World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(RESEARCH ARTICLE)

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Frequencies, pattern and knowledge of health-related problems of coffee consumption in Benghazi – Libya

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World Journal of Advanced Research and Reviews, 2024, 24(03), 3137-3148

Publication history: Received on 22 November 2024; revised on 28 December 2024; accepted on 31 December 2024

Article DOI: https://doi.org/10.30574/wjarr.2024.24.3.4032

Abstract

Introduction: Coffee is one of the most consumed beverages global industry in the world and is the second largest traded commodity just behind the oil industry. Consumption of coffee has greatly increased all around the world because of improved cup quality. Now days, coffee is considered a functional food due to its high content of antioxidant. The aim of the this study was to estimate frequencies, pattern of coffee consumption and study the knowledge related health problems of coffee consumption among population.

Method: A cross sectional study conducted on (n=1022) whom consumed coffee in daily manner, conducted from different public places which consist of 327 male and 695 female through using constructed questionnaire. Statistical analysis of data was done by using SPSS " "version 23" and Excel program and the data presented as frequencies and percentages. Chi-square test was performed for statistically significant differences at α< 0. 05.

Results and Discussion: The data collected on 1022 subjects shown that 41. 58% of participants consuming coffee two times a day, the main reason of coffee drinking was clear mind 17. 8%, followed by 15. 2% for increased attention and concentration, 52% of the sample believed that the coffee has both useful and harmful effect on human health. A significant relation has been found between education levels particularly academic people and coffee consumption throughout the day (p<0. 002). Furthermore going to coffee shop reach the peak in age group of 18-30 years old, then decline in the later ages. The significant relationship between number of coffee cups that consumed by participants and educational level in which increased by increasing educational level academic drinking coffee more than primary and preparatory level. The knowledge related health problems of coffee consumption revealed that, 62. 4% and 73. 6% of responses found no relation between HTN and CVD with high consumption of coffee, while 75. 8% strongly agree with that there is relation between high consumption of coffee and peptic ulcer.

Conclusion: The present study revealed that most of the participant usually drink homemade coffee. Furthermore, a significant relation has been found between coffee consumption and academic level and daily intake of coffee. In addition, clear mind and concentration were the main purpose of coffee consumption. Furthermore, some health problems have been reported. In sum, frequency, time consuming and a reason of drinking coffee did not depend on gender and the participant of this study were consumed drink coffee at recommended level.

Keywords: Coffee consumption; Chemical constituents; Coffee and Health risks; Pattern

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1. Introduction

Coffee is one of the most consumed beverages, global industry in the world and is the second largest traded commodity just behind the oil industry. (1,2,3) consumption of coffee has greatly increased all around the world because of improved cup quality through choosing of varieties and breeding, more evolved agricultural practices; the creation of specialty shops, and a change in coffee's image through the spreading of information on the health benefits of long-term moderate coffee consumption. Now days, coffee is considered a functional food, firstly due to its high content of antioxidant. The characteristic flavor and richness of coffee aroma make it a unique, special beverage, with thousand volatile compounds that found in roasted coffee. (4,5)

Duo to overwhelming scientific evidence, coffee has earned a new and improved reputation. The latest United States Dietary Guidelines recently made an unprecedented recommendation for coffee as part of a healthy lifestyle. The NCA is working with a team of scientific experts to compile on coffee and health.

In the meantime, the key finding on health issues with the strongest associations to coffee consumption. these include (Cancer, Longevity, Cardiovascular disease, Liver health, Diabetes, Stroke). (6-8)

Research shows that caffeine can increase mental alertness at work or while studying and can improve performance on certain mental tasks. in addition to alertness and mental performance, caffeine may also improve memory and reasoning in sleep deprived people. caffeine will not give you unusual abilities, but instead may help you reach your peak mental alertness (9).

Some people may experience mild,temporary effects from abruptly stopping caffeine consumption, including headache, restlessness,and irritability. however, experts agree that discomfort can be avoided by gradually decreasing caffeine intake over time. (9)

There are many studies about the coffee consumption, the factors which effect on coffee consumption rate and their effect on health in many populations such as: " consumption of the coffee of the young people from Branicevo & Smedrevo county" an anonymous survey was conducted in Branicevo & Smedrevo in Serbia, A cross sectional study was including 62 people, aged from (18 -30) years, examine a choice of coffee, frequency of drinking during the day, time consuming and reason for drinking coffee by young people on the impact of gender and age. Results: young consumers drink more than 3 cups per day, with most daily intake of coffee twice and before the afternoon, the most common reason for drinking coffee among young people was for spending time with friends, and rarely to maintaining of alertness during learning, the frequency, time consuming and a source of drinking coffee does not depend on gender, The age of the respondents does not depend on the number of coffee drinking during the day. However, time of the coffee consumption and the reason for drinking coffee significantly depends on the age of respondents. (10).

"a new coffee culture amongst Costa Rican university students" source: Universidad Latin de Costa Rica San Jose-Costa Rica. method: questionnaire cross sectional study, sample size 370 students at a private university. result : 70% of the total sample was drank coffee while 30 % didn't, and they found that coffee consumption affected by gender & they change in the economic base of the country. (11) personal characteristic of coffee consumers and non-consumer reasons & preferences for food eaten with coffee among adults from the federal District, Brazil. used cross sectional study, sample size was 1368 collected by telephone interview. results:68% of individuals at older age more likely to drink coffee. the common reason for coffee drinking was the " personal pleasure" 48% followed by habit\ tradition of consuming coffee. participants using sugar as sweetener used by 83%. (12),"Gender differences in coffee consumption and its effect in young people" this study was carried in Japan, in 2012, a survey was conducted in 1189 young people (567 male & 622 female), found that coffee consumption rate for male was significantly higher 50. 8% than in female 32. 8%, in the coffee consumption group no significance differences were found in the reason for consumption, the taste was the most reason for drinking coffee for both male and female, for its effect on health, a few people were aware about the negative effect of coffee on health, more young people in the consumption group reported stomach problems duo to coffee consumption. (13) In Libya there were scarce data about frequencies, pattern and knowledge of health related to coffee consumption, so that in the society too many people drinking coffee and this habit become circulated in the occasions. Therefore, this study aimed to find the frequencies, pattern and knowledge about health effect of coffee consumption among Benghazi population, Benghazi. Libya

2. Material and methods

2.1. Study design and place

A cross sectional study was conducted in population residents of Benghazi city, the data was collected between (Jan-May 2021) from the following places:

Arab Medical University, Benghazi university "Garyouns", Faculty of Education,BMC, Albounya company for investment and services, School of "Shohadaa Alwajeb ", coffee "finjaan",Youth Center,School of "Fatima Alzahraa", School of "Alshoola", LCCHD "Libyan Center of Consulting and Human Development, Aljouf Company, and by Email.

Sample size (n) was 1022 (327 male, 695 female) from general population whom consumed coffee with in age "18-60years".

2.2. Questionnaire design

Constructed questionnaire modified of the reference (14), which include the three main sections :socioeconomic data from (Q1-Q5),coffee drink frequencies, pattern and habits from (Q6-Q15),health knowledge of participants (Q16-Q20) administrated or through interviewers of respondents.

2.3. Statistical analysis

Data was processed by SPSS "version 23" statistic package for social science and Excel program to analyzed the results by using frequencies and percentage. Chi-square test was performed for statistical significant at $\alpha<0.05$.

2.4. Ethical Statement

The study was approved by the University of Benghazi. To ensure confidentiality, the questionnaires were anonymous, and no personal identifiers were used.

3. Results

The research conducted in Benghazi city included 1022 people aged 18-60 years. The most common ages of the participants were those between 18-30 years (52. 9%), among the respondents 68% were female and 32% male, the majority of surveyed women were between 18- 30 years of age, while the highest numbers of men found between 31-40 years of age. The medium families income was represent the highest percentages (89. 6%) (400-800 LD). In regard the education levels and jobs the majorities of participant were have academic levels (70%) and (35. 6%) have been shown students, all participants were coffee consumers, one of the factors that asked about if the participants used sugar with homemade coffee, the answer found that 59. 49% of sample size drinking coffee with medium sugar, about 65. 7% of the participants were drinking high concentrate homemade coffee, and 37. 96% of participants drinking coffee at evening (Figure 1).

Table 1 Socio demographic characteristics

Gender	**No of subject(n=1022)**
Male	327 (31. 9%)
Female	695 (68. 1%)
Total 1022	
Ages (years)	
18-30	539
31-40	434
41-50	46
51-60	1
Economic	

Low <400 dinar	18
Medium (400-800)dinar	915
High >800dinar	88
Education	
Primary	23
Preparatory	61
Secondary	133
Academic	716
advanced studies	89
Job	
Student	364
Employee	526
another job	132

All of the participants are coffee consumers, one of the factors that asked about it is using sugar with their homemade coffee, 59. 49% of sample size drinking coffee with medium sugar(*). (Figure 4).

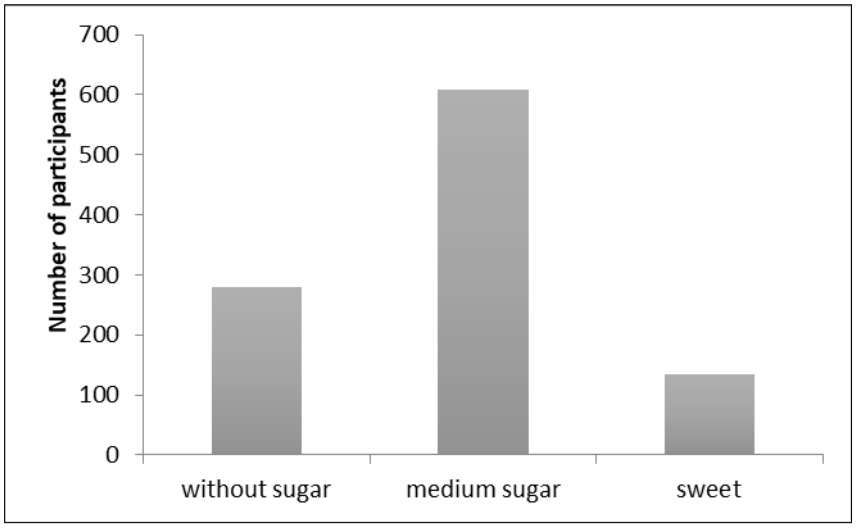

Figure 1 Amounts of sugar used with homemade coffee

*Note :(without sugar it means no added sugar, medium sugar = 0. 5-1 teaspoon per coffee cup "finjaan", sweet coffee =more than one teaspoon per finjaan).

About 65. 7% of the participants were drinking high concentrate homemade coffee. (*) (Figure 2).

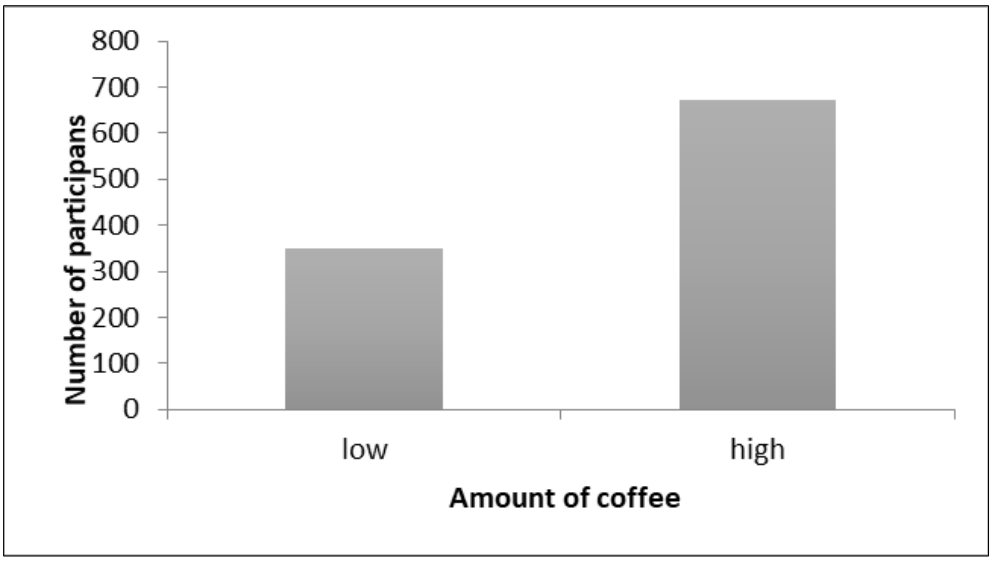

Figure 2 coffee concentration in homemade coffee.

*Note: (low concentrated coffee beverage = one teaspoon per finjaan, high concentrated coffee beverage= two teaspoon or more per finjaan.

Thirty seven points ninety six percent of the participants drinking coffee at evening (Figure 3). In the first relationship between education level and times of coffee consuming we found that more educated people consuming coffee most of the day. (p value = 0. 002) (Figure 4).

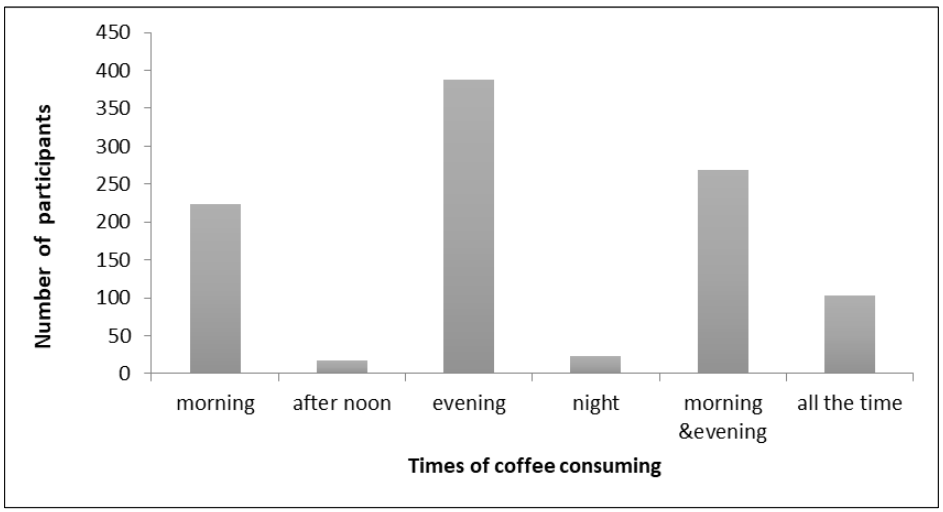

Figure 3 Time of coffee consumption

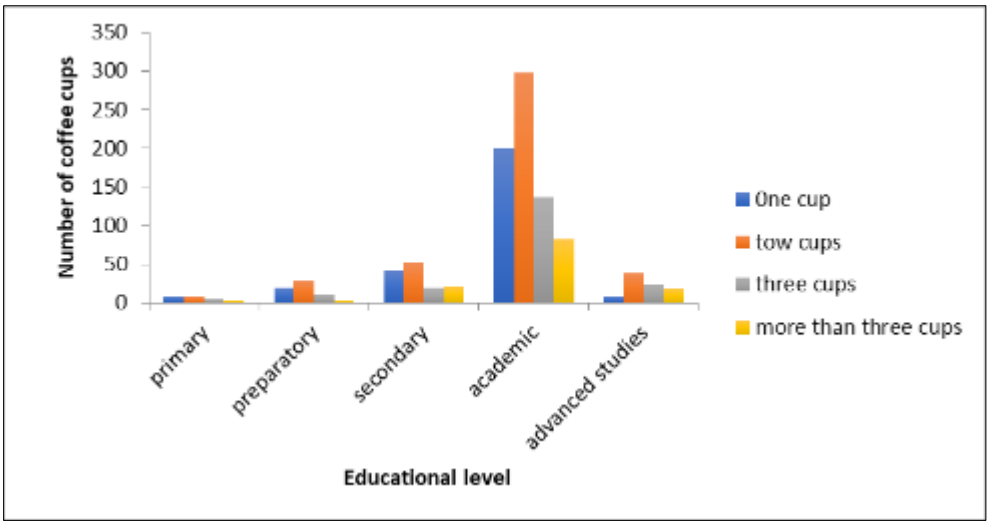

Figure 4 Relationship between coffee drinking time and Education level.

Approximately 36. 30% of the participants going to coffee shop, in the relationship between going to coffee shop and age found that, increased by increasing ages (p value = 0. 008). (Figure 5).

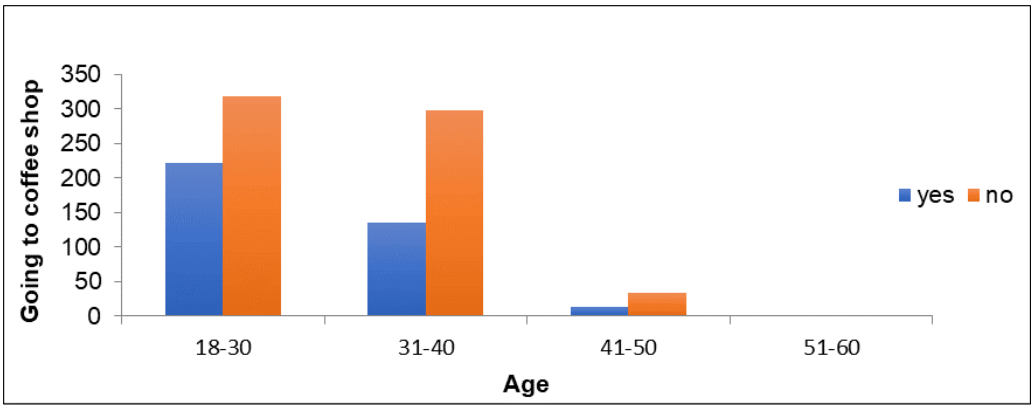

Figure 5 Relationship between going to coffee shop and age.

The most coffee beverages consuming was Arabic coffee (58. 32%), Nescafe (26. 6%), Cappuccino (14. 29%) and Macchiato (12. 33%) (Table 2). Forty one point six of the participants was consuming two cups of coffee per day. Number of cups that consumed by participants increased by increasing educational level (p value =0. 009) (Figure 7).

Table 2 Frequency of the most coffee beverages consuming

Beverage	Frequency	Percent
Arabic coffee	596	58. 32%
Nescafe	271	26. 61%
Cappuccino	146	14. 29%
Macchiato	126	12. 33%

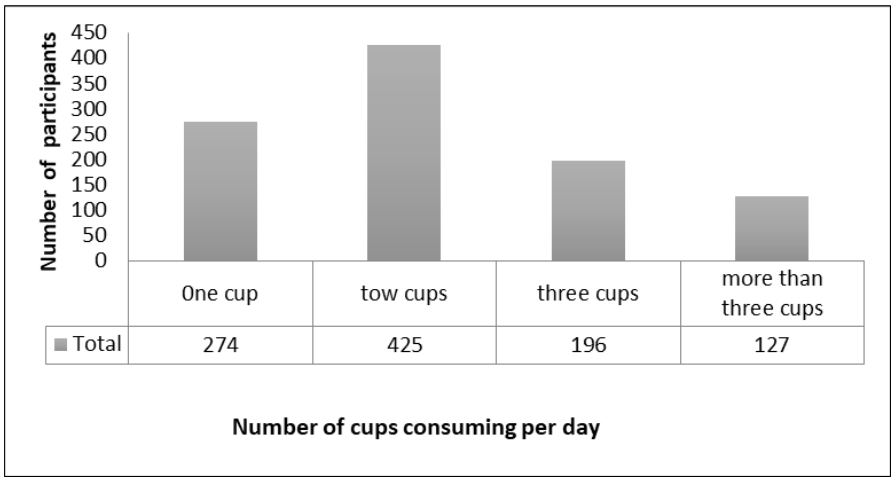

Figure 6 Number of coffee cups consuming per day

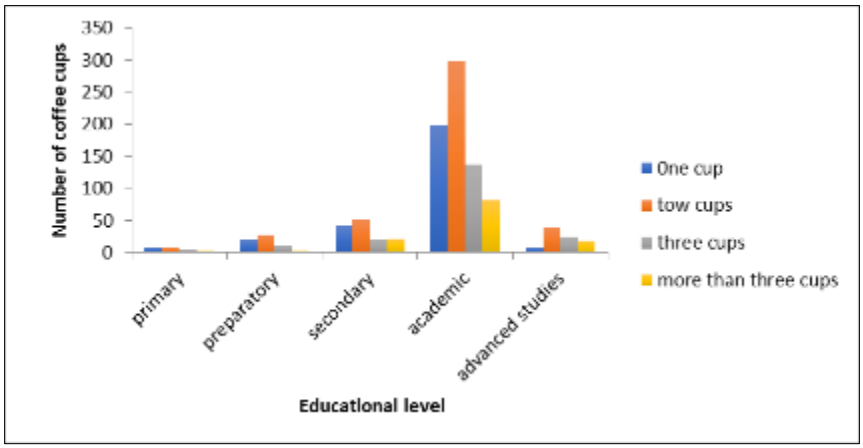

Figure 7 Relationship between number of coffee cups and educational level**.**

The main reason of coffee drinking was clear mind 17. 8% , followed by 15. 2% for increased attention and concentration. The result found that 90. 70% consumers going to coffee shop for the delicious taste,followed by 8. 7% for the name of the coffee shop and 0. 7% for the cost, and 36% of the participants were going to coffee shop while the others are no.

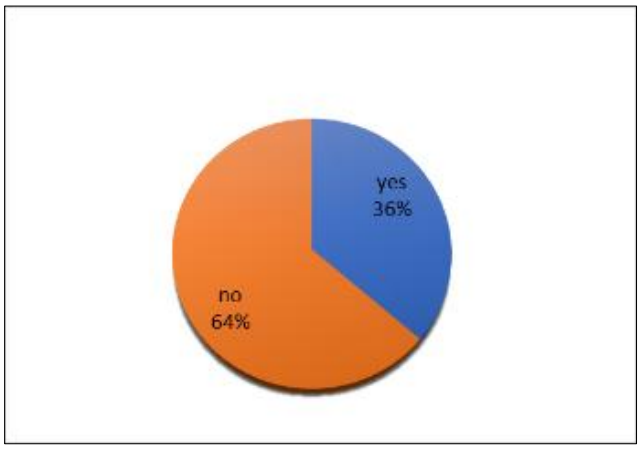

Figure 8 Participants going to coffee shop

The knowledge of participants regarding the coffee usefulness or harmful the answers mainly (52%) was both (Figure 9). The participants were asked is there any relationship between high consumption of coffee and HTN found 62. 4% the answers was no (Figure 10). But strongly agree with that there were relationship between high consumption of coffee and peptic ulcer (Figure 11). About heart diseases the answers was no relationship between them 73. 6% (Figure 12). Participants with high educations levels particularly university have found that, coffee consumed most often at evening time (P< 0. 05) (Table 3). In the relationship between going to coffee shop and age, found that going to coffee shop reach the peak with age group of (18-30), then decline. (p value = 0. 008) (Table 4).

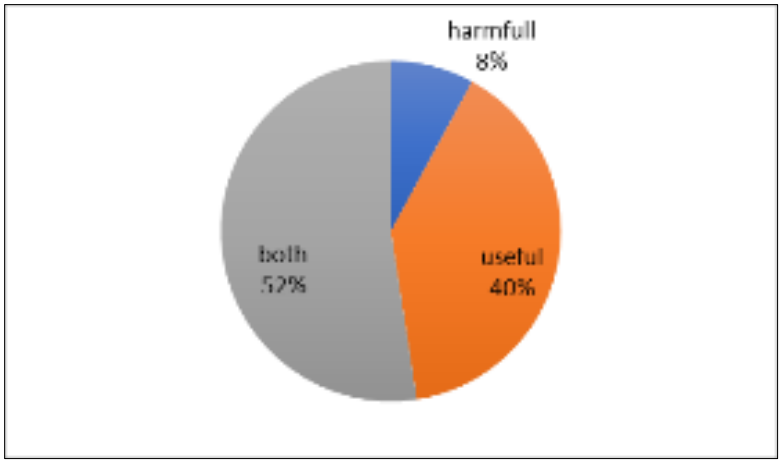

Figure 9 Participants opinion about coffee harmful, useful or both

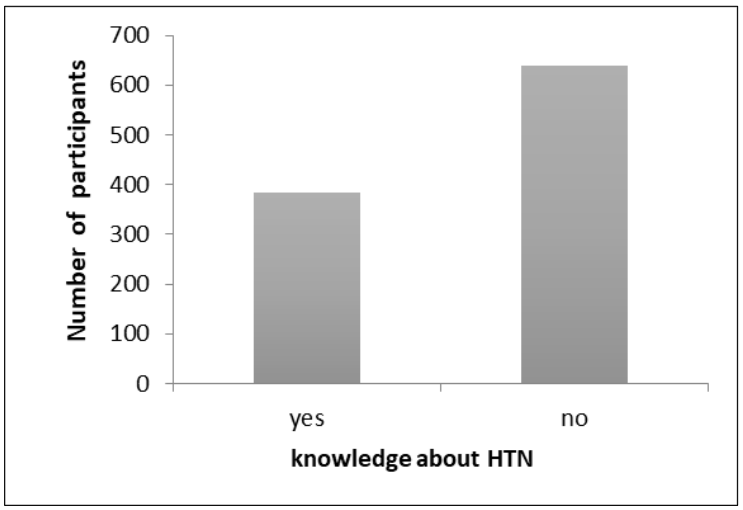

Figure 10 relationship between high consumption of coffee and HTN

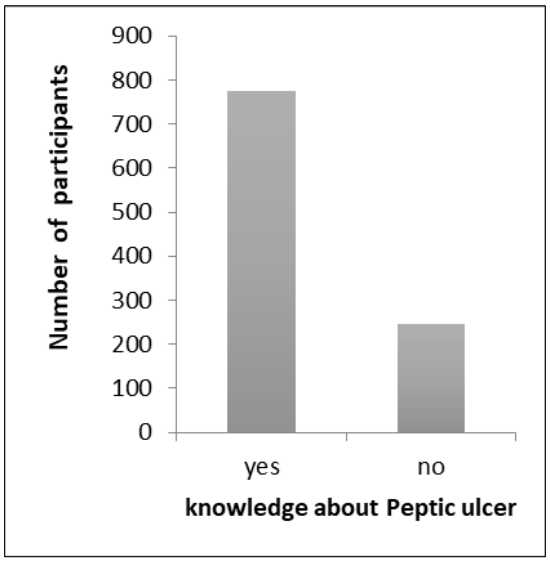

Figure 11 Relationship between high consumption of coffee and peptic ulcer.

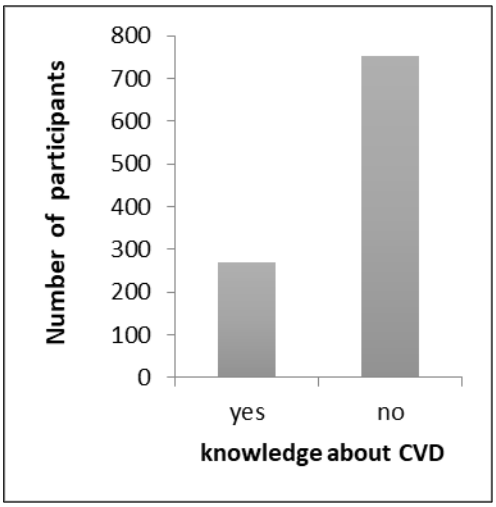

Figure 12 Relationship between high consumption of coffee and heart diseases.

Table 3 Relation between coffee consumption and education levels

Coffee drinking Time								
		morning	**after noon**	**evening**	**night**	**morning &evening**	**all the time**	**Total**
Education level	Primary	5	1	6	1	9	1	23
	Preparatory	17	0	15	1	23	5	61
	Secondary	31	2	50	8	34	8	133
	University	151	14	293	13	173	72	716
	Advanced studies	19	0	24	0	29	17	89
	Total	223	17	388	23	268	103	1022

Chi-square test was performed at $\alpha < 0.05$ considered sign.

Table 4 Relationship between going to coffee shop and ages.

		Going to Coffee Shop		Total
		yes	no	
Age	18-30	222	319	541
	31-40	136	298	434
	41-50	13	33	46
	51-60	0	1	1
	Total	371	651	1022

Chi-square test was performed at $\alpha < 0.05$ considered sign

4. Discussion

The present cross sectional study conducted in Benghazi city to assessed daily patterns of coffee intake frequency, pattern and knowledge related health effect of coffee consumption.

In the analysis of the answers, results shown that, most of the participants drinks commonly two cups of coffee during the day. This result has been proven in the previous studies. In the fact is that very healthy stimulant commodity that recommended to taken daily at least(3-4 cups) because of their antioxidants contents and other beneficial nutrients, which can able to improve our health condition. (4,5) As much scholarly reviewed reports show that coffee drinkers have much lower risk of several serious disease. Its major action is to stimulate the central nervous systems, cardiovascular muscle, respiratory system, diuretic. (15-18) so the frequency of coffee consumption in sociality is considered in safe level.

The present work shown that, most respondents consumption the coffee where were those at academic level and found significant relationship (p=0. 009) with those drink two cups of coffees per day,this could be due to their knowledge about the healthy and safe level of frequency coffee consumption. The numerous of participants like to drink the coffee in the evening and most of them were women,that could be probably because women in this time more sociality with friends gathering and family for drinks coffee together. However, there was statistical significantly differences between the students (primary, secondary, academic, advanced studies) and time of frequency of coffee consumption (p=0. 002), where that the favored time for intake coffee was in the evening, this could be explained by their answers beyond the reason why do they drink the coffee which was through increase of focus of maintaining the alertness during learning and for clear mind, reason of coffee drinking different in other studies. (9, 11, 12).

There were significantly relationship between the age and question regarding go to the coffee shop (p=0. 019),where were that the participant shown at age groups between (18-30 year old). The reason beyond that is youth groups represent the highest proportion in society or because they like taste of coffee that prepared by specific method in coffee shop, (9) in other study highest coffee consumption by respondents with age group (23-26) years at morning, at morning and at the evening up to (22) years.

Respondents of all ages usually drink coffee in the morning and afternoon. Results of the survey showed that young people drink coffee primarily for socializing with friends, and rarely for maintaining of alertness during learning). (9), in regard the analysis of the answers about the knowledge of participants about the effect of high consumption level of coffee drink could have risk of cardiovascular disease, most of answers was there is no relation between highest coffee consumption and cardiovascular disease. The previous studies found that, the moderate coffee consumption (3-5) cups per day was associated with lower CVD risk and heavy coffee consumption (≥6 cups per day) was neither associated with a higher nor a lower risk of CVD. (19)

The result of present work shown that analyzed the answers of the question about high frequency of coffee consumption and increase risk of peptic ulcer, most of participants believes that coffee consumption predisposing factors for peptic ulcer. Similar result has been found elsewhere. (20, 21) However, some recent work found that no significant association between coffee intake and the incidence of GERD (both RE and NERD). (22) Besides the stimulating effect upon gastric acrid production, it was also reported that coffee intake relaxes the lower esophageal sphincter, which might cause the chronic gastric acid reflux. Excessive secretion of gastric acid can damage not only the gastro duodenal but also esophageal mucosa. (22)

Numbers of studies reported that a significant knowledge relationship between hypertension and consumption of coffee drinks. (23-25) Data concluded that the opinion of participants about the relation between coffee consumption and hypertension were not significant this could be due to lack of knowledge among participants.

Overall, an average coffee consumption among participant were 2 cup/day and higher education levels and youth were most significant coffee consumption groups. knowledge of the participants about certain disease and coffee consumption remain highly highlighted

5. Conclusion

The present study revealed that most of the participant usually drink homemade coffee. Furthermore, a significant relation have been found between coffee consumption and young consumers at academic level, daily intake of coffee twice and in the evening. In addition, most of those drinking coffee who were young people usually for clear mind in females and increasing concentration in male consumers. The results also proved that most coffee consumption were at evening. Knowledge of coffee consumption and diseases reported that the participants have to some extent high levels of knowledge. In sum, frequency, time consuming and a source of drinking coffee does not depend on gender differences.

Compliance with ethical standards

Disclosure of conflict of interest

There are no conflicts of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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