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The Role of Cultural Capital in Food Choice Patterns: The Mediatory Role of Educational Inequalities

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Abstract

Background: Cultural capital can interestingly mediate what a person prefers to eat and, thus, may be effective in dietary choice. The objectives of this study were to compare the distribution of cultural capital components within the different educational levels and also compare food consumption patterns across the different educational levels; and examine cultural capital's role in the educational inequalities in food consumption among healthy women.

Methods: The data was obtained in the form of a cross-sectional design with face-to-face interviews with 527 women who had visited shopping centers and parks in Tabriz from September to November 2021, using convenient sampling. Food recall as well as cultural capital questionnaire were completed for the participants, and anthropometric indices were measured. The level of education of the participants was considered as an indicator of socio-economic status.

Results: Family institutionalized cultural capital, objectivized cultural capital, and most of the incorporated cultural capital's indicators were significantly differed by educational inequalities. Daily frequency scores of unhealthy food consumption in the participants with primary education was higher than other educational groups ($p<0.001$). The high-educated individuals' intakes healthier foods were compared to unhealthy foods, and participants with low total cultural capital score were in adherence of a low overall healthy food consumption (PR: 1.49, 95%CI: 1.23-1.68).

Conclusion: Education levels are significantly associated with cultural capital, and participants with high levels of cultural capital choose healthier foods more often than participants with low cultural capital.

Keywords: Cross-sectional studies, Diet, Economic status, Educational status, Female, Humans, Surveys and questionnaires

Introduction

Dietary choices are a main indicator of population health, morbidity, and mortality (1). Healthy diets which are high in fruit and vegetables, whole grains, nuts, and low-fat dairy products may be protective in incidence of Non-Communicable Diseases (NCDs) (2). Conversely, consumption of unhealthy diets such as foods with high amount of saturated fatty acids, sugars, and salt which are poor in micronutrients has contributed to most of the chronic disorders such as diabetes, coronary heart disease, hypertension, and some cancers (3,4).

In addition, over-consumption of energy-dense diets are linked to the development of overweight and obesity, which in turn are associated with much co-morbidity (5-7). It is estimated that worldwide prevalence of obesity will grow by 9.7 billion, in 2050 (8). The sharp rise in incidence of obesity contributes to westernization of the diet and also household incomes that can influence the dietary choices (9). Further, socioeconomic position, living conditions, and cultural resources partly mediate the food choice behaviors (10), and socio-economic inequalities lead to discrepancies in health status (11). Many of the recent national dietary surveys demonstrated that healthier dietary intake is generally associated with higher social and cultural status (12-14). In fact, unhealthy behaviors are not the result of completely voluntary choices of individuals, but are more influenced by the structures in daily life such as material resources and facilities. Low socio-economic groups usually have unhealthier behaviors such as unhealthy food choices (15,16). Educational level is a strong and commonly-used indicator of socio-economic status that can predict consumption of a healthy diet, as nutritional knowledge may be more closely associated with dietary intake than traditional socio-economic characteristics (17-19). Education influences eating habits by facilitating the reading and understanding of nutritional information and adherence to nutritional recommendations (20,21). The new angle of dietary choice studies are focused on cultural resources or "capitals" that may contribute to health inequalities (22). Cultural resources can effectively influence the knowledge, norms, habits, and also preferences of population through education and socialization (23,24). According to the Bourdieu's study, Cultural Capital (CC) is one of the distinguished forms of capital that examined in three categories including incorporated (*e.g.* values, skills, knowledge), objectivized (*e.g.* books, tools), and institutionalized (*e.g.* educational degrees, professional titles) (25,26). Accumulation of cultural capital in people through these three sources causes differences in those who have cultural capital and those who lack it. Bourdieu has reported that taste and food choices are influenced by cultural relations, as well as social and economic status and income. Many factors such as training, education, and attending cultural venues take part in changing lifestyle-related behaviors including food choices. Therefore, cultural capital can interestingly mediate what a person prefers to eat and, thus, may be effective in dietary choice. Some researchers consider the role of education further and consider it as "new cultural capital". They believe that in today's era and despite the daily changes in technology and information, the "educational capital" of individuals should be mentioned as the cultural capital of globalization. Therefore, the improvement of educational capital in professional specializations, technology and new skills can be considered as the reason for the competitive advantage of people in innovation and access to information networks, which in a way will improve the cultural capital of a person (27-29).

Relatively little is studied regarding the mechanisms underlying socio-economic inequality in eating habits or how to compensate inequalities between youth (30,31). The objectives of this study were to (1) compare the distribution of cultural capital within the different educational levels considering three dimensions of cultural capital including incorporated, objectivized, and institutionalized cultural capital (2) compare people food consumption patterns (healthy or unhealthy) across the different educational levels; and (3) examine whether cultural capital contributes to the educational inequalities in food consumption.

Materials and Methods

Study participants

Data were obtained in a cross-sectional design by face-to-face interviews with women who were visiting shopping malls including Laleh Park, Atlas, Setareh Baran, Kourosh, and Hyper Family, as well

as Elgoli and Valiasr parks in Tabriz city, Iran from September to November 2021. The inclusion criteria were women who were responsible for preparing and cooking foods at home with the age of 18 years or more. People with disabilities and who did not want to complete the questionnaires and refer for the measurement of anthropometric indicators were excluded from the study. The statistical population of this study includes all women over 18 years of age in Tabriz which is based on the latest public population and housing census. Using Cochran's formula, the minimum sample size with a variance of 1 and an error of 0.1 is equal to 384 individuals, which is the sample floor for unlimited communities in Cochran's formula. Considering the convenience sampling method, totally 572 subjects were participated in the study. In Tabriz, there are several famous shopping centers, parks and entertainment centers that are scattered in different parts of the city, and these centers were chosen as sample collection sites. People who had free time to visit these centers and were willing to cooperate participated in the study. The built-in chairs and tables were used for resting in the centers, as well as the tables in the food courts to make the participants to answer the questionnaires. The participation of people in the study was completely free and it was explained to the participants that their information will remain confidential for conducting this research. Also, all the participants signed and approved the informed consent form to participate in the study.

Anthropometric measurements

In order to accurately measure the anthropometric indicators, certain sections were designated as examination rooms in the centers. All the subjects were requested to visit the examination rooms after completing the questionnaires. The anthropometric indicators were measured with the help of a trained nutritionist. Anatomical measurements including height, weight, waist circumference and hip circumference were performed for all the participants. Standing height was measured by Seca height meter with an accuracy of 0.5 *cm*. The weight of the participants was estimated with the help of a falcon scale with minimal clothing with a measurement accuracy of 100 *g*. The waist circumference was measured from the middle point of the lower edge of the rib and the sternum while standing and breathing normally and with an accuracy of 0.5 *cm* using a tape measure. Also, hip circumference was measured using a tape measure with an accuracy of 0.5 *cm* and at the point that had the largest circumference. Body mass index was calculated by dividing weight (*kg*) by the square of height in centimeters.

The cultural capital questionnaire development process

The questionnaire that was used in the study of Kamphuis *et al* was selected for the development of cultural capital questionnaire (15). Respectively, the determinants of cultural capital that were relevant to food choice were extracted from previous studies and summarized in the form of a questionnaire. The draft of the questionnaire was then translated into Persian. The final questionnaire composed of 92 questions and was categorized into 4 sections including:

1) characteristics of the respondents, 2) family institutionalized cultural capital that was measured by highest educational credentials of the responder's father, mother, and partner, 3) objectivized cultural capital that was specified by availability of cooking equipment, and 4) incorporated cultural capital that was assessed by asking the participants' participation, cooking skills, grocery shopping skills, food information skills, nutrition knowledge, and general human values. The mean score of the mentioned three dimensions of cultural capital was used as an indicator of total cultural capital, which was divided into tertiles (low, medium, and high).

Content validity

The translated questionnaire was submitted to a panel of 9 experts to review its content validity. According to the topic of the questionnaire, the expert panel consisted of public health nutritionists, dietitians, and health education specialists. The anonymous responses were collected in May and Jun 2021. The content validity was quantified using Content Validity Index (CVI) and Content Validity Ratio (CVR) (32). All the participated experts were rated every question's accuracy, clarity, relevancy, and necessity using a 4-point Likert scale (1: very irrelevant, 2: irrelevant, 3: relevant, 4: very relevant). Some of the questions were rephrased according to the experts'

comments. Finally, the CVI and CVR scores of the questionnaire were 0.98 and 0.94, respectively, which was considered acceptable.

Face validity

Face validity of the questionnaire was assessed by two separate phases. At first, a convenience sample of 14 adult women who were responsible in buying food items and preparing the food at home was recruited in July 2021 at Tabriz University of Medical Sciences. People who had studied in one of the fields related to nutrition or one of their close members were nutritionists, were excluded. A paper version of the finalized questionnaire was completed by the members. In the second phase, an individual structured discussion with a duration of 15 *min* was conducted to provide additional feedback. The strategy of using paraphrasing was used to evaluate the face validity of the questionnaire (33). As, the researcher reads the questions one by one and then asks the responder to restate the items, using their own words in response to every questions. The researchers made minor modifications to flow and clarity.

Reliability

Reliability of the questionnaire was assessed by a pilot study consisting of a convenience sample of 34 adults. This pilot study was conducted in two stages. The printed form of the questionnaire was filled by the participants and then was re-filled by the same responders two weeks later. The responses were analyzed using SPSS Statistics software (version 20.0) to calculate Cronbach's αlpha coefficient and Intra-Class Correlation coefficient (ICC) (34). Finally, Cronbach αlpha and ICC for the overall questionnaire were 0.90 and 0.92, respectively.

Socioeconomic status

The educational level of the participants was considered as the indicator of socioeconomic status (35, 36). The educational level was measured considering three categories including: 1) primary education, 2) lower and higher intermediate general education, and 3) professional education and university.

Evaluation of the food intake

The food intake of the people participating in the project was investigated by means of a 24-*hr* food recall. Then food intakes were analyzed by IV Nutritionist software which was modified for Iranian foods. (First Databank, San Bruno, CA, USA). To measure healthy eating of the participants, the total frequency of daily consumption of healthy foods (including fruits, vegetables, low-fat dairy products, chicken, fish, soy, and whole grains) was used. Similarly, the total frequency of daily consumption of unhealthy foods (including red meat, croissants, chocolate, white bread, carbonated beverages, and sugar) was used to obtain the unhealthy eating (37). Each of the food items were scored by their weekly consumption, as never: 0; less than once a week: 0.10; 1-2 days per week: 0.20; 3-4 days per week: 0.50; 5-6 days per week: 0.80; and every day: 1. The final scores of daily frequencies of healthy and unhealthy foods were obtained by summing the above-mentioned scores (38,39).

Statistical analysis

The SPSS version 20.0 was used to analyze the study data. Kolmogorov-Smirnov test was used to check the normality of the data. Mentioned article ways were used for scoring the cultural capital questionnaire (15). The quantitative and normal data was presented as the mean±standard deviation (SD), and in the case of non-normality and qualitative data were shown as number (percent). One-Way ANOVA and Krauskal-Wallis tests were utilized to investigate the differences of study variables and also indicators of cultural capital between subjects with various educational levels. The probable differences in daily frequency scores of the food consumption by every educational level group were obtained using Independent Sample T-test. Finally, Poisson regression models with robust variance, Prevalence Ratio (PR)'s with 95% Confidence Intervals (CI) were calculated for each of the outcomes by educational level and total cultural capital, adjusted for age, sex, Waist Circumference (WC), and marital status.

Results

Totally, 615 individuals were selected to participate in the study. Among them, 572 subjects had completed all parts of the study, including filling the questionnaires and anthropometric measurements. As

Table 1. The characteristics of participants based on the education levels

Variables		Educational level				p-value
		Primary education	Lower and higher intermediate general education	Professional education and university	Total	
		Mean±SD/ number (percent)	Mean±SD/ number (percent)	Mean±SD/ number (percent)	Mean±SD/ number (percent)	
Age (yr)		44.62±13.78 *	32.36±11.60	32.27±11.04 *	33.80±12.43	<0.001
Height (*cm*)		162.90±7.85	163.05±9.64 *	166.20±9.26 *	163.52±9.44	0.014
Weight (*kg*)		76.15±12.41 *	67.70±11.63 *	70.75±16.47 *	69.17±12.86	<0.001
WC (*cm*)		95.72±17.60 *	85.12±11.18 *	85.74±9.88 *	86.48±12.39	<0.001
WHR		0.87±0.16	0.84±0.36	0.83±0.07	0.84±0.31	0.724
BMI (kg/m^2)		28.70±4.39	29.53±5.11	29.39±4.19	28.80±4.61	0.889
Number of family members		5.23±2.09 *	4.49±1.41 *	4.39±1.23 *	4.56±1.50	<0.001
Position in the number of children	First	18(3.15)	142(24.82)	30(5.24)	190(33.22)	<0.001
	Second	11(1.92)	122(21.33)	38(6.64)	171(29.89)	
	Third	17(2.97)	85(14.86)	14(2.45)	116(20.28)	
	Forth and higher	22(3.85)	67(11.71)	6(1.05)	95(16.61)	
Spouse's educational status	Primary education	39(6.82)	16(2.79)	13(2.27)	68(11.89)	<0.001
	Lower and higher intermediate general education	193(33.74)	189(33.04)	34(5.94)	416(72.73)	
	Professional education and university	47(8.22)	19(3.32)	22(3.85)	88(15.38)	
Father's educational level	Primary education	58(10.14)	9(1.57)	1(0.17)	68(11.89)	<0.001
	Lower and higher intermediate general education	188(32.87)	194(33.92)	34(5.94)	416(72.73)	
	Professional education and university	16(2.80)	58(10.14)	14(2.45)	88(15.38)	
Mother's educational level	Primary education	63(11.01)	5(0.87)	0(0)	68(11.89)	<0.001
	Lower and higher intermediate general education	253(44.23)	154(26.92)	9(1.57)	416(72.73)	
	Professional education and university	40(6.99)	41(7.17)	7(1.22)	88(15.38)	

Contd. table 1.

Marital status	Married	56(9.79)	174(30.42)	41(7.17)	271(47.38)	<0.001
	Single, divorced, widowed	12(2.10)	242(42.31)	47(8.22)	301(52.62)	
Smoking	Yes	3(0.52)	29(5.07)	15(2.62)	47(8.22)	<0.001
	No	65(11.36)	334(58.39)	73(12.76)	472(82.52)	
Alcohol intake	Yes	1(0.17)	31(5.42)	21(3.67)	53(9.27)	<0.001
	No	67(11.71)	385(67.31)	67(11.71)	519(90.73)	

WC: Waist Circumference, WHR: Waist to Hip Ratio, BMI: Body Mass Index. p-values obtained by One-Way ANOVA and Krauskal-Wallis Tests. p<0.05 was considered as significant.

shown in table 1, the mean±SD age of the participants were 33.80±12.43 years, which significantly differed between subjects with different educational levels, as participants with primary education and professional education levels had higher and lower age, respectively. Although a significant difference was observed in the responders' WC between the study groups, the differences of Body Mass Index (BMI) were remained non-significant. The low-educated participants had higher WC compared to others (p<0.001). The numbers of family members decreased by advancing the level of education (p<0.001). Family institutionalized cultural capital, objectivized cultural capital, and most of the incorporated cultural capital's indicators significantly differed by educational inequalities (Table 2). Further, the daily frequency scores of unhealthy food consumption in subjects with primary education was higher than other educational groups (p<0.001). The high-educated participants consumed healthier foods compared to unhealthy foods (Table 3). After adjusting for confounders, the participants with lower educational levels were more likely to report a low overall healthy food consumption (PR: 1.68, 95%CI: 1.47-1.88) and also high overall unhealthy food consumption (PR: 1.38, 95%CI: 1.09-1.26) (Table 4).

Table 2. Dimensions of cultural capital among the study participants according to the educational levels

Dimensions		Educational level				
		Primary education (n=68)	Lower and higher intermediate general education (n=416)	Professional education and university (n=88)	Total (n=572)	p-value
		N (percent)	N (percent)	N (percent)	N (percent)	
Family institutionalized cultural capital						
Highest educational credentials of the responder's father, mother, and partner*		1.15(0.35)	2.33(0.63)	2.99(0.58)	2.29(0.76)	<0.001
Objectivized cultural capital						
Cooking equipment	High	19(3.32)	228(39.86)	65(11.36)	249(43.6)	<0.001
	Low	49(8.57)	188(32.87)	23(4.02)	323(56.4)	

Contd. table 2

Incorporated cultural capital						
Participation	High	10(1.74)	83(14.51)	20(3.50)	113(19.75)	0.651
	Low	58(10.14)	333(58.22)	68(11.89)	459(80.24)	
Cooking skills	High	64(11.19)	355(62.06)	75(13.11)	494(86.4)	0.900
	Low	4(0.71)	61(10.66)	13(2.27)	78(13.6)	
Grocery shopping skills	High	37(6.47)	358(62.59)	72(12.59)	439(76.7)	<0.001
	Low	31(5.41)	58(10.14)	16(2.80)	133(23.3)	
Food information skills	High skills for use of nutrition information on food packages	48(8.39)	389(68.01)	81(14.16)	518(90.56)	<0.001
	Low skills for use of nutrition information on food packages	20(3.5)	27(4.72)	7(1.22)	54(9.44)	
	High skills for use of nutrition information and recipes from magazines and the internet	27(4.72)	334(58.39)	71(12.41)	432(75.52)	<0.001
	Low skills for use of nutrition information and recipes from magazines and the internet	41(7.18)	82(14.33)	17(2.97)	140(24.48)	
Nutrition knowledge	High	31(5.43)	210(36.71)	79(13.81)	320(55.9)	0.05
	Low	37(6.47)	206(36.01)	9(1.57)	252(44.0)	
General human values	High openness to change	29(5.07)	369(64.51)	78(13.63)	476(83.2)	0.003
	Low openness to change	39(6.82)	47(8.22)	10(1.75)	96(16.8)	
	High conservation	46(8.04)	345(60.31)	70(12.24)	461(80.6)	0.073
	Low conservation	22(3.85)	71(12.41)	18(3.15)	111(19.4)	
	High self-transcendence	27(4.72)	318(55.60)	68(11.89)	413(72.2)	0.008
	Low self-transcendence	41(7.16)	98(17.13)	20(3.50)	159(27.8)	
	High self-enhancement	29(5.07)	268(46.85)	74(12.94)	371(64.9)	0.083
	Low self-enhancement	39(6.82)	148(25.87)	14(2.45)	201(35.1)	

* Mean and standard deviation (SD); p-values obtained by One-Way ANOVA and Kruskal-Wallis. p-value <0.05 was considered as significant.

Table 3. Scores of daily frequency of food consumption based on the education levels

Educational level		Overall healthy food consumption	Overall unhealthy food consumption
Primary education (n=68)	Mean	4.92 *	5.33 *
	SD	2.63	3.07
Lower and higher intermediate general education (n=416)	Mean	4.68	4.27 *
	SD	3.19	3.01
Professional education and university (n=88)	Mean	4.65 *	2.19 *
	SD	3.22	2.80
Total (n=572)	Mean	4.39 **	4.08 **
	SD	3.22	3.11

* p<0.001, ** p<0.001, SD: Standard Deviation, p-values obtained by independent sample T-test and One-Way ANOVA. p-value <0.05 was considered as significant.

Table 4. Separate poisson regression models for educational level and total cultural capital in their association with food consumption (n=572)

	Sum scores			
	Low overall healthy food consumption		High overall unhealthy food consumption	
	PR	95%CI	PR	95%CI
Educational level				
High	1.00	-	1.00	-
Mid	1.19*	1.02-1.36	1.18*	1.10-1.36
Low	1.68*	1.47-1.88	1.38*	1.09-1.26
Total cultural capital				
High	1.00	-	1.00	-
Mid	1.23*	1.14-1.46	1.18	1.10-1.35
Low	1.49*	1.23-1.68	1.25	1.12-1.41

* p<0.001, The models adjusted for the confounders including age, sex, waist circumference (WC), and marital status. p-value <0.05 was considered as significant.

Further, the participants with low total cultural capital followed a low overall healthy food consumption (PR: 1.49, 95%CI: 1.23-1.68).

Discussion

The results of this study revealed that low-educated participants had higher WC compared to others. Different components of cultural capital (institutionalized, objectified and most of the included cultural capital indicators) had significant differences with educational inequalities. The daily frequency scores of unhealthy food consumption have a direct relationship with education. The high-educated individuals consumed healthier foods compared to unhealthy foods. Lower educational level was more likely to be associated with a low overall healthy food consumption and also high overall unhealthy food consumption. Moreover, the participants with low total cultural capital followed a low overall healthy food consumption. The same results were reported

in another study conducted in Netherlands (40). The other study among Italian adults indicated that cultural capital was more effective than social class in predicting adapting to healthy recommendations such as healthy food intake, especially among males. In this study, the relationship between cultural capital and alcohol consumption behaviors was not detected, which was also stated in a systematic-review study (41,42). Further, Perrin *et al* reported that consumption of more vegetables and fruits, but not high-quality fat was associated with educational level (43). It can be suggested that education, as a main part of human capital, contributes to increasing knowledge and economic status of people, which resulted in choosing a healthier diet.

Unhealthy behaviors are considered not to be the consequences of exactly voluntary choices, rather impresses by structures in the daily context. Material deprivation is a daily context that is associated with a lower and poorer household income and housing conditions. Rather financial difficulties have been demonstrated to partly mediate the relation between socioeconomic situation and health actions and manners (10,44,45). Cultural capital is certainly related to self-assessed health. People with a high cultural capital evaluate their health better than individuals with a low cultural capital (46).

The results of the systematic review study conducted by Kamphuis *et al* on 113 studies showed that there is an admissible overall internal consistency and a positive relationship between cultural capital and healthy food choices, and between socio-economic status and cultural capital (15). Bourdieu has analyzed French survey data and identified different patterns of eating, leisure activities, and views of the body embodied by different social classes with varying lifestyles (47). The reduction of economic resources leads people to choose cheaper and naturally less healthy food, which in turn increases the possibility of excessive energy consumption and abdominal obesity (48). Knowledge, skills, norms, values, equipment and health promotion facilities are the key elements of cultural resources linked to health. Their promotion is important in the production and reproduction of a healthy lifestyle (49,50). Embedded cultural capital captures high-potential resources such as skills, knowledge, cognitive abilities, competencies, and aptitudes that are important for becoming health capital (46,51). The results of studies demonstrated that the more social, cultural and material resources people have, the better their health and attention to health indicators should be. The opposite of this case is also true, that is, less cultural, material and social resources are associated with less health (52-54). Education, attitudes, nutritional knowledge and cooking skills of parents, especially mothers, affect food intake and the pattern of family meals and most importantly, children (55). The study of Cembranel *et al* revealed that the level of education and income affects the amount of micronutrient intake, daily food consumption, low processed foods and fruits, vegetables, whole grains, milk and its derivatives and has a direct relationship with healthy food consumption (56). Regarding the transition from high school to college or university, energy consumption and unhealthy food choices decreased and healthy food consumption increased (57,58), but the transition from high school to college cultivates changes in behavior and environment that may cause weight gain (59-61).

Previous studies in low- and middle-income countries have shown that people with less education are more active than groups with more education, and it can be a reason for their lower body mass index and waist circumference. Dietary findings indicate a positive relationship between socio-economic status and consumption of fibers, fruits, vegetables and fish. It has also been shown that groups with low socioeconomic status in high-income environments tend to use vast levels of salt and processed foods (62). High-income people spend more money on healthier foods and have more access to health care facilities to control weight gain and obesity (63-65). Previous analysis demonstrated that people with low education have less aspirations and think that they are trapped in the condition they are in. Also, low-educated people, compared to people with higher education, use their position and general material facilities less to make decisions about their life path (66). It is expected that embedded cultural capital can play an important role in the future as individuals as consumers of health not only in the contexts of their daily lives but also in clinical interactions are forced to participate more actively in determining health

(46). Further, in a study among Portuguese adults, it was reported that those having more than 12 years of education compared to those with lower than 4 years adhered to a healthier diet including higher frequency of milk, vegetable soup, vegetables, fruit, and fish consumption (67). Among adolescents, along with cultural capital, other resources including social and economic capitals affected the healthy food intake (68). It is suggested to focus on the contribution of other forms of capitals in future studies to find more intricate capitals.

The food-choice specific cultural capital variables are more likely to have causal associations with food choices that is the advantage of this method. One of the strong strengths of this study is that it was carried out for the first time in Iran, which will be useful for knowing and helping the food choices of different socioeconomic levels of the population of this country. This study had some limitations that should be noted. First, due to the financial constraints, this study was conducted cross-sectionally and by random sampling method, thus the results may not be applicable to other populations. Second, although the present study was conducted in a number of parks and shopping centers selected from different parts of the city, it cannot be representative of the entire population. Further, the cultural capital questionnaire has a main limitation that is mainly specific to food. Another limitation is the self-reporting nature, which may accompany with many biases.

Conclusion

The results of this study showed that people with higher education level have significantly more cultural capital, and participants with high levels of cultural capital choose healthier foods more often than participants with low cultural capital. Cultural capital can be a new and powerful way to explain inequality in food choices, which may lead to the formulation of policies to develop interventions to promote and improve healthy food choices among low socio-economic groups. There is need for future studies to focus on the other forms of capitals to find a suitable health model.

Ethical considerations

The study was approved by the research undersecretary of Tabriz University of Medical Sciences (Identifier: IR.TBZMED.REC.1403.668).

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Conflict of Interest

The authors declare no conflict of interest.

References

1. Cena H, Calder PC. Defining a healthy diet: evidence for the role of contemporary dietary patterns in health and disease. Nutrients 2020;12(2):334.

2. Oni T, Assah F, Erzse A, Foley L, Govia I, Hofman KJ, et al. The global diet and activity research (GDAR) network: A global public health partnership to address upstream NCD risk factors in urban low and middle-income contexts. Global Health 2020;16(1):100.

3. Wang Y, Liu B, Han H, Hu Y, Zhu L, Rimm EB, et al. Associations between plant-based dietary patterns and risks of type 2 diabetes, cardiovascular disease, cancer, and mortality - a systematic review and meta-analysis. Nutr J 2023 Oct 4;22(1):46.

4. Hamid A, Tanweer A. A comparative study on proximate and micronutrient composition of various varieties of rice produced in Punjab, Pakistan. Nurture 2021 Dec 31;15(1):36-42.

5. Forouhi NG. Embracing complexity: making sense of diet, nutrition, obesity and type 2 diabetes. Diabetologia 2023 May;66(5):786-99.

6. Nguyen HD, Oh H, Kim M-S. Higher intakes of fruits, vegetables, and multiple individual nutrients is associated with a lower risk of metabolic syndrome among adults with comorbidities. Nutr Res 2022;99:1-12.

7. Kamolthip R, Fung XCC, Lin CY, Latner JD, O'Brien KS. Relationships among Physical Activity, Health-Related Quality of Life, and Weight Stigma in Children in Hong Kong. Am J Health Behav 2021 Sep 30;45(5):828-42.

8. Nations U, Economic Do, Social Affairs PD. World population prospects: the 2017 revision, key findings and advance tables. Working Paper No ESA/P/WP/248 ed. 2017.

9. Sikorski C, Yang S, Stennett R, Miller V, Teo K, Anand SS, et al. Changes in energy, macronutrient, and food consumption in 47 countries over the last 70 years (1950-2019): a systematic review and meta-analysis. Nutrition 2023;108:111941.

10. Balaj M, Henson CA, Aronsson A, Aravkin A, Beck K, Degail C, et al. Effects of education on adult mortality: a global systematic review and meta-analysis. Lancet Public Health 2024.

11. Chelak K, Chakole S. The role of social determinants of health in promoting health equality: a narrative review. Cureus 2023 Jan 5;15(1):e33425.

12. Sandri E, Cantín Larumbe E, Part-Ferrer R, Ferrer-Torregrosa J, Fernández-Ehrling N. Diet and lifestyle in the Spanish population and their relationship with sociodemographic variables: a descriptive study. Foods 2023;12(18):3409.

13. Vinke PC, Navis G, Kromhout D, Corpeleijn E. Socio-economic disparities in the association of diet quality and type 2 diabetes incidence in the Dutch Lifelines cohort. EClinicalMedicine 2020;19:100252.

14. Allcott H, Diamond R, Dubé JP, Handbury J, Rahkovsky I, Schnell M. Food deserts and the causes of nutritional inequality. The Quarterly Journal of Economics. 2019;134(4):1793-844.

15. Kamphuis CB, Jansen T, Mackenbach JP, Van Lenthe FJ. Bourdieu's cultural capital in relation to food choices: a systematic review of cultural capital indicators and an empirical proof of concept. PLoS One 2015;10(8):e0130695.

16. Leman MA, Claramita M, Rahayu GR. Predicting factors on modeling health behavior: a systematic review. Am J Health Behav 2021;45(2):268-78.

17. Asif AM, Akbar M. On the decomposition of rank-dependent indicator of socio-economic inequalities in child malnutrition: Some empirical findings. Socio-Econ Plan Sci 2021;77:101025.

18. Rashid V, Weijs PJM, Engberink MF, Verhoeff AP, Nicolaou M. Beyond maternal education: Socio-economic inequalities in children's diet in the ABCD cohort. PLoS One 2020 Oct 13;15(10):e0240423.

19. Taylor MK, Sullivan DK, Ellerbeck EF, Gajewski BJ, Gibbs HD. Nutrition literacy predicts adherence to healthy/unhealthy diet patterns in adults with a nutrition-related chronic condition. Public Health Nutrition 2019;22(12):2157-69.

20. Chea M, Mobley AR. Interpretation and understanding of the dietary guidelines for Americans consumer messages among low-income adults. J Am Coll Nutr 2020;39(1):63-71.

21. Stormacq C, Wosinski J, Boillat E, Van den Broucke S. Effects of health literacy interventions on health-related outcomes in socioeconomically disadvantaged adults living in the community: a systematic review. JBI Evid Synth 2020;18(7):1389-469.

22. Mollborn S, Modile A. "Dedicated to being healthy": young adults' deployments of health-focused cultural capital. Soc Sci Med 2022;293:114648.

23. Sun Z, Sun W, Gao H, Fa R, Chen S, Qian D. Digital Inclusion, Cultural Capital, and Health Status of Urban and Rural Residents: An Empirical Study Based on 2017 CGSS Database. Int J Environ Res Public Health 2023;20(5):4022.

24. Swartz D. Culture and power: The sociology of Pierre Bourdieu: University of Chicago Press; 2012. 342 p.

25. Bourdieu P. Distinction a social critique of the judgement of taste. Routledge; 2018. InInequality; p. 287-318.

26. Schofer E, Ramirez FO, Meyer JW. The societal consequences of higher education. Sociol Educ 2021;94(1):1-9.

27. Dietz WH, Baur LA. The Prevention of Childhood Obesity. Clin Obes Adult Child 2022. 11:323-38.

28. Maunah B. Social and cultural capital and learners' cognitive ability: Issues and prospects for educational relevance, access and equity towards digital communication in Indonesia. JSSER 2020;11(1):163-91.

29. Almoussawi ZA, Wafqan HM, Mahdi SR, Dhahim A, Ahmed ON, Abdulhasan MM, et al. The effect of adoption of technology, technology diffusion, human capital, formation of capital and labor force in the production of agriculture products in Iraq. AgBioForum 2022;24(1):144-52.

30. Bratland-Sanda S, Andersson E, Best J, Høegmark S, Roessler KK. Sport, outdoor life and the Nordic world. 1st ed. Routledge; 2020. Chapter, The use of physical activity, sport and outdoor life as tools of psychosocial intervention: The Nordic perspective; p. 140-56.

31. Lin M. Feasibility evaluation model of English culture teaching based on virtual reality and bio technology. J Commerc Biotechnol 2021;26(4):111-20.

32. Lawshe CH. A quantitative approach to content validity. Personnel Psychol 1975;28(4):563-75.

33. Willis GB. Cognitive interviewing and questionnaire design: a training manual. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics; 1994. 56 p.

34. Gleason PM, Harris J, Sheean PM, Boushey CJ, Bruemmer B. Publishing nutrition research: validity, reliability, and diagnostic test assessment in nutrition-related research. J Am Diet Assoc 2010 Mar;110(3):409-19.

35. Bovens M, Dekker P, Tiemeijer W. [Gescheiden werelden.] Sociaal-culturele tegenstellingen in Nederland: de stand van zaken. Dutsch. 2014. 261 p.

36. van de Werfhorst H. [Een kloof van alle tijden: verschillen tussen lager en hoger opgeleiden in werk, cultuur en politiek.] Amsterdam University Press; 2015. 25. 34 p. Dutch.

37. Mc Carthy CM, de Vries R, Mackenbach JD. The influence of unhealthy food and beverage marketing through social media and advergaming on diet-related outcomes in children-A systematic review. Obes Rev 2022;23(6):e13441.

38. Kamphuis CBM, Oude Groeniger J, van Lenthe FJ. Does cultural capital contribute to educational inequalities in food consumption in the Netherlands? A cross-sectional analysis of the GLOBE-2011 survey. Int J Equity Health 2018 Nov 15;17(1):168.

39. Tibiru M, Kwaw E, Osae R, Alolga N, Sackle A, Aikins S, et al. The impact of COVID-19 on food security: Ghana in review. J Food Technol 2022;9(3):160-75.

40. Kamphuis CBM, Oude Groeniger J, van Lenthe FJ. Does cultural capital contribute to educational inequalities in food consumption in the Netherlands? A cross-sectional analysis of the GLOBE-2011 survey. Int J Equity Health 2018 Nov 15;17(1):168.

41. Oncini F, Guetto R. Cultural capital and gender differences in health behaviours: a study on eating, smoking and drinking patterns. Health Sociol Rev 2018 Jan 2;27(1):15-30.

42. Hashemi N, Sebar B, Harris N. The relationship between cultural capital and lifestyle health behaviours in young people: a systematic review. Public Health 2018 Nov; 164:57-67.

43. Perrin AE, Simon C, Hedelin G, Arveiler D, Schaffer P, Schlienger JL. Ten-year trends of dietary intake in a middle-aged French population: relationship with educational level. Eur J Clin Nutr 2002 May;56(5):393-401.

44. Hamid BA, Charoenchang C, Dewandaru G, Islam MU. What drives the halal food and beverage trade? A gravity model investigation. Cuadernos de Economia 2022 Sep 15;45(127):191-201.

45. Panyasing S, Yongvanit S, Purnomo EP, Tham I, Aim S. The government policy on the organic rice farming groups embracing sustainable agricultural production: evidence in Thailand. AgBioForum 2022;24(1): 83-94.

46. Kamin T, Kolar A, Steiner PM. The role of cultural capital in producing good health: a propensity score study/Vpliv

kulturnega kapitala na zdravje: študija nagnjenja. Slovenian J Public Health 2013 Apr 1;52(2):108-18.

47. Bourdieu P. What makes a social class? On the theoretical and practical existence of groups. Berkeley J Sociol 1987 Jan 1;32:1-7.

48. Hruschka DJ. Do economic constraints on food choice make people fat? a critical review of two hypotheses for the poverty-obesity paradox. Am J Hum Biol 2012 May-Jun;24(3):277-85.

49. Ghaderi M, Maleki A, Ahmadnia S. [From Bourdieu's cultural capital to Abel's health-related cultural capital: applying new indicators for explaining healthy lifestyle.] Soc Welf Quart 2016 Oct 10;16(62):9-58. Persian.

50. Abidin IS, Haseeb M, Islam R. [Impact of agricultural irrigated land and raw material import, labor force and capital formation on rice production: evidence from the Malaysian economy.] Cuadernos de Economía 2022 Mar 1;45(127):106-12. Spanish.

51. Chilimba MT, Dunga H, Mafini C. The impact of microfinance programme participation on household food security in Malawi. IJEFS 2020;12(1):204-22.

52. Friedli L. Reasons to be cheerful: the count your assets approach to public health. Perspect Mag Scotland's Democratic Left 2011;30:29-32.

53. Leskošek V. Social determinants of health: the indicators for measuring the impact of poverty on health. Slovenian J Public Health 2012 Jan 18;51(1):21-32.

54. Temsas Z, Zemedu L, Kuma B, Mehari A. Nexus between bank agriculture credit and economic development in Ethiopia: Ardl model approach. Int J Econ Financ Stud 2021;13(2):455-76.

55. Dammann KW, Smith C. Factors affecting low-income women's food choices and the perceived impact of dietary intake and socioeconomic status on their health and weight. J Nutr Educ Behav 2009 Jul-Aug;41(4):242-53.

56. Cembranel F, Wagner KJP, González-Chica DA, d'Orsi E. Education and income levels are associated with energy and micronutrient intake. Int J Vitam Nutr Res 2020 Jun;90(3-4):228-38.

57. Economos CD, Hildebrandt ML, Hyatt RR. College freshman stress and weight change: differences by gender. Am J Health Behav 2008 Jan-Feb;32(1):16-25.

58. Butler SM, Black DR, Blue CL, Gretebeck RJ. Change in diet, physical activity, and body weight in female college freshman. Am J Health Behav 2004 Jan-Feb;28(1):24-32.

59. McCracken M, Jiles R, Blanck HM. Health behaviors of the young adult U.S. population: behavioral risk factor surveillance system, 2003. Prev Chronic Dis 2007 Apr;4(2):A25.

60. Control CfD, Prevention. Youth risk behavior surveillance: national college health risk behavior survey United States, 1995 Morbidity and Mortality Weekly Report. Surveillance Summaries. 1997;46(6):1-54.

61. Wengreen HJ, Moncur C. Change in diet, physical activity, and body weight among young-adults during the transition from high school to college. Nutr J 2009 Jul 22;8:32.

62. Allen L, Williams J, Townsend N, Mikkelsen B, Roberts N, Foster C, et al. Socioeconomic status and non-communicable disease behavioural risk factors in low-income and lower-middle-income countries: a systematic review. Lancet Glob Health 2017 Mar;5(3):e277-e289.

63. Tabrizi JS, Sadeghi-Bazargani H, Farahbakhsh M, Nikniaz L, Nikniaz Z. Prevalence and associated factors of overweight or obesity and abdominal obesity in Iranian population: a population-based study of northwestern Iran. Iran J Public Health 2018 Oct;47(10):1583-1592.

64. Dinsa GD, Goryakin Y, Fumagalli E, Suhrcke M. Obesity and socioeconomic status in developing countries: a systematic review. Obes Rev 2012 Nov;13(11):1067-79.

65. McLaren L. Socioeconomic status and obesity. Epidemiol Rev 2007;29:29-48.

66. Malnar B, Kurdija S. Trends in subjective health assesment between 1981 and 2011 as an indicator of persistent

social inequalities. Slovenian J Public Health 2012 Jan 1;51(1):11-20.

67. Moreira PA, Padrão PD. Educational and economic determinants of food intake in Portuguese adults: a cross-sectional survey. BMC Public Health 2004 Dec 2;4:58.

68. De Clercq B, Abel T, Moor I, Elgar FJ, Lievens J, Sioen I, et al. Social inequality in adolescents' healthy food intake: the interplay between economic, social and cultural capital. Eur J Public Health 2017 Apr 1;27(2):279-86.