

Lampiran 1

Jurnal Akademika Baiturrahim
Vol.6 No.2, September 2017

Engla Ampia L, Rino M

**EFEKTIFITAS INISIASI BLADDER TRAINING TERHADAP
INKONTINENSIA URIEN PADA PASIEN STROKE NON HEMORAGIK
YANG TERPASANG KATETER DI RUANG NEUROLOGI
RSUD RADEN MATTATHER JAMBI**

Engla Ampia Lestari¹, Rino M²
Prodi SI Keperawatan STIKBA Jambi¹⁾
Program Studi Ners STIKBA Jambi²⁾
E Mail: rino.malvino20@yahoo.com

ABSTRACT

Background : Bladder training is one of the efforts to control bladder function is impaired to normal or optimal function that aims to train neurogenic bladder and restore normal pattern of urination by inhibiting or stimulating spending urine .

Method : This study aims to determine urinary incontinence in patients with non-hemorrhagic stroke were catheterized in neurology hospital room Raden Mattather Jambi The population in this study non- hemorrhagic stroke patients were catheterized as many as 209 people , with a sample of 20 people pre -test and post -test method uses pre - experiment with bentukone - group pretest - posttest design statistick test used was T Dependent sample taken with technique "purposive sampling.

Result : Urinary output before and after the initiation of bladder training on non-hemorrhagic stroke patients were catheterized urindilakuakn decreased during the pre-test, namely the number of 12.820ml and after post test bladder training on the total amount of the average change is the number of 2.075ml , Raden expected Mattather Jambi Hospital can make this researach as a Standard Operating Procedure (SOP) Bladder Training in neurology space.

Keywords: Initiation, BladderTraining in patients with non-hemorrhagic stroke

PENDAHULUAN

Stroke adalah suatu cedera mendadak dan berat pada pembuluh-pembuluh darah otak. Cedera dapat disebabkan oleh sumbatan pembekuan darah, penyempitan pembuluh darah, pecahnya pembuluh darah. Disebabkan kurangnya pasokan darah yang memadai, stroke mungkin menampakkan gejala atau mungkin juga tidak (Feigin, 2006).

Di Indonesia, stroke menyerang 35,8% pasien usila dan 12,9% pada usia lebih muda, jumlah total penderita stoke di Indonesia diperkirakan 500.000/tahun, 250.000 orang meninggal dunia, dan sisanya cacat. Angka kematian pada pria dan wanita relatif sama bahkan saat ini Indonesia

merupakan negara dengan jumlah penderita stroke terbesar di Asia. Ini sangat memprihatinkan mengingat Insan Pasca Stroke (IPS) biasanya merasa rendah diri, emosinya tidak terkontrol dan selalu ingin diperhatikan (Supriadi, A, 2007)

Berdasarkan Survei Kesehatan Rumah Tangga tahun 2007 dan Survei Kesehatan Masyarakat (Surkesmas) 2001 penyakit utama penyebab kematian adalah Angka kejadian stroke, menurut data dasar 63,52 per 100.000 penduduk pada kelompok usila. Setiap hari ada dua orang Indonesia mengalami serangan stoke, penyakit stroke menyerang bukan hanya kelompok usila, melainkan juga kelompok usia lebih muda dalam jumlah kasus penderita 2,5%. Menurut survei stroke merupakan pembunuh nomor satu

di RS Pemerintah diseluruh penjuru Indonesia (Depkes RI, 2009).

METODE PENELITIAN

Penelitian ini merupakan penelitian eksperimen dengan menggunakan *Pre eksperiment One group pretest-posttest*. Dimana dalam penelitian ini tidak dilakukan *pre - test* sebelum responden diberikan perlakuan (*Treatment*).

Penelitian ini terdapat pretest dan posttest. Mendapat perlakuan rutin dari peneliti berupa *inisiasi bladder training* satu hari sebelum kateter dilepas. Pengambilan data dilakukan pada kedua kelompok (Notoatmodjo, 2010).

Kelompok perlakuan dalam penelitian ini mendapatkan perlakuan (*pretest*) berupa *inisiasi bladder training* yang dilakukan sejak pasien melewati fase akut, sedangkan mendapat perlakuan *inisiasi bladder training* yang biasa dilakukan perawat, yaitu sejak satu hari sebelum kateter dilepas. Setelah *inisiasi bladder training* selesai dilakukan dan kateter urin dilepas, responden pada kelompok *treatment* dan kontrol akan dievaluasi residu urin didalam kandung kemihnya (Notoatmodjo, 2010).

HASIL DAN PEMBAHASAN

Diketahui bahwa hasil *post - test*, terdapat jumlah urinya sebanyak 200ml yang terdapat pada pasien (Tn.R, Ny.S, dan Tn.K) hasil ini mengalami penurunan setelah dilakukannya *bladder training* yang mana pasiennya dilakukan 1 hari sebelum pasien pulang dan pasien bisa mengatur *sfincter* urinya dan pasien juga bisa merasakan untuk berkemih secara normal dan tidak lagi menggunakan alat bantu kateter. Dan terdapat jumlah urin terendah yaitu 40ml yang mana pasien tersebut adalah (Ny.S, Tn.R, dan Ny.K). hal ini dikarenakan pasien tidak lagi menggunakan infus dan

pasien tidak mengidap penyakit yang dapat mengindikasikan pasien tersebut memiliki cairan urin yang berlebih, serta pasien mengkonsumsi air mineral sebanyak yang diperlukan oleh pasien tersebut.

Inkontinensia urine adalah ketidakmampuan menahan air kencing. Merupakan suatu gejala kelainan berkemih yang sangat mengganggu dan seluruh proses berkemih ini merupakan aktifitas neurologi yang sangat kompleks dan cepat di atur oleh otak (kulit otak dan di bawah kulit otak) bila terjadi gangguan kontrol dari otak akibat penyakit – penyakit saraf tertentu maka akan mengakibatkan inkontinensia. Pengeluaran kemih di atur oleh otot-otot yang di sebut *sfincter* (terletak di dasar kandung kencing dan dinding saluran kencing). Didalam keadaan normal *sfincter* akan menghalangi pengeluaran urine dengan menutup kandung kemih dan salurannya (Handayani 2012)

Stroke adalah suatu cedera mendadak dan berat pada pembuluh - pembuluh darah otak. Cedera dapat disebabkan oleh sumbatan pembekuan darah, penyempitan pembuluh darah, sumbatan dan penyempitan atau pecahnya pembuluh darah. Disebabkan kurangnya pasokan darah yang memadai, *stroke* mungkin menampilkan gejala atau mungkin juga tidak (*Stroke tanpa gejala disebut silent stroke*) (Feigin, 2006).

Inisiasi berasal dari kata *inhiate*, yang berarti memulai suatu kegiatan, sebuah pertanyaan yang menjadi tanda masuk/permulaan sebagai permulaan suatu tindakan yang benar sesuai dengan prinsip.

Bladder training adalah salah satu upaya untuk mengendalikan fungsi kandung kemih yang mengalami gangguan keadaan normal atau ke fungsi optimal neurogenik. *Bladder training* merupakan salah satu terapi yang efektif diantara terapi nonfarmakologis.

Tujuan dari *bladder training* adalah untuk melatih kandung kemih dan mengembalikan pola normal berkemihan dengan menghambat atau menstimulasi pengeluaran air kemih. (AHCP, dalam Potter dan Perry, 2005) terapi ini bertujuan memperpanjang interval berkemih yang normal dengan berbagai teknik distraksi atau teknik relaksasi sehingga frekuensi berkemih dapat berkurang hanya 6-7 kali per hari atau 3-4 jam sekali. Melalui latihan, klien diharapkan dapat menahan sensasi berkemih.

Yang mana klien *stroke* yang mengalami masalah dalam hal berkemihan dan klien *stroke* dengan kesulitan memulai atau menghentikan aliran urin serta klien *stroke* dengan pemasangan kateter yang relatif lama dan juga klien *stroke* dengan inkontinensia urin.

Adapun Penelitian terdahulu dilakukan oleh Bayhakki (2007) "Dampak *Baldder Training* Menggunakan Modifikasi Cara Kozier Pada Pasien Pasca Bedah Ortopedi Yang Terpasang Kateter Urin Di Ruang Rawat Bedah RSCM Jakarta". Hasil penelitian ini menunjukkan bahwa adanya perbedaan pola berkemih dengan kelompok *treatment* dan kelompok kontrol dan ada perbedaan yang signifikan lama waktu pada kelompok *treatment* dan kelompok kontrol dan didukung juga oleh rata - rata dari post - test kelompok *treatment* yang lebih cepat dari kelompok kontrol.

Dalam jurnal yang mengungkapkan penelitian mengenai "The influence Of *Bladder Training* Initiation On Residual Urine In The *Stroke Patients With Urine Catheter*". Penelitian ini menggunakan metode *Quasy eksperimental* studi post - test dengan desain kelompok pembandingan. Dengan jumlah pasien 14 pasien *stroke* sebagai responden yang cocok dengan kriteria inklusi yang terbagi dua kelompok, yaitu kelompok *treatment*

dan kelompok kontrol (Wahyu. H. 2011).

Adapun perbedaan antara penelitian sebelumnya dengan penelitian yang dilakukan oleh peneliti sekarang, yaitu penelitian terdahulu menggunakan Dampak *Baldder Training* Menggunakan Modifikasi Cara Kozier Pada Pasien Pasca Bedah Ortopedi Yang Terpasang Kateter Urin Di Ruang Rawat Bedah RSCM Jakarta dan Hasil penelitian ini menunjukkan bahwa adanya perbedaan pola berkemih dengan kelompok *treatment* dan kelompok kontrol. Ada perbedaan yang signifikan lama waktu pada kelompok *treatment* dan kelompok kontrol dan didukung juga oleh rata - rata dari post - test kelompok *treatment* yang lebih cepat dari kelompok kontrol.

Penelitian yang dilakukan oleh peneliti sekarang yaitu pada Pengaruh *Inisiasi Bladder Training* Terhadap inkontinensia Urine Pada pasien Pria *Stroke Non - Hemoragik* Yang Terpasang Kateter Di Ruang Neurologi RSUD Raden Mattaher Jambi. Yang menggunakan metode Pre - *eksperiment* dengan bentuk *two - group pretest - posttest* desain Uji ststistik yang digunakan adalah uji *T dependent*. Sample diambil dengan tehnik "Proposive Sampling" dan dengan sample 20 orang. Adanya perbedaan yang signifikan jumlah pengeluaran urin dan lama waktu, hasil pre - test 12820ml dan post - test 2075ml, Perlunya peran perawat dalam pengontrolan sfingter pada pasien pasca *stroke Non - Hemoragik* yang telah melewati fase akut, serta mengenai dampak *bladder training* dalam pemasangan kateter dan support dari keluarga maupun petugas kesehatan untuk menghadapi masalah yang terjadi. Dan untuk RSUD Raden Mattaher Jambi agar dapat menjadikan SOP *Bladder Training* ini bisa menjadi baku pelaksanaan teknik *inisiasi bladder training* ini di ruangan baik itu di

ruangan Neurologi, interne, ICU, dan Bedah, serta pada pasien – pasien yang terpasang kateter.

SIMPULAN

Berdasarkan hasil dari penelitian ini dapat ditarik kesimpulan, bahwa tehnik *Inisiasi Bladder Training* Terhadap Residu *Urine* Pada Pasien Pria *Stroke Non – Hemoragik* Yang Terpasang Kateter Diruang Neurologi RSUD Raden Mattaher Jambi. Berpengaruh baik bagi kesehatan pasien *stroke*, namun tehnik ini juga dapat dilakukan bagi pasien yang menderita penyakit lainnya. Terutama yang memiliki gangguan pola perkemihan yang terpasang kateter. Adapun Haluaran residu urin sebelum/sesudah *Inisiasi bladder Training* ini dapat menjadi lebih baik dalam pelaksanaannya di ruangan. Maka dari itu perlunya pelaksanaan *teknik bladder training* ini bisa di terapkan untuk ruangan.

SARAN

Penelitian ini telah mendapatkan Pengaruh Tentang *Inisiasi Bladder Taraining* Pada Pasien Pria *Stroke Non – Hemoragik* Yang Terpasang Kateter Diruang Neurologi RSUD Raden Mattaher Jambi Tentang Residu Urin, maka dapat direkomendasikan bahwa dalam upaya tindakan yang cukup efektif untuk meningkatkan kemampuan klien pria yang terpasang kateter dalam merasakan dan menahan kandung kemih. Saran – saran berikut ini disampaikan kepada :

1. Bagi Institusi Pelayanan Kesehatan (Ruang Neurologi RSUD Raden Mattaher Jambi).

Disarankan bagi Ruang Rawat Neurologi untuk dapat menjadikan penelitian tentang *Inisiasi Bladder Training* sebagai Standar Operasional Prosedur (SOP) *Bladder Training* Di Ruang

Neurologi RSUD Raden Mattaher Jambi. Institusi Pelayanan Kesehatan dapat mengembangkan sistem diruang rawat, terkait personil yang bertanggung jawab terhadap program *Bladder Training* diruangan tersebut dan intitusi pelayanan kesehatan perlu memfasilitasi penyediaan alat pemeriksaan yang dapat digunakan untuk mengevaluasi program *Bladder Training*. Dengan mempertimbangkan *inisiasi* dini sejak pasien *stroke* melewati fase akut yang terpasang kateter, bukan hanya pasien *stroke* tetapi juga diterapkan pada semua pasien yang terpasang kateter sesuai dengan prosedur tetap yang dibuat oleh institusi pelayanan.

2. Bagi Institusi Pendidikan

Perlunya mengadakan diskusi klinis secara terjadwal dalam mengembangkan praktik keperawatan secara mandiri tentang penerapan prosedur *Bladder Training* terutama pada pasien pasca fase akut yang terpasang kateter urin, dapat membentuk organisasi profesi atau perkumpulan perawat dalam memfasilitasi seminar tentang perkembangan praktik keperawatan terkait dengan perawatan kateter dan *Bladder Training*.

3. Bagi Peneliti Selanjutnya

Dapat mengembangkan variabel yang lebih kompleks seperti dilihat Pengaruh *Inisiasi Bladder Training* pada jenis kelamin laki – laki, pengaruh terhadap faktor – faktor usia, pada pasien dengan gangguan neurologis yang lain, segi pembiayaan, ekonomi pasien dan keluarga, dan lain – lain. Metode penelitian dapat dibuat sampai dengan multivariat, sehingga pengaruh tentang *Inisiasi bladder Training* dapat diperoleh lebih luas lagi.

DAFTAR PUSTAKA

- Arikunto.S 2006. Prosedur Penelitian Suatu Pendekatan Praktik, Rineka Cipta, Jakarta.
- Bayhakki. 2007. Dampak Bladder Training Menggunakan Modifikasi Cara Kozier Pada Pasien Pasca Bedah Ortopedi Yang Terpasang Kateter Urin Di Ruang Rawat Bedah. RSCM. Jakarta. Dipublikasikan
- Bondan palestini. Google.com diakses 21 Februari 2013 pada pukul 07:30 Wib. Dipublikasikan
- Clevo.R. 2012. Asuhan Keperawatan Medikal Bedah Penyakit Dalam. Nuha Medika. Yogyakarta.
- Feigin.V. PHD. 2006. Panduan Bergambar Tentang Pencegahan dan Pemulihan Stroke. Gramedia. Jakarta.
- Gusri Wahyudi. usu.co.id. diakses 21 Februari 2013 pada pukul 07 : 30 Wib. Dipublikasikan
<http://eprints.undip.ac.id/Misbach>. 2006. Data *Stroke* Menurut WHO. diakses 02 Januari 2013. Dipublikasikan
<http://lib.ui.ac.id/> Asikin.S. 2007. Data *Stroke* Di Indonesia. diakses 02 Januari 2013. Dipublikasikan
<http://repository.unand.ac.id/> Lucia. 2008. Data *Stroke* Didunia. Diakses 02 Januari 2013. Dipublikasikan
<http://www.yastroki.or.id/> Yastroki di akses 9 Agustus 2013.
- Journal of nursing. Wahyu. H. 2011. The influence of bladder training initiation on residual urine in the urine catheter.
<http://www.readbag.com/digilibm-unsri-ac-id-download-overactif-bladder> diakses pada tanggal 18-02-2013 pukul 17:00Wib. Dipublikasikan
- Jurnal Japardi Iskandar. Fakultas Kedokteran Bagian Bedah Universitas Sumatra Utara. co.id. diakses 21 Februari 2013 pada pukul 07 : 30 Wib. Dipublikasikan
- Kozier.B. 2010. Fundamental Keperawatan Konsep, Proses, dan Praktik Edisi 7 vol.2. EGC. Jakarta.
- Medical Record. 2010. 2011. 2012. Data *stroke Non-Hemoragik* diruang Neurologi RSU Raden Mattaher Jambi.
- Muttaqin.A dkk. 2011. Asuhan Keperawatan Gangguan Sistem Perkemihan. Salemba Medika. Jakarta.
- Notoatmodjo. 2010. Metodologi Penelitian Kesehatan. Rineka Cipta Jakarta.
- Nursalam. 2006 Aplikasi Praktik Keperawatan Profesional. Salemba Medika, Jakarta.
- Nursalam. 2008. Asuhan Keperawatan Pada Pasien Dengan Gangguan Sistem Perkemihan. Salemba Medika Jakarta
- Potter & Perry. 2005. Fundamental Keperawatan Vol : 2. Jakarta : EGC
- Potter dan Perry. 2010. Fundamental Keperawatan of nursing. EGC. Jakarta.
- RISKESDAS 2007 Departemen Kesehatan Republik Indonesia 2009. Data *Stroke* sebagai penyebab utama kematian di Indonesia. Dipublikasikan
- Sjamsuhidajat.R. 2004. Buku Ajar Ilmu Bedah. EGC. Jakarta.
- STIKBA. 2012. Buku Panduan Skripsi. Jambi.
- Sugiyono. 2010. Statistika untuk Penelitian. Alfabeta. Bandung.
www.farmacia.com diakses 21 Februari 2013 Pukul 07 : 30 Wib.
www.Rs.hasan sadikin bandung.ac.id Diakses pada tanggal 12 maret 2013(SOP Bladder Training) Dipublikasikan

**PENGARUH KOMBINASI BLADDER TRAINING DAN KEGEL EXERCISE
TERHADAP PEMULIHAN INKONTINENSIA PADA PADA PASIEN STROKE**

**THE EFFECT OF BLADDER TRAINING AND KEGEL EXERCISE
ON COMBINATION THE RECOVERY OF URINARY INCONTINENCE
IN STROKE PATIENT**

Ernawati

Program Studi DIII Keperawatan STIKes Faletehan Serang
ernawatisujono78@yahoo.co.id

Abstrak

Stroke adalah suatu gangguan fungsi saraf akut yang disebabkan oleh adanya gangguan peredaran darah otak secara mendadak (dalam beberapa detik) atau secara cepat (dalam beberapa jam) timbul gejala dan tanda sesuai dengan daerah fokal di otak yang terganggu. Komplikasi akibat stroke diantaranya adalah lemahnya otot spingter uretra yang mengendalikan kemampuan berkemih pasien. Penelitian ini bertujuan untuk menganalisa pengaruh kombinasi bladder training dan kegel exercise terhadap pemulhanin kontinensia urine pada pasien stroke di Ruang Tulip Rumah Sakit Dr. Dradjat Prawiranegara Serang. Metode penelitian ini adalah kuasi eksperimen pre test and post test one group design. Populasi adalah semua pasien stroke di RS dr. Dradjat Prawiranegara berjumlah 112 orang. Sampel yang diambil adalah 36 respondendengan intervensibladder training selama 3 haridilanjutkegel exercise selama 7 hari. Pengukuran inkontinen dengan menggunakan Sandvik Severity Scale, sedangkan intervensi bladder training dan kegel exercise menggunakan SOP yang telah dibakukan. Hasil didapatkan rata-rata scor inkontinensia urine mengalami penurunan dengan intervensi bladder training sebesar 0,92. Umur secara bersama-sama mempengaruhi bladder training dan kegel exercise dan mempengaruhi pemulihan inkontinensia urine sebesar 0,002. Adapengaruh yang bermakna intervensibladder training dankegel exercise terhadap pemulihan inkontinensia urine dengan p-value 0,000 dan r: 1,16. Pemulihan inkontinensia urine dapat dilakukan dengan memberikan intervensi bladder training dan kegel exercise.

Kata kunci: bladder training, kegel exercise, inkontinensia urine

Abstract

Stroke is an acute nerve dysfunction caused by circulatory disorders of the brain is suddenly (within seconds) or quickly (within hours) symptoms and signs in accordance with the focal area of the brain disrupted. Complications at stroke include weakness at spingter urethra muscle that control the ability of the patient to urinate. The aim at this study is to analyze the effect of bladder training and Kegell exercise combinatic on the recovery of urinary incontinence in stroke patients at Tulip Lounge Hospital Dr. Dradjat Prawiranegara Serang. This research method was a quasi-experimental pretest and posttest one group design. The population was all stroke patients in the hospital dr. Dradjat Prawiranegara with total sum 112 people. Samples taken were 36 respondents with intervensi bladder training for 3 days followed kegel exercise for 7 days. Measurements incontinence by using Sandvik Severity Scale, while the intervention bladder training and Kegell exercise using SOP standardized. The results shows an average scor decreased urinary incontinence with bladder training intervention by 0.92. Age jointly affect bladder training and Kegell exercise and affect the recovery of urinary incontinence of 0.002. No significant effect of intervention bladder training and Kegell exercise on the recovery of urinary incontinence with a p-value of 0.000 and r: 1.16. Recovery of urinary incontinence can be done by giving the intervention bladder training and Kegell exercise

Keywords: bladder training, Kegell exercise, urinary incontinence

PENDAHULUAN

Stroke adalah suatu **gangguan fungsi saraf** akut yang disebabkan oleh adanya gangguan peredaran darah otak secara mendadak (dalam beberapa detik) atau secara cepat (dalam beberapa jam) timbul gejala dan tanda sesuai dengan daerah fokal di otak yang terganggu. Hal ini terjadi ketika suplay darah pada sebagian otak terhenti. Darah membawa nutrisi dan oksigen yang sangat penting untuk otak. Tanpa darah sel-sel otak akan mengalami kerusakan dan kehancuran. Otak adalah pengendali semua aktifitas tubuh manusia, dan stroke mengakibatkan terhambatnya semua fungsi otak* (Stroke Association, 2012).

Pengaruh yang akan terjadi karena kondisi defisit neurologis yang lama akan mengakibatkan munculnya masalah baru pada pasien yang berkaitan dengan pemenuhan kebutuhan dasar sehari-hari yang sangat berkaitan dengan kualitas hidup pasien (Brunner and Suddart, 2001). Salah satu kebutuhan dasar yang muncul pada pasien dengan stroke adalah masalah pengontrolan kandung kemih atau yang sering disebut inkontinensi urine. Inkontinensi urine adalah suatu kondisi pasien tidak dapat mengontrol kandung kemih, hal ini terjadi karena stroke yang terjadi telah merusak otak yang merupakan pengontrol kandung kemih dan usus (Stroke Association, 2012).

Komplikasi yang sering muncul pada pasien stroke adalah kelemahan tonus otot (Rahayu, 2013). Kelemahan otot ini akan berakibat juga pada lemahnya otot sfingter uretra yang mengendalikan kemampuan berkemih pasien. Sekitar setengah dari pasien yang dirawat di rumah sakit dengan stroke akan memiliki kehilangan kontrol kandung kemih mereka dan sepertiganya akan mengalami kehilangan kontrol buang air besar. Inkontinensi urine dapat mengakibatkan terganggunya kebutuhan manusia termasuk diantaranya kebutuhan kebersihan diri, jika kebutuhan kebersihan diri tidak terpenuhi akan menimbulkan gangguan kenyamanan bagi individu baik kenyamanan fisik, psikospiritual, sosial maupun lingkungan.

Roe *et al* (2007) mengatakan bahwa instabilitas detrusor ini dapat diminimalisir atau diatasi dengan latihan kandung kemih yang disebut *bladder training*. *Bladder training* merupakan tindakan yang dilakukan pada pasien yang memiliki kemampuan kognitif dan dapat berpartisipasi secara aktif. *Bladder training* bertujuan untuk mengem-

balikan fungsi kandung kemih ke fungsinya yang normal (Perry and Potter, 2005). Ermiyati dkk (2008) mengatakan bahwa *bladder training* dilakukan agar otot kandung kemih kembali normal dengan cara menstimulasi pengeluaran urine. Tujuan lain dari pelaksanaan *bladder training* adalah agar kandung kemih dapat mengontrol, mengendalikan, dan meningkatkan kemampuan berkemih dengan cara spontan.

Kegel exercise merupakan latihan otot kadung kemih yang saat ini marak dikembangkan sebagai salah satu intervensi dalam mengatasi masalah-masalah yang berkaitan dengan kandung kemih. *Kegel exercise* adalah latihan otot kandung kemih dengan cara mengencangkan dan merelaksasikan otot sehingga otot kandung kemih menjadi kuat. (Stang, 2012). Tujuan mendasar dilakukannya *kegel exercise* adalah untuk meningkatkan kekuatan otot dasar panggul (Lestari, 2011), lebih lanjut Lestari menjelaskan bahwa selain latihan faktor lain yang mempengaruhi kekuatan otot adalah hubungan cross sectional otot, hubungan antara panjang dan tegangan otot pada waktu kontraksi, rekrutmen motor unit, tipe, kontaksi otot, jenis serabut otot, ketersediaan energi dalam aliran darah serta kecepatan kontaksi dan motivasi pasien dalam melakukan latihan.

Bladder training sangat efektif untuk mengatasi inkontinensi urine pada pasien stroke. *Bladder training* adalah tindakan pengikatan atau klem kateter yang dilakukan selama dua jam atau sampai pasien merasakan kandung kemih telah penuh dan ingin segera berkemih. *Kegel Exercise* adalah gerakan yang dilakukan untuk meningkatkan kekuatan otot-otot dasar panggul. Inkontinensi urine dapat diatasi dengan *kegel exercise*. Mengkombinasikan *bladder training* dan *kegel exercise*, sangat efektif untuk mencegah inkontinensi urine.

Hasil penelitian yang dilaksanakan penulis pada bulan Juli 2015 di Ruang Tulip RS Dr. Drajat Prawiranegara Serang diperoleh bahwa dari 36 pasien yang mengalami inkontinensi urine setelah dilakukan *bladder training* selama 3 hari 92% pasien mengalami penurunan skor inkontinen, tetapi penurunannya tidak signifikan. penurunan skor inkontinen rata-rata 1 tingkat, sehingga diperlukan alternative intervensi agar inkontinensi dapat diatasi.

Fakta-fakta diatas menarik untuk dilakukan penelitian, dengan mencoba melakukan kombinasi antara *bladder training* dan *kegel*

exercisedi diharapkan penurunan skor inkontinensia urine pada pasien stroke lebih signifikan.

METODE PENELITIAN

Desain penelitian yang digunakan dalam penelitian ini adalah penelitian kuantitatif *kuasi eksperimen* dengan pendekatan *one group pretest dan posttest design* yaitu pengukuran dilakukan pada awal dan saat akhir penelitian untuk menguji perubahan yang terjadi setelah intervensi diberikan. Dalam penelitian ini populasi terjangkanya adalah semua pasien stroke yang di rawat di Ruang Tulip Rumah Sakit Dr. Dradjat Prawiranegara yang terhitung dari bulan Juli sampai Bulan Agustus adalah 112 orang. Penentuan sampel penelitian dengan menggunakan rumus uji beda dua mean dependen, diperoleh sampel sebesar 36 orang.

Penelitian dilaksanakan selama 6 minggu, untuk melakukan pengukuran inkontinensia urine di gunakan Sandvik Severity Scale. Sandvik severity scale adalah alat ukur inkontinensia yang berisi dua pertanyaan. Pertanyaan pertama tentang kapan pasien mengalami inkontinensia urine, pertanyaan kedua adalah berapa jumlah urine yang keluar saat inkontinensia terjadi. Kemudian scornya dijumlahkan, skor 0 maka pasien tidak mengalami inkontinensia urine, skor 1-2 pasien mengalami inkontinensia ringan, skor 3-5 inkontinensia sedang dan 6-8 inkontinensia berat. Sementara instrument *Bladder Training* dan *Kegel Exercise* adalah SOP *Bladder Training* dan *Kegel Exercise* yang telah dibakukan oleh LPM STIKes Faletehan Serang. Dalam penelitian ini setiap responden dilakukan *bladder training* selama 3 hari kemudian dilanjutkan dengan memberikan *Kegel Exercise* sampai hari ke 7.

Intervensi ini didasarkan pada penelitian Bayhakki (2007) yang menyatakan bahwa *bladder training* dapat dilakukan sampai hari ke-3 sampai dengan hari ke-7, terutama pada pasien setelah operasi. Setelah itu responden penelitian dilakukan pengukuran skor inkontinensia *post bladder training*. Uji analisis statistik yang digunakan adalah *t dependent atau paired-sampel T-test*.

HASIL PENELITIAN

Karakteristik responden penelitian berdasarkan jenis kelamin

Tabel 1. Distribusi Frekuensi Responden Penelitian Berdasarkan Jenis Kelamin

No	Jenis Kelamin	F	Presentasi(%)
1	Laki-laki	15	41,6
2	Perempuan	21	58,4

Karakteristik responden penelitian berdasarkan umur dan berat badan

Tabel 2. Distribusi Frekuensi Responden Penelitian Berdasarkan Umur dan Berat Badan

Karakteristik	(N = 36)		
	Mean	SD	Min-Maks
1. Umur	Mean 53,25	0,667	Min-Max: 45-65
2. Berat badan	Mean 62,06	1,117	Min-Max: 51-75

Uji analisis perbedaan skor inkontinensia pre dan post *Bladder Training*

Tabel 3 Perbedaan Total Skor Rata-Rata Hasil Pengukuran Inkontinensia Urine *Pre Test* dan *post Test* *Bladder Training* Pada Responden

Intervensi	Pre-test		Post-test		Selisih		95% CI	Hasil uji t dependen (<i>p-value</i>)
	Mean	SD	Mean	SD	Mean	SD		
<i>Bladder Training</i>	4,32	0,439	3,22	0,535	0,92	0,92	0,792-1,041	0,000

Uji analisis perbedaan scor pre dan post Kegel Exercise setelah Bladder Training

Tabel 4 Perbedaan Total Skor Rata-Rata Hasil Pengukuran Inkontinensia Urine Pre Test dan Posttest Kegel Exercise Setelah Dilakukan Bladder Gtraining

Intervensi	Pre-test		Post-test		Selisih		95% CI	Hasil uji t dependen (<i>p-value</i>)
	Mean	SD	Mean	SD	Mean	SD		
kegel exercise setelah bladder training	3,22	0,535	2,07	0,811	1,16	0,276	0,960-1,373	0,000

Pengaruh Bladder Training dan kegel Exercise terhadap pemulihan inkontinensia urine.

Tabel 5. Pengaruh Bladder Training dan Kegel Exercise Terhadap Pemulihan Inkontinensia Urine pada Responden Penelitian

Selisih scor pre-post bladder		Selisih scor pre-post kegel setelah bladder		Selisih		95% CI	Hasil uji t independen (<i>p-value</i>)
Mean	SD	Mean	SD	Mean	SD		
0,92	0,368	1,17	0,02	0,25	0,266	0,488-0,12	0,000

Pengaruh umur, jenis kelamin dan berat badan terhadap kombinasi bladder training dan kegel exercise terhadap penulihan inkontinensia urine .

Tabel 6 Pengaruh Umur, Jenis Kelamin dan Berat Badan Terhadap Kombinasi Bladder Training dan Kegel Exercise terhadap Pemulihan Inkontinensia Urine pada Responden Penelitian

Variabel	Coefficients	Hasil uji regresi linier (<i>p-value</i>)
Umur	0,178	0,002
Berat badan	0,240	0,076
Jenis kelamin	0,168	0,687

Nilai *p* berdistribusi normal dan dihitung menggunakan uji regresi linier

Dari tabel diatas diketahui distribusi frekuensi jenis kelamin responden penelitian laki-laki 41,6% dan perempuan 58,6 %, rata-rata umur responden yang adalah 53, 25 tahun dan rata-rata berat badan rersponden penelitian 62,06 kg. Rata-rata scor inkontinensia urine sebelum intervensi bladder training pada responden penelitian adalah 4,32, setelah intrvensi scor inkontinensia urine menjasi 3.22. Rata-rata scor inkontinensia urine setelah bladder training dan kegel exercise adalah 2,07. Pada responden

pengaruh bladder training dan kegel exercise setelah bladder training terhadap scor inkontinensia urine dengan mean 0,25. Sementara variabel confounding (umur, jenis kelamin, berat badan) yang paling berpengaruh terhadap bladder training dan kegel exercise dan paa pemulihan inkontinensia urine adalah umur dengan *p-value* 0,002.

PEMBAHASAN

Hasil penelitian menunjukkan bahwa ada perbedaan yang signifikan scor inkontinensia urine pada responden penelitian sebelum dan setelah dilakukan bladder training dengan *pvalue* sebesar 0,000. Hal ini menunjukkan bahwa hipotesa null ditolak atau ada perbedaan scor inkontinensia urine sebelum intervensi dan setelah intervensi bladdertraining. Hasil ini sesuai dengan penelitian yang dilakukan Pinem (2009) bahwa bladdertraining cukup efektif mengatasi inkontinensi urine pada ibu post partum. Bayyhaki (2007) mendapatkan hasil yang sama pada bahwa bladder training cukup efektif mengatasi inkontinensia urine pada pasien sebelum dilakukan pelepasan kateter. Haryati (2000) dalam penelitiannya tentang hubungan bladder training dan pemulihan inkontinensia urine pada pasien stroke, mendapatkan bahwa bladder training cukup efektif mengatasi inkontinensia urine pada pasien stroke.

Hasil penelitian menunjukkan bahwa ada perbedaan yang signifikan score inkontinensia urine pada responden penelitian sebelum *kegel exercise* setelah *bladder training* dan setelah dilakukan *kegel exercise* dengan *p value* sebesar 0,000. Hal ini menunjukkan bahwa hipotesa null ditolak bahwa terdapat perbedaan yang signifikan skor inkontinensia urine sebelum *kegel exercise* setelah *bladder training* dengan setelah *kegel exercise*. Hasil ini sesuai dengan penelitian yang dilakukan Pinem (2009) bahwa kombinasi *bladder training* dan *kegel exercise* cukup efektif mengatasi inkontinensia urine. Smith, et al. (2009) melakukan penelitian tentang efek latihan destrusor otot panggul pada 6181 responden, menemukan bahwa responden yang mengalami inkontinensia urine lebih rendah setelah dilakukan *kegel exercise* dibandingkan kelompok control.

Hasil penelitian menunjukkan bahwa ada perbedaan yang signifikan score inkontinensia urine pada responden penelitian sebelum *kegel exercise* setelah dilakukan *bladder training* dengan setelah dilakukan *kegel exercise* dengan *p value* sebesar 0,006. Hal ini menunjukkan bahwa hipotesa null ditolak bahwa terdapat pengaruh yang signifikan *bladder training* dan *kegel exercise* terhadap pemulihan inkontinensia urine dengan *p value* sebesar 0,006. Hasil ini sesuai dengan penelitian yang dilakukan Pinem (2009) bahwa paket latihan mandiri kombinasi *bladder training* dan *kegel exercise* cukup efektif mengatasi inkontinensia urine pada ibu post partum. Simon dalam Styowati (2008) mengatakan bahwa *bladder training* dan *kegel exercise* dapat menurunkan rata-rata inkontinensia sebesar 50% responden penelitian

KESIMPULAN

Pemulihan inkontinensia urine dapat diatasi dengan dua intervensi yaitu *bladder training* dan *kegel exercise*, dan faktor usia merupakan faktor yang paling kedua intervensi tersebut dibandingkan berat badan dan jenis kelamin.

DAFTAR PUSTAKA

- Bayhikki. 2007. *Bladder training modifikasi cara koizer pada pasien pasca bedah ortopedi yang terpasang kateter urine*. <http://lib.ui.ac.id>. Diakses tanggal 12 april 2015
- Hariyati. 2000. *Hubungan antara bladder training dan pemulihan inkontinensia urine pada pasien stroke*. <http://lib.ui>. Diakses tanggal 25 Maret 2015
- Lestari. 2011. *Perbandingan senam kegel 1x seminggu dan 3x seminggu terhadap penurunan frekuensi buang air kecil pada wanita usai 50-60 tahun*. Pustaka UNUD
- Roe et al. 2006. Systematic reviews of bladder training and voiding programmes in adults. *Journal of Advance Nursing*
- Stroke Association. (2012). *Continence problem after stroke*. Stroke association

The Influence of Bladder Training Initiation on Residual Urine in the Stroke Patients with Urine Catheter

Wahyu Hidayati¹

Background: The stroke patients usually experience with various dysfunction, including disturbance in elimination because of neurogenic bladder. Urine residue can be used to detect the bladder function in contracting and voiding urine.

Purpose: This research aimed to compare bladder training initiation after stroke patients after the patients passed the acute phase and one day before the urine catheter was removed.

Method: This research was quasy experimental study posttest-only design with a comparison group design. The sample in this research was taken by purposive random sampling method. The residual urine was measured with bladder scan and was recorded in the observation sheet.

Result: The mean volume of the residual urine in the treatment group was less (M= 54,00 ml; SD= 144,22 ml) if compared with the residual urine volume in the control group (M= 101,71 ml; SD=42,55 ml). The mean differences of bladder training both in the treatment and the control groups which was analyzed with *t*-test independent, there wes no differences between residual urine volume in both groups ($p= 0,84$).

Conclusion: Therefore, the health institution should consider developing the system and made a procedure in bladder training program. The nurse also should prever bladder training before the urine catheter was removal.

Keywords: bladder training, stroke patient, residual urine

¹ Lecturer at Adult Nursing Departement, School of Nursing, Faculty of Medicine, Diponegoro University. Correspondency: iway_dni@yahoo.com

Background

Stroke is a neurological deficit that has suddenly and lasts awitan within 24 hours as a result of CVD (cerebrovascular diseases) (Hudak & Gallo, 1996). catastrophic stroke or brain blood flow (brain attack / brain attack), can trigger the occurrence of disability (disability) and the main invaliditas in the age group over 45 years. A stroke is divided into two categories: ischemic stroke and hemorrhagic stroke. The longer the blood supply cut off would make a lot of brain cells become damaged, so the longer a stroke patient does not get help, then the risk of death even higher. Central Java Provincial Health Office in 2005 cases of stroke are highest in the city of Semarang that is equal to 4516 (17.36%) than overall stroke cases in the districts of other cities in Central Java. Stroke patients usually experience various kinds of dysfunction, depending on the location of damage in the brain including urinary and fecal elimination disorders (Hudak & Gallo, 1996).

Nervous system that affects the person's ability of to urinate normally due to the integrated activity of the autonomic nervous system and somatic. Jaras neural consisting of various reflex detrusor and sphincter function of the frontal lobe extends into the sacral spinal cord, so that lesions in various degrees in this jaras cause neurogenic bladder disorder / neurogenic bladders (Japardi, Manifestation of Neurological Disorders Miksi, 2002). Stroke patients who experience urinary incontinence, caused by nerves to send signals of filling of the bladder, but the brain can not interpret and respond to it (because of the damage in the brain) so that the bladder can not empty the bladder (Black & Hawk, 2005; Kozier & Erb, 2004). Patients can not feel her bladder was full and / or patient can not control the urinary sphincter due to neurogenic bladder or because the patient experienced a decrease of consciousness (Black & Hawk, 2005; Kozier & Erb, 2004).

Management of urinary incontinence stroke patients with indwelling catheter placement action, or intermittent catheter, or use a condom catheter / pampers. Indwelling catheter placement performed to overcome incontinence in the acute phase of stroke patients, and help stroke patients avoid a full bladder (Christenseen & Kockrow, 2005). However, the use of the catheter resulted in the emergence of a sustainable neurogenic bladder, detrusor instability or urinary tract infection. Actions taken to minimize the impact of catheterization with catheter care from start installation until the catheter is removed. Includes preparation needs to be done by nurses when it comes to removing the catheter is to apply the bladder training in patients (Black & Hawks, 2005; Kozier & Erb, 2005; Hickey, 2003; Fillingham & Dauglas, 2000).

The Influence of Bladder Training Initiation

Bladder training is an exercise done on the bladder by controlling urine output (Ellis & Nowlis, 1994). Bladder training should be done since the installation of the catheter, the method mentioned by Ellis and Nowlis (1994) as a “clamp and release”. It is expected that the patient will feel diklemnya catheter into her bladder is full, so the desire to spend kecing memuncul. This method should be routinely performed before catheter is removed, so that the system will continue to be trained detrusor patients (Ellis & Nowlis, 1994; Fillingham & Dauglas, 2000). In stroke patients, bladder training should be done immediately after passing through the acute phase after a stroke (Hudak & Gallo, 1996; Christensen & Kockrow, 2005).

Several studies have linked the incidence of stroke and incontinence are many available, but still limited research that discusses stroke patients using a catheter and baldder his training. Research effectiveness of bladders of patients with mixed incontinence, other studies on Impact Modification Using Bladder training Kozier mode, but investigators have not found research that describes the effectiveness of the actions bladder training in stroke patients. Recommendations from the research Duncan, et al (2005), one of which is to improve the quality of life of stroke patients is bladder training program in patients with urinary incontinence and use of bladder scan is highly recommended in the evaluation of voiding ability of patients (Roe, 1990, in Macaulay, 2000)

Hudak and Gallo (1996) catheters in patients with stroke should be immediately released. According Cristensen and Kockrow (2005) Clinical pathways in stroke patients, after passing through the acute phase (days 2-3 post-stroke) patients are recommended to follow the rehabilitation, including rehabilitation bladder. This is done to prevent complications of catheter placement. Interviews with nurses in the neurology ward, that stroke patients who had been given bladder training one day before the release of different catheter success rate, viewed from within the patient's ability to urinate completely. Differences in the ability to urinate can be seen from there are some patients who can urinate completely, there are patients who can not urinate completely and some patients still experience urinary incontinence, but it is not known how the residual urine.

Objectives

The purpose of this study was to determine the difference effect of bladder training is done after the acute phase of stroke patients with bladder through traning one

day before the catheter was removed at a stroke patient who inserted the catheter in neurological ward.

Method

Design

This study used design experiment quasy post-test-only design with a comparison group. Treatment group given preferential treatment in the form of Bladder training conducted since the patient through the acute phase, while the control group treated Bladder training nurses are wont to do, namely from the day before the catheter is removed. Once training is completed Bladder and urinary catheters removed, the respondents in treatment and control groups were evaluated residual urine in the bladder using a bladder scan, after the patient's bladder filled and micturition.

Population and sample

The population in this study were all stroke patients with urinary catheters who were treated in neurology ward at dr. Kariadi hospital. Patients become the research sample if they meet inclusion criteria, and treated in the neurology ward within the period 21 April to 7 June 2008. The inclusion criteria used in this research is: never complain / have never been treated and treated for urinary disorders, are not susceptible to interference persyarafan spinal cord, stroke patients are fitted with a catheter which has stable condition: GCS > 10, blood pressure, respiration and pulse: stable, no brain stem disorder, has allowed doctors to drink with free / not limited to, approved doctors to do bladder training, willing to be respondents of the study. Sampling was purposive sampling method and were randomly selected. However, during the research process within 1.5 months only 14 patients found that match the inclusion criteria and divided by 2 (respectively groups of seven respondents).

Result

The result of study (Table 1) shown that the male sex (treatment group) at most of 4 (57%) and control group sample sex most women who are 4 people (57%). The average age in the treatment group showed the age of 60.29 years with a standard deviation of 11.63 years. Youngest age of 46 years and the oldest 78 years, the average age in the

control group was 58.57 years (standard deviation 14.39 years), age of the youngest and the oldest 40 years old 76 years old.

Table 1

The characteristic of respondents in treatment and control group (N=14)

No.	Variable	Treatment group		Control group	
		n	%	n	%
1.	Sex :				
	a. Male	4	57,1	3	42,9
	b. Female	3	42,9	4	57,1
2.	Age				
	a. < 60 years old	4	57,1	4	57,1
	b. Ages \geq 60 years old	3	42,9	3	42,9
3.	Urine Residue				
	a. \leq 100 ml (normal)	6	85,7	5	71,4
	b. > 100 ml (abnormal)	1	14,3	2	28,6

The average amount of residual urine treatment groups amounted to 44.43 ml (SD = 44.54 ml) and the control group average residual urine volume of 111.29 ml (SD = 139.09 ml). After doing bladder training in group treatment, patients showed residual urine volume \leq 100 ml of 6 people (85.7%), the control group showed that the patients showed results \leq 100 ml urine residue after bladder training has 5 patients (71.4%), (see table 2).

Table 2

The mean, standar deviation, and confidence interval of ages and vomlume residual urine between two groups

Variable	Mean Median	Standar Deviasi	Min-max	95% CI
Ages				
a. Treatment group	60,29 58,00	11,63	46-78	49,53-71,04
b. Control group	58,57 52,00	14,39	40-76	45,26-71,89
Volume urine residue				
a. Treatment group	44,43 34,00	44,54	4-119	3,23-85,63
b. Control group	111,29 48,00	139,09	5-324	-17,35-239,93

Tabel 3 shows the results of Fisher's test on cross-tabulation between sex with a volume of residual urine in the treatment group showed results of 0.429 and p value obtained in the control group p value was 0.286. The *p*-value of the two groups of > 0.05. The *p*-value of the two groups were 0.05. respondents in the treatment group aged \geq 60 years were 33.3%) patients with residual urine > 100 ml. Fisher's exact test results on the cross tabulation between age and residual urine volume in treatment group p value of 0.429 and p value for the control group was 0.143 (p value > 0.05).

Table 3

Cross Tabulation of confounding variables (sex and age) with a volume of residual urine after catheter Released on Treatment Group and Control Group (N = 14)

Variable	Treatment			Kontrol		
	\leq 100 ml	>100 ml	TOTAL	\leq 100 ml	>100 ml	TOTAL
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Male	2(66,7)	1(33,3)	3(100)	3 (75)	1(25)	4(100)
Female	4(100)	0(0)	4(100)	2(66,7)	1(33,3)	3(100)
p Value		0,429			0,286	
< 60 years old	4(100)	0(0)	4(100)	2(50)	2(50)	4(100)
\geq 60 years old	2(66,7)	1(33,3)	3(100)	3(100)	0(0)	3(100)
p value		0,429			0,143	

Surprisingly, the analysis of residual urine in the treatment group (54.00 ml with standard deviation 144.22 mL) was less if compared with the control group (101.71 ml with a standard deviation of 42.55 ml). The results of independent *t*-test showed there was no significance difference in residual urine volume in the treatment group and in the control group ($p > 0.05$), after bladder training be done. Either, on the respondent through the acute phase as well as bladder training is done or one day before the catheter is removed.

Discussion

Relationship Between Sex with Residual Urine Volume

General description of the cross table confounding variables (gender and residual urine volume), seen in quantity in the treatment group there was only 1 patient (33.3%) who had residual urine > 100 ml and male sex. The Analyzed further 1 patient who had urine residual volume in the treatment group was 119 ml (> 100 ml). In the control group urine residual volume > 100 ml was found in 1 person respondent-sex male and female 1 person.

The Influence of Bladder Training Initiation

Settings detrusor fibers in the bladder neck area is different in men and women, men have a distribution of circular fibers and these fibers form a sphincter of the bladder neck is effective to prevent the occurrence of retrograde ejaculation. Urethral sphincter (rhabdosphincter) consists of circular striated muscle fibers, which in men rhabdosphincter located right in front of the distal prostate, whereas in women around almost the entire urethra. Rhabdosphincter anatomically distinct from the muscles that form the pelvic floor (Japardi, 2002). Black and Hawks (2005) says that men with more than 40 years of age often occurs BPH and can hamper urine output, whereas in women other than the detrusor muscle anatomy can also be influenced by a history of pregnancy and hormone estrogen.

The presence of tumor is an urgent bladder or urethra earnest disrupt the process of voiding a person (of BPH or myomas). Also cans Neurological conditions affect the patient, Because after the results of CT-SCAN these pengecekan Patients, seen the results of a rather extensive infarction in the cortex. These cortical regions have in Addition to the central nervous system, that pons regulate the process of micturition. P value > 0.05, indicating no linkage Between sex with residual urine. This cans Happen Because there are factors That Affect the residual urine in this study not be detected cans Because there are diagnostic tests to see the condition of stroke Patients are still not done, Such as EEG, cystoscopy, abdominal ultrasound, plain abdominal images, and others.

Age Relations with Urine Residue volume in Treatment Group and Control Group

Structural and functional changes of the bladder in the elderly may inhibit emptying the bladder completely. The cause of this condition is due to the addition of age, anatomy of the bladder becomes more funnel, which is the result of a change in the connective tissue and pelvic muscles are weakened. Kemihpun become increasingly irritable bladder, thereby increasing urgency in urination. Detrusor muscle also becomes more difficult to elongate resulting in decreased contractility of the bladder and reduced bladder capacity. (Black and Hawks, 2005). National Institute on Aging says that age is not a cause of incontinence, but more associated because of other causes, including the urinary tract and vaginal infections, and neurological disorders. (Urinary Incontinence, 2002, retrieved from <http://www.nia.nih.gov>, dated January 20, 2008). Research by Fantl et al on the Efficacy of bladder training in older women with urinary incontinence, the result of 57% reduction in episodes of incontinence with behavioral therapy (1991, in Rovner et.al., 2002. [Http://www.cielo.br/img](http://www.cielo.br/img) /. mht February 1, 2008). Research was

The Influence of Bladder Training Initiation

conducted on elderly women and bladder training in the form of behavioral therapy has succeeded quite well reduce the incidence of incontinence. Fisher's test results on the treatment group p value > 0.05 so that it can be concluded that there was no significant difference between age and residual urine, both in the control group and treatment group in this study. This can be caused by age is not the only factor associated with the volume of residual urine.

Residual Urine Difference Between Treatment Group and Control Group

Looking at data from the study between treatment and control groups, from 14 stroke patients who performed well bladder training conducted since the acute phase and one day before the catheter was removed, who had residual urine >100 ml there were 3 patients. This volume of residual urine was smaller than the normal patient urine residue, so that both types of bladder training with a different prefix starting time to produce the majority of patients had residual urine ≤ 100 ml (normal). The result viewed that the value of statistical tests have shown there was no significant difference between the two types of bladder training. This result was consistent to the concepts involved, if catheterization walk in the long term, then bladder training also needs a long time during the patient inserted a catheter (Smeltzer & Bare, 2004). In the other citation was also suggest that bladder training on short-term catheterization (up to six days) is useful to restore micturition pattern (Roe, 1990, in Macaulay, 2000).

There was no significant difference between the bladder training after the respondents with bladder training through the acute phase with bladder training one day before the catheter was removed in stroke patients, it can be caused by many factors. These factors include the initial conditions of stroke patients who can not fully known, thus varying the conditions the end result is also difficult to predict. For example, the location of cerebral damage at stroke patient, it could not predict to the extent of neurons damage and the occurrence of stroke involution. Residual urine volume when the patient before the catheter can not be obtained fitted the data, because patients get immediate first aid in the ER form of catheter placement, early detection can not be done because there is no tool Bladder scan on the unit. Another factor is the small sample size ($N=14$) was for both groups may affect the calculation of the statististik. The condition of stroke patients who may experience worsening during treatment, it made some respondents dropped out; therefore, the number of respondents decreased at any time. Based on several studies of

micturition disorders in stroke patients shows that it takes a larger sample size of about 37-250 patients in the study period of 6 months - 1 year, although researchers have not found the same research study.

Conclusion

The average amount of residual urine for smaller groups of treatment that is equal to 44.43 ml, whereas for the control group the average number of 111.29 ml urine residue after the initiation of bladder training. Confounding varabel Analysis showed no significant relationship between gender and age with the amount of residual urine in both the control and treatment groups (p value > 0.05). There was no significant difference between treatment groups conducted training bladders from patients through the acute phase with the control group who performed bladder training the day before the catheter is removed. Effect of bladder training in the treatment group conducted training bladders from patients through the acute phase of visible residual urine respondents on average 54.00 ml (standard deviation 144.22 mL) of less than 100 ml.

Acknowledgment

The researcher gratefully thanks to School of Nursing, Faculty of Medicine, Diponegoro University, which give the researcher a aprt of funding for this study. I also give high appreciation to patients who fully participated in this study.

Reference

- Black, J.M. & Hawks, J.H. 2005. *Medical-Surgical Nursing Clinical Management for Positive Outcomes*. (7th ed.). (hlm 2111-2116). St. Louis: Elsevier.
- Christensen B. L & Kockrow E. O. 2006. *Adult Health Nursing*. (5th ed.). Philadelphia: Elseiver, Mosby.
- Dinkes Jateng. 2005. Profil Kesehatan Dinas Kesehatan Jawa Tengah., downloaded from <http://www.dinkesjateng.org/profil2005/bab4.htm>, tanggal 23 Januari 2008.
- Ellis, J. R, & Nowlis, E. A., 1994. *Nursing: A Human Needs Approach*. (5th ed.). Philadelphia : Lippincott Company.
- Fiers S dan Thayer D. 2000. *Incontinence: Nursing Management: Management of intractable Incontinence*. 2nd edition. Editor Duoghty D. St. Louis, Missouri: Mosby.Inc,
- Gray M I, Doughty D. (editor). 2000. *Incontinence: Nursing Management: Physiologic voiding*. (2nd ed.). Mosby.Inc, St. Louis, Missouri.

The Influence of Bladder Training Initiation

- Ritarwan K, 2003, Pengaruh Suhu Tubuh Terhadap Outcome Penderita Stroke yang Dirawat di RSUP H. Adam Malik Medan, <http://www.kalbe.co.id/files/cdk>, downloaded at January 23rd 2008.
- Hikey. J. V. 2003. *The Clinical Practice of Neurological and Neurological Nursing*. (5th ed.). Lippincott William & Wilkins. Philadelphia
- Hudak & Gallo 1996. *Keperawatan Kritis: Pendekatan Holistik* (4th ed.). translated by : EGC. Jakarta
- Hudak, et al. 2005. *Critical Care Nursing, A holistic Approach*. (8th ed.), Philadelphia: Lippincott Williams & Wilkins.
- Japardi I. 2002. Manifestasi Neurologis Gangguan Miksi. <http://library.usu.ac.id/> downloaded Februari 8th 2008.
- Kozier, et al. 2003. *Fundamentals of Nursing, Concepts, Process, and Practice*. (5th ed.). California: Addison-Wesley.
- Lumbantobing. 2001. *Neurogeriatri*. Jakarta : EGC
- Macaulay M., Fillingham S & Douglas (editor). 1997. *Urological Nursing*. (2nd ed.) London : J.Balliere Tindall.
- McClish, et al. 1991. Bladder Training in Older Women With Urinary Incontinence: Relationship Between Outcome and Changes in Urodynamics Observations. <http://www.greenjournal.org/> diunduh tanggal 25 Januari 2008.
- Mulyatsih E., 2003. *Perawatan Pasien Stroke: Panduan untuk Keluarga*. Jakarta: EGC.
- Newman. 2007. *Using The Bladderscan® For Bladder Volume Assessment*, http://www.seekwellness.com/newman_bio.htm, downloaded January 9th 2008.
- Potter & Perry. 2005. *Fundamental of Nursing*. (4th ed.). Volume 1. Jakarta : EGC.
- Smeltzer, S.C., & Bare, B.G. (2004). *Textbook of Medical-Surgical Nursing*. (10th ed.), Philadelphia: Lippincott Williams & Wilkins.
- Roe, et. al. 2007. *Sistematic Reviews of Bladder training and Voiding Programmes in Adults: A Synopsis of Findings on Theory and Methods Using Metastudy Techniques*. <http://www.blackwell-synergy.com> January 30th 2008.

Effect of Structured Bladder Training in Urinary Incontinence

Asavari J. Gaikwad¹, Suraj B. Kanase²

¹Intern, Faculty of Physiotherapy, Krishna Institute of Medical Sciences Deemed To Be University, Karad, Maharashtra, India, ²Associate Professor, Department of Neurosciences, Faculty of Physiotherapy, Krishna Institute of Medical Sciences Deemed To Be University, Karad, Maharashtra, India.

Abstract

Introduction: Urinary incontinence is considered a very distressing condition affecting multiple domains of human life i.e. social, physical, psychological, occupational, domestic, and sexual aspects experienced by all ages. However, only pathophysiology varies according to each condition, and therefore demanding different therapeutic approaches according to the mechanism of urine loss. This study was designed to find out the effect of structured bladder training in urinary incontinence. To find out effect of conventional bladder training in urinary incontinence. To compare the effect between two on the basis of demographic variables.

Method: This was an experimental study with the total of 28 spinal cord injury patients who had urinary incontinence were selected with random allocation from the Krishna Institute of Medical Sciences, Karad in this study. Their ages were 20 years and above according to inclusion and exclusion criteria. Prior consent was taken. They were divided into two groups: group A and group B. Group A received conventional therapy and group B received structured bladder training with conventional training. Pre assessment was taken prior to the treatment. These subjects were treated for 4 weeks, 3 days per week, 30 – 45 min. After 4 weeks the post treatment assessment was taken. The outcome measures were included King's Health Questionnaire and 1 hour Pad Test.

Results: The obtained results showed a statistically highly significant improvement ($p < 0.0001$) noted in the urinary incontinence in spinal cord injury patients.

Conclusion: It was concluded that structured bladder training was effective in controlling urinary incontinence secondary to spinal cord injury.

Key words: Spinal cord injury, Urinary Incontinence, King's health questionnaire, Pad test.

Introduction

Spinal cord injury (SCI) results in tremendous change in individual's life therefore, a relatively high cost – injury¹. The well known consequence of SCI is paralysis². It also affects other body functions, including

bladder, bowel, respiratory, cardiovascular and sexual function². Generally SCI affect young adults. The majority of population with SCI are male accounting (78.3%). Females accounting for (21.7%)¹.

Etiologically, SCI can be classified as traumatic and non – traumatic injuries. Traumatic injuries being the most frequent cause resulting from motor vehicle accidents (40.4%), falls (27.9%), violence (15%) and sports (8.0%). Non – traumatic damage occurs in adult population mainly from disease or pathological influence accounting for 39% of all SCIs. SCI can result in either tetraplegia, cervical tensions being the cause (56%) or paraplegia due to thoracic, lumbar and sacral involvement (43%)¹.

Corresponding Author:

Suraj B. Kanase,

Associate Professor, Department of Neurosciences, Faculty of Physiotherapy, Krishna Institute of Medical Sciences Deemed To Be University, Karad, Maharashtra, India. Contact number: 9881577676
Email id: drsurajkanase7@gmail.com
asavariGaikwad1997@gmail.com

Bladder dysfunction is one of the most frequent complaint noted after SCI³. Within first year of injury, about 74 – 80% of SCI individuals reports some degree of bladder dysfunction⁴. SCI individuals experiences neurogenic bladder or areflexic bladder with neurogenic being more common with detrusor overactivity⁵. Neurologically, continence is controlled at three levels spinal, pontine and cerebral level working harmoniously by means of combined somatic and autonomic pathways⁶.

The spinal control for micturition occurs at sacral level (S2, S3, S4) with main co-ordination center is located in the pontine mesencephalic reticular formation. This intact pathway between them (pontine and sacral centers) allows for co-ordinated voiding i.e. relaxation of urethral sphincter and contraction of detrusor muscle⁷. SCI alters this complex reflexive and voluntary control of micturition.

Initially, during the stage of spinal shock, the urinary bladder seems flaccid with all bladder reflexes and muscle actions are abolished³. As spinal shock weans off which lasting from few days to several weeks, bladder can either turn automatic or autonomous³. Individuals with lesions above the conus medullaris and sacral segments develop a ‘spastic (UMN or automatic bladder)’¹. It commonly develops with transverse spinal cord lesion above T10 – T11. The reflex arc remains intact, thereby reflex emptying of bladder takes place³. With lesion at conus medullaris or sacral segments, ‘flaccid (LMN or autonomous bladder)’¹. There is no reflex action of detrusor muscle due to involvement of micturition reflex center³.

Common urinary symptoms noted after SCI are urinary retention, incontinence and increased urinary frequency/urgency⁴. Urinary incontinence is most common, affecting 40 – 50% of SCI population⁵. Prevalence rate being more in women between 15 – 64 years of age⁸ with decrease in the quality of life in individuals with SCI⁹. Inappropriate bladder management can lead to high pressure within the bladder resulting in the further complications i.e. recurrent urinary tract infection, urosepsis and progressive renal failure and renal calculi, etc⁴.

Bladder management is one of the important component of the treatment in individuals with SCI⁹. Primary goal of bladder management is to minimize these urinary tract complications¹. Bladder training

program can be achieved by intermittent catheterization or timed voiding program³. Bladder training for urinary incontinence is an upcoming area for physiotherapist because medical and nursing healthcare professionals often overview strength training for bladder muscles. Structured bladder training program contains physiotherapy interventions such as pelvic floor muscle strengthening (PFMs), behavioural training, surface electrical stimulation¹⁰. Often physiotherapy treatment proves to be long lasting and better for strengthening of bladder muscles.

Materials and Methodology

Study Type: Experimental Study.

Study Design: Comparative Study.

Place of Study: Krishna Institute of Medical Sciences, Karad.

Sampling Method: Simple Random Sampling with Random Allocation.

Sample Size: 28.

Study Duration: 3 Months.

Inclusion Criteria:

- Subjects with urinary incontinence secondary to spinal cord injury.
- Subjects with both genders.
- Age group 20 years and above.

Exclusion Criteria:

- Complications other than bladder dysfunction.
- Bladder dysfunction secondary to other causes than spinal cord injury.

Outcome Measures:

- King’s Health Questionnaire – It consists of 21 questions, which can specifically reflect the influence of urinary problem on individual’s quality of life. There are two main parts, first part is related to general health and incontinence impact. The second part contains six health domains. In addition, the third part is related to symptom severity scale. Each domain score is scale from 0 to 100 and higher scores mean a worse quality of life.

- Pad Test – It is standardised method for

quantifying urine loss that can be performed at work or home. The short – term pad test is most commonly used which is performed over 1 hour. For this, an increase of 1 to 10 g represents mild incontinence, 11 – 50 g represents moderate incontinence and > 50 g represents severe incontinence.

Procedure:

Total 28 participants were divided into two groups. In Group A, total 14 participants were included in which 9 males and 5 females. In Group B, total 14 participants were included in which 8 males and 6 females. The informed consent were taken from the participants after approval of ethical committee. Participants were assessed for urinary incontinence secondary to spinal cord injury prior to the treatment for which King's health questionnaire and 1 – hour Pad test were used. Participants were explained about the procedure of the study. Group A received conventional exercises and Group B received structured bladder training with conventional exercises. In Group A, Pharmacological Therapy, Physiotherapy : Electrical stimulation (TENS: Frequency- 100 Hz, Pulse width- 200 to 400 ms, Intensity- tolerable limit, Duration- 20 min) and exercise training, External Appliances, Medical and Nursing Care – Timed Voiding Program, Intermittent Catheterization. In Group B, Pelvic floor muscle exercises – Kegel's exercises, Breathing Exercises, Relaxation Exercises, Strength Training for abdominals, back and thighs. These participants were treated for 4 weeks, 3 days per week, 30 – 45 min. After 4 weeks the post treatment assessment was taken with the help of King's health

questionnaire and 1 – hour pad test. The interpretation of the study was done on the basis of comparing pre and post test assessment. Thus, statistical analysis was done.

Data of all outcome measures was measured as pre treatment and post treatment values. Mean and Standard deviation was calculated for each outcome measure using Instat. Within group comparison was done by applying 'Paired t - test' to pre and post treatment values of same group for all outcome measures. Between groups comparison was done by applying 'Unpaired t - test' which included Group A: Conventional Exercises and Group B: Structured bladder training with conventional exercises.

Results

The distribution of study participants based on gender showed that males accounted for (61%) and females (39%). However, the severity of urinary incontinence was found in females. King's Health Questionnaire showed that Group B has more significant improvement levels with decreased mean values than Group A (Table No. 1, 2, 3, 4, 5, and 6). Within the group comparison for pad test, pre and post training there was extremely significant improvement noted in Group A ($p = <0.0001$) and Group B ($p = <0.0001$). Between the group comparison for pad test, post training there was significant improvement noted in Group A and Group B ($p = 0.0288$). Thus, Pad test showed significant improvement that is decrease in mean weight. Group B had greater efficacious mean value as compared to Group A.

1) Within The Group Comparison:-

A. KING'S HEALTH QUESTIONNAIRE-

Table No. 1: King's Health Questionnaire – Part I

Part I	Group	Pre Training	Post Training	p value	t value	Mean Difference	Result
GHP	Group A	57.14±15.28	33.92±12.43	< 0.0001	13.000	23.214	ES
	Group B	64.28±18.89	23.21±11.86	<0.0001	12.362	41.071	ES
II	Group A	52.32±17.10	40.43±14.18	0.0186	2.687	11.893	S
	Group B	49.95±17.27	28.54±12.09	0.0003	4.837	21.407	ES

Table No. 2: King's Health Questionnaire – Part II

Part II	Group	Pre Training	Post Training	p value	t value	Mean Difference	Result
RL	Group A	47.58±15.81	39.25±15.48	0.0285	2.463	8.336	S
	Group B	44.00±18.02	24.96±18.21	<0.0001	7.984	19.043	ES
PL	Group A	45.20±18.98	39.24±19.18	0.0186	2.687	5.964	S
	Group B	42.82±22.39	24.96±15.68	<0.0001	6.514	17.864	ES
SL	Group A	38.85±17.81	35.67±18.56	0.0401	2.280	3.171	S
	Group B	31.71±16.20	21.00±14.79	<0.0001	5.687	10.707	ES
EM	Group A	35.67±16.96	30.12±15.95	0.0032	3.606	5.550	VS
	Group B	41.24±20.61	18.23±10.30	0.0008	4.368	22.993	ES
SE	Group A	44.02±18.04	33.29±14.62	0.0022	3.801	10.729	VS
	Group B	48.76±22.13	23.75±8.57	0.0003	4.839	25.007	ES
SM	Group A	44.82±11.66	34.5±13.02	0.0022	3.799	11.321	VS
	Group B	40.45±11.72	24.37±12.43	<0.0001	7.236	16.079	ES

Table No. 3: King's Health Questionnaire – Part III

Part III	Group	Pre Training	Post Training	p value	t value	Mean Difference	Result
SSS	Group A	8.21±2.72	7.21±2.51	0.0001	5.508	1.000	ES
	Group B	8.50±2.56	5.28±1.63	<0.0001	7.398	3.214	ES

2) Between The Group Comparison:-**A. KING'S HEALTH QUESTIONNAIRE-****Table No. 4: King's Health Questionnaire – Part I**

Part I	Group A	Group B	p value	t value	Result
GHP	33.92±12.43	23.21±11.86	0.0277	2.333	S
II	40.43±14.18	28.54±12.09	0.0245	2.388	S

Table No. 5: King's Health Questionnaire – Part II

Part II	Group A	Group B	p value	t value	Result
RL	39.25±15.48	24.96±18.21	0.0342	2.236	S
PL	39.24±19.18	24.96±15.68	0.0405	2.156	S
SL	35.67±18.56	21.00±14.79	0.0289	2.313	S
EM	30.12±15.95	18.23±10.30	0.0271	2.343	S
SE	33.29±14.62	23.75±8.57	0.0452	2.104	S
SM	34.50±13.02	24.37±12.43	0.0452	2.104	S

Table No. 6: King's Health Questionnaire – Part III

Part III	Group A	Group B	p value	t value	Result
SSS	7.21±2.51	5.28±1.63	0.0237	2.403	S

Discussion

In general, major goal of this study was to correct the incontinence levels of patients with spinal cord injury and thereby improving quality of life of the patients. Also, secondly to compare the two treatments that are conventional treatment and structured bladder training program with conventional treatment, and find out which best improves the incontinence.

Urinary incontinence is considered a very distressing condition affecting multiple domains of human life i.e. social, physical, psychological, occupational, domestic, and sexual aspects experienced by all ages. However, only pathophysiology varies according to each condition, and therefore demanding different therapeutic approaches according to the mechanism of urine loss¹¹.

In previous study, "Effects of different bladder management methods on the quality of life in patients with traumatic spinal cord injury" by Y Akkoc was found that voiding dysfunction is observed in most individuals with spinal cord injury even in patients who can ambulate. It is associated with further increase in complications and decrease in quality of life⁹. Another study, "Treatment of Urinary Incontinence in Women With Spinal Cord Injury" by Marlene Elmelund was stated that spinal cord injury individuals often experience neurogenic bladder dysfunction with neurogenic detrusor overactivity or

areflexic bladder⁵.

According to the epidemiological studies, it is found that upto 81% of individuals with spinal cord injury reports with neurogenic bladder¹⁰.

The present study was conducted with 28 subjects. It was found that male gender (61%), was more affected than females (39%). Also, the study stated that majority of population with spinal cord injury are male (78.3%)¹. However, it was found that level of incontinence was high in women. In a study, "Single blind, randomised controlled trial of pelvic floor exercises, electrical stimulation, vaginal cones, and no treatment in management of genuine stress incontinence in women" by Kari Bø stated that urinary incontinence is more common in women than in men⁸.

In present study, we used King's Health Questionnaire and pad test. In a study, by Kikuo Okamura stated that King's Health Questionnaire was reliable and valid for investigating relationship for general lower urinary tract symptoms in future studies for both gender¹². Also, short – term pad test was second outcome measure stated a strong specificity which varies between 65 and 89%¹³. Results indicated significant improvement in both outcome measures for both conventional and experimental group.

Furthermore, when outcome measures were compared between groups, there was significant difference between both. Though, both groups are effective, group B with structured bladder training along with conventional training proved far more efficacious.

The efficacy of group B can be marked with significant difference in mean improvement values seen in outcome measures using 'Unpaired t - test'. When King's Health Questionnaire was analyzed, it showed that group B has more significant improvement levels with decreased mean values. Part I including two components, general health perceptions and incontinence impact showed mean improvement with 23.21 and 28.54 respectively. Part II including role limitations, physical limitations, social limitations, emotions, sleep / energy, and severity measures showed 24.96, 24.96, 21.00, 18.23, 23.75, and 24.37 respectively. One component that is personal relationships was excluded in the study from part II because possible response of this component treat as missing value. Part III includes symptom severity scale showed mean improvement with 5.28. According to previous study, "The relationship between bladder management and health – related quality of life in patients with spinal cord injury in the UK" by CW Liu had used King's Health Questionnaire in which the mean improvement value gained significantly co – relate with the findings in present study¹⁴. Second outcome measure, short – term pad test showed mean improvement with 7.28. But, however there are no such literature to support the above finding and therefore need to be investigated further.

In last few years, several studies have demonstrated different results regarding effect of structured bladder training in urinary incontinence. Structured bladder training with conventional treatment are a valuable treatment option. Additionally, there are no much published studies that specifically uses structured bladder training program in control of incontinence in spinal cord injury individuals. This study had some limitations like small sample size. More studies are needed to evaluate a longer followup time and also compare treatment in other conditions.

Conclusion

The study concluded that structured bladder training was effective in controlling urinary incontinence secondary to spinal cord injury.

Conflict of Interest: There is no any conflicts of

interest.

Source of Funding: This study is funded by Krishna Institute of Medical Sciences Deemed To Be University (KIMSUDU), Karad.

References

1. Susan B. O'Sullivan, Physical Rehabilitation, 6th edition: 889.
2. Harvey LA, Physiotherapy rehabilitation for people with spinal cord injuries, Journal of Physiotherapy, 2016, 62:4 – 11.
3. Glady SR, Physiotherapy in Neuro-conditions, 2006: 218 – 219.
4. Darshan P. Patel, Sara M. Lenherr, Study Protocol: patient reported outcomes for bladder management strategies in spinal cord injury, BMC Urology, (2017) 17:95.
5. Marlene Elmeland, Niels Klarskov, Treatment of Urinary Incontinence in Women With Spinal Cord Injury, Clinical Trials.gov NCT02427230, April 27, 2015.
6. Jill Mantle, Jeanette Haslam, Physiotherapy in Obstetrics and Gynaecology, 2nd Edition: 333.
7. Barbara T Benevento, Marca L Sipski, Neurogenic Bladder, Neurogenic Bowel, and Sexual Dysfunction in People With Spinal Cord Injury, Physical Therapy, June 2002, Volume 82: Number 6.
8. Kari Bø, Trygve Talseth, Single blind, randomised controlled trial of pelvic floor exercises, electrical stimulation, vaginal cones, and no treatment in management of genuine stress incontinence in women, BMJ, 20 February 1999, Volume 318: 487 – 93.
9. Y Akkoc¹, Effects of different bladder management methods on the quality of life in patients with traumatic spinal cord injury, Spinal Cord, 2013, 51, 226 – 231.
10. Moore, J. L.; Neville, C. E., Treatment of Urinary Incontinence Following Spinal Cord Injury With Traditional Physical Therapy Techniques: A Case Report, Journal of Neurologic Physical Therapy: December 2006, Volume 30, Issue 4 – p 216 – 217.
11. Carla Maria de Abreu Pereira, Effect of physiotherapy treatment for urinary incontinence in patients with multiple sclerosis, Journal of Physical Therapy Science.

12. Kikuo Okamura, Reliability and validity of the king's health questionnaire for lower urinary tract symptoms in both genders, *BJU International*, 27 May 2009, Volume 103, Issue 12.
13. Cristine Homsí Jorge Ferreira, The Pad Test for urinary incontinence in women, *Journal of Physiotherapy* 61 (2015) 98.
14. CW Liu, The relationship between bladder management and health – related quality of life in patients with spinal cord injury in the UK, *Spinal Cord* (2010) 48, 319 – 324.

A retrospective study of neuromuscular electrical stimulation for treating women with stroke incontinence

Shu-Xia Shen, MM, Yun Liu, MM*

Abstract

This retrospective study evaluated the effect of using neuromuscular electrical stimulation (NMES) for the treatment of post-stroke urinary incontinence (PSUI) among female population in China.

A total of 163 eligible patients with PSUI were included in this study. Of these, 103 patients were assigned to a treatment group, and 60 subjects were assigned to a control group. All patients in both groups received bladder training. In addition, patients in the treatment group also received NMES. All patients were treated for a total of 8 weeks. The outcome measurements included the amount of urine leakage, urinary symptoms and quality of life. The urinary symptoms were measured by the Bristol Female Urinary Symptoms Questionnaire (BFUSQ) score, and the quality of life was assessed by the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) score. In addition, adverse events were also documented in this study.

After 4-week treatment, patients who received NMES did not exert better outcomes in the amount of urine leakage, urinary symptoms, measured by BFUSQ scale, and the quality of life, assessed by ICIQ-SF scale. However, after 8-week treatment, patients in the treatment group showed greater effect in reducing the amount of urine leakage ($P < .01$), enhancing urinary symptoms, as measured by BFUSQ scale ($P < .01$), and improving the quality of life, as assessed by ICIQ-SF scale ($P < .01$), compared with patients in the control group. In addition, no adverse event was recorded during the period of 8-week treatment in this study.

The results of this study indicated that NMES may benefit for patients with PSUI after 8-week treatment. Future studies should focus on warranting the results of this study.

Abbreviations: BFUSQ = Bristol Female Urinary Symptoms Questionnaire, ICIQ-SF = International Consultation on Incontinence Questionnaire-Short Form, NMES = neuromuscular electrical stimulation, PSUI = post-stroke urinary incontinence, UI = urinary incontinence.

Keywords: effect, neuromuscular electrical stimulation, post stroke, urinary incontinence

1. Introduction

Urinary incontinence (UI) is one of the most common complications after stroke.^{11–41} It often presents as the involuntary leakage of urine.^{15–7} One study reported that about 40% to 60% of patients after stroke experienced UI condition.¹⁸ The other studies also reported that the prevalence of post-stroke UI (PSUI) ranges between 32% to 79% at admission and 25% at hospital discharge.^{9–11} Additionally, it still increases to 15% one year later.¹¹ This condition can result in the physical and psychological issues for patients with PSUI.¹² It is estimated that the daily cost for the treatment of such condition is about \$185.60 for each patient with PSUI.¹³ Most importantly, it can

also lead to moderate or severe disability and high mortality.¹⁴ It has been reported that such patients often experience 52% death by discharge, and 60% within 6 months after stroke.¹⁴

Several management options have been reported to treat this condition, including behavioral therapy, supportive device, pharmacological intervention, and surgical treatment.^{15–18} Behavioral therapies mainly consist of healthy bladder habits and training techniques.¹⁹ It helps patients to change their lifestyle, and to teach them to control and enhance continence ability. Supportive devices are often used as the first-line intervention for patients, who have difficulties in moving or using pads or catheters.²⁰ Additionally, pharmacological therapies usually result in a variety of side effects.²¹ As for surgical treatment, most patients rarely received it, especially in neurological injury patients.²² Thus, more safe and efficacious interventions are urgently needed to treat PSUI.

It has been reported that alternative treatments, such as herbal medicine, acupuncture, moxibustion, and neuromuscular electrical stimulation (NMES) are used to treat this condition.^{23–26} However, no data on the effect of NMES for treating patients with PSUI are available among Chinese female population. Therefore, this retrospective study assessed the effect of NMES for PSUI.

2. Patients and methods

2.1. Ethics

This retrospective study was approved by the ethics medical committee of Yulin No.2 Hospital. It was conducted at this

Editor: Qinrong Zhang.

The authors declare no conflicts of interest.

Department of Neurology, Yulin No.2 Hospital, Yulin, Shaanxi, China.

* Correspondence: Yun Liu, Department of Neurology, Yulin No.2 Hospital, Cross of Wenhua South Road and Kangnan Road, Yuyang District, Yulin, 719000, China (e-mail: yang1983001014@sina.com).

Copyright © 2018 the Author(s). Published by Wolters Kluwer Health, Inc. This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial License 4.0 (CCBY-NC), where it is permissible to download, share, remix, transform, and buildup the work provided it is properly cited. The work cannot be used commercially without permission from the journal.

Medicine (2018) 97:26(e11264)

Received: 27 April 2018 / Accepted: 4 June 2018

<http://dx.doi.org/10.1097/MD.00000000000011264>

hospital between June 2014 and July 2017. All subjects provided the written informed consent.

2.2. Design

Two investigators independently selected the patient cases from Yulin No.2 Hospital. A total of 163 eligible adult female patients with PSUI were included in this retrospective study. All these included patients were divided into a treatment group ($n=103$), and a control group ($n=60$). All patients in both groups administered bladder training. In addition, patients in the treatment group also underwent NMES. Both groups received a total of 8 weeks intervention. The outcomes consisted of the amount of urine leakage, urinary symptoms, and quality of life. All the outcomes were evaluated before and after 4-week and 8-week treatment respectively. The data analyst was blinded in this study.

2.3. Patients

All patients were confirmed diagnosed with PSUI by the diagnosis criteria of the American Stroke Association and the International Continence Society. However, this study excluded patients if they were pregnancy, unconsciousness, psychiatric problems, severe organ diseases, having a cardiac pacemaker, or failed to have normal communication ability and recognition. In addition, the cases were also excluded if the patients were administered electrical stimulation therapy, including electroacupuncture 1 month before the study. Furthermore, the cases with incomplete information were also excluded.

2.4. Treatment schedule

All patients in both groups administered bladder training by pelvic muscle exercises, which is a very important form of behavior therapy. It may help patients manage urinary incontinence, and change their urination habits. Each patient was asked to practice this exercise for 5 minutes each session, 1 session daily for a total of 8 weeks.

In addition, patients in the treatment group also underwent NMES therapy at bilateral acupoints Baliao (BL31, over the first sacral foramen; BL32, over the second sacral foramen; BL33, over the third sacral foramen; BL34, over the fourth sacral foramen) and Huiyang (BL35, 0.5 cun lateral to the posterior midline, on the level of the tip of the coccyx) for 30 minutes daily, each pair of points 6 minutes, 3 times weekly for a total of 8 weeks. The NMES device (HANS-100, Nanjing Jisheng Medical Technology Co., Ltd) was applied at a frequency of 2 to 100 Hz. The current intensity of NMES was gradually increased to the maximum tolerance according to each patient. Each device had 2 gel pads attached to a silicon patch. The patches were attached to the local selected acupoint area.

2.5. Outcome measurements

The amount of urine leakage, urinary symptoms and quality of life were utilized to assess the effect of NMES therapy. The amount of urine leakage was measured by the 1 hour pad test. Urinary symptoms were measured by the Bristol Female Urinary Symptoms Questionnaire (BFUSQ) score, with a higher score meaning poorer condition or quality of life,^[27] and quality of life was measured by the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) score.^[28] It ranges from 0

Table 1
General characteristic of the included patients.

Characteristics	Treatment group (n=103)	Control group (n=60)	P
Age, ys	58.6 (10.2)	56.4 (11.3)	.21
Race (Chinese Han)	103 (100.0)	60 (100.0)	–
BMI, kg/m ²	23.5 (2.7)	22.9 (2.4)	.14
Duration of post stroke, mo	10.8 (3.6)	10.3 (4.1)	.43
Duration of PSUI, mo	5.3 (2.4)	5.5 (2.2)	.59
Co-morbidities			
Cardiovascular diseases	10 (9.7)	7 (11.7)	.69
Respiratory diseases	4 (3.9)	3 (5.0)	.74
Osteoarthritis diseases	4 (3.9)	1 (1.7)	.44
Other	7 (6.8)	4 (6.7)	.97

Data are present as mean ± standard deviation or number (%).
BMI=body mass index, PSUI=post-stroke urinary incontinence.

to 21, with a higher score indicating greater severity. Both scales of BFUSQ and ICIQ-SF were validated before they were utilized in this study. In addition, adverse events were also recorded during the treatment period.

2.6. Statistical analysis

The outcome data was analyzed by the SAS package (Version 9.1; SAS Institute Inc., Cary, NC). Mann-Whitney *U* test or *t* test were applied to analyze the continuous data, while χ^2 test was used to analyze the categorical data. The statistical significance level was set at $P < .05$.

3. Results

The general characteristics of patients in both groups are listed in Table 1. The comparison did not show significant differences in all characteristics, as well as the outcome measurements before the study (Table 2) between 2 groups. Those characteristics consisted of age, race, and body mass index, duration of post stroke, duration of PSUI, and comorbidities (Table 1).

After 4-week treatment, all outcomes in the treatment group did not demonstrate better promising effect in decreasing the amount of urine leakage decrease ($P = .82$), enhancing the urinary symptoms, as measured by the BFUSQ scale (inconvenience in activities of daily life, $P = .17$; urinary symptoms, $P = .63$), and improving the quality of life, as assessed by the ICIQ-SF scale ($P = .72$), compared to the control group (Table 3).

After 8-week treatment, NMES exerted greater outcomes in the amount of urine leakage ($P < .01$), symptoms decrease, as

Table 2
Comparison of outcomes measurements before the treatment.

Outcomes	Treatment group (n=103)	Control group (n=60)	P
Urine leakage, mL	20.1 (15.6)	19.5 (16.1)	.82
BFUSQ score			
Inconvenience in activities of daily life	41.3 (7.8)	39.5 (8.2)	.17
Urinary symptoms	12.4 (4.0)	12.1 (3.7)	.63
ICIQ-SF score	9.7 (3.5)	9.5 (3.3)	.72

Data are present as mean ± standard deviation.
BFUSQ=Bristol Female Urinary Symptoms Questionnaire, ICIQ-SF=International Consultation on Incontinence Questionnaire-Short Form.

Table 3
Comparison of outcome measurements after 4-week treatment (change from before treatment).

Outcomes	Treatment group (n=103)	Control group (n=60)	Difference	P
Urine leakage, mL	-6.5 (-9.1, -4.2)	-4.5 (-7.3, -2.0)	-2.0 (-3.5, -0.9)	.07
BFUSQ score				
Inconvenience in activities of daily life	-9.3 (-12.6, -7.5)	-7.1 (-9.2, -5.9)	-2.2 (-3.7, -1.0)	.10
Urinary symptoms	-3.0 (-5.0, -2.2)	-1.9 (-3.4, -0.8)	-1.0 (-1.8, -0.4)	.25
ICIQ-SF score	-1.8 (-2.7, -1.0)	-0.9 (-1.7, -0.3)	-0.8 (-1.3, -0.3)	.19

Data are present as mean (range).

BFUSQ=Bristol Female Urinary Symptoms Questionnaire, ICIQ-SF=International Consultation on Incontinence Questionnaire-Short Form.

Table 4
Comparison of outcome measurements after 8-week treatment (change from before treatment).

Outcomes	Treatment group (n=103)	Control group (n=60)	Difference	P
Urine leakage, mL	-10.9 (-13.4, -7.2)	-5.0 (-7.9, -2.6)	-6.0 (-8.1, -4.3)	<.01
BFUSQ score				
Inconvenience in activities of daily life	-21.7 (-24.9, -17.7)	-8.6 (-10.5, -6.4)	-13.1 (-16.2, -9.9)	<.01
Urinary symptoms	-7.3 (-10.1, -4.9)	-2.5 (-4.2, -1.1)	-4.8 (-6.3, -3.3)	<.01
ICIQ-SF score	-4.2 (-6.6, -2.5)	-1.3 (-2.4, -0.6)	-2.9 (-4.1, -1.6)	<.01

Data are present as mean \pm standard deviation.

BFUSQ=Bristol Female Urinary Symptoms Questionnaire, ICIQ-SF=International Consultation on Incontinence Questionnaire-Short Form.

conducted by the BFUSQ score ($P < .01$), and quality of life, as evaluated by the ICIQ-SF ($P < .01$), compared with these outcomes in the control group (Table 4). No adverse event was recorded in both groups during the 8-week treatment period in this study.

4. Discussion

This retrospective study showed encouraging outcomes after 8-week NMES treatment in patients with PSUI. To our knowledge, no data are available regarding the NMES therapy for treating PSUI in individuals in China presently. In this study, we first utilized NMES intervention for the treatment of PSUI. The findings indicated promising effects of NMES in treating women with PSUI.

Previous related studies have reported promising effects of electroacupuncture for the treatment of patients with PSUI.^{14,25} One pilot study found that electroacupuncture may effectively and safely relieve the symptoms and enhance quality of life in women with pure PSUI.¹⁴ The other study reported that acupuncture treatment can contribute to the less urine leakage after 6 weeks in women with stress urinary incontinence.^{12,51}

In this study, our results showed that NMES can significantly reduce the amount of urine leakage; enhance the urinary symptoms, assessed by the BFUSQ scale; and improve the quality of life, measured by the ICIQ-SF scale. Moreover, no adverse event was documented during the period of the treatment. It indicated that NMES may be safe and efficacious for women with PSUI in China.

This study has several limitations. First, this study had an intrinsic limitation because of the retrospective study. Second, this study only evaluated the effect and safety of NMES for 8-weeks treatment period. Third, this study did not include follow-up assessment after 8-week treatment cessation. All those limitations may impact the results of this study.

5. Conclusion

The results of this study demonstrated that NMES therapy may be efficacious and safety for treating patients with PSUI. Further studies are still needed to warrant the results of this study.

Author contributions

Conceptualization: Shu-Xia Shen, Yun Liu.

Data curation: Shu-Xia Shen, Yun Liu.

Formal analysis: Shu-Xia Shen.

Investigation: Yun Liu.

Methodology: Shu-Xia Shen.

Project administration: Yun Liu.

Resources: Shu-Xia Shen, Yun Liu.

Software: Shu-Xia Shen.

Supervision: Yun Liu.

Validation: Yun Liu.

Visualization: Yun Liu.

Writing – original draft: Shu-Xia Shen, Yun Liu.

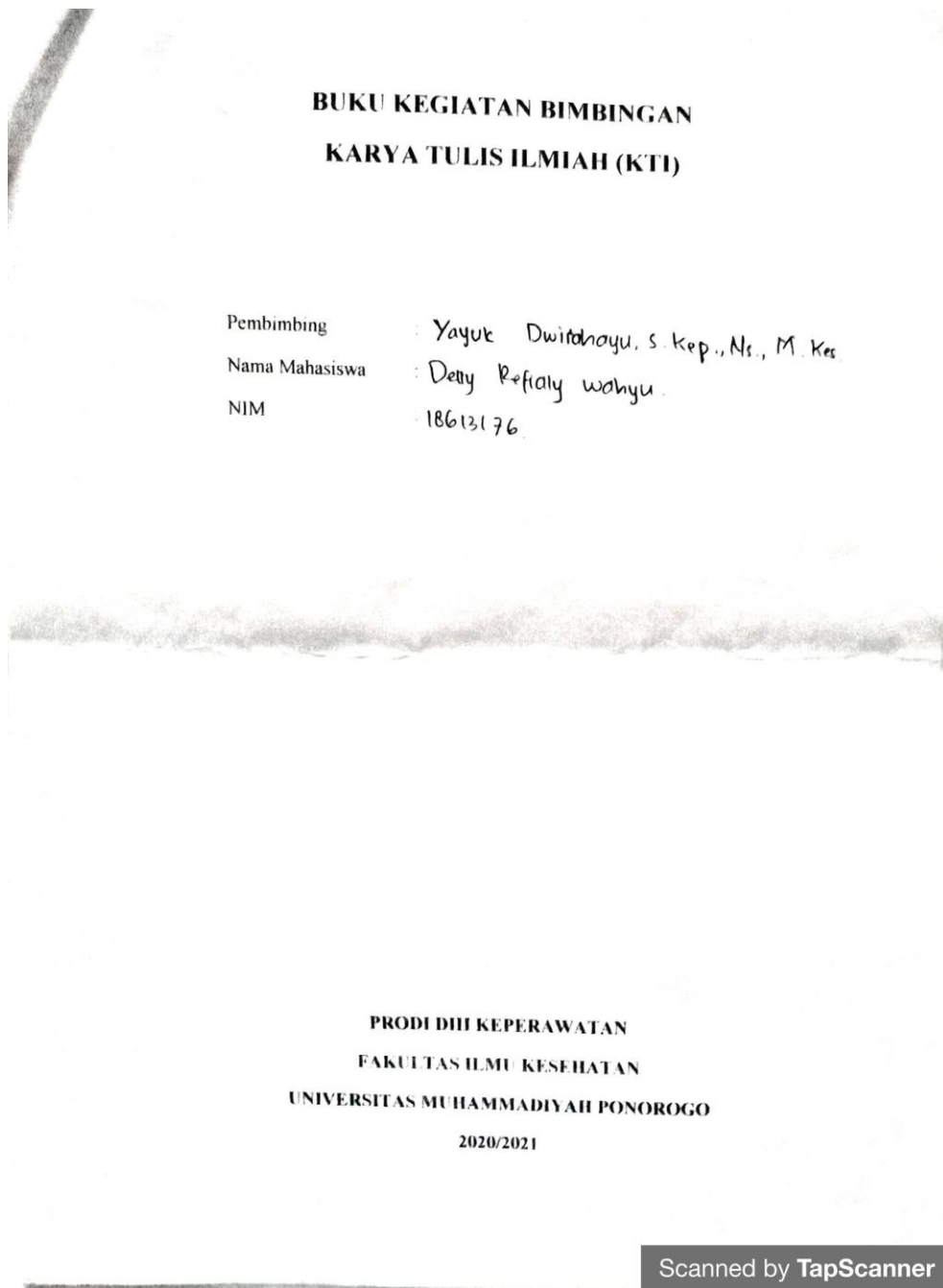
Writing – review & editing: Shu-Xia Shen, Yun Liu.







References

- [1] Bergman J, Robertson JR, Elia G. Effects of a magnetic field on pelvic floor muscle function in women with stress urinary incontinence. *Altern Ther Health Med* 2004;10:70–2.
- [2] Hasanov E, Hasanov M, Kuria IM, et al. Effects of tamoxifen on urinary incontinence: case report and review of literature. *Medicine (Baltimore)* 2017;96:e6785.
- [3] Cormio L, Mancini V, Luzzi G, et al. Surgical management of female pelvic organ prolapse with and without urinary incontinence: a single center experience. *Medicine (Baltimore)* 2017;96:e7914.
- [4] Xu H, Liu B, Wu J, et al. A pilot randomized placebo controlled trial of electroacupuncture for women with pure stress urinary incontinence. *PLoS One* 2016;11:e0150821.
- [5] Zhao Y, Xiao M, Tang F, et al. The effect of water immersion delivery on the strength of pelvic floor muscle and pelvic floor disorders during postpartum period: an experimental study. *Medicine (Baltimore)* 2017;96:e8124.

- [6] Choi JB, Yoon BI, Han KD, et al. Urinary incontinence is associated with the development of peptic ulcers in adult women: data from the KNHANES IV. *Medicine (Baltimore)* 2017;96:e8266.
- [7] Huang W, Li X, Wang Y, et al. Electroacupuncture for women with stress urinary incontinence: protocol for a systematic review and meta-analysis. *Medicine (Baltimore)* 2017;96:e9110.
- [8] Abrams P, Andersson KE, Birder L, et al. Fourth International Consultation on Incontinence Recommendations of the International Scientific Committee: evaluation and treatment of urinary incontinence, pelvic organ prolapse, and fecal incontinence. *Neurourol Urodyn* 2010;29:213–40.
- [9] Brittain KR, Peet SM, Potter JF, et al. Prevalence and management of urinary incontinence in stroke survivors. *Age Ageing* 1999;28:509–11.
- [10] Marinkovic SP, Badlani G. Voiding and sexual dysfunction after cerebrovascular accidents. *J Urol* 2001;165:359–70.
- [11] Booth J, Kumlien S, Zang Y, et al. Rehabilitation nurses practices in relation to urinary incontinence following stroke: a cross-cultural comparison. *J Clin Nurs* 2009;18:1049–58.
- [12] Summers D, Leonard A, Wentworth D, et al. Comprehensive overview of nursing and interdisciplinary care of the acute ischemic stroke patient a scientific statement from the American Heart Association. *Stroke* 2009;40:2911–44.
- [13] Green JP, Smoker I, Ho MT, et al. Urinary incontinence in subacute care—a retrospective analysis of clinical outcomes and costs. *Med J Aust* 2003;178:550–3.
- [14] Nakayama H, Jørgensen H, Pedersen P, et al. Prevalence and risk factors of incontinence after stroke. The Copenhagen stroke study. *Stroke* 1997;28:58–62.
- [15] Dumoulin C, Korner-Bitensky N, Tannenbaum C. Urinary incontinence after stroke: does rehabilitation make a difference? A systematic review of the effectiveness of behavioral therapy. *Top Stroke Rehabil* 2005;12:66–76.
- [16] Jundt K, Friese K. Female urinary incontinence. *MMW Fortschr Med* 2005;147:26–9.
- [17] Song QX, Balog BM, Lin DL, et al. Combination histamine and serotonin treatment after simulated childbirth injury improves stress urinary incontinence. *Neurourol Urodyn* 2016;35:703–10.
- [18] Johnston S. Stress urinary incontinence treatment: focus should be on identifying best candidates for surgical success in the first place. *Can Urol Assoc J* 2017;11:281–2.
- [19] Wyman JF, Burgio KL, Newman DK. Practical aspects of lifestyle modifications and behavioural interventions in the treatment of overactive bladder and urgency urinary incontinence. *Int J Clin Pract* 2009;63:1177–91.
- [20] Khan IJ, Tariq SH. Urinary incontinence: behavioral modification therapy in older adult. *Clin Geriatr Med* 2004;20:499–509.
- [21] George A. Management of urinary incontinence. *P&T* 2012;6:345–61.
- [22] Lum SK, Marshall VR. Results of prostatectomy in patients following a cerebrovascular accident. *Br J Urol* 1982;54:186–9.
- [23] Chen YH, Lin YN, Chen WC, et al. Treatment of stress urinary incontinence by cinnamaldehyde, the major constituent of the Chinese medicinal herb ramulus cinnamomi. *Evid Based Complement Alternat Med* 2014;2014:280204.
- [24] Yang ZY, Qin X. Moxibustion combined with Chinese medicine for 20 cases of urinary frequency and urinary incontinence in middle aged and elderly women. *Zhongguo Zhen Jiu* 2012;32:1029–30.
- [25] Liu Z, Liu Y, Xu H, et al. Effect of electroacupuncture on urinary leakage among women with stress urinary incontinence: a randomized clinical trial. *JAMA* 2017;317:2493–501.
- [26] Wang S, Lv J, Feng X, et al. Efficacy of electrical pudendal nerve stimulation versus transvaginal electrical stimulation in treating female idiopathic urgency urinary incontinence. *J Urol* 2017;197:1496–501.
- [27] Brookes ST, Donovan JL, Wright M, et al. A scored form of the Bristol Female Lower Urinary Tract Symptoms questionnaire: data from a randomized controlled trial of surgery for women with stress incontinence. *Am J Obstet Gynecol* 2004;191:73–82.
- [28] Ito H, Hagiwara M, Furuuchi T, et al. Assessments of quality of life in women with urinary incontinence using King's Health Questionnaire and International Consultation on Incontinence Questionnaire-Short Form. *Hinyokika Kyo* 2010;56:255–9.

Lampiran 2



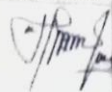
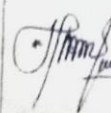

NO.	HARI/TANGGAL	REKOMENDASI	TANDA TANGAN
1	Rabu, 08 Juli 2020	Acc judul.	
	7. Agustus 2020	Revisi Bab I. Introduction similar of Responden yg mau dikelit prevalensi? ditambahkan Kronologi Saluran	
	26-9-2020	Bab I: Acc. Bab II: Revisi pemberian Bab III: Acc Kontrol keseluruhan	
	28-9-2020	Siap ujian proposal	
	15. 3. 2021	Kontrol Jurnal V Bisa di masukkan Bab 4 3 jurnal yg terbit dg naskah keperawatan	
	8 Juni 2021	Bab II, Bab III, Bab IV = Acc Bab V → Revisi Kontrol keseluruhan Abstrak	





**BUKU KEGIATAN BIMBINGAN
KARYA TULIS ILMIAH (KTI)**



Pembimbing : Riva Mayasari M.kep.
Nama Mahasiswa : Dely Refaly Wahyu
NIM : 18613176

**PRODI DIII KEPERAWATAN
FAKULTAS ILMU KESEHATAN
UNIVERSITAS MUHAMMADIYAH PONOROGO**

2020/2021

NO.	HARI/TANGGAL	REKOMENDASI	TANDA TANGAN
1.	Rabu, 08 Juli 2020	<p>Acc judul dg judul</p> <p>Asuhan Keperawatan pada Pasien stroke dengan masalah keperawatan inkontinensia urin fungsional "</p>	
2.	Rabu, 26 Agustus 2020	<p>Perbaiki semua cara bab 7.</p> <p>- IJKS → pola penyusunan bab 1</p> <p>- data terbaru pt mitra nasional → risikitas 2018</p> <p>- Konsep solusi blm ada.</p>	
3.	16/9/20	<p>Bab 1</p> <p>Perbaiki semua cara</p> <p>Bab 2</p> <p>- Penulis perbaiki semua cara : cek panduan !</p> <p>- Fokus diagnosis kep apa ?</p> <p>- data Tambahkan segi ke-Islaman pt intervensi politikan.</p> <p>Formul selanjutnya fibaura kebetul seb</p>	

NO.	HARI/TANGGAL	REKOMENDASI	TANDA TANGAN
	18/20 /5	Bab 2 Cek kembali penulisan Perbaiki semua sara Konsul berikutnya Bab 3 + daftar pustaka.	
	28/20 /5	Konsul berikutnya Konsul kemudian	
	29/20 /5	Ace of Dijiha	
	4/21 /4	Spesifikasi literatur => jurnal 5th tambahkan jurnal internasional. Perbaiki bab 3 sematkan by konsep spesifikasi literatur.	

NO.	HARI/TANGGAL	REKOMENDASI	TANDA TANGAN
	9/6 2021	Penulisan ming Bab 1 jelaskan secara teori tentang bladder training Tambahkan opini pada Pembahasan.	
	15/6 2021	Perlempa pembahasa di feoksi " update terutama limnologi ser feoksi bladder training Perbaiki semua sara segi ke-blauna juga perlu di masukkan dlm pembahasa.	
	18/6 2021	Tolong perhatikan penulisan Abstrak => harus mencakup IMPAD file lebih dari 300 kata. Cek daftar pustaka.	