency of urinary incontinence second measurement in treatment group and control group

The test results of the treatment group were obtained a value of $p=0.002$ ($p < 0.05$) and the p value in the control group was 0.023 ($p < 0.05$). so mann-whitney test was conducted.

6. The difference in hold time of the second measurement in the treatment group and the control group The test results of the treatment group obtained a value of $p=0.200$ ($p > 0.05$) and the p value in the control group was 0.148 ($p > 0.05$). So that it can be concluded that the data in both groups is distributed normally, and t-independent tests are conducted with a 95% confidence level.

3. Results

Based on the above table, the average age of respondents in the treatment group was 73.00 years with a standard deviation of 7.51 years. The youngest is 61.00 years old and

TABLE 1: Distribution of Respondents by Age in the Treatment and Control Group at Persahabatan Hospital, Jakarta, 2018, (n = 34)

Variabel	Mean	Standar Deviation (SD)	Min – Max	95 % CI
Treatment Group Age	73.00	7.51	61.00 – 82.00	69.14 – 76.86
Control Group Age	74.88	7.38	63.00 – 89.00	71.09 – 78.68

the oldest is 82.00 years old. From the estimated interval results it can be concluded that 95% are believed that the average age of the respondents in the treatment group is between 69.14 to 76.86 years. While the average age of respondents in the control group was 74.88 years with a standard deviation of 7.38 years. The youngest age is 63.00 years old and the oldest age is 89.00 years old. From the interval estimation results it can be concluded that 95% are believed that the average age of respondents in the control group is between 71.09 to 78.68 years.

TABLE 2: Frequency Distribution of Respondents by Gender in the Treatment and Control Group at Persahabatan Hospital, Jakarta, in 2018 (n = 34)

Variabel	Treatment		Control		Total	
	Amount	%	Amount	%	Amount	%
Gender						
Male	4	23.5	3	17.6	7	20.5
Female	13	76.5	14	82.4	27	79.5
Amount	17	100	17	100	34	100

Based on the table above, it is obtained the data that the most sex in the treatment group is female, namely 13 people (76.5%) and also in the control group the most sex is female, namely 14 people (82.4%).

TABLE 3: Distribution of Respondents by Urine Frequency at the First Measurement in Persahabatan Hospital, Jakarta, 2018, (n = 34)

Urination	Mean	Standar Deviasi	Min – Maks	95 % CI
Treatment Group	14.94	2.60	10.00 – 22.00	13.60 – 16.28
Control Group	14.09	2.43	10.00 – 19.00	12.84 – 15.34

Based on the above table, the average frequency of urination for the first measurement of the respondent in the treatment group is 14.94 times / 24 hours with a standard deviation of 2.60 times / 24 hours. The lowest frequency of urination is 10.00 times / 24 hours and the highest is 22.00 times / 24 hours. From the estimated interval results it can be concluded that 95% are believed that the average frequency of urination of the first measurement of respondents in the treatment group is between 13.60 to 16.28 times / 24 hours. While the average frequency of urination of the first measurement of respondents in the control group was 14.09 times / 24 hours with a Standard Deviation

of 2.43 times / 24 hours. The lowest frequency of urination is 10.00 times / 24 hours and the highest is 19.00 times / 24 hours. From the interval estimation results it can be concluded that 95% are believed that the average frequency of urination of the first measurement of respondents in the control group is between 12.84 times / 24 hours to 15.34 times / 24 hours.

TABLE 4: Distribution of Respondents According to The Average Hold Time of First Measurement in Persahabatan Hospital, Jakarta, in 2018, (n=34)

Average hold time	Mean	Standar Deviasi	Min – Maks	95 % CI
Treatment Group	1.66	0.29	1.10 – 2.40	1.51 – 1.81
Control Group	1.76	0.31	1.20 – 2.40	1.59 – 1.92

Based on the above table, the average hold time measurement of the respondent's first measurement in the treatment group is 1.66 hours with a standard deviation of 0.289 hours. The lowest hold time is 1.10 hours and the highest is 2.40 hours. From the interval estimation results it can be concluded that 95% are believed that the average hold time of the first measurement of respondents in the treatment group is between 1.51 hours to 1.81 hours. While the average hold measurement time of the first respondent in the control group was 1.76 hours with a standard deviation of 0.31 hours. The lowest hold time is 1.20 hours and the highest is 2.40 hours. From the interval estimation results it can be concluded that 95% are believed that the average frequency of urinary incontinence in the first measurement of respondents in the control group is between 1.59 hours to 1.92 hours.

TABLE 5: Distribution of Respondents According to Frequency of Urinary Incontinence In The First Measurement at Persahabatan Hospital, Jakarta, Year 2018, (n=34)

Frekuensi inkontinence	Mean	Standar Deviation	Min – Max	95 % CI
Treatment Group	3.56	1.78	1.00 – 7.00	2.65 – 4.47
Control Group	4.32	2.19	1.50 – 7.50	3.19 – 5.45

Based on the table above, the average data obtained for urinary incontinence in the first measurement of respondents in the treatment group was 3.56 times / 24 hours with a standard deviation of 1.78 times / 24 hours. The lowest frequency of urinary incontinence is 1.00 times / 24 hours and the highest is 7.00 times / 24 hours. From the estimated interval results it can be concluded that 95% are believed that the average frequency of urinary incontinence in the first measurement of respondents in the treatment group is between 2.65 times / 24 hours to 4.47 times / 24 hours. While the average frequency of urinary incontinence in the first measurement of respondents in the control group was 4.32 times / 24 hours with a Standard Deviation of 2.19 times

/ 24 hours. The lowest frequency of urinary incontinence is 1.50 times / 24 hours and the highest is 7.50 times / 24 hours. From the results of the interval estimation it can be concluded that 95% are believed that the average frequency of urinary incontinence in the first measurement of respondents in the control group is between 3.19 times / 24 hours to 5.45 times / 24 hours.

TABLE 6: Distribution of Respondents by Urine Frequency in the Second Measurement at Persahabatan Hospital, Jakarta, 2018 (n = 34)

Urination Frequency	Mean	Standar Deviation	Min – Maks	95 % CI
Treatment Group	8.91	2.12	6.00 – 14.00	7.82 – 10.0
Control Group	14.21	1.46	11.00 – 16.00	13.46 – 14.96

Based on the above table, the average frequency of urination measured by the two respondents in the treatment group is 8.91 times / 24 hours with a standard deviation of 2.12 times / 24 hours. The lowest urination frequency is 6.00 times / 24 hours and the highest is 14.00 times / 24 hours. From the interval estimation results it can be concluded that 95% are believed that the average urination frequency of the measurements of the two respondents in the treatment group is between 7.82 to 10 times / 24 hours. While the average urination frequency of the measurements of the two respondents in the control group was 14.21 times / 24 hours with a standard deviation of 1.46 times / 24 hours. The lowest urination frequency is 11.00 times / 24 hours and the highest is 16.00 times / 24 hours. From the interval estimation results it can be concluded that 95% are believed that the average urination frequency of the measurements of the two respondents in the control group is between 13.46 times / 24 hours to 14.96 times / 24 hours.

TABLE 7: Distribution of Respondents by Average of Second Measurement Hold Time at Persahabatan Hospital, Jakarta, 2018 (n = 34)

Average hold time	Mean	Standar Deviation	Min – Maks	95 % CI
Treatment Group	2.85	0.59	1.80 – 3.70	2.55 – 3.16
Control Group	1.71	0.19	1.50 – 2.20	1.61 – 1.81

Based on the above table, the average hold time measurement data of the two respondents in the treatment group was 2.85 hours with a standard deviation of 0.59 hours. The lowest hold time is 1.80 hours and the highest is 3.70 hours. From the estimated interval results it can be concluded that 95% are believed that the average hold time measurement of the two respondents in the treatment group is between 2.55 hours to 3.16 hours. While the average hold time measurement of the two respondents in the control group was 1.71 hours with a standard deviation of 0.19 hours. The lowest hold time is 1.50 hours and the highest is 2.20 hours. From the interval estimation results it can be concluded that 95% are believed that the average frequency of urinary

incontinence measurement of the two respondents in the control group is between 1.61 hours to 1.81 hours

TABLE 8: Distribution of Respondents According to The Frequency of Urinary Incontinence in The Second Measurement at Persahabatan Hospital, Jakarta, in 2018 (n=34)

Frekuensi Inkontinence	Mean	Standar Deviation	Min – Max	95 % CI
Treatment Group	0.77	0.87	0.00 – 2.50	0.32 – 1.21
Control Group	4.21	1.76	2.00 – 7.00	3.30 – 5.11

Based on the table above, the average data obtained for urinary incontinence measurement of the two respondents in the treatment group is 0.77 times / 24 hours with a standard deviation of 0.87 times / 24 hours. The lowest frequency of urinary incontinence is 0.00 times / 24 hours and the highest is 2.50 times / 24 hours. From the interval estimation results it can be concluded that 95% believe that the average frequency of urinary incontinence measurement of the two respondents in the treatment group is between 0.32 times / 24 hours to 1.21 times / 24 hours. While the average frequency of urinary incontinence measurement of the two respondents in the control group was 4.21 times / 24 hours with a Standard Deviation of 1.76 times / 24 hours. The lowest frequency of urinary incontinence is 2.00 times / 24 hours and the highest is 7.00 times / 24 hours. From the interval estimation results it can be concluded that 95% believe that the average frequency of urinary incontinence measurement of the two respondents in the control group is between 3.30 times / 24 hours to 5.11 times / 24 hours.

TABLE 9: Difference in Average Urination Frequency of Respondents According to First and Second Measurements In Persahabatan Hospital Treatment Group in 2008 (n=17)

Variabel	Mean	SD	SE	P value	n
Urination Frequency					
Measurement I	14.94	2.60	0.63	0.0001	17
Measurement II	8.91	2.12	0.51		
Difference	6.03	0.48			

Based on the above table, the average frequency of urination in the first measurement is 14.94 times / 24 hours with a standard deviation of 2.60 times / 24 hours. In the second measurement, the average frequency of urination was 8.91 times / 24 hours with a standard deviation of 2.12 times / 24 hours. The mean difference between the first and second measurements is 6.03 with a standard deviation of 0.48. Statistical test results obtained p value = 0.0001, it can be concluded that at alpha 5%, there is a significant difference in the frequency of the urination of the treatment group respondents in the first measurement I and the second measurement.

TABLE 10: Difference in Average Hold Time of Respondents According to First and Second Measurements In Treatment Group Persahabatan Hospital, in 2018 (n=17)

Variable	Mean	SD	SE	P value	N
Average <i>hold time</i>					
Measurement I	1.66	0.28	0.07	0.0001	17
Measurement II	2.85	0.59	0.14		
Difference	1.19	0.31			

Based on the above table, the average hold time obtained at the first measurement is 1.66 hours with a standard deviation of 0.28 hours. In the second measurement, the average hold time is 2.85 hours with a standard deviation of 0.59 hours. The mean difference between the first and second measurements is 1.19 with a standard deviation of 0.31. The statistical test results obtained p value = 0.0001, it can be concluded that at alpha 5%, there is a significant difference in the hold time of respondents in the treatment group in the first measurement and the second measurement.

Differences in the average frequency of urinary incontinence in the first and second measurements were tested using the Wilcoxon test, because the data distribution of urinary incontinence frequency in the second measurement was uneven. Statistical test results obtained p value = 0.0001, it can be concluded that at alpha 5%, there was a significant difference in the frequency of urine incontinence of the treatment group respondents in the first measurement and the second measurement.

TABLE 11: Difference in Average Urination Frequency of Respondents After Intervention in Treatment and Control Group at Persahabatan Hospital, Jakarta, 2018 (n=34)

Variabel	Mean	SD	SE	P value	n
Urination frequency					
Treatment Group	8.91	2.12	0.51	0.0001	17
Control Group	14.21	1.46	0.35		17

Based on the table above, the average frequency of urination in the treatment group is 8.91 times / 24 hours with a standard deviation of 2.12 times / 24 hours, while in the control group the average frequency of urination is 14.21 times / 24 hours with a standard deviation of 1.46 times / 24 hour. Statistical test results obtained p value = 0.0001, it can be concluded that at alpha 5% there was a significant difference in the frequency of urination between respondents in the treatment group and the control group after the intervention.

Based on the above table, the average hold time in the treatment group is 2.85 hours with a standard deviation of 0.59 hours, whereas in the control group, the average hold time is 1.71 hours with a standard deviation of 0.19 hours. Statistical test results obtained

TABLE 12: Difference in Average Hold Time of Respondents After Intervention in Treatment and Control Group at Persahabatan Hospital, Jakarta, 2018 (n=34)

Variabel	Mean	SD	SE	P value	n
Urination Frequency					
Treatment Group	2.85	0.59	0.14	0.0001	17
Control Group	1.71	0.19	0.05		17

p value = 0.0001, then it can be concluded that at alpha 5%, there was a significant difference in hold time between respondents in the treatment group and the control group after the intervention.

Difference in the average frequency of urinary incontinence after intervention in the treatment and control groups. The average difference in the frequency of urinary incontinence in the treatment and control groups was tested using the Mann-Whitney test, due to the distribution of urinary incontinence frequency data in the treatment and control groups. Statistical test results obtained p value = 0.0001, it can be concluded that at alpha 5%, there was a significant difference in the frequency of urinary incontinence between the treatment group and control group respondents after the intervention.

4. Discussion

The results of this study indicate the age range of respondents in the treatment group is in the age range of 61-82 years with an average of 73.00 years, while in the control group 63-89 years with an average of 74.88 years. According to WHO, the age limit is in the range of the elderly (elderly) and old age (old). This reinforces the theory that the incidence of urinary incontinence increases with increasing age and supports a study [12, 37] ie at ages 65 and older, 15% -30% in the community and at least 50% in term care long experience urinary incontinence.

Age can affect an individual's ability to maintain continence, but incontinence is not a normal consequence of the aging process. After menopause, hormonal changes result in a decrease in estrogen which can cause dryness in the vagina and urethra. This condition can interfere with the function of the urethral sphincter lubrication in the urethra, causing incompetence and urine leakage [35].

The study also showed that more respondents were female than male in both the treatment and control groups, namely 13 people (76.5%) in the treatment group and 14 people (82.4%) in the control group. This is consistent with surveys that show that urinary incontinence is a problem experienced by more than 13 million Americans, 85% of whom are women [26]. According to Yin & Jacobson [37] urinary incontinence is a

condition that is commonly experienced in 1 in 3 women and 1 in 10 men with mild to severe ranges.

4.1. Differences in urination frequency, average hold time, and frequency of urinary incontinence before and after Kegel's exercise and bladder training in the treatment group.

This study showed that the combination of Kegel's exercise and bladder training performed in the treatment group successfully decreased the episode of urinary incontinence, the frequency of urination decreased from 14.94 times/24 hours to 8.91 times/24 hours, the hold time increased from 1.66 hours to 2.8 hours and there was a significant difference in the frequency of urinary incontinence between before and after Kegel's exercise and bladder training ($p=0.0001$). The results support a study showing that a combination of Kegel's exercises and bladder training in women on average 50% can decrease urine incontinence episodes and nearly 40% achieve continence in its entirety. This exercise is just as effective when used to cope with urge, stress or mixed incontinence [30].

This study also shows that the Kegel's exercise method and bladder training conducted in the elderly both for women and men provide the same effectiveness that can reduce episodes of urinary incontinence. Weakness in the pelvic floor muscles or bladder muscle instability can cause urinary incontinence, and even the elderly can be treated with appropriate therapy. The first therapy chosen was non-pharmacological therapy including the main behavioral therapy namely Kegel's exercise and bladder training, this reinforces the opinion of Booth et al [4] that conservative management of urinary incontinence should be tried first [4]. This nonpharmacologic therapy carries little risk in patients and is beneficial in reducing the frequency of urinary incontinence.

This study can prove that pelvic floor muscle strengthening exercises (pubococcygeal muscle) that surround the urethral midportion, which is performed on elderly urinary incontinence patients, can strengthen these muscles, so they can close the urethra and be accompanied by conscious use of muscles by the patient to prevent urine leakage. This reinforces the opinion of Delancey (1988) that pelvic floor muscle training (Kegel's exercise) in managing stress incontinence on the grounds that the strength and speed of contraction of the pelvic floor muscles can close the urethra, increase urethral pressure and prevent leakage when intra-abdominal pressure rises suddenly, arrived. The purpose of pelvic floor muscle training in managing stress incontinence is usually to improve the strength and / or timing of pelvic floor muscle contractions. [16].

Kegel's exercises are defined as conscious strengthening of the pubococcygeal muscle, by making repetitive movements of contractions to reduce stress or urge incontinence [6]. Kegel's exercises involve conscious contraction and relaxation of the pelvic floor muscles, strengthening the pelvic floor muscles that support the urethra, bladder, uterus and rectum.

The treatment group performed Kegel's exercises combined with bladder training by using a voiding schedule to help patients learn to restore normal bladder function. Bladder training specifically involves scheduling in stages to increase the interval between voiding times: respondents begin by planning a short interval between voiding times, then gradually increasing with the goal of achieving a voiding interval every 3-4 hours. If urination for urination increases between the specified urination schedules, the patient must remain in place until the urge subsides. After arriving at the time of urination, the patient slowly goes to the toilet [19].

Age factors associated with changes in the physiological function of the urinary system affect the condition of continence in the elderly, but as some previous research results in the elderly with the elderly to old age range that shows that pelvic floor muscle training is effective for reducing urinary incontinence episodes. In this study, respondents performed a combination of Kegel's exercise and bladder training and demonstrated effectiveness in reducing urinary incontinence episodes including decreased urination frequency and increased hold time in the age group 61-82 years. This is due to the strength of pelvic floor muscles can be improved by undergoing an exercise program for 6 weeks, so that the ability to control microcirculation is increased and prevent leakage. In addition, the activities of respondents and the elderly in general in nursing homes are well managed by the management of the orphanage, including by making the elderly independent to carry out daily activities, following daily activities scheduled at the orphanage. This condition is possible to have an impact on respondents to remain active and be able to improve and maintain continence by doing training programs every day correctly and continuously.

The duration of exercise carried out for 6 weeks in this study shows the minimum time needed to get effective exercise results, according to the opinion of Culligan & Heit [9] that bladder control can only be achieved after doing Kegel's exercise for 6 to 12 weeks [33].

At the end of the second week, respondents in the treatment group began to feel a significant change in their urine elimination disorders. Characterized by decreased urination frequency and increased ability to resist urination. Urine leakage is felt to begin to decrease at the beginning and middle of the fourth week of exercise. Respondents

also felt that the implementation of the training program was not burdensome and could be done anywhere either lying down, sitting, squatting or other positions. The motivation of the respondents in joining the training program was very good, seen from the consistency of the respondents in joining the training program until the end of the sixth week. Although at the beginning of the intervention there were 3 respondents who dropped out, but were replaced by 3 other respondents who were willing to take part in the training program until the end of the sixth week.

The primary prevention focus for renal and urinary function in the elderly includes assessment, monitoring, and nursing education activities. Primary nursing care is directed at minimizing the potential that exceeds the capacity of the renal strength and the risk reduction associated with the development of incontinence. Assessment and monitoring of fluid balance is very important. Carolyn Knee [32]. In the elderly who experience urinary incontinence, most of them limit fluid intake inappropriately to prevent urine leakage or increased urination frequency. Reduction of fluid intake can be reduced at the time before going to bed at night to minimize the incidence of nocturia, but the need for fluid per day must still be met by drinking more during the day where urination control can be more controlled.

Education that can be given to patients with urinary incontinence, especially in the elderly, includes managing food and drinks that do not cause bladder irritation, teaching and encouraging Kegel's exercise or other behavioral therapy techniques, and preventing urinary tract infections.

4.2. Difference in urination frequency, average hold time, and frequency of urinary incontinence after intervention in treatment and control groups

After Kegel's exercise and bladder training, in the treatment group showed an average of 8.91 times/24 hours of urination frequency (5.3 times/24 hours different) compared to the control group of 14.21 times/24 hours, the average hold time in the longer treatment group was 2.8 hours (1.09 hours longer) than in the control group of just 1.71 hours. The results of this study also showed that the frequency of urinary incontinence in the treatment and control group found significant differences after intervention ($p=0.0001$).

This study strengthens the evidence that the treatment group showed a significant decrease in incontinence episodes that included urination frequency and hold time significantly compared to the control group who were not given Kegel's training and bladder training. This supports the study conducted by Flynn et al (1994) who tested

pelvic muscle exercises in reducing urgency incontinence or a combination of urgency incontinence and stress incontinence in 37 elderly people who reside in communities ranging from 59 to 92 years. The number of incontinence episodes has been reduced by 82%. These exercises are effective for both types of incontinence. The voiding interval increased from an average of 2.13 hours to 3.44 hours. [32].

The results achieved by the treatment group respondents showed that there was an increase in the respondent's ability to control urination, this could be due to Kegel's exercise program that was carried out regularly would affect the increase in pelvic floor muscle strength that supports the urethra, uterus and rectum so that the increase in pelvic floor muscle strength would close urethra is accompanied by conscious use of muscles so that leakage can be avoided. While bladder training which is done by arranging the urination schedule will gradually restore the normal voiding schedule. It can be seen that there is a significant difference ($p = 0.0001$) decrease in urinary incontinence episodes which includes urination frequency and hold time between the treatment group and the control group.

The management of Kegel's exercise combination therapy program and bladder training for incontinence patients requires proper understanding and mastery of techniques so that optimal results can be achieved. In this study, researchers conducted Kegel's exercise on the treatment group respondents and carried out individually. This is done because the need for accuracy of training based on the contracted area, recognizing the strength of pelvic muscle contraction to reach its weak point by checking directly when the pelvic muscle is contracted and monitoring the health condition of the respondent so that exercise can be given proportionally according to the average ability of the respondents. Exercise that is too strenuous or incorrect in identifying areas that should be contracted will result in increasingly bad urine leakage. The basic concept of a pelvic muscle exercise program is that the process must include the intensity, duration and frequency to achieve the desired results. In this case including also ensuring that the patient performs muscle contractions correctly and the patient performs muscle contractions with a strong, long, and more often [33].

The combination of Kegel's exercise and bladder training can be taught to patients and done independently after minimal mentoring exercises until the patient is able to do it correctly. In clinical settings or home care, nurses can provide assistance and evaluate the continuity and accuracy of the exercises performed by patients. The success of this exercise is also influenced by the motivation and collaboration of patients with nurses who provide training programs.

The provision of nursing care to elderly patients with urinary incontinence is intended to maintain quality of life and improve the degree of health in the elderly. The psychosocial costs of urinary incontinence are enormous: shame, loss of confidence and social isolation are common [31]. Reducing or overcoming urinary incontinence will have a positive effect on the physical and psychosocial impacts experienced by patients due to urinary incontinence, the role of nurses is expected to provide support or appropriate action for patients.

5. Conclusion

Hospital and health service leaders in the community are advised to start developing nursing intervention procedures in conservative management (behavioral therapy) for patients with urinary incontinence in general and the elderly in particular. Nurses give priority to the selection of behavioral therapy which include Kegel's exercise and bladder training as a form of nursing intervention related to physical exercise that has a positive effect on patients. Kegel's exercise and bladder training conducted in the elderly group in this study showed the effectiveness in reducing urinary incontinence episodes, it is recommended to make a continuous exercise program for the elderly who experience urinary incontinence as a therapeutic program and anticipatory action for the elderly who do not experience urinary incontinence, because age influences the incidence of urinary incontinence. The caregiver in the nursing home needs to be taught and demonstrated Kegel's exercise and bladder training so that later they are able to train the elderly in the home to do Kegel's exercise and bladder training correctly.

The need to independent the elderly by providing activities according to the ability of the elderly to maintain the physical fitness of the elderly, which can indirectly affect continence. Educational institutions are advised to introduce further about several behavioral therapy methods including Kegel's exercise and bladder training as the first-line conservative therapy choice for patients with urinary incontinence, especially in the elderly and developed as one of the basic actions of nursing and used as health education material for the community. This research still needs to be explored further, especially regarding variations of related variables, it is recommended that further research be carried out in relation to the effectiveness of other behavioral therapy methods for decreasing episodes of urinary incontinence. It is also necessary to conduct research on some confounding factors that might affect the results of the study, which in this study were not examined.

References

- [1] Haselhorst, M., Schmale, J. Giri P. (2008) Retrieved March 14, 2018 from <http://www.mckinley.uiuc.edu>.
- [2] Bhagwath, G. (September, 2004). Retrieved March 14, 2018 from <http://medind.nic.in/jac>.
- [3] Black, J. M. and Hawk, J. H. (2016). *Medical Surgical Nursing; Clinical Management for Positive Outcomes* (8th ed.). St. Louis: Elsevier. Inc
- [4] Booth, W. J. et. al. (2002). *Introduction to Urinary Incontinence*.
- [5] Bren, L. (2005). *Controlling Urinary Incontinence*. Retrieved from <http://www.fda.gov>.
- [6] Bulechek, G. M. and McCloskey, J. C. (1999). *Nursing Interventions Effective Nursing Treatments* (3rd ed.). Philadelphia: W. B. Saunders.
- [7] Burns, N. and Grove, S. (1999). *Understanding Nursing Research* (2nd ed.). Philadelphia: W. B. Saunders.
- [8] Craven, R. F. and Hirnle, C. J. (2007). *Fundamentals of Nursing, Human Health and Function* (3rd ed.). Philadelphia: Lippincott Williams & Wilkins.
- [9] Culligan, P. J. and Heit, M. H. (2000). Urinary Incontinence: Kegel Exercises for Your Pelvic Muscles. Retrieved from <http://familydoctor.org>.
- [10] Dempsey, A. D. and Dempsey, P. A. (2002). P. Widyastuti and D. Adingsih (Eds.), *Riset Keperawatan*. Jakarta: EGC.
- [11] Doughty, D. B. (2000), *Urinary & Fecal Incontinence Nursing Management* (2nd ed.). St. Louis: Elsevier.
- [12] DuBeau, C. E. (2000). *Urinary Incontinence*. Retrieved from <http://www.americangeriatrics.org>.
- [13] Hidayat, A. A. (2007). *Metode Penelitian Keperawatan dan Teknik Analisis Data*. Jakarta: Salemba Medika.
- [14] Ismayadi. (2004). *Proses Menua (Aging Proses)*. Retrieved from <http://library.usu.ac.id/download>.
- [15] Japardi, I. (2002). *Manifestasi Neurologis Gangguan Miksi*. Retrieved from <http://.library.usu.ac.id/>.
- [16] Karon, S. (2005). *A Team Approach to Bladder Retraining: A Pilot Study*. Retrieved from <http://www.medscape.com>.
- [17] Kementerian Koordinator Bidang Kesejahteraan Rakyat Kedeputusan I Bidang Kesejahteraan Sosial. (2008). *Lansia Masa Kini Dan Mendatang*. Retrieved April 25, 2018 from <http://www.menkokesra.go.id>.

- [18] Kozier, B. et al. (2003). *Fundamentals of Nursing, Concepts, Process, and Practice* (5th ed.). California: Addison-Wesley.
- [19] Luft, J. (1998). *Bladder Retraining*. Retrieved March 14, 2018 from <http://www.ucsf.edu>.
- [20] Meiner, S. E. and Lueckenotte, A. G. (2014). *Gerontologic Nursing* (3rd ed.). St. Louis: Elsevier.
- [21] Murti, B. (1997). *Prinsip dan Metode Riset Epidemiologi*. Jogjakarta: Gadjah Mada University Press.
- [22] Newman, D. K. (2007). *The ABCs of Incontinence Care: Assessment, Behavioral Treatment and Containment*. Retrieved March 14, 2018 from http://dhfs.wisconsin.gov/rl_DSL/Training.
- [23] Notoatmodjo, S. (2002) *Metodologi Penelitian Kesehatan*. Jakarta: PT. Rineka Cipta.
- [24] Polaski, A. L. and Tatro, S. E. (1996). *Core Principles and Practice of Medical-Surgical Nursing*. Philadelphia: W. B. Saunders Co.
- [25] Rachmawati, M. (2007). *Bila "Ngompol" di Usia Senja*. Retrieved April 26, 2018 from <http://64.203.71.11/kompas-cetak>.
- [26] Fanti, J. A. (1996) *Overview: Urinary Incontinence in Adults: Clinical Practice Guideline Update*. Retrieved March 14, 2018 from <http://www.ahrq.gov>.
- [27] Sabri, L. and Hastono, P. S. (1999). *Modul (MA 2600) Biostatistik & Statistik Kesehatan*. Depok: Jurusan Kependudukan & Biostatistik FKM UI.
- [28] Samino, H. (2003). *Menjadi Lansia, Siapa Takut?* Retrieved April 25, 2018 from <http://www.pdpersi.co.id>.
- [29] Sastroasmoro, S. and Ismael, S. (2002). *Dasar-Dasar Metodologi Penelitian Klinis*. (2nd ed.). Jakarta: Sagung Seto.
- [30] Simon, H. (2007). *Urinary Incontinence*. Retrieved March 14, 2018 from <http://adam.about.com>.
- [31] Smeltzer, S. C. and Bare, B. G. (2015). *Textbook of Medical-Surgical Nursing*. (10th ed.). Philadelphia: Lippincott Williams & Wilkins.
- [32] Stanley, M. and Beare, P. G. (2007). *Buku Ajar keperawatan Gerontik*. (2nd ed.). Jakarta: EGC.
- [33] Stendardo, S. (2002). *Urinary Incontinence: Assessment and Management in Family Practice*. Retrieved March 14, 2018 from <http://www.aafp.org>.
- [34] Sugiyono, P. (2014). *Statistika untuk Penelitian*. Bandung: CV Alfabeta.

- [35] Swaffield, J. (1999). Continence. In M. F. Alexander, J. N. Fawcett and P. J. Runciman (Eds.), *Nursing Practice Hospital and Home the Adult*. Churchill Livingstone: Harcourt Brace & Co., pp. 727-728.
- [36] Weiss, B. D. (2007). *Elder Care a Resource for Providers, Urinary Incontinence—Treatment*. Retrieved March 14, 2018 from <http://www.geriatrics.medicine.arizona.edu>.
- [37] Yin, J. and Jacobson, M. (2007). Urinary Incontinence. Retrieved March 14, 2018 from <http://www.ocno.health.wa.gov.au>.