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THE IMMEDIATE EFFECT OF TRADITIONAL MALAY MASSAGE ON SUBSTANCE P, INFLAMMATORY MEDIATORS, PAIN INTENSITY AND FUNCTIONAL OUTCOME AMONG PATIENTS WITH LOW BACK PAIN: A PILOT RANDOMISED-CONTROLLED TRIAL

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ABSTRACT

Treatment of low back pain is very challenging due to the recurrent nature of the problem. It is believed that traditional Malay massage may help to relieve such back pain but there is a lack of scientific evidence to support both the practice of traditional Malay massage and the mechanism by which it exerts its effect. The aim of this thesis is to investigate the immediate effect of traditional Malay massage on substance P, inflammatory mediators, pain scale and functional outcomes among patients with low back pain. A pilot, non-blinded, randomised controlled trial was conducted involving sixty patients who fulfilled the inclusion criteria. The participants were then randomly allocated into intervention (i.e. traditional Malay massage) and control (i.e. relaxation position) groups. Blood samples were collected before and after 5 minutes intervention and were for analysed the level of substance P (i.e. primary outcome) and other inflammatory mediators as secondary outcomes [i.e. tumour necrosis factor (TNF)-α, interleukin (IL)-1β, IL-8, IL-6 and IL-10, and the soluble form of the intercellular adhesion molecule (sICAM-1)]. Self-reported measurements for pain intensity and functional outcome were determined using Visual Analogue Scale (VAS) and Roland-Morris Disability Questionnaire (RMDQ), respectively. The Wilcoxon-signed Ranked test was used to measure the changes within the groups whereas the Mann-Whitney test for comparing the differences between the groups. A significant reduction in substance P level (1.45 ± 0.21 pg/mL versus 1.40 ± 0.15 pg/mL; $p = 0.047$) after application of traditional Malay massage was noted; however, non-significant change was reported for inter-group comparisons. The changes in all inflammatory markers, including IL-1β, IL-6, IL-8, IL-10, TNF-α and sICAM level were not significant for inter-group comparisons before and after application of traditional Malay massage and relaxation position. On the other hand, the changes in both VAS score ($p < 0.001$) and RMDQ score ($p = 0.021$) were statistically significant for inter-group comparisons at both time-points. In conclusion, the traditional Malay massage was reported to have an immediate effect on substance P but not on the inflammatory markers. This finding is well correlated with the changes in pain intensity (i.e. VAS score) and daily functional abilities (i.e. RMDQ score). However, trial with bigger sample size with longer follow-up time points is anticipated to determine the effect and the exact mechanism of traditional Malay massage in reducing pain.

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CHAPTER ONE
INTRODUCTION

1.1   Research Background

Low back pain is one common type of musculoskeletal disorder that can cause deterioration of physiological function and disability if not treated and aggravated (Lawrence et al., 1998; Lizier et al., 2012). The prevalence of low back pain varies from 10% to 63% at different population worldwide (Henry, et al. 2015). Broadly speaking, low back pain affects roughly 75% to 90% of the worldwide population at least once in their lifetime (Andersson, 1999).

In United States, the National Health Interview Survey (NHIS) reported that 25.7% of the surveyed respondents experienced low back pain in 2010 (Yang et al., 2016). This study indicated that more women (27.1%) reported to have suffer from low back pain when compared to men (24.5%). Moreover, older workers have a higher prevalence at 27.7% than the younger workers (23.8%) (Yang et al., 2016). In Asian countries, 11.6% low back pain cases was reported among 2600 respondents in a semi-rural area in Malaysia (Veerapen et al., 2007). From the economic perspective, the total expenses for back care services jumped from USD50 to USD90 billion annually in the United States (Luo et al., 2004; Martin et al., 2008). Moreover, low back pain has been recognised as one of the most common causes of work disability and accounts for a large proportion of workers' compensation costs (Slater et al., 2012). Likewise, in Malaysia, the total healthcare costs for patients with back pain were double than those of the matched control (RM5,500 versus RM2,100, respectively) (Hong et al., 2013).

The main symptom of low back pain is pain which commonly affecting the lumbosacral area, located between bottom of ribs and gluteal fold (Erin, Kaufman & Carl, 2013; van Middelkoop et al., 2010). From the physiology perspective, the chemical mediators, such as cytokines, are released once the injury occurs (Erin, Kaufman & Carl, 2013). Nowadays, one of the chemical mediators that has been well acknowledged is substance P (Mackawan et al., 2007). Substance P could play a major role in development and progression of back pain (Parris et al., 1990). Structurally,