

## ORIGINAL ARTICLE

## Social determinants of food choice motives among young adults in Malaysia during the transition to the endemic phase of COVID-19

Muhammad Haziq Mohammad Johari<sup>1</sup>, Nur Shahirah Mohd Tahir<sup>1</sup>, Joshua Joseph<sup>2</sup>, Seok Tyug Tan<sup>2,3\*</sup>

<sup>1</sup>School of Graduate Studies, Management and Science University, University Drive, off Persiaran Olahraga, Seksyen 13, 40100 Shah Alam, Selangor, Malaysia.

<sup>2</sup>Faculty of Health and Life Sciences, Management and Science University, University Drive, off Persiaran Olahraga, Seksyen 13, 40100 Shah Alam, Selangor, Malaysia.

<sup>3</sup>Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Jalan Lagoon Selatan, Bandar Sunway, 47500 Petaling Jaya, Selangor, Malaysia.

**Corresponding Author:** Seok Tyug Tan **Email:** Tan.SeokTyug@monash.edu

**Received:** 16 August 2023 **Revised:** 13 September 2023 **Accepted:** 20 September 2023 **Available online:** September 2023  
**DOI:** 10.55131/jphd/2023/210322

### ABSTRACT

Changes in socioeconomic status due to the pandemic-led economic crisis could profoundly impact an individual's food choice motives. Therefore, this study aims to evaluate the food choice motives of young adults residing in Malaysia during the transition to the endemic phase of COVID-19 and to investigate the differences in food choice motives by referring to their socio-demographic characteristics. This cross-sectional web-based study recruited 630 young adults aged 15-30 through a combination of convenience and snowball sampling approaches. They were required to self-report their socio-demographic information, while the food choice motives were assessed using a validated 36-item Food Choice Questionnaire (FCQ). Emerging findings demonstrated that sensory appeal, price, and mood were the top three rated food choice motives by young adults residing in Malaysia during the transition to the endemic phase of COVID-19. Gender, age, marital status, monthly earned income, and educational attainment were the predominant determinants of food choice motives among young adults. Government and non-governmental organisations should collaborate on intervention programs that educate the younger generation on healthy eating and help them make informed food choices.

### Key words:

socio-demographics; food choice motives; young adults; transition to the endemic phase

### Citation:

Muhammad Haziq Mohammad Johari, Nur Shahirah Mohd Tahir, Joshua Joseph, Seok Tyug Tan. Social determinants of food choice motives among young adults in Malaysia during the transition to the endemic phase of COVID-19. J Public Hlth Dev. 2023;21(3):289-299 (<https://doi.org/10.55131/jphd/2023/210322>)

## INTRODUCTION

To combat the transmission of COVID-19 viruses, the Malaysian government has statutorily enforced three nationwide lockdowns between 2020 and 2021. Although these lockdowns were necessary, they have profoundly affected the national and global economies. According to the International Labour Organization,<sup>1</sup> global unemployment increased steadily from 186 million in 2019 to 203 million in 2023 due to the economic crisis. A similar trend was also observed in Malaysia, wherein the unemployment rate drastically increased from 3.3% in 2019 to 4.6% in 2021 during the pandemic.<sup>2</sup> Although the unemployment rate in July 2023 (3.4%) has reverted to the pre-pandemic levels,<sup>3</sup> the literature suggested that the pandemic-led economic crisis has disproportionately affected the unemployment of women and youth. Women and young people (aged 15-24) are reported to experience a much slower regain in employment after being laid off than men and those older than 25.<sup>1</sup>

Food choice motives refer to the rationales or driving factors influencing individuals' desire to purchase or consume food.<sup>4</sup> In general, food choices are determined by a complex interplay of various factors, including personal taste preferences, cultural norms and traditions, family structure (such as marital status), peer and family pressure, health considerations, food availability and accessibility, socioeconomic status and dietary habits of an individual.<sup>5</sup> Furthermore, increased psychological distress (for instance, stress, anxiety and depression), coupled with a stronger desire to search for healthy and nutritious foods as a response to prevent the COVID-19 viral infection and movement restrictions imposed by the government during the lockdowns may have also altered people's dietary habits and food choices.<sup>6-8</sup> The findings of two local studies indicated that Malaysians preferred to eat healthily and were more informed about their food choices during the pandemic than before.<sup>9,10</sup>

Apart from the pandemic outbreak, changes in an individual's socioeconomic status should also be considered when discussing food choices after a series of mandatory lockdowns. While there is a local study that compares the food choice motives of Malaysian young adults before and during the pandemic outbreak,<sup>11</sup> it remains uncertain how food choice motives will change and to what extent individuals' socioeconomic status could have impacted their food choice motives after the lifting of travel restrictions. Therefore, this study aims to evaluate the food choice motives of young adults residing in Malaysia during the transition to the endemic phase of COVID-19 and to investigate the differences in food choice motives by referring to their socio-demographic characteristics.

## METHODOLOGY

### *Study Design and Population*

A cross-sectional web-based survey was conducted from August 1<sup>st</sup> 2022 to April 26<sup>th</sup>, 2023. Young adults aged 15-30, holding Malaysian citizenship, physically and mentally healthy, non-pregnant, free from clinically diagnosed eating disorders and accessible to the internet during the data collection period were recruited for this study using a combination of convenience and snowball sampling approaches. Informed consent and survey questions were hosted on Google Forms, and the survey link was circulated to potential respondents through WhatsApp, Twitter, Facebook, Instagram, and TikTok. Young adults who took part in the survey were encouraged to share the survey link with someone they knew.

The minimum sample size required for this study was estimated using the sample size table by Krejcie & Morgan.<sup>12</sup> Given that 8.5 million young adults aged 15-29 lived in Malaysia in 2022,<sup>13</sup> at least 384 young adults would be required at a 95% confidence level and with a 5% margin of error. Ethical approval was granted by the Research Ethics Committee of Management and Science University with the reference number EA-L1-01-FHLS-2022-11-0008.

### ***Socio-demographic characteristics***

Young adults were required to self-report their gender, age, ethnicity, marital status, monthly earned income (RM) and educational attainment.

### ***Food choice motives***

A validated 36-item Food Choice Questionnaire (FCQ) was used to determine the food choice motives of young adults.<sup>14</sup> All items were assessed using a 5-point Likert scale ranging from 'not very important' (1 point) to 'very important' (5 points). The 36-item was further sorted into nine subscales: sensory appeal (4-item), price (3-item), mood (6-item), health (6-item), convenience (5-item), weight control (3-item), natural content (3-item), familiarity (3-item) and ethical concern (3-item). The mean score was calculated by averaging the number of items within a subscale. A subscale with a higher mean score implies that it is rated relatively more important than subscales with lower mean scores.<sup>15</sup> The reliability of FCQ was excellent, with a Cronbach's alpha of 0.924.

### ***Statistical analysis***

Data was analysed using IBM SPSS statistics 27.0 (IBM Corp., Armonk, NY,

USA). Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to describe the studied variables where appropriate. The normal distribution was considered within the skewness of  $\pm 2$  and kurtosis of  $\pm 3$ . The mean difference in food choice motives by gender and educational attainment was analysed using the independent samples t-test. On the other hand, the one-way analysis of variance (one-way ANOVA) with the Games-Howell post hoc test was applied to examine the mean differences in food choice motives by monthly earned income, age, ethnicity, and marital status. Statistical significance was set at  $p < 0.05$ .

## **RESULTS**

A total of 630 young adults answered the survey questions, of whom the majority were female ( $n=347$ , 55.1%), aged between 25-30 ( $n=358$ , 56.8%), of Malay ethnicity ( $n=300$ , 47.6%), with a single marital status ( $n=482$ , 76.5%), earned less than RM 5000 per month ( $n=381$ , 60.5%), and tertiary educated ( $n=483$ , 76.7%) (Table 1).

**Table 1.** Socio-demographic characteristics of the young adults.

Characteristics	n (%)	Mean $\pm$ Standard Deviation
<b>Gender</b>		
Male	283 (44.9)	-
Female	347 (55.1)	
<b>Age</b>		
15-19	102 (16.2)	
20-24	170 (27.0)	24.18 $\pm$ 4.16
25-30	358 (56.8)	
<b>Ethnicity</b>		
Malay	300 (47.6)	
Chinese	107 (17.0)	-
Indian	214 (34.0)	
Others (Mixed race and the bumiputra of Sabah and Sarawak)	9 (1.4)	
<b>Marital Status</b>		
Single	482 (76.5)	-
Married	141 (22.4)	
Divorced	7 (1.1)	

Characteristics	n (%)	Mean $\pm$ Standard Deviation
<b>Monthly earned income (RM)</b>		
No income	160 (25.4)	
< RM4999	381 (60.5)	2423.55 $\pm$ 2449.218
$\geq$ RM5000	89 (14.1)	
<b>Educational attainment</b>		
Secondary and below	147 (23.3)	-
Tertiary	483 (76.7)	

Table 2 shows the mean scores and ranking of food choice motives of young adults during the transition to the endemic phase of COVID-19. Sensory appeal ( $4.16 \pm 0.77$ ), price ( $4.12 \pm 0.86$ ), and mood ( $4.02 \pm 0.84$ ) were the top three rated food choice

motives by young adults in Malaysia. Conversely, the three least considered food choice motives among young adults were natural content ( $3.78 \pm 0.97$ ), familiarity ( $3.69 \pm 0.94$ ), and ethical concern ( $3.47 \pm 0.94$ ).

**Table 2.** The mean scores and ranking of food choice motives.

Food choice motives	Mean $\pm$ Standard Deviation
Sensory appeal	$4.16 \pm 0.77$
Price	$4.12 \pm 0.86$
Mood	$4.02 \pm 0.84$
Health	$3.96 \pm 0.82$
Convenience	$3.95 \pm 0.85$
Weight control	$3.84 \pm 0.93$
Natural content	$3.78 \pm 0.97$
Familiarity	$3.69 \pm 0.94$
Ethical concern	$3.47 \pm 0.94$

Table 3 indicates the social determinants of food choice motives of young adults during the transition to the endemic phase of COVID-19. It is observed that the food choice motives of young adults significantly differed by their socio-demographic characteristics, except for ethnicity. Females attained significantly higher scores in mood ( $t = -2.223$ ,  $p = 0.027$ ) and weight control ( $t = -2.018$ ,  $p = 0.044$ ) compared to males. Tertiary-educated young adults were also observed to record significantly higher scores in mood ( $t = -4.027$ ,  $p < 0.001$ ), health ( $t = -4.788$ ,  $p < 0.001$ ), convenience ( $t = -5.621$ ,  $p < 0.001$ ), weight control ( $t = -4.172$ ,  $p < 0.001$ ), and natural content ( $t = -3.903$ ,  $p < 0.001$ ) than those with lower educational attainment. Young adults without income had significantly lower scores in mood ( $F = 8.651$ ,  $p < 0.001$ ), health ( $F = 14.478$ ,  $p < 0.001$ ), convenience ( $F = 16.230$ ,  $p < 0.001$ ), weight control ( $F = 14.228$ ,  $p <$

$0.001$ ), natural content ( $F = 16.196$ ,  $p < 0.001$ ) than those with income. Conversely, young adults in higher income brackets ( $\geq$  RM 5000/month) recorded significantly higher scores in familiarity ( $F = 4.700$ ,  $p = 0.009$ ) and ethical concern ( $F = 3.451$ ,  $p = 0.032$ ) than those without income or earning less than RM 5000 monthly.

Concerning the food choice motives by age, young adults aged 15-19 attained significantly lower scores in mood ( $F = 16.983$ ,  $p < 0.001$ ), health ( $F = 28.673$ ,  $p < 0.001$ ), convenience ( $F = 29.744$ ,  $p < 0.001$ ), weight control ( $F = 13.016$ ,  $p < 0.001$ ), natural content ( $F = 23.020$ ,  $p < 0.001$ ), and familiarity ( $F = 8.241$ ,  $p < 0.001$ ) than their counterparts. Interestingly, married young adults had significantly higher scores in health ( $F = 4.683$ ,  $p = 0.010$ ) and weight control ( $F = 3.247$ ,  $p = 0.040$ ) than single young adults.

**Table 3.** Social determinants of food choice motives during the transition to the endemic phase of COVID-19.

Food choice motives	Gender <sup>1</sup>		t-value (p-value)	Educational attainment <sup>1</sup>		t-value (p-value)	Monthly income (RM) <sup>2</sup>			F-value (p-value)
	Male	Female		Secondary and below	Tertiary		No income	< 4999	≥ 5000	
Sensory appeal	4.11 ± 0.81	4.20 ± 0.74	-1.418 (0.157)	4.07 ± 0.88	4.18 ± 0.73	-1.396 (0.164)	4.10 ± 0.87	4.17 ± 0.73	4.20 ± 0.78	0.690 (0.502)
Price	4.10 ± 0.89	4.13 ± 0.84	-0.402 (0.688)	4.11 ± 0.92	4.12 ± 0.85	-0.122 (0.903)	4.19 ± 0.89	4.09 ± 0.84	4.12 ± 0.94	0.841 (0.432)
Mood	3.94 ± 0.91	4.08 ± 0.78	<b>-2.223</b> <b>(0.027)</b>	3.76 ± 0.91	4.10 ± 0.81	<b>-4.027</b> <b>(&lt; 0.001)</b>	3.79 ± 0.94 <sup>a</sup>	4.07 ± 0.78 <sup>b</sup>	4.19 ± 0.85 <sup>b</sup>	<b>8.651</b> <b>(&lt; 0.001)</b>
Health	3.94 ± 0.87	3.97 ± 0.78	-0.515 (0.607)	3.66 ± 0.88	4.05 ± 0.78	<b>-4.788</b> <b>(&lt; 0.001)</b>	3.68 ± 0.92 <sup>a</sup>	4.03 ± 0.77 <sup>b</sup>	4.18 ± 0.69 <sup>b</sup>	<b>14.478</b> <b>(&lt; 0.001)</b>
Convenience	3.90 ± 0.91	3.99 ± 0.80	-1.415 (0.158)	3.58 ± 0.95	4.06 ± 0.78	<b>-5.621</b> <b>(&lt; 0.001)</b>	3.63 ± 1.00 <sup>a</sup>	4.04 ± 0.76 <sup>b</sup>	4.14 ± 0.78 <sup>b</sup>	<b>16.230</b> <b>(&lt; 0.001)</b>
Weight control	3.75 ± 0.99	3.90 ± 0.88	<b>-2.018</b> <b>(0.044)</b>	3.55 ± 0.98	3.92 ± 0.90	<b>-4.172</b> <b>(&lt; 0.001)</b>	3.55 ± 1.01 <sup>a</sup>	3.88 ± 0.89 <sup>b</sup>	4.17 ± 0.80 <sup>c</sup>	<b>14.228</b> <b>(&lt; 0.001)</b>
Natural content	3.70 ± 1.05	3.85 ± 0.90	-1.915 (0.056)	3.50 ± 1.03	3.87 ± 0.94	<b>-3.903</b> <b>(&lt; 0.001)</b>	3.46 ± 1.04 <sup>a</sup>	3.84 ± 0.91 <sup>b</sup>	4.14 ± 0.93 <sup>c</sup>	<b>16.196</b> <b>(&lt; 0.001)</b>
Familiarity	3.69 ± 0.94	3.68 ± 0.93	0.141 (0.888)	3.57 ± 1.01	3.72 ± 0.91	-1.623 (0.106)	3.65 ± 1.00 <sup>a</sup>	3.64 ± 0.91 <sup>a</sup>	3.97 ± 0.89 <sup>b</sup>	<b>4.700</b> <b>(0.009)</b>
Ethical concern	3.45 ± 1.10	3.49 ± 0.94	-0.544 (0.587)	3.44 ± 1.01	3.48 ± 1.02	-0.406 (0.685)	3.50 ± 1.06 <sup>a</sup>	3.40 ± 0.98 <sup>a</sup>	3.71 ± 1.06 <sup>b</sup>	<b>3.451</b> <b>(0.032)</b>

**Note:**<sup>1</sup>The mean difference was analysed using the independent samples t-test.<sup>2</sup>The mean differences were analysed using the one-way analysis of variance (one-way ANOVA) with the Games-Howell post hoc test.

**Table 3.** Social determinants of food choice motives during the transition to the endemic phase of COVID-19 (cont.)

Food choice motives	Age (years old) <sup>2</sup>			F-value ( <i>p</i> -value)	Ethnicity <sup>2</sup>				F-value ( <i>p</i> -value)	Marital Status <sup>2</sup>			F-value ( <i>p</i> -value)
	15-19	20-24	25-30		Malay	Chinese	Indian	Others		Single	Married	Divorced	
Sensory appeal	4.00 ± 0.97	4.22 ± 0.70	4.17 ± 0.74	2.739 (0.065)	4.20 ± 0.69	4.07 ± 0.92	4.15 ± 0.80	3.89 ± 0.69	1.067 (0.363)	4.15 ± 0.77	4.19 ± 0.74	3.82 ± 1.20	0.771 (0.463)
Price	4.12 ± 0.96	4.15 ± 0.82	4.10 ± 0.86	0.163 (0.849)	4.13 ± 0.80	4.03 ± 0.96	4.17 ± 0.87	3.63 ± 1.20	1.584 (0.192)	4.14 ± 0.86	4.07 ± 0.85	3.57 ± 1.12	1.857 (0.157)
Mood	<b>3.59 ± 0.97<sup>a</sup></b>	<b>4.07 ± 0.80<sup>b</sup></b>	<b>4.12 ± 0.78<sup>b</sup></b>	<b>16.983 (<math>&lt; 0.001</math>)</b>	4.09 ± 0.74	3.89 ± 0.74	3.99 ± 0.99	4.07 ± 0.79	1.615 (0.185)	4.00 ± 0.84	4.08 ± 0.82	3.81 ± 1.19	0.635 (0.530)
Health	<b>3.43 ± 0.97<sup>a</sup></b>	<b>4.00 ± 0.75<sup>b</sup></b>	<b>4.09 ± 0.74<sup>b</sup></b>	<b>28.673 (<math>&lt; 0.001</math>)</b>	3.93 ± 0.80	3.90 ± 0.84	4.04 ± 0.83	3.74 ± 0.86	1.313 (0.269)	<b>3.91 ± 0.85<sup>a</sup></b>	<b>4.14 ± 0.68<sup>b</sup></b>	<b>3.71 ± 0.57<sup>a,b</sup></b>	<b>4.683 (0.010)</b>
Convenience	<b>3.38 ± 0.99<sup>a</sup></b>	<b>4.01 ± 0.80<sup>b</sup></b>	<b>4.08 ± 0.76<sup>b</sup></b>	<b>29.744 (<math>&lt; 0.001</math>)</b>	3.97 ± 0.78	3.87 ± 0.91	3.96 ± 0.90	3.84 ± 0.86	0.345 (0.793)	3.93 ± 0.87	4.03 ± 0.77	3.74 ± 0.65	1.043 (0.353)
Weight control	<b>3.44 ± 1.03<sup>a</sup></b>	<b>3.82 ± 0.89<sup>b</sup></b>	<b>3.96 ± 0.89<sup>b</sup></b>	<b>13.016 (<math>&lt; 0.001</math>)</b>	3.77 ± 0.91	3.82 ± 0.97	3.94 ± 0.93	3.67 ± 1.17	1.559 (0.198)	3.82 ± 0.95	3.91 ± 0.87	3.67 ± 0.86	0.589 (0.555)
Natural content	<b>3.21 ± 1.03<sup>a</sup></b>	<b>3.82 ± 0.93<sup>b</sup></b>	<b>3.93 ± 0.92<sup>b</sup></b>	<b>23.020 (<math>&lt; 0.001</math>)</b>	3.74 ± 0.95	3.78 ± 1.01	3.86 ± 1.00	3.70 ± 0.98	0.653 (0.581)	<b>3.74 ± 0.98<sup>a</sup></b>	<b>3.96 ± 0.94<sup>b</sup></b>	<b>3.43 ± 1.15<sup>a,b</sup></b>	<b>3.247 (0.040)</b>
Familiarity	<b>3.37 ± 1.08<sup>a</sup></b>	<b>3.82 ± 0.88<sup>b</sup></b>	<b>3.71 ± 0.90<sup>b</sup></b>	<b>8.241 (<math>&lt; 0.001</math>)</b>	3.62 ± 0.88	3.68 ± 0.99	3.79 ± 0.97	3.41 ± 1.05	1.614 (0.185)	3.68 ± 0.93	3.74 ± 0.93	3.19 ± 1.07	1.259 (0.285)
Ethical concern	3.33 ± 1.05	3.55 ± 1.00	3.47 ± 1.01	1.496 (0.225)	3.48 ± 0.90	3.31 ± 1.13	3.56 ± 1.09	3.19 ± 1.24	1.650 (0.177)	3.47 ± 1.00	3.49 ± 1.07	3.14 ± 1.12	0.383 (0.682)

**Note:**<sup>1</sup>The mean difference was analysed using the independent samples t-test.<sup>2</sup>The mean differences were analysed using the one-way analysis of variance (one-way ANOVA) with the Games-Howell post hoc test.

## DISCUSSION

A recent study by Tan et al.<sup>11</sup> indicated that young adults in Malaysia prioritised price, convenience, and sensory appeal when making food decisions in the midst of the COVID-19 pandemic lockdown. Emerging findings revealed that young adults continued to prioritise sensory appeal and price during the transition to the endemic phase of COVID-19 in Malaysia. A year into the transition to the endemic phase, mood surpassed convenience as one of the top three rated food choice motives among young adults in Malaysia. Elevated psychological distress arising from the pandemic-led global economic recession may have driven the tendency to choose food according to the mood among young adults.<sup>16</sup> Given that the government-imposed movement control order no longer constrains Malaysians,<sup>17</sup> it is unsurprising that convenience was positioned at a lower ranking than during the pandemic. Coincidentally, a similar trend of observation was also reported among college students aged 18-35 in Greece, whereby mood and price were rated relatively more important than other food choice motives in the aftermath of the pandemic.<sup>18</sup>

The findings indicated that the mean scores of sensory appeal and price did not significantly differ by all socio-demographics despite being ranked as the top two food choice motives. Notwithstanding the socio-demographic disparities, young adults in Malaysia highly prioritised sensory appeal and price during the transition to the endemic phase of COVID-19. These findings showed that young adults preferred foods with a pleasant mouthfeel, tactile sensations, aroma, and appearance.<sup>19,20</sup> In addition, it is observed that 85.9% of young adults in this study earned less than RM 5000 monthly. Increased food prices due to global food insecurity and limited financial resources may prompt young adults in lower income brackets to consider food prices when making purchases.<sup>21,22</sup>

Malaysia is a nation that is both multi-ethnic and multicultural, with diverse food taboos and cultural beliefs. Different ethnic groups may have their own food taboos and cultural beliefs, which can lead to different food choices.<sup>23</sup> Despite those differences previously mentioned, this study revealed that the food choice motives of young adults did not significantly differ by ethnicity. These findings generally align with a former local study conducted by Mohd-Any et al.,<sup>24</sup> showing that ethnicity is not a prominent factor influencing the food choice motives among Malaysian adults. Since Malaysians typically live in a food environment where cuisine from diverse ethnic groups is easily accessible, sharing cross-cultural food practices among these groups could be responsible for the lack of significant differences in food choice motives of young adults.<sup>25</sup>

The findings of this study demonstrated that females were more reliant on mood and weight control than males when procuring food. It supports the notion that females are more likely to eat emotionally to cope with negative emotions such as depression and stress.<sup>26,27</sup> The fear of gaining weight, weight stigmatisation from society, and striving to achieve thin femininity may prompt women to highly emphasise weight control when making food decisions.<sup>28-30</sup> Concerning the food choice motives of young adults by marital status, it is observed that married individuals paid greater attention to health and natural content than single individuals. Having a partner to discuss food choices could have motivated individuals to be more health-conscious. Hence, this may lead to the selection of natural foods that are minimally processed and rich in health-promoting bioactive compounds.<sup>31</sup>

Young adults with income, tertiary education and in the older age group (25-30 years old) rated mood, health, convenience, weight control, and natural control as more salient than their counterparts. Of the 89 young adults earning more than RM 5000

monthly, 74 (83.2%) were tertiary educated and aged 25-30. As it is assumed that young adults in the older age group (25-30 years old) and with higher educational attainment are more likely to earn more,<sup>32</sup> it is not-so-surprising that they opt for foods that are easily accessible and require minimal preparation to align with their busy schedules.<sup>33</sup> Emerging findings also suggested that these socio-economically advantaged young adults were also more likely to eat emotionally to cope with job-related stress or other negative emotions.<sup>34</sup> In addition, socio-economically advantaged populations are presumably more likely to adopt healthier food habits that concord with dietary recommendations.<sup>35</sup> Findings in the present study are consistent with prior findings, showing that socio-economically advantaged young adults exhibited a greater inclination to make food choices driven by health-related motives, including health, weight control, and natural content.

Owing to the fact that natural foods and ethically produced foods are often pricey,<sup>36</sup> an individual's socioeconomic status may underpin the intention and willingness to purchase these foods. It is worth noting that young adults who earned more than RM 5000/month were more willing to purchase foods containing natural ingredients and/or ethically produced foods. This finding is consistent with what has been found in a recent study in China, indicating that high-income earners have more diverse food choices and are more affordable to access healthy foods.<sup>37</sup> Interestingly, among young adults in the younger age group (15-19 years old), those who did not possess income or those in lower income brackets (< RM 4999/month) considered familiarity to be a less significant motive when making food choices. Living arrangements emerge as a predominant determinant for justifying such a trend. In Malaysia, those 15-19 years old typically live with parents or caregivers who might exert considerable control over their food choices. Increasing exposure to a variety of foods by parents or caregivers has been shown to lessen the reluctance to try unfamiliar foods among young adults.<sup>38</sup> This

may partly justify why the younger-age group rated familiarity less important than their counterparts.

Findings derived from this study must be interpreted within the context of its limitations. First, young adults residing in rural areas may have been excluded from the current web-based survey as they generally have limited internet access. Second, this study is over-represented by young adults aged 25-30, with a single marital status, who earned less than RM 4999 in a month and possess tertiary education. Third, using non-probability sampling methods (convenience and snowball) in recruiting subjects may have introduced selection bias. Hence, the current findings cannot be generalised to all young adults residing in Malaysia. Regardless of those limitations mentioned previously, this study stands as the first to examine the mean differences in food choice motives based on the socio-demographic characteristics of young adults during the transition to the endemic phase of COVID-19 in Malaysia.

## CONCLUSION

Gender, age, marital status, monthly earned income, and educational attainment were the predominant determinants of food choice motives among young adults residing in Malaysia during the transition to the endemic phase of COVID-19. Considering that living arrangements, food environment, personal food preferences, and dietary habits can profoundly impact individuals' food decisions,<sup>39</sup> future studies may consider these factors when justifying the relationship between socio-demographics and food choice motives. Government and non-governmental organisations should collaborate on intervention programs that educate the younger generation on healthy eating and help them make informed food choices.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.



## ETHICAL APPROVAL

Ethical approval was granted by the Research Ethics Committee of Management and Science University with the reference number EA-L1-01-FHLS-2022-11-0008.

## REFERENCES

1. International Labour Organization. World Employment and Social Outlook: Trends 2022 [Internet]. 2022 [cited 2023 Aug 16]. Available from: [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms\\_834081.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_834081.pdf)
2. Ministry of Economy. The Malaysian Economy in Figures 2022 [Internet]. 2022 [cited 2023 Aug 16]. Available from: [https://www.ekonomi.gov.my/sites/default/files/2023-01/MEIF\\_2022.pdf](https://www.ekonomi.gov.my/sites/default/files/2023-01/MEIF_2022.pdf)
3. Department of Statistics Malaysia. How is unemployment trending? Department of Statistics Malaysia [Internet]. 2023 [cited 2023 Sep 9]. Available from: <https://open.dosm.gov.my/labour-market>
4. Onwezen MC, Reinders MJ, Verain MCD, Snoek HM. The development of a single-item Food Choice Questionnaire. Food Quality and Preference. 2019;71:34-45. doi:10.1016/j.foodqual.2018.05.005
5. Institute of Medicine, National Research Council. Individual, Household, and Environmental Factors Affecting Food Choices and Access. In: Julie AC, Ann LY, eds. Supplemental Nutrition Assistance Program: Examining the Evidence to Define Benefit Adequacy. The National Academies Press; 2013.
6. Chin YS, Woon FC, Chan YM. The impact of Movement Control Order during the COVID-19 pandemic on lifestyle behaviours and body weight changes: Findings from the MyNutriLifeCOVID-19 online survey. PLOS ONE. 2022;17(1):e0262332. doi:10.1371/journal.pone.0262332
7. Skalkos D, Kalyva ZC. Exploring the impact of COVID-19 pandemic on food choice motives: A systematic review. Sustainability. 2023;15:1606. doi:10.3390/su15021606
8. Tan ST, Lee L. Social determinants of self-reported psychological distress during the COVID-19 pandemic: a cross-sectional study. Psychol Health Med. 2023;28(2):419-26. doi:10.1080/13548506.2022.2083643
9. Ahmad A, Shahril MR, Wan-Arfah N, Mohd Abu Bakar WA, Piernas C, Lua PL. Changes in health-related lifestyles and food insecurity and its association with quality of life during the COVID-19 lockdown in Malaysia. BMC Public Health. 2022;22(1):1150. doi:10.1186/s12889-022-13568-0
10. Tan ST, Tan CX, Tan SS. Changes in dietary intake patterns and weight status during the COVID-19 lockdown: A cross-sectional study focusing on young adults in Malaysia. Nutrients. 2022;14(2):280.
11. Tan ST, Tan CX, Tan SS. Trajectories of food choice motives and weight status of Malaysian youths during the COVID-19 pandemic. Nutrients. 2021;13(11):3752. doi:10.3390/nu13113752
12. Krejcie RV, Morgan DW. Determining sample size for research activities. Educational and Psychological Measurement. 1970;30(3):607-10.
13. Department of Statistics Malaysia. Current Population Estimates, Malaysia, 2023. Department of Statistics Malaysia [Internet]. 2023 [cited 2023 Aug 9]. Available on: <https://www.dosm.gov.my/portal-main/release-content/current-population-estimates-malaysia---2023>
14. Steptoe A, Pollard TM, Wardle J. Development of a measure of the motives underlying the selection of food: the Food Choice Questionnaire. Appetite. 1995;25:267-84.
15. Konttinen H, Halmesvaara O, Fogelholm M, Saarijärvi H, Nevalainen

- J, Erkkola M. Sociodemographic differences in motives for food selection: results from the LoCard cross-sectional survey. *Int J Behav Nutr Phys Act.* 2021;18(1):71. doi:10.1186/s12966-021-01139-2
16. Glinianowicz M, Ciura D, Burnatowska E, Olszanecka-Glinianowicz M. Psychological effects of the COVID-19 pandemic-what do we know about them? *European Review for Medical and Pharmacological Sciences.* 2023;27: 6445-58. doi:https://doi.org/10.26355/eurev\_202307\_33006
  17. Ministry of Health Malaysia. Fasa Peralihan ke Endemik. Ministry of Health Malaysia [Internet]. 2022 [cited 2023 Aug 13]. Available on: <https://covid-19.moh.gov.my/reopeningsafely/semasa/2022/03/fasa-peralihan-ke-endemik-11032022>
  18. Skalkos D, Kalyva ZC, Kosma IS. The impact of the COVID-19 pandemic on college students' food choice motives in Greece. *Sustainability.* 2023; 15:9865. doi:10.3390/su15139865
  19. Hoppu U, Puputti S, Sandell M. Factors related to sensory properties and consumer acceptance of vegetables. *Crit Rev Food Sci Nutr.* 2021;61(10):1751-61. doi:10.1080/10408398.2020.1767034
  20. Nederkoorn C, Houben K, Havermans RC. Taste the texture. The relation between subjective tactile sensitivity, mouthfeel and picky eating in young adults. *Appetite.* 2019;136:58-61. doi: 10.1016/j.appet.2019.01.015
  21. Snuggs S, McGregor S. Food & meal decision making in lockdown: How and who has Covid-19 affected? *Food Qual Prefer.* 2021;89. doi: 10.1016/j.foodqual.2020.104145
  22. Tan ST, Tan CX, Tan SS. Food security during the COVID-19 home confinement: A cross-sectional study focusing on adults in Malaysia. *Human Nutrition & Metabolism.* 2022;27: 200142. doi: 10.1016/j.hnm. 2022. 200142
  23. Leng G, Adan RAH, Belot M, Brunstrom JM, de Graaf K, Dickson SL, et al. The determinants of food choice. *Proc Nutr Soc.* 2017;76(3): 316-27.
  24. Mohd-Any AA, Mahdzan NS, Cher CS. Food choice motives of different ethnics and the foodies segment in Kuala Lumpur. *British Food Journal.* 2014;116(12):1879-96. doi: 10.1108/BFJ-07-2013-0170
  25. Reddy G, Van Dam RM. Food, culture, and identity in multicultural societies: Insights from Singapore. *Appetite.* 2020;149:104633. doi: 10.1016/j.appet.2020.104633
  26. Yilmazturk NH, Demir A, Celik-Orucu M. The mediator role of emotion-focused coping on the relationship between perceived stress and emotional eating. *Trends in Psychology.* 2023;31: 383-99. doi: 10.1007/s43076-022-00142-1
  27. Bartkiene E, Steibliene V, Adomaitiene V, Juodeikiene G, Cernauskas D, Lele V, et al. Factors Affecting Consumer Food Preferences: Food Taste and Depression-Based Evoked Emotional Expressions with the Use of Face Reading Technology. *Biomed Res Int.* 2019;2019:2097415.
  28. Sattler KM, Deane FP, Tapsell L, Kelly PJ. Gender differences in the relationship of weight-based stigmatisation with motivation to exercise and physical activity in overweight individuals. *Health Psychol Open.* 2018;5(1): 2055102918759691. doi: 10.1177/ 2055102918759691
  29. Spahlholz J, Baer N, König HH, Riedel-Heller SG, Luck-Sikorski C. Obesity and discrimination - a systematic review and meta-analysis of observational studies. *Obes Rev.* 2016;17(1):43-55. doi: 10.1111/obr. 12343
  30. Iwamoto DK, Mui VW. Young Adult Women and Alcohol-Related Problems: The Key Role of Multidimensional Feminine Norms. *Subst Abuse.* 2020;14: 1178221819 888650. doi: 10.1177/ 1178221819 888650

31. Munt AE, Partridge SR, Allman-Farinelli M. The barriers and enablers of healthy eating among young adults: a missing piece of the obesity puzzle: A scoping review. *Obes Rev.* 2017; 18(1):1-17. doi:10.1111/obr.12472
32. Schliemann D, Woodside JV, Geaney F, Cardwell C, McKinley MC, Perry I. Do socio-demographic and anthropometric characteristics predict food choice motives in an Irish working population? *Br J Nutr.* 2019; 122(1):111-9. doi:10.1017/S0007114519000941
33. Bates S, Reeve B, Trevena H. A narrative review of online food delivery in Australia: challenges and opportunities for public health nutrition policy. *Public Health Nutr.* 2023;26(1): 262-72. doi:10.1017/S1368980020000701
34. Park S, Sung E. 'You gotta have something to chew on': perceptions of stress-induced eating and weight gain among office workers in South Korea. *Public Health Nutr.* 2021;24(3):499-511. doi: 10.1017/S1368980020000890
35. Alkerwi A, Vernier C, Sauvageot N, Crichton GE, Elias MF. Demographic and socioeconomic disparity in nutrition: application of a novel Correlated Component Regression approach. *BMJ Open.* 2015;5(5): e006814. doi: 10.1136/bmjopen-2014-006814
36. Möllers J, Bäuml T, Dufhues T. Understanding the market potential of products from alternative food networks in a transition economy- A discrete choice experiment. *British Food Journal.* 2022;124(13):183-99. doi: 10.1108/BFJ-08-2021-0925
37. Gong Y, Li J, Xie J, Tan Y. Relationship between types of food choice motives and well-being among young and middle-aged Chinese adults. *Int J Consum Stud.* 2020;44(4): 369-78. doi: 10.1111/ijcs.12573
38. Elkins A, Zickgraf HF. Picky eating and food neophobia: Resemblance and agreement in parent/young adult dyads. *Appetite.* 2018;126:36-42. doi: 10.1016/j.appet.2018.02.021
39. Bucher T, Collins C, Rollo ME, McCaffrey TA, De Vlieger N, Van der Bend D, et al. Nudging consumers towards healthier choices: a systematic review of positional influences on food choice. *Br J Nutr.* 2016;115(12):2252-63.