APPLICATION OF STRUCTURAL EQUATION MODELLING IN DESIGNING OBESITY MANAGEMENT TRAINING MODEL FOR PRIMARY CARE NURSES IN HEALTH CLINIC, PAHANG

BY

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A dissertation submitted in fulfillment of the requirement for the degree of Master in Nursing Science

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JULY 2024

ABSTRACT

Primary care nurses play a vital role in preventing adults' obesity by delivering effective obesity-related health education. An effective health education related to obesity requires knowledgeable and skilful primary care nurses. Obesity training has traditionally been provided to primary care nurses through continuing nursing education activities such as conferences, seminars, and workshops. Despite such trainings, the prevalence of obesity in the Malaysian community is still rising, indicating that obesity-related training for primary care nurses may be insufficient. As a result, it is crucial to examine the obesity training needs of primary care nurses to prepare for them to play an effective role in obesity management. This study aims to develop a obesity management training model for primary care nurses to help address the increasing numbers of obese patients in Malaysia. A descriptive cross-sectional survey was conducted, and random sampling method was applied. Two hundred and thirty-four nurses were recruited from a variety of primary health clinics throughout Pahang. After obtaining informed consent, the questionnaires were distributed to the participants. Based on the findings of the training needs assessment, a training model was designed using Partial Least Square-Structure Equation Modelling and revealed a significant positive association between knowledge and practice in managing obesity among primary care nurses. This suggests that having a solid knowledge base is crucial for effective obesity management. However, the relationships between attitude and practice, as well as belief and practice, are not statistically significant, indicating that attitudes and beliefs may not be the sole determinants of actual practice. On the other hand, the relationship between opportunity and practice is statistically significant, highlighting the importance of creating more opportunities for nurses to actively engage in obesity management practices. Overall, these findings emphasise the significance of knowledge and opportunities in influencing the practice of managing obesity among primary care nurses and suggest areas for intervention and improvement in healthcare settings. Policymakers can develop policies and guidelines for nurses' training that support evidence-based obesity management practices in primary care settings. By addressing knowledge gaps, promoting positive attitudes, strengthening beliefs in the efficacy of obesity management strategies, and creating more opportunities for nurses, healthcare systems can improve the quality of care for patients with obesity and contribute to better public health outcomes.

Keywords: training needs, obesity, primary care nurse

ملخص البح ث

تلعب ممرضات الرعاية الأولية دورًا حيويًا في الوقاية من السمنة لدى البالغين من خلال تقديم التثقيف الصحي الفعال المتعلق بالسمنة. يتطلب التثقيف الصحي الفعال المتعلق بالسمنة ممرضات رعاية أولية يتمتعن بالمعرفة والمهارة. تم تقليديًا تقديم التدريب على السمنة لممرضات الرعاية الأولية من خلال أنشطة التعليم التمريضي المستمر مثل المؤتمرات والندوات وورش العمل. وعلى الرغم من هذه الدورات التدريبية، فإن معدل انتشار السمنة في المجتمع الماليزي لا يزال في ارتفاع، مما يشير إلى أن التدريب المتعلق بالسمنة لممرضات الرعاية الأولية قد يكون غير كاف. ونتيجة لذلك، فمن الأهمية بمكان دراسة الاحتياجات التدريبية للسمنة لممرضات الرعاية الأولية للتحضير لهم للعب دور فعال في إدارة السمنة. تهدف هذه الدراسة إلى تطوير نموذج تدريب على إدارة السمنة لممرضات الرعاية الأولية للمساعدة في معالجة الأعداد المتزايدة من مرضى السمنة في ماليزيا. تم إجراء مسح وصفي مقطعي، وتم تطبيق طريقة أخذ العينات العشوائية. تم تعيين مائتين وأربعة وثلاثين ممرضة من مجموعة متنوعة من عيادات الصحة الأولية في جميع أنحاء باهانج. وبعد الحصول على الموافقة المستنيرة، تم توزيع الاستبيانات على المشاركين. بناءً على نتائج تقييم احتياجات التدريب، تم تصميم نموذج احتياجات التدريب باستخدام نمذجة معادلة الهيكل المربع الجزئي وكشف عن وجود ارتباط إيجابي كبير بين المعرفة والممارسة في إدارة السمنة بين ممرضات الرعاية الأولية. وهذا يشير إلى أن وجود قاعدة معرفية متينة أمر بالغ الأهمية لإدارة السمنة بشكل فعال. ومع ذلك، فإن العلاقات بين الموقف والممارسة، وكذلك الاعتقاد والممارسة، ليست ذات دلالة إحصائية، مما يشير إلى أن المواقف والمعتقدات قد لا تكون المحددات الوحيدة للممارسة الفعلية. من ناحية أخرى، فإن العلاقة بين الفرصة والممارسة ذات دلالة إحصائية، مما يسلط الضوء على أهمية خلق المزيد من الفرص للممرضات للمشاركة بنشاط في ممارسات إدارة

السمنة. بشكل عام، تؤكد هذه النتائج على أهمية المعرفة والفرص في التأثير على ممارسة إدارة السمنة بين ممرضات الرعاية الأولية وتقترح مجالات للتدخل والتحسين في إعدادات الرعاية الصحية. يمكن لواضعي السياسات وضع سياسات ومبادئ توجيهية لتدريب الممرضات التي تدعم ممارسات إدارة السمنة القائمة على الأدلة في أماكن الرعاية الأولية. من خلال معالجة الفجوات المعرفية، وتعزيز المواقف الإيجابية، وتعزيز المعتقدات في فعالية استراتيجيات إدارة السمنة، وخلق المزيد من الفرص للممرضات، يمكن لأنظمة الرعاية الصحية تحسين جودة الرعاية للمرضى الذين يعانون من السمنة والمساهمة في نتائج أفضل للصحة العامة.

الكلمات المفتاحية: الاحتياجات التدريبية، السمنة، ممرضة الرعاية الأولية

APPROVAL PAGE

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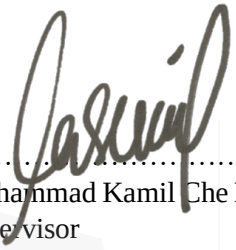

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This thesis is dedicated to my late father for laying the foundation of what I turned out to be in life.

ACKNOWLEDGEMENTS

All glory is due to Allah, the Almighty, whose Grace and Mercies have been with me throughout the duration of my programme. Although, it has been tasking, His Mercies and Blessings on me ease the herculean task of completing this thesis.

I am most indebted to by supervisor, Assoc. Prof. Dr Muhammad Kamil Che Hasan, whose enduring disposition, kindness, promptitude, thoroughness and friendship have facilitated the successful completion of my work. I put on record and appreciate his detailed comments, useful suggestions and inspiring queries which have considerably improved this thesis. His brilliant grasp of the aim and content of this work led to his insightful comments, suggestions and queries which helped me a great deal. Despite his commitments, he took time to listen and attend to me whenever requested. The moral support he extended to me is in no doubt a boost that helped in building and writing the draft of this research work. I am also grateful to my co-supervisor, Assoc. Prof. Dr. Azlina Daud and Asst Prof. Dr. Siti Zuhaidah Shahadan, whose support and cooperation contributed to the outcome of this work.

Lastly, my gratitude goes to my mother, beloved husband, and lovely children; for their prayers, understanding and endurance while away.

Once again, we glorify Allah for His endless mercy on us, one of which is enabling us to successfully round off the efforts of writing this thesis. Alhamdulillah

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

According to the World Health Organisation (WHO), the prevalence of obesity has tripled globally between 1975 and 2016 (Vaamonde & Álvarez-Món, 2020). It was reported that over 1.9 billion persons who are 18 years of age or older are overweight. In 2016, 9% of adults over the age of 18 were overweight, constituting 39% of men and 40% of women. Furthermore, out of 13% of adults worldwide, 11% of men and 15% of women were obese. (Vaamonde & Álvarez-Món, 2020).

In the global context, obesity has emerged as a major health concern in many nations. Obesity has become prominent in Asia as the region enjoys a boost in its development and population wealth (Ghee, 2016). The increase in obesity has also led to the rise of non-communicable diseases (NCD) such as diabetic mellitus type II, hypertension, cardiovascular disease and renal failure. In this regard, compared to people with a normal BMI, obese people use healthcare resources at higher rates, which results in significant additional healthcare costs (Ramasamy et al., 2019). Moreover, the percentage of adult healthcare spending for treating diseases associated with obesity has increased from 20.6 per cent in 2005 to 27.5 per cent in 2010 and 28.2 per cent in 2013. (Biener et al., 2017). Thus, due to the rapid increase in the prevalence of obesity in many regions of the world, managing and preventing obesity has become one of the most important public health concerns (Mohajan & Mohajan, 2023).

In Malaysia, the prevalence of obesity has increased significantly over the past few years; the prevalence of obesity in adults has increased by more than three times from 1996 (4.5%) to 2006 (14%) (Winterfeld & Wu, 2011) and according to the Institute of Public Health (IPH) of Malaysia, in 2015, 30% of Malaysian citizens were obese. The access to comprehensive demographic data has allowed researchers to observe a substantial increase in the prevalence of obesity in Malaysia over the previous three decades.

The higher prevalence of obesity in Malaysia is attributed to social, economic, and nutritional transitions coupled with reduced physical activity following rapid urbanisation and modernisation. All of which have influenced the health of the Malaysian population (Chan et al., 2017). In this light, changes in individual lifestyle behaviours, such as a decrease in physical activity and an increase in sedentary behaviour brought on by rapid urbanisation, may contribute to an increase in the incidence of overweight and obesity. (Chan et al. 2017). Moreover, a variety of factors, such as unhealthy eating patterns, alcohol consumption, physical inactivity, socioeconomic circumstances, and hereditary factors, have been connected to overweight and obesity (Lee et al., 2019).

Supporting Malaysia in its efforts to reduce non-communicable diseases is crucial. Primary healthcare nurses play a significant role in lowering the obesity rate among Malaysian citizens, as obesity is a chronic disease. Primary health nurses need to improve their capacity and chances for involvement in obesity management (Yunus et al., 2023). Evidence presented in a systemic review by Keleher et al. (2009) demonstrates that nurses can deliver quality healthcare in primary care and community settings and that they are particularly effective at improving patient compliance and understanding. Thus, nurses, especially primary healthcare nurses, should arm themselves with the knowledge and abilities required to carry out this vital role in managing obesity.

A primary care nurse in Malaysia is a registered nurse who works in a primary health care setting, with the majority working in primary care clinics (henceforth known as Klinik

Kesihatan or KK) (Chew & Ramli, 2019). Primary care nurse usually interacts with patients on a regular basis, and many of the primary care nurses know their patients well. As healthcare professionals, particularly in the primary care setting, nurses have the potential to influence large numbers of patients. It is very important to note that the needs of healthcare professionals who treat people with obesity may vary between countries (Flodgren, Gonçalves-Bradley, & Summerbell, 2017) Effective training in obesity-related health education is necessary for all primary care nurses in the effort to manage obesity in Malaysia. In this regard, primary care nurses should be knowledgeable and skilful to ensure effective health education, including on obesity. Continuous nursing education, conferences, seminars, and workshops are the traditional obesity platforms for primary care nurses. However, there is a concern that obesity-related training for primary care nurses is insufficient, given the increasing prevalence of obesity among the Malaysian community. According to a National Nutrition Surveillance Centre study and assessment, 78% of medical practitioners, including primary care nurses, require additional training in the management and prevention of overweight and obesity (Lopes et al., 2021). Hence, it is important to assess the obesity training needs among primary care nurses to ensure that the anticipated role of the primary care nurses is optimised. From the assessment, a model of training related to obesity management should be emphasised in the training offered to primary care nurses in future.

1.2 PROBLEM STATEMENT

The World Health Organization (2020) estimated that in 2019, 650 million people worldwide, or 13% of the total population, were obese, and Malaysia had the highest obesity prevalence (15.1%) of all the countries in Southeast Asia. As primary care settings account for the majority of patient-provider interactions, primary care nurses are in a unique position to recognise symptoms of obesity in their patients and deliver effective intervention. Thus, primary care nurses play an important role in educating the public about obesity and health risks related to it (Casanova et al., 2021). Braga et al (2020)

revealed that similar to other countries nurses in England lack of knowledge about managing obesity hinders their ability to prevent and manage obesity in primary healthcare settings. This highlights the need for training on obesity management for primary care nurses, particularly in Malaysia.

Primary care nurses primarily receive training on obesity management through conferences, seminars, workshops, and ongoing nursing education. Chong and Sellick (2011) argued that several factors hindered primary care nurses' involvement in continuing nursing education. Hence, this study recommends carefully creating structured programmes based on their training needs. A study by Bucher et al. (2018) found that most nurses lack knowledge, show negative attitudes and beliefs related to obesity, and have limited opportunities and practices in the management of patients with obesity. Therefore, it is crucial to determine the current knowledge, beliefs, attitudes, opportunities, and practices related to obesity among primary care nurses to determine their training needs. This allows for the development of structured programmes for primary care nurses based on their training needs.

1.3 PURPOSE OF THE STUDY

The purpose of this study is to develop a training model for primary care nurses related to obesity management.

1.4 RESEARCH OBJECTIVES

The study aims to achieve the following objectives:

1. To determine the level of knowledge, beliefs, attitudes, opportunities and practices related to obesity management among primary care nurses.

2. To examine the relationship between the knowledge, beliefs, attitudes, opportunities, and practices related to obesity management among primary care nurses

3. To determine the training needs components in training model related to obesity management for the primary care nurses.

1.5 RESEARCH QUESTIONS

The research questions of this study are:

1. What is the level of knowledge, beliefs, attitudes, opportunities and practices related to obesity management among primary care nurses?

2. Is there any relationship between knowledge, beliefs, attitudes, and opportunities towards practices related to obesity management among primary care nurses?

3. What are the training needs components that should be included in a training model related to obesity management for primary care nurses?

1.6 SIGNIFICANCE OF THE STUDY

The findings on the current knowledge, beliefs, attitudes, opportunities and practices related to obesity among primary care nurses will be useful in identifying the relationship between the domains. Such knowledge can guide in determining factors to be considered in designing training models related to obesity for primary care nurses. The training model can be used as the foundation for targeted obesity management intervention to improve the role of primary care nurses. This can ensure adequate and coherent messages and equal access to evidence-based practice related to obesity management (Baillargeon et al., 2020). Subsequently, the lower prevalence of obesity can reduce healthcare costs for the management of obesity can be reduced. At the same time, primary care nurses should be

able to convey Islamic messages related to health education and promotion effectively. In this regard, it is important to assess primary care nurses' training needs to plan effective courses and integrate Islamic messages from the Quran and prophet Muhammad's teachings to promote a healthy lifestyle and combat obesity.

1.7 DEFINITIONS OF TERMS

1.7.1 Obesity

According to the Obesity Medicine Association, obesity is defined as a chronic, progressive, relapsing, and treatable multi-factorial, neurobehavioral disease. In this light, an increase in body fat promotes adipose tissue dysfunction and abnormal fat mass physical forces, which result in adverse metabolic, biomechanical, and psychosocial health consequences (Fitch & Bays, 2022).

A crude population measure of obesity is the body mass index (BMI), a person's weight (in kilograms) divided by the square of his or her height (in metres). For the Malaysian population, a person with a BMI of 27.5 is generally considered obese. Obesity is frequently subdivided into categories: Class 1: BMI of 27.5 – 34.9, Class 2: BMI of 35.0 – 39.9 and Class 3: BMI of 40 or higher (Alamuddin et al., 2016).

1.7.2 Primary care nurses

In Malaysia, a primary care nurse is a registered nurse working in a primary health care setting, particularly primary care clinics (henceforth known as Klinik Kesihatan or KK) (Chew & Ramli, 2019). They are the first line of contact for patients (Abdullah et al., 2020).

1.7.3 Training

Training, in this study, is defined as a process to improve primary care nurses' knowledge skills, attitudes and behaviour related to obesity management through a learning

experience.

1.7.4 Training Needs

Training needs are components that should be emphasised in conducting training and development of nurses to carry out their roles effectively.

1.8 CHAPTER SUMMARY

This chapter has presented and discussed the background of the study. It justified the importance of determining training needs in the management of obesity and provided definitions of concepts based on numerous sources. Additionally, this chapter also presented the statement of the problem, and explained the study's aim to determine training needs related to obesity and how it can be applied in managing obesity. This chapter also presented the research questions, hypotheses, and objectives. The significance of the study followed, highlighting how this study fills the gap in the literature on obesity. Finally, the operational definitions of the key terms were outlined.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter critically reviews the literature related to obesity, primary care nurses, and training needs. Several literature search strategies have been applied in conducting a comprehensive literature review on the topic of training needs related to obesity among primary care nurses. Online academic databases such as PubMed, MEDLINE, CINAHL, PsycINFO, Scopus, and Google Scholar were searched for relevant articles. Keywords used for the literature review are primary care, nursing, obesity, and training would have been essential. Examples of keywords include "primary care nursing," "obesity management," "obesity training," "nurse education," and "obesity prevention," among others. Boolean operators such as AND, OR, and NOT may have been used to combine keywords and narrow or broaden the search results. For example: "Primary care nursing" AND "obesity training," "Nurse education" AND "obesity management" ("Primary care nursing" OR "nurse education") AND "obesity prevention."

Once the initial search results were obtained, researchers applied inclusion and exclusion criteria to filter the literature. Inclusion criteria might include studies focusing on primary care nurses, obesity management or prevention, and training interventions. Exclusion criteria include studies not conducted in primary care settings, not involving nurses, or not related to training programmes. After applying the filtering criteria, the researchers screened the remaining articles by title and abstract to determine their relevance. Articles deemed potentially relevant would then undergo full-text review to assess their suitability for inclusion in the review. This review may identify the core needs for training related to obesity management for primary care nurses.

2.2 OBESITY

Being overweight and obese is caused by abnormal or excessive fat accumulation, and this condition may impair one's health (World Health Organization, 2020). A person who is overweight or obese by his body mass index (BMI). In this light, BMI is a straightforward weight-for-height metric frequently used to determine whether one is being overweight or obese and is deemed the most accurate population-level indicator of overweight and obesity since it is consistent across all adult age groups and both genders (World Health Organization, 2020). It is obtained when a person's weight in kilograms divided by the square of his height in meters (kg/m2) (World Health Organization, 2020). According to the World Health Organisation (WHO), an adult individual with a BMI of 25 or higher is categorised as overweight, while those with a BMI of 30 or higher are categorised as obese. Notably, there is a slight difference in cut-off points between Asians and Caucasians/Europeans, resulting from the fact that many Asian populations have higher body fat percentages at equal BMIs. (Chen et al., 2021). Based on evidence from several Asian countries, it is suggested that the cutoff BMI for classification obesity in Malaysia is set lower. This is based on data from countries like Hong Kong, Singapore, China, India, and Japan, which indicates that the risk of comorbidities starts to increase at lower BMI values than established by the WHO (Alamuddin et al., 2016). Thus, in the context of Malaysia, a person with a BMI of 27.5 is generally considered obese (Chia et al., 2023). In this regard, obesity is commonly subdivided into 4 categories: Class 1: BMI of 27.5 – 34.9; Class 2: BMI of 35.0 – 39.9; and Class 3: BMI of 40 or higher (Alamuddin et al., 2016).

In the meantime, the World Health Organisation (WHO) reported that the prevalence of obesity approximately tripled globally between 1975 and 2016 (Vaamonde & Álvarez-Món, (2020), with over 1.9 billion people aged 18 years or older being overweight. In this light, 39% of adults worldwide, specifically 39% of the male population and 40% of the female population aged over 18, were overweight. Furthermore,

13% of adults, constituting 11% of the male population and 15% of the female population, worldwide were obese.

Malaysia has one of the highest rates of obesity and overweight in the Asian region, with 64% of its male population and 65% of its female population classified as either overweight or obese o (NHMS, 2019). According to reports from the Malaysian National Health and Morbidity Survey (NHMS), obesity prevalence grew from 27.2% in 2011 to 30.6% in 2015 (Mahaletchumy et al., 2019). The prevalence of obesity among adult Malaysians is also higher than the prevalence of obesity worldwide (IPH, 2015). Malaysia's rising overweight prevalence is largely attributed to urbanisation, high food accessibility, sedentary lifestyles, nutrition transition, food environment, lifestyle, behavioural changes, and government policies (Chong et al., 2023).

In regard to children, Gebremichael et al. (2022) asserted that 38.2 million children under the age of five worldwide were categorised as overweight or obese in 2019. Furthermore, the World Health Organisation (2020) reported an almost 24% increase in the number of overweight children under five in Africa since 2000. It was also reported that almost 50% of overweight and obese children were living in Asia 2016 saw almost 340 million kids and teenagers (ages 5 to 19) who were overweight or obese. In this light, the percentage of children and adolescents aged 5-19 who were overweight or obese increased drastically between 1975 and 2016, from 4% to slightly over 18%. In 1975, the percentage of children and adolescents aged 5-19 who were obese was less than 1%, while in 2016, over 124 million children and adolescents, constituting 6% of girls and 8% of boys worldwide, were categorised as obese. It is projected that the prevalence of obesity globally will likely increase in the future.

A study involving secondary school students in a semi-urban area in Malaysia revealed a high prevalence of overweight and obesity among children and adolescents in the area (Mahaletchumy et al., 2019). The study reported a prevalence of overweight and obesity at 16.0% and 11.5%, respectively. The high prevalence of childhood and adolescence is a

growing concern, as children who are obese have a higher risk of adult obesity, early mortality, and impairment in adulthood (World Health Organization, 2020). In this regard, children who are obese will be more likely to become obese as adults (Liggett, 2014). Thus, if not curbed, childhood obesity will contribute to the continuous increase of adult obesity prevalence in Malaysia.

The American Medical Association declared obesity as a medical condition in 2013 (Deck et al., 2014). Obesity has numerous negative effects on human health and is associated with an increased risk of mortality. This association is still significant even after controlling other risk factors. According to Alamuddin et al. (2016), a higher BMI leads to a high risk of obesity-related health issues. Moreover, people with higher BMI have an increased risk of morbidity from hypertension, dyslipidaemia, type 2 diabetes mellitus (diabetes), osteoarthritis, gallbladder disease, coronary heart disease (CHD), stroke, respiratory issues, sleep apnoea, and various types of cancer (Apovian, 2016).

The World Health Organisation (2020) also reported a link between obesity and higher risk for non-communicable illnesses (NCDs) like diabetes, obstructive sleep apnoea, osteoarthritis, and kidney and cardiovascular disorders. Undoubtedly, the high number of overweight and obese individuals in countries like Malaysia has increased the prevalence of NCD in these countries. For instance, over 70% of all premature deaths in Malaysia are caused by NCDs, including diabetes, heart disease, and cancer (Khaw et al., 2023), while between 2006 and 2015, the prevalence of diabetes among adults aged 18 years and older increased from 11.6% to 17.5% (WHO, 2019). Obesity is also linked to hypertension, and it was reported that about 30% of the population suffers from hypertension and that over 50% of cases of hypertension and diabetes go unreported (WHO, 2019). The higher prevalence of obesity has also increased the cost of healthcare, specifically to treat obesity-related co-morbidities like cardiovascular diseases and diabetes mellitus h (CDC, 2020). This highlights the need to prevent the incidence of obesity from its root cause .

According to the Ministry of Health in Malaysia and the World Health Organization (WHO), primary health care is key to solving the health challenges facing Malaysia (World Health Organization, 2020). In this regard, primary care nurses play a major role in delivering effective health education related to obesity to the community in an effort to reduce the prevalence of obesity (Flinter et al., 2017). Thus, knowledgeable and skilful primary care nurses are paramount in delivering effective health education.

2.3 PRIMARY CARE NURSES

Aggarwal (2012) defined primary care as the range of first-contact healthcare models that address the socioeconomic determinants of health by incorporating community development, health promotion, and intersectoral collaboration. In this context, a primary care nurse is a registered nurse who works in a primary health care setting. Their roles encompass ensuring population health, health promotion, disease prevention, wellness care, first-point-of-contact care and disease management for patients of all ages (Canadian Nurses Association). As they serve at the front lines of public health, nurses usually spend considerable time encouraging patients and their families to lead healthy lifestyles. This is especially true for primary care nurses who interact with patients regularly and are well acquainted with their patients. (Stanulewicz et al., 2020). Primary care nurses are taking on more responsibilities and tasks, which include managing patient care, conducting patient visitsm, interacting with them daily and providing comprehensive patient care. (Flinter et al., 2017).

Primary care nurses often work collaboratively with other healthcare professionals to promote, improve, maintain, and restore health. (Canadian Nurses Association, 2014). A study in Sweden found that 73% of healthcare professionals in primary care expressed a desire to increase their involvement in promoting healthy lifestyles to their patients (Kardakis et al., 2018), and nurses exhibited the highest level of enthusiasm for this endeavour. In regard to their roles, nurses in a primary health care centre (PHCC) take on

two crucial roles in the management of obesity. First, providing care for overweight patients with other health issues, and second, engaging with healthy overweight patients as part of their responsibilities (Bräutigam Ewe et al., 2021).

Primary Health Care, or PHC, refers to an approach to health and a spectrum of services beyond the traditional healthcare system while primary care is the element within primary health care that focuses on healthcare services, including health promotion, management of illness, injury prevention and personal care. PHC serves a dual function in providing health care, first, directly providing services at the point of first contact and second, a coordinating function to ensure continuity of care and ease of movement across the system for individuals in developing their health. Primary health care, or PHC, is a comprehensive approach to health that focuses on the needs and preferences of individuals, families, and communities as early in the health continuum as possible, from disease prevention and promotion to treatment, rehabilitation, and palliative care, and as close as is practical to people's daily environments. The goal is to ensure the highest possible level of health and well-being and their equitable distribution (Kindig & Milstein, 2018). General practice and community-based organisations like nurse clinics are examples of primary care settings.

PHC providers consist of a team of physicians, assistant medical officers (AMOs), nurses and community nurses, pharmacists, medical laboratory technologists, pharmacist assistants, physiotherapists and a list of growing healthcare professionals in line with the expanding and more comprehensive scope of PHC services (Dr Mohamad Noh, 2011). They are responsible for providing primary health care to promote health and prevent illness (World Health Organization, 2020) using the most appropriate health disciplines, collaboration, and providing care in the context of the larger health determinants (such as education, environment, and socioeconomic factors). In the context of Malaysia, primary health care nurses serve as the first line of contact for patients, and changes are frequently required to meet the increasing need for public health (Abdullah et al., 2020). A primary care nurse can also refer to a person who provides first contact or ambulatory personal

health care consisting of high-priority health interventions for low-income groups in other contexts (Hassmiller & Wakefield, 2022). Due to the important role, they take on, primary care nurse practitioners are urged to confront obesity head-on by providing early, individualised intervention to reduce morbidity and mortality associated with obesity (Deck et al., 2014).

The Canadian Nurses Association (2014) used data from published literature publications to determine the reported characteristics of nursing activities connected to direct care, indirect care, education, administrative, and research activities in primary care settings. It was found that direct and indirect care were the most common main topics covered in reported activities. Furthermore, nurses provide direct care in the areas of health assessment, therapeutic interventions, health-care management, chronic disease monitoring and management, health promotion and education, illness, injury, and complications prevention, as well as phone or web-based care. Moreover, the study listed patient advocacy, patient navigation, case management, patient preparation for physician triage, and collaboration with other healthcare organisations and providers as interventions for dealing with obese patient. Another study by Radha Krishna et al. (2019) reported that nurses' roles in education include mentoring and coaching their peers, supervising students and medical residents, and taking part in continuing education. They are also involved in administrative tasks like clerical tasks, scheduling and programme design. The Canadian Nurses Association, (2014) also described those nurses also contributed to research efforts by engaging in programme assessment or quality improvement.

In Malaysia, primary health care is provided by primary health clinics known as *Klinik Kesihatan* (henceforth known as KK) managed by the Ministry of Health. These clinics provide four components of primary health care: curative, preventive, promotive and rehabilitative services. In 2008, there were 802 KK operated by the Ministry of Health, with 5,337 nurses working in these clinics nationwide (Safurah, 2013). A more recent study by Chong & Sellick (2011) reported that 9,922 community nurses were working in primary health clinics and community clinics. In this regard, most of the primary health care

services in KK and other government community clinics are provided by nurses.

Registered nurses (RN) and community nurses form the largest group of health care personnel providing health care services to the county's population in both the public and private sectors. In terms of their training, most RN go through either a 3-year diploma or a 4-year degree course in nursing to qualify as an RN recognised by the Malaysia Nursing Board. In the meantime, community nurses undertake a two-year certificate course (Nursing Board Malaysia, 2010). In this case, both RN and community nurses are considered primary care nurses who are qualified to provide primary health care. Primary health care nurse usually interacts with patients on a regular basis, which many of the primary health care nurses know their patients well. There is an emergence of new roles and activities for primary health care nurses as characterised by greater involvement in handling patient care and its management, their own daily schedule of patient visits and contacts, and extensive care of their patients (Flinter et al., 2017). Opportunities to improve health-promoting behaviours that can lower the likelihood of being overweight or obese in the community are presented to primary care nurses. Primary care nurses also serve as educators and role models for their patients, families, and communities.

2.4 CURRENT PRIMARY CARE NURSE PRACTICE RELATED OBESITY MANAGEMENT AMONG COMMUNITY

Obesity management presents a challenge for healthcare providers in their practices as it involves interactions between genetics, socioeconomic factors (such as access to healthy foods), individual behaviours related to nutrition and physical activity, and other variables (Sanchez-Ramirez et al., 2018). In this light, healthcare providers often face a lack of knowledge and training in aspects such as assessment of obesity, counselling strategies and behaviour management techniques. Thus, as mentioned by Hyer, (2019), strategies to prevent obesity should be developed and put into action towards addressing the factors linked to obesity, removing obstacles to changing one's lifestyle at the individual, social, and environmental levels, and actively involving various stakeholder and related parties.

Nurses play an important role in health promotion. They can encourage healthy lifestyle choices to reduce the likelihood of being overweight or obese. At the forefront of public health, nurses dedicate a significant amount of their time to encouraging patients and their families to adopt healthy lifestyle choices (Stanulewicz et al., 2020). In countries like the United States, nurses frequently educate the public about weight-related health issues (Vine et al., 2013). According to Fruh et al. (2019), school nurses play a significant role in educating students about these challenges. They work with a multidisciplinary team to support and screen children who are underweight or at risk of becoming overweight or obese and organise school intervention programmes to encourage healthy eating and regular physical activity. Additionally, nurses can help to address practical issues such as access to healthy food in the school or office canteen and the psychosocial and cultural factors influencing health behaviours that contribute to obesity (Vine et al., 2013). In this regard, community and school nurses are encouraged to use research evidence in designing health promotion programmes for various populations, for instance, childhood obesity education programmmes.

In the Malaysian context, The Ministry of Health (MOH) organises yearly campaigns to promote healthy lifestyles. Lifestyle campaigns organised between 1997 and 2007 aimed to encourage people to adopt healthy behaviours by focusing on risk factors like bad eating habits, inactivity, alcohol and tobacco misuse, and excessive stress levels (MOH, 2018). The MOH uses a number of media platforms like radio, television and social media to introduce the annual theme at the federal, state, and municipal levels. Information is broadcasted in ethnic dialects as well as in Malay, English, Chinese, and Tamil. Such campaigns for health promotion seek to educate people about healthy lifestyle choices and to motivate them to take more responsibility for their well-being (Safurah et al., 2013).

In primary health clinics, primary care nurses participate in free clinic sessions that provide basic medical examinations, screenings, and health education. In this light, nurses

feel that the primary health care clinic is the best place to expose patients to this issue, and they acknowledge that weight management and lifestyle treatments are a key part of their responsibility (Fruh et al., 2019). Theoretically, most nurses believe that managing obesity is part of their responsibility for managing chronic diseases and promoting health, but this opinion conflicts with the very narrow role they defined. Most nurses believe they possess the communication skills required to approach the subject with patients, work out goals, and establish rapport is positive. Studies also found nurses who received training on obesity, had the opportunity to apply this knowledge and expertise during one-on-one or group consultations with patients and could recommend patients to a group led by a colleague within the practice are the ones who feel the most favourably about their work (Nolan et al., 2012). Therefore, training related to obesity management for primary care nurses is very important to ensure they can deliver their roles in preventing obesity effectively.

2.5 OBESITY MANAGEMENT RELATED TRAINING FOR PRIMARY CARE NURSES

Effective training can help improve the competencies of primary care nurses, which will ultimately improve patient safety and healthcare delivery (Ma et al., 2018). Due to the ever-evolving nature of the healthcare system, healthcare professionals must strive to keep updated on the current information to maintain their clinical competence. Professionals who receive effective training in health systems have better knowledge and skills, higher staff satisfaction and retention rates, lower patient mortality rates, and higher-quality patient care (Ma et al., 2018). The overwhelming majority of nurses view obesity as a serious health concern and consider it a part of their job to assist patients with weight control, which should inspire public health policymakers (Braga et al., 2020). Primary care nurses still need to continue their education and practise in obesity management even though they have specialised training, and the majority are unaware that there is enough organisational support (Zhu et al., 2013).

Continuous professional development (CPD) is necessary for primary care nurses to stay current with the latest advances in the field and to develop their competencies. Malaysia places a strong focus on CPD to keep healthcare workers updated with current skills and knowledge. (Ross et al., 2013). Similarly, several professional boards also require CPD to renew medical practitioners' professional registration. Physicians, pharmacists, dentists and allied healthcare professionals are required to earn a specific amount of credit points annually through CPD programmes, which include formal courses and a variety of professional activities. Those who obtain the required credit points will be awarded an annual Practising Certificate issued by related professional boards (Safurah, 2013).

In 2008, The Malaysian Nursing Board set the requirement that nurses should complete a minimum number of hours of education and training annually (Ross et al., 2013). Enforcing compliance serves as more evidence of the dynamic nature of healthcare and the need for nurses to stay current on advancements in both their knowledge and skill sets. Mandatory continuing professional development (MCPD) is a crucial tool for ensuring that nurses maintain their current level of knowledge and expertise. Nevertheless, policymakers and nurse leaders in the health service facilities' continuing professional development unit should design CPD activities to fulfil the needs of registered nurses (RN), not just organisational requirements. Chong et al., (2014) that out of the nurses surveyed, only 80% (562) had participated in CPD activities in the previous year. Less than 50% of participants showed up for all the events. In terms of continuing professional development, workshops ranked the most common (43.6%), whereas tertiary education was the least popular (1.3%). This indicated few nurses attended tertiary education, which may have been due to a lack of opportunities resulting from the small number. This suggests that CPE should be provided with an emphasis on the learners' need to ensure nurses receive the most recent learning experiences that they can use to improve their current practise (Chong et al., 2014).

According to Sanchez-Ramirez et al. (2018), CPD activities range from teaching methods and passive large-group presentations (such as educational meetings, conferences,

seminars, lectures, etc.) to highly interactive learning techniques like workshops, small groups, and individualised training sessions. Research indicates that symposia and talks improve the knowledge and skills of doctors and other healthcare professionals. However, the most effective CPD activities for improving practice and patient health outcomes should involve continuous exposure, encourage reflection on practice, offer opportunities for skill practice, assist practitioners in identifying the gap between current performance and the desired standard, and are outcome-focused (Wallace & May 2016).

Many studies have identified primary care nurses' practices in the management of obesity and the key obstacles to its implementation. In a recent web-based survey of more than 330,000 medical professionals, nurses believed that they could provide better care for their obese patients if they were given more time (70%), more training in managing obesity (53%), better tools to help patients identify obesity risks (50%) and better reimbursement (53%) (Petrin et al., 2017). Regardless of their prior experience with weight management, 219 primary care physicians (PCPs) and nurses working in a community health system expressed a need for additional training in addressing patients' concerns about overweight and obesity in their survey responses. (Croghan et al., 2019). Healthcare professionals were less likely to discuss obesity with patients in a recent study by Yunus et al. (2023) because of their perception that patients lack motivation to lose weight, have short consultation times, and have other health concerns to attend to during consultations. Furthermore, the researcher stated that Peninsular Malaysia's present healthcare system is not helping physicians or patients who are obese. Nurses require additional assistance in obtaining multidisciplinary obesity care and advanced training in obesity management to enhance the delivery of obesity treatment to their patients (Yunus et al., 2023). The majority of primary care nurses agreed that specific training is necessary for managing obesity.

Sanchez-Ramirez et al. (2018) conducted a one-day training programme called 'interprofessional education activity related to obesity'. The goal of the learning activity was to help healthcare providers treat patients who are fat or at risk of obesity. Leaders from professional groups discussed their experiences in treating obese patients in various

healthcare settings during this two-session programme. They also provided suggestions for integrating obesity intervention into routine patient care. Moreover, round table discussions with participants from two or more professions were encouraged to examine cases connected to obesity. As a result of learning about the various roles that healthcare professionals play in managing obesity, it is crucial to emphasise from an interprofessional perspective that healthcare providers reported having more knowledge about whom to refer patients in the event of obesity intervention. The study conducted by Sanchez-Ramirez et al. (2018) revealed that younger male healthcare practitioners showed the greatest improvement in their abilities and attitudes towards managing obesity after the assessment.

A study by Chong et al. (2016) suggested that more interventions are needed to motivate the involvement of primary care nurses in training activities. The traditional method of obesity training among primary care nurses is through continuous nursing education, conferences, seminars, and workshops. Another study by Chong et al. (2011) stated that there are barriers, such as lack of knowledge, preventing primary care nurses from participating in ongoing nursing education. Designing a structured programme that would meet the training requirements of primary care nurses. To effectively engage in a collaborative weight control programme, nurses require further training in obesity care and weight management (Bleich et al., 2015).

Primary care nurses have traditionally received obesity training through continuing nursing education, conferences, seminars, and workshops. However, according to Chong et al. (2011), primary care nurses often face hindrances in participating in continuous nursing education. The study proposed the creation of structured programmes based on the training needs of primary care nurses. Nonetheless, the training needs related to obesity among primary care nurses remained unidentified. Similarly, Chong et al. (2016) suggested that more interventions are needed to motivate the involvement of primary care nurses in training activities. Hence, a thorough needs assessment should be carried out before planning the training programme to help

determine its objectives and make sure that participants are prepared (Sudarmika et al., 2023). In this case, it is necessary to first assess their current level of knowledge, attitudes, opportunities, and practices around the management of obesity to determine the training needs of primary care nurses. Such inputs can inform the development of coordinated curricula customised to the needs of primary care nurses.

2.6 FACTORS AFFECTING PRACTICE NURSING CARE RELATED TO OBESITY

Various factors motivate nurses to engage in continuous nursing education (CNE) programmes. Common factors include acquiring professional knowledge, professional advancement, relief from routine, adherence to authority, improvement in social welfare abilities, improvement in social interactions, and obtaining credentials (Radha Krishna et al., 2019). Out of these aspects, enhancing professional knowledge and abilities is considered as the most important, followed by the need to maintain current professional practices and enhance their capacity to help the public. Notably, nursing knowledge obtained through CNE is normally only valid for two to five years, and such knowledge and skills could be obsolete and irrelevant to address the current health demands of society if they are not updated (Borrico, 2020)

According to Torre et al. (2018), the majority of nurses sought patient education materials and specific training so they could provide effective counselling to obese patients. In fact, improving one's professional knowledge and abilities may enhance the care given to obese patients (Torre et al., 2018). Lack of knowledge and training in areas like current assessment and counselling approaches and obesity behaviour management techniques were the primary obstacles faced by healthcare providers (Croghan et al., 2018). Standard approaches to managing obesity involve bariatric surgery, medication, nutrition, exercise, and behaviour modification in a therapeutic counselling setting.

Knowledge is an essential concept, and nurses must keep up to date with current

trends and advancements in nursing. Nurses are professionally and legally responsible for their nursing practice, which includes being accountable for every decision they make (Borrico, 2020). However, despite the vital role played by health care providers in preventing and treating obesity, some feel incompetent to treat patients with this condition and occasionally question the long-term effectiveness of their interventions (Torre et al., 2018). Thus, identifying factors influencing knowledge transfer is critical for ensuring the effectiveness of training and that the investment is worthwhile. This will help stakeholders identify techniques to facilitate positive training transfer and, eventually, increasing training efficacy (Ma et al., 2018).

2.6.1 Knowledge On Obesity

In relation to patient care delivery, knowledge is very crucial in caring for patients with obesity and inadequate training and insufficient information can result in costly errors concerning people's health. A study conducted by Torre et al. (2018) on 824 healthcare practitioners revealed that 31% of them were unaware of the definitions of overweight and obesity and were unable to calculate their BMI. Other studies show that there is a lack of knowledge regarding obesity, including the usage of waist circumferences as a measure of obesity and the minimal BMI for obesity. Additionally, it seems that little is known regarding the efficaciousness of the various obesity treatment alternatives (Sanchez-Ramirez et al., 2018).

Moreover, according to a 2009 survey performed by the National Nutrition Surveillance Centre (NNSC), 78% of dietitians and nurses perceived they need training to reduce overweight and obesity, while just roughly 20% perceived they do not need additional training. Another study by Bocquier et al. (2015) found that medical journals represented half of the information sources cited by healthcare professionals in this sector, followed by continuing medical education (25.2%) and patient experiences (10.4%). Only slightly more than half (54.2%) had completed a CME course on weight management, and 80% said they required additional instruction, particularly in behavioural treatment and

nutrition counselling (Bocquier et al., 2015).

There are several important knowledge gaps as identified by interdisciplinary primary care practitioners across different areas on the assessment and treatment of obesity (Ogunleye et al., 2015). According to Bocquier et al. (2015), physicians who completed a continuing medical education (CME) course and were conversant in weight control recommendations often have higher self-efficacy. This is likely because the training boosted their self-esteem and gave them hope for success. This reflects the importance of attaining knowledge in managing obese patients since it can help prevent errors and help deliver better care. Based on the findings, it can be concluded that knowledge is very important to improve the practice of obesity management by primary care nurses.

2.6.2 Belief on obesity

Personal beliefs and attitudes are expressed by behaviour, influence perception, and guide the behaviour of individuals (Ward-Smith & Peterson, 2016). As obesity and being overweight are highly sensitive topics and individuals facing this condition frequently face stigma and discrimination (Bräutigam Ewe et al., 2021, nurses' views on the causes of obesity are significant because they can impact attitudes towards individual accountability, attitudes towards obese clients, and other related factors (Luck-Sikorski et al., 2017). According to a 2018 Bucher et al. study, nurses' ideas about the genetic and endocrinological causes of obesity scored higher. To ensure that these prejudices do not impact or influence the care given, it is crucial to be aware of the attitudes around overweight and obese patients (Ward-Smith & Peterson, 2016).

It is encouraging for public health authorities to know that a majority of nurses view obesity as a serious health concern and consider it a part of their job to assist patients in managing their weight (Patthi et al., 2015). However, the majority do not believe that organisational support is in place, and relatively few seem to have received specialised training. Furthermore, some nurses might exaggerate how important obesity is to one's

health. If a patient thinks their condition is always related to their weight, they could be discouraged from seeking medical attention (Puhl et al., 2014).

2.6.3 Attitude towards patients with obesity

Negative views towards obesity might be exacerbated and hidden by attitudes towards obesity as a health risk factor (Phelan et al., 2015). When it comes to mental health issues, societies bear financial costs due to the widespread negative views towards obese people and the detrimental psychological effects linked to obesity stigma (van Leeuwen et al., 2015). According to multiple studies, there are unfavourable preconceptions about overweight and obese persons based on their weight, such as that they are unmotivated, lazy, weak-willed, unsuccessful, irrational, lack self-control, have weak willpower, and do not follow weight-loss regimens. (Puhl & Heuer, 2010).

Different perspectives and attitudes on weight issues exist between doctors and patients, and a significant barrier could be the issue this causes in their relationship. Sikorski (2003) presents his research on the opinions of German healthcare professionals regarding obesity and overweight. Approximately one-third of the respondents believed that obese people were lazier than their normal-weight counterparts, and 99.0% of the respondents had negative opinions towards obese women (Sikorski et al., 2013). There is a stigma associated with being overweight or obese. Many doctors view these people as lethargic, and they believe that a major obstacle to treating obesity effectively is patient noncompliance and motivation (Sanchez-Ramirez et al., 2018).

According to a Watson et al. (2014) survey, nurses react negatively and impatiently to patients who have a high body mass index. These patients, according to the nurses, have low self-esteem, but they are also capable of controlling their eating patterns through careful meal monitoring. According to Han et al. (2014), a different study reveals that Korean nurses had a negative perception of fat patients, viewing them as passive, with poor self-esteem, and less socially adaptive. According to similar findings from both research

nurse groups, patients with high BMI were perceived as having lower self-esteem, being more passive, and having poorer social adaptation (Mu, 2019).

A study on nurses' personal BMI found that opinions regarding obesity were statistically significantly correlated; nurses who had higher BMIs were also less likely to perceive obesity negatively (Fruh et al., 2019). The weight status of primary care nurses may reflect the low knowledge and beliefs related to obesity. In Malaysia, Coomarasamy et al. (2015) found that 50.6% of the registered nurses in Malaysia have weight issues of being either pre-obese or obese. According to Budd, Mariotti, Graff, and Falkenstein (2011), nurses who are obese typically have a good attitude towards patients who are also obese. The same finding was also reported by Lee & Calamaro (2012), who claimed that nurses with weight issues had less of a negative attitude than nurses without such issues. Apart from that, primary care nurses need to serve as community role models (Rurik et al., 2013).

On the other hand, primary care nurses' weight issues could affect how they feel about helping the community and vice versa. The nurse-patient connection is impacted as a result. The relationship between the nurse and the patient may be impacted, which could lead to inefficient nursing care practices and an increase in Malaysia's obesity rate. In this light, positive attitudes are essential for providing patient-centred care and establishing a supportive environment for individuals struggling with obesity. Another study by Hunter, Rawlings-Anderson, Lindsay, Bowden, & Aitken (2018) reported that after the nurses followed a structured educational experience, their attitudes were more positive towards obese patients.

2.6.4 Opportunity for obesity management

Primary care nurses are in a good position to offer weight-related health advice, but because of educational obstacles and resource availability, the advice they give is generally of low quality (Croghan et al., 2019). According to Croghan et al. (2019),

primary care nurses identified two barriers: a lack of time for discussions and a fear of fostering a bad patient-nurse connection. According to 67% of participants in a recent online poll of more than 330,000 medical professionals, spending more time with patients would enhance their capacity to provide obesity-related advice (Petrin et al., 2017). According to Turner et al. (2018), healthcare providers have identified three primary obstacles that impede them from treating obesity with their patients: insufficient time, inadequate reimbursement, and inadequate training.

Primary care nurses benefit from the opportunity to develop health-promoting practices that reduce the likelihood of becoming overweight or obese. (Bräutigam Ewe et al., 2021). Nurses must take into account the psychosocial and cultural factors that may influence health behaviours linked to obesity in order to effectively prevent and treat these conditions (Fruh et al., 2019). It is crucial to recognise obesity as a chronic, complex illness in order to treat overweight and obese people with appropriate medical care (Warr et al., 2021). A long-term shift in food and exercise habits is the key to both successful weight loss and weight maintenance. Practitioner abilities facilitate effective obesity management in patient coaching and motivation, as well as respect for patients' autonomy. These abilities are becoming more and more important in post-graduate training programmes. Developing these competencies is a key duty for primary care nurses in order to effectively support their patients, including making suitable recommendations to practitioners with training (Lukewich et al., 2020).

2.7 CONCEPTUAL FRAMEWORK

Based on the literature review, the researcher identified training needs for obesity management among primary care nurses, as illustrated in the conceptual framework in Figure 2.1. As stated in previous studies, knowledge, belief, attitude and opportunity need to be improved to increase primary care nurses' practices related to health promotion for managing obesity. It is believed these training needs should be included to improve the quality of primary nurses' practices related to obesity management,

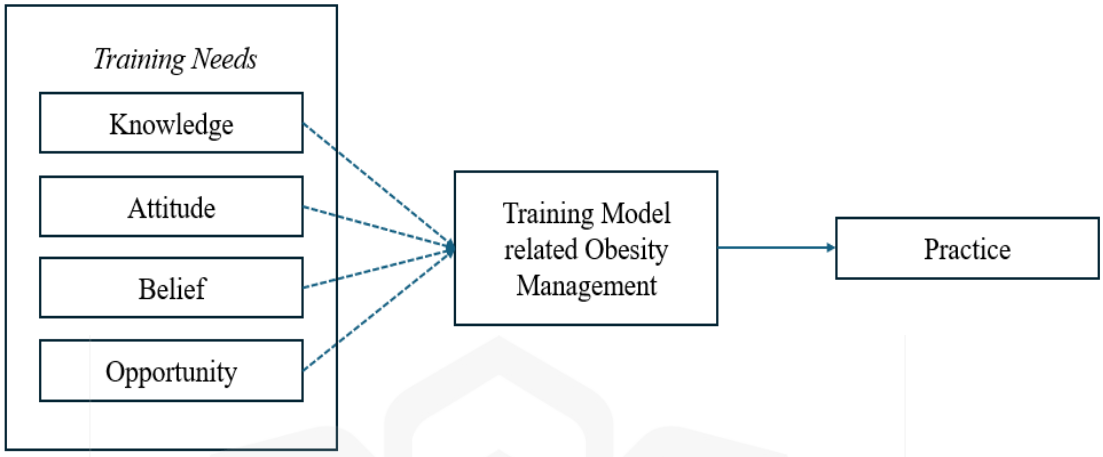

Figure 2.1 Conceptual Framework: Training Needs Component in developing Training Model Related to Obesity Management to Enhance Practices for Primary Care Nurses

2.8 CHAPTER SUMMARY

This chapter described and analysed the definition and significance of obesity-related training needs for primary care nurses. A review of the literature on primary care nurses has also been conducted to provide a brief overview of their various types, roles, and significance to the community. Training needs variables have also been covered in increasing primary care nurses' knowledge, attitude, belief and opportunity to manage obesity in the community. Finally, knowledge, attitude, belief, and opportunity have been identified as factors influencing primary care nurses' practices in managing obesity within the community.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This chapter describes the research methodology adopted in this study. It details the sampling, methodology settings, data collection methods, detailed validity and reliability testing, and the design of the training model for obesity management for primary health nurses.

3.2 RESEARCH DESIGN

This study used the quantitative method of cross-sectional study and was conducted in health clinics across the state of Pahang. This study follows the quantitative cross-sectional design to develop a model of training needs related to obesity management for primary care nurses. The training model is important to identify the variables, specifically training needs, included in training related to managing obesity in primary care settings and to help reduce the prevalence of obesity in Malaysia.

3.3 STUDY SETTING

This study was conducted in primary health clinics in Pahang from October 2021 to April 2022. There are eleven districts in Pahang with a total of 81 primary health clinics. According to the Resource Unit, Pahang State Health Department (2019), there were 884 nurses working in primary health clinics across the state of Pahang. The tabulation of primary health clinics and nurses in each district in Pahang is shown in Table 3.

Table 3.1 Primary health clinics and nurses in each district in Pahang

District	Primary Health Clinic	No of Nurses
Maran	Klinik Kesihatan Jengka 2 Klinik Kesihatan Jengka 7 Klinik Kesihatan Maran Klinik Kesihatan Pekan Tajau Klinik Kesihatan Jengka 22 Klinik Kesihatan Bandar Jengka Klinik Kesihatan Pekan Awah Klinik Kesihatan Chenor	95
Temerloh	Klinik Kesihatan Lanchang Klinik Kesihatan Simpang Songsang Klinik Kesihatan Kerdau Klinik Kesihatan Kuala Krau Klinik Kesihatan Bandar Mentakab Klinik Kesihatan Temerloh Klinik Kesihatan Sanggang	109
Bera	Klinik Kesihatan Padang Luas Klinik Kesihatan Bandar Bera 32 Klinik Kesihatan Bukit Mendi Klinik Kesihatan Tembangau Klinik Kesihatan Purun Klinik Kesihatan Triang Klinik Kesihatan Kemayan	58
Rompin	Klinik Kesihatan Bandar Tun Razak Klinik Kesihatan Tanjung Gemok Klinik Kesihatan Perantau Damai Klinik Kesihatan Leban Chondong Klinik Kesihatan Tekek	89

	Klinik Kesihatan Rompin Klinik Kesihatan Chanis Klinik Kesihatan Bukit Ibam Klinik Kesihatan Perwira Jaya	
Cameron Highland	Klinik Kesihatan Kampung Raja Klinik Kesihatan Tanah Rata	15
Bentong	Klinik Kesihatan Bentong Klinik Kesihatan Lurah Bilut (Felda) Klinik Kesihatan Mempaga Klinik Kesihatan Chemomoi Klinik Kesihatan Simpang Pelangai Klinik Kesihatan Karak Klinik Kesihatan Telemong	64
Raub	Klinik Kesihatan Bukit Fraser Klinik Kesihatan Cheroh Klinik Kesihatan Ulu Gali Klinik Kesihatan Jeruas Klinik Kesihatan Dong Klinik Kesihatan Lembah Klau Klinik Kesihatan Tersang	52
Lipis	Klinik Kesihatan Jerkoh Klinik Kesihatan Mela Klinik Kesihatan Merapoh Klinik Kesihatan Bukit Betong Klinik Kesihatan Benta Klinik Kesihatan Pos Betau Klinik Kesihatan Padang Tengku Klinik Kesihatan Sungai Koyan	63

Jerantut	Klinik Kesihatan Kampung Bantal Klinik Kesihatan Jengka 8 Klinik Kesihatan Kuala Tembeling Klinik Kesihatan Sungai Tekam Utara Klinik Kesihatan Sungai Lekok Klinik Kesihatan Lepar Utara 4 Klinik Kesihatan Kuala Tahan Klinik Kesihatan Padang Piol Klinik Kesihatan Damak	75
Kuantan	Klinik Kesihatan Indera Mahkota Klinik Kesihatan Kurnia Klinik Kesihatan Bandar Kuantan Klinik Kesihatan Jaya Gading Klinik Kesihatan Balok Klinik Kesihatan Gambang Klinik Kesihatan Paya Besar Klinik Permatang Badak Klinik Kesihatan Bukit Goh (Felda) Klinik Kesihatan Sungai Lembing Klinik Kesihatan Beserah	193
Pekan	Klinik Kesihatan Bandar Pekan Klinik Kesihatan Padang Rumbia Klinik Kesihatan Chini Klinik Kesihatan Peramu Jaya Klinik Kesihatan Nenasi Klinik Kesihatan RPS Runchang	71

(Source: Jabatan Kesihatan Negeri Pahang website)

3.4 SAMPLING

3.4.1 Sampling Method

This study used a multistage sampling strategy to achieve a fair and unbiased selection process. In the first step, all districts in Pahang were classified as primary sample units. Using a simple random sample process, which is the lottery technique, each district had an equal chance of being selected. The names of each district were written on identical pieces of paper, placed in a box, and thoroughly mixed. Three pieces of paper were randomly picked, resulting in the districts of Temerloh, Rompin, and Bentong.

In the second stage, all health clinics within each of the selected districts were included as secondary sampling units (SSUs). This meant that every health clinic in Temerloh, Rompin, and Bentong took part in the study, ensuring comprehensive coverage throughout these districts.

The final stage involved selecting participants within each chosen health clinic, treating nurses as tertiary sampling units (TSUs). The study included all nurses who met the inclusion criteria. This strategy ensured that a representative sample of nurses from the designated districts was included, resulting in reliable data for the study. This multistage sampling approach ensured a systematic and unbiased selection process across all levels.

3.4.2 Population and Sample Size

The total sample size for this study was calculated according to the number of primary care nurses working in the three districts selected. The study involved seven primary health clinics in the district of Temerloh with 109 primary care nurses, nine primary health clinics in Rompin, with a total number of 89 primary care nurses, and lastly, seven

primary health clinics in Bentong, with a total of 64 primary care nurses. In all, the sample comprised 262 primary care nurses from three primary health clinics in Pahang. The tabulation of selected primary health clinics and nurses in each district in Pahang is shown in Table 3.2.

Table 3.2: Selected Primary health clinics and nurses in each of the districts in Pahang

District	**Primary Health Clinic**	**Total Number of Primary Care Nurses**
Temerloh	Klinik Kesihatan Lanchang Klinik Kesihatan Simpang Songsang Klinik Kesihatan Kerdau Klinik Kesihatan Kuala Krau Klinik Kesihatan Bandar Mentakab Klinik Kesihatan Temerloh Klinik Kesihatan Sanggang	109
Rompin	Klinik Kesihatan Bandar Tun Razak Klinik Kesihatan Tanjung Gemok Klinik Kesihatan Perantau Damai Klinik Kesihatan Leban Chondong Klinik Kesihatan Tekek Klinik Kesihatan Rompin Klinik Kesihatan Chanis Klinik Kesihatan Bukit Ibam Klinik Kesihatan Perwira Jaya	89
Bentong	Klinik Kesihatan Bentong Klinik Kesihatan Lurah Bilut (Felda) Klinik Kesihatan Mempaga Klinik Kesihatan Chemomoi Klinik Kesihatan Simpang Pelangai Klinik Kesihatan Karak Klinik Kesihatan Telemong	64

3.5 INCLUSION AND EXCLUSION CRITERIA

Inclusion criteria are criteria that must be followed to ensure a correct and valid participant is chosen (Cash et al., 2022). The inclusion and exclusion criteria of the participant are listed below:

3.5.1 Inclusion Criteria

1. Registered Nurse
2. Working in a primary health clinic for at least six months

3.5.2 Exclusion Criteria

1. On leave
2. Refuse to participate

3.6 DATA COLLECTION

The data collection was conducted between January and September 2022. The researchers approached the nurses after an introduction by the head of the health clinics. Each participant was given an information sheet with a brief explanation of the study and the process of data collection. The researcher also explained that the participants would be affected if they participate in the study. The participants were also given details on the confidentiality of the data at least 24 hours before consent was sought. To ensure transparency, the researcher shared her phone number and email address with the participants, and they were informed to contact the researcher if they require further information about the study. Participants were given 24-48 hours to provide their consent to participate. The researcher also conducted a follow-up with those who did not provide any response within 48 hours

after the distribution of the information sheet with a letter of invitation or a phone call to confirm their consent.

The researcher contacted participants who agreed to participate in the study to set a date, time, and location to fill in the consent form. The questionnaire was then distributed to the participants who agreed to participate in this study. Participants were expected to complete the questionnaire within 30 minutes.

3.7 DATA COLLECTION INSTRUMENT

The data collection instrument comprised a questionnaire adapted from a recently published study by Bucher Della Torre et al. (2018). The questionnaire contains six dimensions: i) socio-demographic data, ii) knowledge, iii) attitudes, iv) practices, v) beliefs about obesity and vi) opportunity and perceived needs. The original questionnaire was written in English language and translated into the *Malay language* before being distributed to the participants. The process of translation will be explained in detail in section 3.9.1, while Table 3.3 summarises the content of the questionnaire.

Part A contains items on the participants' demographic data, including their age and working experience. The questionnaire also probed on the participants' current height and weight to determine their BMI. The next part of the questionnaire contains 9 multiple-choice questions to assess the nurse's knowledge level. These items are aimed at evaluating participants' awareness of obesity definitions, recommendations and related messages disseminated in the clinics. The participant would receive 1 point for each correct answer and 0 for the wrong answer. The total score from the knowledge dimension was obtained by dividing the number of correct answers by the total number of questions. The total score for the knowledge dimension ranged from 0 (minimum) to 9 (maximum). These items on the participants' knowledge aimed to evaluate their knowledge in calculating Body Mass Index (BMI) and a healthy balanced diet and lifestyle.

Items in Part C focused on the participants' attitudes towards obesity. There were 15 items with a Likert scale measuring nurses' attitudes towards obesity management. For these items, a Likert scale with a scoring system ranging from 1 (strongly agree) to 5 (strongly disagree) was used to measure attitudes. Lower scores on the Likert scale indicate a more negative attitude towards the management of obese patients, while higher scores reflect a more positive attitude.

Part D of the questionnaire measured the practice of providing education in relation to healthy behaviour. The scoring is based on a scale of "Yes = 1" or "No = 0" for the educational activities involving obese patients. There are 10 activities related to caring for patients with obesity; hence, the total score for this part is 10. Lower scores indicate a lack of practice in giving health education to the patients, while higher scores reflect a higher level of practice among the nurses.

Part E contains 8 questions with a Likert scale measuring the participants' beliefs about obesity. The Likert scale ranges from strongly disagree = 1, disagree = 2, neither agree nor disagree = 3, agree = 4, and strongly agree = 5. Lower scores indicate a low belief about disease and causes of obesity, while higher scores reflect that the nurses have a high belief that obesity is an endocrine disease.

The last part contains 4 questions with a Likert scale. These questions are related to the perceived opportunity to discuss obesity issues with patients. The Likert scale in each item ranges from strongly disagree = 1, disagree = 2, neither agree nor disagree = 3, agree = 4, and strongly agree = 5. Lower scores on the Likert scale indicate a low opportunity to discuss obesity, while higher scores reflect that the nurses have a high opportunity to discuss obesity-related issues with patients.

Table 3.3 Content of the questionnaire

Parts	**Content**
Part A	Socio-demographic data
Part B	Knowledge
Part C	Attitude
Part D	Practice
Part E	Belief
Part F	Opportunity

3.7.1 Pilot Study

A pilot study was conducted after determining the face and content validity. The purpose of the pilot study is to ensure that the participants could rate each item correctly and consistently and the participants could comprehend and agree on the item being rated. Furthermore, the pilot study determined whether the questions were understandable and appropriate and whether the questions were well-defined, clearly understood and presented consistently. Participants' information sheets and consent forms were also assessed for comprehensibility. The pilot study involved 30 staff nurses working at the International Islamic University Malaysia (IIUM) Medical Centre. The results from the pilot study showed that the translated questionnaire has a good content validity index (CVI) with a result of 0.89. The translated questionnaire is deemed suitable to use for real data collection.

3.8 VARIABLES

3.8.1 Dependent Variables

The dependent variable is the practice of obesity management among the primary care nurses in Pahang.

3.8.2 Independent Variables

The independent variables are the nurses' knowledge, attitude, belief and opportunity in managing obese patients.

3.9 VALIDITY AND RELIABILITY

The original questionnaire was written in English language and translated into Malay before being distributed to the participants. The questionnaire underwent a translation process, face and content validity test, and a pilot study to ensure validity and reliability. A group of experts reviewed the questions, and items that were deemed difficult to understand or without relevant content validity were removed. The expert group comprised a physician, two nurses, two nursing academicians and two dieticians, all with expertise in obesity.

3.9.1 Translation

The original version of the questionnaire was written in English, and for this study, it was translated into Malay. The translation process followed the guidelines for cross-cultural adaptation of self-measures in Beaton et al. (2000) as follows:

Stage 1: Initial translation

The first stage in the adaptation process involved a forward translation of the questionnaire to a new targeted language. It is recommended to employ two bilingual translators as it allows a comparison to check and resolve any discrepancies or ambiguities in the wording. During this process, the translators identified and rectified any unsuitable word choices and sentences. They also prepared a report listing any ambiguous or challenging words and sentences along with their rationales. Another recommendation is that translators should come from different backgrounds; for instance, one should have a medical background to ensure an understanding of the subject area, while the latter comes from a non-medical background. In this light, Translator 1 [T-1] can provide a clinical perspective, while Translator 2 [T-2] focus on the language used in the questionnaire to ensure it is suitable for the target participants.

Stage II: Synthesis of the Translations

At this stage, the results of the translations were synthesised by the two translators in a meeting, with an observer making notes. All versions of the questionnaires- the original copy (written in English) and the versions translated by the first (T1) and the second translators (T2) were synthesised to produce a common translated version (T-12). Each of the arising issues addressed and how each was resolved were carefully documented in a written report. Consensus during the meeting is more important than compromising one person's view in resolving the issues. The T-12 version of the questionnaire was finalised in the next stage.

Stage III: Back Translation

At this stage, another translator, who had never seen the original version of the questionnaire, started translating the T-12 version back into the original language. This validity-checking process was conducted to ensure the T-12 reflects the exact translation of the content of the original version. While this process highlights any imprecise wording

used in the translations, there is no guarantee that the forward translation is satisfactory. The backward translation process helps check the validity of translations by highlighting any conceptual errors or gross inconsistencies. It is recommended that the researcher employ two translators, preferably from a non-medical background, who are not informed about the concepts explored. This is to avoid information bias and to eliminate ambiguous meanings of items in the T-12.

Stage IV: Expert Committee

The composition of the expert committee is crucial to achieve cross-cultural equivalence. The committee should comprise the translators involved in the forward and backward translations, healthcare professionals, language experts, and methodologists. During this period, the expert committee should be familiar with the developers of the original questionnaire. The expert committee is responsible for reviewing all versions of the questionnaire, consolidating them and developing the final version of the questionnaire through consensus on any discrepancy before pre- testing takes place. For this study, the expert committee comprised obesity experts, specifically a physician, a psychiatrist, a psychologist, three dieticians, and a physical education teacher. The researcher also involved a statistician in the expert committee.

The expert committee reviewed the original questionnaire, all forward and backward translated versions of the questionnaire, along with written reports explaining the rationale of the decision. The committee made decisions critically, and any issues, decisions and the rationale for those decisions were fully documented in writing. Decisions were made based on four criteria as follows:

1. Semantic equivalence – the meaning of the words, multiple meaning considerations and grammatical difficulties.

2. Idiomatic equivalence – formulation of an equivalent colloquial or idiomatic expression in context (e.g., “downhearted” or “blue”).

3. Experiential equivalence – replacing with a similar item, which relates to capturing the experience of the target context in daily life (e.g., eating with a fork).

4. Conceptual equivalence – the different meanings of conceptual context between cultures (e.g., family – nuclear vs. extended)

The committee examined the sources and performed forward, and backward translations based on the considerations above. The expert reached a consensus that the translation and backward translations could be repeated whenever necessary. As a rule of thumb, the items in the final questionnaire should be understood by a 12-year-old.

Stage V: Pre-Testing the Final Version.

The last stage of the adaptation process involved a pre-testing of the final version of the questionnaire on the target subjects, preferably a sample of 30. The questionnaire was administered to the sample, and interviews were conducted with them to capture their view of the quality of items and the answer options provided. The meanings and responses were examined to ensure that the final version of the adapted questionnaire was consistent in the new context. The responses were then examined to search for high single responses or missing items. This stage has provided valuable insight into how a person interprets each item on the questionnaire but does not address the reliability, construct validity, or pattern of item responses, which are also critical for achieving a successful cross-cultural adaptation. This process also provided some measures of content validity, in which further psychometric properties retention is highly recommended.

Stage VI: Appraisal of the Adaptation Process

All forms and reports used in the adaptation process should be produced and presented to the expert committee members to keep track of the different translated versions of the questionnaire. During this process, the committee might verify that the whole process adheres to Beaton et al's (2000) recommendation. They were also cautioned not to alter the

content provided and to accept that a reasonable translation has been achieved through the process. The procedure is summarised in Figure 3-1.

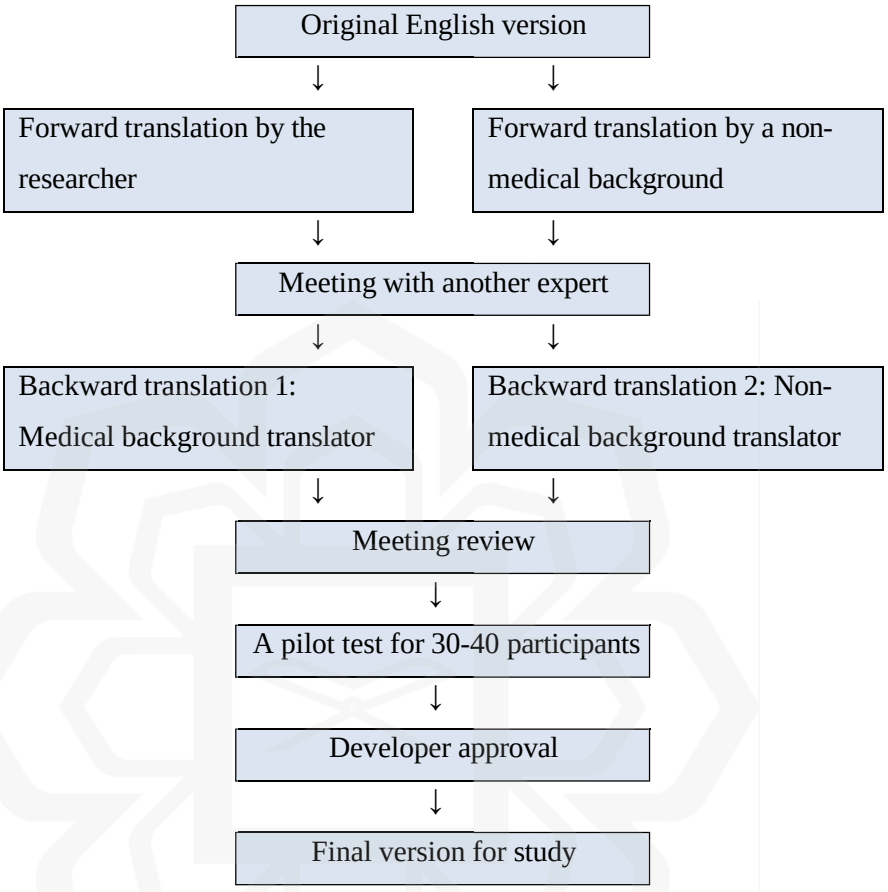

Figure 3.1 Procedure of translation and adaptation of questionnaires (Beaton et al. (2000)

3.9.2 Face Validity

The questionnaire's face validity was determined to ensure the content can measure the study's variables and fulfil the objectives of this study. Face validity assessment forms to several experts. The experts were permitted to comment on any item in the questionnaire. Each panel stated that the words and items in the questionnaire were clear and comprehensible. Overall, the panels provided positive feedback on the items included in the questionnaire. It can be concluded that the questionnaire has good face validity, reflecting that the items are appropriate and can measure what they intended to measure.

3.9.3 Content Validity

In addition to a face validity test, the questionnaire underwent a content validation process. This process is aimed to ensure that the tool used in this study measures the content area it is expected to measure. In order to achieve content validation, the questionnaires were given to each expert for review. The experts rated each item based on a scale of 1, 2 or 3 (1= not relevant to include, 2= relevant but not necessary and 3= absolute necessary). After the expert rated each item in the questionnaire, the researcher calculated the content validity index (CVI), which represents the average expert rating based on the overall scale (Polit and Beck, 2008). Polit and Beck (2008) suggested that items that received a CVI of 0.78 or higher from three or more experts can be considered to have good content validity.

3.10 ETHICAL CONSIDERATIONS

Ethical approval for this study was obtained from the Kulliyyah of Nursing Postgraduate Research Ethics Committee, International Islamic University Malaysia. Formal approval from the Medical Research Ethics Committee (MREC), Ministry of Health, Malaysia, was

obtained (see Appendix 3). The researcher was adhering to the principles of the Declaration of Helsinki 2022 and the Malaysian Good Clinical Practice Guidelines.

All information were kept confidential; detailed explanations were given to the nurses regarding their involvement in this study, which is voluntary, and they can withdraw from this study at any time. Ensuring confidentiality encouraged genuine consent and allowed the gatekeeper to permit the study. The identity and participation were not revealed to anyone, and the results of the data obtained were reported anonymously with no references to a specific individual to ensure data confidentiality.

Informed consent forms were distributed to willing participants before the study started. They were informed of the purpose of the study, the benefits, and the risks and assured that their involvement was voluntary. The researchers' contact details were provided to the participants in case they needed further clarification. They were also briefed that they could voluntarily withdraw from the study.

Privacy and confidentiality were maintained throughout the study to protect participants from potential harm. These include psychological harm like embarrassment or distress, social harm, such as loss of employment, and criminal or civil liability. Participants anticipated that they had not experienced any pain, discomfort, or distress from taking part in the study or posed a risk or burden to them. However, to minimise the potential for both, the following steps were taken:

1. It was made clear in written and verbal communication that participation in this study is completely voluntary and would not affect the participants' work routine.

2. All participants were free to withdraw from the study at any point before publication without giving any reason. The decision may not affect their work and was made clear at the point of recruitment and through the informed consent form.

3. Participants were requested to spend some time to participate in the data collection. Appointments for data collection were made at a time and location that is convenient to the participants to reduce the burden on them.

4. If any risk is established, the participant will be excluded from the study and their superior will be contacted immediately in writing and by telephone. The researcher supervisor or field supervisor will also be contacted to offer support to the participant.

5. Any suspected risk to the physical or mental health of any participant will be discussed with supervisors/ field supervisors and the participant's doctor.

6. Lone worker procedures have been devised and implemented to ensure the researcher is put at the least amount of risk possible during the study, especially if the data collection is conducted outside of the designated research location.

7. The original data from questionnaires were converted to digital data and kept by researchers. The data will be destroyed after 10 years of study completion, according to the Data Protection Act (1998).

8. The study result will be informed to the participants upon request.

9. No personal information will be obtained prior to publication of the research and relevant permissions will be obtained prior to publication.

10. Permission from the Director General of Health, Malaysia, will be obtained prior to publication. (See s*urat pekeliling* Bil 1/2013 - *semua penerbitan dan pembentangan hasil dari penyelidikan KKM dan/atau menggunakan data KKM mesti memperolehi kelulusan Ketua Pengarah Kesihatan)*

3.11 DATA ANALYSIS

The data were analysed using the Statistical Package Social Science (SPSS) version 23.0 with an alpha level of 0.05. Descriptive statistics were initially performed. The result of demographic data, knowledge, attitude, belief, opportunity, and practice were calculated using descriptive analysis and presented in terms of frequency (n) and percentage (%). The result for the second objective - to determine the relationship between knowledge, attitude, belief and opportunity with practice were calculated using inferential statistics. The Pearson Chi-square was used to evaluate the association of variables, and multiple logistic regression tests evaluated the relationship among the variables. From the results, the equation used to make predictions in Partial Least Square-Structure Equation Modelling (PLS-SEM) to propose the conceptual model. The results were presented in charts, graphs, tables, and reports with careful interpretation in Chapter 4.

Categorical data were reported in terms of frequency (n) and percentage (%), while continuous data were presented as mean and standard deviation. Additionally, a normality test was conducted to assess the distribution of the data. The results indicated that the variables followed a normal distribution, which further validated the subsequent statistical analyses. The study utilised inferential statistics, including the Pearson correlation test and multiple linear regression analysis, to explore associations and relationships among the variables. The equation derived from the analysis was subsequently employed in the Partial Least Square-Structure Equation Modelling (PLS-SEM) to propose a conceptual model. The findings are presented using tables, accompanied by a comprehensive interpretation of the results.

3.12 DATA ASSUMPTIONS – REGRESSION

Regression analysis is a statistical technique that estimates the associations between one or more independent variables and a dependent variable. Modelling the future relationship between variables and evaluating the strength of the relationship between them are two

uses for it (Maulud & Abdulazeez, 2020). In this study, researchers have used multiple linear regression to analyse multiple independent variables that were used in this study. Regression analysis produces a regression equation where the coefficients represent the relationship between each independent variable and the dependent variable. A typical multiple linear regression analysis produces several statistics, including an overall test of model fit and tests of individual parameter estimates. In addition, the analysis prints out unstandardised regression coefficients, standard errors for those coefficients, and a standardised version of the regression coefficients. In addition, a squared multiple correlation or *R2* for the regression equation indicates the proportion of variance in the dependent variable accounted for by the set of independent variables in the multiple regression equation (Connell, 1987). From the results, researchers have used the equation to make predictions in Partial Least Square-Structure Equation Modelling (PLS-SEM).

3.13 PARTIAL LEAST SQUARE-STRUCTURE EQUATION MODELLING (PLS-SEM)

The primary objective of this study is to develop a comprehensive training model focusing on addressing obesity-related issues for primary care nurses. The study employed an advanced statistical technique called Structural Equation Modelling (SEM) and utilised the user-friendly Smart PLS software to accomplish the research objective. By employing SEM, the study was able to analyse the relationships among knowledge, attitude, belief, opportunity, and practice related to obesity among primary care nurses and understand how they influence the training needs of primary care nurses in managing obesity-related challenges. Through this approach, the study aims to provide valuable insights and recommendations for designing effective training programmes that enhance the competencies of primary care nurses in addressing obesity. In PLS-SEM, the main goal is to maximise the explained variance of the dependent variables, which are also called latent constructs. PLS-SEM is commonly used in exploratory research, especially when theories are still being developed and integrated (Lowry & Gaskin, 2014). This study employed PLS-SEM due to the scarcity of literature discussing theoretical integration.

Additionally, PLS-SEM is deemed the preferred analysis technique when the research objective is theory development and explaining variance or predicting constructs (Hair et al., 2019, 2020). Therefore, in this study, PLS-SEM has been employed for inferential and hypothesis testing purposes. Before testing the hypotheses, the measurement model has been evaluated to ensure the validity of the instrument used. This evaluation includes assessing the structural model as well.

3.13.1 Outer Model

3.13.1.1 Convergent Validity

Convergent validity was assessed by evaluating the agreement among multiple items measuring the same construct. The average variance extracted (AVE) is a commonly used metric for this purpose. To calculate the AVE, the squared loadings of each indicator on the construct are summed, and the average is computed. An AVE value of 0.50 or higher is typically considered acceptable, indicating that the construct explains 50% or more of the variance in the constituent items (Hair et al., 2019).

3.13.1.2 Discriminant Validity

Discriminant validity refers to how well the items distinguish between different constructs or measure separate concepts (Kumar et al., 2022). Each indicator should strongly relate to only one specific underlying concept to determine discriminant validity. It is important to avoid indicators that have similar relationships with multiple constructs to ensure that each construct is distinct from the others, which is necessary for demonstrating discriminant validity. Additionally, it is crucial for each indicator within a construct to have a satisfactory factor loading of 0.6 or higher, indicating that it measures that specific construct effectively (Dash & Paul, 2021).

3.13.1.3 Reliability

Reliability assesses how consistently a measuring instrument measures a specific concept. Internal consistency reliability is one aspect of reliability that has been examined in this study. It is evaluated by checking if the values of Cronbach's alpha and composite reliability are above 0.7, indicating good internal consistency (Kumar et al., 2022).

3.13.2 Inner Model

3.13.2.1 R-Square

The R-square value is a measure that indicates the extent of influence exerted by the independent variables, both from within and outside of this study, on the dependent variable. By observing changes in the R-square value, the impact of specific independent factors on the dependent variable can be assessed and determined if the effect is statistically significant. As a rough guideline, R-square values of 0.25, 0.50, and 0.75 are considered weak, moderate, and strong, respectively (Kumar et al., 2022).

3.13.2.2 Hypothesis Analysis

Bootstrapping analysis was used for hypothesis testing in this study. The conclusions drawn from the bootstrapping analysis relied on two indicators: the t-statistics and the p-value, which demonstrate the significance of the relationships being examined. The research findings suggest that a route coefficient is considered significant in rejecting the null hypothesis if the t-statistic exceeds 1.96 and the p-value is less than 0.05 (Jumani & Muhamad, 2022).

3.14 EXPECTED OUTCOMES

The outcome of the study is to prove the conceptual framework and develop a training model for primary care nurses related to managing obesity. It is important to analyse the need for further training and interventions to improve the primary care nurses' knowledge, attitudes and practices related to obesity. This is mainly important because the primary care nurses are the front line to assess, diagnose and manage patients with obesity, and their knowledge, attitude and practices may influence the care of the patients.

3.15 CHAPTER SUMMARY

This chapter has described the research methodology of this study. The research design was chosen based on the recommendations of past studies to ensure the smoothness of the study. The participants were randomly sampled from primary care nurses in three primary health clinics in Pahang. The study employed a questionnaire instrument to collect data required on training needs related to obesity management among primary care nurses. The chapter has described the questionnaire adaption and translation process as well as the ethical considerations for the study.

CHAPTER FOUR

FINDINGS AND RESULTS

4.1 INTRODUCTION

This chapter presents the findings of the study. The study aims to achieve three primary objectives, including 1) to determine the level of obesity management-related knowledge, beliefs, attitudes, opportunities, and practices among primary care nurses; 2) to examine the relationships between these factors; and 3) to determine training needs component in a training model tailored to help primary care nurses manage obesity among patients. Descriptive analyses were first conducted to analyse and present demographic data and variables such as knowledge, attitude, belief, opportunity, and practice.

The sample size for this study was set at 262. Out of this number, 234 questionnaires were returned and included in the data analysis, representing a response rate of 89.3%. This response rate is considered good and was attributed to online data collection. The completed questionnaires provided valuable data for the analysis and significantly contributed to the findings of the study.

4.2 THE RESPONDENTS' DEMOGRAPHIC CHARACTERISTICS

The first part of the questionnaire examined participants' demographic characteristics, including age, years of working experience, and body mass index (BMI). The mean age of the participants is 34.68, with a standard deviation of 6.27 (M = 34.68, SD = 6.27). This indicates that most participants are in their mid-30s. In terms of their working experience,

the mean working experience is 10.06 years, with a standard deviation of 6.21 (M = 10.06, SD = 6.21), suggesting that, on average, the participants have slightly over a decade of working experience. Additionally, the study examined the participants' body mass index (BMI), a measure of body fat based on height and weight as reported by the respondents. The mean BMI is 25.81, with a standard deviation of 4.15 (M = 25.81, SD = 4.15). These findings indicate that the participants have a BMI within the normal weight range. However, the standard deviation suggests some variability in BMI scores among the participants, with values ranging from below average to above average.

The study also investigated the participants' attendance in obesity-related courses while attending nursing training and after graduation, and the types of training they received. Regarding their attendance in obesity-related courses during their nursing studies, 132 participants (56.4%) reported that they could not remember whether they attended such courses. In contrast, 55 participants (23.5%) had attended obesity-related courses during their studies, while 47 participants (20.1%) reported that they did not attend any training. Meanwhile, 96 participants (41.0%) reported that they underwent obesity management-related training after graduation, while 138 participants (59.0%) indicated that they did not participate in any training on obesity after graduation. Furthermore, the study showed that 119 participants (50.9%) received short training on obesity, while 115 participants (49.1%) did not undergo any training. Table 4.1 summarises the descriptive statistics for the participants' demographic characteristics and information on obesity-related training they received.

Table 4.1 Summary of Descriptive Statistics for Participant Demographic Characteristics and Training Information

Variable	Mean	SD
Age	34.68	6.27
Year of working experience	10.06	6.21
Body Mass Index (BMI)	25.81	4.15
	Frequency	**Percentage (%)**
Attended obesity-related courses during studies		
Do not remember	132	56.4
Yes	55	23.5
No	47	20.1
Attended training on obesity after graduation		
Yes	96	41.0
No	138	59.0
Duration of training on obesity after graduation		
Short training (less than a week)	119	50.9
Long training (more than a week)	0	0
No training	115	49.1

n= 234

4.3 KNOWLEDGE, BELIEFS, ATTITUDES, OPPORTUNITY, AND PRACTICES RELATED TO OBESITY AMONG THE PRIMARY CARE NURSES.

The findings of the study indicate that primary care nurses demonstrated a moderate level of knowledge regarding obesity management. On an 8-point scale, the mean score of 5.56 (*SD* = 1.98) suggests that, on average, the nurses possess a moderate level of knowledge in managing obesity. This suggests that there is still room for improvement and further education to enhance their knowledge in this area.

In terms of attitudes towards obesity management, the primary care nurses demonstrated moderately positive attitudes. The mean score of 3.26 (*SD* = 0.29) obtained on a 5-point scale suggests that, on average, the nurses held moderately positive attitudes towards managing obesity. This finding indicates a favourable disposition among the nurses, highlighting their receptiveness and willingness to address obesity-related concerns within their practice.

Furthermore, the nurses showed a relatively high level of belief in the effectiveness of obesity management strategies. The mean score of 4.43 (*SD* = 0.62) on a 5-point scale indicates that, on average, the nurses had a strong belief in the efficacy of strategies employed in managing obesity. This positive belief can contribute to their motivation and commitment to implementing effective interventions for patients struggling with obesity.

Additionally, the primary care nurses perceived positive opportunities for obesity management. The average score of 4.31 (*SD* = 0.75) on a 5-point scale indicates that nurses felt a good degree of possibility to treat obesity in their healthcare settings. This indicates that they believed there were adequate resources, support, and infrastructure available to effectively manage obesity.

Moreover, the primary care nurses reported a high level of engagement in obesity management practices. Based on the 10-point scale, the mean score of 8.24 (*SD* = 2.88) indicates that, on average, the nurses were actively involved in various obesity management practices. This reflects their commitment and proactive approach to implementing interventions and strategies to address obesity-related concerns. Table 4.2 presents a summary of the mean scores for knowledge, attitudes, beliefs, opportunities, and practices related to obesity among primary care nurses.

Table 4.2 Summary of Mean Scores for Knowledge, Attitudes, Beliefs, Opportunities, and Practices Related to Obesity Among Primary Care Nurses.

Variable	Min-Max Score	Mean	SD
Knowledge	0-8	5.56	1.98
Attitude	1-5	3.26	0.29
Belief	1-5	4.43	0.62
Opportunity	1-5	4.31	0.75
Practice	0-10	8.24	2.88

N= 234

4.4 CORRELATION BETWEEN KNOWLEDGE, ATTITUDES, BELIEFS, OPPORTUNITIES, AND PRACTICES RELATED TO OBESITY AMONG PRIMARY CARE NURSES

The study also examined the relationships between independent variables (knowledge, attitude, belief, and opportunity in managing obese clients) and the dependent variable (practice) among primary care nurses. Pearson correlation coefficients were used to determine the strength and significance of these connections.

The correlation between knowledge and practice was found to be weak and not statistically significant (r = 0.08, p = 0.249). This suggests that there is no significant

relationship between nurses' knowledge of managing obese clients and their actual practice in this area. In other words, knowledge alone does not significantly influence the extent to which nurses engage in obesity management practices.

Conversely, a weak positive correlation was observed between attitude and practice in managing obese clients among primary care nurses ($r = 0.17$, $p = 0.009$). This finding suggests that there is a statistically significant but weak positive association between nurses' attitudes towards managing obese clients and their practice in managing obesity. It suggests that nurses with more positive attitudes are more likely to actively engage in obesity management practices.

Furthermore, a moderate positive correlation was found between belief and practice in managing obese clients among primary care nurses ($r = 0.46$, $p < 0.001$). This indicates that there is a statistically significant and moderate association between nurses' beliefs in the effectiveness of obesity management strategies and their engagement in practices aimed at managing obesity. It also suggests that nurses who hold stronger beliefs in the efficacy of obesity management strategies are more likely to actively engage in practices related to managing obese clients. Likewise, a strong, significant positive correlation was also found between opportunity and practice in managing obese clients among primary care nurses ($r = 0.57$, $p < 0.001$). This suggests that there is a strong and statistically significant association between nurses' perception of opportunities for managing obese clients and their engagement in related practices. Nurses who perceive a greater number of opportunities for managing obesity are more likely to actively engage in practices aimed at addressing obesity-related concerns. Table 4.3 summarises the correlation between knowledge, attitudes, beliefs, opportunities, and practices related to obesity among primary care nurses.

Table 4.3: Correlation between Knowledge, Attitudes, Beliefs, Opportunities, and Practices Related to Obesity Among Primary Care Nurses

Variables	**Practice**	
	Pearson correlation, *r*	***p*-value**
Knowledge	0.08	0.249
Attitude	0.17	0.009*
Belief	0.46	<0.001*
Opportunity	0.57	<0.001*

*. Significant at 0.05 level.

The findings indicate that nurses' knowledge alone may not directly affect their practice in managing obesity patients. However, their attitudes, beliefs, and perceived opportunities play significant roles in influencing their engagement in obesity management practices. These results highlight the importance of promoting positive attitudes, strengthening beliefs in the effectiveness of obesity management strategies, and creating more opportunities for nurses to effectively address the needs of clients with obesity. Based on this correlation, further analysis using Structural Equation Modelling (SEM) was conducted to propose a conceptual model.

Partial Least Square-Structure Equation Modelling (PLS-SEM) software is used to analyse the structural equation modelling (SEM) where the relationship between the variables (knowledge, beliefs, attitudes, opportunity, and practices related to obesity) is analysed and expressed in single or multiple regression equations.

4.5 DATA ANALYSIS - OUTER MODEL

Testing the outer model in this study focuses on the relationship between each indicator and the study variables. Outer model analysis is carried out to ensure that the

measurements used are feasible to use as measurements (valid, reliable, and no multicollinearity occurs). The outer model is a measurement model consisting of indicators and paths that link them to each factor. The results, as depicted in Figure 4-1, illustrate the findings of the study.

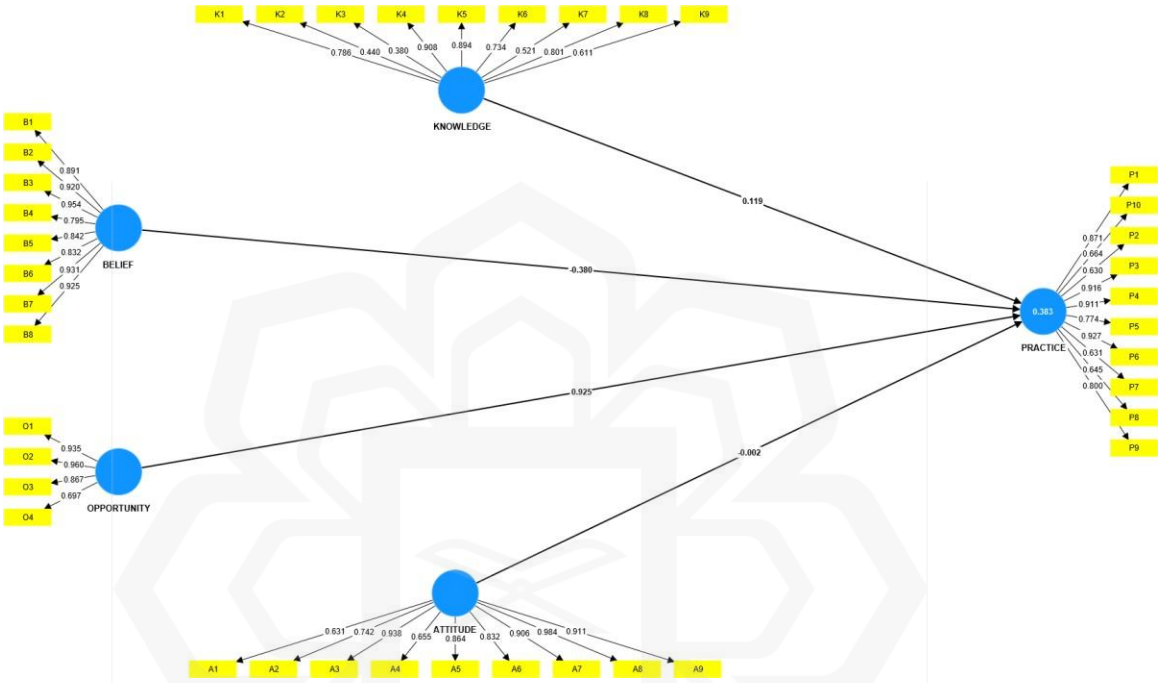

Figure 4.1: Outer Model

4.5.1 Convergent validity

A variable is deemed to have good convergent validity if the average variance extracted (AVE) value is 0.50 or higher. In this regard, an AVE of 0.50 or higher indicates that the construct explains 50 per cent or more of the variance of the items making up the construct. Table 4.4 shows the result of AVE,

Table 4.4: Average Variance Extracted (AVE)

Variable	Average Variance Extracted (AVE)	Explanation
Knowledge	0.511	Valid
Attitude	0.702	Valid
Belief	0.788	Valid
Opportunity	0.759	Valid

The table above shows that all variables have an AVE value of more than 0.5; thus, all variables are declared valid according to the convergent validity test result.

4.5.2 Discriminant Validity

Discriminant validity can be measured using cross-loadings and factor loadings. In this regard, an indicator must load highly only on one latent construct to indicate discriminant validity. Furthermore, while cross-loading must be avoided, each construct must be distinct from others (Rönkkö & Cho, 2022). Discriminant validity is achieved when all indicators under a latent construct have an acceptable factor loading of 0.6 and above. Table 4.5 shows the result of the cross-loadings and loadings factor.

Table 4.5: Loadings Factor

Variable	Indicator	Loadings factor
Knowledge	K1	0.786
	K2	0.440
	K3	0.380
	K4	0.908
	K5	0.894
	K6	0.734
	K7	0.521
	K8	0.801
	K9	0.611
Attitude	A1	0.631
	A2	0.742
	A3	0.938
	A4	0.655
	A5	0.864
	A6	0.832
	A7	0.906
	A8	0.984
	A9	0.911
Belief	B1	0.891
	B2	0.920
	B3	0.954
	B4	0.795
	B5	0.842
	B6	0.832
	B7	0.931
	B8	0.925
Opportunity	O1	0.935
	O2	0.960
	O3	0.867
	O4	0.697
Practice	P1	0.871
	P2	0.664
	P3	0.630
	P4	0.916

Variable	Indicator	Loadings factor

	P5	0.911
	P6	0.774
	P7	0.927
	P8	0.631
	P9	0.645
	P10	0.800

4.5.3 Reliability

Table 4.6 below shows that all variables have Cronbach's Alpha and Composite reliability values of above 0.7. This indicates that the variables were found to have high internal consistency reliability.

Table 4.6: Internal Consistency Reliability

Variable	Cronbach's Alpha	Composite Reliability	Explanation
Knowledge	0.905	0.889	Reliable
Attitude	0.956	0.954	Reliable
Belief	0.961	0.967	Reliable
Opportunity	0.888	0.925	Reliable
Practice	0.938	0.940	Reliable

4.6 DATA ANALYSIS - INNER MODEL

The inner model is a structural model used to predict causal relationships (causation relationships) between latent variables or variables that cannot be measured directly.

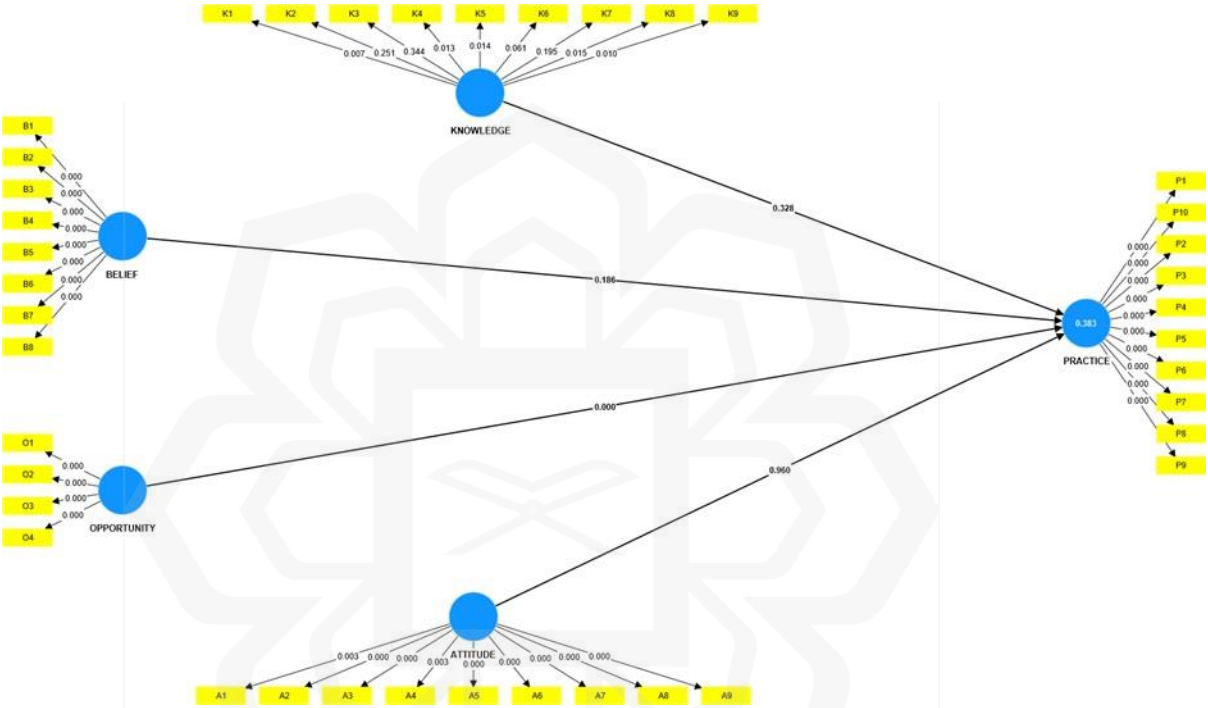

Figure 4.2: Inner Model

4.6.1 R-square

The R-square value indicates how much influence is exerted on the dependent variable by the independent variables simultaneously. The R-square values present the influence of obesity management practice among primary care nurses (dependent variables) on their knowledge, attitude, belief and opportunity in obesity management (independent variables). The rule of thumb for R-square (R^2) values of 0.25 indicates weak influence,

0.50 indicates moderate influence, and 0.75 indicates strong influence. The result of the R-square is shown in Table 4.7.

Table 4.7: R-square value

Variable	R-square	Explanation
Practice among primary care nurses in managing obesity	0.570	Moderate

The results of the R-square test in Table 4.7 show that the variables of knowledge, attitude, belief, and opportunity influence the practice of obesity management among primary care nurses. The R-square value of 0.570 means that these variables explain 57.0% of the obesity management practice. These findings suggest that these factors have a moderate explanatory power in understanding the practice behaviours of primary care nurses in relation to obesity management. The moderate R-square value implies that while the variables of knowledge, attitude, belief, and opportunity contribute significantly to explaining the practice of managing obesity, other factors beyond the scope of this study also influence these practices. It highlights the need to examine additional variables or factors that may play a role in shaping the practice behaviours of primary care nurses when it comes to managing obesity.

4.6.2 Hypothesis Analysis

The results of the hypothesis analysis are presented through the path coefficient of the bootstrapping technique (refer to Table 4.8). In this light, the route coefficient is significant in rejecting the null hypothesis if the t-statistic is more than 1.96, the p-value is lower than 0.05, and the magnitude of the influence can be seen through the value of the original sample. Table 4.8 presents the result of the path hypothesis analysis:

Table 4.8 Path Coefficients

Hypothesis	Original Sample	t-Statistics	P Values	Explanation
Knowledge -> Practice	0.563	10.635	<0.001	Significant
Attitude -> Practice	0.031	0.784	0.434	Not Significant
Belief -> Practice	-0.175	0.900	0.368	Not Significant
Opportunity -> Practice	0.591	3.404	0.001	Significant

Table 4.8 presents the results of hypothesis testing for the relationships between knowledge, attitude, belief, opportunity, and practice variables. The coefficients, t- t-statistics, and p-values were used to determine the significance of these relationships. The results indicate a positive relationship between knowledge and practice (Knowledge -> Practice). The coefficient of 0.563, a large t-statistic of 10.635, and a p-value less than 0.001 indicate statistical significance. On the other hand, the result suggests a weak positive association between attitude and practice (Attitude -> Practice). The coefficient of 0.031, a relatively small t-statistic of 0.784, and a *p*-value of 0.434, greater than the customary threshold of 0.05, indicate that the relationship is not statistically significant.

Similarly, there is a negative relationship between belief and practice (Belief -> Practice) with a coefficient of -0.175, a small t-statistic of 0.900, and a *p*-value of 0.368 greater than 0.05, indicating that the relationship is not considered statistically significant. In contrast, the result demonstrates that opportunity and practice (Opportunity -> Practice) have a positive association. The coefficient of 0.591, a relatively large t-statistic of 3.404, and a *p*-value of 0.001 less than 0.05 indicate that the relationship is statistically significant. The results indicate that knowledge and opportunity have significant effects on the practice of managing obesity among primary care nurses. However, attitude and belief do not have a significant impact on practice.

4.7 CHAPTER SUMMARY

This chapter presented the findings of a study aimed at developing a training model for primary care nurses concerning obesity. The study focused on determining primary care nurses' knowledge, beliefs, attitudes, opportunities, and practices related to obesity. The objectives are to establish relationships between these factors and to create a tailored training model.

The findings suggest that knowledge and opportunity have a significant impact on primary care nurses' practices for treating obesity. However, attitude and belief have no meaningful effect on practice. These findings underscore the need for targeted interventions to enhance attitudes and beliefs, create more opportunities, and provide education to improve obesity management practices among primary care nurses. The study's structural equation modelling (SEM) analysis further supported these conclusions, emphasising the importance of these factors in a proposed conceptual model.

CHAPTER FIVE

DISCUSSION

5.1 INTRODUCTION

This chapter discusses the findings of this study and compares them with the findings of previous research. This study aims to determine the level of primary care nurses' knowledge, attitude and practice related to obesity management. In this regard, this chapter further discusses the relationship between nurses' demographic characteristics, i.e their BMI and their attitude towards managing obese patients and aspects like the relationship between nurses' working experience and their level of knowledge related to obesity.

5.2 KNOWLEDGE, BELIEFS, ATTITUDES, OPPORTUNITIES, AND PRACTICES RELATED TO OBESITY MANAGEMENT AMONG PRIMARY CARE NURSES.

This study measured nurses' knowledge regarding obesity management based on their knowledge of BMI calculations, diet, and exercise using multiple choice questions (MCQ). 73.9% of nurses managed to answer the item on BMI calculation correctly. Conversely, an article by Torre et al. (2018) revealed that 31% of nurses were not able to calculate patients' BMI accurately. On the other hand, the study found that 41.9% of nurses possess knowledge of diet management and the daily portions of fruits and vegetables as recommended by the World Health Organization, 30.3% know about the daily servings of fatty or sweet foods, 91% answered the item on the food group that causes obesity, and 91% know about the healthy meal recommended by Ministry of Health. The result of this study contradicted the findings by Torre et al. (2018), where 81% of nurses lacked knowledge of the daily fruits and vegetables portion, and 53% of them did not know the recommended daily servings of fatty or sweet foods. An article

by Blake & Patterson (2015) also yielded the same result that 79% of nurses were not aware of the right portion of fruits and vegetables intake daily.

In regard to the nurses' knowledge of physical exercise, the results indicate that 71.4% of the participants know about the frequency of exercise per week, 51.3% know about the minimum time required for daily exercise, and 85.5% know the most suitable exercise for obese patients. Similarly, other studies reported that 72% of the participants knew about the frequency of weekly exercise and minimum time spent on daily exercise. In the meantime, 98.1% of the participants know the effective methods to reduce weight for obese patients. This finding is in line with Kable et al. (2015), which stated that nurses perceived combining diet with physical activity as the most effective strategy for reducing weight.

This study indicates that primary care nurses demonstrated a moderate level of knowledge regarding obesity management, as reflected by the mean score of 5.56 on an 8-8-point scale. This suggests that, on average, the nurses possess a moderate level of knowledge in managing obesity. This contradicts Torre et al. (2018), who found that the majority of nurses are aware of current requirements for healthy diets and physical activity. Another study involving 106 nurses in Israel presented comparable results, with 52% of nurses correctly answering a questionnaire on nutritional knowledge questionnaire (Boazet al., 2013). Furthermore, Park et al. (2011) study revealed that nurses had low nutritional knowledge (58.3%).

In the meantime, the standard deviation (SD) of 1.98 indicates some variability in knowledge levels among the nurses. These results imply that there is room for improvement and further education to enhance their knowledge in this area. Many studies reported and suggested that nurses should further their education or training in healthy lifestyle assessment, obesity management and other related aspects (Kable et al., 2015). It is crucial to address this knowledge gap through targeted training programmes or continuing education to ensure that nurses are well-equipped to provide effective obesity

management(Torre et al., 2018).

The study also examined nurses' attitudes towards obese patients. The finding shows that primary care nurses have moderately positive attitudes towards managing obesity, as indicated by a mean score of 3.26 on a 5-point scale. Most of the participants showed a positive attitude towards obese patients, with a percentage of 84.1%. However, 15.9% of participants have a negative attitude towards obese patients. This finding suggests a favourable disposition among the nurses, highlighting their receptiveness and willingness to address obesity-related concerns within their practice. According to another study, nurses who themselves are obese tend to treat obese patients with a positive mindset (Budd, Mariotti, Graff, & Falkenstein, 2011). A similar conclusion was presented by Lee & Calamaro (2012), who reported that nurses with weight problems exhibited a less negative attitude than nurses without such issues. Positive attitudes are essential for providing patient-centred care and establishing a supportive environment for individuals struggling with obesity. Another study by Hunter, Rawlings-Anderson, Lindsay, Bowden, & Aitken (2018) reported that nurses who underwent a structured educational experience showed more positive attitudes towards obese patients. The moderately positive attitudes observed in this study indicate comprehensive training related to obesity provides a promising foundation for effective obesity management.

The study also examined nurses' practice in providing education on healthy lifestyle behaviour for obese patients using 10 questions. Each item was rated based on a scale where < 5 was considered as poor practices while >5 was considered as good practices. The finding demonstrates that primary care nurses reported a high level of engagement in obesity management practices, as indicated by a mean score of 8.24 on a 10-point scale. This finding is consistent with Kable et al. (2015), where the nurses were giving advice or health education regarding obesity management, and 88% of nurses promoted healthy behaviour. These practices are important and should be part of their practices in managing obesity (Blake & Patterson, 2015). This finding suggests that, on average, nurses are actively involved in various obesity management practices. Their commitment and proactive approach to implementing interventions and strategies to address obesity-related

concerns are commendable. It is essential to recognise and support these practices while continually promoting evidence-based approaches to enhance patient outcomes and improve obesity management.

Another qualitative observational study found that the nurses initiated the conversation or health education related to obesity management, and they also reported that 80% of patients said that they were satisfied with the health education given by nurses (Walsh, Grech, & Hill, 2019). This finding indicates that the nurses have good practice in giving health education, which inspires patients to follow their advice in obesity management. Phillips, Wood, & Kinnersley (2014) supported the current findings. The study also revealed that nurses have good practise in obesity management. In addition, more nurses reported that they were willing to provide obesity management to patients as the majority of them provide physical activity advice, discuss weight management and diet intake and measure BMI (Kable et al., 2015). In contrast, Blake (2013) stated that almost half of the nurses face difficulties in giving health education about healthy behaviour when they do not demonstrate the same behaviour themselves. Blake & Patterson (2015) revealed that nurses are not good role model to promote healthy behaviour because some of them practice an unhealthy lifestyle. Thus, it essential for nurses to become a good role model for patients to ensure the effectiveness of health education.

This study found that primary care nurses have a strong belief in the efficacy of obesity control measures, scoring 4.43 on a 5-point scale. This data suggests that nurses were generally confident in the efficacy of obesity management measures. Such positive thoughts can help them stay motivated and committed to delivering successful interventions for obese patients. It is crucial to capitalise on these views by providing evidence-based training and resources to boost nurses' confidence in their abilities to successfully combat obesity. Moreover, it indicates that primary care nurses perceived positive opportunities for obesity management, as reflected by a mean score of 4.31 on a 5-point scale. This suggests that, on average, the nurses believed there were adequate resources, support, and infrastructure available to effectively manage obesity within their healthcare settings. This perception of favourable opportunities is crucial for ensuring that nurses have the necessary

support and tools to address obesity effectively. However, it is important to assess and address any barriers or limitations that may hinder optimal obesity management to create a truly enabling environment.

Overall, this study's findings emphasise the importance of ongoing education, training, and support for primary care nurses in the context of obesity management. Addressing knowledge gaps, fostering positive attitudes, reinforcing beliefs in the effectiveness of interventions, ensuring supportive opportunities, and recognising and promoting best practices are vital steps toward improving obesity management outcomes within primary care settings. By enhancing the knowledge, attitudes, and practices of primary care nurses, healthcare systems can better address the complex and multifaceted challenges associated with obesity and ultimately improve patient care and outcomes.

5.3 PARTIAL LEAST SQUARE-STRUCTURE EQUATION MODELLING (PLS-SEM) IN PROPOSING THE CONCEPTUAL MODEL

To further examine the relationships between knowledge, beliefs, attitudes, opportunities, and practices related to obesity, this study analysed the outer model and inner model results based on the PLS-SEM analysis. The convergent validity test indicates that all variables (knowledge, attitude, belief, opportunity, and practice) are valid, as their average variance extracted (AVE) values are above the recommended threshold of 0.5. This suggests that each construct explains 50% or more of the variance of the items within the construct. The discriminant validity analysis demonstrated that each indicator loaded highly on its respective latent construct, supporting the distinctiveness of the constructs. The reliability test indicated that all variables had high internal consistency and composite reliability values. A similar study by Torre et al. (2018) revealed low levels of negative attitudes towards people with obesity and underlined a lack of confidence and training to care for obese patients, as well as a lack of knowledge to identify obesity in adults and children.

Conversely, studies by Salziyan, Norwati, & Ismail (2018) and Nicholls et al. (2016) revealed that nurses' attitudes have no significant impact on their practice of

managing obesity. This emphasises that the training related to obesity patient management is important to enhance nurses; knowledge while increasing positive attitudes towards patients with obesity. In this light, training can also significantly improve obesity management by instilling the belief that obesity is a disease that requires appropriate treatment while providing individuals with the opportunity to practice these treatment strategies.

In the inner model analysis, the focus shifted to examining the relationships between the latent variables. The R-square value indicated that the variables of knowledge, attitude, belief, and opportunity explained 57.0% of the practice of managing obesity among primary care nurses. This moderate level of explanation suggests that while these variables have a significant impact on obesity management practices, there may be other factors not considered in the study that also influence these practices.

Future studies can consider some potential factors. These include resource availability such as time, staffing, equipment, and support systems that may significantly impact a nurse's ability to engage in obesity management practices. A study by Chong et al. (2014) found only 80% (562) of nurses participated in CPD activities in the previous 12 months, and less than 50% of them participated in all of the training activities events. Notably, only a handful of nurses attended tertiary education due to a lack of opportunities to continue their education. This suggests that CPD should be focused on the nurses' need to ensure they receive the most optimum learning experiences t to improve their current practices (Chong et al., 2014).

Training and education quality, as well as access to ongoing professional development, are crucial. Effective training can support primary care nurses' advancement in the nursing profession and their competency, which is linked to patient safety and the objective of enhancing the delivery of healthcare, according to Ma et al. (2018). Medical professionals who receive effective training in health systems have better knowledge and skills, higher staff satisfaction and retention rates, lower patient mortality rates, and higher-

quality patient care (Ma et al., 2018). Thus, understanding the factors that influence training transfer is crucial for developing strategies for encouraging good training transfer and, ultimately, boosting training efficacy. It can ensure the overall success of the training, making the investment worthwhile (Ma et al., 2018). The overwhelming majority of nurses view obesity as a serious health concern and consider helping patients manage their weight as a part of their profession, which should motivate public health authorities.

Personal factors related to nurses, such as motivation, self-efficacy, and personal beliefs, can also be significant in determining a nurse's engagement in obesity management practices. Even though they play a critical role in treating and preventing obesity, some medical professionals believe they are not competent to care for patients who are obese, and occasionally, they question if their interventions will be effective in the long run (Torre et al., 2018). A nurse’s level of motivation plays a crucial role. High motivation can drive them to actively engage in obesity management, continually seek ways to improve their knowledge and skills in this area and remain committed to providing the best care to patients with obesity. It's important to note that these personal factors are not static and can be influenced by training, experiences, and changes in one's professional journey.

Various factors, including patient-specific variables like motivation and compliance, and the impact of the work environment and patient load on time and effort allocation. can influence a nurse's engagement in obesity management practices. Additionally, system-level factors, such as healthcare system policies and incentives, and individual attributes like motivation and self-efficacy play crucial roles in shaping a nurse's involvement in obesity management.

The hypothesis analysis revealed that knowledge and opportunity have a significant positive impact on the practice of managing obesity among primary care nurses. These findings imply that having a solid knowledge base and favourable opportunities to apply that knowledge are crucial for effective obesity management by primary care nurses. However, attitude and belief have no statistically significant influence on practice.

Attitudes and beliefs, while important, may not be the sole determinants of actual practice.

Teixeira et al. (2012) suggested that a lack of knowledge may lead people to perceive counselling as something that is hard to conceptualise, difficult to approach, and related to low expectations of success and perceptions about the ineffectiveness of accessible therapies. Access to more information and expertise may enhance the standard of treatment provided to obese patients. According to research by Sanchez-Ramirez et al. (2018), the primary obstacles facing healthcare professionals include a lack of expertise and training in areas like obesity behaviour management techniques and contemporary diagnostic and counselling methods. A study conducted in 2008 by Buffart et al. shown that general practitioners' confidence in managing adult or paediatric obesity was notably boosted by their attendance at continuing professional development. According to a study (Bleich et al., 2015), nurses require further training in obesity care and weight management in order to effectively engage in collaborative weight management.

The strong, significant positive relationship between opportunity and practice suggests that nurses who perceive a greater number of opportunities for managing obesity are more likely to actively engage in related practices. In 2009, the International Council of Nurses (ICN) stated that primary care nurses have a great chance to improve health-promoting behaviours that lower the risk of being overweight or obese. A Swedish study nu Phillips et al., (2014) found that nurses who have the opportunity to discuss weight with patients and patients attending chronic disease clinics, where weight advice is consistently provided, will be more open to receiving guidance on weight management. This is especially true for patients recently diagnosed with conditions like hypertension or high cholesterol levels.

Nevertheless, another study reported that the main obstacles for healthcare providers from discussing obesity with their patients are a lack of time, inadequate

compensation, and inadequate training (Turner et al., 2018). It was also found that nurses were concerned about potentially stigmatising the patient and compromising the rapport between the patient and nurse. This highlights nurses' anticipation that their patients might become upset or feel disconnected if the topic were raised in an unrelated manner (Phillips et al., 2014). Thus, creating more opportunities for nurses to effectively address the needs of patients with obesity can significantly impact their engagement in obesity management practices.

While the hypotheses analysis found no significant relationship between attitudes and practice in managing obesity patients, notably, it may not be the sole determinant of actual nurses' practices. Similarly, Salziyan, Norwati, & Ismail, (2018) and Nicholls et al., (2016) revealed that the attitudes are not significantly linked to their practice in managing obesity. Teixeira et al. (2012) stated that the practitioner's level of professional experience with obesity and knowledge correlates with the number of years of negative views expressed. The systematic review also demonstrated that healthcare professionals' attitudes towards obese patients were characterised by stigmas and social stereotypes, such as the notion that obese people are lazy, unmotivated, unwilling, and have many psychological issues. These stereotypes appear to impact healthcare professionals' views of the obese group as well as their practises (Teixeira et al., 2012).

The study found that beliefs have no significant relationship with nurses' obesity management practices. The result contrasts with studies that showed that nurses with stronger beliefs in the effectiveness of obesity management strategies were more likely to actively engage in practices related to managing obese patients. Beliefs regarding the causes of obesity are significant because they might impact attitudes towards obese clients as well as beliefs regarding personal accountability (Puhl & Brownell 2003). In this light, strengthening nurses' beliefs in the efficacy of these strategies can contribute to increased engagement in obesity management practices. Moreover, Torre et al. (2018) reported a higher score on nurses' ideas about endocrinological and genetic factors contributing to obesity. Teixeira et al. (2012) systematic study discovered that despite a broad concern

about the obesity problem, there are ambiguous beliefs and negative attitudes towards these patients. This can be attributed to the shortage of resources in healthcare facilities, which limits basic care interventions and referrals to more specialised institutes.

Overall, this study utilised PLS-SEM to provide valuable insights into the factors influencing obesity management practices among primary care nurses and offers implications for improving obesity management in primary health care settings. Based on these findings, it is crucial to focus on interventions beyond knowledge enhancement. Efforts should be made to promote positive attitudes, strengthen beliefs in the effectiveness of obesity management strategies, and create more opportunities for nurses to actively engage in obesity management practices. These results provide valuable insights for developing interventions and strategies to improve obesity management among primary care nurses.

CHAPTER SIX

CONCLUSION

6.1 CONCLUSION

In summary, the study successfully achieved its primary objective, which is to comprehensively understand the level of obesity-management knowledge, beliefs, attitudes, opportunities, and practices among primary care nurses. The study found interrelationships between these aspects which underscore the complexity of obesity management and the need for a multifaceted approach. Moreover, the study's outcomes provided a foundation for the development of a tailored training model to enhance the competency of primary care nurses in managing obesity effectively. The training model developed stands as a valuable tool to guide future educational endeavours, ultimately empowering primary care nurses to play a more effective role in combating obesity and promoting overall health and well-being.

The first objective of this study focused on assessing the knowledge, beliefs, attitudes, opportunities, and practices of primary care nurses regarding obesity management. The study's outcomes demonstrated that while primary care nurses possessed a moderate level of knowledge, their beliefs, attitudes, and practices were moderately positive. These insights emphasise both the strengths and areas for improvement in the current state of obesity management among primary care nurses.

This study also aimed to investigate the relationships between knowledge, beliefs, attitudes, opportunities, and practices related to obesity management. The study's findings highlighted significant correlations between these factors, suggesting that a comprehensive approach to addressing obesity necessitates a holistic understanding of the factors related

to practices related to obesity management. The knowledge is essential for developing targeted interventions and strategies that can enhance nurses' capacity to manage obesity effectively. The findings highlight the importance of knowledge enhancement, positive attitudes, strengthened beliefs, and increased opportunities for nurses to actively engage in obesity management practices. These components of training need should be emphasis in the training model related obesity management.

The significant positive impact of knowledge and opportunity on practice emphasises the need for a solid knowledge base and favourable circumstances to apply that knowledge effectively. Efforts should be made to address barriers such as lack of time, limited reimbursement, and insufficient training, to create more opportunities for nurses to manage obesity and provide quality care to patients. Primary care clinics or health systems should be encouraged and given opportunity to primary health care nurses with specific interests in obesity management and support their training and certification to improve the obesity management (Oshman et al., 2023).

While attitude and belief do not have a statistically significant influence on practice in the hypothesis analysis, it is crucial to highlight that these variables may still play a role in nurses' real practice. More research is needed to better understand the details of these interactions and find additional factors that may influence obesity management approaches.

The PLS-SEM analysis conducted in this study provides valuable insights into the factors influencing the practice of managing obesity among primary care nurses. The results demonstrate that knowledge, attitudes, beliefs, and perceived opportunities all play significant roles in nurses' engagement in obesity management practices. The convergent validity and discriminant validity tests confirm the validity and distinctiveness of the measurement model, indicating that the constructs and indicators used in the study effectively capture the intended variables. However, the reliability test suggests that further refinement of the attitude variable may be necessary.

The implications of these findings extend to healthcare organizations, policymakers, and educators. Healthcare organizations can focus on knowledge enhancement and practical training opportunities to equip nurses with the necessary skills for effective obesity management. Policymakers can develop policies and guidelines that support evidence-based practices in primary care settings. Educators can design targeted training programmes to improve nurses' knowledge and practical skills in managing obesity (Biener et al., 2017).

Overall, this study underscores the multifaceted nature of obesity management among primary care nurses and provides valuable insights for developing interventions and strategies to enhance their practice. By addressing knowledge gaps, promoting positive attitudes, strengthening beliefs in the efficacy of obesity management strategies, and creating more opportunities for nurses, healthcare systems can improve the quality of care for patients with obesity and contribute to better public health outcomes.

6.2 IMPLICATIONS

The implications of these findings are significant for healthcare organizations, policymakers, and educators. By recognising the importance of knowledge and providing practical training opportunities, healthcare organizations can better equip primary care nurses to address the challenges associated with obesity management. The findings provide valuable insights that can guide actions and decisions in various ways.

The study highlights the importance of enhanced nursing education. The dentification of knowledge gaps among nurses presents a critical need for targeted educational programmes within the nursing curricula. By integrating comprehensive obesity management modules into their education, future nurses can be better prepared to address this prevalent health issue adeptly. This foundational knowledge is essential for

developing the skills and confidence necessary to manage obesity effectively in clinical settings.

The development of a training model also offers a framework for designing customised training programmes. Such tailored programmes can empower primary care nurses with the specific knowledge, skills, and attitudes required to manage obesity cases effectively. This approach ensures that training is relevant and directly applicable to the challenges nurses face in their practice, leading to improved patient outcomes. Tailored training not only enhances the capabilities of individual nurses but also elevates the overall standard of care provided within healthcare institutions. Policymakers can utilise study results to advocate for the integration of obesity management into healthcare policies and guidelines. This may involve allocating resources for obesity-focused training, creating supportive infrastructures, and implementing preventive measures and compulsory continuous education on obesity management for primary care nurses.

Furthermore, improved patient care is a direct outcome of equipping nurses with a better understanding of obesity management. With enhanced knowledge, nurses can provide more informed and patient-centred care, leading to early intervention, personalised treatment plans, and improved patient compliance. This proactive approach to patient care can significantly enhance health outcomes, reducing the long-term impact of obesity-related complications.

The study opens avenues for further research in obesity management. Future studies could explore specific interventions, long-term patient outcomes, and the impact of multidisciplinary collaboration on obesity management within primary care settings.

Moreover, the implications drawn from this study can potentially transform obesity management within primary care settings. By addressing knowledge gaps, fostering positive attitudes, and promoting targeted training, healthcare systems can better equip primary care nurses to play a pivotal role in combating the obesity epidemic and improving overall population health.

6.3 RECOMMENDATION

Further research is needed to deepen understanding of the complex relationships between knowledge, attitude, belief, opportunity, and practice in the context of obesity management. Future studies can contribute to the development of comprehensive interventions and strategies to improve obesity management in primary care, leading to better patient outcomes and improved public health.

These recommendations aim to bridge the identified gaps and capitalise on the strengths identified in the study. By implementing these strategies, healthcare institutions can empower primary care nurses to play a more proactive and effective role in obesity management, ultimately leading to improved patient outcomes and better public health.

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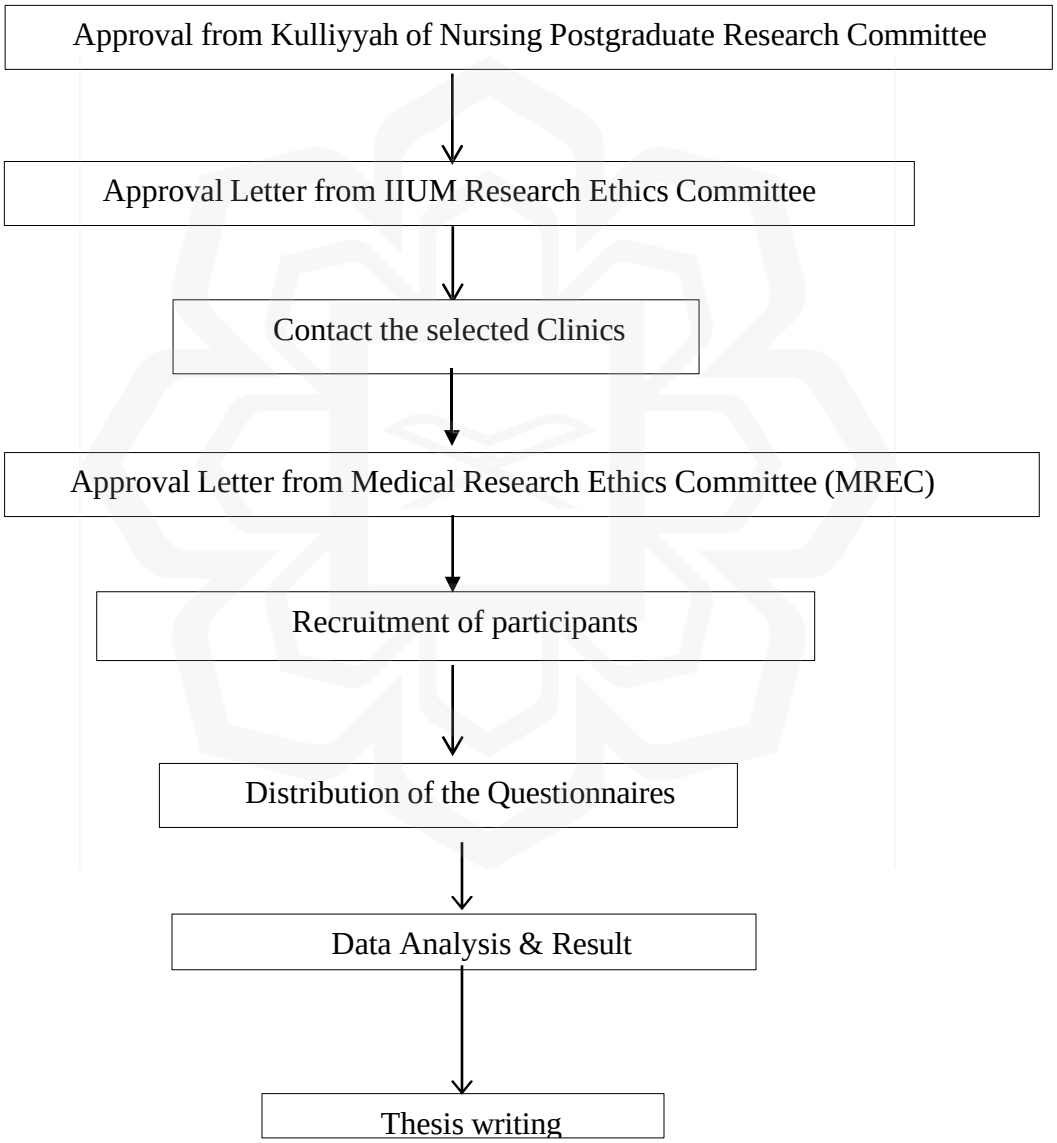
APPENDICCES

APPENDIX 1: FLOW CHART OF THESIS WRITING



APPENDIX 2 – APPROVAL OF RESEARCH PROPOSAL

KULLIYYAH OF NURSING

Our Reference : IIUM/313/DDPG&R/C/20/4/10
Date : 30th September 2020 / 12 Safar 1442H

Nor Azila Pangat
G1913050
Postgraduate Student
Master in Nursing Science
Kulliyyah of Nursing IIUM

Dear Nor Azila,

APPROVAL OF RESEARCH PROPOSAL
- MASTER IN NURSING SCIENCE

May this letter find you in the best of health.

With reference to the above matter, kindly be informed that your research proposal title "Designing a Training Needs Model Related to Obesity for Primary Care Nurses" has been approved by the Kulliyyah of Nursing Postgraduate and Research Committee (KNPGRC) No. 8/2020 dated 29th September 2020.

Kindly proceed with necessary action accordingly.

Thank you.

Yours sincerely,

ASST. PROF. DR. LEE SIEW PIEN
Deputy Dean (Postgraduate & Research)
Kulliyyah of Nursing

cc : Dean, Kulliyyah of Nursing
: Student file/Filing

Office Address: Kulliyyah of Nursing, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, Bandar Indera Mahkota, 25200 Kuantan, Pahang
Tel: +609-570 7300 | **E-mail:** nursingadmin@iium.edu.my | **Website:** http://www.iium.edu.my/kulliyyah/kon

APPENDIX 3 – ETHICS INITIAL APPROVAL MREC

JAWATANKUASA ETIKA & PENYELIDIKAN PERUBATAN
(Medical Research & Ethics Committee)
KEMENTERIAN KESIHATAN MALAYSIA
d/a Kompleks Institut Kesihatan Negara
Blok A, No 1, Jalan Setia Murni U13/52,
Seksyen U13, Bandar Setia Alam,
40170 Shah Alam, Selangor.
Tel: 03-3362 8888/8205

Ref : KKM/NIHSEC/ P21-1155 (4)
Date: 16-August-2021

AZLINA BINTI DAUD
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA (IIUM) - KUANTAN CAMPUS

DR SITI ZUHAIDAH BINTI SHAHADAN
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA (IIUM) - KUANTAN CAMPUS

MUHAMMAD KAMIL BIN CHE HASAN
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA (IIUM) - KUANTAN CAMPUS

NOR AZILA BINTI PANGAT
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA (IIUM) - KUANTAN CAMPUS

Dear Sir/ Mdm,

ETHICS INITIAL APPROVAL: NMRR-21-981-58196 (IIR)

DESIGNING A TRAINING NEEDS MODEL RELATED TO OBESITY FOR PRIMARY CARE NURSES IN PAHANG

This letter is made in reference to the above matter.

2. The Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia (MOH) has provided ethical approval for this study. Please take note that all records and data are to be kept strictly **CONFIDENTIAL** and can only be used for the purpose of this study. All precautions are to be taken to maintain data confidentiality. Permission from the District Health Officer / Hospital Administrator / Hospital Director and all relevant heads of departments / units where the study will be carried out must be obtained prior to the study. You are required to follow and comply with their decision and all other relevant regulations, including the Access to Biological and Benefit Sharing Act 2017.

3. The investigators and study sites involved in this study are:

   KLINIK KESIHATAN BANDAR MENTAKAB
   Muhammad Kamil Bin Che Hasan (Principal Investigator)

   KLINIK KESIHATAN BANDAR TUN ABDUL RAZAK
   Azlina Binti Daud (Principal Investigator)

   KLINIK KESIHATAN BENTONG
   Dr Siti Zuhaidah Binti Shahadan (Principal Investigator)

   KLINIK KESIHATAN BUKIT IBAM
   Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN CHANIS
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN KARAK
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN KERDAU
Nor Azila Binti Pangat (Penyelidik Utama)

KLINIK KESIHATAN KUALA KRAU
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN KUALA ROMPIN
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN LANCHANG
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN LEBAN CHONDONG
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN LURAH BILUT (FELDA)
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN MEMPAGA (FELDA PK FASA 1)
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN PERANTAU DAMAI
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN PERWIRA JAYA
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN SANGGANG
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN SIMPANG PELANGAI
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN SIMPANG SONGSANG
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN TANJUNG GEMOK
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN TEKEK, PULAU TIOMAN
Nor Azila Binti Pangat (Principal Investigator)

KLINIK KESIHATAN TEMERLOH
Nor Azila Binti Pangat (Principal Investigator)

4. The following study documents have been received and reviewed with reference to the above study:

Documents received and reviewed with reference to the above study:
1. Study Protocol Version 3.0, dated 10-August-2021 2. Patient Information Sheet (English) & Informed Consent Form (English) Version 3.0, dated 10-August-2021 3. Patient Information Sheet (BM) & Informed Consent Form (BM) Version 3.0, dated 10-August-2021 4. Questionnaire Version 3.0, dated 10-August-2021 5. Investigator's documents : Declaration of Conflict of Interest (COI), IA-HOD-IA, and CV: a) Muhammad Kamil Bin Che Hasan (Principal Investigator) b) Azlina Binti Daud (Principal Investigator) c) Dr Siti Zuhaidah Binti Shahadan (Principal Investigator) d) Nor Azila Binti Pangat (Principal Investigator)

5. Please note that ethical approval is valid until **15-August-2022**. The following are to be reported upon receiving ethical approval. Required forms can be obtained from the National Medical Research Registry website.
   i. **Continuing Review Form** has to be submitted to MREC within 2 month (60 days) prior to the expiry of ethical approval.
   ii. **Study Final Report** upon study completion to the MREC.
   iii. Ethical approval is required in the case of **amendments / changes to the study documents/ study sites/ study team**. MREC reserves the right to withdraw ethical approval if changes to study documents are not completely declared.

6. This study involves the following methods:

   i. Questionnaire

7. Please take note that the reference number for this letter must be stated in all correspondence related to this study to facilitate the process.

Comments (if any): **NIL**

Project Sites:
KLINIK KESIHATAN BANDAR MENTAKAB
KLINIK KESIHATAN BANDAR TUN ABDUL RAZAK
KLINIK KESIHATAN BENTONG
KLINIK KESIHATAN BUKIT IBAM
KLINIK KESIHATAN CHANIS
KLINIK KESIHATAN KARAK
KLINIK KESIHATAN KERDAU
KLINIK KESIHATAN KUALA KRAU
KLINIK KESIHATAN KUALA ROMPIN
KLINIK KESIHATAN LANCHANG
KLINIK KESIHATAN LEBAN CHONDONG
KLINIK KESIHATAN LURAH BILUT (FELDA)
KLINIK KESIHATAN MEMPAGA (FELDA PK FASA 1)
KLINIK KESIHATAN PERANTAU DAMAI
KLINIK KESIHATAN PERWIRA JAYA
KLINIK KESIHATAN SANGGANG
KLINIK KESIHATAN SIMPANG PELANGAI
KLINIK KESIHATAN SIMPANG SONGSANG

KKM/NIHSEC/ P21-1155 (4)

KLINIK KESIHATAN TANJUNG GEMOK
KLINIK KESIHATAN TEKEK, PULAU TIOMAN
KLINIK KESIHATAN TEMERLOH

Decision by Medical Research & Ethics Committee:
(√) Approved
( ) Disapproved

Date of Approval : 16-August-2021

DR HJH SALINA ABDUL AZIZ
Chairperson
Medical Research & Ethics Committee
Ministry of Health Malaysia
MMC No: 27117

NH/Approval2021/Mrecshare

APPENDIX 4 – APPLICATION FOR AUTHORIZATION OF HEALTH CLINIC

Rujukan kami : IIUM/313/14/3/1
Tarikh : 16hb November 2021

Pegawai Kesihatan Daerah,
Pejabat Kesihatan Daerah Temerloh,
28000 Temerloh,
Pahang.

YBhg Dato' / Tuan / Puan,

PERMOHONAN KEBENARAN PENGGUNAAN KLINIK KESIHATAN DAERAH TEMERLOH UNTUK MENJALANKAN PENYELIDIKAN

Dengan hormatnya saya merujuk kepada perkara tersebut di atas.

2. Saya perlu menggunakan fasiliti YBhg Dato'/Tuan/Puan untuk aktiviti penyelidikan bertajuk, **"NMRR-21-981-58196 (IIR): *DESIGNING A TRAINING NEEDS MODEL RELATED TO OBESITY FOR PRIMARY CARE NURSES IN PAHANG*"**. Penyelidikan ini telah diluluskan oleh Jawatankuasa Etika Penyelidikan Perubatan JEPP (*Medical Research Ethics Committee MREC*). Bersama-sama ini disertakan surat kebenaran MREC (Lampiran 1) dan kertas kajian (*protocol)* / makluman ringkas projek (Lampiran 2).

3. Pegawai dari fasiliti YBhg Dato'/Tuan/Puan yang terlibat dalam penyelidikan ini adalah seperti berikut: (jika berkenaan)
   i. Jururawat Terlatih

4. Fasiliti/Jabatan di tempat YBhg Dato'/Tuan/Puan yang diperlukan adalah seperti berikut:
   i. Klinik Kesihatan Lanchang
   ii. Klinik Kesihatan Simpang Songsang
   iii. Klinik Kesihatan Kerdau
   iv. Klinik Kesihatan Kuala Krau
   v. Klinik Kesihatan Bandar Mentakab
   vi. Klinik Kesihatan Temerloh
   vii. Klinik Kesihatan Sanggang

5. Kajian tersebut hanya melibatkan pengumpulan data penyelidikan yang akan dijalankan di fasiliti YBhg Dato' / Tuan / Puan melalui:
   i. Borang Soal Selidik

Kami berharap mendapat kebenaran YBhg Dato' / Tuan / Puan. Sila hubungi Nor Azila binti Pangat (017-3763525 atau emel norazilapangat@gmail.com) untuk sebarang pertanyaan.

Sekian, terima kasih.

KULLIYYAH OF NURSING (KON)
International Islamic University Malaysia, Jalan Sultan Ahmad Shah, Bandar Indera Mahkota, 25200 Kuantan, Pahang Darul Makmur
(Company No: 101067-P)

Tel: +609 570 7300 Email: nursingadmin@iium.edu.my
www.iium.edu.my/kulliyyah/kon

Saya yang menurut perintah,

Assoc. Prof. Dr. Azlina binti Daud
Senior lecturer
Department of Medical Surgical Nursing
Kulliyyah of Nursing
International Islamic University Malaysia

.....

(Assoc. Prof. Dr Azlina Binti Daud)
International Islamic University Malaysia (IIUM) - Kuantan Campus
Ketua Penyelidik

s.k.
<Ketua Jabatan Ketua Penyelidik>
< Ketua Jabatan Tapak Penyelidikan>
< Ketuan Unit Kejururawatan Tapak Penyelidikan>
<Nama Penyelidik bersama (Co-Invesigator) di lokasi>

i. Dr Siti Zuhaidah Binti Shahadan
International Islamic University Malaysia (Iium) - Kuantan Campus
ii. Dr. Muhammad Kamil Bin Che Hasan
International Islamic University Malaysia (Iium) - Kuantan Campus
iii. Nor Azila Binti Pangat
International Islamic University Malaysia (Iium) - Kuantan Campus>

APPENDIX 5(a)
Surat Kebenaran MREC

LAMPIRAN 2
Protokol (*full protocol)*

Ringkasan Projek Penyelidikan

Tajuk Penyelidikan: Designing A Training Needs Model Related To Obesity For Primary Care Nurses In Pahang

Nama dan Jabatan Ketua Penyelidik: Asst Prof. Dr Azlina Binti Daud

International Islamic University Malaysia (IIUM) - Kuantan Campus

Nombor pendaftaran NMRR: NMRR-21-981-58196 (IIR)

Rujukan kelulusan MREC: KKM/NIHSEC/ P21-1155 (3)

Tarikh mula penyelidikan: 15 November 2021

Tarikh tamat penyelidikan: 15 Ogos 2022

Objektif penyelidikan: Tujuan penyelidikan ini dilakukan adalah untuk mereka cipta model latihan bagi jururawat untuk mengurangkan kadar obesiti di Malaysia. Penyelidikan ini diperlukan kerana kadar obesiti di Malaysia yang tinggi akan menyebabkan komplikasi masalah kesihatan di kalangan masyarakat.

Ringkasan metodologi penyelidikan: Kajian ini menggunakan kaedah *quantitative cross-sectional study* melibatkan klinik kesihatan di negeri Pahang.

Peserta kajian perlu menjawab kesemua soalan yang dikemukakan oleh penyelidik dengan jujur dan lengkap yang akan mengambil masa selama 30 minit. Borang ini mempunyai 6 bahagian, yang meliputi topik Bahagian A: Kajian Demografi, Bahagian B: Pengetahuan berkaitan Pengurusan Obesiti (Multiple Choice Questions), Bahagian C: Sikap Jururawat terhadap Pesakit Obesiti (Scala-Likert), Bahagian D: Latihan dalam memberikan pendidikan kesihatan yang berkaitan dengan amalan hidup sihat, Bahagian E: Kepercayaan mengenai penyakit dan punca obesiti (Skala-Likert) dan Bahagian F: Peluang untuk berbincang dengan pesakit berkenaan masalah obesity (Skala-Likert).

APPENDIX 5 – APPROVAL FROM DISTRICT HEALTH DIRECTOR, TEMERLOH

APPENDIX 5 (b)

MAKLUMBALAS PERMOHONAN KEBENARAN PENGGUNAAN KLINIK KESIHATAN DAERAH TEMERLOH UNTUK MENJALANKAN PENYELIDIKAN

Tajuk Penyelidikan : *Designing A Training Needs Model Related To Obesity For Primary Care Nurses In Pahang*
Nama dan Jabatan Ketua Penyelidik : Asst Prof. Dr Azlina Binti Daud
International Islamic University Malaysia (IIUM) – Kuantan Campus

Pihak hospital/institusi dengan ini membuat keputusan seperti berikut :-

☑ Membenarkan projek penyelidikan dijalankan

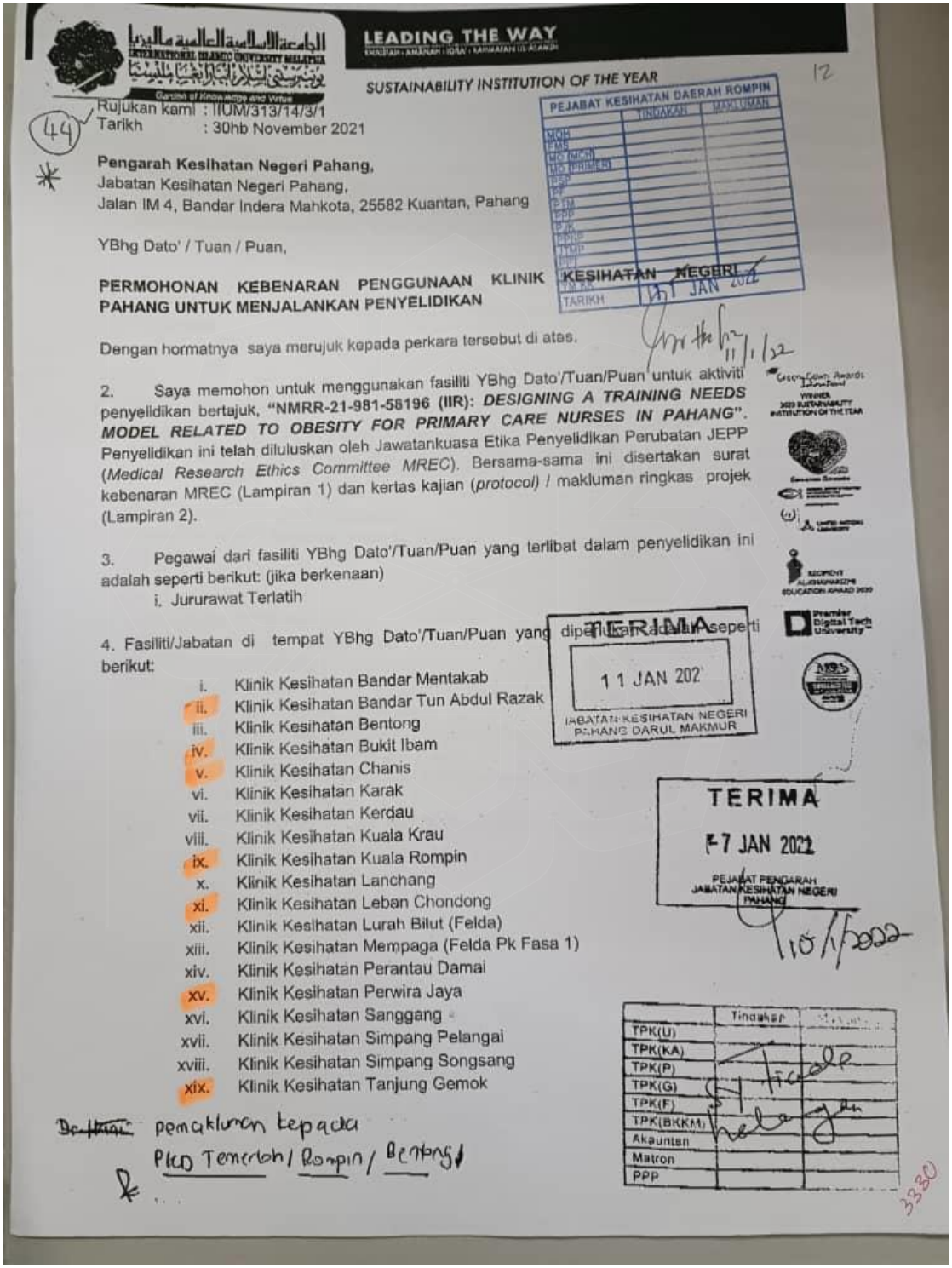
☐ Tidak membenarkan projek penyelidikan dijalankan

"BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah

.....
(DR. SHARIFAH MAHANI BINTI SYED MAHAR AFFANDI)
Pakar Perubatan Kesihatan Awam UD56
Pegawai Kesihatan Daerah Temerloh
Pejabat Kesihatan Daerah Temerloh

APPENDIX 6 – APPROVAL FROM DISTRICT HEALTH DIRECTOR, ROMPIN



LEADING THE WAY

SUSTAINABILITY INSTITUTION OF THE YEAR

Rujukan kami : IIUM/313/14/3/1
Tarikh : 30hb November 2021

Pengarah Kesihatan Negeri Pahang,
Jabatan Kesihatan Negeri Pahang,
Jalan IM 4, Bandar Indera Mahkota, 25582 Kuantan, Pahang

YBhg Dato' / Tuan / Puan,

PERMOHONAN KEBENARAN PENGGUNAAN KLINIK KESIHATAN NEGERI PAHANG UNTUK MENJALANKAN PENYELIDIKAN

Dengan hormatnya saya merujuk kepada perkara tersebut di atas.

2. Saya memohon untuk menggunakan fasiliti YBhg Dato'/Tuan/Puan untuk aktiviti penyelidikan bertajuk, **"NMRR-21-981-58196 (IIR): *DESIGNING A TRAINING NEEDS MODEL RELATED TO OBESITY FOR PRIMARY CARE NURSES IN PAHANG"***. Penyelidikan ini telah diluluskan oleh Jawatankuasa Etika Penyelidikan Perubatan JEPP (*Medical Research Ethics Committee MREC*). Bersama-sama ini disertakan surat kebenaran MREC (Lampiran 1) dan kertas kajian (*protocol*) / makluman ringkas projek (Lampiran 2).

3. Pegawai dari fasiliti YBhg Dato'/Tuan/Puan yang terlibat dalam penyelidikan ini adalah seperti berikut: (jika berkenaan)
   i. Jururawat Terlatih

4. Fasiliti/Jabatan di tempat YBhg Dato'/Tuan/Puan yang dipohonkan adalah seperti berikut:

i. Klinik Kesihatan Bandar Mentakab
ii. Klinik Kesihatan Bandar Tun Abdul Razak
iii. Klinik Kesihatan Bentong
iv. Klinik Kesihatan Bukit Ibam
v. Klinik Kesihatan Chanis
vi. Klinik Kesihatan Karak
vii. Klinik Kesihatan Kerdau
viii. Klinik Kesihatan Kuala Krau
ix. Klinik Kesihatan Kuala Rompin
x. Klinik Kesihatan Lanchang
xi. Klinik Kesihatan Leban Chondong
xii. Klinik Kesihatan Lurah Bilut (Felda)
xiii. Klinik Kesihatan Mempaga (Felda Pk Fasa 1)
xiv. Klinik Kesihatan Perantau Damai
xv. Klinik Kesihatan Perwira Jaya
xvi. Klinik Kesihatan Sanggang
xvii. Klinik Kesihatan Simpang Pelangai
xviii. Klinik Kesihatan Simpang Songsang
xix. Klinik Kesihatan Tanjung Gemok

pemakluman kepada
PKD Temerloh / Rompin / Bentong

PEJABAT KESIHATAN DAERAH ROMPIN — TINDAKAN / MAKLUMAN
TARIKH 27 JAN 2022

TERIMA
11 JAN 202
JABATAN KESIHATAN NEGERI PAHANG DARUL MAKMUR

TERIMA
27 JAN 2022
PEJABAT PENGARAH JABATAN KESIHATAN NEGERI PAHANG

	Tindakan	
TPK(U)		
TPK(KA)		
TPK(P)		
TPK(G)		
TPK(F)		
TPK(BKKM)		
Akauntan		
Matron		
PPP		

xx. Klinik Kesihatan Tekek, Pulau Tioman
xxi. Klinik Kesihatan Temerloh

5. Kajian tersebut hanya melibatkan pengumpulan data penyelidikan yang akan dijalankan di fasiliti YBhg Dato' / Tuan / Puan melalui:

i. Borang Soal Selidik

Kami berharap mendapat kebenaran YBhg Dato' / Tuan / Puan. Sila hubungi Nor Azila binti Pangat (017-3763525 atau emel norazilapangat@gmail.com) untuk sebarang pertanyaan.

Sekian, terima kasih.

Saya yang menurut perintah,

.....

(Profesor Madya Dr Azlina Binti Daud)
International Islamic University Malaysia (IIUM) -
Ketua Penyelidik

s.k.
<Ketua Jabatan Ketua Penyelidik>
< Ketua Jabatan Tapak Penyelidikan>
< Ketuan Unit Kejururawatan Tapak Penyelidikan>
<Nama Penyelidik bersama (Co-Invesigator) di lokasi>

i. Dr Siti Zuhaidah Binti Shahadan
International Islamic University Malaysia (Ium) - Kuantan Campus

ii. Dr Muhammad Kamil Bin Che Hasan
International Islamic University Malaysia (Ium) - Kuantan Campus

iii. Nor Azila Binti Pangat
International Islamic University Malaysia (Ium) - Kuantan Campus>

APPENDIX 7 – APPROVAL FROM DISTRICT HEALTH DIRECTOR, BENTONG

APPENDIX 5 (b)

MAKLUMBALAS PERMOHONAN KEBENARAN PENGGUNAAN KLINIK KESIHATAN DAERAH BENTONG UNTUK MENJALANKAN PENYELIDIKAN

Tajuk Penyelidikan : *Designing A Training Needs Model Related To Obesity For Primary Care Nurses In Pahang*
Nama dan Jabatan Ketua Penyelidik : Asst Prof. Dr Azlina Binti Daud
International Islamic University Malaysia (IIUM) - Kuantan Campus

Pihak hospital/institusi dengan ini membuat keputusan seperti berikut : -

☑ Membenarkan projek penyelidikan dijalankan

☐ Tidak membenarkan projek penyelidikan dijalankan

"BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah

DR. CASSIDY ANAK DEVARAJOOH
No. Pendaftaran Tuan MPM 44290
Pegawai Kesihatan Daerah
Kesihatan Daerah Bentong

(<Ketua Jabatan Pegawai Kesihatan Daerah Bentong>)

.....
(<Nama Pengarah >)

S.K.
<Ketua CRC hospital >
<Nama penyelidik bersama (co- investigators) di fasiliti berkaitan (jika berkaitan)

QUESTIONNAIRE

APPLICATION OF STRUCTURAL EQUATION MODELLING IN DESIGNING OBESITY MANAGEMENT TRAINING MODEL FOR PRIMARY CARE NURSES IN HEALTH CLINIC, PAHANG

Questionnaires

Part A – Demographic characteristic

Date / *Tarikh*:

1) What is your age? *Berapakah umur anda*?

2) Year of working experiences? *Tahun pengalaman bekerja?*

3) What is your current height? (cm) *Berapakah ketinggian anda?*

4) What is your current weight? (kg) *Berapakah berat anda?*

Training/ *Latihan:*

5) During your studies, did you follow any courses on obesity?
Semasa belajar, adakah anda pernah mengikuti sebarang kursus mengenai obesiti?

☐ Yes/ *Ya* ☐ No/*Tidak* ☐ I don't remember/ *Saya tidak ingat*

6) After your graduation, have you followed training on obesity?
Selepas graduasi, adakah kamu mengikuti latihan mengenai obesiti?

☐ Yes/ *Ya* ☐ No/*Tidak*

7) If yes, what type of training did you go?
Jika ya, apakah jenis latihan yang pernah anda pergi?
☐ Short training (less than a week)/ *Latihan singkat (kurang dari seminggu)*
☐ Long training (more than a week)/ *Latihan panjang (lebih dari seminggu)*

Part B: Knowledge related obesity management (Multiple Choice Questions)
Please answer all the questions by CIRCLE the best answer either A, B, C or D.

1) How do you calculate the body mass index (BMI)? (W= weight, H= height)
Bagaimana anda mengira indeks jisim badan (BMI)? (B=berat, H=tinggi)

A. Height (cm) – 100	*A. Tinggi (cm) - 100*
B. Weight (kg) / (Height [m])^2	*B. Berat(kg) / (Tinggi[m])^2*
C. (Height [m])^2 / Weight [kg]	*C. (Tinggi [m])^2 / Berat[kg]*
D. Weight (g) / (Height[m])^2	*D. Berat (g) / (Tinggi [m])^2*
E. I don't know	*E. Saya tidak tahu*

2) How many daily fruits and vegetables servings are recommended by World Health Organization (WHO)? G = gram
Berapa banyak pengambilan buah-buahan dan sayur-sayuran setiap hari yang disarankan Pertubuhan Kesihatan Dunia (WHO)? G=gram

A. 200g fruits and vegetables	*A. 200g buah-buahan dan sayur-sayuran*
B. 400g fruits and vegetables	*B. 400g buah-buahan dan sayur-sayuran*
C. 500g fruits and vegetables	*C. 500g buah-buahan dan sayur-sayuran*
D. > 700g fruits and vegetables	*D. >700g buah-buahan dan sayur-sayuran*
E. I don't know	*E. Saya tidak tahu*

3) How many daily servings of fatty or sweet food are recommended by Ministry of Health (MOH)?
Berapa banyak hidangan makanan berlemak ataupun manis yang disarankan oleh Menteri Kesihatan?

A. 0-1 serving	*A. 0-1 hidangan*
B. 2-3 serving	*B. 2-3 hidangan*
C. > 4 serving	*C. > 4 hidangan*
D. I don't know	*D. Saya tidak tahu*

4) Which of the following food group can cause obesity?
Yang manakah kumpulan makanan yang boleh menyebabkan obesiti?

A. Carbohydrate *A. Karbohidrat*

B. Fibre *B. Fiber*

C. Protein *C. Protein*

D. I don't know *D. Saya tidak tahu*

5) What is composition healthy plate that has been recommended by Ministry of Health?
Apakah komposisi pinggan sihat yang telah disarankan Kementerian Kesihatan?

A. 1/4 carbohydrate, 1/4 protein, 1/2 fibre
A. 1/4 karbohidrat, 1/4 protein, 1/2 serat

B. 1/3 carbohydrate, 1/2 protein, 1/2 fibre
B. 1/3 karbohidrat, 1/2 protein, 1/2 serat

C. 1/2 carbohydrate, 1/4 protein, 1/4 fibre
C. 1/2 karbohidrat, 1/4 protein, 1/4 serat

D. 1/4 carbohydrate, 1/2 protein, 1/4 fibre
D. 1/4 karbohidrat, 1/2 protein, 1/4 serat

E. I don't know
E. Saya tidak tahu

6) Do you know the frequency of physical exercise per week?
Adakah anda tahu kekerapan aktiviti fizikal setiap minggu?

A. 3 days per week *A. 3 hari dalam seminggu*

B. > 5 days per week *B. > 5 hari dalam seminggu*

C. Everyday *C. Setiap hari*

D. I don't know *D. Saya tidak tahu*

7) What is the minimum time spend daily for physical exercise among obese patient? *Berapakah tempoh masa yang minimum diperlukan setiap hari untuk senaman fizikal bagi pesakit obesiti?*

A. 15 minutes per day	*A. 15 minit setiap hari*
B. 20 minutes per day	*B. 20 minit setiap hari*
C. 30 minutes per day	*C. 30 minit setiap hari*
D. 60 minutes per day	*D. 60 minit setiap hari*
E. I don't know	*E. Saya tidak tahu*

8) Do you know most suitable exercise for obese patient?
Adakah anda tahu senaman yang paling sesuai untuk pesakit obesiti?

A. Walking	*A. Berjalan*
B. Running	*B. Berlari*
C. Cycling	*C. Berbasikal*
D. Playing badminton	*D. Bermain badminton*
E. I don't know	*E. Saya tidak tahu*

9) Which of the following is the effective method in order to reduce weight for obese patient?
Yang manakah cara yang paling berkesan untuk menurukan berat badan bagi pesakit obesiti?

A. Modify diet intake/ *Mengubah suai pengambilan diet*
B. Increasing physical exercise/ *Meningkatkan senaman fizikal*
C. Combination of modify diet and increase physical exercise/ *Gabungan ubahsuai diet dan peningkatan aktiviti fizikal*
D. I don't know/ *Saya tidak tahu*

Part C: Attitude of Nurses towards Obese patient (Likert Scale) - Negative attitude
and Confidence Level

Sikap jururawat terhadap pesakit obesity (Skala Likert) – Sikap negative dan tahap keyakinan.

Please answer all the questions by placing a clear ☑ sign in the space provided. For each statement, please circle the number which shows the level you agree with. Choices could be made from 1 representing strongly agree to 5 representing strongly disagree. There are no wrong or right choices and your answers will be only used for this study. Thank you for your cooperation.

Jawab semua soalan dengan meletakkan simbol ☑ pada ruang yang disediakan. Untuk setiap penyataan bulatkan nombor pada tahap yang anda pilih. Pilihan yang dibuat berdasarkan dari skali 1 yang mewakili sangat setuju kepada 5 mewakili sangat tidak bersetuju. Tiada pilihan yang menunjukkan betul atau salah dan jawapan anda hanya akan digunakan untuk kajian. Terima kasih atas kerjasama anda.

No.		Strongly agree *Sangat setuju*	Agree *Setuju*	Neither agree nor disagree *Setuju atau tidak bersetuju*	Disagree *Tidak bersetuju*	Strongly disagree *Sangat tidak setuju*
1)	I blame the patient for being obese *Saya menyalahkan pesakit yang menjadi obesiti*					
2)	It is difficult to feel empathy towards obesity patient *Ianya sangat sukar untuk merasa simpati kepada pesakit obesiti*					
3)	Caring for an obese patient is more stressful than caring for normal weight patient *Menjaga pesakit obesiti memberi lebih tekanan berbanding menjaga pesakit yang normal berat badan.*					

4)	Caring for an obese patient is more frustrating than caring for a normal body weight patient. *Menjaga pesakit obesiti adalah lebih membebankan berbanding pesakit yang normal berat badan.*					

5)	I feel more impatient when caring for an obesity patient than normal body weight patient *Saya mudah hilang sabar apabila menjaga pesakit obesiti berbanding pesakit yang normal berat badan.*					
6)	If given the choice, I would prefer not to care for obesity patient *Jika diberi peluang saya lebih rela untuk tidak menjaga pesakit obesiti.*					
7)	By having normal BMI, I tend to show negative attitudes towards obesity patient *Dengan mempunyai BMI yang normal, saya sering menunjukkan sikap negatif kepada pesakit obesiti.*					
8)	In work setting, I would prefer that my patient wouldn't be obese *Di tempat kerja, saya lebih menyukai bahawa pesakit saya tidak gemuk.*					
9)	I do not confidence to educate patient about obesity management if I have low knowledge *Saya tidak yakin untuk mendidik pesakit mengenai pengurusan obesiti jika saya mempunyai pengetahuan yang sedikit*					
10)	I feel confident to raise weight as an issue in management of obesity *Saya merasa yakin untuk menjadikan berat badan sebagai satu isu dalam pengurusan obesiti.*					

11)	I feel confident to set weight loss goal for obese patient *Saya merasa yakin untuk menetapkan target pengurangan berat badan untuk pesakit obesiti.*					
12)	I feel confident in making diet recommendation for obese patient					
	Saya merasa yakin untuk mengesyorkan plan pemakanan untuk pesakit obesiti					
13)	I feel confident making physical activity recommendation for obese patient. *Saya merasa yakin untuk mengesyorkan aktiviti fizikal kepada pesakit obesiti.*					
14	I do not feel confidence to provide counselling regarding obesity management if I am obese. *Saya tidak merasa yakin untuk memberi kaunseling mengenai pengurusan obesiti sekiranya saya seorang obesiti*					
15)	When I have enough knowledge related to obesity management, I feel more confident to educate obese patient. *Apabila saya mempunyai pengetahuan yang cukup mengenai pengurusan obesiti, saya merasa lebih yakin untuk mendidik pesakit obesiti.*					

Part D: Practise of giving health education related to healthy behaviour

Bahagian D: Latihan dalam memberikan pendidikan kesihatan yang berkaitan dengan amalan hidup sihat

Please tick ☑ either "yes" or "no" for following

activities. Sila tanda ☑ "Ya" atau "Tidak"

pada aktiviti berikutnya

No.		Yes *Ya*	No *Tidak*
1)	I give health education to obese patient regarding obesity management *Saya memberi pendidikan kesihatan mengenai pengurusan obesiti kepada pesakit obesiti.*		
2)	Promoting healthy behaviour is a priority in my department *Mempromosikan amalan hidup sihat menjadi keutamaan alam jabatan saya*		
3)	Promotion of healthy behaviour is a part of my daily routine. *Mempromosikan amalan hidup sihat ialah sebahagian daripada rutin harian saya.*		
4)	I practise healthy behaviour before delivered it to patient. *Saya mengamalkan amalan hidup sihat sebelum mencadangkannya kepada pesakit.*		
5)	I calculate body mass index (BMI) for all my obese patient. *Saya mengira indeks jisim badan (BMI) untuk semua pesakit obesiti saya.*		
6)	I have recommended obese patient to eat food with low glycemic index such as vegetable, fruits and low-fat foods. *Saya telah mencadangkan pesakit obesiti untuk makan makanan yang mempunyai nilai indeks glisemik yang rendah seperti sayuran, buahan dan makanan yang rendah lemak.*		
7)	I advice obese patient to reduce daily caloric intake. *Saya menasihati pesakit obesiti untuk mengurangkan pengambilan kalori harian*		
8)	I advice obese patient to increase physical activity. *Saya menasihati pesakitan untuk meningkatkan aktiviti fizikal*		
9)	I have suggested obese patient to joined fitness programme or gym in order to reduce weight. *Saya telah mencadangkan kepada pesakit obesiti untuk menyertai program kecergasan atau ke gym bagi mengurangkan berat badan.*		
10)	I found barrier in deliver advice on healthy behaviour if I do not carry out the same behavior in myself. *Saya berdepan dengan halangan dalam memberi nasihat tentang amalan hidup sihat jika saya tidak mempraktikkan amalan tersebut dalam diri saya.*		

Part E: Beliefs about disease and causes of obesity (Likert-Scale)

Bahagian E: Kepercayaan mengenai penyakit dan punca obesiti (Skala-Likert)

Please answer all the questions by placing a clear ☑ sign in the space provided. For each statement, please circle the number which shows the level you agree with. Choices could be made from 1 representing strongly agree to 5 representing strongly disagree. There are no wrong or right choices and your answers will be only used for this study. Thank you for your cooperation.

Jawab semua soalan dengan meletakkan simbol ☑ pada ruang yang disediakan. Untuk setiap penyataan bulatkan nombor pada tahap yang anda pilih. Pilihan yang dibuat berdasarkan dari skali 1 yang mewakili sangat setuju kepada 5 mewakili sangat tidak bersetuju. Tiada pilihan yang menunjukkan betul atau salah dan jawapan anda hanya akan digunakan untuk kajian. Terima kasih atas kerjasama anda.

No.		Strongly agree *Sangat setuju*	Agree *Setuju*	Neither agree nor disagree *Setuju/ tidak setuju*	Disagree *Tidak setuju*	Strongly disagree *Sangat tidak setuju*
1)	Obesity is a health problem *Obesiti ialah masalah kesihatan*					
2)	Obesity leads to serious medical complications *Obesiti menyumbang kepada komplikasi kesihatan yang serius*					
3)	One of the factors that lead to obesity is genetics factor *Salah satu faktor yang menyumbang kepada obesiti ialah keturunan.*					
4)	Obesity also can be cause by endocrine disorders *Obesiti juga berpunca daripada masalah endokrin.*					

5)	I believe that obesity is caused by lack of physical activity and excess food intake. *Saya percaya obesity berpunca dari kurangnya aktiviti fizikal dan pengambilan makanan secara berlebihan.*					
6)	Lack of willpower to change also is the cause of obesity. *Kurangnya keinginan untuk berubah juga merupakan punca obesiti.*					
7)	Psychological problems such as eating disorders and stress also lead to obesity.					
	Masalah psikologi seperti kecelaruan makan dan tekanan juga merupakan punca obesiti.					
8)	Increased screen time also one of the factors that cause obesity. *Meningkatnya masa di hadapan skrin juga merupakan salah satu faktor yang menyebabkan obesiti.*					

Part F: Opportunity to discuss with patient regarding obesity problem (Likert-Scale) Peluang untuk berbincang dengan pesakit berkenaan masalah obesiti

Please answer all the questions by placing a clear ☑ sign in the space provided. For each statement, please circle the number which shows the level you agree with. Choices could be made from 1 representing strongly agree to 5 representing strongly disagree. There are no wrong or right choices and your answers will be only used for this study. Thank you for your cooperation.

Jawab semua soalan dengan meletakkan simbol ☑ pada ruang yang disediakan. Untuk setiap penyataan bulatkan nombor pada tahap yang anda pilih. Pilihan yang dibuat berdasarkan dari skali 1 yang mewakili sangat setuju kepada 5 mewakili sangat tidak bersetuju. Tiada pilihan yang menunjukkan betul atau salah dan jawapan anda hanya akan digunakan untuk kajian. Terima kasih atas kerjasama anda

No.		Strongly agree *Sangat setuju*	Agree *Setuju*	Neither agree nor disagree *Sama ada setuju/ tidak setuju*	Disagree *Tidak setuju*	Strongly disagree *Sangat tidak setuju*
1)	Every visit to primary care clinic is an opportunity to discuss with obesity patient on body weight problem. *Setiap sesi lawatan ke klinik kesihatan merupakan satu peluang untuk berbincang dengan pesakit obesiti mengenai masalah berat badan.*					
2)	I don't want to make my obese patient feel guilty when I discuss obesity problem with him/her. *Saya tidak mahu membuatkan pesakit obesiti saya rasa bersalah ketika saya membincangkan masalah obesiti dengannya.*					
3)	Giving health education on obesity is more difficult than family planning to the patients at the primary care clinic. *Memberi pendidikan kesihatan mengenai obesiti adalah lebih sukar berbanding dengan merancang keluarga kepada pesakit di klinik kesihatan.*					
4)	I feel comfortable to discuss with obese patient about her/his obesity problem. *Saya rasa selesa untuk berbincang dengan pesakit obesiti mengenai masalah obesitinya*					

RISALAH MAKLUMAT PESERTA DAN

BORANG PERSETUJUAN atau KEIZINAN PESERTA
(untuk subjek dewasa)

1 Tajuk penyelidikan: Aplikasi pemodelan persamaan struktur dalam mereka model latihan pengurusan obesiti jururawat jagaan rendah di Klinik Kesihatan, Pahang

2 Nama Institusi and nama penyelidik: International Islamic University Malaysia (IIUM), Associate Professor Dr. Azlina Bt. Daud, Dr Muhammad Kamil b Che Hasan, Dr Siti Zuhaidah binti Shahadan, Nor Azila Pangat

3 Nama penaja*: Fundamental Research Grant Scheme* (FRGS), KEMENTERIAN PENDIDIKAN TINGGI MALAYSIA (KPT)

4 Pengenalan:

Risalah ini menjelaskan hal-hal berkenaan penyelidikan tersebut dengan lebih mendalam dan terperinci. Amat penting anda memahami mengapa penyelidikan ini dilakukan dan apa yang dilakukan dalam penyelidikan ini. Sila ambil masa yang secukupnya untuk membaca dan mempertimbangkan dengan teliti penerangan yang diberi sebelum anda bersetuju untuk menyertai penyelidikan ini. Jika ada sebarang kemusykilan ataupun maklumat lanjut yang anda ingin tahu, anda boleh bertanya dengan mana-mana kakitangan yang terlibat dalam penyelidikan ini. Setelah anda berpuas hati bahawa anda memahami penyelidikan ini, dan anda berminat untuk turut serta, anda dikehendaki untuk menandatangani Borang Persetujuan atau Keizinan Peserta, pada muka surat akhir risalah ini.

Penyertaan anda dalam penyelidikan ini adalah secara sukarela. Anda tidak perlu menyertai penyelidikan ini jika anda tidak mahu. Anda juga mempunyai hak untuk tidak menjawab mana-mana soalan yang anda tidak mahu jawab. Anda juga boleh menarik diri daripada penyelidikan ini pada bila-bila masa sahaja. Jika anda menarik diri, segala maklumat yang telah diperolehi sebelum anda menarik diri tetap akan digunakan dalam penyelidikan ini. Jika anda tidak mahu menyertai ataupun menarik diri dari penyelidikan ini, tindakan anda tidak akan menjejaskan segala hak dan keistimewaan perubatan kesihatan yang selayaknya anda terima.

Penyelidikan ini telah mendapat kelulusan Jawatankuasa Etika dan Penyelidikan Perubatan, Kementerian Kesihatan Malaysia.

5 Apakah tujuan penyelidikan ini dilakukan?

Tujuan penyelidikan ini dilakukan adalah untuk mereka model latihan bagi jururawat untuk mengurangkan kadar obesiti di Malaysia. Penyelidikan ini

diperlukan kerana kadar obesiti di Malaysia yang tinggi akan menyebabkan komplikasi masalah kesihatan di kalangan masyarakat.

Penyelidikan ini akan berlangsung selama 6 bulan (1/10/2021 sehingga 30/4/2022). Dijangka bahawa 455 individu akan mengambil bahagian dalam kajian ini.

6 Apakah tanggungjawab saya sewaktu menyertai penyelidikan ini?

Amat penting anda menjawab kesemua soalan yang dikemukakan oleh kakitangan penyelidikan dengan jujur dan lengkap yang akan mengambil masa selama 30 minit.

Anda akan diberi borang soal selidik untuk dijawab. Borang ini mempunyai 6 bahagian, yang meliputi topik Bahagian A: Kajian Demografi, Bahagian B: Pengetahuan berkaitan Pengurusan Obesiti (*Multiple Choice Questions*), Bahagian C: Sikap Jururawat terhadap Pesakit Obesiti (Scala-Likert), Bahagian D: Latihan dalam memberikan pendidikan kesihatan yang berkaitan dengan amalan hidup sihat, Bahagian E: Kepercayaan mengenai penyakit dan punca obesiti (Skala-Likert) dan Bahagian F: Peluang untuk berbincang dengan pesakit berkenaan masalah obesity (Skala-Likert).

7 Apakah manfaatnya saya menyertai kajian ini?

Penyelidikan ini mungkin akan mendatangkan manfaat ataupun langsung tiada memberi apa- apa manfaat kepada anda. Segala maklumat yang diperolehi daripada penyelidikan ini akan dapat membantu dalam pembangunan model latihan bagi jururawat untuk megurangkan kadar obesiti di Malaysia.

8 Apakah risiko dan kesan-kesan sampingan menyertai penyelidikan ini?

Risiko untuk penyertaan penyelidikan ini yang adalah minima dan tidak akan menjejaskan rawatan anda. Anda berhak untuk tidak menjawab jika rasa tidak selesa dengan mana-mana soalan kajian.

9 Siapakah yang membiayai penyelidikan ini?

Kajian ini dibiayai oleh *Fundamental Research Grant Scheme* (FRGS), Kementerian Pengajian Tinggi (KPT). Anda akan dibayar RM20 untuk kajian ini.

10 Adakah maklumat saya akan dirahsiakan ?

Segala maklumat anda yang diperolehi dalam penyelidikan ini akan disimpan dan dikendalikan secara sulit, bersesuaian dengan peraturan-peraturan dan/ atau undang-undang yang berkenaan. Sekiranya hasil penyelidikan ini diterbitkan atau dibentangkan kepada orang ramai, identiti anda tidak akan didedahkan tanpa kebenaran anda terlebih dahulu. Pihak-pihak tertentu seperti individu yang terlibat dalam penyelidikan ini, juruaudit dan jurupantau yang terlatih,

pihak berkuasa kerajaan atau undang-undang, boleh memeriksa maklumat atau data kajian jika diperlukan.

11 Siapakah yang perlu saya hubungi sekiranya saya mempunyai sebarang pertanyaan?

Anda boleh menghubungi doktor penyelidikan Associate Professor Dr. Azlina Bt. Daud pada nombor telefon 09-5707294 sekiranya anda mempunyai sebarang pertanyaan mengenai penyelidikan ini atau jika anda mengesyaki anda mengalami kecederaan yang terhasil daripada penyelidikan ini dan anda mahukan maklumat tentang rawatannya.

Jika anda mempunyai sebarang pertanyaan berkaitan dengan hak-hak anda sebagai pesakit dalam penyelidikan ini, sila hubungi: Setiausaha, Jawatankuasa Etika & Penyelidikan Perubatan, Kementerian Kesihatan Malaysia, melalui talian telefon 03-3362 8407/8205/8888.

BORANG PERSETUJUAN/ KEIZINAN PESERTA

Tajuk Penyelidikan : ***Aplikasi Pemodelan Persamaan Struktur Dalam Mereka Model Latihan Pengurusan Obesiti Jururawat Jagaan Rendah Di Klinik Kesihatan, Pahang***

Dengan menandatangani di bawah, saya mengesahkan bahawa:

- Saya telah diberi maklumat tentang penyelidikan di atas secara lisan dan bertulis and saya telah membaca dan memahami segala maklumat yang diberikan dalam risalah ini.
- Saya telah diberikan masa yang secukupnya untuk mempertimbangkan penyertaan saya dalam penyelidikan ini dan telah diberi peluang untuk bertanyakan soalan dan semua persoalan saya telah dijawab dengan sempurna dan memuaskan.
- Saya juga faham bahawa penyertaan saya adalah secara sukarela dan pada bila-bila masa saya bebas menarik diri daripada penyelidikan ini tanpa harus memberi sebarang alasan dan ianya sama sekali tidak akan menjejaskan rawatan perubatan saya pada masa akan datang. Saya tidak mengambil bahagian dalam mana-mana penyelidikan lain pada masa ini. Saya juga memahami tentang risiko dan manfaat penyelidikan ini dan saya secara sukarela memberi persetujuan untuk menyertai penyelidikan ini di bawah syarat-syarat yang telah dinyatakan di atas. Saya faham saya harus mematuhi nasihat dan arahan yang berkaitan dengan penyertaan saya dalam penyelidikan ini daripada doktor penyelidikan (penyelidik).
- Saya faham bahawa kakitangan penyelidikan, pemantau dan juruaudit terlatih, pihak penaja atau gabungannya, dan pihak berkuasa kerajaan atau undang-undang, mempunyai akses langsung dan boleh menyemak laporan perubatan saya bagi memastikan penyelidikan ini dijalankan dengan betul dan data direkodkan dengan betul. Segala maklumat dan data peribadi akan dianggap sebagai **SULIT.**
- Saya akan menerima satu salinan 'Risalah Maklumat Pesakit dan Borang Persetujuan atau Keizinan Pesakit' yang telah lengkap dengan tarikh dan tandatangan untuk dibawa pulang ke rumah.
- Saya **bersetuju/ tidak bersetuju*** untuk doktor yang merawat keluarga saya diberitahu tentang penyertaan saya dalam penyelidikan ini. *(*Potong mana yang tidak berkenaan)*

Subjek :

Tandatangan: Nombor K/P:

Nama: Tarikh :

<u>Penyelidik yang mengendalikan proses menandatangani borang keizinan:</u>

Tandatangan: Nombor K/P:

Nama: Tarikh :

Saksi tidak-berpihak/adil:

Tandatangan: Nombor K/P:

Nama: Tarikh :

PARTICIPANT INFORMATION SHEET AND INFORMED CONSENT FORM

(for adult subjects)

1 Research Topic: Application of Structural Equation Modelling in Designing Obesity Management Training Model for Primary Care Nurses in Health Clinic, Pahang

2 Institution Name and Investigators Name: International Islamic University Malaysia, Associate Professor Dr. Azlina Bt. Daud, Dr Muhammad Kamil b Che Hasan, Dr Siti Zuhaidah binti Shahadan, Nor Azila Pangat

3 Sponsored Name: Fundamental Research Grant Scheme (FRGS), **MINISTRY OF HIGHER EDUCATION (MOHE)**

4 Introduction:

It is important that you understand why the research is being done and what it will involve. Please take your time to read through and consider this information carefully before you decide if you are willing to participate. Ask the study staff if anything is unclear or if you would like more information. After you are properly satisfied that you understand this study, and that you wish to participate, you must sign this informed consent form.

Your participation in this study is voluntary. You do not have to be in this study if you do not want to. You may also refuse to answer any questions you do not want to answer. If you volunteer to be in this study, you may withdraw from it at any time. If you withdraw, any data collected from you up to your withdrawal will still be used for the study. Your refusal to participate or withdrawal will not affect any medical or health benefits to which you are otherwise entitled.

This study has been approved by the Medical Research and Ethics Committee, Ministry of Health Malaysia.

5 What is the purpose of this research?

The purpose of this research is to design a training model for nurses to reduce obesity rates in Malaysia. This research is needed because the high rate of obesity in Malaysia will cause complications of health problems in the community.

This research will last for 6 months (1/10/2021 to 30/4/2022). It is expected that 455 individuals will participate in this study.

6 What are my responsibilities while participating in this research?

It is very important that you answer all the questions posed by the research staff honestly and completely which will take 30 minutes. You will be given a questionnaire to answer. This form has 6 sections, which cover the topics Part A: Demographic characteristic, Part B: Knowledge related obesity management (Multiple Choice Questions), Part C: Attitude of Nurses towards Obese patient (Likert Scale), Part D: Practice of giving health education related to healthy behavior, Part E: Beliefs about disease and causes of obesity (Likert-Scale) and Part F: Opportunity to discuss with patient regarding obesity problem (Likert-Scale).

7 **What are the benefits of me participating in this study?**

This research may or may not be of any benefit to you. All the information obtained from this research will be able to assist in the development of training models for nurses to reduce obesity rates in Malaysia.

8 What are the potential risks and side effects of being in this study?

Participation to this study will not affect your treatment, and the risk is minimal. You are free to decline to answer any of the questions that you feel uncomfortable with.

9 Who funded this research?

This study is sponsored by Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education (MOHE). You will be paid RM20 for participate in this study.

10 **Will my information be kept confidential?**

All your information obtained in this research will be stored and handled confidentially, in accordance with applicable regulations and/ or laws. If the results of this research are published or presented to the public, your identity will not be disclosed without your prior permission. Certain parties such as the individuals involved in this research, trained auditors and monitors, government or legal authorities, may examine the information or data of the study if required.

11 **Who should I contact if I have any questions?**

You can contact the research doctor Associate Professor Dr. Azlina Bt. Daud on the phone number 09-5707294 if you have any questions about this research or if you suspect you have suffered an injury resulting from this research and you want information about its treatment. If you have any questions regarding your rights as a patient in this research, please contact: Secretary, Medical Ethics & Research Committee, Ministry of Health Malaysia, at 03-3362 8407/8205/8888.

PARTICIPANT CONSENT/ CONSENT FORM

Research Topic: ***Application of Structural Equation Modelling in Designing Obesity Management Training Model for Primary Care Nurses in Health Clinic, Pahang***
By signing below, I confirm the following:

- I have been given oral and written information for the above study and have read and understood the information given.
- I have had sufficient time to consider participation in the study and have had the opportunity to ask questions and all my questions have been answered satisfactorily.
- I understand that my participation is voluntary, and I can at any time free withdraw from the study without giving a reason and this will in no way affect my future treatment. I am not taking part in any other research study at this time. I understand the risks and benefits, and I freely give my informed consent to participate under the conditions stated. I understand that I must follow the study doctor's (investigator's) instructions related to my participation in the study.
- I understand that study staff, qualified monitors and auditors, the sponsor or its affiliates, and governmental or regulatory authorities, have direct access to my medical record in order to make sure that the study is conducted correctly, and the data are recorded correctly. All personal details will be treated as **STRICTLY CONFIDENTIAL**
- I will receive a copy of this subject information/informed consent form signed and dated to bring home.
- I **agree/disagree*** for my family doctor to be informed of my participation in this study. *(*delete which is not applicable)*

Participant:

Signature: I/C Number:

Name: Date:

Investigator conducting informed consent:

Signature: I/C Number:

Name: Date:

Impartial/fair witnesses:

Signature: I/C Number:

Name: Date:

WORK SCHEDULE (GANTT CHART)

Activity/ Month	2020				2021												2022												2023							
	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
Literature Review																																				
Preparation of study tools/ Proposal Defense																																				
Ethical Clearance																																				
Data Collection																																				
Data Analysis																																				
Writing																																				
Submission and Publication																																				