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DIFFERENCES NEURAL MOBILIZATION AND KINESIO TAPPING IN PAIN REDUCEMENT CARPAL TUNNEL SYNDROME GONDANGREJO OFFICE EMPLOYEES

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Abstract: ***Background*** *; CTS is a combination of mechanical trauma, increased pressure, and ischemic damage to the median nerve within the carpal tunnel. CTS is commonly reported among professional computer users among musculoskeletal disorders. Nerve mobilization (NM) is one of the interventions aimed at restoring homeostasis in and around the nervous system, by moving the nervous system itself or the structures that surround it. In addition to these exercises, this study also used tape or kinesio tape (KT) as a comparison of the differences in the effects of the two interventions. KT is applied to the body to help movement of problematic joints, increase intra-articular space, reduce pain. Purpose ; To determine the differences in the effect of NM and KT on pain reduction indicated by CTS in office employees in the Gondangreo Karanganyar area.* ***Method*** *; quasi-experimental research methods with pre-test and post-test research designs. Measurement of pain level for indications of CTS using the Numeric Pain Rating Scale (NPRS).* ***Results*** *; The results of the different effect test using the Mann Whitney test obtained p = 0.246 (p> 0.05).* ***Conclusion*** *; There was no difference between the NM and KT groups in reducing CTS pain indications in office workers.*

Keywords: employees; CTS pain; Neural Mobilization; Kinesio Tapping

INTRODUCTION

The National Health Interview Study (NHIS) estimates that the reported prevalence of CTS among the adult population is 1.55% (2.6 million). The proportion of CTS was more found in respondents who had an age range of 20-60 years (89.2%). CTS affects more women than men, which is 3.6 times more than men (Hamid, et al., 2020). CTS occurs when the median is pinched or compressed as it passes over the hand. This syndrome is characterized by hand pain, numbness, and tingling in the distribution of the median nerve. The pathophysiology of CTS involves a combination of mechanical trauma, increased pressure, and ischemic damage to the median nerve within the carpal tunnel (Genova, et al., 2020).

CTS can be triggered by exposure to motion or pressure or by positional errors that occur over a long period of time, for example, a worker's computer. Not many people realize that computer users can also cause problems, especially for a long time and continuously and in the wrong position, one of which is the negative impact on health arising from computer use, one of which is CTS complaints (Hamid, et al., 2020). At the same time, many investigators have turned their attention to managing CTS through carpal bone mobilization, which results in fewer tissue adhesions and increased wrist mobility by improving signs and

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symptoms of CTS (Sakr, et al., 2019). In addition to exercise therapy in the form of neural mobilization which is used for the treatment of CTS, several studies have also used therapy in the form of taping or Kinesio tape (KT). The benefits of KT in CTS continue to support areas where KT is applied during movement while also enabling people with a CTS diagnosis to continue working (Daroglou, et al., 2021).

This study was conducted to determine whether there is a difference in the effect of NM and KT administration on reducing CTS-indicated pain in office employees in Gondangrejo, Karanganyar. The purpose of this study was to determine the pain of respondents suffering from indications of CTS at sub-district and urban village offices and to find out the differences in pain reduction in-office employees with CTS indications before and after being given NM and KT, as well as to analyze the differences in the effect of NM and KT on reducing pain with CTS indications. to office workers.

METHODE

This research is qualitative research using the type of quasi-experimental research the time series. The research design was two groups pretest-posttest. The sampling technique was carried out using a purposive sampling technique to obtain a sample based on the characteristics or characteristics according to the determination of the researcher. The inclusion criteria in this study were male and female respondents, aged 30-40 years, experiencing CTS-indicated pain, and respondents who complained of mild to moderate pain without taking pain relievers. This research was conducted by dividing into 2 groups and then each group was given intervention in the form of NM and KT 3 times a week for 4 weeks. Pain measurements were carried out before (pretest) and after (posttest) after each therapy was given. The research instrument used was the NPRS (Numeric Pain Rating Scale) to determine the respondent's pain scale from mild to moderate.

RESULTS AND DISCUSSION

The results of the univariate analysis carried out in this study are displayed in the following frequency distribution table:

Table 1 Characteristics of Research Respondents Based on Age.

Usia (Tahun)	Kelompok *Neural Mobilization*		Kelompok *Kinesio Tapping*	
	N	%	N	%
30-35	6	40%	8	53,3%
36-40	9	60%	7	46,7%
Jumlah	15	100%	15	100%

Table 2 Characteristics of Respondents Based on Gender.

Jenis Kelamin	Kelompok *Neural Mobolization*		Kelompok *Kinesio Tapping*	
	N	%	N	%
Laki-Laki	5	33,3%	9	60%
Perempuan	10	66,7%	6	40%
Jumlah	15	100%	15	100%

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Based on Tables 1 and 2 it is known that the total number of respondents was 30 people with 15 people in each group, wherein the NM group the highest number of respondents were aged 36-40 years (60%) and the most female respondents were 10 people (66.7 %). Whereas in the KT group, most respondents were aged 30-35 years (53.3%) and the most male respondents were 9 (60%).

It can be concluded that female employees are more exposed to CTS indications than men. This is in line with Salma (2019). Women are more susceptible to the effects of CTS because most of the work done by women uses their wrists. Housewives charge higher rates than workers because of the variety of housework they do. This is also in line with Kalra & Bhatnagar (2017). Women are often responsible for tasks such as cleaning, washing bathrooms and toilets, and cleaning windows, mirrors and beds which can cause contact with various pressures of physical contact which cause musculoskeletal diseases including CTS which results in complaints of pain in the wrists and course still to take care of all the needs of the family.

Table 3 Test data for the effect of giving interventions

Kelompok	N	Mean		P
		Pre	Post	
Neural Mobilization	15	2,47	1,13	0,01
Kinesio Tapping	15	2,33	1,33	0,02

Based on the data above, it is known that the value of pain measurement using NPRS before and after being given neural mobilization obtained significant results of p = 0.01 (p <0.05) and data on pain measurement values before and after kinesio tapping was significant at p = 0. 02 (p<0.05) which means that there is a significant effect before and after the neural mobilization and kinesio tapping treatment.

Median nerve mobilization or neural mobilization is commonly used in the management of CTS, which involves various exercises aimed at mobilizing the median nerve with the aim of reducing pressure within the carpal tunnel (Huey, et al. 2017). According to BaptistaI, et al (2022) in his journal, NM consists of a combination of joint movements that encourage sliding or tension of the nervous tissue and can be performed either passively by a healthcare professional or actively by an individual. This is believed to facilitate nerve gliding in relation to adjacent tissues, to facilitate nerve vascularization, and to increase axoplasmic outflow, which in turn results in improved nerve function and, consequently, improved motor and sensory function and, especially decreased pain.

Based on the results of this study regarding the effect of Kinesio tapping on pain complaints in CTS indications, it is in line with previous research, namely, Setiawan, et al (2021). Kinesio tape is an intervention that functions to facilitate muscle relaxation, and inhibition, increase lymphatic flow, and reduce pain. The therapeutic effect of kinesio tape is due to the interaction between afferent stimuli on the skin and motor units of the central nervous system and peripheral nervous system which can stimulate skin mechanoreceptors.

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Table 4 Effect Difference Test

Kelompok	P	Z
Pre *Neural Mobilization - Kinesio Tapping*	0,214	-1.244
Post *Neural Mobilization - Kinesio Tapping*	0,246	-1.160

Based on the statistical test output using the Man Whitney test, the results obtained before the neural mobilization and kinesio tapping exercises were given a value of p = 0.214, which means greater than 0.05 so it was concluded that there was no significant difference in pain before the neural mobilization and kinesio tapping exercises were given.

Whereas in the next test, the results after being given neural mobilization and kinesio tapping exercises had a value of p = 0.246, which means greater than 0.05 so it was concluded that there was no significant difference in reducing pain levels in indications of carpal tunnel syndrome. This is in line with research from Kurniawati, et al (2020) which describes neural mobilization and kinesio taping. Nerve mobilization with the addition of active finger movements helps reduce adhesion to the tissue, while treatment using Kinesio tapping is given in CTS conditions that pull forces on tendons or ligaments. Tension from Kinesio tapping increases afferent excitability to large-diameter nerve fibres and reduces the impulses received from small-diameter nerve fibres via nociception. Nerve mobilization and kinesio taping have an effect on reducing pain in CTS conditions.

CONCLUSION

Based on the results of the effect test value, it shows that the results of the value of pain measurement for CTS indications mean that there is a significant effect before and after kinesio tapping. The results of the difference in effect test mean that there is no significant difference in the provision of neural mobilization and kinesio tapping interventions in reducing CTS indication pain.

AUTHOR CONTRIBUTION

All authors contributed fully to this writing.

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