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THE DEVELOPMENT AND EFFECTIVENESS OF INTERACTIVE MULTIMEDIA-BASED NUTRITION EDUCATION MODULE (IMNEM): A CONCEPT PAPER

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ABSTRACT

Globally, malnutrition is an issue that has never been overcome, even after a series of efforts by experts, which have never been impressive. The world's malnutrition burden remains unsatisfactory since malnutrition is solely responsible for more illnesses than other reasons. Malnutrition continues to be a significant problem in Malaysia. The most common manifestation of chronic malnutrition in children is stunting, a lifetime problem for a child in Malaysia. Stunting is an irreversible condition in which a child cannot regain their height in the same way that they can regain weight. Notably, various factors have been identified associated with the risk of stunting among Malaysian children. This includes socio-demographic background, gestational characteristics, maternal and infant diet, feeding practice, illness, and infection. As discovered through the literature review, stunted children face many disabilities, such as learning deficiencies, which affect their productivity for economic prosperity, mostly falling sick more often, losing opportunities to learn, performing poorly in school and growing up to be backward, and more likely to suffer from diet-related Non-Communicable Diseases (NCDs). Therefore, this study will develop and evaluate the effectiveness of interactive multimedia-based nutrition education on Knowledge, Attitude, and Practice (KAP) about nutrition, growth monitoring, breastfeeding, and child-feeding practices among mothers with stunted children using the ADDIE model. This study will employ a quasi-experimental research method consisting of control and treatment groups. The study will be conducted in maternal child health clinics in the Seberang Perai district in Pulau Pinang. The population of this study consists of mothers with stunted children under five years old. In this study, convenience sampling will be used to recruit the target population, and the sample size was determined using G*power.

Keywords: Multimedia module, nutrition education, malnutrition, stunting.

INTRODUCTION

Malnutrition continues to be a significant problem in Malaysia and is the root cause of many illnesses and fatalities. Although the food in Malaysia is vast and accessible, challenges remain in the way Malaysians eat, leading to nutritional problems (Wan Muda et al., 2019). Chronic malnutrition retards linear growth, resulting in stunting (De Onis & Blössner, 2003). Stunting

is a significant health issue in many low- and middle-income countries worldwide, especially among children under the age of five (UNICEF, 2007). It is defined as a height deficit in relation to a child's age (World Health Organization, 2006). Stunting in children under the age of five may impair physical development and have a long-term impact on cognitive development. This includes educational performance, economic productivity in adulthood, and maternal reproductive outcomes (Stewart et al., 2013). Notably, stunting is caused by several factors, including inappropriate child-feeding practices and insufficient knowledge among mothers regarding nutrition and feeding practices in relation to stunting. Therefore, in this study, the level of knowledge will be the main subject to be identified.

Consequently, Kok (2019) highlighted a lack of awareness in Malaysia about child stunting, highlighting that only 6.6% of Malaysian adults were health literate. Most adults are less likely to search for health-related information to improve their knowledge, which may also include knowledge of undernutrition and stunting among children. Therefore, the stunting of children could not be observed in isolation. Instead, it is a part of the life cycle of malnutrition in a child, as well as being equally crucial for the health and nutrition of mothers. The State of the World's Children report recommended that parents strengthen their knowledge and increase their understanding of vital risk factors of stunting among children. The report also supported the strategies to reverse the prevalence or prevent stunting to improve children's life expectancy (UNICEF, 2013). Breastfeeding and child-feeding practices are the primary outcomes and further reduce the prevalence of stunting in the long term (Akombi et al., 2017).
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Therefore, this study aims to develop and evaluate the effectiveness of nutrition education modules. It consists of eight topics related to knowledge, attitude, and child-feeding practice on nutrition, growth monitoring, breastfeeding, and child-feeding practice among mothers with stunted children.

BACKGROUND

According to the 2019 World Report, 21.3% or 144.0 million children under the age of five suffer from stunting, and more than 50% of all stunted children under five live in Asia. Out of the five sub-regions in Asia, Southeast Asia has the highest prevalence of stunted children, which is approximately 55.9 million children (UNICEF, 2018). However, between 2000 and 2019, the global prevalence of stunting decreased from 32.4% (199.5 million) to 21.3% (144.0 million), specifically dropping from 136.6 million to 78.2 million in Asia (UNICEF, 2018). Although globally, the prevalence of stunting dropped; however, the intensity and consequences of stunting are still at a concerning level.

In contrast, in Malaysia, stunting among children below five has increased from 17.2% in 2006 to 20.7% in 2016, which far exceeds the 11% target in the National Plan of Action for Nutrition (2015 – 2025) (Wan Muda et al., 2019). Even though Malaysia falls under upper middle-income countries compared to Ghana, Gaza, and the West Bank, which fall under the lower-middle-income countries and have high poverty rates, Malaysia has a higher prevalence than these low-income countries. The reported prevalence was higher than the prevalence of stunting in Ghana (18.8%), Gaza (7.4%), or even the West Bank (7.4%) (The World Bank, 2018). Compared to other middle-income countries such as Macedonia (4.9%), Mexico (12.4%) and Kazakhstan (8.0%), the prevalence of stunting in Malaysia was relatively higher among children from the same age range (Partap et al., 2019). Childhood stunting in Malaysia

has consistently garnered public attention. Nevertheless, there generally remains a lack of understanding of this issue.

The prevalence of stunting among Malaysian children under the age of five stands at 21.8%, according to the 2019 National Health and Morbidity Survey (Institute for Public Health Malaysia, 2020). The prevalence of stunting in Malaysia was higher than the overall prevalence reported among the upper middle-income countries in the year 2016 (20.7% vs. 6.9%). In addition, the prevalence of stunting in Malaysia is higher compared to the target of reducing stunting to 11.0% to be achieved by the year 2025 under the National Plan Action for Nutrition of Malaysia 2016-2025 (National Coordinating Committee on Food and Nutrition, 2016). Malaysia has a higher stunting rate than some lower-middle-income and low-income countries, such as Ghana and Senegal. The rate is also higher than the stunting rate in the West Bank and Gaza (7.4%) and comparable to Iraq's stunting rate (22.6%) in 2011 (The World Bank, 2018). The prevalence of stunting in Malaysia is far worse than the prevalence in the conflict-ridden West Bank and Gaza (20.7% vs. 7%) (Kok, 2019).

Numerous variables, such as socio-demographic background, gestational characteristics, maternal and infant diet, feeding practices, and illness and infection, have all been linked to the risk of stunting in Malaysian children. Furthermore, maternal knowledge before, during, and after pregnancy was identified as essential to ensure optimal gestational weight gain and appropriate feeding practices to reduce complications among children (Ministry of Health Malaysia, 2017). In addition, good nutrition knowledge is vital to attaining healthy dietary behaviors, subsequently improving the overall diet quality (Mitra et al., 2012; Mugyia et al., 2016; Shariff et al., 2008). Mother, as a primary caregiver to the children, needs to have sufficient knowledge of nutrition and malnutrition, understand the cause of stunting and how to prevent it, and reduce the incidence of stunting, as well as to enable to enhance the effectiveness of prevention strategies and nutrition intervention programs (Turyashemererwa et al., 2009).

IMPORTANCE OF THE STUDY

This study is essential to educate mothers about nutrition, growth monitoring, breastfeeding, and child-feeding practices in order to reduce stunting complications. Apart from that, this study is also essential to understand the Knowledge, Attitude, and Practice (KAP) towards nutrition and feeding practices among mothers with stunted children and their relationships with child nutrition.

In addition, the outcomes of this study will also assist nutritionists, dietitians, and other healthcare professionals such as nurses and medical assistants, policymakers, and the Ministry of Health in overcoming stunting issues among Malaysian children. In addition, adequate knowledge among parents is able to promote nutritious food intake in the family to obtain the benefits of healthy diets as well as to influence social and cultural beliefs in terms of food intake (Abu-Saad & Fraser, 2010; Wan Muda et al., 2019). Good knowledge can usually be transferred to a good attitude and practice; therefore, nutrition education may have positive outcomes for child health benefits as well as combating stunting.

With a piece of improved KAP towards nutrition and feeding practices among mothers, the global and national targets to meet at least 70% of exclusive breastfeeding among infants below six months and a 40% reduction of stunted children under five by 2025 can be achieved (WHO, 2023).

Interactive Multimedia-Based Nutrition Education in the form of modules should be developed to address the problem of stunting effectively. This is attributed to the fact that policymakers and the general public have tended to concentrate on the immediate causes of stunting, such as insufficient food intake, rather than the underlying determinants of stunting (Kok, 2019). The lack of understanding about stunting and nutrition among children in Malaysia is at the root of the problem (Kok, 2019).

Currently, there is no specific health education module on child stunting for public awareness; mostly, the developed module focuses on general child nutrition.

Therefore, this module aims to fill in the gaps in knowledge about factors that contribute to stunting, such as nutrition, growth monitoring, breastfeeding, and infant feeding practices.

PURPOSE OF STUDY

In this concept paper, the researchers aimed to develop and evaluate the effectiveness of an Interactive Multimedia-Based Nutrition Education Module (IMNEM) on KAP. This is in relation to nutrition, growth monitoring, breastfeeding, and child-feeding practices among mothers with stunted children.

OBJECTIVES OF THE RESEARCH

1. To identify the mother's socio-demographic background, children's characteristics, mothers' obstetrics characteristics, children's current and previous illness, and mothers' and children's anthropometry.
2. To identify the level of KAP among mothers with stunted children in terms of nutrition, growth monitoring, breastfeeding, and child-feeding practices.
3. To identify the associations between mothers' socio-demographic background, children's characteristics, mothers' obstetric characteristics, children's current and previous illness, and mother's and children's anthropometry, with KAP about nutrition, growth monitoring, breastfeeding, and child-feeding practice among mothers with stunted children at pre-intervention.
4. To develop an IMNEM on nutrition, growth monitoring, breastfeeding, and child-feeding practice for mothers with stunted children.
5. To evaluate the effectiveness of the IMNEM to increase KAP about nutrition, growth monitoring, breastfeeding, and child-feeding practices among mothers with stunted children at post-intervention and follow-up.

RESEARCH QUESTIONS

1. What is the mothers' socio-demographic background, children's characteristics, mothers' obstetrics characteristics, children's current and previous illness, and mothers' and children's anthropometry?
2. What is the level of KAP among mothers with stunted children regarding nutrition, growth monitoring, breastfeeding, and child-feeding practices?
3. Are there any significant associations between mothers' socio-demographic background, children's characteristics, mothers' obstetric characteristics, children's current and previous illness, and mother's and children's anthropometry with KAP about nutrition, growth monitoring, breastfeeding, and child-feeding practice among mothers with stunted children at pre-intervention?
4. To what extent are the validity and accuracy of the IMNEM on nutrition, growth monitoring, breastfeeding, and child-feeding practices among mothers with stunted children?
5. Is the IMNEM effective in increasing KAP about nutrition, growth monitoring, breastfeeding, and child-feeding practices among mothers with stunted children at post-intervention and follow-up?

RESEARCH HYPOTHESES

H1: There are significant associations between mothers' socio-demographic background, children's characteristics, mothers' obstetric characteristics, children's current and previous illness, and mother's and children's anthropometry with KAP about nutrition, growth monitoring, breastfeeding, and child-feeding practice among mothers with stunted children at pre-intervention.

H2: The IMNEM will increase KAP about nutrition, growth monitoring, breastfeeding, and child-feeding practices among mothers with stunted children at post-intervention and follow-up.

RESEARCH METHODOLOGY

In this study, the quasi-experimental design (non-equivalent comparison group design), which consists of treatment and control groups, will be used. The treatment and control groups will be recruited using convenience sampling techniques from the maternal child clinic. The study sample consists of mothers who have stunted children under the age of five. Note that the sample was drawn from mothers who visited district-level health clinics to seek treatment for their children. These groups will undergo pre-test, post-test, and follow-up tests prior to the implementation of the intervention. Consequently, the treatment group will receive a nutrition education intervention, which will be developed based on the five phases of the ADDIE Model. This includes analysis, design, development, implementation, and evaluation. A quasi-experimental study design will be used to determine the effectiveness of the module, and a self-administrative KAP questionnaire will be employed to collect the data from participants.

CONCLUSION

Observing the results and implications considered in this concept paper, it is obvious that combating childhood stunting based on nutrition education is crucial in Malaysia. The prevalence of stunting among children below five years old remains a significant public health concern, surpassing national targets and comparative rates in other countries. The development and assessment of IMNEM could be an important strategy in improving nutrition KAP among mothers on topics such as nutritional information, growth monitoring, breastfeeding, and feeding practice of children. Focusing on enhancing maternal knowledge and practices has the potential to alleviate the long-term effects of stunting on child development and, consequently, societal welfare. "This paper reinforces the importance of encouraging informed decision-making among these groups, including healthcare professionals and parents.

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