THE EFFECTIVNESS OF IN BED EXERCISE PROGRAM FOR PREVENTING ELDERLY LOWER EXTREMITY CONTRACTURES WHO ARE INSTITUTIONALIZED IN NURSING HOME

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ABSTRACT

Background

Contracture is an important issue in long term care or immobilization for elderly people in nursing home, there have been few studies that have evaluated intervention for contracture.

The purposes of this study were to determine the effectiveness of the Bed Exercise Program (BEP) for preventing patient with risk lower extremity contracture. **Method** conducted to **Clin. N. Am** (2012) about Prevention and Management of Limb Contracture maintenance Range of Motion and **Patricia et all** about Bed Positioning Program for Treating Older Adult with Knee Contracture who are Institutionalized. This study using case study approach with 12 subjects with low level of cognitive and functional lower extremity impairment (mean age Range 60-85 tabun) in Chronic care in Nursing Home as participants in this study. The Bed Exercise Program (BEP) applied by stretching knee in to extension and securing and maintaining for period the position of 30 minutes 5 times a week. Participants were randomly assigned in one group pre-test and post-test intervention received BEP in 4 week and follow 4 weeks no intervention. The group received the revers order once a week, participants assessed for range lower of the leg (knee and ankle), knee pain during. **The Result** overall there was difference in mean range of knee and ankle Extension between intervention period and no intervention period. **Conclusion** in this study the used of a BEP for preventing knee and ankle contracture. **Discussion** effectiveness Bed Exercise Program/BEP for preventing older adult with knee and ankle flexion contracture in nursing home institutional must be do BEP everyday 30 minutes two times a day .

Key Word: Bed Exercise Program, Contracture, elderly, Nursing home

Interduction

Older people are the faster growing in sector of the population, and they account for the largest increase in the world. Aging proses relation to the specific diseases, syndrome or biological change. In addition, it does not necessarily follow that the same type or dose of exercise is needed for treatment of overt or advanced disease as that which would be required for prevention. Many residents of nursing home and other long-term care facilities are immobile and lack voluntary movement, often as result of neurological insult. Residents often cannot move their extremities or roll themselves over in the bed and are dependent on their caregiver for bathing, feeding, moving in bed ang getting into chair. This problem may be magnified by the present of contracture.

Contracture are associated with impair ambulation, pain and decrease functional status, pressure ulcer and institutionalization. For care giver the presence of Contracture can mean of mean that there is an increases burden in caring for their patients. More time and effort are

required to move a patient's extremity during activities such as positioning, bathing, feeding and moving into the chair. Knee flexion Contractures are one of the most prevalence type of Contracture and affect bed and chair positioning, which ultimately affects patient's quality of life. A contracture may be defined as an increased resistance to passive stretch of muscle or joints from disorder of the muscle.

The development contracture may be caused by combination of factors including shortening of ligament and joint capsule, intra-articular adhesions, proliferation of fibro fatty tissues into joint and muscular shortening. The prevalence of contracture among people in nursing home and other long-term care Institution In United States is between 24% and 75 %approximately 1.5 million people in nursing home in United States. The mean length of stay of nursing home almost 3 times as long for residents with contracture as for those without contracture. Only 2 studies, both randomized controlled trials, were found where low load prolong stretching was examined as an intervention for treating nursing home residents with knee flexion contracture. Passive range of Knee extension increase degree in participants in one study, whereas the intervention was ineffective in the other study. Researcher in another study of 35 patient received long term care evaluated a passive range of motion exercise program for treatment of contracture and found no treatment affect it is not adequately addressed in the literature. Contracture prophylaxis is important to maintain function range of motion

Management of Contracture

The Evidence base supporting intervention to improve Range of Motion (ROM) in Neuro Muscular Diseases (NMD). There are generally principles in NMD condition that may minimize the impacts of disability from contracture, should be managed with the following concepts in mind: 1). Prevention contracture required early diagnosis and initiative of physical medicine approaches such as passive ROM and splinting before contractures are present or while contracture are mild. 2). Contracture are inevitable in some NMD condition. 3). Advanced contracture become fixed and show little response to conservative innervation such as stretching, or splinting may required surgical. 4). A, Major rational lower limb contracture is to minimize their adverse effects on independent ambulation, major caused of wheelchair. Mild upper limb contracture may not negative impact function

Rehabilitation management of lower limb contracture

Four principal physical therapy modalities must be regularly carried out to prevent or delay to development of lower limb contracture for those at risk for musculoskeletal deformity these include: (1). Regularly prescribe period of daily standing or working; (2). Passive stretching of muscle and joint; (3). Positioning the limb to promote extension and oppose flexion; (4). splinting which useful measure for the prevention or delay contracture. Minimum 2 hour daily standing, or working is necessary and addition to passive stretching to maintenance ROM impotence component to prevent contracture. Such as passive range of motion has been documented to be efficacious in slowing the development of contracture. Program a passive stretching should be stated as early as possible in the course neuromuscular disease and become a part of regular morning and evening routine. Proper technique is essential for passive stretching to be effective. With each stretch the position should be held a count 15, and each exercise to be repeated 10 to 15 times during a session. Stretching should be performed slowly and gently. An overly strenuous stretch may cause discomfort and reduce cooperation. Written instructional should be provided to the patient and family as supplement to verbal instruction and demonstration by the physical therapist. The specific anatomic focus of stretching exercises prescribe for lower limb contracture will vary with the type of neuromuscular disease. Lower limb positioning may be useful adjunct for prevent contracture formation. The limb should be

placed in resting position that opposes or minimize flexion. The prone lying position is an effective method to stretch the hip flexors.

Method

This study was designed to evaluate the effectiveness of Bed Exercise Program (BEP) designed Case Study pre-test post-test with 12 subjects in nursing home Jakarta Indonesia base on Research based who practice Bed Position Program (BPP). The BEP prolonged stretch and flexi performed with the participants in the supine position. Most of the patients who received BEP are unable to lie prone. The study participant's knee extended as much as possible repeat 10 times and flexi ankle 10 times, leg abduct and adduction duration 30 minute every morning and afternoon and maintained by positioning with pillow under the knees and then strapping bedsheet over the extended knees and securing it under the mattress. Nurse and nurse assistant were responsible for setting up the BEP and the type of equipment usually required depend on the severity of the contracture, the number of extremity stretched and the degree muscle tone. In the study done by nurse and nurse assistant.

Study Participants

Study participant were recruited from nursing home Panti werda Budi Mulia Jakarta Indonesia that provides care for alder adult content 350 persons elderly with 100 persons selfcare 150 persons partial care and 50 persons total care all elderly experience chronic care. The participants all in patient in nursing home discharge in 2 months, randomize control trial take from 50 elderly total care but only 12 elderly with moderate and light contracture, they have a knee flexion contracture of 20 degree or greater at least one lower extremity and they able to tolerate do BEP and ongoing assessments without severe pain as demonstrated by intense vocalizations or facial grimacing. Participants were excluded from the study if they demonstrated any behaviour's such as agitation that prevented adherence to the program. The physical therapists and occupational come very incidental or substitute decision makers individuals authorized to give or refuse consent to a treatment on behalf of individuals who are in capable of giving consent were approached by the research coordinator to obtain their informed consent for participant in the study.

Study Design

The study participants were randomly assigned in one group by random number of participants table. Pre-test post-test 8 weeks observation before and after received innervation. There was no period to allow the patient clinical condition to revert something to close initial state because period was along enough to allow ring of motion during period intervention. We decided to recruit all patients at the start of the study instead of in staggered fashion and not replace dropouts because we belief it was unlikely that new admitted patients would have contractures.

Data collection case study

Collection demographic data consist of information about age, gender, primary diagnosis, Nurse or assistants respectively administration about Functional Independent Measure (FIM), participants was receiving BEP for treatment of a knee flexion contracture prior to the start of this study. Once a week for the duration of the study for knee pain and passive range of the knee extension of the contracted extremity. The ratter followed a standardized assessment protocol. The ratter was provided with information about each participant's difficulties and condition were needed. Information was posted above the patient bed indicating to the ratter the legs to be assessed.

Intervention

A standardized protocol for BEP for treating people with knee flexion contracture was developed base on the results of survey of therapists who practice BPP consisted of low load prolonged stretch perform with participants in supine position unable to prone. Participants received a stretch 30 minutes, 5 times a week. The dosage of a BEP was determined base on our belief of what is standard clinical practice and form a study demonstrating treatment effect after period of 30 minutes. The dosage of BEP is limited by the needs of the patients including bathing, dressing, and feeding and by therapy recourses. If both knee had contractures, they were stretching simultaneously for period of 30 minutes, 5 times per week. First step BEP was to be conducted was placed on the inside of the participant, s locker for reference by the nurse or nurse assistants. Second Nurse assistants were asked to notify if there was a problem the participants with the implementation of the intervention. Third nurse were asked to monitor and record once a week whether the BEP was implemented correctly. Fourth the assistants recorded the number of minutes the participant had spent on the BEP per day, adverse effects of the program and other therapeutic interventions the participant was receiving for the lower extremities.

Distribution Age and sex

Age	Male	Female	Total
60-70 years		2	2
70-80 ears	1	8	9
>80		1	1
Total	1	11	12

Intervention 30 minutes
stretching and flex knee and ankle

value	before	after	Information
Mucle strength	2	3	Increase muckle strength
Joint range knee	20 degree	30 degree	Increase joint range knee
Joint range ankle	15 degree	20 degree	Increase joint range ankle

Result

Study participants; twelve from forty patients were identified as participants for the study, twelve participants completed in this study in one group. Participant were receive the intervention for 30 minutes 5 days per week received an adequate dose of the BEP, was belief implemented correctly. The main effect of intervenes, none of the participants received other therapeutic interventions for their lower extremities. The rater became aware of the assignment in the group during the study. In Examining range of knee extension at the beginning of the study after the intervention period and after the no intervention no participant period improve. The mean deference in participants range of knee extension between intervention and no intervention. There were effect some of the participants who had motivation to done exercise/ respond to treatment in two weeks had been change the range of knee and ankle joint. There was difference between intervention period and no intervention. Individual participant's 8 weeks range of motion of knee was plotted. Although an increase of range of motion during an intervention period and decrease in range of motion during no intervention period might have

been expected visual inspection of the individual participant's graphs for the primary outcome measure (knee extension) over the 16 weeks revealed discernible trend. A graph of the mean range of knee extension for the intervention period showed were difference.

Conclusion

Contracture are exceedingly common impairments in NMD, but weakness more often leads to disability longer immobilisation. Less than antigravity strength produces an inability to achieve full active range of motion. Static positioning of the limb and lack active range of motion (ROM) result in progressive contracture. Aggressive rehabilitation intervention in nursing including stretching, flexi, positioning help minimize the degree of disability do to contracture. Exercise to increase capacity; aerobic increase capacity increase muscle strength, power, endurance, increase motor coordination increase Neural reaction time and decrease heart rate and blood pressure response submaximal exercise.

Discussion

This study does support to use of BEP to treat Institutionalized older adult s with knee flexion contractures, because there was effect increase the muckle strength and joint range knee and ankle.

There are not enough do exercise with 8 weeks only to increase muscle strength and increase Joint range to prevent contracture but must be do exercise by elderly in nursing home every day two times 30 minutes a day. The contracture of participants may have been too long-standing and resistant to treatment or their contracture may not have been severe enough to respond to treatment. The researcher in the other study on nursing home residents did not report duration of contracture is an important factor in the determining the response to treatment. Severity of contracture may explain the difference in finding. The main baseline range of knee extension of the participants in the study with positive finding contracture on range ages 70->80 years old elderly.

Limitation of our study

Case study there is no carryover effect from the intervention period to the no intervention period. Presence of carryover effect can lessen the treatment effect. Another limitation of our study in the questionable ability of the BEP maintenance intense stretch. The intensity of the stretch was not measured in our study; however, the stretch from the BEP may be substantial relative to a patient usual resting position on the bed. We used a research design where participants acted as their own control to minimize the effects of heterogeneity in the subjects. Our subjects included not only older with various diagnoses but also with contracture, unlike previous studies. In addition, the intervention was standardizing and appropriate for the population of interest. The high risk of morbidity and mortality and the lack of appropriate outcome measures in our study magnifies the challenges encountered in conducting research in this population. We belief that future studies should be randomized controlled trials, should include a large number of participants to allow for a high drop-out rate, should include with patients unilateral contractures, should be long enough detect treatment effect and should ensure an intense stretch.

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