

**DEVELOPMENT AND EVALUATION OF NUTRITION
RESOURCE KIT FOR MALNOURISHED AND AT-RISK
ELDERLY IN HEALTH CLINIC SETTING**

BY

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A thesis submitted in fulfilment of the requirement for the
degree of Master of Health Sciences

**Kulliyyah of Health Sciences
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ABSTRACT

Elderly population is at risk for malnutrition due to various factors. To address this issue, the elderly needs to be screened for malnutrition and received an appropriate care plan if necessary. The use of nutrition resource is useful as part of a care plan due to its ability to provide nutrition education for malnourished and at-risk elderly. Therefore, this thesis aimed to develop and evaluate a nutrition resource kit for nutrition intervention among malnourished and at-risk elderly in health clinic setting.

This multiphase, action research study was conducted in four selected health clinics in Kuantan, Pahang. A mixed-method approach was taken to achieve the research objective: (Phase I: Plan) qualitatively assessed the types of nutrition resource kit needed by community living elderly; (Phase II: Act) development of nutrition resource kit and educational video for malnourished and at-risk elderly and (Phase III: Observe and Reflect) qualitatively explored the acceptability towards the newly developed nutrition resource kit and educational video and improvisation of it.

Phase I aimed to demonstrate the types of nutrition resource kit needed by community living elderly in health clinic setting. Twenty-one elderly participants with a mean age of 67.24 ± 6.98 years were purposively recruited for individual in-depth interview. Thematic analysis of the interview identified five themes; 1) provision of nutrition resource kit, 2) preference needed to solve this issue (Webb et al., 2018). Favourable outcomes for printed version, 3) eye-friendly, 4) facilitate understanding with diagram and 5) support for technology-based materials. In phase II, a nutrition resource kit with incorporation of an educational video in a QR code were developed based on the integration of findings in phase I and the scoping review which had been performed to identify the suitable topics to be included. This newly developed kit and video then had undergone validation by experts and elderly. Six experts involved in content and face validation of the kit and video. Both resources achieved excellent content validity. Suggestions by experts were considered and revision was done accordingly. The revised kit and video was further assessed by twelve elderly for face validation. All elderly positively evaluated both resources. Amendment was done according to the elderly's suggestions for further improvement. Then, assessment on acceptability towards the developed kit and video among malnourished and at-risk elderly was conducted in phase III. Twenty-two elderly participants (mean age = 68.82 ± 5.33 years) were purposively selected for individual in-depth interview and triangulation was performed using a questionnaire. Interviews were thematically analysed and descriptive statistic was used for data triangulation. Four themes emerged; 1) positive acceptance, 2) elderly-friendly, 3) valuable and 4) individual preference. Additional suggestions given by elderly were reviewed and revised accordingly.

To conclude, this newly developed nutrition resource kit both in the printed format and electronically was well-accepted by the malnourished and at-risk elderly. Provision of nutrition resource kit tailored to the need of elderly could help to deliver nutritional guidance effectively and serve as an important reference for them to prevent and overcome malnutrition.

خلاصة البحث

إن كبار السن يتعرضون لخطر الإصابة بسوء التغذية بسبب عوامل مختلفة. لمعالجة هذه المشكلة، يحتاج كبار السن إلى فحص سوء التغذية وتلقي خطة الرعاية المناسبة عند الحاجة. يعد استخدام موارد التغذية مفيداً كجزء من خطة الرعاية، نظراً لقدرةها على توفير التثقيف التغذائي لكبار السن الذين يعانون من سوء التغذية والمعرضون للخطر. لذلك، هدفت هذه الأطروحة إلى تطوير وتقييم مجموعة موارد التغذية للتدخل التغذوي بين كبار السن الذين يعانون من سوء التغذية والمعرضين للخطر في بيئة العيادة الصحية.

أجريت هذه الدراسة البحثية الإجرائية متعددة المراحل في أربع عيادات طبية مختارة في كوانتان، باهانج. تم اتباع نهج مختلط لتحقيق هدف البحث: (المرحلة الأولى: التخطيط) تقييم نوعي لأنواع مجموعة موارد التغذية التي يحتاجها المجتمع المحلي من كبار السن؛ (المرحلة الثانية: العمل) تطوير مجموعة موارد التغذية والفيديو التعليمي لكبار السن الذين يعانون من سوء التغذية والمعرضين للخطر و(المرحلة الثالثة: المراقبة والتفكير) اكتشاف مدى المقبولية تجاه مجموعة موارد التغذية والفيديو التعليمي المطورة حديثاً والارتجال فيها.

هدفت المرحلة الأولى إلى توضيح أنواع مجموعة موارد التغذية التي يحتاجها المجتمع المحلي للمسنين في بيئة العيادة الصحية. تم تجنيد واحد وعشرين مشاركاً من كبار السن بمتوسط عمر 67.24 ± 6.98 عاماً لإجراء مقابلة فردية متعمقة. حدد التحليل المواضيعي للمقابلة خمسة محاور؛ (1) توفير مجموعة موارد التغذية، (2) تفضيل النسخة المطبوعة، (3) صديقة للعين، (4) تسهيل الفهم بالرسم التخطيطي، (5) دعم المواد القائمة على التكنولوجيا. في المرحلة الثانية، تم تطوير مجموعة موارد التغذية مع دمج مقطع الفيديو التعليمي في رمز الاستجابة السريعة بناء على دمج النتائج في المرحلة الأولى، ومراجعة النطاق التي تم إجراؤها لتحديد الموضوعات المناسبة التي سيتم تضمينها. بعد ذلك، خضعت هذه المجموعة والفيديو المطورة حديثاً للتحقق من قبل الخبراء وكبار السن. ستة خبراء شاركوا في التحقق من صحة المحتوى والوجه المجموعة والفيديو. حقق كلا المصدرين صلاحية محتوى ممتازة. تم النظر في اقتراحات الخبراء وتم تنقيحها بناء على ذلك. ثم، تقييم المجموعة المنقحة والفيديو بشكل أكبر من قبل اثني عشر مسناً للتحقق من صحة الوجه. جميع كبار السن قيموا بشكل إيجابي كلا الموارد. وتم التعديل وفقاً لاقتراحات كبار السن لمزيد من التحسين. بعد ذلك، تم إجراء تقييم حول المقبولية تجاه المجموعة المطورة والفيديو بين كبار السن الذين يعانون من سوء التغذية و المعرضين للخطر في المرحلة الثالثة. اثنان وعشرون مشاركاً من كبار السن (متوسط العمر = 68.82 ± 5.33 عاماً) تم اختيارهم للمقابلة الفردية المتعمقة وتم إجراء التثليث باستخدام الاستبيان. حللت موضوعياً المقابلة واستخدمت الإحصاء الوصفي لتثليث البيانات. ظهرت أربعة مواضيع؛ (1) القبول الإيجابي، (2) صديقة للمسنين، (3) ذو القيمة، (4) التفضيل الفردي، مراجعة وتنقيح الاقتراحات الإضافية المقدمة من كبار السن وفقاً لذلك.

في الختام، لقد حظيت مجموعة موارد التغذية المطورة حديثاً بالشكل المطبوع والإلكتروني بقبول جيد من قبل كبار السن الذين يعانون من سوء التغذية والمعرضين للخطر. يمكن أن يساعد توفير مجموعة موارد التغذية المصممة خصيصاً لاحتياجات كبار السن في تقديم الإرشادات التغذوية بفعالية وتكون بمثابة مرجع مهم لهم للوقاية من سوء التغذية والتغلب عليه.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Master of Health Sciences.

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Prof. Dr. Suzanah Binti Abdul Rahman
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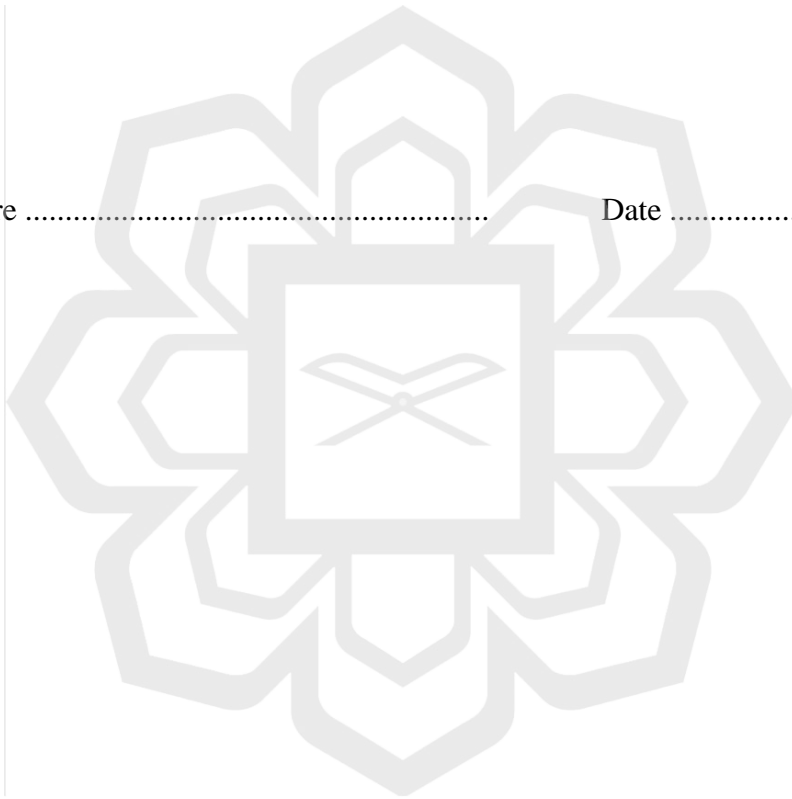
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I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

There are various definition of elderly across the countries. Elderly is commonly described as a person aged 65 years and older in a medical research (Sabharwal, Wilson, Reilly, & Gupte, 2015). However, in Malaysia, elderly is defined as people aged 60 years and above (Mastura, Mohammad, & Yusoff, 2012; Rabieyah & Hajar, 2003). Malnutrition is a common health issue occurs among elderly population (Komici et al., 2019). According to Sauer, Alish, Strausbaugh, West, & Quatrara (2016), the risk of malnutrition and nutritional deficits is high among this group. It is a condition which often goes under-recognized and undertreated by clinicians (Abd Aziz, Mohd Fahmi Teng, Abdul Hamid, & Ismail, 2017; Bizoń et al., 2019).

According to World Health Organization (WHO), malnutrition can be defined as the deficiency, excess or imbalance of energy and/or nutrients in an individual. Although malnutrition can be pointed out as overnutrition, this research focus is on undernutrition. It can interfere with the physiological function of a person including increased risk of morbidity and mortality; and elevate the healthcare cost (Saunders & Smith, 2010). Besides, malnutrition is linked to various adverse clinical outcomes like prolonged length of hospital stay, increased risk of complications, impaired quality of life, affecting the medical treatment, lengthen recovery time and cause a disease (Kellett, Kyle, Itsiopoulos, Naunton, & Luff, 2016; Kopelman & Lennard-jones, 2002; Vetta, Ronzoni, Taglieri, Bollea, & Moscati, 1999).

Malnutrition issue among elderly population can be resolved if it is tackled timely. Appropriate actions are greatly require efforts from multidisciplinary team to

manage the causes with the use of social and dietary approaches as intervention components (Saint-Pierre, Herskovic, & Sepúlveda, 2018; Taberna et al., 2020). Social support is equally important as the dietary intervention strategies as inadequate of it may lead to poor interest towards food which could directly decrease the dietary intake (Evans, 2005). Basically, nutrition is clearly known as the principle of health (Yoshida, Suzuki, & Kikutani, 2013). Thus, in order to address malnutrition issue, the elderly population need to be screened for malnutrition and received an appropriate care plan if necessary (Stanga, 2009). Nutrition resource kit was useful as part of a care plan due to its ability to provide nutrition education for the malnourished and at risk elderly patient (Hamirudin et al., 2014).

Hence, this study aimed to identify the types of nutrition resource kit needed by community living elderly in health clinic setting, to develop a nutrition resource kit for nutrition intervention among malnourished and at-risk elderly and to assess the acceptability of the newly developed nutrition resource kit among them. This study which is an action research was divided into three phases based on the research objectives. So, in this study, identification of type of nutrition resource kit needed by community living elderly in health clinic setting was done in **Phase I**. Findings from the Phase I and scoping review were used to develop a new nutrition resource kit for malnourished and at-risk elderly (**Phase II**). Next, the acceptability and perception towards the newly developed nutrition resource kit were assessed among malnourished and at-risk elderly (**Phase III**).

1.2 PROBLEM STATEMENT

Malnutrition might occur due to suboptimal dietary intake or nutrients malabsorption, disease-associated inflammatory or other mechanisms (Cederholm et al., 2019). Elderly population is at risk for nutritional deficiency compared to younger adults (Abdelwahed, Algameel, & Tayel, 2018).

The prevalence of malnutrition among elderly differs according to setting. Systematic review and meta-analysis of 240 studies on malnutrition have shown the following prevalence; community: 3%, outpatients: 6%, home-care services: 9%, nursing homes: 17.5%, hospital: 22%, long-term care: 29%, rehabilitation/sub-acute care: 29% (Cereda et al., 2016). In Malaysia, a range from 25.7% to 64.0% of elderly living in community were classified as malnourished and at-risk (Institute for Public Health, 2019; Muhamad, Hamirudin, Zainudin, Sidek, & A. Rahman, 2019; Suzana, Boon, Chan, & Normah, 2013; Zainudin, Hamirudin, Rahman, & Sidek, 2019). Although the reported rate of malnourished elderly living in community was relatively lower compared to other settings, this issue should not be neglected and appropriate action must be undertaken. Hence, screening and identification of malnutrition should be done earlier in elderly population to help them understand their nutritional requirements, maintain good health status and to avoid from disease co-morbidities (Shahar, Fun, Chak, & Wan, 2002). According to Suzana & Siti Saifa (2007), Mini Nutritional Assessment – Short Form (MNA[®]-SF) is the most suitable malnutrition screening tool to be used in health clinics setting. Furthermore, it is essential to monitor and treat elderly who have been identified with malnutrition through appropriate nutrition intervention (Ramage-morin, Gilmour, & Rotermann, 2017).

It is important to enhance nutritional knowledge of the elderly population as malnutrition and non-communicable diseases could be resulted from the poor

nutritional knowledge; which then led to the unsatisfactory dietary intake and outcome (Brownie, 2006). In Malaysia, studies have also shown that nutrition knowledge among elderly was poor (Adznam et al., 2009; Karim et al., 2008). Hence, any nutrition promotion campaigns and intervention that focused on improving nutrition knowledge of a population should be continued in order to enhance diet quality and their health status (Chong, Appannah, & Sulaiman, 2019; Southgate, Keller, & Reimer, 2010). Besides, nutrition knowledge of elderly population can be improved with the provision of educational materials which has been specifically designed for their use (Southgate et al., 2010). Hence, the development of nutrition resource kit tailored to the malnourished and at-risk elderly in health clinic setting is warranted as it could be beneficial in improving their dietary intake.

Moreover, health education should be individualised, culturally sensitive and considering several factors which are age, socioeconomic status and level of education (Abdelwahed et al., 2018). However, the existing nutrition educational materials available for elderly's use somehow is plainly lacking. Most of the materials only provide information related to malnutrition in brief. To date, there is no study on identification of specific nutrition resource kit needed by community living elderly in Malaysian health clinic setting. On account of that, there is a need to identify the types of nutrition resource kit needed by this target group before the development of nutrition resource kit that specifically addressing the needs of this group.

1.3 SIGNIFICANCE OF THE STUDY

Malnutrition and poor nutritional status among older adults are the matters that should be of concern (Rashid, Tiwari, & Singh, 2019). Considering there is scarcity of information regarding the availability of nutrition resource kit that can be used to overcome and prevent malnutrition among Malaysian elderly population, this study is therefore warranted as it could reduce the risk of malnutrition and further adverse consequences can be prevented.

Developing a nutrition resource kit for the malnourished and at-risk elderly living in community is needed as it provides tailored guidance for this specific group. It has significant potential to make a valuable contribution to combat malnutrition issue and improve nutritional status among them. Most importantly, this target group's point of view was taken into account which has not been investigated previously. Apparently, the number of Malaysian elderly have increased from 6.5% in the year 2018 to 6.7% in the year 2019 and expected to increase by 14.5% in the year 2040. This growing trend in number of elderly shows the important to take an action towards this issue. Besides, in line with the initiative of Ministry of Health in Malaysian Plan of Action for the year 2016 to the year 2020 and with the Ministry of Health's 10th Malaysia Health Plan, this study also is one of the efforts to provide the cost effective and sustainable healthcare service to the population specifically for the elderly.

This thesis explored the types of nutrition resource kit needed by community living elderly in health clinic setting, described the development of the nutrition resource kit and assessed the acceptability of the newly developed nutrition resource kit. This comprehensive study is essential to provide significant impact on elderly patient's nutritional status and health outcome.

1.4 RESEARCH QUESTIONS

This study addresses the following research questions:

1. What is the type of nutrition resource kit needed by community living elderly in health clinic?
2. What is the process involved in the development of nutrition resource kit for nutrition intervention among elderly with malnutrition and at risk of malnutrition?
3. How acceptable is the newly developed nutrition resource kit for nutrition intervention among malnourished and at-risk elderly in health clinic?

1.5 RESEARCH OBJECTIVES

This study embarks on the following objectives:

1. To identify the type of nutrition resource kit needed by community living elderly in health clinic setting. **(Phase I)**
2. To develop a nutrition resource kit for nutrition intervention among malnourished and at-risk elderly in health clinic setting. **(Phase II)**
3. To assess the acceptability of the newly developed nutrition resource kit for nutrition intervention among malnourished and at-risk elderly. **(Phase III)**

1.6 HYPOTHESIS

1. The newly developed nutrition resource kit for nutrition intervention is acceptable for community living elderly in health clinic setting.

1.7 CONCEPTUAL FRAMEWORK

The figure below illustrates the cyclic process of the study (Koshy, 2005):

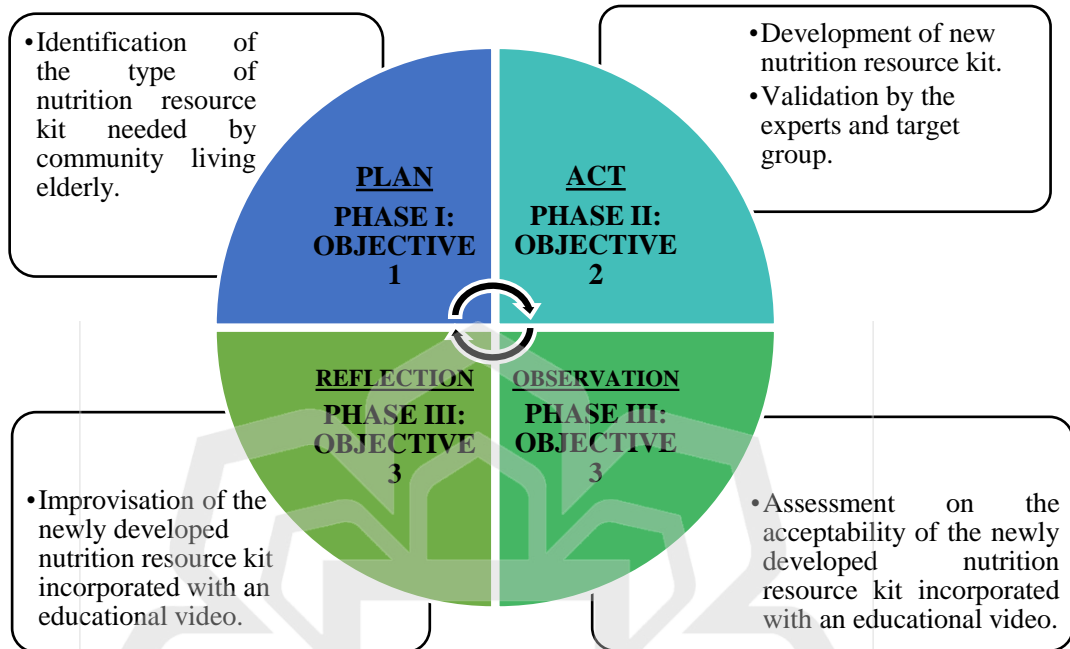


Figure 1.1 Four phase representation of the basic action inquiry cycle

1.8 METHODOLOGICAL FRAMEWORK

The methodological framework for this study is summarized in the following figure (Figure 1.2). This study was conducted in three phases. Phase I was a qualitative study to identify the types of nutrition resource kit needed by community living elderly in selected government health clinics, Kuantan, Pahang. Phase II comprised of development and validation of the nutrition resource kit. The development was also based on the information obtained from Phase I. Meanwhile, phase III was a qualitative study that assessed the acceptability of the newly developed nutrition resource kit.

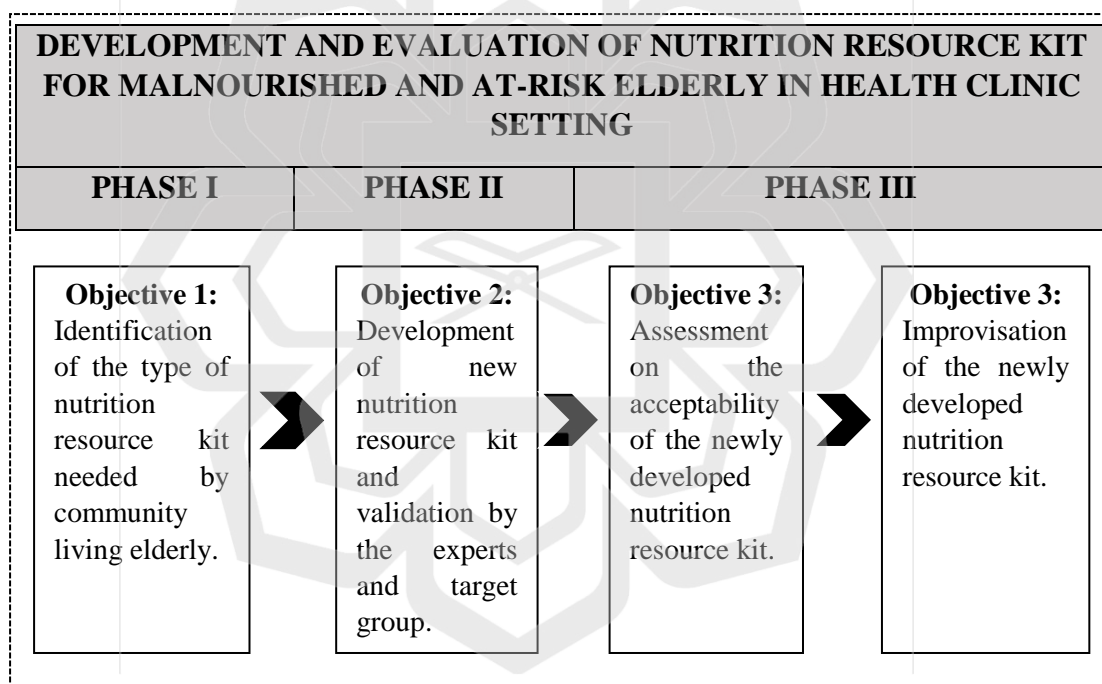


Figure 1.2 Methodological framework of the study