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Article

A Prospective Survey on Socio-Demographics and Lifestyle Factors among a Population of Caribbean Immigrants Living in the US

Angel A. Justiz-Vaillant ^{1,*} and Darren Gopaul ²

¹ Department of Paraclinical Sciences, Faculty of Medical Sciences, The University of the West Indies, St. Augustine, St. Augustine, 00000. Trinidad and Tobago

² Department of Internal Medicine, Port of Spain General Hospital, The University of the West Indies, St. Augustine, 00000. Trinidad and Tobago; Darren.gopaul2@my.uwi.edu

* Correspondence: angel.vaillant@sta.uwi.edu

Abstract: Aim: This study aimed to carrying out a prospective survey on socio-demographics and lifestyle factors among a population of Caribbean immigrants living in the US. **Materials and Methods:** The data were processed and analysed using the SPSS software and Excel. Crosstabulations were done. The Chi-square test was use to evaluate different hypotheses in this study. Statistical significance was defined as $p < 0.05$. **Results:** Gender was found statistically significant difference with the country of birth of the Caribbean immigrants ($p = 0.038$), and in the cleanness of their neighbourhoods ($p = 0.045$). There were differences in occupations between males and females ($p = 0.001$). Males were less unemployed than females ($p = 0.011$). Gender also showed statistically significant difference in how easy the immigrants balanced their work and personal life ($p = 0.044$). Age groups depicted differences in the physical health of the immigrants ($p = 0.001$). The use of alcohol and tobacco was not an important risk factor among participants ($p = 0.529$). **Conclusions:** These facts suggest that socio-demographics among a population of Caribbean immigrants were significantly different among genders. However the use of tobacco and alcohol showed not significant differences among the immigrants.

Keywords: Caribbean; Hispanic; West Indians; Hypothesis; Biostatistics; immigrants

1. Introduction

“Cancer is the second leading cause of death in the Caribbean and has created tremendous challenges for healthcare services and expenditures throughout the region. According to the World Health Organization (WHO), cancer in the Caribbean will increase by 58%, from 84,703 cases in 2015 to 133,937 cases in 2035. Cancer mortality will increase by 67% during this period, from 52,282 to 87,430 deaths.” “Nationals of African ancestry exhibited the highest rates of the cancer incidence rate of 243 per 100,000 per year and mortality rate of 156 per 100,000 per year compared to their counterparts of Indian ancestry (incidence rate of 125 per 100,000 per year; and mortality rate of 66 per 100,000 per year) or mixed ancestry (incidence of 119 per 100,000 per year; and mortality: 66 per 100,000 per year) [1].”

Pinheiro et al. (2016) analysed 185,113 cancer deaths from 2008 to 2012 in the USA, of which 20,312 occurred in black populations. The authors computed cancer mortality rates of US- and Caribbean-born residents of Florida, specifically focusing on black populations compared them using age-adjusted mortality ratios obtained from Poisson regression models. The overall risk of death from cancer was 2.1 (95% CI: 1.97–2.17) and 1.6 (95% CI: 1.55–1.71) times higher for US-born blacks than black Caribbean men and women, respectively ($p < 0.001$) [2].

Siegel et al. (2012) reported that in 2009 cancer surpassed heart disease as a leading cause of death. The American Cancer Society (ACS) 2010 updated the previous report on cancer statistics of the 50.5 million Latinos living in the US using data from the Center for Disease Control and Prevention (CDC), the National Cancer Institute (NCI), and the North American Association of

Central Cancer Registries (NAACCR), and in addition using mortality data from National Center for Health Statistics (NCHS) [3].

Islami et al. (2018) estimated the proportion and number of invasive cancer cases and deaths for 26 cancer types in adults aged 30 years and older in the United States in 2014. In this study was found that these cancers were attributable to modifiable risk factors such as cigarette smoking, and alcohol intake.

This study aimed to carry out a prospective survey on socio-demographics and lifestyle factors among a population of Caribbean immigrants living in the US.

2. Materials and Methods

2.1. Hypotheses

Hypotheses

1. There are differences in country of origin between males and females
2. Gender influences overall how clean the neighbourhoods of the participants are
3. Gender influences how easy is to balance the work and personal life of the immigrants.
4. There are differences in occupation between males and females
5. Males are less unemployed than females
6. There are differences in physical activity between males and females
7. Age groups are associated with participants' physical health
8. The use of alcohol and tobacco is an important risk factor for cancer.

2.2. Ethical considerations

The Campus Ethical Committee of the University of the West Indies, St. Augustine, Trinidad and Tobago approved this study.

2.3. Location and Time Frame of the study

The location was in the US region. The project started in August 2021 and was completed in August 2022. The study was carried out online, and a SurveyMonkey link was sent to the participants through a social media network by SurveyMonkey Co.

2.4. Inclusion/exclusion criteria

2.4.1. Inclusion Criteria

Immigrants with no personal history of cancer living in the US and older than 18 year-old.

2.4.2. Exclusion Criteria

Caribbean subjects who have cancer and are not immigrant.
Participants under the age of 18 years.

2.5. Research Related Justification for Sample Size

We used simple random sampling. In this way, each questionnaire had an equal chance of being included in the sample, which would allow for an adequate representation.

So that the final sample size is calculated by using the formula:

$$N = \frac{Z_{\alpha/2}^2 \times p(1-p)}{d^2}, \text{ where: } N \text{ is the required sample size.}$$

- $Z_{\alpha/2}$ is the standard normal deviation corresponding to the specified total population at the 95% confidence level of 1.96.
- p is the prevalence of cancer =0.487 $1-p = 0.513$
- d is the desired degree of accuracy = 0.05

A total of 388 participants with no history of cancer, 18 year-old or older, living in the US were enrolled.

2.6. Recruitment of Subjects

The recruitment of participants involved the distribution of an online questionnaire link to all participants, included in a database of SurveyMonkey Co, along with a letter explaining the importance of this study via social media by SurveyMonkey Co.

2.7. Statistical Methods of Data Analysis

The data were processed and analysed using the SPSS 27 software. Crosstabulations were done. The Chi-square test was used to evaluate hypotheses related to the difference in frequencies between groups. Statistical significance was defined as $p < 0.05$.

Hypotheses (to test whether the observed frequency are significantly different from what was expected by crosstabulation).

Null hypothesis: Gender, and age groups *are significantly different* in country of birth of the participants, in how clean are their neighbourhoods, in current occupation, in balancing of the work life and personal life, in employment status (whether employed, unemployed or student), in physical health, in drinking and smoking habits, and in engagement in physical activities.

These hypotheses were tested by crosstabulations that generated the Pearson Chi-Square.

2.8. Confidentiality

2.8.1. Methods for storing and securing study/biological data

All collected data were stored in a password-protected SurveyMonkey account. Data will be stored securely for two years in an SPSS file, after which it will be discarded.

2.8.2. Methods for protecting participants' confidentiality

A disclaimer was placed at the beginning of the survey to inform the participants how their information would be handled. Participants provided their consent. Participants were not asked to disclose their names, addresses, or contact information during or after the online survey. Therefore, the study was anonymous.

2.9. Risk/Benefit

2.9.1. Indicate what the level of risk associated with this research is?

More significant than minimal risk. Minimal risk to subjects means that the probability and magnitude of harm or discomfort anticipated in the research are not greater than those ordinarily encountered in daily life or during the performance of routine physical and psychological examinations or tests and that confidentiality is adequately protected.

2.9.2. Describe risk, discomfort (physical/psychological), inconvenience, side effects, and financial costs to participants (include measures to mitigate these risks/discomforts)

A mild level of psychological risk was associated with this study. No physical or invasive procedure was performed. It was asked about the family history of cancer and a few screening procedures, among other questions that may have been sensitive to some participants. However, they had the benefit of not answering or the surveying withdrawal. In this survey there was not people withdrawal, but some did not answer to some questions.

2.9.3. Indicate direct benefits to participants.

Participants obtained information about the importance of mitigating the use of tobacco and alcohol to prevent malignancies. The participants were informed of the importance of physical activity.

2.10. Compensation, rewards, or other incentives for participants

Participants were thanked for their participation in the questionnaire.

2.11. Describe the process for informed consent.

Since it is an online survey, a consent form statement was disclosed at the beginning of the online questionnaire to ratify the true willingness of the participant to participate in the online study.

2.12. Survey standardisation

SurveyMonkey Co. provided the questions to carry out this study, except question one (Caribbean countries where the participants were born).

3. Results And Discussion

3.1. Association between country of born and gender

There were statistically significant differences between males and females and the country they were from originally ($p=0.038$) as shown in Table 1. The countries that have greatest percentages of males were US Virgin Islands (32.1%), Puerto Rico (21.4%), and Haiti (6.9%) and followed by Cuba and Dominican Republic with 6.3%. The countries that have greatest percentages of females were US Virgin Islands (48.0%), Puerto Rico (11.4%), Cuba (7.0%) and Dominican Republic (6.6%) as shown in Table 2. Conversely, the countries with fewer percentages of males were Barbados, and Antigua and Barbuda with 0.3%; and countries with fewer population of woman were Anguilla and Antigua and Barbuda with 0.3%.

Table 1. Chi-square test examining the association between country of origin and gender.

	Value	df	Asymptotic Significance 2-sided)
Pearson Chi-Square	24.622 ^a	14	0.038
Likelihood Ratio	25.679	14	0.028
Linear-by-Linear Association	5.142	1	0.023
N of Valid Cases	388		

a. 13 cells (43.3%) have expected count less than 5. The minimum expected count is .41.

Table 2. Chi-square test examining percentages of males and females in Caribbean countries.

Which Caribbean country are you from originally?		Count	16	10	26
		% of Total	7.0%	6.3%	6.7%
Cuba	Count	10	11	21	
	% of Total	4.4%	6.9%	5.7%	
Haiti	Count	15	10	25	
	% of Total	6.6%	6.3%	6.4%	
Dominican Republic	Count	26	34	60	
	% of Total	11.4%	21.4%	16.3%	
Puerto Rico	Count				
	% of Total				

Jamaica	Count	14	12	26
	% of Total	6.1%	7.5%	6.8%
Trinidad and Tobago	Count	6	2	8
	% of Total	2.6%	1.3%	2.0%
Bahamas	Count	15	7	22
	% of Total	6.6%	4.4%	5.4%
Belize	Count	3	7	10
	% of Total	1.3%	4.4%	2.9%
Barbados	Count	2	1	3
	% of Total	0.9%	0.6%	0.8%
Saint Lucia	Count	0	2	2
	% of Total	0.0%	1.3%	0.7%
United States Virgin Islands (US)	Count	110	51	161
	% of Total	48.0%	32.1%	40.0%
Grenada	Count	3	6	9
	% of Total	1.3%	3.8%	2.6%
Antigua and Barbuda	Count	1	1	2
	% of Total	0.3%	0.6%	0.5%
Caribbean Netherlands (Netherlands)	Count	7	5	12
	% of Total	3.1%	3.1%	3.0%
Anguilla (UK)	Count	1	0	1
	% of Total	0.4%	0.0%	0.2%
Total	Count	229	159	388
	% of Total	100.0%	100.0%	100.0%

3.2. Association between cleanliness of neighbourhood and gender

There was statistically significant difference between males and females in how clean their neighbourhood is ($p=0.045$) as shown in Table 3. The percentages of women that live in extremely clean neighbourhoods was 20.1%, in very clean (44.9%), in somewhat clean (31.9%) and not so clean neighbourhoods (3.1%). The percentages of men that live in extremely clean neighbourhoods was 22.7%, in very clean (44.7%), in somewhat clean (23.8%), in not so clean neighbourhoods (6.9%) and not at all clean (1.9%). Females tended to live in cleaner neighbourhoods as shown in Table 4.

Table 3. Chi-square test examining association between cleanliness of neighbourhood and gender.

	Value	Df	Asymptotic Significance 2-sided)
Pearson Chi-Square	9.717 ^a	4	0.045
Likelihood Ratio	10.725	4	0.030
Linear-by-Linear Association	.106	1	0.744
N of Valid Cases	388		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 1.23.

Table 4. Percentages of participants by neighbourhood cleanness and gender.

			What is your gender?		Total
			Female	Male	
Overall, how clean is your neighborhood?	Extremely clean	Count	46	36	82
		% of Total	20.1%	22.7%	21.4%
	Very clean	Count	103	71	174
		% of Total	44.9%	44.7%	44.8%
	Somewhat clean	Count	73	38	111
		% of Total	31.9%	23.8%	27.9%
	Not so clean	Count	7	11	18
		% of Total	3.1%	6.9%	5.0%
Not at all clean	Count	0	3	3	
	% of Total	0.0%	1.9%	0.9%	
Total	Count	229	159	388	
	% of Total	100.0%	100.0%	100.0%	

3.3. Association between current occupation and gender

There was statistically significant difference between females and males in current occupations ($p < 0.001$) as shown in Table 5. More females had occupations such as life, physical and social (3.9%); legal (2.2%); education, training and library (11.0%); healthcare practitioners and technical occupations (9.2%); health care support (7.8%); personal care and service (7.4%); office and administrative support occupations (5.2%); and food preparation and serving related occupation (6.1%). These percentages in current occupations of females are greater than the percentages of the male's counterpart. Males surpassed women in occupation such as transportation and materials moving occupations (9.4%), management occupations (5.7%), and both production occupations, and installation, maintenance, and repair occupations with 4.4% as depicted in Table 6.

Table 5. Chi-square test examining the association between current occupation and gender.

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	69.338 ^a	22	<0.001
Likelihood Ratio	77.413	22	0.000
Linear-by-Linear Association	4.123	1	0.042
N of Valid Cases	388		

a. 12 cells (26.1%) have expected count less than 5. The minimum expected count is 1.64.

Table 6. Percentages of the participants by occupations and gender.

		What is your gender?		Total	
		Female	Male		
Which of the following best describes your current occupation?	Other (please specify)	Count	31	8	39
		% of Total	13.5%	5.0%	8.4%
	Management Occupations	Count	5	9	14
		% of Total	2.2%	5.7%	4.0%
	Business and Financial Operations Occupations	Count	10	12	22
		% of Total	4.4%	7.5%	6.0%
	Computer and Mathematical Occupations	Count	10	14	24
		% of Total	4.4%	8.8%	6.9%
	Architecture and Engineering Occupations	Count	8	9	17
		% of Total	3.5%	5.7%	4.6%
	Life, Physical, and Social Science Occupations	Count	9	1	10
		% of Total	3.9%	0.6%	2.3%
	Community and Social Service Occupations	Count	4	5	9
		% of Total	1.7%	3.1%	2.4%
	Legal Occupations	Count	5	0	5
		% of Total	2.2%	0.0%	1.1%
	Education, Training, and Library Occupations	Count	25	10	35
		% of Total	11.0%	6.2%	7.6%
	Arts, Design, Entertainment, Sports, and Media Occupations	Count	7	8	15
		% of Total	3.1%	5.3%	4.2%
	Healthcare Practitioners and Technical Occupations	Count	21	2	23
		% of Total	9.2%	1.3%	5.6%
	Healthcare Support Occupations	Count	18	11	29
		% of Total	7.8%	6.9%	7.4%
	Protective Service Occupations	Count	0	5	5
		% of Total	0.0%	3.1%	1.6%
	Food Preparation and Serving Related Occupations	Count	14	9	23
		% of Total	6.1%	5.6%	5.9%
	Building and Grounds Cleaning and Maintenance Occupations	Count	7	6	13
		% of Total	3.1%	3.8%	3.5%
Personal Care and Service Occupations	Count	17	3	20	
	% of Total	7.4%	1.9%	5.0%	
Sales and Related Occupations	Count	8	5	13	
	% of Total	3.5%	3.1%	3.3%	
Office and Administrative Support Occupations	Count	12	6	18	
	% of Total	5.2%	3.8%	4.5%	
Farming, Fishing, and Forestry Occupations	Count	2	2	4	
	% of Total	0.9%	1.3%	1.1%	

Construction and Extraction Occupations	Count	6	5	11
	% of Total	2.6%	3.1%	2.9%
Installation, Maintenance, and Repair Occupations	Count	3	7	10
	% of Total	1.3%	4.4%	2.9%
Production Occupations	Count	1	7	8
	% of Total	0.4%	4.4%	4.8%
Transportation and Materials Moving Occupations	Count	6	15	21
	% of Total	2.6%	9.4%	5.0%
Total	Count	229	159	388
	% of Total	100.0%	100.0%	100.0%

3.4. Association between participants' work and personal life balance and gender

There was statistically significant difference between males and females in balancing their work and personal life ($p=0.044$) as shown in Table 7. Females in the categories of "extremely easy" showed 18.8%, in "very easy" showed 24.0%, in "somewhat easy" depicted 40.2%, in "not so easy" and "not at all easy" represented 15.3% and 1.7%, respectively. Conversely, males in the categories of "extremely easy" showed 11.3%, in "very easy" showed 32.1%, in "somewhat easy" depicted 43.4%, in "not so easy" and "not at all easy" represented 9.4% and 3.8%, respectively as shown in Table 8.

Table 7. Chi-square test examining the association between participants' work and personal life balance and gender.

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.772 ^a	4	0.044
Likelihood Ratio	9.935	4	0.042
Linear-by-Linear Association	.247	1	0.619
N of Valid Cases	388		

a. 1 cells (10.0%) have expected count less than 5. The minimum expected count is 4.10.

Table 8. Percentages of participants by balancing their work and personal life and gender.

		What is your gender?			
		Female	Male	Total	
How easy is it to balance your work life and personal life?	Extremely easy	Count	43	18	61
		% of Total	18.8%	11.3%	15.0%
	Very easy	Count	55	51	106
		% of Total	24.0%	32.1%	28.0%
	Somewhat easy	Count	92	69	161
		% of Total	40.2%	43.4%	41.8%
	Not so easy	Count	35	15	50
		% of Total	15.3%	9.4%	12.4%
	Not at all easy	Count	4	6	10
		% of Total	1.7%	3.8%	2.8%
Total	Count	229	159	388	
	% of Total	100.0%	100.0%	100.0%	

3.5. The association between current occupation status and gender

There was statistically significant difference between males and females in describing their best current occupation status ($p=0.011$) as shown in Table 9. Females displayed in the category of “employed” 63.7%, showed in the category of “unemployed” 26.4% and 9.9% as “student”. Males displayed in the category of “employed” 70.8%, showed in the category of “unemployed” 13.9% and “student” 15.3%. Males did greater than females in this crosstabulation. The rate of unemployment was far greater in female as shown in Table 10.

Table 9. Chi-square test examining the association between participants’ current occupation status and gender.

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.011 ^a	2	0.011
Likelihood Ratio	9.320	2	0.009
Linear-by-Linear Association	.055	1	0.814
N of Valid Cases	356		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 17.39.

Table 10. Percentages of participants by current occupation status and gender.

			What is your gender?		Total
			Female	Male	
Which of the following best describes your current occupation?	Employed	Count	135	102	237
		% of Total	63.7%	70.8%	67.3%
	Unemployed	Count	56	20	76
		% of Total	26.4%	13.9%	20.1%
	Student	Count	21	22	43
		% of Total	9.9%	15.3%	12.6%
Total	Count	212	144	356	
	% of Total	100.0%	100.0%	100.0%	

3.6. Association between engagement in physical activity and gender

Table 11 shows that there was statistically significant difference between males and females in engaging in physical activity ($p=0.025$). As shown in Table 12, the percentage of females that engage in physical activity “every day” was 27.6%, “a few times a week” was 33.3%, “about once a week” was 15.8%, “a few times a month” was 13.2%, “once a month” was 4.4% and “less than once a month” was 5.7%. The percentage of males that engage in physical activity “every day” was 30.8%, “a few times a week” was 44.0%, “about once a week” was 14.5%, “a few times a month” was 5.0%, “once a month” was 1.3% and “less than once a month” was 4.4%.

Table 11. Chi-square test examining engagement in physical activity and gender Chi-Square Tests.

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.837 ^a	5	0.025
Likelihood Ratio	13.737	5	0.017
Linear-by-Linear Association	6.443	1	0.011
N of Valid Cases	387		

a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 4.93.

Table 12. Percentages of participants' engagement in physical activity and gender.

		What is your gender?			Total
		Female	Male		
How often do you engage in physical activity?	Every day	Count	63	49	112
		% of Total	27.6%	30.8%	29.2%
	A few times a week	Count	76	70	146
		% of Total	33.3%	44.0%	38.7%
	About once a week	Count	36	23	59
		% of Total	15.8%	14.5%	15.2%
	A few times a month	Count	30	8	38
		% of Total	13.2%	5.0%	9.0%
	Once a month	Count	10	2	12
		% of Total	4.4%	1.3%	2.9%
	Less than once a month	Count	13	7	20
		% of Total	5.7%	4.4%	5.0%
	Total	Count	228	159	387
		% of Total	100.0%	100.0%	100.0%

3.7. Association between alcohol and tobacco use and gender

Table 13 shows that there was not statistically significant difference between alcohol and tobacco use and gender ($p=0.529$). As shown in Table 13 the percentages of females that engaged in drinking and smoking almost every day were 6.1% and 2.6%, respectively. The percentages of females, which engaged in drinking and smoking more than once a week, were 11.0% and 4.8%, respectively; and the percentage of females that neither drank, nor smoked was 36.4%. Conversely, the percentages of males that engaged in drinking and smoking almost every day were 9.4% and 4.4%, respectively. The percentages of males that engaged in drinking and smoking more than once a week were 9.4% and 3.8%, respectively; and the percentage of males that neither drank nor smoked was 28.3% as shown in Table 14.

Table 13. Chi-square test examining the association between drinking and smoking, and gender.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.033 ^a	10	.529
Likelihood Ratio	9.417	10	.493
Linear-by-Linear Association	1.528	1	.216
N of Valid Cases	387		

a. 4 cells (18.2%) have expected count less than 5. The minimum expected count is .41.

Table 14. Percentages of participants by drinking and smoking and gender.

			What is your gender?		Total
			Female	Male	
Do you drink alcohol or smoke cigarettes? Tick all that apply.	I drink alcohol once a week	Count	36	28	64
		% of Total	15.8%	17.6%	16.7%
	I drink alcohol more than once week	Count	25	15	40
		% of Total	11.0%	9.4%	10.2%
	I drink almost every day	Count	14	15	29
		% of Total	6.1%	9.4%	7.8%
	I do not drink alcohol	Count	15	14	29
		% of Total	6.6%	8.8%	7.8%
	I do not smoke	Count	22	20	42
		% of Total	9.7%	12.6%	11.1%
	I smoke sometimes	Count	11	6	17
		% of Total	4.8%	3.8%	4.3%
	I often smoke	Count	6	7	13
		% of Total	2.6%	4.4%	3.5%
I smoke every day	Count	13	5	18	
	% of Total	5.7%	3.2%	4.4%	
I do not drink nor smoke	Count	83	45	128	
	% of Total	36.4%	28.3%	32.3%	
I do not smoke marihuana	Count	0	1	1	
	% of Total	0%	0.6%	0.3%	
I do not drink, nor do I smoke cigarettes or marijuana	Count	3	3	6	
	% of Total	1.3%	1.9%	1.6%	
Total	Count	228	159	387	
	% of Total	100.0%	100.0%	100.0%	

3.8. The association between the physical health and age groups

There was statistically significant difference between the participant's age groups and their physical health ($p=0.005$) as shown in Table 15. About 2.8% of the participants aged 18 to 24 were in the category "extremely healthy", 10.6% were in the category "very healthy", 9.0% were in the category "somewhat healthy", and 1.0% were in the category "not so healthy". A 6.4% of the immigrants aged 25 to 34 were extremely healthy, 7.2% were very healthy, 10.8% were somewhat healthy, and 1.0% were not so healthy and 0.5% were in the category of "not at all healthy". About

2.1% of the participants aged 35 to 44 were extremely healthy, 6.4% were very healthy, 6.7% were somewhat healthy, and 0.8% were not so healthy. A 1.5% of the immigrants aged 45 to 54 were extremely healthy, 5.7% were very healthy, 10.3% were somewhat healthy, and 1.0% were not so healthy. About 0.8% of the participants aged 55 to 64 were extremely healthy, 3.1% were very healthy, 6.4% were somewhat healthy, and 1.3% were not so healthy and so on as shown in Table 16.

Table 15. Chi-Square tests examining the association between the physical health and age groups.

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	45.693 ^a	24	0.005
Likelihood Ratio	40.134	24	0.021
Linear-by-Linear Association	9.180	1	0.002
N of Valid Cases	388		

a. 16 cells (45.7%) have expected count less than 5. The minimum expected count is .01.

Table 16. Percentages of participants by physical health and age groups.

What is your age?	18 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	75 or older	How physically healthy are you?					
								Extremely healthy	Very healthy	Somewhat healthy	Not so healthy	Not at all healthy	Total
	Count	11	41	35	4	0	91						
	% of Total	2.8%	10.6%	9.0%	1.0%	0.0%	23.5%						
	Count	25	28	42	4	2	101						
	% of Total	6.4%	7.2%	10.8%	1.0%	0.5%	26.0%						
	Count	8	25	26	3	0	62						
	% of Total	2.1%	6.4%	6.7%	0.8%	0.0%	16.0%						
	Count	6	22	40	4	0	72						
	% of Total	1.5%	5.7%	10.3%	1.0%	0.0%	18.6%						
	Count	3	12	25	5	0	45						
	% of Total	0.8%	3.1%	6.4%	1.3%	0.0%	11.6%						
	Count	2	4	5	4	0	15						
	% of Total	0.5%	1.0%	1.3%	1.0%	0.0%	3.9%						
	Count	0	2	0	0	0	2						
	% of Total	0.0%	0.5%	0.0%	0.0%	0.0%	0.5%						
Total	Count	55	134	173	24	2	388						
	% of Total	14.2%	34.5%	44.6%	6.2%	0.5%	100.0%						

Tao et al., 2014 examined the relationship between foreign-born Hispanic settling in lower-status neighbourhoods and USA-born Hispanics [5]. Foreign-born Hispanic also showed a health

advantage with survival after diagnoses of breast, prostate, and lung cancer compared to US-born [6–8].

In 2010, 30.7% of Hispanics were uninsured, and 26.6% lived in poverty, compared to 11.7% and 9.9% of Non-Hispanic whites (NHW). There was an abysmal heterogeneity within the Hispanic/Latino population. For instance, the socioeconomic profile of Cuban Americans was more similar to NHW than to Dominican Americans and Haitian Americans. Hispanic had a lower rate for the most common cancers (breast, lung, prostate, and colorectal) and high rates for cancer of the liver, uterine cervix, and stomach than NHW, which may be due to the poor access to screening programmes in the immigrant population and low social background. In 2012, an estimated 113,000 new cases of cancer and 33,000 death among Hispanics/Latinos were predicted. Strategies to attenuate the cancer explosion among this leading minority in the US were effective interventions to decrease alcohol consumption, tobacco use, and obesity [3].

The Latino population in the US will triple in size by 2050. It will become half of the nation's population growth if current migration trends continue, including the Caribbean Hispanic population [9]. The same authors studied preimmigration family cohesion. Family cohesion is a buffer against alcohol abuse and a protective factor against psychological distress among US Latinos from Cuba and the Dominican Republic. In this study some respondents answered that they drink once a week (16.5%), more than once a week (10.3%) and almost every day (7.5%). In addition, In this study, some interesting data about tobacco use were available. About 17 immigrants smoke sometimes (4.4%) from 388 participants, 13 respondents (3.4%) often smoke, 18 immigrants (4.6%) smoke every day, and 42 individuals (10.8%) do not smoke but drink alcohol. However, Chi-square test shows $p=0.529$, which is not significant [9].

Taylor et al. (1997) conducted a survey where it was sampled 165 Haitian-born, 354 Caribbean-born, and 402 US-born blacks settled in New York City in 1992. Haitian-born and Caribbean-born were more likely to smoke preferentially than their female counterpart. As well, both gender US-born were more likely to smoke compared to Haitian-born and Caribbean-born. Alcohol consumption was combined with the act of smoking across the groups. Community education would have been essential to tackle this problem because participants believed that smoking was not related to cancer [10].

Vega et al. (1993) demonstrated that Cuban-American adolescents, foreign-born were less likely to have ever smoked or consumed alcohol compared to Cuban American US-born. The latter were more likely to go through an acculturation process [11]. Lucas et al. (2005) suggested that over 87% of the foreign-born black community in the US believed that their health was excellent or very good, and significantly higher than foreign-born white individuals and the same US-born. The foreign black population had lower smoking rates, especially among women [12].

Nelson et al. (2016) positively examined the screening impact on breast cancer survival. Several authors in the literature refer that there are still inequalities in breast cancer screening realisation related to socioeconomic deprivation, even with universal screening programmes in many European countries [13–15].

Household air pollution (HAP) arises from domestic activities of heating, cooking, and lighting, and is usually measured indoors. It is a socioeconomic factor that causes respiratory cancers, specially in low- and middle income countries, but it is associated to poor neighbourhood and could be found elsewhere. Three 3 billion people worldwide are exposed to toxic amounts of HAP every day. Indoor air pollution deaths per-million population is 0-10 million in US, Canada, and Australia. HAP is considered now to be a modifiable exposure. HAP can improve human health with interventions such as the use of cookstoves, heaters, and improved fuels [16–19].

Plants have the capacity to absorb and catabolize various environmental toxic substances by a process called phytoremediation. In countries like Indonesia have been implemented. However, plants are still not optimally utilized as a medium for room's air purification. Different plants have been used including English ivy (*Hedera helix*), Bamboo palm (*Chamaedorea seifrizii*), Aloe vera (*Aloe vera*), and Banana (*Musa oriana*) [20–23].

“In 2018, 1,735,350 new cancer cases and 609,640 cancer deaths are projected to occur in the United States. An estimated one in three Americans will be diagnosed with an invasive cancer over their lifetimes” [3]. Lifestyle changes provides an opportunity for cancer prevention [24–27]. It includes abstinence from alcohol and tobacco [28–31], consumption of various serves of fruits and vegetables daily [32–39], prevention of viral infections as HIV/AIDS and hepatitis viruses B and C by using adequate protection and safe sexual practices [40–42], and avoidance of the obesity [43,44]. Physical activity is a protecting factor against several cancers including colorectal cancer, bladder, breast, endometrial, and esophageal adenocarcinoma. However, sedentary behaviour, independent of physical activity predisposes to the risk of endometrial, colon, and lung cancers; owing to the effect of effect on endogenous sex steroids and insulin sensitivity, metabolic hormones, and chronic inflammation [45,46].

3.9. Summary

Table 17 summarises the statistical study. The use of alcohol and tobacco is an important known risk factor for cancer, the participants in this survey drank and smoked, but not in any significant way as judged by the result of the Chi-square test, which shows no significant associations between alcohol and tobacco use with gender ($p>0.05$). There was association between gender and overall how clean was the neighbourhoods of the immigrants, it was supported by the analysis done by the Chi-square test, which shows significant results ($p=0.045$). There was association between gender and how easy is to balance the work and personal life of the immigrants, as judged by the result of the Chi-square test, which shows significant association ($p=0.044$). There were differences in occupation between males and females. It was supported by the analysis done by the Chi-square test, which shows significant results ($p<0.001$). There were associations between the country of born and gender. It was supported by the analysis done by the Chi-square test, which shows significant results ($p=0.038$). There were association between gender and current occupation status. It shows that males were less unemployed than females. The analysis was supported by the Chi-square test, which showed $p=0.011$. There was an association between age groups and participants' physical health, as judged by the result of the Chi-square test, which shows significant association ($p=0.005$).

Table 17. Hypotheses demonstrated by crosstabulation.

Hypotheses	Statistical test	Supported Not supported	Statistical significance
The use of alcohol and tobacco is an important risk factor for cancer	Chi-square test	Not supported by the analysis	$p=0.529$
Gender influences overall how clean the neighbourhoods of the immigrants are	Chi-square test	Supported by the analysis	$p=0.045$
Gender influences how easy is to balance the work and personal life of the immigrants	Chi-square test	Supported by the analysis	$p=0.044$
There are differences in occupation between males and females	Chi-square test	Supported by the analysis	$p<0.001$
There is association between the country of born and gender	Chi-square test	Supported by the analysis	$p=0.038$
Males are less unemployed than females	Chi-square test	Supported by the analysis	$p=0.011$
Age groups are associated with participants' physical health	Chi-square test	Supported by the analysis	$p=0.005$
There was association between participants' engagement in physical activity and gender	Chi-square test	Supported by the analysis	$p=0.025$

3. Conclusion

The biostatistics was very clear in accepting or not the association of socioeconomics/ lifestyle factors with gender or age groups among 388 immigrants living in the US. Several modifiable risk factors are attributed to the onset of many cancers, not limited to those discussed in this study. An overlap can be seen in the data, whereby distinct factors such as smoking, alcohol consumption, and physical activity can be implicated in developing many of cancer types. But a low risk was found. The limitations of this study are: the low participation of the elderly 75 or older in this study could be due to low proficiency in social networks and internet management in general and lower accessibility to different device types. Cross-sectional studies have the limitation that there is no follow-up work; difficult to make causal inferences; presence of prevalence-incidence bias, also called Neyman bias; it may provide differing results if another timeframe had been chosen [47].

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