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RECEIVED 12 April 2025

ACCEPTED 06 October 2025

PUBLISHED 30 October 2025

CITATION

Daley OO, Webb M, Isaac W-AP and
Wilson S (2025) Food choices and
preferences on food systems and food
security in Caribbean Small Island Developing
States.

Front. Sustain. Food Syst. 9:1610615.
doi: 10.3389/fsufs.2025.1610615

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Food choices and preferences on food systems and food security in Caribbean Small Island Developing States

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Introduction: The Caribbean dietary landscape has undergone significant transformation over the past six decades. The events of political independence, coupled with the departure of colonizing countries have led to a cultural shift, characterized by the proliferation of fast-food restaurants. Hence, this study investigates how cultural, economic, and social factors influenced dietary habits in terms of food choices and preferences and how these factors contributed to food security outcomes in the region.

Methods: An online cross-sectional survey was conducted, among consumers from Barbados, Dominica, Jamaica, and Trinidad and Tobago to assess their knowledge of food systems and food security, food choices and preferences, influencers and concerns about food systems.

Results and discussion: Overall knowledge of food system and food security was significantly associated with marital status ($p \leq 0.012$) and household size ($p \leq 0.044$). A significant, moderately positive correlation ($\rho = 0.631$, $p < 0.001$) was found between food choices and preferences, as well as their influences. This study highlights the need for comprehensive and culturally sensitive approaches to food education and policy development in the Caribbean. By increasing consumer knowledge, addressing concerns about sustainability and food security, and promoting local food production, the region can take significant steps toward building a more resilient and sustainable food system.

KEYWORDS

consumer preferences, fast food, food choices, food system, food security

Introduction

Caribbean Small Island Developing States (SIDS), known for their vibrant cultures and rich biodiversity, are grappling with the challenge of ensuring food security for their populations. A complex interplay of economic instability, climate change, and evolving dietary behaviors has made food systems in the region particularly fragile. In 2022, an alarming 60.6% of individuals in the Caribbean experienced moderate to severe levels of transient food insecurity (FAO, IFAD, PAHO, UNICEF and WFP, 2023), underscoring the urgency of addressing both structural and behavioral factors influencing food access and availability.

Among these factors, food choices and preferences have emerged as significant yet often underexamined drivers of regional food system outcomes. Historical shifts following political independence and decolonization have catalyzed cultural transitions in eating habits, most notably the rise of fast-food culture, where speed, convenience, and affordability in food

consumption is prioritized and has increasingly replaced traditional home-cooked meals and local food markets (Alladin, 2017). Over the past seven decades, the growing presence of imported temperate products, such as apples and grapes has contributed to a decline in the production and consumption of native fruits and vegetables, further reshaping local diets (Stanberry and Fletcher-Paul, 2024).

These dietary changes are not without consequence. The growing consumption of processed, energy-dense foods, and often imported foods has coincided with a marked rise in noncommunicable diseases, such as obesity and malnutrition (Rivera et al., 2014; Rambaran et al., 2021; Saint Ville et al., 2022; Vega-Salas et al., 2023). As the Caribbean food system becomes increasingly integrated into global supply chains, local agricultural sectors face declining productivity due to factors, such as unfavourable trade terms, competition from low-wage economies, and high energy costs (Liu and Wang, 2022). This dependency on food imports, along with exposure to global market shocks, further exacerbates food insecurity in the region (FAO, 2023). Moreover, food preferences shaped by a mix of cultural, environmental, biological, and social influences are central to understanding the current state of Caribbean diets. The decline in traditional dietary practices, particularly among younger populations, and the increasing normalization of fast food are contributing to worsening public health outcomes, including childhood obesity and early-onset chronic diseases (Mizia et al., 2021; Lee, 2024; Abdoli et al., 2023; Vasile et al., 2023).

Crucially, taste and preference are powerful determinants of what people eat, often outweighing considerations of health or affordability—especially in vulnerable or low-income communities (Bawajeeh et al., 2020). Despite this, these behavioral dimensions are frequently neglected in food security discourse. Understanding the interplay between food choices, preferences, and food security is essential for developing effective policies and interventions to address the region's pressing challenges. This study examines the factors influencing food choices and preferences on food security in the Caribbean. By examining the specific contexts of four Caribbean countries, we aim to gain insights into how cultural, economic, and social factors shape dietary habits and contribute to food security outcomes in the region.

Methodology

Study design and participants

An online cross-sectional survey was conducted from January 1st to December 31st, 2022, to investigate consumers' knowledge of food systems, food choices and preferences, and the factors influencing choices and preferences among 202 individuals. The survey also examined concerns related to food and food systems. Participants involved consumers from four Caribbean countries, namely Trinidad and Tobago, Barbados, Jamaica, and Dominica.

Data collection

A survey link with the questionnaire was distributed online using various crowdsourcing approaches, including direct emails and social media. Convenience sampling and snowball sampling methods were also used where participants were asked to complete the questionnaire and share the link with their contacts to ensure wide distribution of the

survey and recruit a large sample of the population. The questionnaire was completed anonymously, voluntarily and with prior online informed consent by participants. Additionally, all participants were required to be at least 18 years old, residing in one of the participating countries (Trinidad and Tobago, Barbados, Jamaica, and Dominica) for at least two consecutive years and had regular access to the internet and basic digital literacy to complete an online survey. The participants were given no reward or incentive and could withdraw from completing the questionnaire at any time without any consequence. Several measures were taken to control the data quality including using a clear and simple survey design with easy-to-understand questions, conducting a pilot test, before the actual survey, with small representative samples from each participating country and finally checking the data for duplicates and missing entry which were removed before analyses.

Measures

Data on eight socio-demographic variables were collected, including country of residence, sex, age category, race/ethnicity, marital status, highest education level attained, monthly household income (in United States dollars) and household size, which refers to the total number of people living together in a single dwelling unit who share meals and or living arrangements. Respondents' knowledge of food systems and food security was assessed using a series of statements to which they could respond "yes," "no," or "unsure" (Table 1). Additionally, respondents provided responses to statements designed to evaluate their food choices and preferences, factors influencing food choices and preferences, and concerns about food systems.

Coding and data analysis

The data collected from the online surveys were numerically coded and analyzed using both descriptive and inferential statistical techniques. Total scores for each respondent in each section were computed by summing the scores of all statements within the respective sections. For the section on knowledge of food system and food security, responses to 11 statements were scored as follows: no = 1, unsure = 2, and yes = 3 and the total scores for this section ranged from 11 to 33. Responses for food choices and preferences were recorded using a five-point Likert scale where 1 indicated "no preference," 2 "little preference," 3 "moderate preference," 4 "great preference," and 5 "very great preference." Similarly, responses for food choices and preferences influencers were recorded using a five-point Likert scale where 1 indicated "no influence," 2 "little influence," 3 "moderate influence," 4 "great influence," and 5 "very great influence." For concerns about food systems, 1 indicated "no concern," 2 "little concern," 3 "moderate concern," 4 "great concern," and 5 "very great concern." The section on choices and preferences included six statements, resulting in a range of 6–30. For influencers, nine statements were included, with a score range of 9–45. Similarly, the section on concerns about food systems comprised of seven statements, yielding a total score range of 7–35. Scores in each section were categorized into low, medium, and high levels to enable descriptive analysis and operationalization of the variables. For knowledge of food system and food security, low knowledge scores ranged from 11 to 18, fair scores from 19 to 26, and high scores from 27 to 33. Food

TABLE 1 Socio-demographic characteristics of respondents and their knowledge of food system and food security.

Socio-demographic categories and descriptions	Frequency	Percentage (%)	Knowledge count (% within socio-demographic categories)		
			Low	Fair	High
Country of residence			χ^2 : 10.37, df: 6, <i>p</i> -value: 0.110		
Trinidad and Tobago	113	55.9	19 (16.8%)	83 (73.5%)	11 (9.7%)
Barbados	30	14.9	4 (13.3%)	22 (73.3%)	4 (13.3%)
Dominica	30	14.9	0 (0%)	28 (93.3%)	2 (6.7%)
Jamaica	29	14.4	1 (3.4%)	26 (89.7%)	2 (6.9%)
Sex			χ^2 : 0.27, df: 2, <i>p</i> -value: 0.875		
Female	139	68.8	16 (11.50%)	109 (78.40%)	14 (10.10%)
Male	63	31.2	8 (12.70%)	50 (79.40%)	5 (7.90%)
Age			χ^2 : 6.50, df: 6, <i>p</i> -value: 0.370		
Less than 25	16	7.9	3 (18.80%)	10 (62.5%)	3 (18.80%)
From 25 to 44	107	53	8 (7.50%)	90 (84.10%)	9 (8.40%)
From 45 to 64	67	33.2	11 (16.40%)	50 (74.60%)	6 (9.00%)
Over 64	12	5.9	2 (16.70%)	9 (75.00%)	1 (8.30%)
Race/Ethnicity			χ^2 : 6.01, df: 4, <i>p</i> -value: 0.199		
African	126	62.4	19 (15.10%)	94 (74.60%)	13 (10.30%)
Indian	29	14.4	0 (0%)	26 (89.70%)	3 (10.30%)
Mixed	47	23.3	5 (10.60%)	39 (83.00%)	3 (6.40%)
Marital status			χ^2 : 8.93, df: 2, <i>p</i> -value: 0.012		
Unmarried	121		8 (6.60%)b	99 (81.80%)	14 (11.60%)
Married	81		16 (19.80%)a	60 (74.10%)	5 (6.20%)
Level of education			χ^2 : 0.42, df: 4, <i>p</i> -value: 0.981		
Secondary School	14	6.9	2 (14.30%)	11 (78.60%)	1 (7.10%)
Vocational training	7	3.5	1 (14.30%)	5 (71.40%)	1 (14.30%)
Tertiary	181	89.6	21 (11.60%)	143 (79.00%)	17 (9.40%)
Combined monthly household income (USD)			χ^2 : 5.00, df: 6, <i>p</i> -value: 0.545		
<1,000 USD	48	23.8	2 (4.20%)	41 (85.40%)	5 (10.40%)
1,000–5,000 USD	119	58.9	17 (14.30%)	90 (75.60%)	12 (10.10%)
5,001–10,000 USD	22	10.9	3 (13.60%)	17 (77.30%)	2 (9.10%)
>10,000 USD	13	6.4	2 (15.40%)	11 (84.60%)	0 (0.0%)
Household size (members)			χ^2 : 8.55, df: 24, <i>p</i> -value: 0.014		
1–5	189	93.6	24 (12.70%)	150 (79.40%)	15 (7.90%)b
6 or more	13	6.4	0 (0.0%)	9 (69.23%)	4 (30.77%)a

* χ^2 : Pearson Chi-square test of association value; *df: degrees of freedom.

preferences and choices were classified as low (6–14), medium (15–22), and high (23–30). Factors influencing food choices and preferences were categorized as low (9–21), medium (22–33), and high (34–45). Concerns about food systems were classified as low (7–16), medium (17–26), and high (27–35). The categorization of low, medium and high scores was decided by equally dividing the score range by using a modified Bloom's cut-off point reference (Alwidyan et al., 2025).

Chi-square tests of association were performed to examine relationships between the categorical ordinal values for knowledge, food choices and preferences, influencing factors, and concerns about food systems with the socio-demographic factors. One-way analysis of variance (ANOVA), followed by Tukey's b post-hoc tests, was used to

evaluate differences in mean scores for food choices and preferences, influencing factors, and concerns about food systems across socio-demographic groups, with total scores serving as the dependent variables and socio-demographic factors as independent variables. Spearman's rank order correlation coefficients were calculated to examine the interrelationships among response variables. Univariate ordinal logistic regression analyses were conducted to determine and quantify the association between socio-demographic characteristics and the outcome variables: food choices and preferences, influences, and concerns about food systems. The univariate model was chosen to isolate the impact of socio-demographic factors on one particular outcome at a time. In the model, the vector of ordinal values for the outcome variable (e.g.,

concerns), were regressed against the eight demographic factors. Model diagnostics were performed to ensure that collinearity did not skew parameter estimates. Statistical significance was considered at alpha level 5% (p -value of ≤ 0.05). All statistical analyses were conducted using the Statistical Package for Social Sciences Software (SPSS v. 28).

Results

Socio-demographic characteristics

The socio-demographic characteristics of respondents are presented in Table 1. A total of 202 respondents completed the survey. Most of the respondents lived in Trinidad and Tobago (55.9%), were female (68.8%), were aged between 25 and 44 years (53%) and had completed tertiary education (89.6%). Most respondents identified as being of African race/ethnicity (62.4%), while 59.9% were unmarried. Most respondents (58.9%) were from household with combined monthly income in the range \$1000–5,000 USD, while 23.8% accounted for the combine monthly household income range of less than 1,000 USD, 10.9% accounted for the range of \$5001–10,000 USD and 6.4% were from household having more than \$10,000 USD. Household size of 1–5 members accounted for most respondents (93.6%), while 5.9% of households were in the category 6–10 members and 0.5% of households had more than 10 members.

Knowledge of food systems and food security

Consumer responses to knowledge statements related to food systems and food security are presented in Table 2. The highest overall proportion of responses were categorized as “unsure” (48.8%), followed by “yes” (27%) and “no” (24.2%) responses. None of the knowledge statements recorded a majority response for ‘yes.’ Consumers displayed the strongest knowledge regarding “*origin of the food purchased*” (45%) and “*ingredients used in processed food purchased*” (44.6%). These

responses indicate a moderate level of awareness about food origins and ingredient knowledge. Conversely, the lowest levels of knowledge were observed in relation to the statements: “*eating locally produced food encourages domestic/local food production*” (2%) and “*eating patterns and food choices have changed over the years*” (4%), signaling a gap in consumer understanding of the broader implications of food choices. Overall knowledge of food system and food security was significantly associated with marital status (χ^2 : 8.93, df: 2, p -value: 0.012) and household size (χ^2 : 8.55, df: 4, p -value: 0.014) (Table 1). A significantly higher proportion of married respondents had low knowledge of food system and food security compared to unmarried respondents (Table 1). Furthermore, higher knowledge of food security was significantly more prevalent among respondents from household with 6 or more members compared to household with 1–5 members (Table 1, Figure 1).

There were also some significant associations between socio-demographic variables and individual knowledge statements of food systems and food security. A significantly higher proportion (χ^2 : 15.94, df: 6, p -value: 0.014) of respondents from Barbados agreed that their country was not food secure compared to respondents from Trinidad and Tobago. Male respondents were significantly (χ^2 : 5.581, df: 2, p -value: 0.05) less aware of the shelf life of food they purchased compared to females. Respondents in the age categories <25 and 25–44 were significantly (χ^2 : 12.56, df: 6, p -value: 0.05) less aware of changing eating patterns and food choices over the years compared with the two older age categories.

Respondents from household with 6 or more members were significantly more aware of the operations of food supply chains for imported food and food ingredients (χ^2 : 9.91, df: 4, p -value: 0.042) and more knowledgeable that eating locally produced food encourages domestic production of foods (χ^2 : 9.70, df: 4, p -value: 0.046) compared with respondents from household with 1–5 members.

Consumer food choices and preferences

Food choices and preferences among Caribbean consumers exhibited considerable variation across the five assessed preference

TABLE 2 Knowledge of food systems and food security among respondents.

Knowledge statements	Consumer knowledge (%)		
	No	Unsure	Yes
Origin of the food purchased	25.7	29.2	45
Ingredients used in processed food purchased	31.2	24.3	44.6
Shelf life of foods purchased	12.9	56.4	30.7
Nutritional content of foods purchase	12.9	49	38.1
Processes involved in manufacturing the foods purchased	50	9.4	40.6
Operation of the food supply chain for locally produced foods and food ingredients	42.6	25.2	32.2
Operation of the food supply chain for imported foods and food ingredients	65.8	4	30.2
This country is not food secure	13.9	67.8	18.3
Domestic/local production is necessary to achieve food security	5	86.6	8.4
Eating locally produced food encourages domestic/local production of foods	2	92.6	5.4
Eating patterns and food choices have changed over the years	4	92.1	4
Means	24.2	48.8	27.0

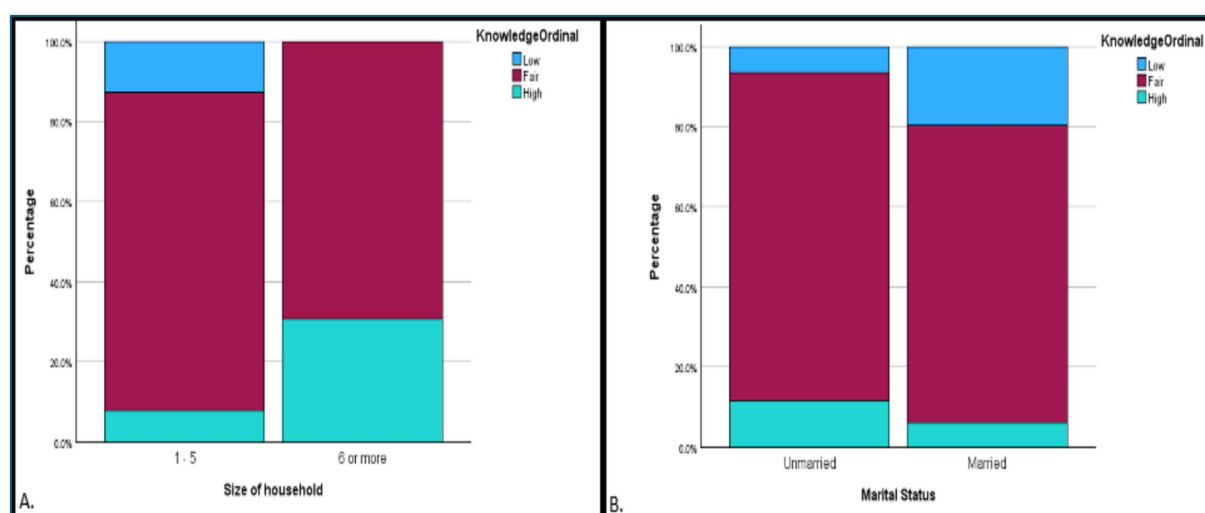


FIGURE 1
Knowledge level of participants in the survey based on household size (A) and marital status (B).

levels (no extent, little extent, moderate extent, great extent, very great extent). “No” preference level garnered most responses for any of the food preference/choice statements (Table 3). The highest mean percentage across all preference or choice statements was recorded at the moderate level (35%) followed by great extent (26.2%), and little extent (16.8%) (Table 3). For most preference statements, the highest number of respondents selected the moderate extent option, except for the statement “*locally produced foods*” where the highest number of consumers (30.7%) indicated a preference at the very great extent level. Additionally, the preference statement “*food that are easy to prepare*” acquired the highest percentage of respondents at a moderate extent level (41.1%), followed by “*lower cost food*” (36.1%) (Table 3). The lowest percentage of respondents was recorded for the preference statement “*lower cost food*” at no extent level, with only 3% of consumers selecting this option.

Factors influencing consumer food choices and preferences

Several factors were highlighted as influencing consumer food choices and preferences, at varying levels of influence. The overall mean influence across all statements was highest at the moderate extent level (32.6%), followed by the little influence (22.9%). Among all factors, religion had the least influence on food preference, with most respondents indicating either no influence (56.9%) or little influence (19.3%). The proportion of respondents who indicated no influence was the highest across all factors and influence levels.

Concerns about food systems

Consumers expressed a wide range of concerns about food systems, with varying degrees of concern across different issues (Table 3). The overall mean response across all statements showed that moderate concern was the most common, with 31.4% of consumers selecting this level. This was followed by great concern (23.7%), little

concern (18.7%) and very great concern (18%). Among the various concerns, the highest proportion of respondents expressed moderate concern about “*respect for nature during food production and distribution*” which received 39% of responses. On the other hand, the statement “*high dependency on imported foods*” received the highest levels of concern at both the very great concern level (34.7%) and great concern level (29.7%) levels.

Socio-demographic factors, food preferences, and food system concerns

A significant moderately positive correlation ($\rho = 0.631, p < 0.001$) was found between food choices and preferences and influencing factors (Table 4). There were also significant but low positive correlations between food choices and preferences and concerns about food systems ($\rho = 0.446, p < 0.001$) as well as influencing factors and concerns about food systems ($\rho = 0.394, p < 0.001$) (Table 4). The ANOVA and univariate ordinal logistic models, which explore the relationships between socio-demographic variables and consumers’ food choices and preferences, influencing factors, and concerns about food systems are presented in Tables 5, 6. ANOVA tests revealed no significant differences in consumer food choices and preferences and influencing factors across the various socio-demographic variables evaluated (Table 5). However, there were significant differences in consumer concerns about food systems based on country of residence ($p < 0.046$) and level of education ($p < 0.003$) (Table 5). Consumers from Dominica exhibited the highest levels of concern about food and food system, with their scores significantly higher than those of consumers from Barbados. Additionally, respondents with secondary school education reported the lowest levels of concern, which was significantly different from those with vocational education, who exhibited the highest levels of concern.

All eight socio-demographic variables were successfully included in the univariate ordinal logistic regression model for food choices and preferences, influencing factors and concerns about food systems (Table 6). Significant differences ($p < 0.05$)

TABLE 3 Consumer food choices and preferences, influencers and concerns about food systems among respondents.

Food choices and preferences	Food choices and preferences levels (%)				
	No preference	Little preference	Moderate preference	Great preference	Very great preference
Traditional foods	4	14.4	34.7	32.7	14.4
Locally produced food	2.5	9.4	29.2	28.2	30.7
Foods that are easy to prepare	6.9	25.2	41.1	19.8	6.9
Choosing foods according to taste	7.4	16.3	34.7	28.7	12.9
Long storage or shelf-life	9.9	19.3	34.2	22.3	14.4
Lower cost foods	3	16.3	36.1	25.7	18.8
Means	5.6	16.8	35	26.2	16.4

Influencers	Influencers levels (%)				
	No influence	Little influence	Moderate influence	Great influence	Very great influence
Availability	2	9.9	47	31.2	9.9
Visual appeal	6.4	19.3	33.7	28.7	11.9
Advertising	31.2	35.6	26.2	6.4	0.5
Product brands	19.3	26.2	38.6	11.9	4
Sales or discounts	8.9	26.7	33.7	22.3	8.4
Country of origin	18.8	30.2	28.2	12.9	9.9
Current affairs on food	14.4	28.7	38.1	14.4	4.5
Religion	56.9	19.3	11.4	6.4	5.9
Previous experiences	3	10.4	36.1	31.7	18.8
Means	17.9	22.9	32.6	18.4	8.2

Concerns about food systems	Concerns levels (%)				
	No concern	Little concern	Moderate concern	Great concern	Very great concern
Many of the foods I like, are more expensive	4	9.9	32.2	29.7	24.3
High dependency on imported foods	3.5	6.4	25.7	29.7	34.7
Many of my favorite foods may not be available soon	11.9	18.8	31.7	23.8	13.9
Use of preservatives in food production	6.4	19.8	30.2	24.3	19.3
Health effects of food product	2	12.9	35.1	29.7	20.3
Respect for nature during food production and distribution	10.9	32.7	39.1	11.9	5.4
Integrity of the farmer and other food producers and processors.	18.8	30.2	25.7	16.8	8.4
Means	8.2	18.7	31.4	23.7	18

TABLE 4 Bivariate correlation among knowledge, food choices and preferences, factors influencing food choices and preferences and concerns about food systems.

Variables	Knowledge	Choices & preferences	Influencers	Concerns
Knowledge	1			
Choices & preferences	−0.031	1		
Influencers	−0.033	0.631**	1	
Concerns	0.193**	0.446**	0.394**	1

** $p < 0.001$.

were detected for consumer concerns based on country of residence and education level in the ordinal logistic regression model (Table 6). The model indicated that there were odds of 3.235 and 1.255 times, respectively, for Dominican and Barbadian respondents being concerned about food and food compared to Jamaican respondents. Additionally, the odds of respondents being concerned about food and food system was 2.032 times higher for graduates of vocational training compared to tertiary graduates.

For all models (ANOVA and ordinal regression), the index known as Variance Inflation Factor (VIF) was used as a diagnostic, to determine if multicollinearity caused an inflation of the standard errors of parameter estimates, making the results unreliable. However, for all models, the VIF index remained lower than two (2) indicating no inflation of standard errors due to multicollinearity. VIF values greater than five (5) are an indication of multicollinearity being too high (Kutner et al., 2004).

Discussion

The present study offers valuable insights into Caribbean consumers' knowledge of food security and food systems, as well as their food choices and preferences, influencers, and concerns. The socio-demographic characteristics of the respondents underscore the region's socio-demographic diversity. Majority of respondents were from Trinidad and Tobago, with a significant proportion identifying as female, aged between 25 and 44, and having attained tertiary education. This higher representation of educated, younger individuals may mirror broader regional trends and has important implications for the design and targeting of future interventions aimed at improving food security and food systems.

The study also reveals that most respondents came from households with a combined monthly income between 1,000 and 5,000 USD, typically within smaller household units. The relationship between food choices and income is particularly shaped by per capita income levels (Milford et al., 2019; Munialo and Mellor, 2024). Consumers with lower incomes often allocate a larger proportion of their disposable income to food, with any additional income typically directed toward food expenditure. This can lead to significant effects on food consumption patterns (Rask and Rask, 2004; Fukase and Martin, 2020; Munialo and Mellor, 2024). Conversely, wealthier consumers allocate a smaller proportion of their income to food, which reduces the impact of income growth on food demand. In higher-income households, food choices are more likely to prioritize convenience and quality, with less emphasis on psychological or sociocultural factors, as these consumers face fewer economic

constraints when making purchasing decisions (Munialo and Mellor, 2024).

Understanding the socio-demographic profile of consumers is critical, as it can significantly influence food choices, preferences, and concerns. These differences often reflect disparities in food accessibility and varying levels of engagement with food systems issues, as highlighted by Salas-García et al. (2025). For instance, consumers from higher-income households tend to prioritize food quality and convenience (Konttinen et al., 2021), whereas those from lower-income households are more likely to experience food security, which in turn shapes their food choices and perceptions of the food systems (Bocquier et al., 2015). Recognizing these socio-demographic factors is crucial when designing effective interventions aimed at reducing food insecurity and fostering more sustainable food systems in the Caribbean.

The findings suggest that most Caribbean consumers have limited knowledge about food systems and food security. This contrasts with previous research by Daley et al. (2023), which highlighted that individuals were more knowledgeable about food security. In the current study, respondents demonstrated uncertainty about fundamental aspects of food systems, with no single knowledge statement receiving a majority of "yes" responses. This general lack of awareness is consistent with findings in other regions and populations (Kneafsey et al., 2013; Anugwa et al., 2023). However, certain demographic groups, such as larger households and unmarried individuals tended to be more informed. Knowledge levels also varied across, gender, household size, and country. These patterns align with previous research indicating that general knowledge tends to increase with age until around age 50, after which it may decline (Steinmayr et al., 2015). Additionally, gender disparities in knowledge were evident, with men generally outperforming women across a variety of knowledge domains, a trend observed consistently across countries and age groups (Hambrick et al., 2010; Steinmayr et al., 2015). While household size is a known determinant of food security, the lack of knowledge around proper food choices and nutritional needs also plays a critical role. This issue is particularly pronounced among less-educated parents or those with limited access to reliable information, underscoring the need for greater nutrition education and awareness (Sisha, 2020). Moreover, significant differences in knowledge across countries may be attributed to variations in social and cultural contexts, economic development, and educational systems (Guiné et al., 2023). This overall lack of understanding underscores the urgent need for targeted education to raise consumer awareness of food systems. Particularly concerning the low levels of knowledge about how individual food choices affect local production and changing consumption patterns. These gaps may limit consumers' ability to make informed decisions that support sustainable food systems and

TABLE 5 ANOVA model on the socio-demographic variables on consumers' food choices and preferences, influencing factors and concerns about food systems.

Socio-demographic categories and descriptions	Choices and preferences (Mean $\pm$ SEM)	Influencers (Mean $\pm$ SEM)	Concerns (Mean $\pm$ SEM)
Country of residence			
Trinidad and Tobago	19.717 $\pm$ 0.374	24.646 $\pm$ 0.492	22.327 $\pm$ 0.481 ^{ab}
Barbados	20.300 $\pm$ 0.725	25.067 $\pm$ 0.955	22.033 $\pm$ 0.933 ^b
Dominica	19.567 $\pm$ 0.725	24.033 $\pm$ 0.955	25.167 $\pm$ 0.933 ^a
Jamaica	20.207 $\pm$ 0.737	26.276 $\pm$ 0.971	22.483 $\pm$ 0.949 ^{ab}
<i>F</i> -value	0.3	1.037	2.714
<i>p</i> -value	0.825	0.377	0.046
Sex			
Female	20.000 $\pm$ 0.335	24.863 $\pm$ 0.445	22.669 $\pm$ 0.440
Male	19.524 $\pm$ 0.498	24.825 $\pm$ 0.661	22.857 $\pm$ 0.654
<i>F</i> -value	0.629	0.002	0.057
<i>p</i> -value	0.429	0.962	0.812
Age			
Less than 25	20.438 $\pm$ 0.991	25.750 $\pm$ 1.301	22.062 $\pm$ 1.300
25–44	20.047 $\pm$ 0.383	25.411 $\pm$ 0.503	22.607 $\pm$ 0.503
45–64	19.418 $\pm$ 0.484	23.701 $\pm$ 0.636	23.209 $\pm$ 0.635
Over 64	19.750 $\pm$ 1.145	25.083 $\pm$ 1.503	22.000 $\pm$ 1.501
<i>F</i> -value	0.473	1.67	0.376
<i>p</i> -value	0.702	0.175	0.771
Race/Ethnicity			
African	19.897 $\pm$ 0.353	24.968 $\pm$ 0.468	22.611 $\pm$ 0.463
Indian	19.414 $\pm$ 0.736	24.276 $\pm$ 0.975	23.310 $\pm$ 0.965
Mixed	20.000 $\pm$ 0.578	24.894 $\pm$ 0.766	22.681 $\pm$ 0.758
<i>F</i> -value	0.218	0.207	0.216
<i>p</i> -value	0.804	0.813	0.806
Marital status			
Unmarried	19.942 $\pm$ 0.360	25.074 $\pm$ 0.476	22.347 $\pm$ 0.470
Married	19.716 $\pm$ 0.440	24.519 $\pm$ 0.582	23.296 $\pm$ 0.570
<i>F</i> -value	0.158	0.547	1.637
<i>p</i> -value	0.691	0.461	0.202
Level of education			
Secondary School	20.286 $\pm$ 1.060	23.929 $\pm$ 1.403	20.786 $\pm$ 1.374 ^b
Vocational training	19.857 $\pm$ 1.500	25.571 $\pm$ 1.984	26.000 $\pm$ 1.943 ^a
Tertiary	19.818 $\pm$ 0.295	24.895 $\pm$ 0.390	22.751 $\pm$ 0.382 ^{ab}
<i>F</i> -value	0.09	0.288	2.419
<i>p</i> -value	0.914	0.75	0.03
Combined monthly household income (USD)			
<1,000 USD	20.000 $\pm$ 0.570	25.813 $\pm$ 0.754	23.333 $\pm$ 0.751
1,000–5,000 USD	20.067 $\pm$ 0.362	24.765 $\pm$ 0.479	22.513 $\pm$ 0.477
5,001–10,000 USD	18.591 $\pm$ 0.843	23.409 $\pm$ 1.114	22.773 $\pm$ 1.109
>10,000 USD	19.462 $\pm$ 1.096	24.538 $\pm$ 1.449	22.385 $\pm$ 1.443
<i>F</i> -value	0.929	1.126	0.304
<i>p</i> -value	0.428	0.34	0.823

(Continued)

TABLE 5 (Continued)

Socio-demographic categories and descriptions	Choices and preferences (Mean $\pm$ SEM)	Influencers (Mean $\pm$ SEM)	Concerns (Mean $\pm$ SEM)
Household size (members)			
1–5	19.915 $\pm$ 0.288	24.836 $\pm$ 0.382	22.661 $\pm$ 0.378
6 or more	19.000 $\pm$ 1.144	25.083 $\pm$ 1.517	23.583 $\pm$ 1.500
F-value	0.411	0.013	0.274
p-value	0.664	0.987	0.761

SEM, Standard error of the mean.

^aValues along a column within the socio-demographic variable that does not share a common letter are significantly different at the stated *p*-value.

TABLE 6 Results of univariate ordinal logistic model for consumers' food choices and preferences, influencing factors and concerns about food systems.

Socio-demographic categories and descriptions	Choices and preferences		Influencers		Concerns	
	β	OR	β	OR	β	OR
Country of residence						
Trinidad and Tobago	−0.075	0.928	−0.271	0.763	−0.051	0.950
Barbados	−0.032	0.969	0.016	1.016	0.203	1.225*
Dominica	−0.412	0.662	−0.606	0.546	1.174	3.235*
Jamaica	Ref.		Ref.		Ref.	
Sex						
Female	−0.172	0.842	−0.395	0.674	−0.093	0.911
Male	Ref.		Ref.		Ref.	
Age						
<25	−0.113	0.893	0.387	1.473	−0.014	0.986
25–44	0.222	1.249	0.275	1.317	0.464	1.590
45–64	−0.23	0.795	−0.127	0.881	0.515	1.674
>64	Ref.		Ref.		Ref.	
Race/Ethnicity						
African	−0.22	0.803	0.144	1.155	0.21	1.234
Indian	−0.954	0.385	0.161	1.175	0.292	1.339
Mixed	Ref.		Ref.		Ref.	
Marital status						
Unmarried	0.122	1.130	0.382	1.465	−0.472	0.624
Married	Ref.		Ref.		Ref.	
Level of education						
Secondary School	0.315	1.370	−0.437	0.646	−0.484	0.616
Vocational training	0.276	1.318	−0.069	0.933	0.709	2.032*
Tertiary	Ref.		Ref.		Ref.	
Combined monthly household income (USD)						
<1,000 USD	0.163	1.177	0.518	1.679	−0.286	0.751
1,000–5,000 USD	0.188	1.207	0.303	1.354	−0.451	0.637
5,001–10,000 USD	−0.418	0.658	−0.205	0.815	−0.51	0.600
>10,000 USD	Ref.		Ref.		Ref.	
Household size (members)						
1–5	1.081	2.948	−0.162	0.850	−0.396	0.673
6 or more	Ref.		Ref.		Ref.	

 β , Estimate; OR, odds ratio; *Significant at the 5% level ($p < 0.05$); Ref., Reference category.

local agriculture. Conversely, the highest levels of awareness were observed in areas related to the origin of purchased food and the ingredients in processed foods, consistent with findings by Thøgersen (2023). This suggests growing consumer interest in food sourcing and health-related factors, aligning with global trends toward greater transparency and traceability in food production.

The study also revealed a significant knowledge gap regarding the benefits of locally produced foods. This gap may hinder initiatives to promote local agricultural products and develop sustainable food systems, echoing the findings of Nichifor et al. (2025). Further, this lack of understanding may hinder the adoption of policies and practices that encourage the consumption of locally produced foods, which are integral to building resilient and sustainable food systems. Addressing these knowledge gaps through targeted education and awareness campaigns is essential for fostering a more informed consumer base and supporting sustainable food systems in the Caribbean. Effective strategies include leveraging popular Caribbean platforms to share concise, engaging content on sustainable food choices, seasonal and local foods, and food waste reduction. Additionally, integrating curriculum modules on food systems, nutrition, and sustainability across all education levels will help build foundational knowledge from an early age.

Food choices and preferences are shaped by a multifaceted array of factors, including physiological, nutritional, environmental, and sociocultural influencers (Smith et al., 2016; Vink et al., 2020; Hejazi et al., 2024). In this study, Caribbean consumers demonstrated significant variability in their food choices and preferences, as evidenced by the distribution of responses across the five preference levels. A considerable proportion of respondents selected the “moderate extent” option for most preference statements, suggesting a tendency toward a balanced or middle-ground approach to food choices. The strongest preference was observed for foods that are quick and easy to prepare, aligning with the global trend toward prioritizing convenience in food selection (Granheim et al., 2022; Bogard et al., 2024). Additionally, a marked preference for lower-cost foods was evident, with a substantial proportion of participants indicating a preference for affordable options.

However, the absence of a clear majority response for any statement at a specific preference level highlights the complexity of food choice determinants among Caribbean consumers. This finding suggests that food choices and preferences in this population are not solely driven by a single factor but rather by an interplay of multiple considerations. Of particular interest is the pronounced preference for locally produced foods, which was the most strongly endorsed statement among respondents. This preference suggests an awareness of the value of supporting local food production, yet it may not always reflect a comprehensive understanding of the broader food system, as indicated by the varying levels of knowledge observed in the study’s knowledge section. Thus, while there is a clear inclination toward local food, it is important to recognize that this preference does not necessarily equate to an in-depth appreciation of the complexities of food production and distribution systems.

Several factors were identified as influencing consumer food choices, with varying degrees of impact across respondents. The most prominent determinant was food availability, which aligns

with previous research suggesting that access to specific food options is a critical factor in shaping food choices (Leng et al., 2017; Wongprawmas et al., 2021; Pelly et al., 2022). This finding reinforces the notion that the physical and economic accessibility of food plays a central role in consumer decision-making processes, highlighting the importance of ensuring equitable access to diverse and nutritious food options in promoting healthier dietary behaviors.

Advertising and brand influence emerged as significant factors in shaping food choices, aligning with previous research indicating that consumers are frequently exposed to a multitude of advertisements across various media platforms, which can substantially impact their food choices (Cairns, 2019; Kalog et al., 2022; Tsochantaridou et al., 2023). This finding underscores the critical role that food branding and availability play in influencing consumer behavior. It also suggests that there is a considerable opportunity for developing targeted marketing campaigns that not only emphasize the influence of food branding and availability but also incorporate nutritional education and promote local food options. By integrating these elements, such campaigns could potentially foster more informed and health-conscious food choices among consumers.

Religion emerged as the least influential factor in shaping food choices, with most respondents reporting either no or minimal influence. This finding was unexpected, as existing literature suggests that religious beliefs can significantly shape dietary choices and food-related behaviors (D’Haene et al., 2019; Heiman et al., 2019; Major-Smith et al., 2023; Gowder, 2024). Previous studies have highlighted the central role of religion in determining food practices, particularly in relation to dietary restrictions, rituals, and ethical considerations (D’Haene et al., 2019; Heiman et al., 2019; Major-Smith et al., 2023; Gowder, 2024). The discrepancy between our results and those of earlier studies may warrant further investigation to explore potential cultural, socio-demographic, or regional factors that could moderate the influence of religion on food choices and preferences. Additionally, it may be useful to consider how the interplay of other factors, such as social norms or individual health beliefs, might overshadow the impact of religious doctrine in contemporary food choices.

The study revealed a wide array of concerns among consumers regarding food and food systems, with “moderate concern” being the most reported response. A key concern expressed was the region’s heavy reliance on imported foods, which resonates with ongoing regional discussions on food sovereignty and the pressing need to reduce dependence on imported food sources (Phillips, 2022). According to FAO (2021), the Caribbean imports between 60 and 80 percent of its essential food supplies to meet domestic demand and support its large tourism sector. This dependency underscores the importance of promoting local food production and enhancing self-sufficiency, aligning with broader efforts to strengthen food security and resilience in the region.

In addition, similar to findings in other studies respondents expressed significant concern about the environmental impact of food production and distribution, particularly regarding the respect for nature (Vermeir and Verbeke, 2006; van Dam and Trijp, 2013; Aschemann-Witzel and Zielke, 2017; Shi et al., 2018; Vermeir et al., 2020; van Bussel et al., 2022). This focus on environmental sustainability reflects a growing awareness of the ecological consequences associated with modern food systems. Increasing

recognition of issues such as deforestation, biodiversity loss, greenhouse gas emissions, water scarcity, and soil degradation has highlighted the urgent need to transform how food is produced, distributed, and consumed. Consumers, policymakers, and producers alike are becoming more conscious of the environmental footprint of their choices and practices, driving demand for sustainable alternatives that minimize harm to ecosystems while ensuring food security. This shift underscores the importance of integrating sustainability principles into food system planning and education to promote practices that support long-term ecological balance and resilience. It may also indicate an increasing consumer preference for reducing the environmental footprint of food systems and prioritizing sustainability in their food choices. This shift in consumer values underscores the need for policies that support sustainable food production and distribution practices, highlighting the importance of environmental considerations in future food system developments. Growing desire for environmentally responsible food systems in Caribbean Small Island Developing States (SIDS) creates opportunities for policy action that links food choices with sustainable food systems. This region remains highly dependent on food imports and are very vulnerable to climate change, making it essential to promote local, climate-smart production and low-impact distribution practices (Stanberry and Fletcher-Paul, 2024). Policies that incentivize agroecological methods, renewable-energy-based cold chains, and reduced food waste can simultaneously lower greenhouse gas emissions and strengthen food security. These measures will help to ensure that food system development in Caribbean SIDS meets nutritional needs while aligning with global commitments such as the Paris Agreement and the Sustainable Development Goals, safeguarding both environmental health and long-term food security and sovereignty (United Nations General Assembly, 2014).

The ANOVA and univariate ordinal logistic models provided a deeper understanding of the relationships between socio-demographic variables and consumer food choices and preferences, influencers, and concerns. While no significant differences were found in food choices and preferences or influences across socio-demographic groups, significant differences were observed in consumer concerns based on both country of residence and level of education, consistent with findings of Mota-Gutierrez et al. (2024). Markedly, consumers from Dominica exhibited the highest levels of concern about food and food systems, which were significantly higher than those of consumers from Barbados. This finding suggests that regional factors, such as local food security issues or agricultural challenges, may influence levels of concern about food systems. Additionally, respondents with secondary education reported the lowest levels of concern, which were significantly lower than those of consumers with vocational education. This suggests that education plays a pivotal role in shaping consumer concerns about food systems, highlighting the importance of integrating food security education into curricula at various levels to increase awareness and drive action toward sustainable food practices.

The findings of this study underscore the importance of designing targeted educational programs and policies that address the gaps in knowledge about food systems and food security. Increasing awareness about the benefits of locally produced foods and promoting sustainable food practices should be central to these initiatives. Furthermore,

addressing consumer concerns about imported foods and environmental sustainability could guide the development of programs aimed at strengthening local food systems. Given the variability in consumer food choices and preferences and concerns across socio-demographic groups, it is crucial for future research to further investigate the influence of cultural, regional, and socio-economic factors on food choices. In-depth studies examining the role of income, education, and household structure in shaping food behaviors could provide valuable insights into the development of more effective food security programs in the Caribbean.

In conclusion, this study highlights the need for comprehensive and culturally sensitive approaches to food education and policy development in the Caribbean. By increasing consumer knowledge, addressing concerns about sustainability and food security, and promoting local food production, the region can take significant steps toward building a more resilient and sustainable food system.

Limitations and future directions

This study has some limitations, and the results must be understood and interpreted in the context of those limitations. Firstly, the study used a small sample size and there was poor representation of respondents from some of the groups involved in the study. For example, there were considerably more tertiary graduates who responded, and majority of the respondents were of African race/ethnicity. There was also a notably higher proportion of female to male respondents. The use of online recruitment tools has inherent limitations such as the need for participants to be literate and have internet access. Because of this, the use of online surveys may have excluded some groups or limited the number of respondents from some socio-demographic categories. In addition, the survey was conducted only among adults and did not include children and adolescents because of ethical consideration. Nevertheless, we recognize their significance as a consumer group that could influence the outcome of this study. Furthermore, the timing of the survey may have had an impact on respondents' views, and their views may be different if they had a longer time to reflect on their responses or had face-to-face interactions with surveyors. Future studies on a larger scale covering more Caribbean countries and with subjects more representative of the general Caribbean population should be considered. These studies should also explore intervention strategies and ways to reorganize and build resilience in the food systems of Caribbean Small Island Developing States.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by The University of the West Indies. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

Author contributions

OD: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. MW: Conceptualization, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. W-AI: Conceptualization, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Writing – original draft, Writing – review & editing. SW: Data curation, Formal analysis, Validation, Visualization, Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research and/or publication of this article.

Acknowledgments

The authors extend their appreciation to all consumers that completed and submitted the questionnaire.

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