Original Article

# Needs Assessment for the Development of a Module to Prevent Weight Gain Among Adults with Normal BMI: The H.E.A.T Study

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## Abstract

***Background:*** **Weight maintenance is a simpler, cheaper, and faster means of preventing overweight and obesity. This study aimed to conduct a needs assessment for the development of a module aimed at preventing weight gain among adults with a normal body mass index (BMI).**

***Methods:*** **Semi-structured interviews were conducted with 15 trained healthcare staff and 15 members of the public. Healthcare staff were eligible if they had at least two years of experience in weight management. Members of the public were eligible if they were Malaysian citizens aged 18 to 35 years with a normal BMI who lived or worked in selected Federal Land Development Authority (FELDA) settlements in Bentong District, Pahang, Malaysia. Participants in both groups were recruited until data saturation was reached. All interviews were audio-recorded, transcribed verbatim and analysed using thematic analysis.**

***Results:*** **The module comprises four main sections and their topics: i) Introduction to obesity (causes and effects of overweight and obesity); ii) Nutrition (healthy eating, watch your calories, preparing healthy meals, and understanding food labels); iii) Physical activity (physical activity and basic exercise, and behaviour change); and iv) Motivation (social support and tips to maintain a healthy weight).**

***Conclusion:*** **Given the rapidly rising prevalence of obesity in Malaysia, a weight gain prevention module is essential. The nine topics identified are intended to engage young adults effectively in maintaining a healthy weight throughout their lifespan.**

***Keywords:*** *weight gain prevention, normal body mass index, weight management intervention, physical activity, social support*

## Introduction

Overweight and obesity are defined as abnormal or excessive fat accumulation that poses a risk to health. In adults, a body mass index (BMI) of 25 kg/m² or more is classified as overweight and 30 kg/m² or more as obesity. The World Health Organization reported that, from 1990 to 2022, the percentage of children and adolescents aged 5 to 19 years living with obesity rose from 2% to 8% worldwide, while the percentage of adults aged 18 years and over living with obesity more

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than doubled from 7% to 16% (1). Obesity is rapidly increasing across both developed and developing countries, contributing to significant social, economic, and healthcare burdens worldwide (1, 2). The global prevalence of obesity has risen dramatically over the past decades, with projections indicating a continued upward trend in the coming years (3, 4). Overweight and obesity are major public health concerns that contribute substantially to the burden of non-communicable diseases such as diabetes, cardiovascular disease, and certain cancers.

While many interventions focus on individuals who are already overweight or obese, adults with a normal BMI are often overlooked in preventive efforts. However, recent evidence indicates that weight gain commonly occurs during adulthood due to lifestyle changes and environmental factors, and this increase often goes unnoticed until it progresses to overweight or obesity (5, 6). Furthermore, studies have shown that individuals with a normal BMI may still be at risk of excess fat accumulation, highlighting the need for early intervention within this population (7). A meta-analysis of randomised controlled trials involving adults aged 18 to 50 years ($n$ = 37,407) found that lifestyle interventions significantly limited weight gain compared with control groups, with a mean difference of −1.15 kg (8).

In Malaysia, there is a lack of local studies on weight gain prevention in adults compared with weight loss studies. Weight loss studies are more prominent because changes in fat mass are reflected more clearly in body size and are easier to measure than changes in lean mass, which are difficult to measure in population studies (9). Overweight prevention studies in Malaysia are more often conducted on children (10) and adolescents (11) largely because study samples are more accessible within school settings. In contrast, adults are often occupied with work commitments and, for some, family responsibilities, making them more difficult to recruit for research. As a result, adults have received less attention. Therefore, this study assessed the needs for a module intended to serve as a reference for adults to maintain a healthy body weight, thereby helping to prevent weight gain and obesity.

## Methods

### *Research Design*

This study used a qualitative design. Semi-structured interviews were conducted with healthcare staff experienced in weight management to explore practical strategies for preventing weight gain, and with members of the public to identify the topics they considered important for weight maintenance. Participants were recruited until data saturation was reached, that is, when additional interviews yielded no new themes or patterns (12).

### *Study Participants*

Participants comprised two groups: healthcare staff and members of the public. Healthcare staff were eligible if they had at least two years of experience in weight management programmes. Members of the public were young adults aged 18 to 35 years who lived or worked in selected FELDA settlements in Bentong District, Pahang, Malaysia, and had a normal BMI (18.5 to 24.9 kg/m$^2$). Exclusion criteria for the public were pregnancy or breastfeeding, physical disabilities that could interfere with physical activity, and chronic diseases such as diabetes, hypertension, hyperthyroidism, or cardiovascular disease.

### *Data Collection Tools*

A semi-structured interview guide comprising seven open-ended questions was developed to explore key aspects relevant to the module, including potential topics and subtopics. The guide was drafted by the principal researcher and refined in consultation with the research team to ensure clarity and alignment with the study objectives. The interview guide for healthcare staff is shown in Table 1, and the interview guide for the public is shown in Table 2.

### *Data Collection Process*

Interviews were scheduled by appointment at a place and time convenient to each participant. Before each interview, participants received a participant information sheet and provided written informed consent. All interviews were conducted face to face and audio-recorded using a digital voice recorder. Interviews lasted a mean of 22.26 minutes for healthcare staff and 14.15 minutes for the public.

**Table 1.** Interview guide for healthcare staff.

| No | Questions |
|---|---|
| 1 | What is your opinion on the issue of overweight and obesity in Malaysia? |
| 2 | Are there any existing intervention modules for preventing weight gain? If not, skip to question 5. |
| 3 | What topics attract your interest? |
| 4 | Are there any other topics you would like the public to learn about? |
| 5 | As a healthcare worker with experience in weight management, and since I am developing a module to prevent weight gain, what is your opinion on what topics should be included in this module? (List the topics mentioned by participants) |
| 6 | For each of the topics mentioned, what subtopics should be included? (List subtopics for each topic mentioned) |
| 7 | How should these subtopics be delivered (e.g., through what activities)? |

**Table 2.** Interview guide for the public.

| No | Questions |
|---|---|
| 1 | What is your understanding of obesity? |
| 2 | Have you ever participated in a weight gain prevention programme? If not, skip to question 5. |
| 3 | What topics attract your interest? |
| 4 | Are there any other topics you would like to learn about? |
| 5 | Since your weight is within the normal range and I am developing a module to prevent weight gain, what topics do you think should be included in this module? (List the topics mentioned by the public) |
| 6 | For each topic mentioned, what specific information would you like to know about it? (List subtopics for each topic mentioned) |
| 7 | In your opinion, how should the subtopics be delivered (activities)? |

### *Data Coding and Analysis*

The interview recordings were transcribed verbatim in Malay and analysed manually using thematic analysis. According to Braun and Clarke (13), thematic analysis is a method for identifying, analysing and reporting patterns (themes) within data. The analysis followed six phases:

#### *Familiarisation with the Data*

The transcripts were read repeatedly so that the researchers were fully immersed in the content, and the entire data set was read at least once before coding began.

#### *Generating Initial Codes*

Initial codes were generated to identify features of the data that the researchers considered relevant or meaningful, and each code was supported by illustrative data extracts.

#### *Searching for Themes*

The analysis then moved to the broader level of themes: codes were grouped into potential themes, and all relevant coded data extracts were collated within them.

#### *Reviewing Themes*

Candidate themes were reviewed to ensure that the data within each theme were meaningfully coherent and that the distinctions between themes were clear and identifiable.

#### *Defining and Naming Themes*

Themes were refined, defined and named to capture the essence of each.

#### *Producing the Report*

Once the themes were fully developed, the final analysis was conducted, and the report was written.

Participants' sociodemographic characteristics were summarised using descriptive statistics in IBM SPSS Statistics Version 26 (IBM Corp., Armonk, NY, USA).

## Results

### *Sociodemographic Characteristics of the Participants*

A total of 15 healthcare staff (5 men and 10 women) and 15 members of the public (10 men and 5 women) participated. All participants were Malay except for one staff member who was Chinese. Most healthcare staff were aged 30 to 39 years, while the majority of the public were aged 20 to 29 years. Almost all healthcare staff (93.3%) had tertiary education, whereas just over half of the public (53.3%) had secondary education. Most participants were married (Table 3).

### *Content of the Module*

The qualitative findings indicated that the module should comprise four main sections: i) Introduction to obesity, comprising one topic, causes and effects of overweight and obesity; ii) Nutrition, comprising four topics: healthy eating, watch your calories, preparing healthy meals and understanding food labels; iii) Physical activity, comprising two topics: physical activity and basic exercise, and behaviour change; and iv) Motivation, comprising two topics: social support and tips to maintain a healthy weight. The sections, topics and subtopics of the H.E.A.T module, with supporting quotes, are presented in Table 4.

## Discussion

This needs assessment identified the sections, topics, and subtopics required for the H.E.A.T educational module to be used in this programme. Several new subtopics emerged from this study when compared with the module used in a previous weight gain prevention study, the Study of Novel Approaches to Weight Gain Prevention (SNAP) trial (14), conducted in the United States. Under the Nutrition section, one new subtopic was eating ethics, which emphasises dietary practices that help regulate body weight based on the teachings of Islam and other religions. Under the Physical activity section, a behaviour change topic was added, focusing on behavioural modifications related to physical activity, including exercises that can be performed at home and in the workplace.

Under Section 1 (Introduction to obesity), healthcare staff described overweight and obesity as concerning conditions. Both groups highlighted the need to include the risk factors,

**Table 3.** Sociodemographic characteristics of the participants.

| Criteria | Healthcare staff ($n$ = 15), $n$ (%) | Public ($n$ = 15), $n$ (%) |
|---|---|---|
| **Gender** | | |
| Male | 5 (33.3) | 10 (66.7) |
| Female | 10 (66.7) | 5 (33.3) |
| **Race** | | |
| Malay | 14 (93.3) | 15 (100.0) |
| Chinese | 1 (6.7) | 0 (0.0) |
| **Age** | | |
| 20 to 29 years | 1 (6.7) | 9 (60.0) |
| 30 to 39 years | 10 (66.7) | 6 (40.0) |
| 40 years and above | 4 (26.7) | - |
| **Education** | | |
| Secondary education | 1 (6.7) | 8 (53.3) |
| Tertiary education | 14 (93.3) | 7 (46.7) |
| **Marital status** | | |
| Single | 3 (20.0) | 5 (33.3) |
| Married | 11 (73.3) | 9 (60.0) |
| Divorced/widowed | 1 (6.7) | 1 (6.7) |

**Table 4.** Sections, topics, subtopics and supporting quotes for the H.E.A.T module.

| Section | Topic and subtopic | Quotes |
|---|---|---|
| **Introduction to obesity** | **Causes and effects of obesity**<br><br>The meaning of overweight and obesity ($n$ = 1) | There needs to be awareness because some people are overweight but think they're okay. (Healthcare staff, female, 33)<br><br>Maybe one of the ways is by getting to know oneself... one's identity... (Healthcare staff, male, 30)<br><br>Understanding what obesity is, and knowing the meaning of obesity. (Healthcare staff, female, 38) |
| | Causes of overweight and obesity ($n$ = 3) | Risk factors... maybe we can go with risk factors... the risk factors of obesity. (Public, male, 30)<br><br>First, we need to know why obesity happens. (Healthcare staff, female, 39)<br><br>We focus on the causes of weight gain. (Healthcare staff, female, 38) |
| | Energy balance ($n$ = 3) | If your work is physically demanding, you need to eat more to get energy. (Public, male, 34)<br><br>You need to know what you have eaten and then know how many calories you have burned. (Healthcare staff, male, 32)<br><br>It's about balancing fat burning... how much is burned and how much is taken in. (Public, male, 27) |
| | Effect of overweight and obesity ($n$ = 11) | The effects of obesity, especially in the long term. (Healthcare staff, female, 33)<br><br>Show the effects to become aware of what's happening to their bodies. (Public, female, 35)<br><br>There needs to be constant reminders about the dangers of obesity. (Healthcare staff, male, 31) |
| **Nutrition** | **Healthy eating**<br><br>Malaysian Food Pyramid ($n$ = 30) | First of all, it's definitely the diet, need to take care of the diet... variety. (Healthcare staff, female, 33)<br><br>A balanced variety of food types. (Healthcare staff, female, 56)<br><br>I think it's about how we consume food, the quantity and the types of food. (Public, male, 22) |
| | Malaysian Healthy Plate ($n$ = 8) | Then eat according to quarter, quarter, half, balanced. (Healthcare staff, female, 33)<br><br>Diet and appropriate portion sizes regarding nutrition. (Public, female, 24)<br><br>They know how much intake they should consume, such as how many portions per day. (Healthcare staff, male, 30) |
| | Foods that need to be controlled ($n$ = 8) | Reduce fat, oil, all those things, and sugar. (Healthcare staff, female, 33)<br><br>Like to look for what people call happy food... happy food is things like sugar, ice cream, chocolate, and so on. (Healthcare staff, female, 38)<br><br>Because I smoke... if a heavy smoker needs sweet things. (Public, male, 27) |

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**Table 4.** (*continued*)

| Section | Topic and subtopic | Quotes |
|---|---|---|
| | Unhealthy foods ($n$ = 15) | The need to emphasise unhealthy foods, like fast food. (Healthcare staff, female, 39)<br><br>Oily and fatty foods should be avoided if possible; if consumed, they should be taken in small quantities. (Healthcare staff, male, 38)<br><br>We can avoid fast food, avoid fried foods, and avoid sweet foods. Those foods can still be consumed, but there should be limits. (Healthcare staff, female, 37) |
| | Eating ethics ($n$ = 1) | Which is to eat before feeling hungry and stop before feeling full. (Public, male, 34) |
| | Dietary supplements ($n$ = 2) | People need to know if any supplements are not good for them. (Healthcare staff, male, 31)<br><br>What people call the foods that people often take as those vitamins sold. (Public, female, 22) |
| | **Watch your calories** | Need to know the calories... Calculate how many calories we consume. (Healthcare staff, male, 30) |
| | Energy intake/ calorie count ($n$ = 9) | Then if you ask someone who wants to lose weight, I'm not good at counting calories. (Healthcare staff, female, 29)<br><br>Firstly, people like this need to know about calorie count. (Healthcare staff, female, 37) |
| | Meal times ($n$ = 11) | The correct timing for food intake. (Healthcare staff, male, 31)<br><br>The right time to eat. (Public, female, 24)<br><br>When is the appropriate time to eat. (Public, male, 33) |
| | MyNutriDiari 2 application ($n$ = 1) | Maybe there should be a diary—a food diary. Nowadays, there are already apps for that. (Healthcare staff, male, 31) |
| | **Preparing healthy meals** | Choose a healthy menu... healthy cooking methods such as steaming. (Healthcare staff, female, 33) |
| | Cooking methods ($n$ = 3) | So worried about how to choose food, how to cook food. (Healthcare staff, female, 56)<br><br>Make sure the way of food handling and food preparation. It is healthy, clean and safe. (Healthcare staff, female, 39) |
| | Example menus ($n$ = 3) | After that, more towards the menus that they take. (Healthcare staff, female, 43)<br><br>Hmm, after that maybe can provide example menus that can be used. (Healthcare staff, female, 30)<br><br>But they don't know what the examples of the food are? Provide examples of foods. (Public, male, 26) |
| | Preparation of healthier food ($n$ = 2) | After that, reduce eating out. Cook more at home. (Healthcare staff, female, 30)<br><br>Indeed, we want people to eat food at home, food that is home-cooked... but I think the guidelines don't forbid it... but there are limits. (Healthcare staff, female, 39) |

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**Table 4.** (*continued*)

| Section | Topic and subtopic | Quotes |
|---|---|---|
| | **Understanding food labels** (*n* = 3) | Healthy supermarket tour programmes can show how to choose healthier food products. (Healthcare staff, female, 33)<br><br>Oh... okay, the most important thing is to teach how to read ingredients. (Healthcare staff, female, 56)<br><br>They need to check how much sugar and salt at packaging labelling when they buy it. (Healthcare staff, female, 39) |
| **Physical activity** | **Physical activity and basic exercise**<br><br>Definition of physical activity (*n* = 2) | What does exercise actually mean. (Healthcare staff, female, 43)<br><br>I think there needs to be a proper definition of physical activity. (Healthcare staff, female, 56) |
| | Recommendations for physical activity (*n* = 12) | People need to be encouraged to exercise, at least as recommended. (Healthcare staff, female, 33)<br><br>Exercise... It should be done every day, the time... the duration... how long. (Public, male, 30)<br><br>Exercise, then how many times... 3 times a week... 30 minutes a day? (Healthcare staff, male, 37) |
| | Type of physical activity (*n* = 16) | Physical activity has different types... then it has intensity levels. (Healthcare staff, male, 31)<br><br>Types of exercises that are easy to practice daily. (Public, male, 25)<br><br>Basically, they need to know the types of exercise actually. (Healthcare staff, female, 37) |
| | Exercise techniques/phase (*n* = 7) | How to do physical activity correctly. (Healthcare staff, female, 56)<br><br>How the exercise should be done... daily, in their daily life. (Public, female, 22)<br><br>The proper ways to exercise, the right time to exercise. (Public, male, 33) |
| | Benefit and effect of exercise (*n* = 8) | How to avoid getting injured. (Healthcare staff, female, 56)<br><br>Where if we use the wrong exercise technique, it can cause injury. (Healthcare staff, male, 32)<br><br>About its benefits... its advantages... what effects it has... its importance. (Public, female, 28) |
| | Training heart rate (*n* = 1) | We want them to know how to calculate their training heart rate. (Healthcare staff, female, 56) |
| | **Behaviour change**<br><br>More active activity (*n* = 5) | There should be physical activities that keep them active. (Healthcare staff, female, 30)<br><br>I don't really do exercise, but I walk a lot. Most of the day I'm either standing or moving around. (Healthcare staff, female, 33)<br><br>I wouldn't say I'm very active, but I do move a lot... walking here and there. (Healthcare staff, male, 29) |

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**Table 4.** (*continued*)

| Section | Topic and subtopic | Quotes |
|---|---|---|
| | Exercise at home ($n$ = 5) | They can do more physical activities; they can sweep the floor. (Healthcare staff, female, 30)<br><br>What exercises can be done at home… what exercises can she do to sweat… (Public, male, 26)<br><br>Light exercise usually includes marching (5 to 10 minutes, three times), Zumba, following YouTube videos (three times a week, 45 minutes), gardening (twice a week), play badminton twice a week, for one hour. (Healthcare staff, female, 44) |
| | Exercise at office ($n$ = 6) | Don't use the elevator, take the stairs, if the office is big, they can walk. (Healthcare staff, female, 56)<br><br>Simple exercises that people can do every day because they work. (Public, female, 28)<br><br>We can suggest doing X-breaks… 15 minutes for stretch and move a bit. (Healthcare staff, female, 38) |
| **Motivation** | **Social support** ($n$ = 9) | If you have friends, you have a group, you can sustain it better. (Healthcare staff, female, 56)<br><br>Looking for a coach to help with health… how to make people interested in doing sports. (Public, male, 32)<br><br>Sharing experiences from people on how they manage to maintain their body weight. (Healthcare staff, female, 33) |
| | **Tips to maintain weight** ($n$ = 5) | We need to be aware of our weight, not just let it be when it increases. (Healthcare staff, female, 43)<br><br>There must be tips to stay consistent… how do we overcome that laziness? (Healthcare staff, female, 56)<br><br>They're like… "Oh, we have to exercise? That's tiring to come here… we'll end up sweating," and after that they don't want to come anymore. (Healthcare staff, female, 32) |
| | To foster interest ($n$ = 7) | Need to encourage people to exercise. (Healthcare staff, female, 31)<br><br>Encourage of motivation. Without motivation, exercise won't happen. (Healthcare staff, female, 43)<br><br>Healthy activities are already varied in Malaysia… we need to encourage more. (Public, male, 31) |
| | Time management ($n$ = 3) | Time management… how we plan our daily lives. (Healthcare staff, male, 30)<br><br>Lifestyle… how to manage time and how to include these activities. (Healthcare staff, female, 53)<br><br>How to manage daily life, needs to be a schedule, not just work all the time. (Healthcare staff, female, 32) |

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**Table 4.** (*continued*)

| Section | Topic and subtopic | Quotes |
|---|---|---|
| | Stress management ($n$ = 8) | Stress management…when we're stressed, we tend to eat as well. (Healthcare staff, female, 30)<br><br>How to manage emotions. When they're stressed, they start eating a lot. (Public, female, 30)<br><br>They need to strengthen their mental state to keep going. (Public, male, 22) |
| | Sleep/rest time ($n$ = 4) | Enough rest. (Public, male, 25)<br><br>We just need to… take care of our sleep schedule. (Public, female, 35)<br><br>Break time, need to know how to manage the schedule… rest time. (Healthcare staff, female, 29) |

or causes, and the effects of overweight and obesity. Most participants mentioned that adults do not regard excess weight as an important issue and that a larger body size has come to be considered normal. This is supported by a study in Bahrain, which found that nearly half of the participants did not consider obesity a disease, and older age groups were more likely to perceive excess weight as "normal" (15). Similarly, a qualitative study in Nepal demonstrated a lack of awareness regarding the implications of obesity and a tendency to accept larger body sizes as socially acceptable within the community (16).

For Section 2 (Nutrition), participants emphasised that weight gain prevention should focus particularly on limiting the consumption of fast foods, fried foods, and sweet foods. Participants also mentioned the consumption of what they referred to as "happy foods," such as ice cream, cakes, and chocolate, which were perceived as a form of self-reward after experiencing work-related fatigue or achieving personal goals. These findings are consistent with the study by Leigh et al. (17), which highlighted that the brain's food reward system is strongly influenced by highly palatable foods. Repeated exposure to such foods may alter neural responses, thereby promoting overeating behaviours that resemble addictive patterns even in the absence of hunger. In addition, one participant reported that individuals who smoke tend to consume sweetened beverages more frequently to reduce the bitter taste associated with smoking. This observation is consistent with evidence from a study conducted among adolescents in China, which showed that adolescent smokers were significantly more likely to consume sugar-sweetened beverages at least once daily compared with their non-smoking counterparts (18). Overall, these dietary behaviours, if not properly regulated, may contribute to excessive caloric intake and subsequently increase the risk of weight gain.

One participant in this study stated that the practice of eating when feeling hungry and stopping before feeling full can help control body weight. This practice is rooted in Islamic teaching and forms part of the Sunnah of the Prophet Muhammad (SAW). It emphasises moderation and balance in eating as key principles for maintaining health and preventing disease. A study by Syed Mohideen et al. (19) reported that this practice aligns with modern nutritional principles aimed at controlling portion sizes, reducing the risk of obesity, and maintaining physical health through moderate eating without excess. Many other religions also emphasise dietary principles based on moderation, self-control, and both spiritual and physical benefits through diet. Religions such as Judaism, Hinduism, and Buddhism also prescribe specific dietary laws and guidelines that influence nutrient intake and health outcomes (20). As these practices support weight control and are shared across religions, this subtopic was termed eating ethics.

Section 3 addresses physical activity, an important component in controlling weight gain. Some participants acknowledged that although they did not exercise regularly, they ensured that they remained physically active and avoided a sedentary lifestyle. Performing household activities and staying constantly active through daily movement are considered

moderate-intensity activities that can improve overall health status. A study by Chu et al. (21) found that engagement in household chores was associated with longer life expectancy and provided long-term benefits for physical health, mental health, and mortality outcomes.

Although exercise is often associated with outdoor activities such as running or cycling, not all individuals have the time or ability to exercise outdoors, particularly women with young children. Feedback from participants also indicated that they were interested in learning about types of exercises that can be performed at home. Therefore, home-based exercises, such as muscle-strengthening and flexibility exercises using dumbbells, resistance bands, yoga balls, yoga mats, and other equipment, can serve as practical alternatives. Advances in technology have also enabled access to a wide range of exercise videos and online fitness classes through social media platforms. Home-based exercise has been identified as an effective strategy to overcome barriers related to time constraints, distance, and cost (22). Home-based exercise programmes supported by instructional videos, exercise schedules, and digital reminders have been shown to improve adherence to physical activity through self-monitoring and continuous support. Systematic reviews indicate that video- and digital-based interventions can achieve high adherence rates and enhance participant engagement in home-based exercise programmes (23, 24). These technology-based interventions help individuals to maintain consistent exercise routines at home (25).

In addition, engaging in physical activity in the workplace, such as using the stairs, walking during the working day, or performing short exercise breaks, has been found to have positive effects on both physical and mental health. Recent studies indicate that workplace physical activity interventions, even when performed for short durations, are effective in increasing physical activity levels and reducing sedentary behaviour (22). Overall, adherence to physical activity is influenced by factors such as motivation, intervention design, and environmental support, all of which play a crucial role in ensuring the effectiveness of weight gain prevention programmes (26).

Under Section 4 (Motivation), social support from family members, friends, and colleagues plays an important role in shaping health behaviours. In this study, participants acknowledged that peer influence was a key motivational factor for engaging in physical exercise. In addition, guidance from fitness trainers and the sharing of experiences by individuals who have successfully maintained their weight were preferred strategies among participants to help increase physical activity levels. A previous randomised controlled trial of health coaching found greater weight loss and larger increases in physical activity in the intervention group than in the control group, together with more positive psychosocial changes (27).

However, the influence of social support from family and friends on dietary practices was less recognised among participants. Nevertheless, family eating practices in early childhood strongly influence an individual's dietary behaviours. Studies have shown that parental dietary practices directly shape children's eating habits, whether healthy or unhealthy. Interpersonal factors, particularly interactions with family members and friends, are key determinants of eating behaviours among young people (28).

In addition, "laziness" was identified by participants as one of the barriers to engaging in physical activity. Laziness may stem from a lack of interest in exercise, indifference towards the importance of physical activity, and low motivation (29). Laziness is also difficult to measure because it is often intertwined with other barriers such as time constraints and environmental factors, making it challenging to isolate the effect of motivation alone (28, 30).

A study conducted in Kuala Lumpur showed that psychosocial factors such as "lack of discipline," "lack of time," and "other more enjoyable activities" emerged as reasons for physical inactivity (31). This suggests that, although physical capability may be present, motivation or interest in exercise remains low. In addition, "dislike of sweating" was also cited by some individuals as a reason for not exercising, although at a relatively low prevalence. A study among Malaysian female undergraduate students

identified dislike of exercise due to aversion to physical aspects such as sweating, changing clothes, and showering after exercise (32).

## Conclusion

This study identified key educational needs for the development of the H.E.A.T module aimed at preventing weight gain among adults with a normal BMI. The findings highlighted four sections for the module (Introduction to obesity, Nutrition, Physical activity and Motivation), each comprising topics and subtopics that reflect the needs of both healthcare staff and the public. The results indicate that increasing awareness of obesity, improving dietary knowledge, encouraging regular physical activity, and strengthening motivation are essential elements in preventing weight gain among young adults. The H.E.A.T module provides a structured educational framework that integrates lifestyle education with behavioural support strategies. From a public health perspective, this module has the potential to serve as a practical preventive tool for healthcare providers and community programmes to promote healthy weight maintenance and reduce the long-term risk of obesity and related non-communicable diseases.

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## Ethics of Study

The study protocol was approved by the UKM Research Ethics Committee (JEPUKM-JEP-2022-628). Ethical approval and permission were also obtained from the National Medical Research Register (NMRR) and the Medical Research and Ethics Committee (MREC), Ministry of Health (MOH), Malaysia (NMRR ID-22-01591-AXG IIR). Permission to involve healthcare staff was also obtained from the Pahang State Health Department, and permission for data collection was granted by the FELDA Mempaga Regional Office prior to conducting the study. Written consent was also obtained from the participants prior to the study.

## Conflict of Interest

None.

## Funds

None.

## Authors' Contributions

Conception and design: WSWY
Analysis and interpretation of the data: WSWY
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