

Exploring the Factors of Obesity: Insights from Johor State Civil Servants

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DOI: <https://dx.doi.org/10.47772/IJRISS.2025.910000028>

Received: 22 September 2025; Accepted: 05 October 2025; Published: 03 November 2025

ABSTRACT

This research investigates the factors of obesity among Johor State civil servants. A qualitative research approach and case study design were employed, involving semi-structured, in-depth interviews with five informants aged 29 and above from diverse state departments in Johor, Malaysia. The research findings highlight four social factors that contributed to obesity, such as peer influence, inconsistent eating habits, lack of physical activity, and workplace food environment. The cost of healthy food was found to be the economic factor influencing food choices. Besides that, the findings also show how the selective implementation of health incentives led to obesity among the informants. The study further recommends that future research incorporate quantitative methods to provide a more comprehensive analysis of the prevalence of obesity. Furthermore, discussions should be facilitated through workshops or focus group discussions that enable individuals or experts to share experiences and strategies for addressing obesity's social, economic, and policy factors. This approach aims to create healthier civil servants who can provide the best services to the community.

Keywords: obesity, factor, civil servant, eating habit, workplace food environment

INTRODUCTION

Obesity has emerged as a pressing public health challenge worldwide, characterized by excessive body fat accumulation that elevates the risk of numerous chronic conditions, including diabetes, hypertension, cardiovascular diseases, and certain cancers. Defined by the World Health Organization (WHO) as a body mass index of 30 kg/m² or higher for general populations and adjusted to 27.5 kg/m² for Asians due to heightened risks at lower thresholds, obesity stems from a complex interplay of genetic, behavioral, environmental, socioeconomic, and psychological factors. In Malaysia, the National Health and Morbidity Survey 2019 (National Institutes of Health, Ministry of Health Malaysia, 2020) reported that nearly 20% of adults in Johor are obese, with rates potentially higher among civil servants owing to sedentary desk jobs, urban lifestyles, and cultural dietary preferences such as high-calorie Malay staples like nasi lemak and fried snacks. This demographic, predominantly Malay ethnic in Johor, faces unique vulnerabilities, with obesity

rates around 24% linked to communal eating habits and limited physical activity. Among Johor State Civil Servants, obesity not only impairs individual health and productivity but also imposes significant economic burdens on the healthcare system, estimated at MYR2 to 4 billion annually nationwide. Absenteeism, reduced work efficiency, and psychosocial issues like workplace stigma further exacerbate the problem.

Statement of problem

Malaysia faces a significant obesity crisis, with the overall national prevalence reaching 11.7% among individuals aged 15 years and above, representing a 280% increase since 1996 (Rampal et al., 2007). The prevalence is notably higher among females (13.8%) compared to males (9.6%), with Malays (13.6%) and Indians (13.5%) showing the highest rates among ethnic groups (Rampal et al., 2007). Key contributing factors include physical inactivity (ranked as the primary factor at 41.6%), food intake, emotional factors, and technology use (Mahat et al., 2022). Among healthcare workers specifically, 21.1% are obese, with nurses having significantly higher obesity risk (Kunyahamu et al., 2021). Social determinants affecting the Malay community include body image dissatisfaction, poor eating habits, health knowledge gaps, physical inactivity barriers, media influence, and religious practices (Ullah et al., 2018). These findings highlight the urgent need for comprehensive intervention programs targeting Malaysia's growing obesity epidemic, especially among civil servants.

Research objective

The study aims to achieve the following objective:

- 1) To explore the factors that contribute to obesity among Johor State civil servants in Malaysia.

Significance of the study

This study holds profound significance for Johor state civil servants grappling with obesity, as it elucidates the multifaceted factors that contribute to elevated risks of non-communicable diseases (NCDs) like hypertension, diabetes, and hypercholesterolemia, thereby empowering individuals with actionable insights to improve personal health outcomes, enhance quality of life, and mitigate productivity losses from sickness absenteeism and reduced work ability. By highlighting these determinants, the research fosters greater self-awareness and behavioural changes among affected employees, potentially reducing the economic burdens of healthcare costs and lost wages associated with obesity-related complications in this demographic.

For policymakers in Malaysia, particularly those overseeing public sector health initiatives in Johor, this study provides evidence-based recommendations to refine obesity prevention strategies, such as expanding selective programs like *Johor Sihat Penjawat Awam* to achieve broader coverage and address implementation barriers, ultimately optimising resource allocation and public health investments. It underscores the need for integrated policies that prioritise workplace interventions, public-private partnerships, and systematic monitoring to combat the obesity epidemic, thereby enhancing workforce efficiency and reducing national healthcare expenditures in the long term.

In terms of advancing future research and the body of knowledge, this study bridges critical gaps in obesity literature specific to Malaysian civil servants by integrating socio-demographic, lifestyle, and occupational factors into existing models, such as the socio-ecological framework for obesity prevention. It paves the way for longitudinal investigations into intervention efficacy and genetic influences. It contributes to theoretical development by emphasising context-specific determinants in Southeast Asian public sectors, encouraging interdisciplinary approaches that incorporate qualitative insights on barriers and perceptions to enrich global obesity theories and inform scalable models for similar populations worldwide.

LITERATURE REVIEW

Peer Influence

Peer influence refers to how social networks, such as friends, family, or colleagues, shape an individual's

behaviors related to diet, physical activity, and body weight perceptions, often leading to the adoption of similar habits that can contribute to obesity. For instance, if peers frequently consume high-calorie foods or engage in sedentary activities, individuals may mimic these patterns due to social conformity or shared environments, exacerbating obesity risks, especially among adolescents and young adults. Research highlights that peer effects can propagate obesity through mechanisms like imitation or social norms, with studies showing a higher obesity likelihood of obesity if close friends are obese (Mognard et al., 2023).

Inconsistent Eating Habits

Inconsistent eating habits significantly contribute to obesity development across various populations. Research demonstrates that junk food consumption is a primary factor, with 13 out of 15 studies confirming its association with obesity, particularly due to leptin resistance in obese individuals that fails to suppress appetite (Pebriani et al., 2022). Ultra-processed foods show a substantial dose-response relationship with obesity across diverse populations, including Spanish university graduates, Brazilian civil servants, and UK Biobank participants, attributed to their oro-sensory characteristics, satiety levels, and nutritional content (Shen, 2023). Indonesian adolescents exhibit poor dietary patterns characterized by frequent fast-food consumption, high-fat and high-carbohydrate intake, nighttime eating, excessive portions, and breakfast skipping, combined with predominantly sedentary activities (Purnomo et al., 2024). Environmental factors also play crucial roles, as areas with limited access to healthy foods but abundant fast-food vendors promote obesogenic eating patterns, emphasizing the importance of establishing healthy eating habits during childhood development (Reviani & Riany, 2022).

Lack of Physical Activity

Physical inactivity has emerged as a critical factor contributing to obesity across different populations. Research demonstrates that sedentary lifestyles, characterized by light physical activities such as watching television and minimal exercise participation, significantly contribute to obesity development among adolescents through poor dietary patterns and reduced energy expenditure (Santos et al., 2025). Among workers specifically, irregular and insufficient physical activity patterns consistently correlate with obesity development, as office environments promote prolonged sedentary behavior (Ratri et al., 2021).

Workplace Food Environment

The workplace food environment, encompassing the availability, affordability, and promotion of food options at work, plays a pivotal role in shaping employees' dietary habits and contributing to the global obesity epidemic, where sedentary lifestyles and easy access to unhealthy choices often lead to excessive calorie intake and weight gain. As modern work settings increasingly rely on vending machines, on-site cafeterias, or catered meals laden with processed and calorie-dense foods, they inadvertently foster obesogenic behaviors, exacerbating health risks such as metabolic disorders and reduced productivity. For instance, a study conducted by Geboers et al. (2025) on workplace food environments in small and medium-sized enterprises (SMEs) reveals apparent differences across desk-based, mobile workforce, and other types, with structural options like on-site cafeterias largely absent; desk-based SMEs often provide daily facilitated lunches, while mobile workforce employees typically receive food allowances. However, all SME types share a lack of financial incentives or policies for healthy and sustainable eating, compounded by barriers such as viewing nutrition as outside organizational responsibility.

The Cost of Healthy Food

Research has consistently demonstrated an inverse relationship between food energy density and cost, where energy-dense foods high in refined grains, added sugars, and fats are significantly cheaper than nutrient-dense options like lean meats, fish, fresh vegetables, and fruits (Drewnowski & Darmon, 2005; Drewnowski, 2004). This economic disparity creates a situation where low-income populations may select energy-dense foods as a cost-saving strategy, potentially leading to passive overeating and weight gain due to their lower satiating power (Drewnowski & Darmon, 2005).

Selective Implementation of Health Incentives

Research suggests that financial rewards for weight loss should motivate behavioral changes, and empirical research has strongly supported this premise. However, results vary widely due to differences in incentive design and contextual factors (Jeffery, 2012). Studies indicate that incentivizing weight loss is effective in the short term while incentives are active, with positive incentives increasing program uptake and potentially reducing dropouts (Ananthapavan et al., 2018). However, the relative effectiveness of different incentive designs remains unclear. For childhood obesity specifically, limited but encouraging evidence supports incentives for health-related behavior change in children (Enright & Redfern, 2016).

METHODOLOGY

Research Approach and Design

This study employs a qualitative research approach. The said approach is the most suitable because it enables researchers to explore and analyze the intended problems encountered by the informants (Taylor et al., 2016). It allows the researchers to have an in-depth understanding of the various issues explored or predicaments faced by Johor civil servants relating to the issue of obesity. This allowed the researchers to gain insight into how the informants interpreted their experience, what meanings they attributed to it, and how it affected them. Additionally, this study used a case study design to comprehend multifaceted issues that informants encounter in various contexts.

Sample and Sampling Techniques

Sampling is a technique that involves setting specific criteria (Etikan et al., 2016). It enables researchers to identify and select cases with abundant information, enhancing the effectiveness of limited study resources (Palinkas et al., 2015). Purposive sampling is a technique commonly used in qualitative research. It is intentionally used to select individuals involved in the study, allowing researchers to identify and choose information-rich cases, thus maximizing the efficient use of limited resources.

The selected sample represents the target population. The sample for this study was chosen using the snowball sampling technique. This technique involves gathering samples, typically after the study has begun, by asking informants to suggest others as potential participants (Creswell, 2013). The sample for this study represents five informants. The total number of informants was determined and finalized using the saturation principle, which states that once the data were collected, no new themes or sub-themes were added to the existing data (Taylor et al., 2016).

Table I Demographic Profile of the Informants

Informants' Demography	Tika	Sam	Fari	Zack	Zehra
Gender	Female	Male	Female	Male	Female
Age	40	28	45	29	33
Location	Johor Bahru, Johor	Johor Bahru, Johor	Tangkak, Johor	Johor Bahru, Johor	Johor Bahru, Johor
Ethnic group	Malay	Malay	Malay	Malay	Malay
Current occupation	Clerk	Clerk	Clerk	Executive Officer	Officer
Marital status	Married	Single	Married	Married	Married
Monthly income (MYR)	MYR5,000 and above	MYR5,000 and above	MYR5,000 and above	MYR5,000 and above	MYR5,000 and above

Length of services (Years)	17	2	17	2	11
Height (cm)	155	168	144	170	152
Weight (kg)	110	85	80	165	75
Body Mass Index	45.78 (Class III obese)	30.11 (Class I obese)	38.6 (Class II obese)	57.1 (Class III obese)	32 (Class I obese)

Table I presents the demographic profile of the five informants in this study, revealing diverse backgrounds in terms of gender, age, location, ethnicity, occupation, marital status, monthly income, length of service, height, weight, and body mass index. The sample consists of three women (Tika, Fari, and Zehra) and two men (Sam and Zack), aged 29 to 45. Geographically, all informants work in the Johor Bahru area except Fari at the Tangkak district. Regarding ethnicity, all informants are Malays and Muslims. All of the informants are Johor civil servants. Tika, Sam, and Fari are clerks, while Zack and Zehra hold higher positions as officers. They are all married, except Sam, who is still single. They all earn more than MYR5,000 per month, and their lengths of service also differ, with Tika and Fari having 17 years of experience, Sam and Zack having 2 years, and Zehra having a service period of 11 years. Zack is the tallest informant at 170cm, followed by Sam at 168cm. Tika's height is 155cm, Zehra's is 152cm, and Fari's is 144cm. The heaviest among all informants is Zack, weighing 165kg, followed by Tika at 110kg, Sam at 85kg, and Fari at 80 kg, with Zehra being the lightest at 75kg. Lastly, the body mass index shows that Zack and Tika are classified as class III obese, with BMIs of 57.1 and 45.78, followed by Fari, who is class II obese, and Sam and Zehra, who are class I obese, with BMIs of 30.11 and 32.

Data Collection Procedure

The study utilized semi-structured, in-depth interviews as the primary data collection method. The interview protocol was structured around the central issue of obesity and divided into two main categories of questions: closed-ended and open-ended.

Closed-ended questions primarily focused on gathering demographic information about the informants. This included details such as gender, age, location, ethnic group, current occupation, marital status, monthly income (in MYR), length of service (in years), height (in cm), weight (in kg), and body mass index (BMI). These questions were designed to provide a standardized profile of each participant, as summarized in Table I of the study, which lists the demographics for the five informants (e.g., all Malay, aged 28–45, with BMIs indicating obesity classes I–III).

Open-ended questions were crafted to elicit detailed responses aligned with the study's objective: exploring the factors contributing to obesity among Johor State civil servants. These questions allowed informants to share personal experiences, interpretations, and meanings related to their obesity, such as influences from social networks, eating patterns, physical activity levels, workplace environments, economic constraints, and policy-related issues. Specific examples from the findings include probes that led to narratives about peer invitations to eat out, skipping meals due to time constraints, sedentary work routines, and the high cost of healthy foods.

Interviews were conducted in the Malay language to facilitate natural storytelling and ensure cultural comfort. Each session lasted an average of 30 minutes and was held in relaxed, informant-chosen settings (e.g., cozy cafés or lounge areas) at a time and date of their preference. Before starting, researchers provided an information sheet and informed consent form to explain the study's nature, objectives, and scope. Informants were assured of confidentiality, voluntary participation, and the right to withdraw. With permission, interviews were audio-recorded to capture details accurately. This approach enabled a welcoming atmosphere for open dialogue, aligning with qualitative principles to gain in-depth insights into lived experiences.

Data Analysis

The coding process in the study followed a systematic qualitative data analysis workflow, emphasizing

verbatim transcription and thematic analysis, as guided by Creswell (2013). This approach ensured a rigorous, inductive examination of the data, allowing themes to emerge naturally from the informants' narratives without preconceived frameworks. Below, expanding on each stage, incorporating standard practices from Creswell's methodology, which typically involves a "data analysis spiral" with iterative steps: organizing data, reading and noting, describing and classifying codes into themes, and interpreting the findings. The process transformed the raw interview data into structured themes (social, economic, and policy factors) and sub-themes, directly addressing the research objective of exploring obesity contributors among Johor State civil servants.

1) *Transcription*: Following the completion of the five semi-structured interviews, the audio recordings were transcribed verbatim into written Malay transcripts, resulting in a total of 80 pages. Verbatim transcription captured not only the spoken words but also elements like pauses, emphases, and contextual nuances to preserve the informants' original expressions and meanings. This step aligned with Creswell's (2013) emphasis on preparing raw data for analysis, ensuring fidelity to the informants' voices in their native language (Malay) to maintain cultural relevance, such as references to local foods like "nasi lemak" or "mamak restaurants."

Transcription was performed with transcription software, involving multiple passes to verify accuracy. The average interview length of 30 minutes per informant generated approximately 16 pages each, indicating detailed responses rich in personal anecdotes (e.g., Zehra's description of peer invitations to eat out). Quality checks, such as comparing transcripts against recordings, would have been essential to avoid errors.

This foundational step provided a clean, organized dataset for subsequent analysis, enabling the researchers to immerse themselves in the content without losing subtle insights into the informants' experiences of obesity factors.

2) *Translation and Initial Coding*: A software converter was employed to translate the Malay transcripts into English while applying initial coding. This tool handled the bilingual content efficiently, identifying key phrases, patterns, and recurring ideas. Initial coding, equivalent to Creswell's (2013) early detailed analysis phase, involved labelling data segments with descriptive codes drawn directly from the text (e.g., "peer invitation to eat" from Zehra's quote about colleagues ordering food, or "expensive healthy food" from Tika's discussion of fruit and vegetable costs). Codes were assigned to units of meaning, such as sentences or paragraphs, to capture preliminary patterns related to social, economic, and policy influences on obesity

The software supported simultaneous translation and coding, with automated features for keyword detection and manual oversight to refine codes. For instance, a quote like Zack's on skipping breakfast due to time constraints might be initially coded as "inconsistent eating habits" and "work demands." Translation ensured accessibility for analysis, with careful handling of cultural terms to avoid loss of meaning.

This step bridged the language gap while organizing the data, setting the stage for deeper thematic development. It aligned with Creswell's spiral by beginning the process of reducing the 80-page dataset into manageable, coded elements.

3) *Thematic Analysis*: Thematic analysis, per Creswell (2013), systematically examined the data through an iterative spiral. The steps included:

a) *Immersion through Multiple Readings and Memoing*: Researchers read the English transcripts repeatedly to familiarize themselves with the content, jotting memos (notes) on emerging ideas, such as connections between workplace culture and eating habits. This built an overall sense of the data's patterns.

b) *Open Coding (Describing and Classifying)*: Detailed coding labeled segments with descriptive codes, staying close to the informants' words. Examples include "lack of exercise facilities" from Fari's narrative on sedentary offices or "selective health screening" from Sam's quote on limited program access. Codes were generated inductively, without predefined categories.

c) *Axial Coding (Connecting Codes into Categories)*: Related codes were grouped into categories, identifying relationships. For example, codes like "peer invitation to eat," "communal pantry gatherings," and "high-calorie meeting refreshments" were connected under "social factors," while "expensive fresh produce" and "cheap fast food" formed "economic factors."

d) *Selective Coding (Refining into Themes)*: Categories were refined into overarching themes and sub-themes, interpreting their significance. The three main themes—social (sub-themes: peer influence, inconsistent eating habits, lack of physical activity, workplace food environment), economic (sub-theme: cost of healthy food), and policy (sub-theme: selective implementation of health incentives)—emerged as a cohesive framework, visualized in Figure 1.

The coding system categorized and linked data, with iterations involving researcher discussions for consensus. Creswell's (2013) six-step variant (organize data, read through, code, generate themes, represent findings, interpret) was adapted, emphasizing the spiral's non-linear nature—researchers revisited earlier steps to refine codes. This produced a nuanced understanding of obesity factors, grounded in the data and addressing the research objective.

Saturation was achieved through the saturation principle, as cited from Taylor et al. (2016), which defines it as the point where additional data collection yields no new themes or sub-themes. In this study, the sample of five informants was finalized based on this criterion: after transcribing and analyzing the interviews, the researchers determined that the data had reached redundancy, with recurring patterns in social, economic, and policy factors (e.g., repeated mentions of peer influence or costly healthy foods) and no novel insights emerging.

Using purposive and snowball sampling, informants were selected for information richness (obese civil servants from diverse departments). Data collection and analysis occurred iteratively—after each interview, preliminary coding and thematic review checked for new elements. By the fifth informant, themes stabilized, as per Taylor et al.'s (2016) emphasis on data saturation in qualitative methods, where collection stops when information repeats without adding depth.

Saturation was assessed during thematic analysis; if a new interview introduced unique sub-themes, sampling would continue, but the 80-page corpus showed thematic redundancy (e.g., all informants echoed workplace sedentariness). This small-sample approach is common in case studies, prioritizing depth over breadth.

RESEARCH FINDINGS AND DISCUSSION

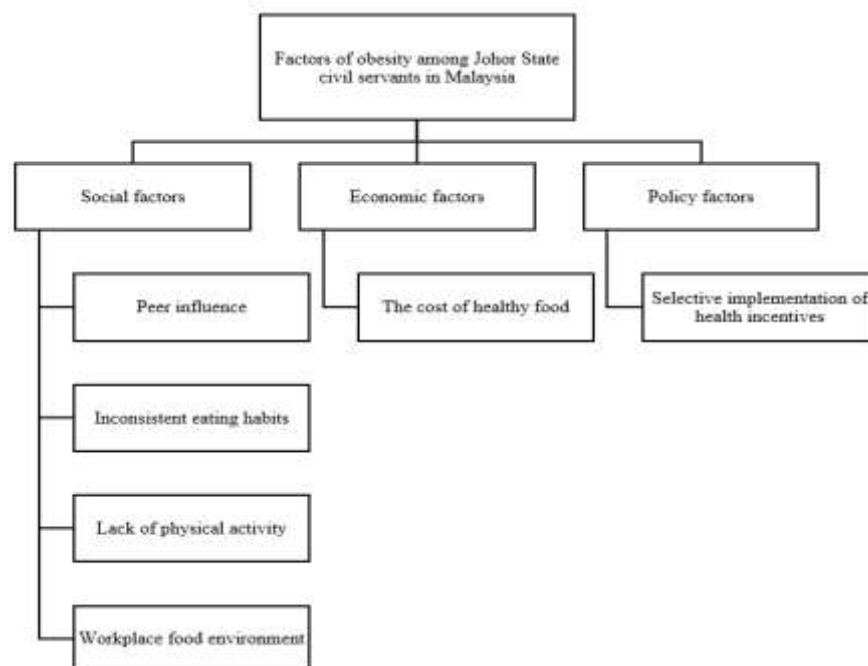


Figure 1: Factors of obesity among Johor State civil servants in Malaysia

Based on Figure 1, this study revealed three prominent themes regarding the factors of obesity experienced by the informants. The three themes are social, economic, and policy factors. The sub-themes for social factors are peer influence, inconsistent eating habits, lack of physical activity, and workplace food environment. The sub-theme for the economic factor is the cost of healthy food. Finally, the sub-theme for policy factor is the selective implementation of health incentives.

Social Factors

This study analyzed the factors that contribute to obesity among civil servants in the state of Johor. The findings show that peer influence, inconsistent eating habits, lack of physical activity, and workplace food environment are major contributors to obesity. The following paragraphs will discuss those issues in detail.

1) *Peer influence*: Obesity is a growing global health problem, especially among office workers such as civil servants, where sedentary lifestyles and unhealthy eating patterns are often the norm. One of the informants, Zehra (pseudonym), who is 33 years old and has been through such a situation, recounted the following:

"Sometimes colleagues invite me to eat out. Sometimes they order the food delivery services. It is hard for me to refuse. So, I go with it."

The informant explains that irregular eating patterns, including skipping meals, consuming high-calorie snacks (e.g., cakes, fatty rice), and eating junk food when hungry, indicate poor nutritional choices. Social pressure from colleagues to participate in communal eating, often involving unhealthy food choices, makes it challenging to adhere to a healthy diet (Mognard et al., 2023).

2) *Inconsistent eating habits*: Inconsistent eating habits often stem from the relentless pace of modern life, where meals become casualties of tight schedules, leading to skipped breakfasts and reliance on quick, nutrient-poor options that disrupt metabolic balance and promote weight gain. An informant, Zack (pseudonym), 29 years old, recounted the following:

"I eat according to the availability of time. Sometimes, I skip breakfast, while lunch is usually eaten at mamak (Muslim Indian) restaurants or prepared as a packaged meal whenever possible. I consistently eat dinner, whether I cook it at home or dine out. Furthermore, frequent office meetings are often served with refreshments, most of which are high in calories".

The findings exemplify how external pressures like work demands and convenience foods foster inconsistent eating habits; a pattern linked to obesity through disrupted energy regulation and excess calorie intake. This is compounded by the obesogenic workplace, where high-calorie refreshments during meetings normalize snacking. In Zack's Malaysian urban context, cultural reliance on flavorful, affordable mamak fare adds to the challenge, creating a feedback loop of irregularity that undermines health. This aligns with studies done by Purnomo et al. (2024), who found that inconsistent eating habits like those seen in Indonesian adolescents, who frequently consume fast food, high-fat/high-carb meals, nighttime snacks, oversized portions, and skip breakfast amid sedentary lifestyles, underscoring how irregular patterns amplify obesogenic risks in modern contexts. In addition, Shen (2023) also found that the dose-response association between ultra-processed foods and obesity is evident across diverse groups, due to their sensory allure, low satiety, and nutrient-poor profiles.

3) *Lack of physical activity*: The informants reported that the office lacks facilities and time for physical activity, resulting in hours spent sitting at desks. This sedentary environment contributes to weight gain and reduced physical health. This condition leads to a sedentary lifestyle, as most of the working time is spent in a sitting position at a desk all day. Time constraints stemming from busy work schedules, coupled with an organizational culture that emphasizes desk-based productivity, have reduced employees' opportunities and motivation to engage in physical activity. Although the office provides walking opportunities (stairs, corridors), prolonged working time at the desk remains dominant. This is reflected in the narratives of a 45-year-old informant, Fari (pseudonym), who said the following:

"The office environment is quite limited in terms of physical activity. There is no dedicated space for exercise, and most of the time is spent sitting at a table. Time constraints and a busy work culture reduced opportunities for physical activity, which has contributed to my weight gain".

The findings align with the study done by Santos et al. (2025) and Ratri et al. (2021), who found that physical inactivity or a sedentary lifestyle is a critical factor contributing to obesity.

4) *Workplace food environment:* Workplace food environment encourages the consumption of heavy fried foods during pantry gatherings and after-meeting banquets. One of the informants, Tika (pseudonym), who is 40 years old and has been through such a situation, recounted the following:

"If there are any staff cooks in the pantry, they will invite me too. Usually, it is heavy food, such as fried dishes. If there is a meeting with a refreshment, I eat together in the dining area after the meeting".

Similarly, an informant, Fari (pseudonym), who is 45 years old, shared the following:

"At work, there are often meetings or small celebrations that provide fried food, sweet cakes, and sugary drinks. Even though I was basically trying to eat healthy food, the atmosphere of eating together made it difficult for me to refuse it."

Social norms in the workplace, such as eating together, promote unhealthy eating, making it challenging to maintain a balanced diet. This highlights how the workplace environment can normalise the consumption of high-calorie foods. Workplace culture encourages the consumption of heavy and fried foods during pantry gatherings and after-meeting banquets. This aligns with the studies done by Geboers et al. (2025), who found that a consistently limited food environment that fails to encourage healthier dietary choices actively gives rise to the problem of obesity.

Economic Factor

Under the economic factor, the findings show that the cost of healthy food is a factor that leads to obesity. The following paragraphs will discuss such issues in detail.

1) *The cost of healthy food:* Obesity remains a pressing public health concern globally, and Johor state is no exception. The interplay between economic constraints, food pricing, and individual dietary choices vitally influences the prevalence of obesity. Findings from the study highlight that the affordability of food is a central determinant of nutritional behaviour, which in turn perpetuates weight-related health challenges among the informants. An informant, Tika (pseudonym), emphasised that the cost of healthy food is expensive. She said:

"In my opinion, the cost of healthy food is quite expensive at the moment, especially fresh fruits and vegetables, compared to other food, such as fast food, rice, and fried noodles. This causes my expenses to be spent more on relatively cheap food."

In addition, Zack (pseudonym) offered a comparative perspective and recounted the following:

"The pricing of meals in eateries and restaurants demonstrates that less nutritious food options are available at significantly lower costs compared to healthier alternatives. For instance, a plate of fried rice is priced at approximately MYR5, whereas a grilled chicken dish ranges between MYR11 and MYR13."

Similarly, an informant called Fari (pseudonym) further shared her experience related to the issue as follows:

"Income greatly influences my food choices. When finances are limited, I tend to choose cheaper, easily available, and filling foods. These options are sometimes less healthy, such as fried foods or fast food. However, when I have more financial flexibility, I prefer to buy fresh produce, fruits, and nutritious foods, even if they are more expensive. This experience shows that financial constraints can sometimes limit the ability to eat healthily."

The findings highlight that obesity cannot be understood solely as an individual responsibility but as a structural issue rooted in economic inequality. Income remains one of the strongest factors of dietary quality. Economic instability not only affects immediate food choices but also has long-term implications for health inequality. The narratives of the informants underscore three interrelated themes that illuminate the socioeconomic dimensions of obesity in Malaysia. First, healthy food emerges as a luxury commodity. Fresh produce and lean proteins are perceived as prohibitively expensive, thereby limiting their accessibility to households with constrained financial resources. Second, unhealthy food functions as the default dietary option. Fast food and carbohydrate-dense meals, being consistently cheaper and more filling, provide an economically rational choice for individuals seeking affordability and satiety. Third, income serves as the critical gatekeeper of dietary quality. Financial stability enables individuals to adopt healthier eating practices, while economic insecurity entrenches dependence on inexpensive, energy-dense alternatives. In other words, it is not merely a matter of individual choice but a reflection of structural economic realities. High costs of healthy foods, the affordability of unhealthy alternatives, and income instability collectively shape dietary practices.

The findings are corroborated by the studies done by Drewnowski and Darmon (2005) and Drewnowski (2004), who found that the affordability of healthy food is a major barrier to healthier eating among middle- and low-income households. The structural context where fast food chains offer filling meals at a fraction of the cost of fresh produce reinforces obesogenic behaviours. This affordability gap contributes to dietary inequalities, where those with fewer financial resources disproportionately consume foods high in fat, sugar, and salt.

Policy Factor

Under the policy factor, the findings indicate that the selective implementation of health incentives is a contributing factor to obesity. The following paragraphs will discuss such issues in detail.

1) Selective implementation of health incentives: Evidence from data records, research, and official sources indicates that health incentives such as routine check-ups and obesity prevention programs in Malaysia are often limited to civil servants or specific population segments, due to factors such as lack of resources, policy priorities, and implementation barriers. This limits the impact of obesity prevention at the national level, especially among children, adolescents, or rural populations.

The *Johor Sihat Penjawat Awam* program is a collaborative initiative between the Johor State Government and KPJ Healthcare Berhad, launched in April 2024. It offers free health checks, including blood tests, urine tests, an electrocardiogram (ECG), and doctor consultations to eligible Johor state civil servants, with an initial target of 13,000 participants until December 2024. The program is implemented at KPJ hospitals in Johor, such as KPJ Kluang, Bandar Maharani, and others. In 2025, it was continued as version 2.0 through the Johor Budget 2025 with an allocation of MYR800,000, targeting 5,000 participants, and open until 30 November 2025. The launch of version 2.0 was carried out in May 2025 at the KPJ Kluang Specialist Hospital, focusing on basic health screening and health education. The program aims to detect non-communicable diseases (NCDs) such as obesity, diabetes, and hypertension early among civil servants, in line with national obesity prevention efforts. However, such health incentives are often implemented selectively, limited to specific target groups such as civil servants, which limits their impact on the general population. One of the informants, Sam (pseudonym), aged 28, recounted the following:

“There is provision to promote healthy living through health screening under the State Government through specialist hospitals, but not all civil servants are involved, and only a select few.”

Based on Sam’s statement, the State Government provides a provision to promote healthy living through health screening in specialist hospitals. However, this initiative is not fully inclusive, involving only a select few civil servants. The government provides some health screening, but selective access limits the broad impact on obesity. This suggests that even when allocations exist, selectivity undermines universal coverage, potentially exacerbating the obesity gap. Studies such as Jeffery (2012), Ananthapavan et al. (2018), and Enright and Redfern (2016) strongly support the short-term effectiveness of financial incentives in motivating

weight loss and health behaviour changes, particularly by boosting program uptake and reducing dropouts. Their long-term impact and optimal design remain unclear, with limited but promising evidence for childhood obesity interventions.

CONCLUSION

In conclusion, this empirical investigation into the factors of obesity among Johor State civil servants reveals a multifaceted issue driven by social influences such as peer influence, inconsistent eating habits, lack of physical activity, workplace food environment, economic barriers, including the high cost of healthy foods, and policy shortcomings, notably selective implementation of health incentives. Through qualitative insights from in-depth interviews with five informants, the study underscores how these interconnected factors perpetuate obesity, leading to elevated risks of non-communicable diseases, reduced productivity, and increased healthcare costs. Social factors emerged as particularly dominant, highlighting the role of communal norms and work environments in shaping unhealthy behaviors. The findings emphasize the need for holistic strategies beyond individual responsibility, advocating for systemic changes such as affordable healthy food subsidies, expanded health incentive programs, stress management workshops, and workplace reforms to encourage physical activity. By addressing these root causes, Johor can mitigate obesity's impact on its civil service, enhancing overall workforce well-being and public service delivery.

RECOMMENDATION

To effectively address obesity among Johor State civil servants, a multifaceted approach is essential, building on the identified social, economic, policy, and psychological factors. First, the Johor State Government should expand workplace wellness programs, such as integrating mandatory physical activity breaks, subsidized gym memberships, and on-site nutrition counselling into daily routines. This could include redesigning office spaces to encourage movement, like installing standing desks or creating dedicated exercise areas, to counter sedentary workplace culture and lack of activity. Workshops and peer support groups should be organized to promote healthy eating habits, focusing on cultural adaptations of traditional Malay diets such as lower-calorie versions of nasi lemak using whole grains and lean proteins to mitigate peer influence and food preferences toward high-calorie options.

Policies should aim to reduce barriers by partnering with local vendors to offer affordable, healthy food options in government canteens, perhaps through subsidies or vouchers for fruits, vegetables, and nutritious meals. Income-based incentives could be introduced to support lower-earning civil servants in accessing healthier choices, addressing the cost disparities highlighted in the findings. On the policy front, the *Johor Sihat Penjawat Awam* Program (version 2.0, launched in May 2025 with an MYR800,000 allocation and targeting 5,000 participants until November 30, 2025) should be scaled up to achieve universal access. This could include routine health screenings, obesity prevention education, and incentives such as rewards for weight management milestones. Collaborations with local hospitals could extend to psychological support, incorporating stress management sessions, mindfulness training, and counselling to tackle emotional eating triggers.

Furthermore, community-level initiatives, such as focus group discussions and expert-led forums, are recommended to foster dialogue on balancing modern lifestyles with societal expectations, enabling civil servants to share strategies for overcoming obesity's root causes. Long-term monitoring through annual surveys could evaluate program efficacy, with data informing iterative improvements. By implementing these recommendations, Johor can cultivate a healthier civil service, enhancing productivity, reducing healthcare costs, and improving service delivery to the community.

Limitation

This study provides valuable qualitative insights into the factors contributing to obesity among Malay Muslim civil servants in Johor, but it is not without limitations. The reliance on in-depth, semi-structured interviews with a small sample of five informants, selected via purposive and snowball sampling, limits generalizability to the broader civil servant population, as personal narratives may not fully represent diverse experiences across

demographics, such as varying age groups, ethnicities beyond Malays, or rural versus urban settings. The qualitative nature of the research, while rich in depth, lacks quantitative data to measure obesity prevalence, correlations between factors, or statistical significance, potentially overlooking measurable trends like exact body mass index distributions or longitudinal changes. Additionally, the study's focus on Malay Muslim civil servants introduces selection bias, excluding non-Muslim perspectives that could offer comparative insights. Future research should employ mixed-methods approaches, larger samples, and longitudinal designs to overcome these constraints and provide a more comprehensive understanding of obesity dynamics in Johor's public sector.

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