

## Development of Comprehensive Module on Physical Activity for Overweight and Obese Adolescents

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### Abstract

Overweight and obesity among adolescents has become a major public health problem in the 21st century. This health status is measured through the health condition of individuals and the population as a whole. It can be measured through several health indicators such as life expectancy status at birth, death and morbidity (Kementerian Kesihatan Malaysia, 2021). Therefore, the practice of a healthy lifestyle should be implemented among Malaysian to be able to enjoy a healthier and more productive life. Furthermore, good health can contribute to overall well-being, prosperity and social stability (Najmi Shahirah Mamat, 2020). The issue of overweight and obesity is closely related to physical activity problems. The study found that four out of five teenagers are physically inactive (Guthold et al. 2019). This affects physical activity whether jogging, fast walking, or running. Most of them refuse to do those things because they are afraid of being ridiculed because of their body size even though they have the desire to do those activities. However, there are some factors that can change a person's decision from negative to more positive, namely by giving positive reinforcement such as constructive praise, and a gifts as encouragement for him to be more motivated to lose weight.

**Keywords:** Teaching Module, Overweight and Obese, Physical Activity.

### Background

The topic discussed on the health and physical activity challenges faced by Malaysians, especially concerning issues like overweight and obesity for teenagers. The significance of this study lies in addressing critical health concerns prevalent in Malaysia's population, particularly among adolescents. By highlighting the statistics that indicate a high percentage of individuals facing health challenges, the importance of developing targeted interventions,

such as the I-SUMO module for physical activity among obese and overweight teenagers, becomes evident.

In general, one out of five Malaysians aged 13 and above rate their health as "not good" (Institute for Public Health, 2019). Through the findings of a study conducted for a period of two weeks by the ministry of health (KKM, 2021), 20 percent of the population in Malaysia reported that they were in an "unhealthy" state. This shows that the health level of Malaysians is still at a low level. This health status is measured through the health condition of individuals and the population. In order to live a happier and more productive life, Malaysians should adopt a healthy lifestyle. Additionally, social stability, prosperity, and general well-being can all be attributed to excellent health (Mamat, 2020).

In Malaysia, there is an increase in the trend of the nutritional status of the people in this country. The Institute for Public Health (2019), survey, regarding overweight and obese trends continues to increase (30.4 percent and 19.7 percent) compared to National Health Morbidity Survey findings in 2011 (29.4 percent and 15.1 percent) and 2015 (30.0 percent and 17.7 percent). This results show negative impression on Malaysians' healthy lifestyle care activities because almost half of the adult population suffers from overweight and obesity. It is more worrying when the findings of the KKM (2021), showed that 29.8 percent of children aged 5 to 17 years face the same problem of being overweight (15.0 percent) and overweight and obese (14.8 percent). This phenomenon needs to be curbed and special attention should be taken because it involves the future leaders of Malaysia.

The development of a comprehensive module will guide teachers especially physical education teachers to understand overweight and obese students in planning a structured training program for them. In other hand, the module will help teachers to identify at-risk and less at-risk group before planning suitable physical activity programme. Therefore, physical activity planning can be expected as the right strategy to help students improve and maintain fitness levels while also helping to lose weight.

Physical activity is closely related to body activity for the purpose of staying active, maintaining or losing weight. Involvement in physical activity and active exercise is a component found in a Healthy Lifestyle. However, there are still people who underestimate the benefits of doing physical activity as often recommended by the Malaysian Ministry of Health, which is to do at least 60 minutes of physical activity at a moderate or high level every day. The IPH in National Health and Morbidity Survey NHMS (2017), reported on 27,411 secondary schools showed that 50.1 percent and 19.8 percent of teenagers aged 13 to 17 years chose sedentary activities and chose low physical activities. The increment in activity choices has been shown to have negative health effects. The findings of a study by Sultana et al (2021), showed that increment of overweight and obesity cases were caused by the inactivity of physical activity by 95 percent. This physical inactivity is a worldwide public health problem or global pandemic and is an important contributor to the country's major non-communicable diseases (NHMS, 2020).

All schools in Malaysia that are registered under the Ministry of Education and Culture are required to perform the SEGAK test twice a year (Kementerian Pendidikan Malaysia, 2016). That is the first term in March and the second term in August. Nevertheless, after the country

entered the endemic phase after post-COVID 19, there was a change in the implementation of the SEGAK test in June (first term) and October (second term) (KPM, 2021). Test information or data must be keyed-in online in the PAJSK system. The results of this SEGAK report need to be analyzed and intervention needs to be implemented on every issue that arises, especially involving students who lose weight, are overweight, overweight or obese students, less fit students and unfit students. In the SEGAK implementation manual or guide (KPM, 2016), appropriate activities are being suggested to help teachers plan intervention programs for overweight and obese students. However, the activities suggested in the guidebook are not complete. It is because the guideline can only suggest activities for a week only. Whereas according to Bompá & Buzzichelli (2019), for a training activity program, at least it takes 6 weeks to adequate as a preconditioning program in individuals seeking to participate in a regular exercise program or competitive sports.

This study is considered important because it can help overweight and obese adolescents to do activities that are compatible with their abilities, and then eliminate shame when doing physical activity. In addition, the researchers also wanted to study balanced nutrition plans suitable for overweight and obesity. It's because there's a number of them that misconcepts about properly balanced nutrition. Having an ideal body mass index is everyone's dream, including overweight and obesity. Restricted movement, rapidly tired and often cheated or used as a joke is a bad dream for those who have ever been through it.

The interests of this study will also be a guide to teachers, especially PJK teachers in understanding overweight and obesity in designing their training programmes. This training program will help teachers identify risk groups and lower risk groups before designing a training program for them. Besides, the application of self-image is also very important and needs to be taken into account by teachers. It's because the diversity and abundance of food in this country is so hard to reject by anyone. Thus, physical activity planning, a balanced diet, is expected to help teachers improve and maintain their fitness levels while helping to lose weight. The psychological aspect of this is that it is necessary for the teenager to be more confident and help the child to adapt to the circumstances.

The Malaysian Ministry of Education has established a policy called Parental and School Monitoring Program. Various programmes are designed to increase the active and widespread involvement of parents in the programmes carried out in schools. As parents of overweight and obese children, their role and responsibility is essential in helping teachers monitor their teenagers at home. Thus, parents also have responsibilities along the lines of teachers and act as mentors to their children who are involved in this training program. The results of this study could at least help parents and the community to better recognize the root causes of the problem and try to deal with the problem of overweight and obesity together.

### **Description of The Study**

The objectives of the study have been planned to allow this study to run smoothly and coincide with the concept of the study to be conducted. This study uses the Design and Development Research (DDR) approach founded by Richey and Klein (2014). The objectives of the study to be conducted are:

- i. Identify the need for the development of the I-SUMO module for physical activity among obese and overweight teenagers
- ii. Design and develop the I-SUMO module for physical activity among obese and overweight adolescents.
- iii. Identify the level of validity and reliability of the content of the I-SUMO module for physical activity among obese and overweight teenagers.
- iv. Assess the usability of the I-SUMO module for physical activity among obese and overweight teenagers

### **Propose Research Design & Method**

This study uses the Design and Development Research (DDR) technique to develop a healthy lifestyle-based module specifically for overweight and obese students. Siraj et al (2020), explained that a development study is an organized and systematic study. This is because it includes a dynamic process to identify needs, design, development and evaluation until the result of a product that wants to be developed.

In this study, the researchers focused on physical activity among overweight and obese teenagers. The use of this approach is able to help and guide researchers to design and develop what they want to study in depth. Through the context of the study using the DDR approach, the researcher will conduct the study through three phases Siraj et al (2021), namely phase one (needs analysis), phase two (design and development) and phase three (evaluation phase).

This phase identifies the development requirements of the module to be built. According to McKillip (1987), the needs analysis phase is a process of identifying and evaluating the needs of the study and the factors to be studied to determine the results to be achieved. According to Klein (2007), needs analysis is a method to identify the gap between the current situation that exists compared to the desired situation.

McKillip (1987), states that needs analysis is a value judgment that a particular group has a problem that can be solved. In this aspect of needs analysis, the researcher will outline the procedure in the first phase ie

1. Identify the target group or groups to be focused on
2. Conduct a needs analysis for the Head of the PJKP Committee
3. A pilot study will be conducted before the questionnaire is distributed in this phase.

### **Need Analysis Phase**

In order to carry out this phase, the researcher used two methods, namely the survey method using a five-point scale questionnaire. Researchers will ask questions using Google Form software on PJKP teachers who at least hold the position of Head of Committee (KP) for Physical Education and Health Education (PJKP) subjects, PJKP Main Trainers, Officers currently serving in the District Education Office (PPD) who are coordinators for PJKP subjects, officers currently serving in the State Education Department (JPN) who are coordinators for PJKP subjects, officers currently serving in the Malaysian Ministry of Education (KPM) who are coordinators for PJKP subjects as well as officials who is currently serving as Jemaah Nazir

(JN). The questions that will be included are about demographics, then the researcher will ask general questions about the issues, challenges and respondents' views on the topic as well as suitable activity suggestions to be included in the module that will be produced by researchers specifically for overweight and obese teenagers and weight excessive Module-related briefings, activity implementation videos, and implementation procedures will be given to teachers as one of the test administration steps and procedures. This implementation will be monitored in terms of testing and administration to control the quality of the study that will be conducted

**Design and Development Phase**

The design phase is a phase that needs to be understood more deeply because the product that will be produced in the form of modules will be built through the steps that will be developed in this phase. The implementation in this phase will use the Fuzzy Delphi technique because this method is one of the best methods to obtain expert agreement in determining the appropriate elements that will be included in the study to be developed (Mohd Ridhuan Mohd Jamil et al., 2017).

**Evaluation Phase**

The evaluation phase that will be implemented in this phase is to study the usability of the I-SUMO module prototype that will be produced. Through this phase the researcher will conduct an interview session on the usability of this module prototype. The TUP Usability Evaluation Model Bednarik (2002), and Mobile EDU Model Nidzam (2016), as well as the Syar Meeze module production study (2021), will be used as a backup to evaluate the usability of this module.

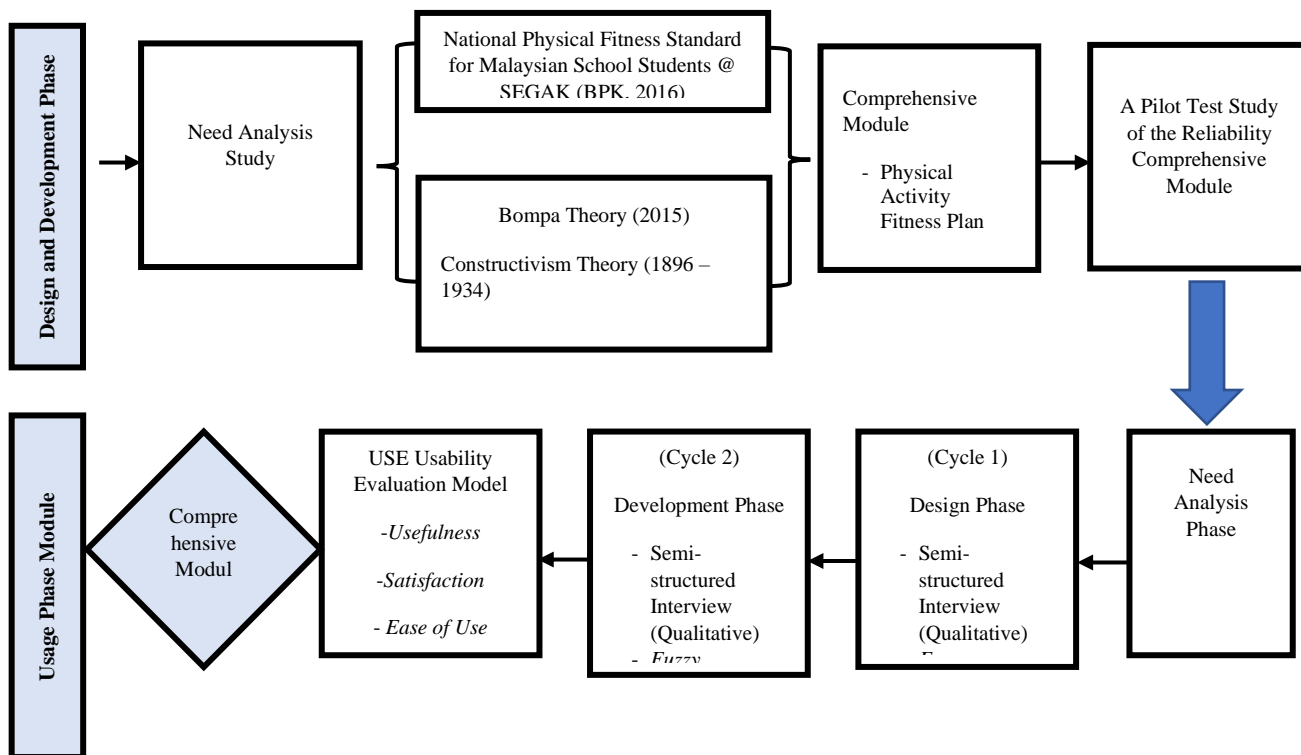


Diagram 1: Conceptual Framework.

**Population and Sample**

According to Creswell (2008), a population is a group of individuals who are willing to be studied to represent a common criterion based on the objectives of the study. The total population is determined by how far and how much data or information is to be collected and analyzed (Lebar, 2018). This is because the sample or respondent is part of the population targeted by the researcher. Therefore, in determining the population, it needs to be studied in more depth so that the solution to the chosen problem is effective (Rozmi, 2017). Rozmi (2017); and Lebar (2018), stated that it is quite impossible to study everyone in a large population, so a correct method should be chosen in the selection of samples or respondents. Therefore, in the context of this study, the selection of samples or respondents is different according to each phase. Each procedures will follow a sampling method that is appropriate to the study according to each phase.

**Study Sample: Need Analysis Phase**

The researcher will continue for the first phase study with needs analysis phase. In this phase, the researcher uses purposive sampling, which is to select a sample based on the researcher's knowledge and the specific purpose of the research (Ramlan & Ghazali 2018). The number of samples in this phase is a total of 75 teachers who at least hold the position of PJKP Committee Leader and have served for at least 10 years, PJKP State and National JUs, Officers who are currently serving in the District Education Office (PPD) who are coordinators for points PJKP subjects, officers who are serving in the State Education Department (JPN) who are coordinators for PJKP subjects, officers who are serving in the Malaysian Ministry of Education (KPM) who are coordinators for PJKP subjects as well as officers who are serving as Jemaah Nazir (JN ).

**Study Sample: Design and Development Phase**

Through this second phase, the researcher chooses purposive sampling to help in the design phase of this module. A total of 15 expert panels will be appointed by researchers. The panel consist of lecturers from Universiti Teknologi Malaysia (UTM), Universiti Putra Malaysia (UPM), lecturers at the Institute of Teacher Education (IPG), PJKP Inspectorate Officers, Ministry Officers Health Malaysia (KKM) and National Lead Trainer (JUK) of PJKP. According to Jamil and Nurulrabihah (2021), the number of experts of 10 to 15 experts is sufficient and appropriate for the use of the Fuzzy Delphi Method in measuring expert agreement. This statement is supported by Yao et al (2022), who also agree that 10 to 15 expert panels are sufficient and will achieve a high level of uniformity among experts.

**Study Sample: Evaluation Phase**

Next, for phase three, in order to obtain findings on the usability of the I-SUMO module, researchers will conduct an evaluation phase by selecting a study sample consisting of two experts in physical activity, two experts in nutrition, two experts in psychological aspects and four at-risk teenagers overweight and obese. The six experts who will be appointed will meet the following criteria. The selected respondents are based on the USE Model (Lund, 2001) study. Interview validity will also involve internal validity which involves criterion validity and cross checking. At this stage, the interview is related to the usability aspect of the module that will be used (Usability).

### **Study Requirement**

This need analysis, design and development stage in this module must be completed with the approval of experts. Building the module structure will take six months to complete. Pilot study which is to determine the content reliability will be conducted in 4 weeks. Phase 2 required 12 weeks to complete the usability research.

### **Conclusion**

The study that will be carried out can be considered important because it can help overweight and obese students carry out activities that are appropriate to their abilities, examine the proposed nutrition plan according to suitability and then be able to remove the feeling of shame when doing physical activity. In addition, the researcher also wants to study a balanced diet plan that is suitable for overweight and obese students. This is because there are a number of them who have the wrong concept of proper balanced nutrition. Having an ideal body mass index is everyone's dream including overweight and obese students. Limited movement, quickly tiring and often mocked or used as a joke is a nightmare for those who have been through it.

### **Contribution**

Participation in physical activities and maintaining an active lifestyle offer numerous benefits for students, particularly those who are overweight and obese.

1. **Improved Overall Health:** Engaging in physical activities helps obese students enhance their overall health by reducing risks associated with obesity. Regular exercise can lead to weight loss, improved cardiovascular health, and better metabolic functioning.
2. **Physical Well-being:** Regular physical activity promotes better physical well-being, increasing strength, flexibility, and endurance. It also contributes to better sleep patterns and energy levels.
3. **Social Benefits:** By engaging in activities and social interactions, students can build relationships and enjoy friendships. This can reduce feelings of embarrassment or self-consciousness, fostering a supportive and inclusive environment. Social engagement through sports or group activities enhances students' sense of belonging and community.
4. **Enhanced Learning Engagement:** Integrating dynamic and relevant content into the curriculum can make learning more engaging and exciting. This encourages students to take a greater interest in their studies, leading to improved academic performance.
5. **Healthy Habits:** Encouraging regular physical activity helps students develop healthy habits that can continue into adulthood. These habits promote long-term health and well-being, reducing the likelihood of chronic diseases later in life.

- 6. Independence and Self-confidence:** Participating in diverse activities and taking on new challenges helps students build their independence and self-confidence. These experiences prepare them for future successes both academically and personally, equipping them with essential life skills.

The Malaysian Ministry of Education has established a policy called the strengthening program for parents and school facilities. Various programs were formed to increase the active and widespread involvement of parents in the programs carried out in the school. As parents who have children who are overweight and obese, of course their role and responsibility are vital to help teachers monitor these students when they are at home. Therefore, parents will also have a responsibility along with the line of teachers and act as mentors to their children who are involved in this training program. The findings of this study can help parents and the community to better recognize the cause of the problem and try to deal with the problem of overweight and obesity together.

All schools in Malaysia that are registered under the MoE are required to conduct the SEGAK test twice a year. That is the first term in March and the second term in August. However, after the country entered the endemic phase, there was a change in the implementation of the SEGAK test in June (first term) and October (second term). Test information or data must be locked in online in the PAJSK system. The results of this SEGAK report need to be analyzed and need to be reported to the school administrator for further action. Therefore, the results of this study will help the school to improve and strengthen physical activity programs for overweight and obese students to be healthier, active and fit. Indirectly, it is hoped that the school will be able to see a decrease in the number of overweight and obese students.

Overall, promoting an active lifestyle and physical activity within the school environment benefits students by improving their health, fostering social connections, enhancing academic engagement, and developing lifelong healthy habits and self-confidence.

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