

UNIVERSITI TEKNOLOGI MARA

**EFFECT OF *PILATES* EXERCISE ON
FUNCTIONAL CAPACITY,
CANCER-RELATED FATIGUE,
DEPRESSION, SALIVARY
CORTISOLS AND QUALITY OF
LIFE AMONG COLORECTAL
CANCER SURVIVORS IN KLANG
VALLEY**

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ABSTRACT

Persistent physical and psychological complaints related to cancer and its treatment impact the quality of life of colorectal cancer survivors. This study aimed to investigate the effect of *Pilates* exercise on the functional capacity, cancer-related fatigue, depression, salivary cortisol and quality of life of colorectal cancer survivors. This is a quasi-experimental study which was conducted at Hospital Canselor Tuanku Muhriz, and Hospital Al-Sultan Abdullah. The intervention group performed *Pilates* exercises with a certified *Pilates* instructor via online streaming from the participants' homes. Meanwhile, the control group participants received the usual care as stipulated by their oncologists. Data was collected at baseline and eight weeks after the exercise intervention. The effects of the intervention were analyzed using Repeated Measures Analysis of Covariance (ANCOVA) statistical test. Thirty-six (36) colorectal cancer survivors were allocated into either a *Pilates* exercise intervention group (N= 18) or a control group (N= 18). Over eight weeks, only thirty (30) participants completed the study. The *Pilates* exercise group revealed significant group x time interactions ($p < 0.05$) for quality of life, role functioning, functional capacity, and stool frequency. However, only the stool frequency symptom ($p < 0.05$) remained significant after controlling for the confounders of age, gender and stage of cancer. The predictors for quality of life determined by Multiple Linear Regression revealed presence of hypertension disease, stage III of colorectal cancer and cognitive functioning level associated with global quality of life among colorectal cancer survivors. *Pilates* exercise intervention potentially improve quality of life in colorectal cancer survivors.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

1.1.1 Global and Malaysian Patterns of Colorectal Cancer

Globally, the incidence and mortality rate for colorectal cancer (CRC) is on the rise. According to the World Health Organization (WHO), CRC is the third and second most prevalent form of cancer diagnosed in men and women, with more than 1.8 million new cases and 880,792 deaths (Lyon, 2020).

There were fast escalations in CRC incidence and mortality rates reported in Eastern Europe, Asia, and South America. Still, the rate is declining in developed countries such as the United States of America (USA), Australia, New Zealand and several Western European countries due to early detection (Foreman et al., 2018). It is postulated that the CRC affliction will increase by 60% to more than 2.2 million new cases and 1.1 million deaths by 2030 (Arnold et al., 2017).

In Malaysia, CRC is reported to be the second most prevalent form of cancer. A total of 15,515 cases of colorectal cancer were registered from 2012 to 2016 compared with 13,693 cases in the 2007-2011 report. The incidence rate was reported to be more prevalent among males than females, accounting for 56.1% and 43.9% of males and females, respectively (National Cancer Institute, 2019).

The incidence of CRC was highest among Chinese, followed by Malay and Indian ethnic groups for both sexes. The lifetime risk for males was 1 in 55. It was 1 in 43 for Chinese, 1 in 65 for Malays and 1 in 70 for Indians. The lifetime risk for females was 1 in 76; for Chinese 1 in 57, Malays 1 in 89 and Indians 1 in 95. The incidence increased with age and peaked at 70 and above for both sexes (National Cancer Institute, 2019).

Breakthroughs in early detection and treatment have caused a notable rise in the figure of cancer survivors. Recent studies reported that the 5-year survival rate had been on the rise, i.e. more than double from 24.6 % to 58.2% and from 35% to 57% after almost 40 years in England and 20 years in Spain respectively (Bujanda et al., 2010; Quaresma et al., 2015). A similar phenomenon also happened in Asian countries, as