

### Assessing the determinants of unhealthy dietary habits among a sample of survey participants in Jamaica

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#### **ABSTRACT**

Objective. To identify and assess the determinants of unhealthy dietary habits among a sample of survey participants in Jamaica.

Methods. Because of resource constraints, this cross-sectional assessment is based on a three-stage non-probability sample of 374 survey respondents in Jamaica aged ≥18 years. Firstly, three administrative areas (parishes) were randomly selected. Secondly, the main commercial areas within the selected parishes were identified, from which a non-probability sample of establishments was drawn. A broad selection of establishments covering public, private, and nongovernmental organizations was chosen. This array of establishments was selected to capture a sample of respondents that was as representative as possible. Patrons and employees in the selected establishments were asked to complete a questionnaire.

Results. Respondents' self-assessment of their general consumption revealed that 48.4% were unhealthy eaters. Among these, the top reasons for generally unhealthy dietary choices were greater accessibility of unhealthy foods (63.5%) and limited time to prepare healthy meals (61.3%). Additionally, 52.5% indicated "unhealthy foods cost less," and 47.0% identified affordability as the main factor in the food choice equation. Findings revealed that the determinants of eating unhealthily tended to vary across income, age, and gender. Female, younger, and lower-income respondents have a higher likelihood of being impacted by the factors.

Conclusions. The largest proportions of the sample identified limited time to prepare healthy meals and the ease of access to unhealthy foods as the foremost determinants of unhealthy eating habits. These barriers to healthy eating are more likely to impact survey participants in the 18-34 age group.

#### **Keywords**

Feeding behavior; diet; nutrition assessment; eating; Jamaica.

The epidemiological and nutrition transition that began in the mid-20th century has grown into a significant developmental challenge (1). Globally, noncommunicable diseases (NCDs) were responsible for 70% of all deaths in 2015 (2), and 15 million persons between the ages of 30 and 70 years die prematurely from NCDs each year (3). Caribbean countries continue to grapple with the consequences of this phenomenon, which manifest in the form of high and rising prevalence rates of cardiovascular diseases, diabetes, cancer, and chronic respiratory diseases, among others. The Caribbean countries have the highest risk of premature mortality from cardiovascular disease in the Region of the Americas (4), and the absolute risk of premature deaths from these four diseases was estimated to range between 16% and 28%, while the proportion of total deaths stemming from NCDs is above 80% for many countries (3).



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To a large extent, NCDs are triggered by individual lifestyle choices and obesogenic environments (5, 6) and are mostly preventable. Social and economic burdens can be averted by the employment of proven measures to combat NCDs (7–11). Fiscal policies can modify behavior by either incentivizing consumers to purchase healthier foods or discouraging the purchase of unhealthy foods, with the aim of reducing dietrelated NCD burdens (12, 13). The World Health Organization adds credence to this position by stating, "Trade measures, taxes, and subsidies are important means of guaranteeing access to and enabling healthy dietary choices" (14). In addition to improving the health of the population, these approaches aim to minimize inequalities in diet quality and diet-related health burdens.

The link between diet and the prevalence of NCDs is strong, and the epidemiological trajectory is unsettling. While it is acknowledged that appropriate intervention initiatives can be useful in curtailing the prevalence of NCDs, there is limited research on precisely what drives the dietary patterns of the average consumer in the Caribbean. Identifying the root factors that influence the decision to consume (un)healthy foods is critical. A clear understanding of these factors will provide essential insights to guide community interventions aimed at influencing the dietary patterns of the population. Such information is also critical for evidence-based public health decision-making and the development of intervention measures for achieving the goal of healthy populations. This study, therefore, seeks to identify and assess the determinants of unhealthy consumption choices among participants of a food consumption survey conducted in Jamaica.1

#### **MATERIALS AND METHODS**

As a consequence of resource and other technical constraints, this cross-sectional assessment is based on a three-stage, non-probability sample of 374 survey respondents in Jamaica, aged ≥18 years. Though the targeted sample size of 380 was surpassed by four, 10 questionnaires were deemed unusable due to a high level of question non-response. Firstly, three administrative areas or parishes (Kingston, St. Andrew, and St. James) in Jamaica were randomly selected. Secondly, the main commercial areas within the selected parishes were identified, from which a non-probability sample of establishments within these business districts was selected. A broad selection of establishments, covering public, private, and nongovernmental organizations, including finance, health, education, retail, manufacturing, hospitality, tourism, communications, and other services, were selected. This array of establishments was chosen to ensure the inclusion of a sample of respondents that was as representative as possible. Patrons agreeing to participate, and all employees in the selected establishments, were asked to complete a predesigned questionnaire. Data were collected using electronic and paper-based face-to-face interviews. Respondents included were from all but one parish in Jamaica. The wide coverage of respondents was possible because of the relatively centralized nature of the business sector in the country.

The food consumption survey for Jamaica was designed to capture the main determinants (reasons) of food consumption

patterns, as indicated by participants. To identify these factors, participants were asked to perform a self-assessment of their diet quality and disclose whether they generally ate healthily or unhealthily. For this study, healthy eating is defined as the regular consumption of items that are not high in salt, fat, or sugar; are not highly processed or ultra-processed; and contain no tobacco, alcohol, or other substance known to cause harm to the body. Once the self-assessment was done and diet-quality perception revealed, 11 reasons for general eating behavior were provided in each case (healthy or unhealthy). Participants were allowed to make single or multiple choices. The determinants of reported eating patterns were captured in four broad classifications: biological, economic, physical, and social (15). In this study, reasons for unhealthy eating are the focus. The economic determinants include factors such as income, cost, and availability of foods. Physical determinants include access and time. Culture, family, peers, and habits are considered social determinants, while taste and appetite are included under biological determinants (15). Open-ended responses were also accepted and classified appropriately.

The relationships between the outcome variables (the reasons for eating unhealthily) and demographic characteristics of the respondents were assessed by testing for statistical significance and cross-tabulated, where applicable. Kruskal–Wallis tests were conducted to determine statistical significance at the conventional level of 5%.

Ethical approval for this study was granted by the Faculty of Medical Sciences Ethics Committee of The University of the West Indies in Jamaica. Each participant gave informed consent at the beginning of the questionnaire. To ensure the anonymity of the data, no personal identifiers were used in the data collection process.

#### **RESULTS**

Of the total of 374 persons surveyed, 370 respondents indicated the age group in which they fell, with 35.1% in the 25–34 age group, 22.2% in the 35–44, 19.2% in the 18–24 age group. Due to a low number of observations, the age group 65 years and over was condensed to 55 years and over (6.8%). Of the survey respondents who indicated their gender (354), 62.2% were female and 37.9% were male (Table 1).

Concerning educational attainment, approximately 25.6% of respondents reported having finished, at most, secondary school, while 64.2% completed tertiary education (Table 1).

The sample comprised employed persons (88.0%) and those who were self-employed (4.8%). Only 1.1% of respondents indicated being unemployed. The income distribution of the survey participants was somewhat skewed toward those with higher income, with 64.5% reporting a monthly income of 80 000 Jamaican dollars (J\$) (US\$ 533) and over. Persons receiving a monthly income equal to or less than J\$ 79 999 accounted for 35.4% of the sample (Table 1).

Respondents' self-assessment of their general consumption habits saw just under half (48.4% or 181 persons) classifying themselves as unhealthy eaters. Among this unhealthy eating group, the top reasons given for generally unhealthy dietary choices were greater accessibility of unhealthy foods (63.5%) and limited time to prepare healthy meals (61.3%). Additionally, 18.8% reported that healthy foods were difficult to find as a reason for their current eating habit, while 52.5% said

<sup>&</sup>lt;sup>1</sup>The survey was conducted in Jamaica in December 2019 and January 2020.

that unhealthy foods cost less and 47.0% identified affordability as the main influential factors in the food choice equation (Figure 1).

Concerning the physical determinants of food choice, the survey found that age is a statistically significant (p = 0.009) source of variations among survey respondents (Table 3). The younger respondents, 18–34 years, appear to be most heavily impacted by time constraints to prepare healthy meals, giving this as a reason for their generally unhealthy diet. This result shows that 38.0% and 35.4% of participants in the age groups 18-24and 25–34 years, respectively, identified limited time to prepare healthy meals as being among the reasons for their general unhealthy food consumption patterns. Comparatively, for the two oldest age-groups, 45-54 and 55 years and over, those figures were 14.5% and 16.0%, respectively. Similarly, the proportion of respondents identifying greater access to unhealthy foods as being among the reasons for their general unhealthy diet varies across age and is more common among younger participants. In this case, 39.4% and 38.5% of the survey respondents who are in the age groups 18-24 and 25-34 years, respectively, admitted to eating unhealthily most of the time because unhealthy foods are more accessible. In a similar vein to the "time" reason, respondents in the older age groups were much less likely to link their unhealthy eating habits to greater accessibility of unhealthy foods, with 14.5% of the age group 45–54 and 8.0% of those 55 years and above pointing to this factor as a reason for their eating unhealthily (Table 2). These overall differences were also found to be statistically significant (p = 0.001) (Table 3).

Overall, the social determinants of food choice appear to be of less importance in the survey respondents' dietary decisions. Whereas 53.0% of all the respondents who indicated unhealthy eating reported being influenced by personal habits in their unhealthy eating practices, the other social determinants were not well represented, with selection prevalence ranging from 8.8% in the case of peer influence to 16.6% for meal preference of the household (Household preference) (Figure 1).

The analysis further found a statistically significant (p = 0.023) difference between the number of women who chose "personal habit" and their male counterparts (Table 3): 72.2% of the women who indicated eating generally unhealthily identified "personal habit" as at least one of the reasons for doing so, whereas only 27.8% of the men did. This result suggests that more women in the survey are influenced by preexisting eating habits than men. The other social determinants, though less critical, varied in terms of significance across income and age.

"Unhealthy foods cost less" (Lower cost of unhealthy foods) was the main economic reason given by respondents for eating unhealthily. This reason was cited by 52.5% of those who reported a generally unhealthy diet, where statistically significant (p = 0.006) differences were found across age category (Table 3). Some 32.4% of respondents in the age group 18-24 years reported that the low cost of unhealthy foods was at least one of the reasons for eating unhealthily. Further, respondents' choice for this option fell to 30.0%, 28.1%, and 8.0% for the agegroups 25-34, 35-44, and 45-54 years, respectively, showing a diminishing level of influence as age increases (Table 2).

Moreover, the results suggest a statistically significant link between the economic determinants of poor nutritional patterns and income. Respondents in the two lowest income brackets, "less than J\$ 16 280 (US\$ 108)" and "J\$ 16 280 (US\$ 108) to

TABLE 1. Sociodemographic characteristics of respondents, Jamaica 2020

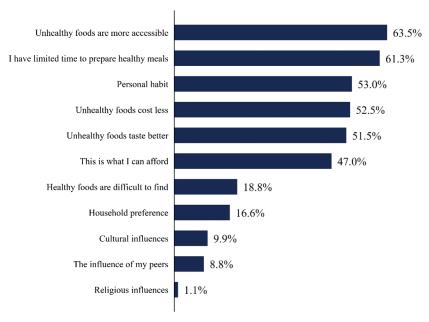
Sociodemographic characteristic	Frequency	Percent
Gender		
Female	220	62.2
Male	134	37.9
Age group		
18–24	71	19.2
25–34	130	35.1
35–44	82	22.2
45–54	62	16.8
55 and over	25	6.8
Highest level of education		
Primary	5	1.4
Secondary	95	25.6
Vocational/technical	28	7.6
Tertiary/university	238	64.2
None/other	5	1.4
Employment status		
Employed	329	88.0
Unemployed	4	1.1
Self-employed	18	4.8
Student	21	5.6
Other	2	0.5
Monthly income (Jamaican dollars)		
Less than 16 280	15	4.3
16 280–23 999	9	2.6
24 000–39 999	25	7.2
40 000–79 999	74	21.3
80 000–119 999	65	18.7
120 000–239 999	95	27.4
240 000 and over	64	18.4

**Source:** Table prepared by the authors from the study results.

J\$ 23 999 (US\$ 160)" per month, appear to be most severely affected by the relatively lower cost (Unhealthy foods cost less) and the greater affordability of unhealthy foods (This is what I can afford). These differences were shown to be statistically significant, with p-values of 0.009 for the relative cost and 0.000 for the greater affordability of unhealthy food determinants (Table 3). Here, 40.0% and 44.4%, respectively, of respondents in these income brackets indicated that these factors are at least part of the reason for poor dietary choices. Similarly, some 33.3% and 55.6% of respondents in the income groups "less than J\$ 16 280 (US\$ 108)" and "J\$ 16 280 (US\$ 108) to J\$ 23 999 (US\$ 160)," respectively, flagged the affordability of unhealthy foods as essential considerations in their dietary decisions. In contrast, only 10.9% and 3.1%, respectively, of participants in the highest income group reported these factors as being among the reasons for their general nutritionally poor dietary choices (Table 4).

A relatively large proportion of respondents (51.5%) pointed to what they viewed as the better taste of unhealthy foods as being among the reasons for eating unhealthily. The influence of taste on nutritional patterns was lowest among respondents in the upper age-groups of 45–54 years and 55 years and over. Only 4.8% and 12.0% of respondents in the age groups 45–54

FIGURE 1. Reasons for eating unhealthily, as a percentage of total respondents who indicated general unhealthy dietary habits, Jamaica 2020



Source: Figure prepared by the authors from the study results.

TABLE 2. Reasons given for unhealthy diet (% of unhealthy eaters) by age-group, Jamaica 2020

Age group	Time constraints	Greater access to unhealthy food	Lower cost of unhealthy foods	Better taste of unhealthy foods
18–24				
Frequency	27	28	23	25
Percent	38.0	39.4	32.4	35.2
25-34				
Frequency	46	50	39	41
Percent	35.4	38.5	30.0	31.5
35-44				
Frequency	23	25	23	20
Percent	28.1	30.5	28.1	24.4
45-54				
Frequency	9	9	5	3
Percent	14.5	14.5	8.1	4.8
55 and over				
Frequency	4	2	4	3
Percent	16.0	8.0	16.0	12.0

Source: Table prepared by the authors from the study results.

and 55 years and over, respectively, cited this reason for eating unhealthily. Comparatively, 35.2% and 31.5% of respondents in the age groups 18–24 and 25–34 years, respectively, identified taste as at least one of the reasons for their unhealthy eating habits (Table 2). These age differences were also found to be statistically significant (p = 0.000) (Table 3).

Only 18.8% of those reporting a generally unhealthy diet indicated that they had difficulty locating healthy foods (Healthy foods are difficult to find) as a reason for their less wholesome nutritional practices. Furthermore, there were no detectable

statistically significant differences across the socioeconomic variables. This result suggests that increasing the availability of healthy foods alone may be a necessary but insufficient condition for improved diet quality.

#### **DISCUSSION**

The results of the survey indicate that there are statistically significant disparities among the different groups in the sample with regard to the motivations for choosing a particular dietary path. Physical determinants were shown to impact dietary patterns among survey participants. The identification of time constraints as a key physical determinant of food choice in Jamaica is not a surprise. The study of changes in the social, economic, and demographic environment and how they affect dietary patterns shows a severe reduction in the time available for at-home food preparation and a greater reliance on preprepared foods (16). The important implication of these changes is that time limitations have, in part, driven households to consume substantially more out-of-home meals. These meals tend to be less healthful, usually more energy-dense and nutrition-poor, contain excessive amounts of fats, salts, and sugar (17) and fewer quantities of fruits, vegetables, whole grains, and legumes (18).

The emergence of "greater access to unhealthy meals" as the second most cited reason for participants' general unhealthy diet largely coincides with the issue of limited time to prepare healthy meals, as the existence of one may be seen as a solution to the other. Greater access to unhealthy meals speaks to the physical food environment, which has evolved markedly over the last several years with the proliferation of out-of-home food establishments led by the fast-food industry in Jamaica (19). The physical food environment also includes the food facilities provided in the workplace and its immediate

TABLE 3. Relationship between reasons for unhealthy diet and demographic variables, Jamaica 2020

Reason	Demographic variables and overall <i>p</i> -values using Kruskal–Wallis H Chi² test			
	Age group	Income bracket	Gender	Head of household
Time constraints	0.009	0.240	0.077	0.380
Greater access to unhealthy food	0.001	0.703	0.810	0.874
Lower cost of unhealthy foods	0.006	0.009	0.237	0.304
Affordability of unhealthy foods	0.148	0.000	0.057	0.404
Better taste of unhealthy foods	0.000	0.765	0.235	0.247
Personal habit	0.071	0.724	0.023	0.586
Culture	0.370	0.006	0.925	0.443
Peers	0.001	0.000	0.578	0.039

Source: Table prepared by the authors from the study results.

vicinity (20); these can also substantially impact food consumption behavior. The crucial implication of these features of the physical food environment is that greater accessibility and availability of unhealthy foods have been shown to disturb an individual's capacity to make healthful consumption choices (21).

Consistent with the findings of other scholars (22, 23), the role that "time" and "access" play in respondents' decision to adopt a generally unhealthy diet appear to vary with age, as the proportion of respondents selecting these reasons for their harmful dietary practices were substantially more common among the younger population of respondents.

Economic factors were also important reasons for eating unhealthily. A sizable proportion of respondents identified the relatively low cost of unhealthy foods ("unhealthy foods cost less") and the affordability of unhealthy foods ("this is what I can afford") as reasons for their dietary choices. This finding in some ways aligns with a 2016 study (24) on the minimum cost of a healthy diet in Jamaica, which found that for some families, the relative² lowest cost of a nutrition-rich diet may be prohibitive, leading such individuals to default to the cheaper, less healthy option.

Many of the other determinants of food choice, such as "personal habit" and the "taste" factor, showed significant differences across income and gender, as is the case with age, and are likely to have been formed earlier in life (25–27), thus pointing to the need for early life interventions. Further, the identified demographic differences may have important implications for the nature of public health and other related initiatives geared toward improving nutritional choices.

As several factors collectively contribute to unhealthy eating at the individual decision-making level, the solution must be one that addresses the various determinants of an unhealthy diet. For instance, one recommendation is for increased financial and technical support to the local agriculture sector, with the aim of increasing the supply of healthy foods to substantially lower prices and increase affordability and accessibility. The success of this policy will likely encourage healthier dietary

TABLE 4. Reported economic reasons for unhealthy diet by income bracket, Jamaica 2020

Income bracket	This is what I can afford		Unhealthy food	Unhealthy foods cost less	
(Jamaican dollars) –	Frequency	Percent	Frequency	Percent	
Less than 16 280	5	33.3	6	40.0	
16 280-23 999	5	55.6	4	44.4	
24 000-39 999	5	20.0	3	12.0	
40 000-79 999	22	29.7	17	23.0	
80 000-119 999	19	29.2	21	32.3	
120 000-239 999	21	22.1	31	32.6	
240 000 and over	2	3.1	7	10.9	

Source: Table prepared by the authors from the study results.

choices, particularly for those in the lower income bracket (less than J\$ 16 280 [US\$ 108] per month) and the younger population (18–34 years).

Furthermore, since the time dimension has emerged as a major barrier to healthy eating, policies geared to making healthy eating and the preparation of healthy meals more convenient and less time consuming may likely be impactful. Policy prescription to address this particular barrier includes encouraging and lending financial and technical support to food establishments to increase the availability, while keeping prices low, of nutritionally rich, ready-to-eat meal options.

Personal habit is a significant determinant of (un)healthy eating choices. The policy recommendation in this regard is for the State and other pertinent nongovernmental organizations to deliver to families with young children sustained social programs that highlight the importance of healthy dietary practices in the home. Particularly, these programs should deliver training in proper child and adolescent nutrition and provide training in healthy meal preparation. Where needed and feasible, financial support should be provided to facilitate the transition from knowledge to action. Such initiatives may foster the early formation of a healthy nutritional habit in young children that is likely to persist into adulthood.

#### Limitations of the study

The limitations of this study include a non-representative survey sample, which is skewed toward more educated and higher-income persons. However, the age trends in preferences are unlikely to be affected by this. As the sampling procedure was non-probabilistic, further research is needed to confirm the results for the broader population.

#### Conclusion

The findings from the sample of survey respondents in Jamaica provided key insights into the determinants of eating habits. The study showed that the largest proportions of the sample identified limited time to prepare healthy meals and the ease of access to unhealthy foods as the foremost determinants of unhealthy eating habits. The results further indicated that economic determinants, namely the relatively lower cost and perceived affordability of unhealthy foods, play key roles in encouraging poor nutritional practices.

<sup>&</sup>lt;sup>2</sup>The assessment was done in relation to the country's minimum wage.

**Author contributions.** All authors contributed to conceiving and conceptualizing the original idea, designing the research, collecting and analyzing the data, interpreting the results, and writing and reviewing the research paper. All authors reviewed and approved the final version.

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## Evaluación de los determinantes de los hábitos alimentarios poco saludables en una muestra de encuestados en Jamaica

#### **RESUMEN**

**Objetivo.** Identificar y evaluar los determinantes de los hábitos alimentarios poco saludables en una muestra de encuestados en Jamaica.

**Métodos.** Debido a las limitaciones de recursos, esta evaluación transversal se basa en una muestra no probabilística de tres etapas de 374 encuestados en Jamaica de edad igual o superior a los 18 años. Primero, se seleccionaron al azar tres parroquias (áreas administrativas). Luego, se identificaron las principales áreas comerciales dentro de las parroquias seleccionadas, y se extrajo una muestra no probabilística de establecimientos de esas áreas comerciales. Se escogió una amplia selección de establecimientos que abarcaban organizaciones públicas, privadas y no gubernamentales. Se seleccionó este rango de establecimientos para reunir una muestra de encuestados que fuera lo más representativa posible. Se pidió a los clientes y empleados de los establecimientos seleccionados que llenaran un cuestionario.

**Resultados.** La autoevaluación de los encuestados sobre su consumo general reveló que 48,4 % tenían una alimentación poco saludable. Entre estos, las principales razones tras estas decisiones alimentarias generalmente poco saludables fueron un mayor acceso a alimentos poco saludables (63,5 %) y limitaciones en el tiempo para preparar comidas saludables (61,3 %). Además, 52,5 % indicó que "los alimentos poco saludables cuestan menos", y 47,0 % identificó la asequibilidad como el factor principal en la ecuación relativa a la selección de alimentos. Los resultados revelaron que los determinantes de una alimentación poco saludable tendían a variar según los ingresos, la edad y el sexo. Entre los encuestados, las mujeres más jóvenes y con menores ingresos tenían una mayor probabilidad de verse afectadas por los factores.

**Conclusiones.** La mayoría de los encuestados identificó las limitaciones con el tiempo necesario para preparar comidas saludables y la facilidad de acceso a alimentos poco saludables como los principales determinantes de hábitos alimentarios poco saludables. Es más probable que estas barreras para una alimentación saludable afecten a los encuestados del grupo etario de 18 a 34 años.

#### Palabras clave

Conducta alimentaria; dieta; evaluación nutricional; Jamaica.

# Uma análise dos determinantes de hábitos alimentares não saudáveis em uma amostra de participantes de pesquisa na Jamaica

### **RESUMO**

**Objetivo.** Identificar e analisar os determinantes de hábitos alimentares não saudáveis em uma amostra de participantes de pesquisa na Jamaica.

**Métodos.** Por limitação de recursos, esta análise transversal foi realizada a partir de uma amostra não probabilística com 374 participantes maiores de 18 anos na Jamaica. A amostragem seguiu um processo de três estágios. Primeiro, três áreas administrativas (localidades) foram selecionadas de forma aleatória e, em seguida, foram identificadas as áreas comerciais centrais em cada localidade selecionada. Para garantir a representatividade da população, uma amostra não probabilística de estabelecimentos comerciais em setores variados (público e privado e organizações não governamentais) foi obtida, com a aplicação do questionário da pesquisa aos seus clientes e funcionários.

**Resultados.** Os participantes avaliaram o próprio consumo alimentar em geral, o que demonstrou que 48,4% consumiam alimentos não saudáveis. Os principais fatores para escolhas alimentares pouco saudáveis foram maior acesso a alimentos não saudáveis (63,5%) e falta de tempo para o preparo de refeições saudáveis (61,3%), sendo que 52,5% indicaram que "os alimentos pouco saudáveis são mais baratos" e 47,0% citaram os preços acessíveis como o principal fator na escolha dos alimentos. Os determinantes da alimentação pouco saudável tenderam a variar de acordo com o gênero, idade e o nível de renda, afetando mais as mulheres, os jovens e pessoas de baixa renda.

**Conclusões.** Uma grande parcela da amostra estudada apontou a falta de tempo para o preparo de refeições saudáveis e a facilidade de acesso a alimentos pouco saudáveis como determinantes de hábitos alimentares não saudáveis. Os obstáculos à alimentação saudável repercutem mais entre os participantes jovens de 18 a 34 anos de idade.

#### Palavras-chave

Comportamento alimentar; dieta; avaliação nutricional; Jamaica.