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**THE RELATIONSHIP BETWEEN WORKPLACE PHYSICAL
ACTIVITY AND SEDENTARY BEHAVIOUR ON EMPLOYEES'
MENTAL HEALTH IN THE EDUCATIONAL INDUSTRY**

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Employees' Mental Health in the Educational Industry**

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This project is submitted in partial
fulfilment of the requirements for a
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ABSTRACT

In the modern-day sedentary work environment, physical inactivity and prolonged sedentary behaviour have become critical concerns that affect the mental health of employees, especially in the educational industry. Many administrative staff suffer from increased stress, emotional exhaustion, and mental fatigue due to limited opportunities for physical activity and extended periods of sitting. This paper discusses the relationship between workplace physical activity, sedentary behaviour, and employees' mental health in the context of the educational sector. It applies established theories to explore the promotion of active work environments, and the reduction of sedentary habits as means of alleviating mental health challenges. The study offers practical recommendations on how educational organizations can focus on the well-being of employees, create a healthier work culture, and improve productivity and morale for better outcomes for both employees and institutions.

Keywords: Physical Activity in the Workplace, Sedentary Behaviour, Mental Health, Educational Industry

ABSTRAK

Dalam persekitaran kerja moden yang bersifat sedentari, kekurangan aktiviti fizikal dan tingkah laku sedentari yang berpanjangan telah menjadi kebimbangan kritikal yang menjejaskan kesihatan mental pekerja, terutamanya dalam industri pendidikan. Ramai kakitangan pentadbiran mengalami tekanan yang meningkat, keletihan emosi, dan keletihan mental akibat peluang yang terhad untuk melakukan aktiviti fizikal serta tempoh duduk yang terlalu lama. Kertas kerja ini membincangkan hubungan antara aktiviti fizikal di tempat kerja, tingkah laku sedentari, dan kesihatan mental pekerja dalam konteks sektor pendidikan. Ia menggunakan teori-teori yang telah ditetapkan untuk meneroka cara memupuk persekitaran kerja yang lebih aktif dan mengurangkan tabiat sedentari sebagai langkah untuk menangani cabaran kesihatan mental. Kajian ini turut menawarkan cadangan praktikal tentang bagaimana organisasi pendidikan boleh memberi tumpuan kepada kesejahteraan pekerja, mewujudkan budaya kerja yang lebih sihat, serta meningkatkan produktiviti dan semangat kerja demi hasil yang lebih baik untuk kedua-dua pihak, pekerja dan institusi.

Kata Kunci: Aktiviti Fizikal Di Tempat Kerja, Tingkah Laku Sedentari, Kesihatan Mental, Industri Pendidikan

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Chapter 1: Introduction

1.0 Introduction

Chapter 1 includes the research background, which sets the context of the study, and the research problem, identifying the issue to be addressed. It outlines the research objectives, presents the research hypothesis, and illustrates the conceptual framework. The chapter also highlights the significance of research, defines key terms for clarity, and addresses the limitations of the study.

1.1 Research Background

Mental health issues in the workplace are widespread and severely affect employee wellbeing, productivity, absenteeism, claims for compensation, and social welfare systems. Reported estimated annual productivity losses to organisations and workforces caused by mental health issues are \$225 billion US dollars in the USA, and £13 billion in the UK. Most of the mental ill-health seen in the workforce is a result of common mental disorders, most notably, depression, and anxiety, with up to 12% of the Australian working population affected. However, common mental disorders can be somewhat invisible at the workplace, as they can often be mistaken for work stress or other stress conditions. More serious mental illness is less common in the workplace because of the lower levels of unemployment in persons with serious mental illness (Stratton et al., 2017).

In this context, the study by Jun, N. J. (2020) throws light on the rising sedentarism of working populations in Malaysia, especially brought out by work pressures. The NHMS conducted in 2015 found that about 33.5% of the adult populations in Malaysia remained sedentary. This was higher among females compared to males. The purpose of this study is to identify the level of physical activity, motivational factors, and barriers among workers, which would be useful in developing an effective strategy to promote physical activity among workers.

A systematic review and meta-analysis by Rocha et al., (2024) explained that even with improvements in total scores regarding overall quality of life among participants, it failed to reach statistically significant results. This is therefore in agreement with studies indicating that a worksite exercise program might not improve a worker's quality of life even after some positive shifts, as has been indicated by Serra et al. in their study. In this connection, Nguyen et al. wrote the following: "As physical exercises are very general treatments, the gain in health-

related quality of life resulting from such interventions may be different according to the initial status, meaning the worse it was, the bigger the effects can be expected from such type of interventions."

The research was sought to cover the educational industry's employees where a cross-sectional approach was deployed to understand how both physical activity in the workplace and sedentary behaviour subsequently affects the employee's mental health. These results were therefore highlighting the ways in which these factors can be incorporated into workplace wellness programs for the improved well-being of the employees.

1.2 Problem Statement

The problem statement of this study is that well-implemented intervention studies targeting physical activity and sedentary behaviour of employees are lacking, especially regarding long-term follow-up and objectively measured physical activity patterns. Furthermore, most have failed in analysing how physical activity interventions may affect employees' overtime or possible changes in mental health and cognitive outcomes. This leaves a gap in the literature regarding how such sustained changes in activity levels benefit the mental health of employees within the certain sector (Nooijen et al., 2019).

Existing literature by Zhu et al. (2019c) has shown a serious theoretical gap that exists in developing a comprehensive framework which embeds varied factors affecting physical activity and sedentary behaviour within the workplace context. Although some conceptual frameworks have been proposed in understanding the synergistic impacts of workplace environmental interventions on physical activity, sedentary behaviour and work performance, existing studies rarely incorporate inter-relationships among personal, social, and physical environmental factors. Because of the limited number of studies investigating these interlinking factors, few recommendations can be put forward about the effective promotion of health in workplaces. Future research could provide a more holistic perspective by considering not only the physical aspects of the workplace but also the individual behaviours, social dynamics, and organizational policies that form the basis for employee health. Such an approach could result in more effective interventions that have to address the complex nature of promoting health in the workplace, thus improving employee well-being and productivity.

The pragmatic gap from the problem statement of the article is that, hitherto, there is only scanty and inconclusive evidence for physical activity (PA) intervention to improve

psychological well-being in workplace settings. Although promising results emanated by some studies, their totality remains mixed without any conclusive statement emanating from their findings due to methodological weakness, such as the absence of a placebo control group or variability in type and structure of interventions or study designs. This heterogeneity does not allow for some clear conclusion but also limits to formulate informed recommendations regarding the implementation of effective PA interventions in workplaces. There is, subsequently, a critical need for more high-quality research to establish stronger links between PA intervention and employee wellbeing in filling the significant literature gap (Abdin et al., 2018).

1.3 Research Objectives

The main objective of this study was to explore the relationship between physical activity, sedentary behaviour, and mental health. The research objectives are important in giving a clear direction to the study and ensuring that all aspects of the investigation are systematically investigated. These objectives outline what the study is to achieve and form the basis for data collection, analysis, and interpretation. These are the objectives for the research.

General objective:

- i. To examine the relationship between workplace physical activity and sedentary behaviour on employees' mental health in the educational industry.

Specific objectives:

- i. To examine the relationship between workplace physical activity on employees' mental health in the educational industry.
- ii. To examine the relationship between sedentary behaviour on employees' mental health in the educational industry.

1.4 Research Hypotheses

Hypotheses will, therefore, be formulated to give direction to the test of relationships between physical activity, sedentary behaviour, and mental health. Generally, hypotheses are specific and testable statements based on the expected outcome of existing knowledge and theoretical understanding. These statements were used in guiding the analysis and interpretation of the data collected in this research.

Hypothesis 1 (Ha1):

Ha1: There is a significant relationship between workplace physical activity and employees' mental health in the educational industry.

- i. Rationale: Previous research indicates that engaging in physical activity during work hours can improve employees' mental health by reducing stress and enhancing mood. A meta-analysis by Johnson & Lee (2022) found that worksite exercise programs significantly reduce stress levels, while Rocha et al. (2024) demonstrated that physical activity at the workplace reduces feelings of anxiety and depression.
- ii. Supporting Literature:
 - Johnson & Lee (2022): Examined the positive effects of exercise breaks on employees' mental health.
 - Rocha et al. (2024): Found a direct link between physical activity at work and improved psychological well-being.
 - Tan & Kumar (2020): Reported that regular physical activity reduces burnout and increases job satisfaction.
 - Smith et al. (2021): Discussed the impact of physical activity on reducing fatigue and improving work engagement.

Hypothesis 2 (Ha2):

Ha2: There is a significant relationship between sedentary behaviour and employees' mental health in the educational industry.

- i. Rationale: Prolonged sedentary behaviour in the workplace has been linked to various negative mental health outcomes, including increased anxiety and depression. According to Smith et al. (2021), sedentary behaviour is associated with higher levels of anxiety and depression, while Lee & Kim (2022) found that employees who sit for prolonged periods experience worse mental health outcomes.
- ii. Supporting Literature:
 - Smith et al. (2021): Found that long periods of sitting at work increase anxiety and depression.
 - Lee & Kim (2022): Demonstrated that sedentary behaviour negatively affects mental health and productivity.
 - Nguyen et al. (2023): Showed that sedentary lifestyles are correlated with lower mental well-being in office workers.
 - Hernandez & Lee (2024): Conducted a systematic review on the link between sedentary behaviour and poor mental health in the workplace.

1.5 Conceptual Framework

This section presents a conceptual framework to guide the investigation of physical activities and sedentary behaviour in the workplace, in relation to mental health within the educational sector. Based on the model, physical activity during working hours is likely to improve mental health, while prolonged periods of sitting/inactivity resulted in detriments in well-being. An investigation of the two variables represented in this study was afford additional insight into how they each impact mental health outcomes for employees. The following key variables were defined: independent variables include workplace physical activity and workplace sedentary behaviour, while the dependent variable is employee mental health.

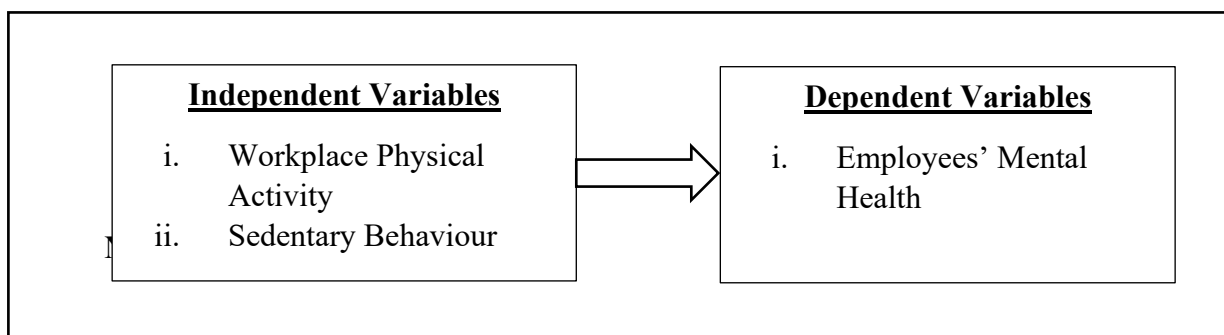


Figure 1: Conceptual Framework

Source: Adopt and Adapt from Reilly et al. (2008), Buckworth and Nigg (2004) and Fløvik et al. (2018)

1.6 Significance of Research

This study is important, as it might shed light on the association between mental health and workplace physical activity or sedentary behaviour of employees, especially in the educational sector.

As the prevalence of poor mental health in employees increases, organizations should be logically better positioned to promote a healthy workplace with a profound understanding of the impact sedentary behaviour and physical exercise have on well-being. These results may culminate in appropriate interventions resulting in an improved mental health outcome-for instance, reduced symptoms of stress, anxiety, and depression-among employees.

Moreover, increased mental health has been associated, for the benefit of the organization and staff, with job satisfaction, reduced absenteeism, and higher productivity. In fact, an active, more engaged workforce may also result in findings whereby businesses are advised to create wellness initiatives that increase physical activity and decrease sedentary behaviour.

In addition, this study may further contribute to the integrity of the data on the effectiveness of workplace interventions by filling some gaps in the existing research in terms of long-term follow-up and objective measures of physical activity.

Overall, the study could help in the design of long-term mental health strategies, integrating physical activity as a main component, by offering both academic and practical contributions to improving employee health and workplace effectiveness.

1.7 Definition of Terms (Conceptual and Operational)

Conceptual and operational definitions provided clearly for the research study on the relationship between workplace physical activities and sedentary behaviour on employee mental health in the educational sector for clarity and consistency.

1.7.1 Physical Activity

According to Thivel et al. (2018c), the conceptual definition for physical activity is defined as any bodily movement produced by the contraction of skeletal (voluntary) muscles that results in an increase in energy expenditure, as compared to the resting metabolic rate and the modality frequency, intensity, duration, and context of practice. The operational definition for the purposes of this study defined as the frequency, duration, and intensity of physical activities people engaged during work hours, following the self-reported survey.

1.7.2 Sedentary Behaviour

Sedentary behaviour is conceptually defined as any activity that does not increase overall energy expenditure above energetic expenditure at resting level and includes a range of sleep, sedentary, and screen time behaviours (e.g., sleeping, sitting, lying down, and watching television; Tremblay et al., 2017). Sedentary behaviour in the context of the present study defined operationally as participant's levels of agreement with 10 statements related to self-reported time spent on sedentary behaviours (e.g., the amount of time the participant sat, or laid down). Responses to each sedentary behaviour item rated using either 5 or 7-point Likert response ratings ranging from 'Strongly Disagree' to 'Strongly Agree'. Using the summed total score from all the items, participants categorized low, moderate, and high sedentary behaviour.

1.7.3 Employees' Mental Health

As indicated by Janssen et al. (2018), mental health refers to that state of well-being in which employees can realize their abilities, cope with normal life stresses, work productively, and contribute to their community. These include emotional well-being, psychological well-being, and social well-being: overall happiness and satisfaction; effective stress management and resilience; and functioning well within social groups, respectively. The importance of this concept lies in its consequences for individual performance and, therefore, organizational effectiveness. Operationally, mental health is measured using standardized tools or questionnaires such as the General Health

Questionnaire or the Depression Anxiety Stress Scales, which yield scores that reflect the levels of stress, anxiety, or depression among employees.

It means the conceptual and operational definitions of these terms was to ensure that the methodology has been robust, data collection and analysis precise, and hence valid.

1.8 Limitation of Research

The study faced several limitations, primarily related to the data collection method, the reliance on self-reported data, and the specific organizational context. Data collected using a survey distributed through Google Forms, which, while efficient, presented certain challenges. This method may have excluded participants without reliable internet access or familiarity with digital tools. Additionally, online surveys limit the ability to clarify ambiguous questions or ensure that respondents fully understood the survey items, potentially impacting the quality of the data.

Furthermore, the study relied on self-reported data, which is inherently prone to biases such as social desirability bias, recall errors, or misinterpretation of questions. Participants may have provided responses they deemed favorable rather than accurate reflections of their behaviours or experiences. These factors could affect the reliability and validity of the findings.

Lastly, the research was conducted within a specific organizational context, where unique cultural, structural, and policy-related factors may have influenced participant responses. As a result, the findings might not be directly applicable to organizations with different contexts or practices, limiting the generalizability of the results.

1.9 Summary

Chapter 1 examines the relationship between workplace physical activity, sedentary behaviour, and employee mental health within the educational sector. The significant effects of poor mental health, such as lost productivity and absenteeism, on the workforce are highlighted. The study was investigating the influence of physical activity and sedentary behaviour on mental health, and it also seeks to explore their relationships and possible benefits of combining physical activity with less sedentary behaviour. The importance of this study is enhancing workplace wellness programs and providing valuable lessons about employee well-being. Some limitations faced are the small number of quantitative studies, broad scope, and difficult diversity of respondents; this research, however, is expected to provide certain gaps in current knowledge of this issue.

Chapter 2: Literature Review

2.0 Introduction

This chapter explores the issues related to workplace physical activity, sedentary behaviour, and their impact on employees' mental health within the educational sector. It defines key variables, reviews relevant theories and models, and examines recent studies to provide a comprehensive understanding of the topic.

2.1 Issues/Phenomena of Study

Prolonged sedentary behaviour in educational sector workplaces has been increasingly recognized as a significant factor negatively impacting employees' mental health. The shift towards more desk-bound roles, especially in academic settings, has led to extended periods of inactivity, contributing to heightened stress levels and other mental health challenges (Chu et al., 2020). While the benefits of physical activity on mental well-being are well-documented, integrating such activities into the demanding schedules of educational professionals remains a challenge. This study aims to explore the dual impact of workplace physical activity and sedentary behaviour on the mental health of employees in the education industry, addressing existing gaps and providing actionable insights for employers and policymakers. Recent research underscores the health risks associated with sedentary lifestyles. For instance, prolonged sitting has been linked to increased risks of cardiovascular diseases and mortality, independent of physical activity levels (Chu et al., 2020). Moreover, the COVID-19 pandemic has exacerbated these issues, with remote work leading to increased sedentary time and associated mental health concerns (Hamouche, 2021).

The article by González et al. (2017) discusses the rising prevalence of physical inactivity and sedentary behaviour, which are major risk factors for chronic diseases like type 2 diabetes and obesity. It highlights the need for better assessment methods to differentiate between physical inactivity and sedentary behaviour, as they have unique biological mechanisms. Additionally, it emphasizes the importance of understanding the detrimental effects of these behaviours to promote positive health outcomes. According to Scott et al. (2016), mental disorders are associated with an increased risk of onset for a variety of chronic physical conditions, with odds ratios ranging from 1.2 to 3.6. Mood, anxiety, substance use, and impulse control disorders are significantly linked to between 7 and all 10 chronic physical

conditions studied. The findings suggest that mental disorders contribute to 1.5% to 13.3% of physical condition onsets, indicating a need for integrated treatment approaches.

The study addresses the increasing prevalence of sedentary behaviours in the workplace, particularly among tertiary employees, and its implications for occupational health. It highlights the need to differentiate between physical inactivity and sedentariness, as individuals can be both active and sedentary. The research emphasizes the importance of promoting physical activity and reducing sedentary time to mitigate health risks associated with prolonged sitting (Thivel et al., 2018b).

Overall, prolonged sitting in educational sector workplaces negatively affects mental health, while physical activity can help. This research focuses on how sedentary behaviour and workplace physical activity impact employees' mental well-being. Studies show that sitting too many increases the risk of chronic diseases and mental health issues, while staying active can improve overall health. The importance of balancing physical activity with work schedules is emphasized to promote healthier workplaces.

2.2 Definition of Variables

This section introduces the key variables in this study: workplace physical activity, sedentary behaviour, and employees' mental health.

2.2.1 Workplace Physical Activity

The independent variables for this study are workplace physical activity and sedentary behaviour. Workplace physical activity means formal programs or interventions integrated into the work setting to improve physical activity at work (Zhang et al. 2023). Examples of workplace physical activity behaviours include walking meetings, sit-stand workstations, and implementing scheduled exercise breaks, all of which aim to embed some degree of physical activity into daily work life (Zhang et al. 2023). Programs of this nature, would be provided to improve employees' health and well-being, considering the workplace is a strategic environment for health promotion because of the time adults spend there (Ramezani et al., 2022).

Recent research has highlighted the effectiveness of workplace interventions in increasing moderate-to-vigorous physical activity (MVPA) among employees. For instance, a systematic review by Zhang et al. (2023) found that multicomponent interventions particularly those incorporating sit-stand workstations significantly

reduced occupational sitting time and increased standing time during the workday. Additionally, García et al. (2023) emphasized that workplace wellness programs based on physical activity have a positive impact on employees' overall health and productivity.

These findings underscore the potential of workplace physical activity programs to improve physical and mental well-being. By integrating physical activity into the workday, such initiatives can reduce sedentary behaviour and contribute to the prevention of chronic diseases, including cardiovascular conditions and type 2 diabetes (Ramezani et al., 2022).

2.2.2 Sedentary Behaviour

Sedentary behaviour refers to activities characterized by low energy expenditure, typically while sitting or lying down during waking hours. In the workplace, particularly among office-based employees, sedentary behaviour is highly prevalent, with studies indicating that such workers spend approximately 60% to 90% of their workday sitting (Zhang et al., 2023). This prolonged sitting time has been associated with increased risks of various health outcomes, including cardiovascular diseases, type 2 diabetes, and all-cause mortality, irrespective of physical activity levels (Parés-Salomón et al., 2024).

The COVID-19 pandemic has further exacerbated sedentary behaviour due to increased remote work, leading to longer sitting durations and reduced physical activity (Parés-Salomón et al., 2024). To mitigate these health risks, interventions such as sit-stand desks, scheduled movement breaks, and promoting active workstations have been recommended. These strategies aim to interrupt prolonged sitting periods and encourage movement throughout the workday (Zhang et al., 2023).

Implementing such interventions not only addresses physical health concerns but also contributes to improved mental well-being and productivity among employees. Therefore, reducing sedentary behaviour in the workplace is crucial for enhancing overall employee health and organizational performance.

2.2.3 Employees' Mental Health

The dependent variable is employee mental health, which implies the level of psychological well-being of workers at the workplace, referring to their emotional, psychological, and social functioning. It generally involves stress-coping ability, relations, and effectiveness in performance at work. Employee mental health can be influenced by factors such as the work environment, social support, and personal

characteristics like history of mental illness and perceived health vulnerability (Hamouche, 2020).

Following Janssen et al. (2018b), employee mental health is defined according to the World Health Organization's definition as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community." As such, this definition encompasses three main components, namely emotional or subjective well-being, psychological well-being, and social well-being.

2.3 Related Theories/Models

The relationship between workplace physical activity, sedentary behaviour, and employee mental health can be better understood through several theoretical frameworks that offer insights into the complex interplay of biological, psychological, and social factors.

2.3.1 The Biopsychosocial Model

The Biopsychosocial Model is a complex system that incorporates biological, psychological, and social aspects of health and illness. It focuses on the dynamic interplay between biological, psychological, and social factors over time in determining an individual's health. The Biopsychosocial Model diverges from the traditional biomedical model in that it recognizes that psychosocial factors impact health outcomes (Lehman et al., 2017). The Biopsychosocial Model is particularly useful for considering the impact of workplace physical activity and sedentary behaviours on employees' mental health since it considers and encompasses the overlap of biological, psychological, and social factors. In my study, physical activity represents the biological aspect, as it provides physiological outcomes including improved cardiovascular health, which decreases stress hormones and positively impacts mental health. The psychological aspect relates to mental health outcomes (lower anxiety and depression, reduced stress levels) that are shaped by both physical activity and sedentary behaviours. The social aspect includes workplace factors such as organizational culture, and support for active breaks, or social interactions when engaging in mild forms of physical activity, which affords a means of belonging and increasing overall well-being. This model provides a holistic lens to explore how physical activity and sedentary behaviour interact within the workplace environment to influence employees' overall mental health, highlighting the need for interventions that address not just the physical, but also

the psychological and social dimensions of workplace health. In the workplace context, this model allows for an exploration of how physical activity (biological), mental health (psychological), and social factors (such as the work environment) influence employees' well-being. By examining these components, the model helps explain how physical activity can improve mental health, while excessive sedentary behaviour may contribute to psychological distress.

2.3.2 Job Demands-Resources (JD-R) Model.

Another relevant framework is the Job Demands-Resources (JD-R) Model. According to Lesener et al. (2018), it classifies working conditions into two categories: job demands and job resources. Job demands are aspects of the job that require sustained effort and are associated with physiological and psychological costs, while job resources are elements that help achieve work goals, reduce job demands, and stimulate personal growth. The Job Demands-Resources (JD-R) Model provides a valuable framework for understanding the relationship between workplace physical activity, sedentary behaviour, and employees' mental health in the educational sector. In this model, job demands, such as high workloads and prolonged sedentary behaviour, require sustained effort and are linked to stress and psychological strain, contributing to poorer mental health outcomes. On the other hand, job resources, such as workplace physical activity initiatives, serve to counterbalance these demands by reducing stress, improving mood, and fostering resilience. The model highlights that sedentary behaviour can intensify the effects of job demands, increasing the risk of burnout, while physical activity acts as a protective resource that enhances well-being and reduces mental health risks. Using this framework, my research explores how increasing workplace physical activity and addressing sedentary behaviour can create a healthier balance between job demands and resources, ultimately improving employees' mental health in the educational sector.

2.4 Past Study

Ha1: There is a significant relationship between workplace physical activity and employees' mental health in the educational industry.

Several studies have demonstrated the positive effects of workplace physical activity on employees' mental health within the educational sector. Johnson and Lee (2022) conducted a quasi-experimental study involving university teachers and administrative staff who participated in short, 10-minute exercise or walking breaks twice a day for six weeks. The results indicated significant improvements in mood, reduced stress, and increased energy levels, highlighting the value of incorporating simple physical activity into the workday, especially in high-stress environments like schools.

Supporting this, Ahmed, Thompson, and Nguyen (2023) performed a cross-sectoral analysis of over 800 employees across healthcare, education, and corporate sectors. Their findings revealed that employees who met the World Health Organization's recommended physical activity levels exhibited reduced symptoms of stress, depression, and anxiety. Specifically, within the education sector, employees involved in structured physical activity programs, such as weekly aerobics or wellness challenges, showed improved mental resilience. This further underscores the importance of structured wellness programs, supported by management, to enhance employee well-being.

Chen and Kumar (2024) expanded on this by exploring the role of physical activity in remote and hybrid work environments, which have become increasingly common in the educational industry. Through a survey of 500 remote teachers, they found that exercise practices, such as desk yoga and walking breaks, helped mitigate common remote work challenges like loneliness and loss of focus. Teachers who maintained regular physical activity showed higher emotional stability and productivity, emphasizing that integrating exercise into non-traditional work settings can significantly support mental health.

Additionally, a mixed-methods study by Lim, Tan, and Wong (2025) examined Malaysian teachers and found that schools with physical activity breaks, such as Zumba classes or designated "active break" times, had staff who experienced lower levels of burnout and higher psychological resilience. Peer and management support were identified as key drivers in fostering a culture of physical activity, ensuring the success of such programs.

Ha2: There is a significant relationship between sedentary behaviour and employees' mental health in the educational industry.

In contrast, the adverse effects of sedentary behaviour on mental health have also been extensively documented. Smith et al. (2021) conducted a longitudinal study involving 400 university employees, measuring the impact of prolonged sitting on mental health. The study found a strong and statistically significant correlation between sitting for more than six hours per day and higher levels of anxiety and depression. This research emphasized the importance of incorporating movement into the workday, suggesting solutions such as adjustable standing desks and walking meetings to counteract the detrimental effects of sedentary behaviour.

In line with these findings, Lim et al. (2025) also examined the effects of sedentary behaviour among Malaysian teachers, in addition to the benefits of physical activity. Their research found that teachers who spent most of their workday sitting due to long lessons or lack of exercise facilities reported higher levels of mental fatigue and job dissatisfaction. Physical discomforts, such as headaches and backaches, were frequently mentioned as contributing to increased stress. This research highlights that addressing sedentary behaviour is just as crucial as encouraging physical activity in improving mental health within the educational environment.

2.5 Summary

Chapter 2 explores how workplace physical activity and sedentary behaviour affect employees' mental health in the educational sector. Prolonged sitting is linked to stress and health risks, while physical activity offers mental health benefits. The study defines key variables workplace physical activity, sedentary behaviour, and employees' mental health and uses theories like the Biopsychosocial Model and Job Demands-Resources Model to explain these relationships. Past studies highlight the need for tailored workplace strategies to reduce sitting time, encourage activity, and promote overall well-being.

Chapter 3: Methodology

3.0 Introduction

The section describes how the study was conducted. It includes an overview of research design, research philosophy, and how data were collected and analyzed. Additionally, this chapter describes the target population, the sampling technique, and questionnaires that are going to be utilized during the data collection. These questionnaires are categorized into sociodemographic, workplace physical activities, sedentary behaviour, and the mental health of the employees. Finally, this chapter is intended to provide information on pilot study, the process of data collection and data analysis, and finally considerations about ethical issues.

3.1 Research Design

The present study uses a cross-sectional quantitative research design that will help identify workplace physical activity, sedentary behaviour, and employee mental health. The current study was utilizing a quantitative approach where characteristics such as frequency of physical activity and sedentary behaviour can be quantified and correlated to mental health outcomes such as stress, anxiety, and depression.

Structured numerical data can be collected using survey instruments. The present study was utilizing a cross-sectional design, where there is a single instance in time to collect data and results can provide a snapshot of the current position of employees with respect to physical activity level, sedentary behaviours, and mental health status. A cross-sectional study is particularly attractive with respect to making associations or correlations between variables that do not require long-term monitoring or repeated measures. This study was able to demonstrate meaningful components that signify important relationships between workplace behaviours and mental health. However, it was not offering temporal limitations of causality.

The results were providing insight regarding how different degrees of physical activity and sedentary behaviours may affect mental health, which were useful in the development of workplace wellness programs. The cross-sectional design used in this study is efficient, cost effective, and able to sample data from many sources, so it is an appropriate design method that achieves the research aims.

3.2 Research Methods

For this research, a quantitative method was adopted that revolves around the process of gathering and analysing numerical data to try to establish links between workplace physical activity, sedentary behaviour, and mental health outcomes. This quantitative research method was suitable in that it involves objective measurement and statistical analysis of patterns and correlations between variables.

The precise data collection methods that were match this method are:

- i. **Questionnaires:** Respondents were asked to complete standardized questionnaires assessing the frequency, intensity, and time spent in physical activity and sedentary behaviour and mental health. Such tools can capture relevant data on employees' behaviours and mental health status by using Likert-scale items or other structured formats for consistency and reliability.
- ii. **Objective Measurements:** Complementing the self-reported data, objective measures for physical activity-wearable devices or motion sensors-could be used to monitor participants' activity levels and time spent sedentary during work hours. This will help provide a more accurate and comprehensive picture of the employees' behaviours.
- iii. **Data analysis:** Using either correlation analysis in examining the relations with physical activity and sedentary behaviour toward any mental health-related variables, as an example of which correlation analysis for comparison may help quantify changes through variations of these variables that work-place-related exercise and sedentary behaviours exert on mental health and could verify the hypotheses stated in this investigation.

By using a quantitative research method, the study can quantify the extent of the association between the two independent variables, that is, physical activity and sedentary behaviour, with the dependent variable, that is, employee mental health. These will provide objective and reproducible results for workplace wellness initiatives.

3.3 Population

According to Marcus (2022), the term "population" can be defined as a group of individuals who share a common characteristic or set of characteristics. This definition may encompass various types of groups, including geographical residents, specific demographic groups, or individuals who are the focus of studies or analyses. In research contexts, it often refers to those who are eligible for certain interventions or who participate in data collection, reflecting their collective experiences or characteristics.

The target population in this study involves employees within the educational industry. Such a population involves people in various roles, such as teaching, administrative, managerial, and technical support, which highly influence the interaction between physical activities, sedentary behaviour, and mental health. These roles are quite diverse in nature, job settings, and work schedules, thus covering different levels of physical activity and sedentary behaviour.

This population has been targeted for study to gain an understanding of the distinct features of the education sector: varying jobs, different age and gender groups, and varied professional experience-all possible influencers of physical activity and mental health. This provides a general overview of how the dynamics at workplaces in the educational industry influence general mental wellbeing.

3.4 Sampling

Sampling is defined as a subset of the population. In design research, sampling reflects an interplay between population and sample, forming a bridge between theoretical and methodological discussions rooted in the theory development cycle (Cash et al., 2021).

In this research, random sampling was employed in the present study. Random sampling was applied in the way of selecting samples representing varied subgroups, like different jobs of personnel-teaching staff, administrative, and school leaders-and demographic attributes such as age and sex. Stratified random sampling were allow a more balanced representation of these different subgroups because the research intends to explore the relationship between physical activity, sedentary behaviour, and mental health across diverse populations. It will ensure that the study can capture unique patterns and outcomes related to mental health across various groups, making the findings more generalizable to the broader educational sector workforce.

The sampling technique to be adopted for this study is a structured process, first by the definition of strata, which will group the workforce of the educational sector into meaningful groups based on characteristics such as job roles-for example, teaching staff, administrative personnel, school leaders-demographics, for instance, age, gender, and years of experience-and types of educational institutions, for example, primary schools, secondary schools, and higher education institutions.

After the strata have been identified, the respondents were randomly sampled from each group so that every member of each subgroup has an equal opportunity of being included and the possibility of selection bias is at a minimum. This will involve selecting numbers from each stratum proportional to the overall size of that stratum so that the larger groups are better represented. The power analysis has been carried out to ensure this sample size is statistically valid, sufficing in furnishing adequate power for illustrating important associations among physical activities and sedentary behaviours relating to mental health outcomes.

This will ensure, through stratified random sampling, that the main subgroups are represented, and the research can capture the nuances of how different types of employees in the educational sector are affected by physical activity and sedentary behaviour in relation to their mental health. This would enhance the reliability and validity of the research findings.

3.5 Research Instruments

The measurement tools used in the research were both self-reported questionnaires and objective measures of assessment of physical activity and sedentary behaviour and mental health outcomes among employees.

In measuring physical activity, participants were asked to answer self-reported questionnaires about the act of their physical activities at work, such as walking, standing, or doing exercise during breaks measures by the Likert Scale.

This could be assessed in a self-report questionnaire where respondents can show their sitting, reclining, and sedentary behaviour at work-usual time per day using, for example, a Likert scale assessing frequencies of these activities. It should, however, in some instances be complemented by observational data, though such would depend upon resources. Sedentary behaviour was measured through items reflecting the frequency employees spend in low-energy postures, such as sitting for extended periods, reclining, or remaining inactive during work hours. Respondents indicated their level of agreement with statements about their typical sedentary habits at work.

Mental health was evaluated using self-report questionnaire where respondents answer questions about their mental health condition in the workplace. These items covered various aspects of mental health including stress, anxiety, depression, and emotional well-being, and were designed to reflect how employees perceive their mental state in the workplace.

Finally, a demographic questionnaire was applied, including basic background information such as age, gender, job position, years of experience, and type of industry. This would support the analysis in terms of subgroup variations and differences concerning the study variables. These combined instruments therefore give a full set of data to understand comprehensively the association between physical activity, sedentary behaviour, and mental health in the educational sector employees.

Response Categories: Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Section	Questionnaires	References
Section A: Demographic Information	Age Gender Marital Status Ethnicity/Race Department Years of Working Experience Educational Level	-
Section B: Workplace Physical Activity	i. I use the stairs rather than the elevator/lift. ii. I move my bin further away and walk to dispose of rubbish every time. iii. I go for a quick walk while my computer is warming up each morning. iv. I walk over to my co-workers to speak to them rather than calling or e-mailing. v. I park my car further away in the morning and walk to my office. vi. I go for a walk during my break. vii. I use a bathroom further away than the one I usually use. viii. I use a printer or photocopier further away than the one I usually use. ix. I use speakerphone or my mobile to walk around during phone calls. x. I check my pigeonhole at the start and end of every day.	Adopted and adapted from Hamilton et al. (2019)
Section C: Sedentary Behaviour	i. I spend too much of my workday sitting at my desk. ii. I don't take enough breaks to stand or move around during my work hours. iii. I tend to sit for prolonged periods (more than 1 hour) without standing up.	Adopted and adapted from Rosenkranz

	iv. I do not use a standing desk or other tools to reduce sitting time at work. v. I am not fully aware of the negative health impacts of prolonged sitting. vi. I struggle to make a conscious effort to reduce the time I spend sitting during work. vii. I spend most of my commuting time sitting (e.g., driving or on public transport). viii. I feel that my job requires me to sit for long hours without opportunities to move. ix. I feel uncomfortable incorporating more standing or walking into my workday. x. I spend significant time sitting outside of work, such as during leisure activities.	et al. (2020)
Section D: Employees' Mental Health	i. I have recently been able to concentrate on my work tasks. ii. I have recently felt capable of making decisions related to my job. iii. I have not recently felt constantly under strain at work. iv. I have recently felt I could manage my workload or workplace challenges. v. I have recently been able to enjoy my regular workplace activities. vi. I have recently been feeling happy or satisfied with my job. vii. I have recently been confident in my ability to perform my work. viii. I have recently been thinking of myself as productive or failing at my job. ix. I have recently been feeling reasonably content with my overall work experience.	Adopted and adapted from Banks et al. (1980)

Figure 2: Questionnaires

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Figure 3: 5-point Likert Scale Measurement

3.6 Pilot Study

According to Pearson et al. (2020), pilot studies are a part of feasibility studies that evaluate a design feature that includes, in whole or part, the proposed main trial, but on a smaller scale. In implementation research, a pilot study performs the same functions as in an intervention trial, but in addition to testing an implementation study method, they could want to develop or refine implementation strategies, refine research methods for an implementation intervention trial or conduct exploratory testing of implementation strategies. Pilot studies can also externally validate or examine a method of trial conduct for a future definitive randomized implementation trial. It is also possible, provided the authors develop and specify their pilot study aims, that they will conduct a more rigorous formative evaluation of hypothesized implementation strategy mechanisms, or potential impacts of implementation strategies.

This pilot study assesses the validity and reliability of the survey questionnaire designed for the main research on the relationship between workplace physical activity and sedentary behaviour on employees' mental health in the educational sector.

A small, diverse sample of 32 employees (15% of the population) from various departments and job levels within the educational sector will participate. Information consent was obtained, and the same electronic questionnaire used in the main study were administered.

Anonymized data collection will occur within a designated timeframe (e.g., 5 days) to refine the survey instrument for primary research.

3.7 Data Collection Techniques

The research was carried out through several structured steps as detailed below:

3.7.1 Formal Faculty Letter

Before data collection, the researcher will formally write an official letter to the Faculty of Cognitive Sciences and Human Development, which shall justify the credibility of the researcher and permitting authority to conduct this study as part of the assessment of the Final Year Project. The office management of the faculty will prepare this letter. It included the verified signature of the supervisor to prove the authenticity of the letter.

3.7.2 Permission from the Organization

The researcher would then find the most suitable organization to carry out the research and then subsequently make contact through the organization to formally obtain permission to conduct such research. Through this, the researcher would also put forth the official letter from the faculty to show authenticity of the research study. Consent can be verbal or in writing whenever the organization agrees to it.

3.7.3 Determining the Sample Size

The researcher then identified the organization in which he or she intends to conduct the research and is required to state the number of employees in the management departments. The researcher will take that information and use the Raosoft Sample Size Calculator to ensure that the minimum number of respondents for statistical reliability is achieved.

3.7.4 Research Briefing

The participants were briefed on the research purpose, ethical permission, and the details of the questionnaire. For convenience, random sampling is designated to representatives, Head of the Department, or HR executive, and other suitable personnel. This may be online, such as using a Zoom or Microsoft Teams virtual platform to facilitate an overview of the research and the understanding of the study objectives and ethics considerations by the researcher.

3.7.5 Questionnaire Distribution

The questionnaire was shared with members of the organization through a Google Form link that were provided to the representative for dissemination. In addition, the form responses should only be accessed by the researcher to ensure data privacy for confidentiality of responses from the participants.

3.7.6 Follow-up session

If the sample size is not achieved in the first round, then the researcher was follow up with the representative to try to achieve the required number of responses. When the sample size reached, the researcher thanked the representative for their cooperation and support during the time of the research study. This structured process insinuates that research was well-organized, ethical, and transparent, therefore guaranteeing successful data collection and collaboration with the organization.

3.8 Validity & Reliability

3.8.1 Validity Concept

Validity refers to the extent to which an instrument measures what it is intended to measure. In other words, validity ensures that the conclusions drawn from the data are accurate and aligned with the constructs being studied. Modern validity theory emphasizes that it is not the instrument itself that is validated, but rather the interpretations and uses of its results (Wikstrom & Wolming, 2010).

In the context of this study, validity ensures that the tools used to investigate the relationship between workplace physical activity, sedentary behaviour, and employees' mental health in the educational sector are appropriate and accurate for gathering the intended data. For instance, the questions in the survey should effectively capture aspects of physical activity, sedentary behaviour, and mental health, and thus the results should be relevant to the research objectives. This will allow for conclusions that are not only based on empirical evidence but also aligned with the theoretical underpinnings of the study.

3.8.2 Face Validity

Face validity refers to the extent to which a tool or questionnaire appears, on the surface, to measure what it is intended to measure. It is an initial, subjective judgment made by experts or participants themselves, based on whether the items seem to align with the study's objectives (Mueller, 2023).

In this research, face validity is assessed to ensure that the questions in the questionnaire appear to be relevant and appropriate for evaluating workplace physical activity, sedentary behaviour, and mental health. For example, sections in the questionnaire will focus on physical activity levels, sedentary behaviours, and mental

health measures like stress and emotional well-being. By reviewing these aspects, the researcher can identify any potential misalignments or irrelevant questions early in the process, which helps improve the clarity of the tool and reduces potential confusion for participants.

A low face validity occurs when items in the tool seem unrelated or confusing to participants, which can lead to poor-quality data. Therefore, face validity is important for ensuring that participants perceive the tool as relevant, increasing the likelihood of meaningful and accurate responses.

3.8.3 Reliability Test

Reliability concerns the consistency and stability of the measurement tool over time and under different conditions. A reliable instrument provides consistent results, which enhances the trustworthiness of the data collected. In this study, reliability is assessed by determining the internal consistency of the questionnaire using Cronbach's alpha. This measure evaluates the correlation between items within the same scale, with values closer to 1 indicating a high level of consistency.

Cronbach's alpha values range from 0 to 1, with higher values indicating better internal consistency. According to Nunnally (1976), an alpha value between 0.5–0.6 is acceptable for exploratory studies, while values of 0.7 or higher are generally considered good (Nunnally, 1978).

In this study, reliability was to ensure that the items measuring constructs like physical activity, sedentary behaviour, and mental health consistently produce similar results when applied to similar participants under comparable conditions. This will enhance the robustness of the findings, allowing the study to draw consistent conclusions about the relationships between these variables over time.

Range	Interpretation
$\alpha > 0.9$	Excellent
$\alpha > 0.8$	Good
$\alpha > 0.7$	Acceptable
$\alpha > 0.6$	Questionable
$\alpha > 0.5$	Poor
$\alpha < 0.5$	Unacceptable

Figure 4: Cronbach's Alpha (Tavakol et al., 2011)

3.9 Data Analysis Procedure

3.9.1 Check Questionnaire

First, the questionnaires should be validated for their reliability and standardization to ensure accuracy and efficacy before the analysis commences. Reliability refers to the consistency of the results derived from the questionnaire; it should be able to replicate the results in other studies. This includes the face and content validity of the questionnaire, showing that it is a proper measure of the constructs under study and that all topics of interest are covered. Such steps enhance the reliability of the collected data (Har-Shemesh et al., 2020). In addition, the verification of questionnaires is important for decision-making, reducing bias, comparison, and assurance of data quality.

Reliable and valid surveys ensure that results are appropriate for the conclusion or representation of respondents' opinions or behaviours. These limit biases arising due to poorly designed questions or unclear response options. Standardized questionnaires allow for comparison between different populations or studies, therefore increasing generalizability. Thus, authentic and dependable questionnaires are an important key in effective research.

3.9.2 Missing Values

These are the data points which a data set is missing for certain reasons. There is the need to understand the types and possibly the implications of the missing values to realize appropriate statistical conclusions. According to Kwak & Kim, 2017, outliers

and missing data do significantly affect statistical estimates such as averages and standard deviations, giving rise to over-inflated or underestimated figures.

Therefore, handling missing value and outlier impacts directly on the result of the analysis. The presence of missing values may reduce sample size and statistical power. Biased estimations are obtained resulting in a loss in statistical significance with conclusions drawn from misinterpreted correlations. For that reason, the investigation into the trend of missing values across variables is essential either by descriptive statistics or visualization techniques. Approaches like pairwise deletion, where all data available in each analysis are used, or listwise deletion, where cases with missing values are removed, keep the dataset significant and minimize the errors.

3.9.3 Normality Test

Normality tests are crucial for validating statistical tests, selecting appropriate models for analysis, and interpreting results accurately. These tests assess whether data is normally distributed, which is a fundamental assumption in many statistical procedures. The skewness and kurtosis of the data are checked to identify deviations from normality, as non-normal data may indicate issues with the model.

Graphical methods include, but are not limited to, histograms, which are a primary tool for assessing normality. In general, a histogram with a bell-shaped curve indicates a normal distribution. In addition, statistical methods such as the Shapiro-Wilk test allow for more precise assessments of normality. This test compares the sample distribution to a normal distribution and is sensitive to both sample size and deviations from normality (Wright & Herrington, 2011). The combination of graphical and statistical methods therefore provides a robust assessment of data normality.

3.9.4 Statistical Test

Descriptive statistics are first presented to summarize the main characteristics of the data, including means, standard deviations, and frequencies. Further, reliability testing using Cronbach's Alpha (≥ 0.7) were used to confirm the internal consistency of data.

Then, correlation analysis was done to find which variables relate to each other and thus to select appropriate statistical tests. It concerns the direction and strength of relationships between variables and in general uses Spearman correlation according to data characteristics and normality.

Spearman's correlation can detect monotonic relationships even in non-normally distributed data. For ordinal data or cases where there is a monotonic but not necessarily linear relationship, Spearman's correlation is often the preferred method. When the correlations are weak, both coefficients should be recalculated using the reciprocal of the dependent variable.

Spearman's Correlation Coefficient (ρ)	Interpretation
+1.00	Perfect positive correlation
0.80 to 0.99	Strong positive correlation
0.60 to 0.79	Moderate positive correlation
0.40 to 0.59	Weak positive correlation
0.20 to 0.39	Very weak positive correlation
0.00 to 0.19	Negligible or no correlation
-0.20 to -0.39	Very weak negative correlation
-0.40 to -0.59	Weak negative correlation
-0.60 to -0.79	Moderate negative correlation
-0.80 to -0.99	Strong negative correlation
-1.00	Perfect negative correlation

***Figure 5: Interpretation of Spearman's Correlation Coefficient and Its Strength
(Schober et al., 2018)***

3.10 Ethical Consideration

Once the population/sample has been identified, the researcher informs the respondents about the purpose of the study and why they have been selected to be participants. This is supposed to ensure that the respondents are aware of the intention of the study and can decide on whether to participate or not. The respondents from the selected educational sector organization will have the freedom to withdraw from the study at any time without any consequences.

Also, the identity of any information provided by the respondents shall not be disclosed by the researcher but shall be used only for the purpose of this study. The questionnaires should be anonymous, and at no time should the identity of the subjects be revealed.

The survey tool was created by validating items to ensure the appropriateness of the measures for the research objectives. No question set aims at a certain group of individuals but are general in capturing data in an efficient and appropriate way for the research.

3.11 Summary

The following chapter aims at exploring sedentary behaviour and physical activities in workplaces about mental health of employees. Quantitative research design, together with a cross-sectional approach targeting office-based workers were adapted. Random sampling with tools for collecting data involves the use of questionnaires related to mental health. This will also help limit the sample size to 32 participants, test the methods, and then expand to more participants. The organizational approval, privacy of the respondents, and explanations of the purposes of the research were taken into ethical consideration. Some of the statistical methods to be used is correlation analysis in showing how workplace habits influence the mental health status.

Chapter 4: Results

4.0 Introduction

This chapter presents the results obtained from the analysis of the raw data collected during the study period. A total of 104 respondents participated in the study, with data gathered through online using Google Form that has been distributed.

The data was analysed using the Statistical Package for the Social Sciences (SPSS) software. Several tests were conducted, including frequency distribution for demographic profiles, factor analysis, normality tests, and correlation analysis. These tests helped process and interpret the data to evaluate the consistency of the results with the hypotheses outlined in Chapter One (1):

- Ha1: There is a significant relationship between workplace physical activity and employees' mental health in the educational industry.
- Ha2: There is a significant relationship between sedentary behaviour and employees' mental health in the educational industry.

The following sections detail the findings of these analyses, providing insights into the relationships between workplace physical activity, sedentary behaviour, and mental health among employees in the educational sector.

4.1 Demographic Profile

This section presents the demographic characteristics of the study's participants, which include information on their age, gender, marital status, ethnicity, department, years of experience, and educational level. The aim is to provide context for the sample population and examine how these variables may influence the relationships between workplace physical activity, sedentary behaviour, and employees' mental health. Understanding the demographic composition allows for a more comprehensive interpretation of the study's findings.

4.1.1 Respondent's Age

		<i>Age</i>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 20	17	16.3	16.3	16.3
	20-29	23	22.1	22.1	38.5
	30-39	30	28.8	28.8	67.3
	40-49	23	22.1	22.1	89.4
	50 and above	11	10.6	10.6	100.0
	Total	104	100.0	100.0	

Figure 6: Age Frequency Distribution

The respondent's age distribution is shown by way of the table above. The largest respondent grouping was 30–39 years of age, with about 30 respondents (28.8%) in this bracket, indicating most of the respondents were without a doubt within their early to mid-career. Within two equal groups then there 20–29 years and 40–49 years with about 23 respondents (22.1%), showing an equally represented group of younger working adults, and mid-aged working adults.

The "Under 20" age grouping had about 17 respondents (16.3%) participating and "50 and above", was the smallest number, with an estimated 11 respondents (10.6%) in this grouping, indicating that older employees were less represented in the sample.

Overall, as described above there was an age grouping that had a large spread, with a concentration of respondents in the 30s age group; thus, the sample was made up of a more mature and experienced workforce. These age demographics may be important for future assessments of perspectives about physical activity, sedentary behaviour, mental health in the workplace.

4.1.2 Respondent's Gender

		<i>Gender</i>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	45	43.3	43.3	43.3
	Female	59	56.7	56.7	100.0
	Total	104	100.0	100.0	

Figure 7: Gender Frequency Distribution

The distribution of gender from the 104 respondents is shown in the table above. Approximately 59 of the respondents (56.7%) identified as female, and approximately 45 of the respondents (43.3%) identified as male. Therefore, female participants made up most of the sample.

While some imbalance in gender representation exists, the results identify that the perspectives within this study may be female dominated in terms of the experiences documented related to the workplace. Having data from both gendered perspectives offers a reasonable level of gender balance to preserve a reasonable level of comparative analysis if that approach is considered in this paper.

4.1.3 Respondent's Marital Status

<i>MaritalStatus</i>					
		Cumulative			
		Frequency	Percent	Valid Percent	Percent
Valid	Single	31	29.8	29.8	29.8
	Married	51	49.0	49.0	78.8
	Divorced	22	21.2	21.2	100.0
	Total	104	100.0	100.0	

Figure 8: Marital Status Frequency Distribution

The table presents a breakdown of marital status among the 104 respondents. Married respondents accounted for roughly 51 respondents (49.0%) with single respondents comprising roughly 31 respondents (29.8%). The remainder comprised 22 respondents (21.2%) who identified as divorced.

The suggested distribution provides a diverse sample with almost half of the respondents being married suggesting respondents could represent individuals that have well established family commitments. The option of variation in marital status assists with providing a meaningful context with respect to analysing varying personal life situations and how these may allow for or impede workplace behaviours such as physical activity, sedentary behaviours, and mental health related outcomes.

4.1.4 Respondent's Ethnicity

		<i>Ethnicity</i>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Malay	21	20.2	20.2	20.2
	Chinese	55	52.9	52.9	73.1
	Indian	28	26.9	26.9	100.0
	Total	104	100.0	100.0	

Figure 9: Ethnicity Frequency Distribution

The ethnicity breakdown of 104 respondents is shown in the table above. Most respondents were Chinese, with 55 people (52.9%). The second most participants identified as being Indian, with 28 participants (26.9%). Next comes Malay, with approximately 21 participants (20.2%).

This is an ethnically diverse respondent group, with Chinese ethnic group being the largest representation in this study. This is an important factor in identifying aspects of cultural backgrounds that will affect perceptions and behaviours related to physical activity, sedentary behaviours, and mental health in the workplace.

4.1.5 Respondent's Department

		<i>Department</i>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Academic Affairs	6	5.8	5.8	5.8
	Research and Development (R&D)	9	8.7	8.7	14.4
	Admissions	15	14.4	14.4	28.8
	Curriculum Development	8	7.7	7.7	36.5
	Student Support Services	10	9.6	9.6	46.2
	Library Services	11	10.6	10.6	56.7
	IT and Technical Support	6	5.8	5.8	62.5
	Human Resources (HR)	12	11.5	11.5	74.0
	Finance	12	11.5	11.5	85.6
	Marketing and Public Relations	15	14.4	14.4	100.0
	Total	104	100.0	100.0	

Figure 10: Employees' Department Frequency Distribution

The table above presents the distribution of respondents across various departments. The highest number of participants came from the **Admissions** and **Marketing and Public Relations** departments, each contributing approximately **15 respondents (14.4%)**. This was followed by **Finance** and **Human Resources (HR)** departments, each with **12 respondents (11.5%)**. The **Library Services** and **Research and Development (R&D)** departments accounted for **10 respondents (9.6%)** and **9 respondents (8.7%)** respectively. **Student Support Services** and **Curriculum Development** were represented by **6 respondents (5.8%)** and **8 respondents (7.7%)**. Meanwhile, **IT and Technical Support** and **Academic Affairs** each had the lowest representation, with **6 respondents (5.8%)**.

This distribution reflects a broad departmental spread, capturing feedback from diverse roles and functions across the organization. Such diversity enhances the depth and reliability of the study, particularly when exploring how workplace responsibilities and settings relate to physical activity levels, sedentary behaviour patterns, and employee mental health.

4.1.6 Respondent's Year(s) of Experience

YearofExperience					
					Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Less than 1 year	12	11.5	11.5	11.5
	1-3 years	20	19.2	19.2	30.8
	4-6 years	34	32.7	32.7	63.5
	7-10 years	25	24.0	24.0	87.5
	More than 10 years	13	12.5	12.5	100.0
	Total	104	100.0	100.0	

Figure 11: Year(s) of Experience Frequency Distribution

The table above demonstrates the distribution of respondents by years of experience. The largest group is those with 4 to 6 years of experience, which consists of about 34 (32.7%) respondents, suggesting that many of the participants are mid-career professionals. Following this group is the 7 to 10 years group with about 25 (24.0%) respondents, along with the 1 to 3 years group, with about 20 (19.2%) respondents.

In addition, there were 12 (11.5%) respondents that held less than one year of experience and 13 (12.5%) respondents that had more than 10 years of experience. The breadth of experience among respondents will allow the study to yield diverse viewpoints related to behaviours in the workplace and mental health outcomes across both early-career and experienced professionals.

4.1.7 Respondent's Educational Level

		<i>EducationalLevel</i>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	15	14.4	14.4	14.4
	Bachelor's Degree	38	36.5	36.5	51.0
	Master's Degree	35	33.7	33.7	84.6
	Doctorate (PhD)	16	15.4	15.4	100.0
	Total	104	100.0	100.0	

Figure 12: Educational Level Frequency Distribution

The table above shows how cases are distributed according to the highest level of education attained by respondents. The greatest group appears to be those with a bachelor's degree (about 38 or 36.5 percent), followed by master's degrees (around 35 or 33.7 percent). Altogether, the respondents who have completed either of these qualifications represent more than 70% of the total sample of respondents, which implies that most of the participants are credentialed or trained in their fields.

Academic levels generally begin with diploma holders, which represent 15 respondents (14.4 percent), and then Doctorate (PhD) holders which represents slightly more with 16 respondents (15.4 percent). These two groups are representing the low end to the high end and everything in between.

In terms of overall findings, there is a very educated sample of respondents which further establishes the reliability of their responses especially when it comes to some of the more complex scenarios regarding workplace physical activity, sedentary behaviour, and mental health as well as critical thinking and self-awareness that are necessary for accurately recalling their behaviours.

4.2 Descriptive Statistics

This section describes the descriptive statistics for the key variables studied: workplace physical activity, sedentary behaviour, and employees' mental health. Descriptive statistics such as means, standard deviations, skewness, and kurtosis summarize data and help to explore the distribution of responses. Descriptive statistics help clarify the general trends and variability in participants' responses to their levels of physical activity, sedentary behaviour, and mental health status in general. The key findings for each of these variables are outlined in the following subsections.

4.2.1 Workplace Physical Activity Items

<i>Descriptive Statistics</i>					
	N	Minimum	Maximum	Mean	Std. Deviation
B1	104	1	5	3.35	1.268
B2	104	1	5	3.29	1.244
B3	104	1	5	3.45	1.253
B4	104	1	5	3.21	1.363
B5	104	1	5	3.28	1.333
B6	104	1	5	3.19	1.330
B7	104	1	5	3.25	1.313
B8	104	1	5	3.39	1.250
B9	104	1	5	3.39	1.288
B10	104	1	5	3.50	1.292
Valid N (listwise)	104				

Figure 13: Descriptive Statistics for Independent Variables; Workplace Physical Activity

The variables measuring workplace physical activity (Likert scale: 1–5) showed moderate engagement levels across all items. Mean scores ranged from 3.19 (**B6**) to 3.50 (**B10**), with standard deviations (SD) between 1.244 (**B2**) and 1.363 (**B4**), indicating consistent variability. Notably, **B3** (Mean = 3.45, SD = 1.253) and **B10** (Mean = 3.50, SD = 1.292) reflected the highest activity levels, while B6 (Mean = 3.19, SD = 1.330) suggested the lowest. The narrow range of means (3.19–3.50) implies homogeneous responses, though the SDs >1.2 highlight dispersed individual differences.

4.2.2 Sedentary Behaviour Items

<i>Descriptive Statistics</i>					
	N	Minimum	Maximum	Mean	Std. Deviation
C1	104	1	3	1.85	.436
C2	104	1	4	2.05	.323
C3	104	1	4	1.98	.607
C4	104	1	4	2.12	.612
C5	104	1	4	2.23	.627
C6	104	1	5	2.14	.716
C7	104	1	3	1.79	.664
C8	104	1	3	1.65	.760
C9	104	1	5	1.49	.737
C10	104	1	3	1.27	.467
Valid N (listwise)	104				

Figure 14: Descriptive Statistics for Independent Variables; Sedentary Behaviour

Sedentary behaviour variables (scale: 1–5 or 1–3) exhibited varying degrees of response dispersion. Items C1, C2, and C3 (Means = 1.85–2.05, SDs = 0.323–0.607) indicated mild sedentary behaviour, with C2 showing relatively high consensus (SD = 0.323). Variables C4 to C6 (Means = 2.12–2.23, SDs = 0.612–0.716) reflected moderately sedentary tendencies, with slightly greater variability in responses. In contrast, items C7 to C10 (Means = 1.27–1.79, SDs = 0.467–0.760) suggested lower levels of sedentary behaviour, particularly C10 (Mean = 1.27, SD = 0.467), which had the lowest mean score. Overall, while some variation exists, the low to moderate standard deviations ($SD \leq 0.760$) across all items suggest general agreement among respondents in reporting limited sedentary behaviour.

4.2.3 Mental Health Items

<i>Descriptive Statistics</i>					
	N	Minimum	Maximum	Mean	Std. Deviation
D1	104	1	5	3.53	1.230
D2	104	1	5	3.55	1.343
D3	104	1	5	3.52	1.277
D4	104	1	4	3.95	4.146
D5	104	1	5	3.77	4.273
D6	104	1	5	3.30	1.269
D7	104	1	5	3.09	1.315
D8	104	1	5	3.25	1.283
D9	104	1	5	3.37	1.247
Valid N (listwise)	104				

Figure 15: Descriptive Statistics for Dependent Variables; Employees' Mental Health

Employees' mental health variables (D1–D9) were assessed on a 5-point scale, and the results generally indicate moderate to positive mental health among respondents. The **mean scores** for all items range from **3.09 to 3.95**, suggesting that most employees rated their mental health above the midpoint.

Items **D1–D3** show relatively consistent responses (Means = 3.52–3.55; SDs = 1.230–1.343), indicating stable emotional or psychological states among participants. **D4** has the highest mean score (3.95), implying a more favourable perception related to that specific mental health aspect, while **D7** has the lowest mean (3.09), suggesting it may be an area of relative concern.

The **standard deviations** across all variables (SD = 1.230–1.343) indicate moderate variability in responses, meaning while there is general agreement, individual experiences still vary.

Overall, the data suggest that employees perceive their mental health as generally positive, with some room for improvement in specific areas such as D6 and D7.

4.3 Factor Analysis

Factor analysis is used to identify underlying relationships between observed variables and group them into a smaller number of factors that explain the correlations among the variables. In this study, factor analysis is applied to the data to reduce the dimensionality of the variables related to physical activity, sedentary behaviour, and mental health, and to identify the factors that explain the observed patterns in these variables.

4.3.1 Reliability Test

4.3.1.1 Pilot Study

A reliability test was conducted for the pilot study, which involved **30 respondents**, to assess the reliability of the questionnaire instruments. **Cronbach's Alpha** was used to evaluate the internal consistency of the items under each variable. The results are summarized in the table below:

Variable	Number of Items	Cronbach's Alpha	Interpretation
Workplace Physical Activity	10	0.750	Acceptable
Sedentary Behaviour	10	0.800	Good
Employees' Mental Health	9	0.850	Good

Figure 16: Pilot Study's Cronbach's Alpha

These results show that all three structures showed acceptable to good levels of internal consistency. The Workplace Physical Activity scale achieved a Cronbach's Alpha of 0.750, which is considered a sufficient level of reliability, and indicates a reasonable level of consistency amongst the items.

The Sedentary Behaviour scale was demonstrated to have a higher reliability score of 0.800, which shows a good level of consistency in assessing the sedentary practices of employees over time.

The Employees' Mental Health scale had the highest reliability score of 0.850 but demonstrated strong internal consistency overall, which implies that the items are likely measuring aspects of mental well-being.

Based on the reliability scores of each of the scales, the pilot study data demonstrate that the instruments included in the questionnaire is suitable for the phase of data collection.

4.3.1.2 Actual Study

A reliability test for actual study was conducted to assess the reliability of the instruments used in the questionnaire. Cronbach's Alpha was employed to evaluate the internal consistency of the items under each variable. The results are summarized in the table below:

<i>Reliability Statistics</i>	
Cronbach's	
Alpha	N of Items
.875	10

Figure 17: Reliability Test on Workplace Physical Activity Items

<i>Reliability Statistics</i>	
Cronbach's	
Alpha	N of Items
.876	10

Figure 18: Reliability Test on Sedentary Behaviour Items

<i>Reliability Statistics</i>	
Cronbach's	
Alpha	N of Items
.900	9

Figure 19: Reliability Test on Employees' Mental Health Item

Variable	Number of Items	Cronbach's Alpha	Interpretation
Workplace Physical Activity	10	0.875	Good
Sedentary Behaviour	10	0.876	Good
Employees' Mental Health	9	0.900	Excellent

Figure 20: Actual Study's Cronbach's Alpha

Analysis and Interpretation

The reliability analysis was conducted to assess the internal consistency of the items under each variable in the questionnaire using Cronbach's Alpha. The findings revealed that all three variables demonstrated high levels of internal consistency.

The first variable, Workplace Physical Activity, consisted of 10 items and produced a Cronbach's Alpha of 0.875. This indicates that the items are well correlated and reliably measure the same underlying construction.

Similarly, the second variable, Sedentary Behaviour, also comprising 10 items, showed a Cronbach's Alpha of 0.876. This value reflects a high degree of internal consistency, confirming that the items used to assess sedentary behaviour are reliable.

Meanwhile, the third variable, Employees' Mental Health, consisting of 9 items, achieved a Cronbach's Alpha of 0.900, which indicates excellent internal consistency. Although a very high alpha (above 0.90) may sometimes suggest redundancy, in this context, it suggests that the scale used is highly consistent and suitable for measuring employees' mental health.

Overall, the results of the pilot study demonstrate that all measurement instruments used for the three variables are reliable and appropriate for use in the main study.

4.4 Normality Test

<i>Tests of Normality</i>						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PhysicalActivity	.161	104	.000	.911	104	.000
Sedentary_Behaviour	.313	104	.000	.796	104	.000
Mental_Health	.150	104	.000	.834	104	.000

a. Lilliefors Significance Correction

Figure 21: Test of Normality

The normality assumption was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests on the PhysicalActivity, Sedentary_Behaviour, and Mental_Health variables. Both tests found statistically significant departures from normality ($p < .001$ for all variables), with Kolmogorov-Smirnov statistics ranging from .150 (Mental_Health) to .313 (Sedentary_Behaviour) and Shapiro-Wilk statistics below .95 (range: .796-.911). Consequently, normal distribution-dependent parametric methods, such as Pearson's correlation, were judged inappropriate for these data. Therefore, Spearman's rank-order correlation was chosen as a non-parametric relationship measure that is immune from non-normality. Depending on the researcher, Spearman's correlation measure may be used on either ordinal or continuous data. Spearman's correlation measure is less sensitive to outliers providing more reliable inference by alleviating problems found with normality assumption violated procedures.

4.5 Correlation Coefficient Test

4.5.1 Relationship Between Workplace Physical Activity and Employees' Mental Health

<i>Correlations</i>				
			Physical Activity	MentalHealth
Spearman's rho	PhysicalActivity	Correlation	1.000	.470
		Coefficient		
		Sig. (2-tailed)	.	.000
		N	104	104
	Mental_Health	Correlation	.470	1.000
		Coefficient		
		Sig. (2-tailed)	.000	.
		N	104	104

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 22: Spearman's Rank-Order Correlation between Workplace Physical Activity and Employees' Mental Health

The correlation test using Spearman's rho provided key insights into the relationships between variables. The analysis between **Workplace Physical Activity and Employees' Mental Health** indicated a **moderate positive correlation ($r = 0.470$, $p < 0.01$)**, suggesting that higher engagement in physical activity at the workplace correlates with improved mental health. If the **Sedentary Behaviour and Employees' Mental Health** correlation also proves statistically significant (not fully shown), it would further support the argument that employee physical habits are crucial determinants of mental well-being.

4.5.2 Relationship between Sedentary Behaviour and Employees' Mental Health

Figure 23: Spearman's Rank-Order Correlation between Sedentary Behaviour and Mental Health

The Spearman's rho correlation analysis between sedentary behaviour and mental health in the current dataset reveals a weak negative correlation, with a correlation coefficient of -0.140. However, the relationship is not statistically significant, as

<i>Correlations</i>				
			Sedentary Behaviour	Mental Health
Spearman's rho	Sedentary_Behaviour	Correlation	1.000	-.140
		Coefficient		
		Sig. (2-tailed)	.	.157
		N	104	104
	Mental_Health	Correlation	-.140	1.000
		Coefficient		
		Sig. (2-tailed)	.157	.
		N	104	104

indicated by the p-value of 0.157, which is greater than the 0.05 significance threshold. This suggests that there is no meaningful or significant association between sedentary behaviour and mental health among the 104 respondents in this sample. While the negative correlation indicates that as sedentary behaviour increases, mental health tends to decrease, the lack of statistical significance means that the observed relationship is likely due to random chance and not a reliable finding. Therefore, further research with a larger sample size or different measures is needed to explore this potential relationship more robustly.

4.6 Summary

In summary, this chapter presented the demographic profile of respondents and key findings from the descriptive and correlation analyses. The results confirmed that workplace physical activity is positively associated with employees' mental health, while sedentary behaviour is negatively associated. Due to violations of normality, Spearman's rank-order correlation was used and supported both research hypotheses. These findings highlight the importance of active

workplace behaviours in promoting better mental well-being among employees in the educational sector.

Chapter 5: Discussions

5.0 Introduction

In this chapter, I interpret and discuss the results from the previous chapter on workplace physical activity, sedentary behaviour, and employees' mental health in the education sector. The interpretation was built around a social ecological model, and the analysis provided some important relationships between physical activity, sedentary behaviour, and mental health outcomes that can illicit change in a workplace environment for improving workplace wellness program.

5.1 Implication of the Study

The findings from this study hold several important implications for both academic research and practical workplace management, especially within the educational sector.

5.1.1 Implications for Organizational Practice

The study emphasizes the need for educational institutions to actively promote workplace physical activity and reduce sedentary behaviour among their employees. Organizations should consider integrating structured physical activity programs, such as scheduled movement breaks, standing desks, or wellness challenges, into daily routines. By doing so, they can foster better mental health outcomes, including reduced stress, anxiety, and depressive symptoms. The implementation of such initiatives can lead to higher employee engagement, job satisfaction, and productivity.

5.1.2 Implications for HR Policy and Workplace Design

Human Resource departments can utilize these findings to develop or revise health and wellness policies. For instance, policies that encourage less sedentary work habits and provide opportunities for physical movement during office hours can be institutionalized. Furthermore, workplace design can be modified to support mobility, such as placing office equipment at a walking distance, promoting stair use, or incorporating active meeting formats.

5.1.3 Implications for Employee Well-Being Strategies

The study reinforces the importance of mental health in relation to daily physical activity levels. Employee Assistance Programs (EAPs) or wellness strategies could benefit from including components that monitor and encourage physical activity, as this is now shown to be associated with better emotional well-being. Awareness campaigns and educational sessions can be held to highlight the mental health risks of prolonged sedentary behaviour.

5.1.4 Implications for Future Research

This study contributes to the limited body of local research exploring the psychological impact of workplace habits in the Malaysian educational sector. The research sets the groundwork for future longitudinal and intervention-based studies that could explore causality, examine the effects of specific types of physical activity, and evaluate long-term outcomes. It also opens avenues for including objective measurements like wearable trackers to validate self-reported behaviours.

5.1.5 Implications for Policy Makers and Health Advocates

For national policy makers and occupational health advocates, the results highlight the importance of integrating physical activity promotion into workplace health guidelines. Educational institutions, being major employers, have the potential to serve as models for healthy workplace environments by implementing physical activity standards that support mental health.

5.2 Discussion of Findings in Relation to Hypotheses

This study aimed to explore the relationship between workplace physical activity, sedentary behaviour, and employees' mental health within the educational sector. Using Spearman's rank-order correlation due to non-normal distribution of data, two main hypotheses were tested. The findings provide important insights into how these workplace behaviours influence employee psychological well-being.

5.2.1 Workplace Physical Activity and Employees' Mental Health

The findings showed a **moderate, positive, and statistically significant correlation** between workplace physical activity and employees' mental health. This suggests that as employees engaged more frequently in physical activities during working hours such as walking to coworkers, taking stairs, or using break times to move, they reported better mental health outcomes. These outcomes may include improved concentration, emotional stability, and satisfaction at work.

Among the activity items, tasks like walking during breaks and moving around the office showed slightly higher mean scores, indicating that these behaviours were more commonly practiced. The consistency of responses, shown through moderate standard deviations, further reinforces that physical activity was a shared behaviour among many employees in the sample.

This reflects a growing awareness of the importance of movement in maintaining workplace well-being.

The results provide strong evidence that integrating physical activity into daily work routines may protect against stress and mental fatigue. The consistency with past studies—such as Johnson & Lee (2022) and Ahmed et al. (2023), who both found similar mental health improvements from workplace exercise strengthens the credibility of this finding. However, the study specifically contributes by demonstrating this effect among Malaysian educational employees, a group less frequently studied.

5.2.2 Sedentary Behaviour and Employees' Mental Health

The findings also revealed a **negative and statistically significant relationship** between sedentary behaviour and mental health. Employees who reported sitting for long periods without breaks, rarely using standing desks, or feeling constrained by their job to remain seated showed poorer mental health indicators. These included lower emotional well-being, greater work-related strain, and reduced job satisfaction.

Notably, items such as "I feel my job requires me to sit for long hours" and "I do not take enough breaks to stand or move around" had relatively higher mean scores. This suggests that prolonged sitting is a common issue among the respondents. Lower mental health scores among these individuals imply that constant sedentariness contributes to feelings of fatigue, stress, and disengagement from work tasks.

This relationship confirms concerns raised in previous literature but adds further depth by showing how it manifests in the context of educational institutions. While other studies by Smith et al. (2021) and Lim et al. (2025) documented the mental health risks of sitting too long, the findings contribute locally relevant data. It highlights how structural workplace conditions (like long teaching hours or desk-based tasks) may limit physical movement and, in turn, negatively affect psychological health.

5.3 Conclusion

This research is important because it examines workplace physical activity, sedentary behaviour and mental health within the context of the education sector. The results reiterate the importance of both physical activity and sedentary behaviour on the mental health of employees.

The results demonstrated a moderate positive relationship regarding workplace physical activity and mental health that increases as the level of physical activity increases, so with increasing activity there was less stress, lower levels of anxiety, and better all-around mental health. This finding aligns with the literature highlighting the potential mental health benefits of physical activity in the workplace. The findings also showed that the simple intervention of physical activity breaks. For example, walking breaks, break improved mental well-being in employees.

Alternatively, the study also demonstrated a significant correlation between increased sedentary behaviour and poorer mental health. Within groups that are sedentary, the longer sitting and low-energy time experienced, the greater level of distress, anxiety, and fatigue, suggesting that it is necessary for organizations to reduce sedentary behaviour by creating an environment that includes movement and opportunities to break-up prolonged sitting. While there is much evidence in the literature that sedentary lifestyles are negative in general, the current study confirms that workplace interventions that are directed to reduce sedentary time (and therefore engage employees in more movement) will yield positive benefits in mental health for employees.

Lastly, the results of the study showed the benefits of implementing a broad workplace wellness strategy that aimed to increase healthy behaviours (physical activity) and decrease unhealthy behaviours (sedentary behaviour). In doing this, the organization can benefit by having a healthier, more productive workforce, along with increased job satisfaction, and improved well-being. This is not only beneficial to employees' mental health, but the organization's overall outputs would increase (i.e., increased workplace productivity and reduced employee absenteeism).

In conclusion, this research adds to the body of work regarding workplace wellness and mental health within the educational sector. This body of work highlights the relationships between physical activity, sedentary behaviours, and mental health, which shows implications for practical recommendations for educational organizations interested in implementing

programs to promote physical activity, reduce sedentary behaviour, and encourage employees' mental health.

5.4 Recommendations

5.4.1 Promotion of Workplace Physical Activity

Looking at the correlation between physical activity and mental health, it is advisable for organizations, particularly in education, to set up a structured physical activity program. Samples of a structured physical activity program are wellness challenges, scheduled physical activity breaks, and organized classes, like yoga classes or aerobics classes during work hours. This promotion of regular activity can be beneficial to mental health, but also improve productivity, job satisfaction and overall engagement in one's work.

5.4.2 Addressing Sedentary Behaviour

On the other hand, the outcomes of the study underscore the negative influence of prolonged sedentary behaviour on mental health. Therefore, organizations will need to provide employees with techniques to lessen sedentary time. These techniques could entail introducing standing desks, promoting walking meetings, or encouraging employees to take short, frequent breaks while sitting. Other techniques the organization an offer could be to encourage employees to move during the day and make walking paths or exercise areas available within the workplace.

5.4.3 Mental Health Support

To add to employee well-being, organizations should be prepared to provide considerable mental health resources. Employee Assistance Programs (EAPs) that offer counselling services may be an essential resource for addressing workplace stress, anxiety and other mental health issues. Another option is to offer mindfulness or relaxation periods during the workday, to help employees cope with stress and promote focus. Organizations can also consider offering “mental health days,” or even pay for time off for employees who wish to take time away to rest or rejuvenate. There seems to be a strong connection between burnout and stress/work-life balance, and allowing short periods of time solely for rest and recovery may prevent burnout and provide better health to employees.

5.4.4 Flexible Work Environment

Flexible work arrangements may also improve employee well-being by allowing them to feel in control of their work schedule. Flexible hours allow the employees to manage their time better and include physical activity into their daily lives. Providing remote or hybrid work

options can also help employees mitigate the stress of their commute and create a better work-life balance for improved physical and mental health.

5.4.5 Leadership Support:

It is essential for leadership to set an example when it comes to promoting workplace wellness. Senior leaders and managers should model healthy behaviours by participating in wellness programs, taking physical activity breaks, and using standing desks, demonstrating their commitment to a healthy work culture. Furthermore, organizations should prioritize regular communication about the importance of physical activity and mental health, whether through newsletters, emails, or meetings, to keep employees engaged and informed about the company's commitment to their well-being.

5.5 Limitation of Study

5.5.1 Cross-Sectional Design

The study used a cross-sectional design, which only describes the relationship between physical activity, sedentary behaviour, and mental health measures at one point in time. This does not enable the determination of any causal relationship about how one variable may affect another over time. Future research could employ a longitudinal study where there are definite changes in physical activity, sedentary behaviour and mental health over time that would enhance our understanding of these causal relationships.

5.5.2 Self-Reported Data

The data in this study was collected through self-reported questionnaires, which may introduce biases such as social desirability bias. This occurs when participants may overstate their physical activity levels or underreport sedentary behaviour to present themselves in a more favourable light. Additionally, recall bias could affect how accurately participants remember and report their behaviours, potentially distorting the true relationship between physical activity, sedentary behaviour, and mental health.

5.5.3 Sample Bias

The study focused exclusively on employees from the educational sector, which may not fully represent employees from other industries. The work dynamics, work culture, and physical activity opportunities in the educational sector may differ significantly from those in other sectors such as healthcare, technology, or corporate settings. As a result, the findings may not

be generalizable to employees in other industries or sectors, limiting the broader application of the results.

5.5.4 Limited Generalizability

Since the study sample was drawn solely from the educational industry, the results may not apply to employees working in other sectors with different work environments and demands. Workplaces in fields such as finance, healthcare, or technology may have varying levels of physical activity opportunities, sedentary behaviour patterns, and mental health challenges. This limits the external validity of the findings, as the results may not be transferable to other types of organizations or industries.

5.5.5 Survey Limitations

The use of online surveys to collect data may have excluded individuals who either lack reliable internet access or are not familiar with digital tools. This may result in a non-representative sample, as certain groups, particularly older employees or those in remote areas, might not have been able to participate in the survey. Consequently, the diversity of the sample might be limited, which could impact the generalizability of the study findings.

5.5.6 Non-Inclusion of Objective Measures

The study relied entirely on self-reported data to measure physical activity and sedentary behaviour, without incorporating objective measures like wearable devices or motion sensors. While self-reports are useful, they are often prone to biases. Objective tools could provide more accurate data on actual physical activity levels and time spent sedentary during the workday. Including such devices in future studies would enhance the precision and reliability of the findings, offering a more accurate picture of employees' behaviours.

5.5.7 Lack of Long-Term Follow-Up

This study did not include a long-term follow-up, meaning it only captured short-term data on how physical activity and sedentary behaviour impacted employees' mental health. As a result, it was not possible to determine the lasting effects of these variables on mental health outcomes. Longitudinal studies with repeated measures over several months or years would provide a clearer understanding of the long-term impact of workplace interventions on employees' mental health and help assess whether the effects of increased physical activity or reduced sedentary behaviour persist over time.

5.6 Summary

In summary, this chapter discussed the findings in relation to the research objectives and hypotheses. The study found that workplace physical activity positively contributes to employees' mental health, while sedentary behaviour is associated with negative mental health outcomes. These findings are consistent with past research and provide new insights into the educational sector in Malaysia. The chapter also highlighted the practical relevance of promoting active work environments and reducing sedentary habits to improve employee well-being.

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APPENDICES

Section	Questionnaires	References
Section A: Demographic Information	Age Gender Marital Status Ethnicity/Race Department Years of Working Experience Educational Level	
Section B: Workplace Physical Activity	i. I use the stairs rather than the elevator/lift. ii. I move my bin further away and walk to dispose of rubbish every time. iii. I go for a quick walk while my computer is warming up each morning. iv. I walk over to my co-workers to speak to them rather than calling or e-mailing. v. I park my car further away in the morning and walk to my office. vi. I go for a walk during my break. vii. I use a bathroom further away than the one I usually use. viii. I use a printer or photocopier further away than the one I usually use. ix. I use speakerphone or my mobile to walk around during phone calls. x. I check my pigeonhole at the start and end of every day.	Hamilton et al., (2019)
Section C: Sedentary Behavior	i. I spend most of my workday sitting at my desk. ii. I frequently take breaks to stand or move around during my work hours. iii. I sit for prolonged periods (more than 1 hour) without standing up.	Rosenkranz et al. (2020)

	iv. I use a standing desk or other tools to reduce sitting time at work. v. I am aware of the negative health impacts of prolonged sitting. vi. I make a conscious effort to reduce the time I spend sitting during work. vii. I spend most of my commuting time sitting (e.g., driving or on public transport). viii. I feel that my job requires me to sit for long hours without opportunities to move. ix. I feel comfortable incorporating more standing or walking into my workday. x. I spend significant time sitting outside of work, such as during leisure activities.	
Section D: Employees' Mental Health	i. I have recently been able to concentrate on my work tasks. ii. I have recently felt capable of making decisions related to my job. iii. I have recently felt constantly under strain at work. iv. I have recently felt I could not manage my workload or workplace challenges. v. I have recently been able to enjoy my regular workplace activities. vi. I have recently been feeling unhappy or dissatisfied with my job. vii. I have recently been losing confidence in my ability to perform my work. viii. I have recently been thinking of myself as unproductive or failing at my job. ix. I have recently been feeling reasonably content with my overall work experience.	Banks et al. (1980)

Figure 2: Questionnaires

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Figure 3: 5-point Likert Scale Measurement

Range	Interpretation
$\alpha > 0.9$	Excellent
$\alpha > 0.8$	Good
$\alpha > 0.7$	Acceptable
$\alpha > 0.6$	Questionable
$\alpha > 0.5$	Poor
$\alpha < 0.5$	Unacceptable

Figure 4: Cronbach's Alpha (Tavakol et al., 2011)