

Research Article

Secular Trends of Fast-Food Consumption Among Adolescents Aged 12–15 Years: A Global Analysis Including 18 Countries

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Consumption of fast-food in adolescence is detrimental to mental and physical health. However, data on the temporal trends of fast-food consumption in this population are scarce, particularly from non-Western or non-high-income settings. Therefore, we aimed to examine this trend in representative samples of school-going adolescents aged 12–15 years from 18 countries in Africa, Asia, and the Americas, which were predominantly low- and middle-income countries (LMICs). Data from the Global School-based Student Health Survey (GSHS) 2009–2017 were analyzed. Fast-food consumption referred to eating from a fast-food restaurant at least once in the past 7 days. The prevalence of fast-food consumption was calculated for each survey, and crude linear trends within each country were examined by linear regression models. Data on 74,055 students aged 12–15 years were analyzed (mean (standard deviation (SD)) age: 13.9 (1.0) years; 49.2% boys). The mean prevalence of fast-food consumption was 52.7%. Of the 18 countries included in the study, significant increasing, decreasing, and stable trends were observed in 5, 2, and 11 countries, respectively. The most drastic increases were observed in Morocco between 2010 (44.2%) and 2016 (62.2%) and Lebanon between 2011 (64.6%) and 2017 (77.1%). Significant decreasing trends were observed in Kuwait between 2011 (90.5%) and 2015 (75.1%) and Samoa between 2011 (78.9%) and 2017 (67.3%). The prevalence of fast-food consumption is overwhelmingly high among adolescents globally. Decreasing trends were only observed in two countries (Kuwait and Samoa). These data suggest that global strategies to tackle fast-food consumption among adolescents are urgently required.

Keywords: adolescents; epidemiology; fast-food; multi-country; trends

1. Introduction

Fast-food is food that can be prepared quickly and easily, and is sold in restaurants and snack bars as a quick meal or for take-out (e.g., hamburgers and chips) [1–3]. Fast-food sales are on the rise globally in both low- and middle-income countries (LMICs) and high-income countries [4–6]. Fast-foods are often calorically dense, highly flavored, and nutritionally barren, while they often contain multiple potentially disease promoting chemicals and synthetic ingredients including extra corn syrup, artificial sweeteners, and coloring agents, as well as high content of sugar and salt [7].

Such poor nutritional content is detrimental to both mental and physical health, especially in adolescents. Specifically, failure to meet nutrient requirements during adolescence can result in growth retardation, impaired organ remodeling, and micronutrient deficiencies [8]. Moreover, fast-food consumption has been found to be associated with a higher body mass index [9–11], suicide attempts [12, 13], depression, stress, anxiety, sleep dissatisfaction, and lower levels of happiness in adolescence [14, 15]. Importantly, the effect of unhealthy dietary habits in youth can have long-term health effects. For instance, they have been associated with an increased risk of obesity [16, 17], cardiovascular disease, type 2 diabetes [18–20], and cancer [21, 22] in later adulthood.

Despite the high global prevalence of fast-food consumption and its known deleterious effect on health among adolescents, little is known about its recent temporal trends, especially in LMICs and non-Western high-income countries. It is essential to understand the time trends of fast-food consumption among adolescents for service planning and policy development that aims to reduce fast-food consumption and promote healthy diets. It is particularly important to target adolescents as adolescence is a time when habits are formed that persist into adult life including healthy diets [23, 24].

The few previous studies on fast-food consumption trends have shown, for example, that fast-food consumption could be increasing among adolescents in China or that it could be decreasing in the United States, but with sociodemographic disparities being apparent. Specifically, among 2656 Chinese children and adolescents aged 6–18 years, fast-food consumption increased between 2004 and 2009, from 18.5% to 23.9% in those aged 6–18 years, but increased more rapidly among those aged 13–17 years, from 17.9% to 26.3%. The increase was significant in almost all groups by age, sex, family income, and residence [25]. Next, in a repeated cross-sectional study carried out on 3072 adolescents in 1999 and 2793 adolescents in 2010 from the United States, the overall prevalence of frequent fast-food consumption, defined as three or more times per week, decreased between 1999 and 2010 (1999: 25%; 2010: 19%; $p < 0.001$) but the prevalence of frequent fast-food consumption remained highest and did not significantly decrease among Black or Native American youths [26]. It is clear that research on this topic is needed from other settings, using recent data. In particular, studying this topic in LMICs is important, as in these settings, prices increased substantially in 2008 for

basic food items, and the price spike was experienced as a crisis by many people who were already spending half or more of their earnings on food. This may have consequently driven people to purchase cheap and readily-available processed foods that are high in sugars, fats, and salt (i.e., fast-food) [27]. Indeed, such changes in diets are likely contributing to the increasing prevalence of noncommunicable diseases in such settings [28]. Furthermore, data from multicountry studies that use standardized methodology across countries are highly informative, as they can highlight the potentially contrasting trends across countries and provide hints on what country-wide policies may be more effective in reducing fast-food consumption.

Given this background, the aim of the present study was to examine the temporal trends of fast-food consumption in a sample of 74,055 students aged 12–15 years from 18 countries in Africa, Asia, and the Americas (predominantly LMICs), where temporal trends of fast-food consumption are largely unknown.

2. Methods

2.1. The Survey. Data from the Global School-based Student Health Survey (GSHS) was analyzed. Details on this survey are provided elsewhere [29, 30]. Briefly, the GSHS was jointly developed by the World Health Organization (WHO) and the US Centers for Disease Control and Prevention (CDC), and other UN allies. The survey aimed to identify risk and protective factors of common noncommunicable diseases. The survey used a standardized two-stage probability sampling design to select participants within each country. For the first stage, schools were selected with probability proportional to size sampling. The second stage involved the random selection of classrooms which included students aged 13–15 years within each selected school. All students in the selected classrooms were eligible to participate in the survey regardless of age. Thus, the survey was not restricted to those aged 13–15 years, given that classrooms could have included students who were below or above this age range (e.g., 12 years old). Data collection was conducted during one regular class period. The questionnaire was translated into the local language and consisted of multiple-choice response options. Students recorded their response on computer scannable sheets. All GSHS surveys were approved, in each country, by both a national government administration (most often the Ministry of Health or Education) and an institutional review board or ethics committee. Student privacy was protected through anonymous and voluntary participation, and informed consent was obtained as appropriate from the students, parents, and/or school officials. Data were weighted for nonresponse and probability selection.

From all publicly available data, we selected all nationally representative datasets that included the variables used in our analysis, and for which data on two waves were available from the same country. Thus, the analytical sample consisted of 18 countries. The characteristics of each country including the region, survey year, country income level, response rate, sample size, and demographics are provided in the Appendix

(Table A1). These countries were mainly LMICs and were from five WHO regions: African region ($n=2$), region of the Americas ($n=5$), Eastern Mediterranean region ($n=5$), Southeast Asia region ($n=1$), and Western Pacific region ($n=5$). The surveys included in the current study were conducted between 2009 and 2017.

2.2. Fast-Food Consumption. Fast-food consumption was assessed with the question “During the past 7 days, on how many days did you eat food from a fast-food restaurant?” with country specific examples on fast-food restaurants. This variable was dichotomized as at least once or not [31].

2.3. Statistical Analysis. The analysis was restricted to those aged 12–15 years as most students were within this age group, while information on the exact age outside of this age range was not available. The prevalence and 95% confidence interval (CI) of fast-food consumption was calculated for the overall sample and sex-stratified samples for each survey. Crude linear trends in fast-food consumption were assessed by linear regression models across surveys within the same country to estimate regression coefficients (β) and 95% CI for every 1-year change. P for trends were estimated using the survey year as a continuous variable. Sampling weights and the clustered sampling design of the surveys were considered in all analyses. Statistical analyses were done with Stata 14.2 (Stata Corp LP, College station, Texas).

3. Results

A total of 74,055 students aged 12–15 years were included in the analysis. The mean (standard deviation (SD)) age was 13.9 (1.0) years and 49.2% were boys. The overall mean prevalence of fast-food consumption (i.e., at least once in the past 7 days) was 52.7%, although this ranged widely between countries. Specifically, the lowest prevalence was observed in Maldives in 2009 (34.9%) and the highest in Kuwait in 2011 (90.5%). The trends in the prevalence of fast-food consumption are shown in Table 1 (overall and by sex), Figure 1 (overall), and Figure 2 (by sex). Of the 18 countries included in the study, based on the overall sample, significant increasing, decreasing, and stable trends were observed in 5, 2, and 11 countries, respectively. Specifically, significant increasing trends were observed in Anguilla between 2009 (72.0%) and 2016 (76.9%; $\beta = 0.70$; 95% CI = 0.27, 1.14), Lebanon between 2011 (64.6%) and 2017 (77.1%; $\beta = 2.08$; 95% CI = 1.46, 2.70), Morocco between 2010 (44.2%) and 2016 (62.2%; $\beta = 2.99$; 95% CI = 2.08, 3.90), Oman between 2010 (65.0%) and 2015 (71.9%; $\beta = 1.38$; 95% CI = 0.07, 2.69), and United Arab Emirates between 2010 (66.0%) and 2016 (76.6%; $\beta = 1.77$; 95% CI = 0.88, 2.66). The β can be interpreted as the average point change in prevalence (%) per year. In contrast, significant decreasing trends were observed in Kuwait between 2011 (90.5%) and 2015 (75.1%; $\beta = -3.84$; 95% CI = -5.31, -2.37) and Samoa between 2011 (78.9%) and 2017 (67.3%; $\beta = -1.94$; 95% CI = -2.87, -1.01). Trends were similar between boys and girls in most countries although the increasing trend in Anguilla was more pronounced among

boys, while the increasing trend in Oman was mainly driven by the increase among girls.

4. Discussion

The prevalence of fast-food consumption (i.e., at least once per week) was high (52.7%), and significant increasing and decreasing trends were observed in five (Anguilla, Lebanon, Morocco, Oman, and United Arab Emirates) and two countries (Kuwait and Samoa), respectively, in a representative sample of school-going adolescents 12–15 years from 18 countries in Africa, Asia, and the Americas. The most drastic increases were observed in Morocco between 2010 (44.2%) and 2016 (62.2%) and Lebanon between 2011 (64.6%) and 2017 (77.1%). However, it is important to highlight that the prevalence of fast-food consumption was high at baseline in the two countries with significant decreasing trends (90.5% in Kuwait and 78.9% in Samoa) and was still high at the most recent survey (75.1% in Kuwait and 67.3% in Samoa). Furthermore, in the remaining 11 countries where stable trends were observed, high prevalence of fast-food consumption was observed across multiple years. To the best of our knowledge, this is the first multicountry study on this topic, while we present data on fast-food consumption trends among adolescents from countries where data were previously nonexistent.

Findings from the present study are concerning as they demonstrate that trends in fast-food consumption are increasing rather than decreasing in most countries sampled, and are high and stable in others. The increasing trends in fast-food consumption may be explained by multiple factors but one key factor may be the rapid growth in fast-food outlets and the concurrent increase in the availability of fast-food. Indeed, in Morocco, where a drastic increase in fast-food consumption was observed in our study, an average annual fast-food outlet growth of between 3% and 4% from 2009 to 2014 has been reported [32]. Previous studies have shown that exposure to fast-food outlets is associated with greater consumption [33]. A further factor underlying increasing fast-food consumption among adolescents in Morocco maybe due to country-specific strategies and advertising to entice adolescents. For example, the menu of McDonalds in Morocco is similar to that of the USA or European countries, but the restaurants are presented as local places to socialize and the ambiance is often based on local culture [34]. Finally, Morocco has a relatively high level of food insecurity among adolescents [35], which is also true for Lebanon [36]. Food insecurity may lead to fast-food consumption as people tend to consume more calorie dense but less nutritious food when food is not readily available [37]. Alternatively, increasing cravings for high-calorie foods may be induced as a coping strategy for food insecurity-associated stress [38].

It is encouraging that fast-food consumption is decreasing in two countries (Kuwait and Samoa). These decreasing trends may be owing to country-specific strategies to improve diets in these locations. For example, the Kuwait National Programme for Healthy Living (first 5-Year Plan 2013–2017), supported by the Ministry of Education and the Ministry of Health, was developed through multiple consultations with governing

TABLE 1: Trends in prevalence (%) of fast-food consumption in 18 countries (overall and by sex).

Country	Year	Overall				Boys				Girls			
		%	[95% CI]	β	[95% CI]	%	[95% CI]	β	[95% CI]	%	[95% CI]	β	[95% CI]
Anguilla	2009	72.0	[72.0,72.0]	0.70**	[0.27,1.14]	69.7	[69.7,69.7]	0.81**	[0.22,1.41]	73.9	[73.9,73.9]	0.67	[−0.00,1.34]
	2016	76.9	[73.8,79.8]	—	—	75.4	[71.1,79.2]	—	—	78.6	[73.7,82.8]	—	—
Benin	2009	51.8	[48.5,55.2]	−0.79	[−1.87,0.28]	52.7	[47.6,57.7]	−0.65	[−2.08,0.79]	50.4	[45.9,54.9]	−1.07	[−2.17,0.03]
	2016	46.3	[39.9,52.7]	—	—	48.2	[40.0,56.4]	—	—	42.9	[37.1,48.8]	—	—
Cook Islands	2011	66.8	[66.8,66.8]	−0.69	[−0.69,−0.69]	66.8	[66.8,66.8]	0.03	[−1.73,1.80]	66.8	[66.8,66.8]	−1.15	[−3.03,0.72]
	2015	64.0	[58.0,69.6]	—	—	67.0	[59.8,73.4]	—	—	62.2	[54.6,69.1]	—	—
Guatemala	2009	50.6	[44.1,57.1]	1.04	[−0.67,2.74]	53.7	[49.6,57.9]	0.22	[−1.12,1.55]	47.3	[38.3,56.4]	1.90	[−0.38,4.19]
	2015	56.8	[49.0,64.3]	—	—	55.1	[48.3,61.7]	—	—	58.7	[48.5,68.2]	—	—
Jamaica	2010	57.6	[53.9,61.1]	0.12	[−0.51,0.76]	57.4	[48.8,65.6]	−0.10	[−1.48,1.29]	57.6	[49.5,65.4]	0.33	[−1.00,1.65]
	2017	58.4	[56.1,60.7]	—	—	56.7	[52.7,60.6]	—	—	59.9	[56.0,63.8]	—	—
Kuwait	2011	90.5	[88.4,92.2]	−3.84***	[−5.31,−2.37]	88.8	[86.6,90.7]	−2.66**	[−4.43,−0.88]	92.2	[88.4,94.8]	−5.03***	[−6.59,−3.47]
	2015	75.1	[69.4,80.1]	—	—	78.2	[71.0,84.0]	—	—	72.1	[66.7,76.8]	—	—
Lebanon	2011	64.6	[61.5,67.6]	2.08***	[1.46,2.70]	68.0	[63.7,72.0]	1.87***	[1.02,2.72]	61.6	[58.2,65.0]	2.26***	[1.62,2.90]
	2017	77.1	[75.2,78.9]	—	—	79.2	[76.3,81.8]	—	—	75.2	[73.7,76.7]	—	—
Maldives	2009	34.9	[32.2,37.7]	0.06	[−0.88,0.99]	39.3	[34.8,44.0]	−0.76	[−2.08,0.57]	30.6	[28.0,33.3]	0.76	[−0.19,1.70]
	2014	35.1	[31.5,39.0]	—	—	35.5	[31.0,40.4]	—	—	34.4	[30.6,38.4]	—	—
Mauritius	2011	54.2	[52.1,56.2]	0.54	[−0.20,1.28]	53.6	[50.5,56.7]	0.79	[−0.25,1.84]	54.7	[50.7,58.6]	0.28	[−1.01,1.57]
	2017	57.4	[53.7,61.1]	—	—	58.3	[53.2,63.3]	—	—	56.4	[50.0,62.5]	—	—
Morocco	2010	44.2	[40.4,48.1]	2.99***	[2.08,3.90]	45.2	[41.1,49.4]	3.16***	[2.20,4.11]	43.3	[38.6,48.1]	2.74***	[1.59,3.90]
	2016	62.2	[58.4,65.8]	—	—	64.1	[60.3,67.8]	—	—	59.8	[54.9,64.5]	—	—
Oman	2010	65.0	[59.5,70.2]	1.38*	[0.07,2.69]	69.2	[60.6,76.6]	0.77	[−1.03,2.58]	61.3	[55.2,67.1]	2.01*	[0.26,3.75]
	2015	71.9	[68.3,75.3]	—	—	73.0	[69.2,76.5]	—	—	71.3	[64.9,77.0]	—	—
Philippines	2011	47.1	[39.6,54.7]	1.22	[−1.19,3.63]	44.4	[36.6,52.4]	1.79	[−0.75,4.34]	49.8	[41.8,57.8]	0.63	[−2.00,3.25]
	2015	51.9	[46.2,57.6]	—	—	51.5	[45.4,57.6]	—	—	52.3	[45.8,58.7]	—	—
Samoa	2011	78.9	[75.5,81.9]	−1.94***	[−2.87,−1.01]	77.6	[74.1,80.8]	−1.88**	[−3.10,−0.65]	79.7	[75.9,83.0]	−1.93***	[−2.87,−0.99]
	2017	67.3	[62.7,71.5]	—	—	66.4	[59.7,72.4]	—	—	68.1	[63.7,72.2]	—	—
Suriname	2009	62.4	[58.1,66.5]	0.21	[−0.61,1.03]	63.9	[59.3,68.2]	0.23	[−0.87,1.33]	61.5	[55.9,66.7]	0.14	[−0.82,1.10]
	2016	63.8	[60.3,67.2]	—	—	65.5	[59.4,71.0]	—	—	62.5	[58.9,65.8]	—	—
Tonga	2010	70.0	[67.3,72.5]	−0.05	[−0.55,0.45]	68.9	[65.5,72.1]	0.00	[−0.67,0.68]	70.8	[67.1,74.3]	−0.06	[−0.73,0.62]
	2017	69.6	[67.2,71.9]	—	—	68.9	[65.5,72.1]	—	—	70.4	[67.3,73.4]	—	—
Trinidad and Tobago	2011	64.6	[60.5,68.5]	0.41	[−0.40,1.22]	60.4	[56.0,64.6]	0.71	[−0.29,1.71]	68.9	[63.0,74.2]	0.09	[−0.99,1.17]
	2017	67.1	[64.4,69.6]	—	—	64.6	[60.4,68.6]	—	—	69.5	[66.3,72.4]	—	—
United Arab Emirates	2010	66.0	[61.1,70.5]	1.77***	[0.88,2.66]	66.4	[61.8,70.8]	1.77***	[0.83,2.70]	65.6	[58.9,71.8]	1.74**	[0.56,2.92]
	2016	76.6	[74.2,78.8]	—	—	77.0	[73.7,80.0]	—	—	76.0	[73.5,78.5]	—	—
Vanuatu	2011	56.4	[46.6,65.7]	0.25	[−1.93,2.44]	56.5	[44.3,67.9]	0.48	[−2.18,3.15]	56.0	[46.5,65.1]	−0.03	[−2.29,2.23]
	2016	57.6	[53.0,62.1]	—	—	58.9	[53.8,63.8]	—	—	55.9	[50.0,61.6]	—	—

Note: Fast-food consumption referred to eating from a fast-food restaurant at least once in the past seven days. The β are based on linear regression including survey year as a continuous variable. The β can be interpreted as the average percentage point change in prevalence per year.

Abbreviation: CI, confidence interval.

* p for trend <0.05.

** p for trend <0.01.

*** p for trend <0.001.

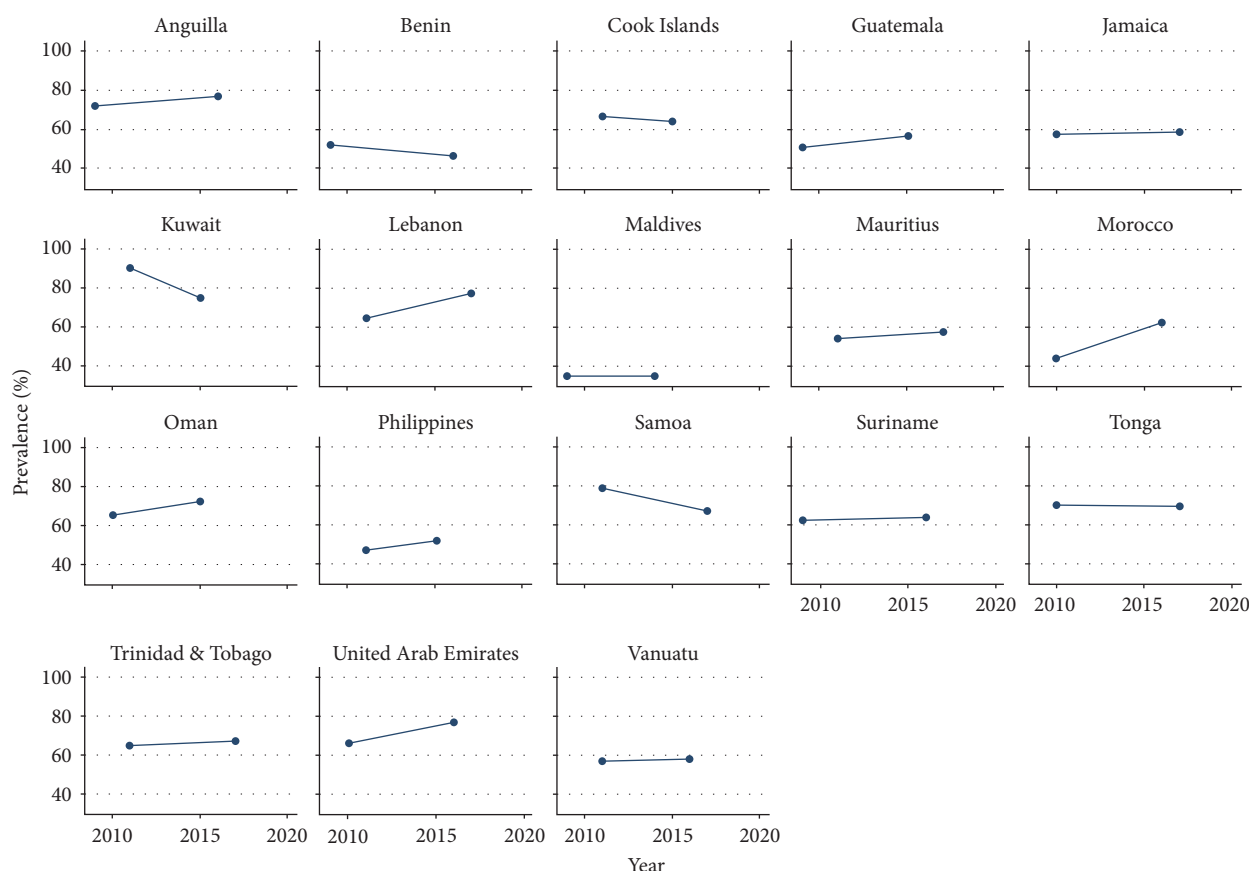


FIGURE 1: Prevalence of fast-food consumption (%) across years by country (overall sample including both boys and girls). Fast-food consumption referred to eating from a fast-food restaurant at least once in the past 7 days.

bodies, with the main aim of addressing the high prevalence of obesity in Kuwait. Among other initiatives, the programme introduced knowledge on the pathophysiology of obesity into the school curriculum, and the harmful effects of physical inactivity in conjunction with excessive caloric intake (including fast-food consumption) [39]. Moreover, Samoa also developed national noncommunicable disease control policies for 2010–2015 and 2018–2023, and the Samoa National Health Promotion Policy 2010–2015, which included the promotion of healthy diets [40].

4.1. Policy Implications. Data from the present study suggest that fast-food consumption is a global public health concern among adolescents, and that global strategies and initiatives are urgently required to curb any increases in consumption and reduce high and stable trends. It has been proposed that high-leverage policies are required to change original structures and create a context in which adolescents have less chance to form or maintain unhealthy behaviors. For example, restricting fast-foods in school cafeterias can make unhealthy food inaccessible to children, whereas school policies on nutrition education can equip students with more skills and knowledge about how to balance their energy intake and expenditure in such a changing food environment

[41]. Taxing fast foods may also help reduce fast-food intake. Global regulation of food marketing should also be considered. Indeed, increased exposure to food advertising might be associated with shaping food choices, beliefs, and purchase requests and the large proportion of TV advertisements on food consist of fast-foods. Regulation may include a complete advertisement ban on fast-foods, a ban on fast-food adverts that target children and adolescents, and health messages included on advertisements [41, 42].

4.2. Strengths and Limitations. The analysis of large representative samples of school-going adolescents across 18 countries from multiple continents is a clear strength of the present study. However, findings must be interpreted in light of the study's limitations. First, fast-food consumption was self-reported potentially introducing some level of reporting bias (e.g., recall bias). Second, no data were available on the type of fast-food consumed. Owing to differing cultures, it may be that in some settings, the type of fast-food consumed may have a more desirable nutritional content than others. Third, our study results are only generalizable to school-going adolescents as only students were included in the study. However, school attendance rates are known to be generally high in the countries included in our study. Finally, the trends were

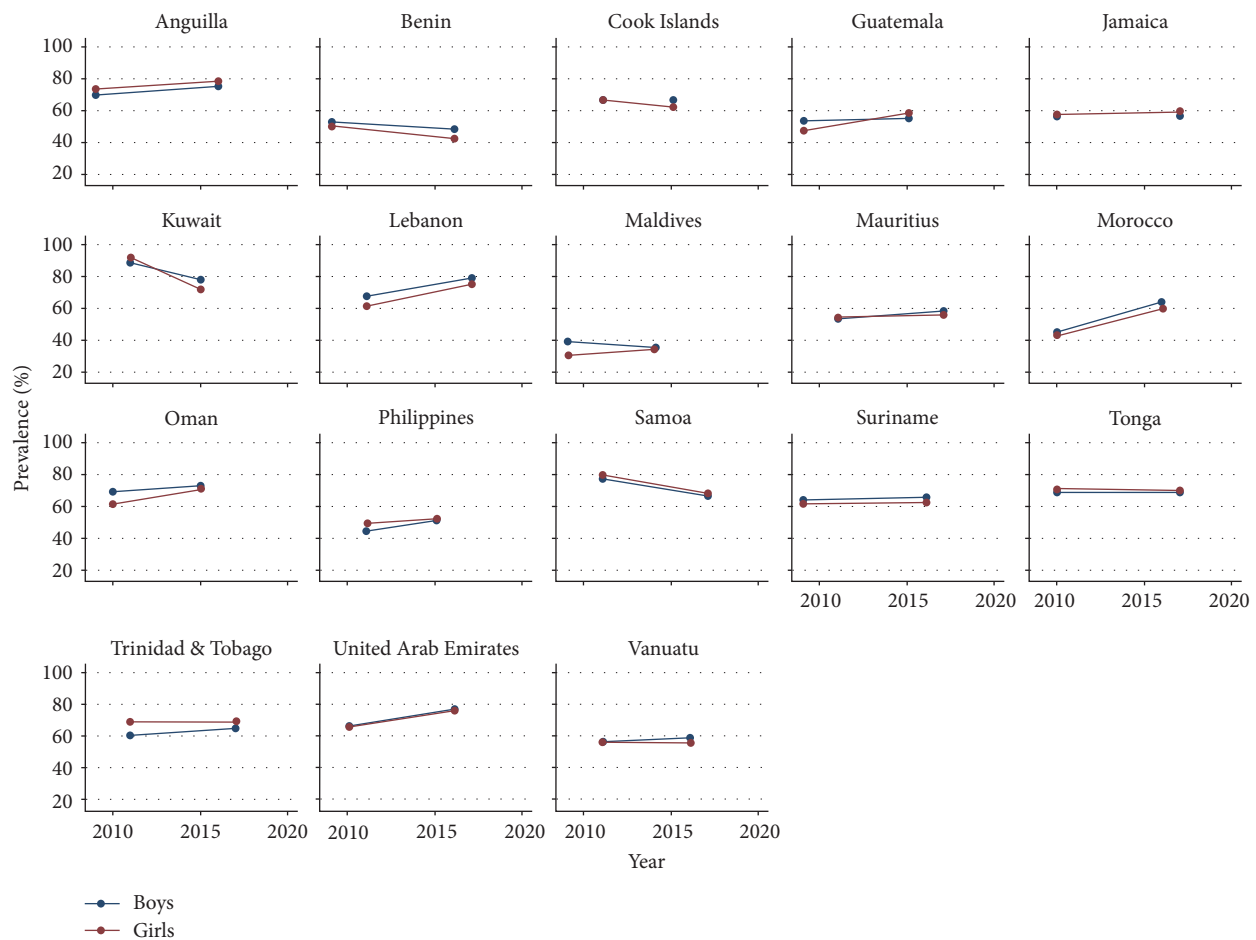


FIGURE 2: Prevalence of fast-food consumption (%) across years by sex and country. Fast-food consumption referred to eating from a fast-food restaurant at least once in the past 7 days.

assessed for different timeframes depending on the country. This should always be taken into consideration when interpreting the annual change.

5. Conclusion

The prevalence of fast-food consumption was overwhelmingly high in our sample of school-going adolescents aged 12–15 years from multiple continents, and we found very little evidence of improvement based on recent trends. Specifically, significant increasing and decreasing trends were

observed in five (Anguilla, Lebanon, Morocco, Oman, and United Arab Emirates) and two countries (Kuwait and Samoa), respectively. Our data suggest that global strategies to reduce fast-food consumption among adolescents are urgently required. Such strategies may include restricting fast foods in school cafeterias, taxing fast-food, and regulating the marketing/advertising of fast-food. It would be prudent to carry out future research that focuses on trends of different types of fast-food consumption, as previously stated, it may be that in some settings, the type of fast-food consumed may have a more desirable nutritional content than others.

Appendix A

TABLE A1: Survey characteristics.

Country	Region	Year	Survey Characteristics				
			Country income level	Response rate (%)	N	Boys (%)	Mean (SD) age (years)
Anguilla	AMR	2009	NA	84	701	49.5	13.7 (1.1)
		2016	NA	88	564	50.3	14.0 (0.8)
Benin	AFR	2009	L	90	1170	66.1	14.2 (0.9)
		2016	L	78	717	65.6	14.2 (0.9)
Cook Islands	WPR	2011	NA	84	849	52.6	13.7 (1.0)
		2015	NA	65	366	48.7	14.2 (0.7)
Guatemala	AMR	2009	LM	81	4495	52.2	13.9 (0.9)
		2015	LM	82	3611	50.9	13.9 (0.9)
Jamaica	AMR	2010	UM	72	1204	49.7	14.3 (0.8)
		2017	UM	60	1061	47.9	14.2 (0.8)
Kuwait	EMR	2011	H	85	2298	51.3	14.1 (0.8)
		2015	H	78	2034	49.4	14.1 (0.9)
Lebanon	EMR	2011	UM	87	1982	46.6	13.7 (1.0)
		2017	UM	82	3347	47.4	13.6 (1.0)
Maldives	SEAR	2009	LM	80	1981	47.9	14.4 (0.7)
		2014	UM	60	1781	49.3	14.4 (0.7)
Mauritius	AFR	2011	UM	82	2074	49.2	13.8 (1.0)
		2017	UM	84	1955	45.8	13.9 (0.8)
Morocco	EMR	2010	LM	92	2405	52.9	13.7 (1.0)
		2016	LM	91	3975	50.9	13.6 (1.1)
Oman	EMR	2010	H	89	1000	48.0	14.3 (0.7)
		2015	H	92	1669	47.1	14.2 (0.8)
Philippines	WPR	2011	LM	82	3845	48.5	13.9 (1.0)
		2015	LM	79	6162	48.1	13.9 (0.9)
Samoa	WPR	2011	LM	79	2200	47.4	14.0 (0.8)
		2017	LM	59	1058	46.4	13.8 (1.0)
Suriname	AMR	2009	UM	89	1046	45.4	14.0 (1.0)
		2016	UM	83	1453	46.1	13.8 (1.0)
Tonga	WPR	2010	LM	80	1946	50.3	14.1 (0.9)
		2017	UM	90	2067	51.4	13.6 (1.1)
Trinidad & Tobago	AMR	2011	H	90	2363	49.5	13.6 (1.1)
		2017	H	89	2763	48.3	13.6 (1.1)
United Arab Emirates	EMR	2010	H	91	2302	39.9	14.0 (0.9)
		2016	H	80	3471	48.1	13.9 (1.0)
Vanuatu	WPR	2011	LM	72	852	49.5	13.5 (1.0)
		2016	LM	57	1288	47.8	14.1 (0.9)

Note: Country income level was not available for Anguilla and Cook Islands.

Abbreviations: AFR, African region; AMR, region of the Americas; EMR, Eastern Mediterranean region; H, high income; L, low income; LM, lower–middle income; NA, not available; SD, standard deviation; SEAR, Southeast Asia region; UM, upper–middle income; WPR, Western Pacific region.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

Author Contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work, and approved it for publication.

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