

## ORIGINAL ARTICLE

# Association of Screen Time with Dietary Intake and Physical Activity Level among Adults in Selangor

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## ABSTRACT

**Introduction:** Lifestyle factors like screen time, physical activity, and dietary intake significantly impact health outcomes. Understanding the adult's lifestyle is crucial for effective public health initiatives. This study aims to determine the association of screen time with dietary intake and physical activity among adults in Selangor. **Methods:** This research was conducted using cross-sectional research involving 347 adults aged 18 to 65 from Selangor. The questionnaires consisted of a 3-day 24-hour diet recall, the International Physical Activity Questionnaire (IPAQ-SF), and the Screen Time Questionnaire. Data were analysed using Nutritionist Pro and SPSS version 27. The Spearman's correlation was used to determine the correlation between screen time with dietary intake and PAL. **Results:** Average screen time on weekdays was 88.3 minutes, and on weekends, screen time was 78.7. The average energy intake was 2084 kcal, fat was 81.7 g, sodium was 3080.0 mg, and potassium was 1335.1 mg. 45.5% of adults in Selangor have high physical activity levels. Weekday screen time was correlated significantly with carbohydrates and fat intake, while others were insignificant. Screen time on weekends was significantly correlated with fat intake, while other times were not significantly correlated. None of the screen time parameters were significantly correlated with the IPAQ score. **Conclusion:** This study showed that screen time correlates with dietary intake and sitting time but does not correlate with physical activity. Effective public health interventions and nutrition education are crucial to enhancing nutrient consumption and overall health and well-being in this population.

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## INTRODUCTION

People nowadays spend more time on smartphones, using laptops and watching television, which increases their screen time and leads to a sedentary lifestyle. According to the World Health Organization (WHO), screen time can be defined as the time spent passively observing screen-based entertainment, including television, computers and mobile devices (1). Screen time could be affected by dietary intake and physical activity (PA) level (2). Research shows that individuals who regularly engage in PA tend to have healthier dietary habits compared to those who are more sedentary or spend more time on screen devices (3). A recent cross-

sectional study in the US showed that a combination of high screen time and low physical activity was associated with overweight and obesity (4).

Nowadays, the increased availability of processed foods, rapid urbanisation, and changing lifestyles, all of which have led to a shift in dietary patterns (1). The dietary intake of most individuals is changing which they tend to consume unhealthy food choices. Recent studies indicate that the dietary habits of Malaysian adults are not aligning with the recommended dietary intake guidelines. For instance, a previous study revealed that a significant number of adults do not consume sufficient daily portions of fruits and vegetables. Furthermore, the majority of participants in the study reported consuming sugar-sweetened beverages at least once a week, which includes self-prepared drinks with added sugar, commercially packaged ready-to-drink options and premixed beverages (5). Prolonged screen time

exposure among adults has been associated with poor dietary intake and an increased consumption of low-nutrient foods (6). A systematic review analysis found a potential link between sedentary behaviour, especially television viewing, and an unhealthy diet among young people. This association appears to involve an increased consumption of cariogenic foods. However, the strength of the evidence from the studies was limited (7).

Excessive screen time has emerged as a significant public health concern, particularly in the context of its detrimental effects on both physical and mental health. Excessive screen time can disrupt the body's natural cues for hunger and fullness, resulting in unhealthy food selections, including consuming empty-calorie foods (8). There are multiple factors influence the increase screen time use such as demographic factors such as education level, age, and self-efficacy. A study found that the association of dietary intake, physical activity and screen time was influenced by income status. Different household income among adults affects access to a variety of healthy food options and opportunities for engaging in PA, such as spending money to join Zumba classes or buy PA equipment (9). Besides, mobility and transportation significantly influence the adults obtaining nutritious food sources (10). Notable distinctions include limited access to restricted access to recreational parks and spaces for physical activities, variation in working hours, elevated living costs and a broader array of food options (10). Dietary intake and physical activity are often seen as separate factors, but they are connected, especially regarding screen time. Despite existing studies, the evidence linking screen time, dietary intake, and physical activity remains limited, highlighting the need for further research, particularly within the population of this study. Consequently, this research aims to investigate the associations between screen time, dietary habits, and physical activity among adults in Selangor.

## MATERIALS AND METHODS

### Research Design

This research was a cross-sectional study employing a quantitative approach for data collection. A total of 347 adults aged 18 to 65 years residing in Selangor participated in this study.

### Study Location and Participants

This study was conducted in Selangor, Malaysia, specifically in Kuala Selangor and Shah Alam. Convenience sampling, a non-probability sampling technique, was employed because it offers the easiest and most accessible method for the researcher to collect data. The sample size was determined using the Krejcie-Morgan formula, which considers the total population of Selangor. A total of 347 participants were successfully recruited for this study. Researchers identified two locations to ensure a sufficient sample size and represent

Selangor state.

### The Inclusion and Exclusion Criteria

This study included adults aged 18 to 65 years old who willingly volunteered to participate in this. The age range was chosen based on the the adults age range from previous study (11). Their screen time, dietary intake and physical activity were assessed. The exclusion criteria are participants who had been diagnosed with eating disorders such as anorexia nervosa, bulimia nervosa, etc or who were diagnosed with a chronic neurodegenerative disease such as Alzheimer's Disease and physical activity disability.

### Measurements

#### Socio-demographic Characteristics and Anthropometry Measurement

The socio-demographic questions included age, gender, ethnicity, educational level, household income, occupation, comorbidities and supplements used. Height and weight were measured to determine the body mass index (BMI). The height and weight of participants were measured using a digital weighing scale and a stadiometer to the nearest 0.1 cm. The BMI category was determined according to the Malaysia Clinical Practice Guidelines: Management of Obesity 2023 (12).

#### Screen Time

A validated screen time questionnaire was adopted from a previous study and used to assess the screen time among the participants (13). The participants were asked to estimate the total time spent using each device in hours and minutes.

#### Dietary Intake

Three days of 24-hour diet recall was conducted to measure participants' dietary intake. Two weekdays and one weekend were chosen for three consecutive days. Fasting days were not taken in the diet recall because the calorie intake on that day was invalid. The participants were also asked to recall every meal they had throughout a specified three-day period while using household measurements, Atlas of Food Exchanges & Portion Sizes, and Food Album to assist them in estimating the portion size accurately. The BMR was calculated using the formula from Ismail et al. (1998) (14), and the dietary reporting was based on intake and recommendation, which was evaluated based on Goldberg et al. (1991) (15).

#### Physical Activity

The International Physical Activity Questionnaire-Short Form (IPAQ-SF) was developed as a tool for assessing sedentary and physical activity levels globally (16). The questionnaire was used in the Malay language, which has been validated and considered reliable based on a previous study (17). The IPAQ-short form includes questions about vigorous activity, moderate activity,

walking activity and sitting in the previous seven days. Less than 600 MET-min per week of physical activity is categorised as a low physical activity level, 600 to 3000 MET-min per week as moderate and more than 3000 MET-min per week as a high physical activity level.

### Ethical approval

This study received approval from the UiTM Research Ethics Committee (Reference number: REC/07/2023 (PG/MR/265)).

### Statistical Analysis

The Statistical Package for Social Scientists (SPSS) version 27.0 was used for data analyses. A descriptive analysis was performed on the sociodemographic, screen time, dietary intake, and physical activity. Next, the normality of the data was ascertained before analysing the correlation test. Spearman's correlation was used to analyse this data using SPSS. The significance level was set at  $\alpha < 0.05$ , corresponding to a 95% confidence interval (CI). A p-value less than 0.05 was considered statistically significant.

**Table I: Sociodemographic and anthropometric data among adults in Selangor (n=347)**

Variable	Frequency	(%)	Mean (SD)
<b>Age</b>			44.0 (11.0)
<b>Gender</b>			
• Female	198	57.1	
• Male	149	42.9	
<b>Race</b>			
• Malay	336	96.8	
• Chinese	1	0.3	
• Indian	10	2.9	
<b>Occupation</b>			
• Government Sector	147	42.4	
• Private Sector	69	19.9	
• Self-employed	101	29.1	
• Not Employed	30	8.6	
<b>Educational Level</b>			
• Tertiary Level	135	38.9	
• Secondary Level	191	55.0	
• Primary Level	20	5.8	
• None	1	0.3	
<b>Household Income<sup>1</sup></b>			
• Less than RM5,249	275	79.3	
• RM5,250 - RM11,820	64	18.5	
• More than RM11,820	8	2.3	
<b>Body Mass Index<sup>3</sup></b>			
• Underweight	5	1.4	
• Normal	63	18.2	
• Overweight	103	29.7	
• Obese Class I	114	32.9	
• Obese Class II	41	11.8	
• Obese Class III	21	6.1	
<b>Energy Intake<sup>4</sup></b>			
• Under-reported			88.3 (75.5)
• Normal			78.7 (60.3)
• Over-reported			

<sup>1</sup> Based on the Department of Statistics Malaysia

<sup>2</sup> Supplement used was categorised based on research Hassan, Egbuna (17)

<sup>3</sup> Based on BMI cut-off point according to the Malaysia Clinical Practice Guidelines: Management of Obesity 2023 (12)

## RESULT

The sociodemographic and anthropometric data of adults in Selangor is presented in **Table I**. A total of 347 adults participated in this study. Most of the adults were female (57.1%), Malay (96.8%) and had a household income of less than RM5,259 (79.3%). More than 50% of the participants were classified as overweight and above, and only 18.2% of adults had a normal BMI. This study evaluated dietary reporting using the energy intake to basal metabolic rate (EI: BMR) ratio. The results show that 61.4% of adults were under-reported their energy intake. Meanwhile, 36.0% normally reported their energy intake, while only 2.6% over-reported it.

**Table II** shows the screen time of adults in Selangor. On weekdays, the participants report an average screen time of 88.3 minutes, while the average screen time during weekends is slightly lower at 78.7 minutes. Regarding background screen usage, participants, on average, spent 128.9 minutes. The average duration of screen time in the evenings is 92.5 minutes. On weekends specifically, the average screen time was increased to 139.4 minutes.

**Table II: Screen time of adults in Selangor (n=347)**

Variables	Mean (SD)
Weekdays (min)	88.3 (75.5)
Weekends (min)	78.7 (60.3)
Background Screen Used	
• Whole day (min)	128.9 (160.7)
• Evening (min)	92.5 (129.4)
• Weekend (min)	139.4 (170.9)

**Table III** shows that the average daily energy intake is 2084.0 kcal (SD = 416.3). Carbohydrate intake averages 262.2 g (SD = 60.8). Approximately 47.2% of participants are low in carbohydrates, 52.0% have an adequate intake and only 0.8% consumed excessive carbohydrates. Next, the average protein intake is 74.8g (SD = 25.2). Regarding protein intake per body weight, 29.6% of participants have a low intake, while 70.4% have an adequate intake. Next, the average fat consumption is 81.7g (SD = 22.5). Most adults, 79.2%, have an excessive fat intake, while 14.4% have an adequate intake, and only 6.4% have a low-fat intake.

The result for physical activity level is presented in **Table IV**. The median IPAQ Score is 2565.0 MET-min/week (IQR = 4926.0), while the median sitting time is 5.0 hours per day (IQR = 5.4). Most of the adults have high physical activity levels (45.5%).

**Table V** showed weekday screen time was significantly correlated with carbohydrates ( $r_s = -0.247$ ,  $p = 0.007$ ) and fat intake ( $r_s = 0.250$ ,  $p = 0.006$ ), while energy intake, protein, sugar, fibre, sodium and potassium were not significant ( $p > 0.05$ ). Weekend screen time only significantly correlated with fat intake ( $r_s = 0.255$ ,  $p = 0.005$ ), while others were not significantly correlated. The screen time parameters have no significant correlation with the IPAQ Score. Weekday screen time was significantly correlated with sitting time ( $r_s = 0.506$ ,

**Table III: Dietary intake among adults in Selangor (n=125)**

Variables	Reference Value	Mean (SD)	Low Intake, n (%)	Adequate Intake, n (%)	Excessive Intake, n (%)
Energy Intake (Kcal/day)		2084.0 (416.3)			
Carbohydrates (g)		262.6 (60.8)			
Carbohydrates (% TEI)	Low Intake: <50% of total energy intake (TEI) Adequate Intake: 50-65% of TEI Excessive Intake: >65% of TEI		59 (47.2)	65 (52.0)	1 (0.8)
Protein (g)		74.8 (25.2)			
Protein (g/body weight)	Low Intake: <1.0 g/body weight Adequate Intake: ≥1.0 g/body weight		37 (29.6)	88 (70.4)	0 (0.0)
Fat (g)		81.7 (22.5)			
Fat (% TEI)	Low Intake: <25% of TEI Adequate Intake: 25-30% of TEI Excessive Intake: >30% of TEI		8 (6.4)	18 (14.4)	99 (79.2)
Sugar (g)		36.6 (23.9)			
Fibre (g)	Low Intake: <25g Adequate Intake: 25-30g Excessive Intake: >30g	6.8 (3.5)	125 (100.0)	0 (0.0)	0 (0.0)
Sodium (mg)	Adequate Intake: ≤2000mg Excessive Intake: >2000mg	3080.0 (1147.7)	0 (0.0)	16 (12.8)	109 (87.2)
Potassium (mg) <sup>1</sup>	Adequate Intake: <4700mg Excessive Intake: >4700mg	1335.1 (452.0)	0 (0.0)	125 (100.0)	0 (0.0)

<sup>1</sup> The subjects are normal report

**Table IV: Physical activity level of adults in Selangor (n=347)**

Variables	Frequency	Percentage (%)	Median (IQR)
IPAQ Score			2565.0 (4926.0)
(MET-min/week)			
Sitting Time (Hours)			5.0 (5.4)
Physical Activity Level			
• High	158	45.5	
• Moderate	137	39.5	
• Low	52	15.0	

**Table V: Correlation between screen time, dietary intake and physical activity among adults in Selangor (n=117)**

Variables	Screen Time			
	Weekdays (min)		Weekends (min)	
	r <sub>s</sub>	p-value	r <sub>s</sub>	p-value
Nutrients				
• Energy Intake (Kcal)	-0.017	0.857	0.044	0.635
• Carbohydrates (g)	0.247**	0.007	-0.174	0.060
• Protein (g)	0.075	0.422	0.108	0.244
• Fat (g)	0.250**	0.006	0.255**	0.005
• Sugar (g)	-0.155	0.095	-0.075	0.421
• Fibre (g)	-0.030	0.744	-0.074	0.427
• Sodium (mg)	-0.022	0.810	-0.052	0.578
• Potassium (mg)	-0.089	0.339	-0.119	0.200
Physical Activity				
• IPAQ Score (MET-min/week)	-0.078	0.400	-0.050	0.589
• Sitting Time (Hours)	0.506**	<0.001	0.368**	<0.001

r<sub>s</sub>: Spearman correlation coefficient

\*. Correlation is significant at the 0.05 level (2-tailed)

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

p<0.001). Weekday screen time was significantly correlated with sitting time (rs=0.368, <0.001).

**DISCUSSION**

This study examines the relationship between screen time, dietary intake, and physical activity. The findings indicate that the average screen time on weekdays was 88.3 ± 75.5 minutes per day, which translates to approximately 1.5 hours. While no specific screen time guidelines have been established for adults (18), this duration aligns with recommendations for children and youth to limit their screen time to less than 2 hours daily (19). This guideline can provide a useful reference for determining whether screen time levels are excessive. Interestingly, screen time during weekends was lower, averaging 78.7 ± 60.3 minutes per day, or about 1.3 hours. The present study's results are aligned with the previous study by Tyagi and Rathi (20), which revealed that 75% of middle-aged adults spend time for screen time below two hours per day. The possible factor results could be because the participants in the current group are working individuals and adults with a mean age of 44 years, indicating that they were middle-aged adults. During this phase of life, middle-aged adults frequently manage multiple responsibilities, such as careers, household management, and caregiving for children or ageing relatives (20).

In this study, background screens used among adults throughout the whole day are equivalent to two hours, on an evening or equivalent to one and a half hours, and at weekends, equivalent to more than two hours per day. Background screen time refers to when a screen is on in the background, such as when the TV is playing during dinner. This pattern was similar to Vizcaino, Buman (13), who showed that adults indicated that background screen usage was the most on weekends, totalling almost three hours per day, while background screen usage on weekdays and weeknights was approximately two hours per day. The background screen used was television or other screens while engaging in activities such as exercising, cooking, or interacting with friends or family. (13). Screens functioned as a source of ambient sound and visual entertainment, which adults find soothing or captivating while completing routine tasks (21). The utilisation of background screens was used to reduce boredom and enhance enjoyment but can significantly increase the overall screen time (21).

More than half of the adults in Selangor under-reported their energy intake, while the remaining normal reported, and some over-reported it. The underreporting of food intake can be intentional when participants deliberately reduce the amount of reported food consumption during research or unintentionally when participants are unable to recall or misjudge the quantity of food they have consumed (22). A result from this study demonstrates significant disparities between

genders and among adults with different BMI categories. For example, females are more likely to under-report, while it is common among adults who are overweight and obese because they feel afraid or ashamed to be judged by others if they consume a lot of food (23).

While many participants underreported their dietary intake, this study only selected and analyzed results from those who reported normally. The mean energy intake among adults in Selangor was comparable to the NHMS 2014: MANS, indicating that the adults had dietary intakes like ordinary Malaysian adults. Nevertheless, the mean consumption in this study was reported to be  $2084.0 \pm 416.3$  kcal, which was significantly higher compared to the energy intake of adult Malaysians from NHMS 2014: MANS reported energy intake was 1466.0 kcal per day. The carbohydrate intake among adults in this study stated that half of them achieved an adequate carbohydrate intake, defined as 50 to 60% of total energy intake, while huge numbers of adults had inadequate carbohydrates. This was the same pattern as research from (24), which also found that almost 50% of adults in 2 cities in Malaysia maintained adequate carbohydrate intake. An adequate carbohydrate intake is important to provide adequate energy to the brain and body and maintain stable blood glucose levels, which are crucial for preventing insulin resistance, controlling diseases like diabetes and optimising performance and recovery process for adults active in sports (25, 26). Most of the adults had an excessive intake of fat. According to previous studies conducted by Ayogu, Oshomegie (27), demonstrated that the fat intake of the adult population also contributed more than 30% of their overall energy intake. This happened because research from Yun, Ahmad (28) stated that adults have been found to engage in unhealthy dietary intake. These practices include consuming high-fat foods frequently among adults as well as significantly consuming more saturated fats (29).

The adults in this study had inadequate fibre intake, with an average of only  $6.8 \pm 3.5$  g per day, lower than 20 – 25g per day based on RNI 2017. Similarly, patterns with (24) showed that mean fibre intake is only  $3.0 \pm 2.6$  g per day. Adults have a low amount of fibre intake because their consumption of fruits is less than one serving, and vegetables are less than two servings based on diet recall (24). Over 80% of the adults in this study had a high sodium intake, with an average of  $3080 \pm 1147.7$  mg higher than 3000 mg per day, according to MDG 2023. High sodium intake was observed among obese adults, likely due to excessive consumption of calorie-dense foods, condiments, sauces, or other unhealthy snacks (30). Most processed food products are also known to have high sodium content, which serves as a preservative agent (30).

The distribution of PAL shows that most of the adults in Selangor have high PA (45.5%). These findings are

an improvement compared to the NHMS 2019, which reported a 24.2% prevalence of physical inactivity among adults in Selangor. This positive trend aligns with a previous research which showed the same pattern, indicating that approximately 50% of the adult participants were actively involved in PA, whereas the remaining adults were either less active or inactive (31). However, several factors contribute to these high levels of physical activity among adults in Selangor. One of the possible factors for having a high PAL might be related to the availability of sports facilities. Developed states like Selangor have a variety of parks, recreational centres and sports complexes that vigorously encourage physical activity among adults (32). This evidence is supported by Nik-Nasir, Md-Yasin (9) has shown that having parks, designated jogging trails, and exercise equipment available leads to increased engagement among adults to help them meet the recommended PAL. This is supported by the previous study, which showed that 57% of adults visited the recreational park at least once a week, and 55.4% of adults participated in active activities such as jogging, aerobic exercise and using exercise equipment (33).

Screen time during weekdays had a negative correlation with energy intake. This happened because excessive exposure to screens and work-related stress contributed to mental fatigue, which in turn led to a decrease in appetite and lower consumption of food among the adult population (34). Based on the diet recall session, most of the office workers had insufficient time to prepare and consume breakfast and dinner, resulting in reduced energy intake. On the other hand, screen time during weekends had a positive correlation with energy intake because most adults, including office workers, had more leisure time and engaged in sedentary lifestyles such as screen-based activities, which may be linked to eating more calorie-dense foods (35, 36). Research by Benaich, Mehdad (37) showed that high screen time among adults in university was associated with high energy intake. This could be due to engaging with screens late at night, often associated with increased consumption of high-calorie snacks and sugary drinks, as adults look for fast and handy sources of energy to remain awake and attentive.

Carbohydrate intake among adults in Selangor showed a significant difference between screen time during weekdays. Carbohydrates showed a negative correlation with screen time during weekdays because the urban or rural work environment can also influence carbohydrate intake, with urban workers being found to have low carbohydrate intake (38). Excessive screen use on weekdays might lead to more frequent consumption and increased snacking on energy-dense, low-carbohydrate snacks, which can cause a change in the macronutrient distribution (39, 40). Based on a diet recall, most office workers consumed nuts and seeds, coffee and chocolates during screen time activities. The current

study found that energy intake had a negative correlation with screen time on weekdays; however, this correlation was not significant. This suggests that while there is a negative relationship between energy intake and screen time, the distribution of macronutrients could still be influenced by the amount of screen time. This finding opens up the possibility for future research to examine how macronutrient distribution changes and to assess the intake of high-sugar foods in relation to screen time. Furthermore, all the correlations between screen time and fat intake positively correlated with screen time on weekdays and weekends, which showed significant differences in fat intake. A study on Greek adults revealed a positive correlation between screen time duration and the likelihood of engaging in high-fat food, such as frequent fast food consumption. (41). This was because increased screen time was associated with less healthy food choices and behaviours and an increased likelihood of obesity (41). A study from Shin (42) also stated that screen time makes people sit for long periods and makes them eat more high-fat foods. In the present study, participants chose high-fat food options due to convenience, could be due to most office workers have busy schedules. Next, there is a positive correlation because many fast foods are convenient and easy to consume while watching television or using electronic devices. Adults often choose these foods because they taste good and are easy to get in their free time.

Next, there was no statistically significant difference in the association between screen time with fibre, sodium, and potassium intake. High screen time had elevated consumption of total energy and salt while demonstrating reduced intake of dietary fibre, fruits and vegetables (43). Research from Vizcaino, Buman (6) also stated that longer screen time was associated with a low intake of fruit and vegetables and a high sodium intake. Low intake of fruits and vegetables causes adults not to have enough fibre and potassium intake. Adults in the lowest screen time category consumed a considerably smaller amount of fibre during screen time compared to those in the moderate and high screen time categories (44). A sedentary lifestyle linked to excessive screen usage might decrease motivation to follow a balanced diet high in fibre. There may be a shift in attention towards meals that are high in calories and low in fibre, which offer rapid satisfaction.

This study showed no significant correlation between screen time and IPAQ score. Similarly, no correlation was observed between physical activity and time spent on screens while working remotely (41). A negative link was found between the amount of time spent on recreational screen activities and the probability of exercising at least once each week (41). Research from Dahlgren, Sjublom (45) also revealed no correlation between screen time and physical activity levels among adults. The lack of correlation between screen time and PA may be due to variations in the assessment

techniques employed. In contrast to other studies that used questionnaires to measure screen time, this one used smartphones to measure screen time objectively (45).

In this study, all the correlations between screen time and sitting time showed a positive correlation, meaning that engaging in screen time was inherently sedentary. Whether adults were working, studying or engaged in recreational screen use such as watching television or playing video games, these activities generally required sitting. Research from Brenda Biaani, Palencia (46) showed that the association between screen time and sitting time on weekends and weekdays differed. This happened because most adults were highly exposed to the sedentary lifestyle at the office, which causes them to spend more time sitting during the weekdays (46).

The correlation between background screens used during evenings and weekends with sitting time can be attributed to various lifestyle and behavioural habits that were common throughout these periods. Most of the adults in this study frequently utilised screens as background noise or passive entertainment during their leisure time in the evenings and weekends. For example, engaged in activities such as listening to the radio while driving or using a gadget while lounging on the couch. These routines indicated the common ways in which adults spent their leisure time, often leading to extended periods of sedentary behaviour. The social and family interactions further strengthened this correlation. Evenings and weekends were optimal for family gatherings and social interactions, during which background screens, such as televisions, often contributed to developing shared experiences.

The main strength of this study lies in its findings, which highlight trends in dietary habits and sedentary behaviors. These insights could help guide public health interventions. Additionally, the study uses validated tools, such as the International Physical Activity Questionnaire (IPAQ) and screen time questionnaires, which enhance the reliability and validity of the data gathered. However, there are several recommendations based on the current study. The reliance on self-reported questionnaires, like the IPAQ and screen time assessments, may lead to misreporting of physical activity levels or screen time. It is advisable to incorporate objective measurements, such as wearable activity trackers or screen monitoring software. Furthermore, this is a cross-sectional study, which limits the ability to establish causal relationships between screen time, dietary intake, and physical activity. A longitudinal study design is recommended to observe changes over time and better infer causal relationships.

## CONCLUSION

This study found that adults in Selangor adhered to

screen time recommendations on both weekdays and weekends, maintaining an average of less than 2 hours per day. Most adults met the recommended dietary intake for carbohydrates, protein, and potassium; however, over half consumed excessive amounts of fat and sodium, and none met the recommended fiber intake. The International Physical Activity Questionnaire (IPAQ) scores were moderate, with most adults classified as having a high level of physical activity. The findings indicated that screen time is correlated with dietary intake, but it does not correlate with the IPAQ scores, except for background screen time during weekends. Additionally, all screen time variables were found to correlate with sitting time.

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