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ORIGINAL ARTICLE

A CROSS SECTIONAL RETROSPECTIVE STUDY: THE PAIN OUTCOME OF PHYSIOTHERAPY REHABILITATION FOR CERVICAL SPONDYLOSIS AT PRIVATE HEALTHCARE INSTITUTE IN NEGERI SEMBILAN

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ABSTRACT

Background: Cervical spondylosis physical therapy plays an important role in alleviating pain and reducing the symptoms. Physiotherapy treatments for cervical spondylosis is crucial and essential as patients who are affected presents with limited mobility, and one wrong step can result in excruciating pain and discomfort. **Aims and Objectives:** This study was undertaken to study the outcome of physiotherapy rehabilitation by comparing the mean difference of pain score between pre and post treatment. **Methods:** This cross-sectional retrospective study conducted at KPJ Seremban Specialist Hospital. Respondents age within 30- 60 years old, had been diagnosed of cervical spondylosis and underwent physiotherapy treatment in KPJ Seremban Specialist Hospital. Respondents with the history of pathological changes in the cervical spine, congenital disorder, nerve root compression were excluded. Data collection was done through physiotherapy treatment card obtained from KCIS (KPJ Clinical Information System). Check list were used to record the data, and data were analysed and interpreted into results using Paired t-test. **Results:** A total of 120 respondents involve in this study. There are varieties of treatment modalities used in treating such conditions. The combination of Neck exercise, Neck traction, Ultra Sound, Interferential and Hot Pack were the most common used in treating cervical spondylosis (39.2%). The least treatment combination (29.2%) is Neck exercise, Neck traction, Shock Wave Therapy and Interferential. All treatment combination group has a significant reduction of pain score ($p < 0.05$) on post physiotherapy interventions with mean difference of 1.78 (95% CI; 1.57, 2.00). **Conclusion:** Study validates that the whole physiotherapy rehabilitation, and three major intervention categories used were effective in managing pain of Cervical Spondylosis.

Keywords: Cervical Spondylosis, Physiotherapy Interventions, Pain score.

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INTRODUCTION

Cervical Spondylosis are often defined as the degenerative changes within the intervertebral disc in which desiccation occurs, leading to overall loss of disc height and a drop in the disc's capability to maintain or withstand additional axial loads along the cervical spine¹. Cervical spondylosis is a common condition which is expected to occur in results of the degenerative changes in the cervical spine, with estimation of 90% cases occurring in those with the age category of 30-49 years old². The evidence by RoseBist PK, et al. 2018 expounds that prevalence was more in males³.

A cross-sectional study conducted by Mahbub et al. (2006), on the Cervical Spondylosis and musculoskeletal symptoms among coolies in Bangladesh found that the prevalence of positive degenerative changes, using X- Ray was considerably high (39.8%)⁴. Certain occupational positions required repeated or prolonged flexion, extension or extreme bending of the neck may induced the degenerative changes in the cervical spine⁵.

It can be concluded that Cervical Spondylosis may highly results from gradual degenerative changes of the cervical spine due to heavy loading on the head over time the load carried. Presented with localise neck pain and radiculopathy over arms⁶. The best choice of cervical spine investigation is Magnetic Resonance Imaging (MRI) as it gives detailed information about the spinal cord, bones, discs, and soft tissue⁷.

Cervical spondylosis physical therapy plays an important role in alleviating pain and reducing the symptoms of spondylosis. Cervical spondylosis physiotherapy has proven to be

effective in restoring the mobility, flexibility and the core strengthening through various manual therapies, exercises, and modalities. The benefit of physiotherapy in Cervical Spondylosis is that it not only helps in relieving pain but also helps in preventing recurrent pain. Physiotherapy treatments for Cervical Spondylosis is crucial and essential as patients who are affected presents with limited mobility, and one wrong step can result in excruciating pain and discomfort⁸.

Currently, there's no record of research done on the effectiveness of physiotherapy rehabilitation on Cervical Spondylosis patients at Physiotherapy center of KPJ Seremban Specialist Hospital. Thus, this study will be the first looking into the pain outcome following physiotherapy rehabilitation on such condition. The application of treatments conferring to the standardized rehabilitation protocol of Cervical Spondylosis is still on uncertainty in giving out a consistent result of pain level reduction. Despite that, this research will be done to compare the mean difference of pain score between pre and post physiotherapy treatment among Cervical Spondylosis. KPJ Seremban Specialist Hospital was chosen as it is one of the eminent private hospitals in Negeri Sembilan.

The aim of this study is to determine the pain score outcome following physiotherapy rehabilitation for Cervical Spondylosis at KPJ Seremban Specialist Hospital.

The results from this study will be a yardstick to determine the outcome of pain score following physiotherapy rehabilitation and to enable evaluate and review the current treatment protocol for cervical spondylosis.

METHODOLOGY

This is a cross sectional study design, retrospective in nature through examines the physiotherapy treatment records of KPJ Specialist Hospital. This hospital has a good practice in healthcare and been accredited by Malaysian Society for Quality in Health (MSQH) and comply the standards of Joint Commission International (JCI). The inclusion criteria is patients within the age group between 30- 60 years old², diagnosed of Cervical Spondylosis by medical Officer and underwent physiotherapy treatment in KPJ Seremban. Respondents with history of pathological changes of cervical spine were excluded from this study.

The sampling method for this study is purposive sampling. The list of patients name were obtained from physiotherapy registry book. Sample size was determined using Kish L (1965) formula of $n = (Z_{1-\alpha})^2 (P(1-P)/D^2)$. Prevalence (P) was 80% based on study conducted by Rose Bist et al (2018), confidence interval determined ($Z_{1-\alpha}$) at 95%, absolute precision (D^2) is 5% and total number (n)of respondents was 120. Permission from KPJ Healthcare University College and subsequently from KPJ Seremban Specialist Hospital obtained prior to assessing patients registry book and treatment card.

Collecting the data: The patients list name was obtained at the physiotherapy registration book and the treatment card was traced at the KPJ Clinical Information department. The treatment record was selected within 6 to 12 months of post treatment. A research collection form was prepared prior to data collection exercise to enable individual treatment information documented. The form consists of demographic information, pain

score on pre & post treatment and types of physiotherapy interventions.

Ethical consideration: This study obtained ethical approval from KPJ Healthcare University ethic committee and permission from KPJ Seremban Specialist Hospital research committee prior to data collection.

Data analysis: Descriptive statistic was used to describe the demographic distribution of respondents. A paired t-test, was used to compare the means of variables.

RESULTS

A total of 120 respondents involve in this study. Male respondents were dominant represents 56.7% and the remaining of 43.3% were female. Age categories varies with 31 – 50 years old represent the most respondents (51.7%) and only 0.8% were aged below 30 years old. There are three types of occupation recorded and categorized based on their nature of work. Total of 48.3% of responded work in office, 35.0% performing physical related task and the remaining of 16.7% was unemployed and doing house chore (Table 1).

Variables		N	%
Gender			
Male		68	56.7
Female		52	43.3
Age category (years old)			
< 30		1	0.8
31 – 50		62	51.7
> 51		57	47.5
Types of occupation			
Unemployed		20	16.7
Office related task		58	48.3
Physical demanding task		42	35.0
Types of Physiotherapy interventions			
Type 1	N. Exercise, N. Traction, SWT, IT	35	29.2
Type 2	N. Exercise, N. Traction, US, IT, Cryo	38	31.7
Type 3	N. Exercise, N. Traction, US, IT, HP	47	39.2

N. = Neck; SWT = Shock Wave Therapy; IT = Interferential Therapy; US = Ultrasound; HP = Hot Pack

Table 1: Sociodemography information on respondents and types of physiotherapy interventions

Modalities used in managing the pain following cervical spondylosis were categories based on the combination of intervention delivered. There were 3 types of treatment combination that widely used. Namely, exercise, traction, SWT and IT (type 1), type 2 (exercise, traction, US, IT & cryo), type 3 (exercise, traction, US, IT & HP). The most common interventions were type 3 (39.2%), type 2 and 3 were 31.7% and 29.2% respectively (Table 1).

In the table 2, the result showed the difference of pain score pre and post physiotherapy intervention. The mean pain score of 120 respondents was significantly different 1.78 (95% CI 1.57, 2.00). The mean pain score on pre treatment was 4.98 (± 2.07) and post treatment was recorded 3.19 (± 1.51). The mean was lower in post physiotherapy treatment among 120 Cervical Spondylosis patients in KPJ Seremban Specialist Hospital where it reduced by 1.78 post intervention (Table 2).

Outcome	Mean			P value
	Pre treatment	Post treatment	Difference (95% CI)	
Pain score	4.98 (\pm 2.07)	3.19 (\pm 1.51)	1.78 (1.57, 2.00)	< 0.05*

*Significant when p value < 0.05. Statistical test = Sample T-test

Table 2: The difference of pain score on Pre and post physiotherapy interventions

There's significant reduction of pain score post treatment of all treatment types. The mean pain score of three groups dropped to 3.26 (Type 1), 3.29 (Type 2) and 2.98 (type 3). This validates that, all of the physiotherapy

intervention category are effective in managing pain. Relatively, the pain reduction of type 3 intervention was more pronounced (2.98) compared to other types of interventions.

Types of physiotherapy interventions		Mean pain score of physiotherapy treatment			
		Pre	Post	Difference (95% CI)	P value
Type 1.	N. Exercise, N. Traction, SWT, IT	5.14 (2.25)	3.26 (1.58)	1.87 (1.43, 2.34)	< 0.05*
Type 2	N. Exercise, N. Traction, US, IT, Cryo	5.18 (1.96)	3.29 (1.41)	1.90 (1.51, 2.28)	< 0.05*
Type 3	N. Exercise, N. Traction, US, IT, HP	4.55 (2.05)	2.98 (1.54)	1.57 (1.23, 1.92)	< 0.05*

* Significant when p value < 0.05; Statistical test = Paired t-test

Table 3: The difference of pain score on Pre and post physiotherapy treatment

DISCUSSION

This finding are relatable to many other researcher's findings, in which it is proven that physiotherapy treatment has a major role in decreasing the pain in patients with Cervical Spondylosis. As many other researches are based on specified intervention, this study could be a general and significant study which represents the effectiveness of whole

physiotherapy rehabilitation on Cervical Spondylosis pain level. The data collected were at single private physiotherapy center therefore it unable to represent the whole private physiotherapy center operated in Negeri Sembilan. The selection of few private rehabilitation as study respondents was needed in future research to enable the results represents whole private institutions.

In private setting, the aims of reducing the symptoms as early as possible are vital to ensure early return of physical functions and abilities. It is justifiable on the usage of more than 3 treatment modalities were widely used in the private setting. It seems redundancy in treatment approach through using varieties of modalities however, the outcome following such intervention was benefited to patients itself. This study didn't determine the number of treatment session needed to complete by patients in order to achieve desired outcome. Such factors should be included as study variables to determine the relationship of pain reduction and treatment session. It can be used as outcome tools to measure the cost effectiveness of treatment.

The modalities used in all physiotherapy intervention types were mostly similar and the only different was electrotherapeutic modalities used. It is a known fact that electrotherapeutic able improve circulation, triggered the pain gate effects and decreased the pain⁹. However the effects of exercise and traction in reducing the pain intensity cannot be deny. The effects of pain reduction following exercise preception were more dominance due to ability to sustain the therapeutic effects for longer period of time¹⁰. However, the sustainability effects of pain reduction in all groups were not determined because it is not suitable to be carried out using cross sectional method. It is advisable to utilise longitudinal method of study for future study. And also need to be appraised in future study.

The correlation between age, gender, and occupation could not be conducted in this study as this is not a correlation study. Specific and multiple intervention approach effects

could not be obtained through this study as this study is based on whole rehabilitation effects.

Conflict of interest: There was no conflict of interest on conduct of this study.

Fund for the study: The fund for the study was granted by KPJ Healthcare University College, Nilai, Malaysia.

CONCLUSION

This study has been done to in regards to the effective of physiotherapy rehabilitation based on NPRS alone. Further studies should be done in regards of the effectiveness physiotherapy rehabilitation based on other outcomes such as range of motion (ROM), Manual Muscle Testing (MMT) and a lot more. Additional studies should be done on the specific and multiple intervention effects, since each intervention stands out in their advantage and disadvantages.

Moreover, research on leading the physiotherapy rehabilitation of Cervical Spondylosis to a whole new level, especially constructed on the age and gender based symptoms should be done, as the evidence on age or gender based symptoms are insufficient despite the fact that there is distinction in the prevalence.

REFERENCE

1. Benzel EC. (2001). Biomechanics of Spine Stabilization, chapters 1- 2, American Association of Neurological Surgeons, Rolling Meadows, USA. Spine J. 2001; 1(1);
2. Birnie, D., Healey, J. S., Krahn, A. D., Ahmad, K., Crystal, E., Khaykin, Y., Redfearn, D. (2011). Prevalence and Risk

- Factors for Cervical and Lumbar Spondylosis In Interventional Electrophysiologists. *Journal of Cardio-vascular Electrophysiology*; 22(9): 957- 960.
3. Rosebist P, K., R. P., Peethambaran, A. K., & Peethambar, G. A. (2018). Cervical spondylosis: analysis of clinical and radiological correlation. *International Surgery Journal*, 5(2); 491.
 4. Mahbub M.H, et al. (2014). Prevalence of Cervical Spondylosis and Musculoskeletal Symptoms among Coolies in a City of Bangladesh Prevalence of Cervical Spondylosis and Musculoskeletal Symptoms among Coolies in a City of Bangladesh: April: 69-73.
 5. Jager HL, Gordon-Harris L, Mehring UM, Goetz GF and MathiasKD. (2017). Degenerative changes in the cervical spine and load-carrying on the head. *Skeletal Radiol*; 26; 475-481.
 6. Kelly JC, Groarke PJ, Butler JS, Poynton AR, O'Byrne JM. (2011). The natural history and clinical syndromes of degenerative cervical spondylosis. *Advances in orthopedics*; Nov (28).
 7. Boden SD, McCowin PR, Davis DO, et al. (1990). Abnormal magnetic- resonance scans of the cervical spine in asymptomatic subjects. *J Bone Joint Surg [Am]*; 72-A; 1178-84.
 8. Misailidou V. (2010). Assessment of patients with neck pain: a review of definitions, selection criteria, and measurement tools. *J Chiropr Med*: 9; 49-59.
 9. Kuo DT, Tadi P. Cervical Spondylosis. (2020. Jul 8). In: *StatPearls [Internet]*. Treasure Island (FL): StatPearls Publishing.
 10. Blanpied PR, Gross AR, Elliott JM, Devaney LL, Clewley D, Walton DM, Sparks C, Robertson EK, Altman RD, Beattie P, Boeglin E. (2017). Neck Pain: Clinical Practice Guidelines Linked to the International Classification of Functioning, Disability and Health From the Orthopaedic Section of the American Physical Therapy Association. *Journal of Orthopaedic & Sports Physical Therapy*; Jul 47 (7): A1 —83.

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