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PORTO

# CHARACTERIZATION OF CAFFEINE CONSUMPTION IN THE PORTUGUESE POPULATION AND ITS RELATIONSHIP WITH PSYCHOLOGICAL WELL-BEING

A dissertation presented to the Portuguese Catholic University

to obtain a master's degree in Psychology

- Specialization in Clinical and Health Psychology -

*João Machado Peixoto*

Porto, October 2020

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Work carried out under the guidance of
Professor Patrícia Oliveira-Silva, Ph.D.

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**Abstract**

Caffeine is one of the most widely used psychoactive substances worldwide with a significant impact on an individual, social, and economic level. Also, there is ample evidence in the literature on the physiological, cognitive, and emotional effects after consumption. Given its relevance, the objective of this study is to characterize the consumption of caffeine in a sample of the Portuguese population (with special emphasis on the quantities consumed, the forms, and the main reasons that lead to the consumption of this substance), and to understand its association with psychological well-being. The results point to higher consumption in males (when compared to females) and in the group of subjects aged between 31 to 35 years, which represents results similar to another study conducted with the Portuguese population. This study also made it possible to identify 50ml coffee (also known as “espresso”) as the most consumed source of caffeine in the Portuguese population. Finally, this study proved that among the reasons given by individuals for consuming caffeinated products are the improvement of alertness and the taste of products with caffeine.

***Keyword:*** caffeine, Portuguese population, psychological, well-being

**Resumo**

A cafeína é uma das substâncias psicoativas mais utilizadas em todo o mundo com um impacto significativo a nível individual, social e económico. Além disso, há várias evidências na literatura sobre os efeitos fisiológicos, cognitivos e emocionais após o seu consumo. Diante da sua pertinência, o objetivo deste estudo é caracterizar o consumo de cafeína numa amostra da população portuguesa (com especial destaque para as quantidades consumidas, as formas e as principais razões que levam ao consumo desta substância) e compreender a sua relação com o bem-estar psicológico. Os resultados apontam para um maior consumo no sexo masculino (quando comparado com o feminino) e no grupo de sujeitos com idades compreendidas entre os 31 a 35 anos, o que representa resultados semelhantes a um outro estudo realizado com a população portuguesa. Este estudo também permitiu identificar o café de 50ml (também conhecido como "café expresso") como a fonte de cafeína mais consumida na população portuguesa. Finalmente, este estudo permitiu comprovar que entre as razões apresentadas pelos indivíduos para o consumo de produtos cafeinados estão a melhoria do estado de alerta e o sabor dos produtos com cafeína.

***Palavras-Chave:*** cafeína, população portuguesa, bem-estar, psicológico

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**Index**

**Figure Index**

**Table Index**

**Attachment Index**

**Abbreviation Index**

| | |
|---|---|
| cAMP | Cyclic adenosine monophosphate |
| CCQ-R | Caffeine Consumption Questionnaire-Revised |
| CMQ | Caffeine Motives Questionnaire |

## Introduction

Caffeine is known as one of the most used substances in the world (Gilbert, 1981, as cited in Jarvis, 1993). In fact, the consumption of caffeinated products was increasing worldwide in 2005, especially among younger consumers (with an apparent stabilization since) (Frary et al., 2005; Verster & Koenig, 2018). Caffeine also has a major impact on the economic and social spheres (particularly coffee, the most relevant caffeinated product) (Weinberg & Bealer, 2002).

This substance is quickly absorbed by the digestive system and diffused by all tissues, with great ease in overcoming the blood-brain barrier (Lieberman, 2001) and is generally known for the capability to stimulate the central nervous system with significant cognitive and affective effects over the organism (Jarvis, 1993; Spiller, 1997; Temple, 2009).

This study aims to characterize the consumption of caffeine in a sample aged between 18 and 35 years old (males and females) of the Portuguese population and to understand its relationship with psychological well-being. Two studies with different aims were made. Study one had the objective to assess caffeine consumption patterns, the amounts consumed, and the products used. Study two had the objective to assess the motives that lead to this substance consumption.

Since caffeine is a widely used substance, with impact in many spheres both in individual and in the society, to know the patterns of consumption, the motives for it, and its relationship with psychological well-being becomes important for both research and public health.

## Theoretical Framework

Caffeine is the most consumed psychoactive substance all around the world. Its consumption was increasing, especially among younger consumers in 2005, although in 2018 the research says that consumption has stabilized in the previous 10 years (Frary et al., 2005; Verster & Koenig, 2018). It also has an individual impact, as well as a social and economic impact in many cultures (Weinberg & Bealer, 2002).

### Reasons to consume caffeinated products

The reasons to consume certain foods or substances or not are based on the expected benefits or harmful effects of those substances (Rogers & Richardson, 1993). On the one hand, motives like function, taste, pleasure, habit, tradition, culture, and socialization are presented as factors that influence caffeine intake positively. On the other hand, motives like the unpleasant taste (of coffee) and the possible adverse effects (of caffeine) on health are presented as factors that influence the avoidance of caffeine consumption (Samoggia & Riedel, 2019). Some of the effects expected from coffee consumption are performance, resistance, alertness enhancements, well-being feelings, somnolence decrease, metabolism stimulation, and toxic elements elimination (from our body) (Ramada & Nacif, 2019).

### Describing caffeine and caffeinated substances

As was previously said, caffeine (also known as 1,3,7- trimethylxanthine) is accepted as one of the most used substances in the world (Gilbert, 1984, as cited in Jarvis, 1993). In 2005, around 90% of adults reported caffeine intake regularly (Frary et al., 2005). This substance, which is doubly classified as a food and as a stimulant drug, is present in about 60 species of plants (Lieberman, 2001; Temple, 2009).

In 1820, the caffeine's isolation from coffee beans was achieved, and in 1826, Fechner started using the word caffeine. Other methylxanthines like caffeine, named theobromine, theophylline, and paraxanthine, were found in the following years (Dews, 1984). By 1895, the total synthesis of caffeine

was achieved. However, only in 1897, a formula for that substance was confirmed (Fischer, 1897 as cited in Dews, 1984).

Nowadays, caffeine can be found in many products like coffee, sodas, energy drinks, tea, food (including chocolates), and even medication sold without a prescription (Sinclair & Geiger, 1999; Temple, 2009). The fact that it is one of the most used substances globally is nourished both by the panoply of caffeinated products available and the varied motivations (related to the positive effects) mentioned by people to use it.

**Caffeine effect on the physiological system**

Caffeine is quickly absorbed by the digestive system and diffused by all tissues, with great ease in overcoming the blood-brain barrier (Lieberman, 2001). The research suggests that the qualities of sources (i.e., composition, pH, and volume) where the substance is dissipated may impact the assimilation rate. This substance is distributed into overall body fluids, and it seems that there are no physiological impediments that restrict this compound's movement through tissues. It penetrates and leaves the tissues by simple diffusion. This substance can be eliminated by the kidneys (urine) or by metabolic reactions (first-order kinetics) (Dews, 1984).

At a physiological level, the caffeine intake may increase metabolic rate, blood pressure, increase or decrease heart rate and heart's contractility (depending on the mechanism of action), increase skin temperature, and skin conductance (Quinlan et al., 2000; Pincomb et al., 1988; Spiller, 1997). The gastrointestinal tract is also modulated by the consumption of caffeinated products. Some examples are the increment of gastric secretion, impacts on gastric and intestinal mobility, the production of emesis, the stimulation of gall bladder contraction, the simulation of the pancreatic hormone secretions, and the impact on the liver's metabolism (Spiller, 1997). Some subjects report gastrointestinal negative impacts (indigestion or abdominal pain as an example) resulting from the consumption of this methylxanthine (Spiller, 1997). Other physiological effects can be named such as the stimulation of respiration, the influence on the skeletal muscle contractibility, the diuretic effect

(increasing renal blood flow and glomerular filtration rate), the ergogenic effect, and the enhancement of renin liberated from the kidneys (Spiller, 1997).

**Caffeine effect on the nervous system**

This compound is generally known for the capability to stimulate the central nervous system[1] (Temple, 2009). For instance, one of the most documented caffeine mechanisms on the central nervous system is the one that blocks the sites of action of adenosine (antagonist mechanism). Succinctly, when caffeine blocks the adenosine receptors ($A_1$, $A_{2A}$, $A_{2B}$, and $A_3$) connecting to them, the effects are the opposite of those generated by adenosine (adenosine is known to dilate the blood vessels, impede platelet aggregation or inhibit neuronal firing). It also seems to increase adenosine receptors in mouse or rat brain, but this appears to not manifest changes in terms of functionality (Dews, 1984; Fisone, 2004; Lieberman, 2001; Nehlig et al., 1992; Sinclair & Geiger, 1999). Besides that, other mechanisms in the central nervous system are also reported. One of those is the mobilization of intracellular calcium. Synaptic transmission requires a regulated discharge of neurotransmitters, which depends on the inflow of calcium into nerve endings. Caffeine stimulates the translocation of calcium through the plasma membrane and sarcoplasmic reticulum. However, only a quantity of 250 µm seems required to generate noticeable effects, which makes this mechanism not seem an essential one (the concentration on the plasma following consumption of caffeine is generally less than 100 µm, and toxic effects are detected with concentrations exceeding 200 µm) (Nehlig et al., 1992).

Another known process is the inhibition of phosphodiesterases (enzymes that hydrolyze cAMP). Caffeine avoids cAMP hydrolysis by inhibiting cyclic nucleotide phosphodiesterase. The resultant accumulation of cAMP and the enhancement of its impacts seems to stimulate the action of catecholamines. Methylxanthines competitively constrain various isoenzymes of phosphodiesterases to different levels, depending on the area of the brain (Nehlig et al., 1992).

[1] Some of the findings mentioned below are resultant of research on mice or rats

One more effect by which caffeine is known is the antagonization or modification of the effect of benzodiazepines, interacting with benzodiazepine receptors, or by affecting adenosine receptors. Yet, toxic dosages (to humans) seem to be needed to notice this interaction (Nehlig et al., 1992).

In addition to the mechanisms cited above, caffeine also seems to affect neurotransmitters in the central nervous system. It elevates serotonin (monoamine) by increasing synthesis rates or reducing its rates of degradation and release. It also decreases this neurotransmitter availability postsynaptically, affecting serotonin's dependent functions such as sleep mechanism or the regulation of cerebral blood vessels (Dews, 1984; Gupta & Gupta, 1999).

Caffeine also enhances norepinephrine's (catecholamine) synthesis and turnover rates (ratio of use [Sharman, 1981]). Still, another effect is the enhancement of the electric activity of noradrenaline-containing neurons. (Dews, 1984).

**Caffeine effect on the cognitive functioning**

The literature shows that caffeine consumption is associated with improved cognitive performance (Jarvis, 1993; Spiller, 1997). The main cognitive processes affected by the consumption of caffeine are attention, perception, learning, memory, language, problem-solving, executive functioning, thinking, and reasoning (Eysenck & Keane, 2017).

The cognitive benefits of caffeine are vast and include benefits on rapid processing tasks (although in high dosages appears to impair the processing performance in complex tasks due to overstimulation resulting from high baseline arousal combined with the high dosage), on the performance of mental arithmetic tasks, on spatial capacity tasks (when sleep-deprived), on memory performance (yet in some studies seems to decrease this performance or have no effect at all), on psychomotor performance namely visual selection and fine motor control (motor performance is under the influence of past practices stored in memory), on vigilance (both auditory and visual), on concentration, on the ability to perform a specific task, on work shift performance (by increasing wakefulness) and repeated acquisition (Lieberman et al., 2002; Jarvis, 1993; Spiller, 1997; Walsh et al., 1990).

Caffeine also contradicts age-associated deficits in cognitive performance, increases arousal (and, in excess, also increases distractibility), decreases the quantity of time to make a decision and to connect information logically, and reduces reaction time (in moderate to low dosages and not in complex tasks due to high arousal) (Spiller, 1997).

**Caffeine effects on the affective functioning**

The research also shows the impact of caffeine on affective performance. It increases feelings of wakefulness and feelings of high awareness (Cappelletti et al., 2015; Jarvis, 1993; Lieberman et al., 2002; Spiller, 1997). Low to moderate dosages (100 to 300 mg) increase feelings of well-being and feelings of "mental sedation". However, high dosages (over 300mg) increase self-reports of anxiety, frustration, tension, nervousness, and irritability (Garret & Griffiths, 1997; Spiller, 1997).

Related to mood, both users and non-users report that caffeine positively impacts on mood as it appears to raise the regularity of positive mood (positive moods may influence the performance of cognitive tasks). It also appears to improve negative mood and mood deficits after forty-eight hours of sleep deprivation. Research seems to show evidence that caffeine increases the positive mood alterations produced by other stimulants (for example, nicotine) or increase the craving for other drugs of abuse (for example, cocaine). Apparently, the effects on mood are influenced by expectations related to consumption and are dose-dependent (Spiller, 1997).

Happiness seems to be one impact of caffeine since there is also evidence that the consumption of this substance increases the self-reports of happiness and pleasure (Spiller, 1997).

Regarding anxiety, several researchers refer to a positive relationship between anxiety and the consumption of caffeine in adults (both users and non-users) and children. A part of the results showed that males are more susceptible to the anxiety-producing consequences of caffeine. This methylxanthine also seems to enhance the impact of diverse stressors (via various physiological mechanisms) (Rogers, 2007; Spiller, 1997).

Concerning anger, caffeine appears to be linked to this emotion and its behavioural expression, aggression, increasing affective arousal, and, therefore, increasing anger, aggressive behaviour, and hostility (Martin et al., 2008; Spiller, 1997).

**Abuse, dependence, and tolerance**

As expected, and similarly to other substances, caffeine also has a potential for abuse. One element that contributes to this potential is its psychoactivity (patent on its mood-changer capacity). Another element is the capacity to stimulate compulsive use (repeated exposure), leading to dependence. This compulsive use may be due to this compound's action over dopamine, modulating caffeine's rewarding effects (Pohler, 2010; Spiller, 1997).

The compulsive use cited above may lead to the development of tolerance. On this point, the studies differ. Some of the studies in this field report no tolerance development while others report the development of chronic tolerance to caffeine, both in animals and humans (Spiller, 1997; Temple, 2009). Those differences are apparently dose-dependent, that is, smaller amounts are less probable to lead to tolerance than higher doses. Yet, other authors have shown that higher dosages may lead to tolerance (Spiller, 1997; Temple, 2009).

In parallel with addiction and tolerance, research reports withdrawal symptoms such as insomnia, headaches, tension, tiredness, and psychomotor impairment. Other symptoms may include decreased attention and concentration and increased irritability, anxiety, emesis, and depression. Like tolerance, smaller doses do not seem to have these effects (Rogers, 2007; Spiller, 1997). Interestingly, some researchers founded that the use, tolerance, and dependence on caffeine are heritable traits (Kendler & Prescott, 1999). For instance, authors refer to an association between polymorphisms in the $A_{2A}$ gene, the consumption pattern of caffeinated products, and the individual sensitivity to caffeine (Alsene et al., 2003).

**Caffeine impact on health**

After consulting the literature, one can found a mixture of benefits and prejudices to health associated with caffeine consumption. There is evidence that it lowers the risk of developing Parkinson's disease, Alzheimer's disease, type 2 diabetes, and some cancer types. Caffeine consumption is also associated with a positive effect on liver function and weight loss (for example, increases in metabolic rate, lipid oxidation, and energy spending). Concerning prejudices, there are reports that the consumption of caffeine has negative impacts on health, such as bone loss, lower bone density or fractures, and increased blood pressure. Although caffeine increases the glycaemic response, in the specific case of coffee, other of its components may deteriorate glucose tolerance by changing glucose assimilation, liver glucose metabolism, and insulin sensitivity (de Mejia & Ramirez-Mares, 2014).

**Caffeine consumption in Portugal**

Caffeine is, as it was previously said, a widely used substance with many effects on the organism and some impact on health. Once the objective of this work is to characterize its consumption in a sample of the Portuguese population, seems important to contextualize its consumption in Portugal.

According to Pinhão and his colleagues (2016), caffeine consumption in Portugal is higher in men than in women. Concerning age, the group from 30 to 44 years old consumes a higher amount of caffeine, followed by the group from 45 to 64 years old. The older (more than 65) is the group that consumes less caffeine. In the analysis over regions, it is possible to verify that the north of Portugal presents a higher caffeine consumption, followed by Azores, Alentejo, Algarve (analogous to Alentejo), Centre region, Madeira, and finally Lisbon and Tejo's Valley (the region with the lowest consumption). Considering marital status, it is advanced that divorced and separated people consume more caffeine than the other groups, followed by married/union of fact, singles, and widowers. In terms of educational level, it is shown that people with a superior education (more than the $12^{th}$ grade) consume more caffeine and that people with less than the $4^{th}$ grade are the group that consumes less.

Finally, taking into consideration the professional situation, the same study shows that actives are the ones that present a higher caffeine consumption, followed by domestics, unemployed, students, and retired (Pinhão et al., 2016)

Given the importance of this substance, the objective of the present study is to characterize the consumption of caffeine in a Portuguese sample (namely, the quantities, the main types, and the main reasons for consuming caffeinated products), and its association to subjective well-being and demographic factors.

## Method

### Sample

The sample was obtained using a non-probabilistic sampling technique, specifically using convenience sampling on both 'Study 1' and 'Study 2'. In both studies, the exclusion criteria were to be under 18 or over 35 years old, not to have Portuguese nationality, or to have a health problem that impedes caffeine consumption.

#### *Study 1*

The sample of this study is composed of 216 subjects (n = 216), 82 males (38%), and 134 females (62%) with an age range between 18 and 35 years old (with a mean of age of 25 years old). Subjects were divided into four age groups to facilitate the analysis. The 18 to 21 age group has 39 subjects (18.1%), followed by the 22-25 age group with 72 individuals (33.3%) and by the 26 to 30 age group with 68 subjects (31.5%). The fourth age group comprehends this sample's older subjects since their ages ranging from 31 to 35 years old. This age group is composed of 37 subjects (17.1%).

Most of the participants reported being single (86%). Some reported to be married (8.8%) or to be in a de facto union (5.2%). In terms of literary abilities, most of the sample reported having graduation (41.2%) or a master's degree (35%). Despite that, some subjects reported they had the studied until the ninth year (0.9%), some until the twelfth year (22.4%), and one participant reported to have a doctorate (0.5%).

Regarding the professional situation, the sample mostly divides between students (40.3%) and employed subjects (43.5%). Despite that, some were unemployed (4.2%), and some study and work simultaneously (12%).

***Study 2***

The sample of this study is composed of 223 subjects (n = 223), 83 males (37.2%), and 140 females (62.8%) with an age range between 18 and 35 years old (with a mean of age of 25 years old). Subjects were divided into four age groups to facilitate the analysis. The 18 to 21 age group has 44 subjects (19.7%), followed by the 22-25 age group with 74 individuals (33.2%) and by the 26 to 30 age group with 68 subjects (30.5%). The fourth age group comprehends this sample's older subjects with ages ranging from 31 to 35 years old. This age group is composed of 37 subjects (16.6%).

Most of the participants reported being single (86.6%), some reported being married (8.5%), or to be in a de facto union (4.9%). In terms of literary abilities, most of the sample reported having graduation (39.5%) or a master's degree (35%). Despite that, some subjects reported they had the studied until the ninth year (0.9%), some until the twelfth year (24.2%), and one participant reported having a doctorate (0.4%).

In terms of the professional situation, the sample mostly divides between students (40.4%) and employed subjects (43%). Despite that, some were unemployed (4.5%), and some study and work simultaneously (12.1%).

**Instruments**

The protocols of these studies included two questionnaires: the Caffeine Consumption Questionnaire-Revised and the Caffeine Motives Questionnaire. The first aims to assess patterns of consumption and products consumed, and the second aims to assess the motives that lead to that consumption.

***Caffeine Consumption Questionnaire-Revised (Irons et al., 2016)***

The CCQ-R is an instrument that measures self-reported weekly caffeine intake (more flexible than the previous version, the CCQ [Landrum,1992]). It assesses the amount and the type of caffeinated product consumed (i.e., coffee, soft drink, tea, cocoa, chocolate, and over-the-counter drugs). It can be administered via a web-based survey or with pencil and paper.

The CCQ-R has pictures of usually consumed products, visual aids for the servings' sizes, and pictures of products that are widely commercialized (that were not on the CCQ, for example, energy drinks). One significant change from the 1992's version to the newest is the fact that it is simpler to report the consumption of caffeinated products. The fact that it is easier and more appealing to answer this new version, gives the CCQ-R a more intuitive and flexible character, which makes it more user-friendly.

The CCQ-R is a questionnaire with 60 items. This instrument's assessment guidelines indicate to multiply the three estimates of caffeine quantity of each drink (minimum, mean, and maximum) by the total number of ounces consumed. By doing this, the milligrams of caffeine consumed for each item are obtained. This operation leads to three different scores, the first is called conservative value estimate (using the minimum caffeine concentration values), the second is called mean value estimate (using average caffeine concentration values), and the third is called liberal value estimate (using maximum caffeine concentration values). The scoring procedure can be done automatically, which makes the CCQ-R researcher-friendly.

After requesting permission from the original instrument's authors, the questionnaire was translated to Portuguese by two bilingual researchers (fluent both in English and in Portuguese). The same version was later translated back to English by different bilinguals. A comparison was made between the originals and the retroversions. Finally, three specialists in the field of psychoactive substances evaluated the final versions.

The products presented in the original instrument version were adapted for the Portuguese reality. Some other products were added according to their availability in the Portuguese market

(namely caffeinated food supplements). Before taking this decision, a search was made in two distinct approaches, *in loco* (at a Portuguese large goods distributor) and on the web, using the official websites of manufacturers and distributors (in the case of the caffeinated food supplements) and using the INFARMED's official website (in the case of the over-the counter-drugs). Then, a survey was created to assess whether the new products were easily identifiable by a sample of 24 participants. Finally, photographs were taken to ensure that the visual clues are easily recognizable by the Portuguese population (sizes and type of product) (Attachment I).

Some adjustments to caffeine's values were also needed before quantifying the results per participant (Attachment II). When possible, the values of reference were taken from studies for the Portuguese context (Candeias et al., 2009; Pena et al., 2005). In the cases where it was not found any reference specifically for the Portuguese context, the values were selected from sources that included a sub-sample from Portugal (for example, one from the Institute for Scientific Information on Coffee). When any of the conditions mentioned above were met, other sources were consulted (for example, the United States Food and Drug Administration, the United States Department of Agriculture or the Food and Agriculture Organization of the United Nations). Finally, for some cases, when none of the sources provided reference values for a specific caffeinated product, the values present on the original instrument were kept.

***Caffeine Motives Questionnaire (Irons et al., 2014)***

The CMQ is an instrument that measures the motives to consume caffeine. It is composed of 21 items, each one representing a reason for caffeine intake. The answers are given on a 5-point Likert-type scale, where one represents an inexistence of consumption ('never') and five represents a continuous consumption ('always'). The items were taken from well-known caffeine effects, previous results on caffeine's consumption motives, and other substance's utilization motives.

After requesting permission from the original instrument's authors, the questionnaire was translated to Portuguese by two bilingual individuals (fluent both in English and in Portuguese), and the Portuguese version was translated back to English by other bilinguals. The research team

compared the original, the Portuguese, and the retroversion versions, and the Portuguese translations were kept. Finally, three specialists approved the final version (Attachment III).

**Procedures**

Subjects that matched the inclusion criteria were contacted using social networks and the Human Neurobehavioural Laboratory's internal polling (non-probabilistic sampling technique, specifically convenience sampling). The initial contact provided an explanation about the study's objectives as well as the anonymity guaranty and the possibility of withdrawal anytime without any harmful consequences. Participants were also informed that they could interrupt their participation at any stage during the procedure and that all the collected data would remain confidential. Additionally, participants were provided with the researcher's e-mail address to ensure that they would be able to contact the researcher if needed.

The sample was composed of 270 participants in both studies. In both studies, 24 participants were excluded for being over 35 years old, 6 because they were not Portuguese, 4 because they had a health problem that prevents caffeine consumption, and 3 because they disagreed with the informed consent. The only difference was the exclusion of participants for incomprehensible answers. In Study 1, 17 individuals were excluded for this reason, and in Study 2 only 10 were excluded for this specific motive. The data was collected between the 2$^{nd}$ of April and the 19$^{th}$ of June using Qualtrics, an online survey platform.

## Results

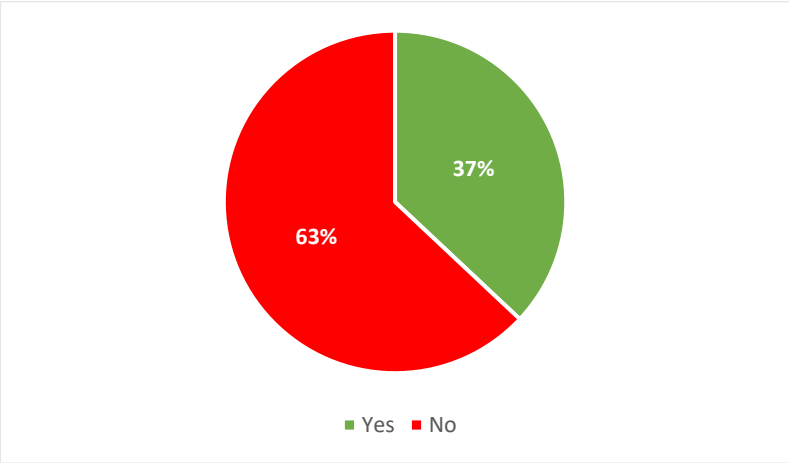
### Study 1

#### *Perceived sensitivity to caffeine's effects*

In terms of the perception of being particularly sensitive to caffeine's effects, 63% of individuals reported that they do not perceive themselves as particularly sensitive to those effects (see Figure 1).

**Figure 1**

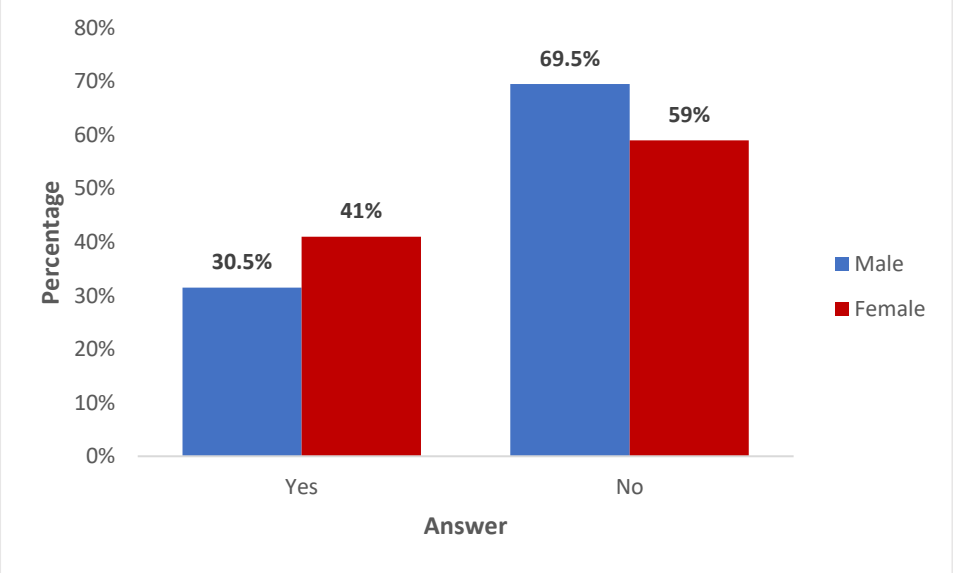
*Perceived sensitivity to caffeine's effects (all sample)*




In terms of gender, males and females reported that they did not consider themselves susceptible to caffeine's effects (69.5% and 59%, respectively) (Figure 2). To understand if there was a significant statistical association between the perceived sensitivity to caffeine and gender, a Fischer's Exact Test was performed since the data was not normally distributed (the Kolmogorov-Smirnov showed a $p < .001$). There was not a significant statistical association between gender and the perceived sensitivity to caffeine ($p = .147$).

**Figure 2**

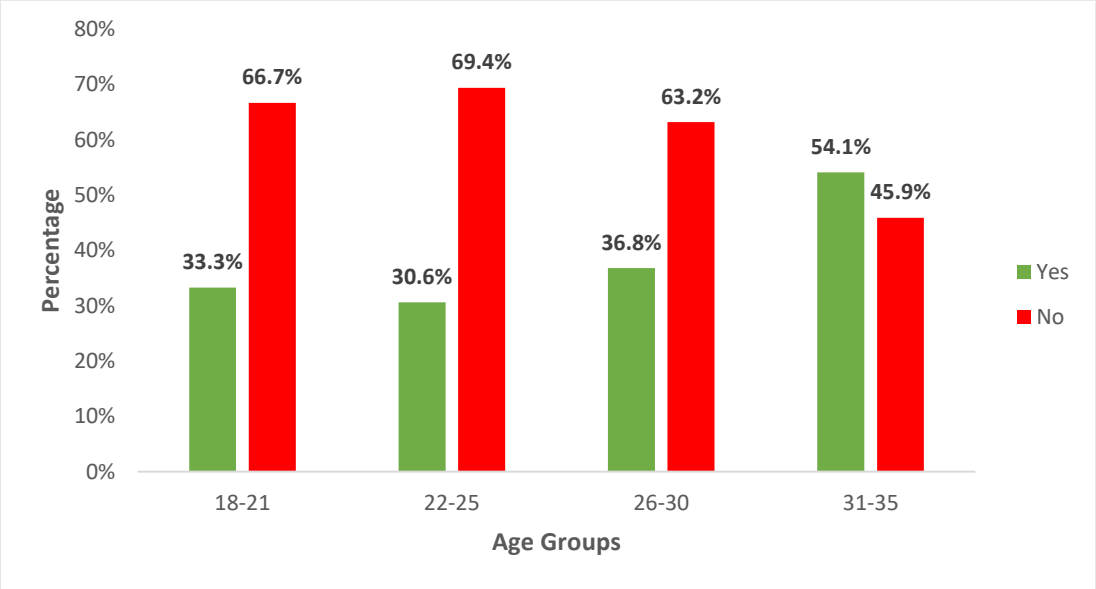
*Perceived sensitivity to caffeine's effects (by gender)*



In terms of age, almost all age groups reported, in the majority, that they do not consider themselves particularly susceptible to the effects of caffeine, except for the age group of 31 to 35 years old (54.1%) (Figure 3). To investigate if there was a significant statistical association between the perceived sensitivity to caffeine and age, considering that the data did not meet again the normal distribution assumption (the Kolmogorov-Smirnov showed a $p < .001$), a Chi-square test was performed ($\chi^2(3) = 6.12$, $p = .106$), indicating that there was not a significant statistical association between age and the perceived sensitivity to caffeine.

**Figure 3**

*Perceived sensitivity to caffeine's effects (by age groups)*




The data were compared using age groups and gender as variables. The results showed that older males and females reported themselves as especially susceptible to caffeine effects (56.2% and 52.4%, respectively) (see Figures 4 and 5). A Chi-square test was performed to explore if there was a significant statistical association between the perceived sensitivity to caffeine and age (by gender). This decision to use the Chi-square test was made because of the existence of extreme outliers on males (specifically on the 18 to 21, and on the 22 to 25 age groups) and the lack of a normal distribution (the Kolmogorov-Smirnov showed a $p < .001$). As a result, for females, we have ($\chi^2(3) = 2.29$, $p = .515$), which means that there was not a significant statistical association between female's age and the

perceived sensitivity to caffeine. On the other hand, for males, 25% of the cells had an expected count of less than five, and the minimum expected count was 2.74 ($\chi^2(3) = 6.25$). Therefore, the decision was to divide the age groups into just two groups (18 to 25 and 26 to 35), as Martins (2011) recommended. The Chi-square test was performed again ($\chi^2(3) = 1.55$, $p = .214$), revealing that there was no significant statistical association between males' age and the perceived sensitivity to caffeine.

**Figure 4**

*Perceived sensitivity to caffeine's effects (age groups by gender) – Males*

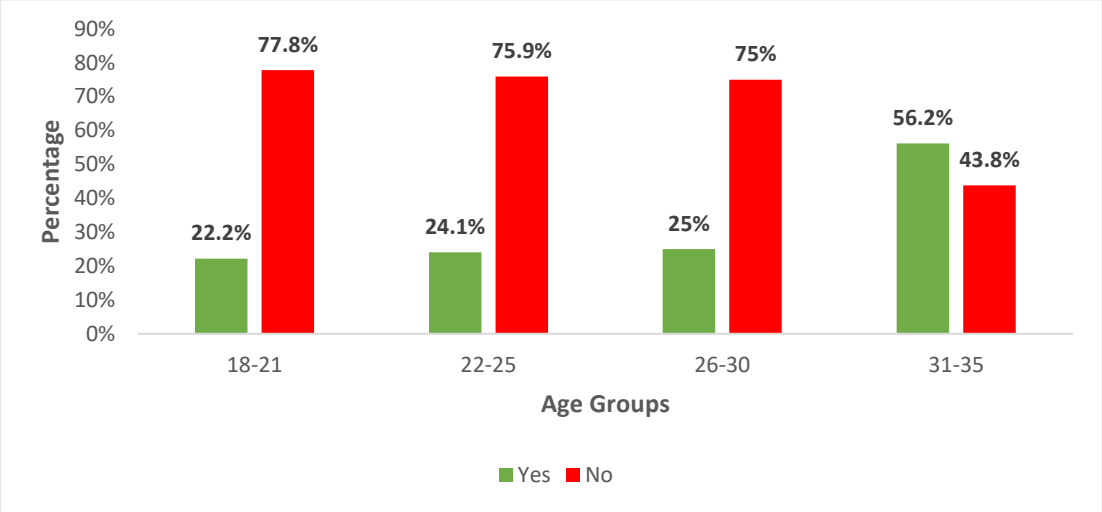
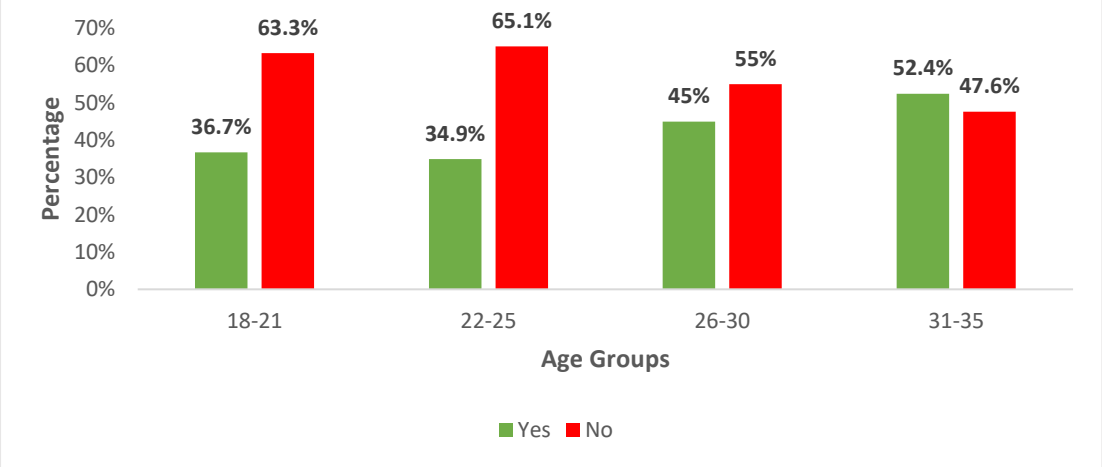



**Figure 5**

*Perceived sensitivity to caffeine's effects (age groups by gender) – Females*

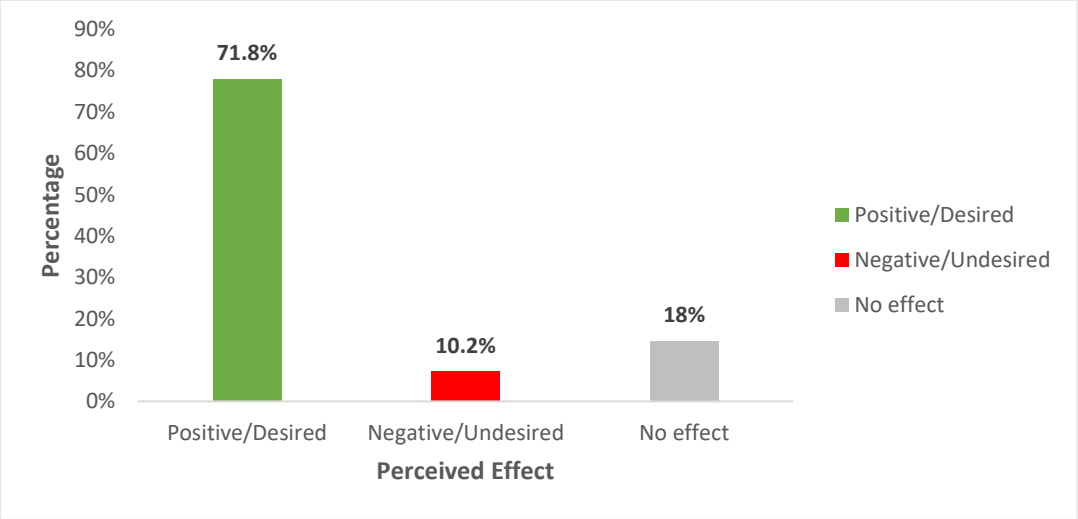


***Type of perceived caffeine's effect***

In terms of perceiving caffeine's effects, 71.8% of individuals reported that they recognize that caffeine has a positive/desired effect, 10.2% reported that caffeine has a negative/undesired effect, and 18% reported that caffeine does not affect them (Figure 6).

**Figure 6**

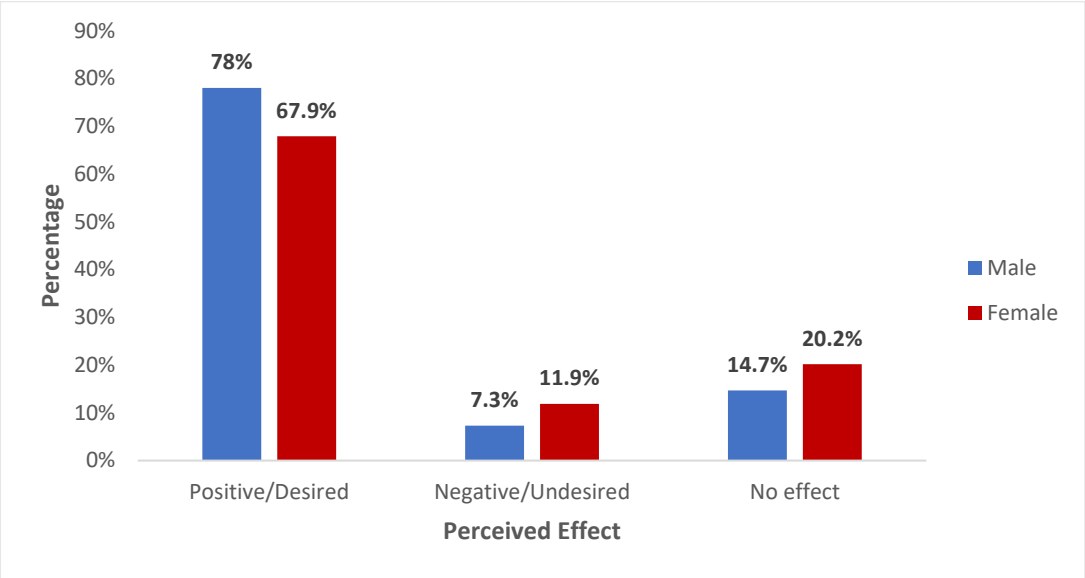
*Type of perceived caffeine's effect (all sample)*




In terms of gender, both males and females reported, in the majority, that caffeine has a positive/desired effect (78% and 67.9%, respectively) (Figure 7). To understand if there is a significant statistical association between the perceived caffeine's effect and gender and since the data was not normally distributed (the Kolmogorov-Smirnov showed a $p < .001$), a Fischer's Exact Test was performed ($p = .290$), which means that there is not a significant statistical association between gender and the perceived effects of caffeine.

**Figure 7**

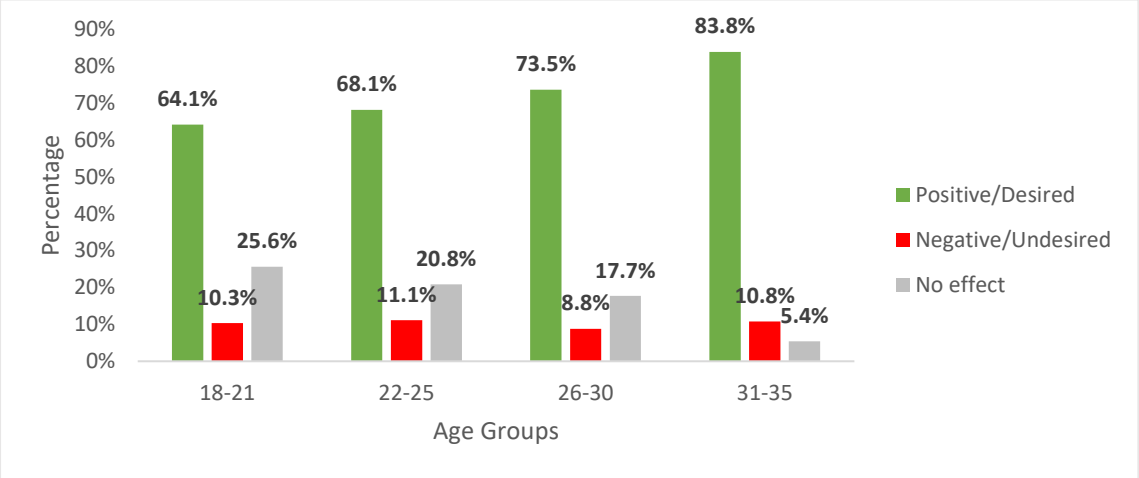
*Type of perceived caffeine's effect (by gender)*




In terms of age, all age groups reported, in the majority, that caffeine has a positive/desired effect (Figure 8). To explore if there was a significant statistical association between the type of perceived sensitivity to caffeine and age, considering that the data was not normally distributed (the Kolmogorov-Smirnov showed a $p < .001$), a Chi-square test was performed. The results showed that there was not a significant statistical association between age and the type of perceived caffeine's effect ($\chi^2(3) = 6.27$, $p = .394$).

**Figure 8**

*Type of perceived caffeine's effect (by age group)*



When considering the data through the comparison between age groups and gender, the results showed that the entire sample of males within the oldest age group reported perceiving the caffeine's effect on themselves as positive. It is also shown that older females (31-35) are the ones that most reported the perception of caffeine effects as negative/undesired (19%) (Figures 9 and 10). To explore whether there was a significant statistical association between the perceived caffeine's effect and age (by gender), a Chi-square test was performed. The dataset was again divided into just two groups (18 to 25 and 26 to 35), as explained previously. As a result, there was not a significant statistical association between females' age and the perceived effects of caffeine ($\chi^2(3) = 2.04$, $p = .360$). On the other hand, in males, as it was not possible to group the variables further, the decision was made to read the results in Fisher's Exact Test ($p = 0.402$), which indicates that there is not a significant statistical association between the man's age and the perceived caffeine's effect.

**Figure 9**

*Type of perceived caffeine's effect (age groups by gender) – Males*

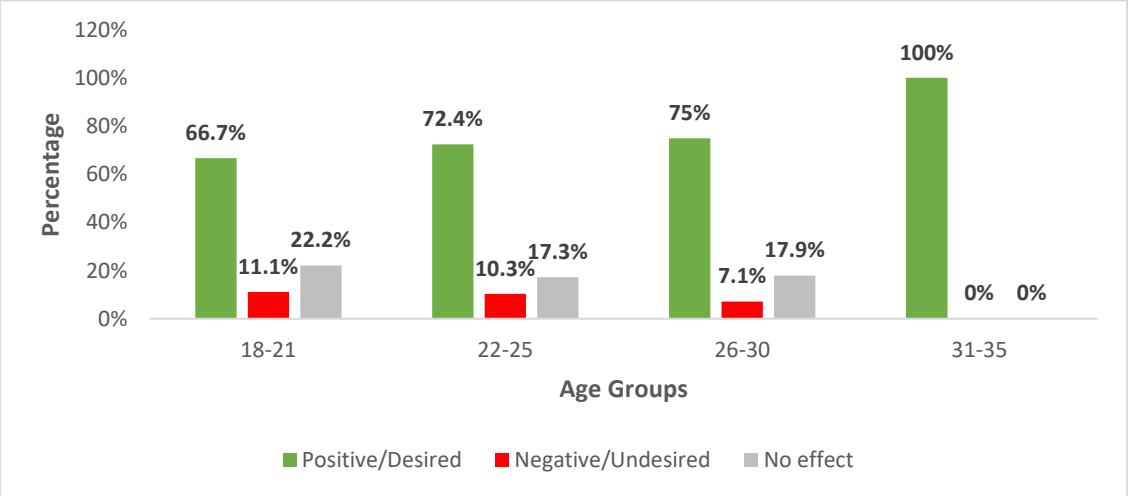
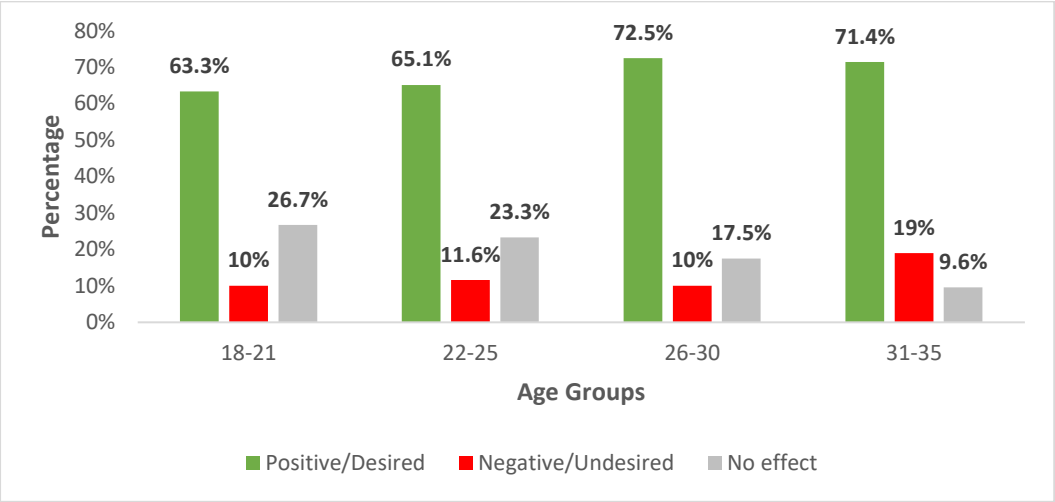


**Figure 10**

*Type of perceived caffeine's effect (age groups by gender) – Females*



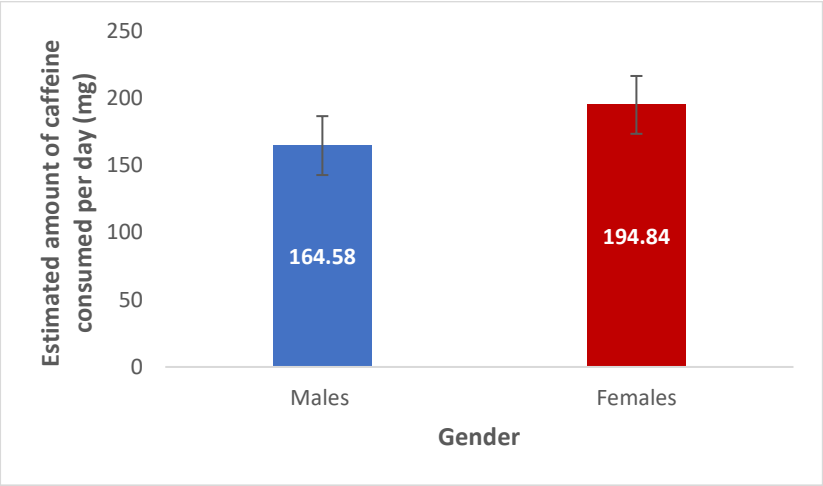

***Estimated amount of caffeine (mg) consumed per day***

For this topic, a smaller sample was used (n = 152). It was decided to eliminate the respondent who gave no numeric answer to this question, which suggests that the individual was unable to estimate the amount of caffeine consumed (although the same individuals answered in the same form that they consume caffeinated products). Thus, the 'zero values' were converted into missing answers.

In terms of the estimated amount of caffeine (mg) consumed per day, subjects estimated an average of 181.9 mg of caffeine consumed per day ($M$ = 181.9, $SE$ = 15.46). If we consider gender, males estimated consuming on average 164.58 mg of caffeine per day ($M$ = 164.58, $SE$ = 21.9), while females estimated consuming on average of 194.84 mg of caffeine per day ($M$ = 194.84, $SE$ = 21.5). It was explored if there was a significant difference in the estimated amount of caffeine (mg), according to the participants' gender through the performance of a Mann-Whitney test. Although females estimated, on average, a higher amount of caffeine consumed per day than males, there was not a significant statistical difference between males and females ($U$ = 2,553, $z$ = -1.02, $p$ = .305) (see Figure 11).

**Figure 11**

*Estimated amount of caffeine consumed per day (mg) (by gender)*



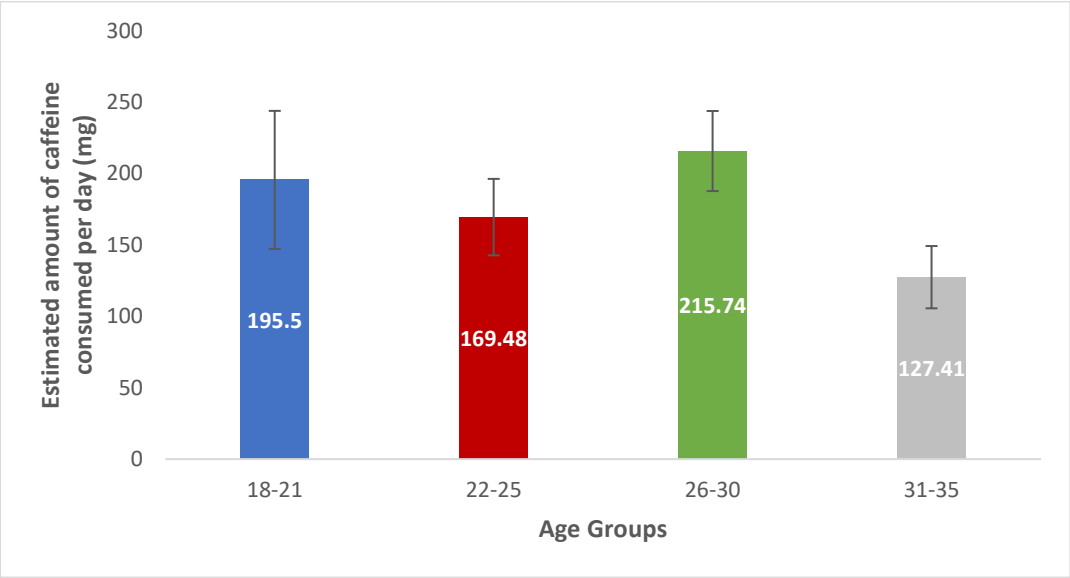

*Note*. A Mann-Whitney U test was run and determined that there was not a significant statistical difference between males and females.

If we consider age, the age group of 26 to 30 years old was the one that estimated a greater amount of caffeine consumed per day ($M$ = 215.74, $SE$ = 28.04), followed by the 18 to 21 age group ($M$ = 195.5, $SE$ = 48.36) and the 22 to 25 age group ($M$ = 169.48, $SE$ = 26.75). The age group that has the lowest estimated amount of caffeine consumed per day was the 31 to 35 years old age group ($M$ = 127.41, $SE$ = 21.81).

To explore if there was a significant difference in the estimated amount of caffeine (mg) between age groups, a Kruskal-Wallis H test was performed. Although there are differences in the amounts estimated by each age group, there was not a significant statistical difference between them ($\chi^2(3) = 2.18$, $p = .535$) (see Figure 12).

**Figure 12**

*Estimated amount of caffeine consumed per day (mg) (by age groups)*



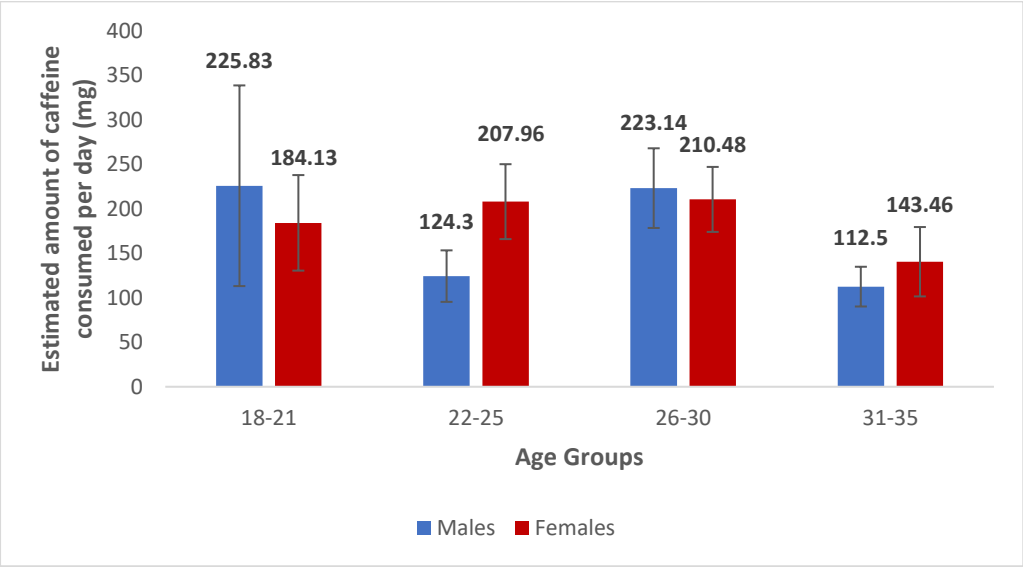

*Note*. A Kruskal-Wallis test was run and determined that there was not a significant statistical difference between age groups.

If we consider age groups by gender, males in the age group from 18 to 21 estimated a higher estimated amount of caffeine consumed per day (*M* = 225.83, *SE* = 112.71), followed by the 26 to 30 age group (*M* = 223.14, *SE* = 44.77) and the 22 to 25 age group (*M* = 124.30, *SE* = *28.93*). The male age group with the lowest estimated amount of caffeine consumed per day is 31 to 35 years old (*M* = 112.5, *SE* = 22.32) (Figure 13). On the other hand, females in the age group from 26 to 30 estimated a higher value of caffeine consumed per day (*M* = 210.48, *SE* =*36.51*), followed by the 22 to 25 age group (*M* = 207.96, *SE* = 42.07) and the 18 to 21 age group (*M* = 184.13, *SE* = 53.68). The female age group with the lowest estimated amount of caffeine consumed per day is 31 to 35 years old (*M* = 143.46, *SE* = 38.96).

Then, a Kruskal-Wallis H Test was performed to explore if there was a significant difference in the estimated amount of caffeine (mg) between age groups in both males and females. Results showed that there was not a significant statistical difference between the groups both in males and females ($\chi^2(3) = 2{,}242$, $p = .524$; $\chi^2(3) = 1{,}237$, $p = .744$; respectively) (see Figure 13).

**Figure 13**

*Estimated amount of caffeine consumed per day (mg) (age groups by gender)*




*Note*. A Kruskal-Wallis test was run and determined that there was not a significant statistical difference between age groups.

***Amount of caffeine consumed per week (mg)***

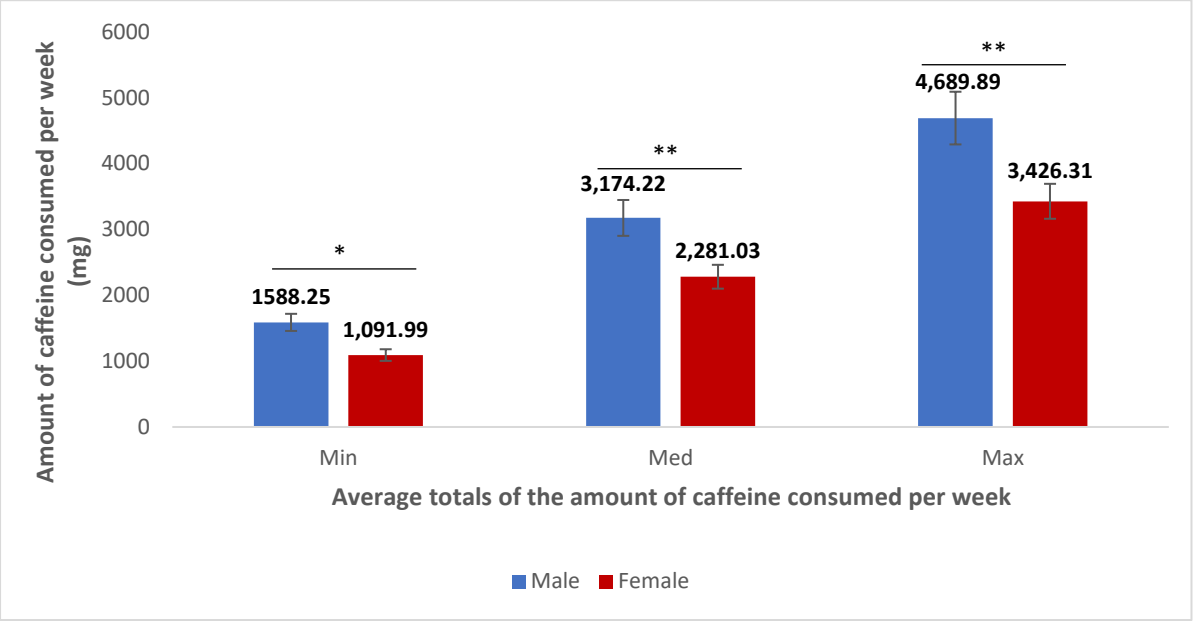
To analyse the amount of caffeine consumed per week, all the subjects in the database were considered (n = 216). Here, the missing values were interpreted as if a specific product was not consumed (i.e., 0). It was calculated a minimum, a medium, and a maximum average value for each metric, as shown here for the amount of caffeine consumed per week according to the self-reported quantity of different caffeinated products (minimum: $M_{min}$ = 1,280.39, $SE_{min}$ = 75.28; medium: $M_{med}$ = 2,620.11, $SE_{med}$ = 155.05; maximum: $M_{max}$ = 3,906, $SE_{max}$ = 227.22).

If we consider gender, males consume a minimum average of 1,588.25 mg of caffeine per week (*SE* = 129.92), a medium average of 3,174.22 mg of caffeine per week (*SE* = 272.27), and a maximum average of 4,689.89 mg of caffeine per week (*SE* = 399.87). On the other hand, females consume a minimum average of 1,091.99 mg of caffeine per week (*SE* = 88.19), a medium average of 2,281.03 mg of caffeine per week (*SE* = 180.93), and a maximum average of 3,426.31 mg of caffeine per week (*SE* = 265.3).

Then, we compared the amount of caffeine (mg) consumed in a week by males and by females, through a Mann-Whitney Test. Results showed that there was a significant statistical difference between males and females on the three average values of caffeine consumed per week (mg) (minimum: $U$ = 4,053, $z$ = -3.23, $p$ = .001; medium: $U$ = 4,226, $z$ = -2.84, $p$ = .004; maximum: $U$ = 4,260, $z$ = -2,768, $p$ = .006; respectively), demonstrating that males consumed a significantly higher amount of caffeine per week than females (see Figure 14).

**Figure 14**

*Amount of caffeine consumed per week (mg) (gender)*



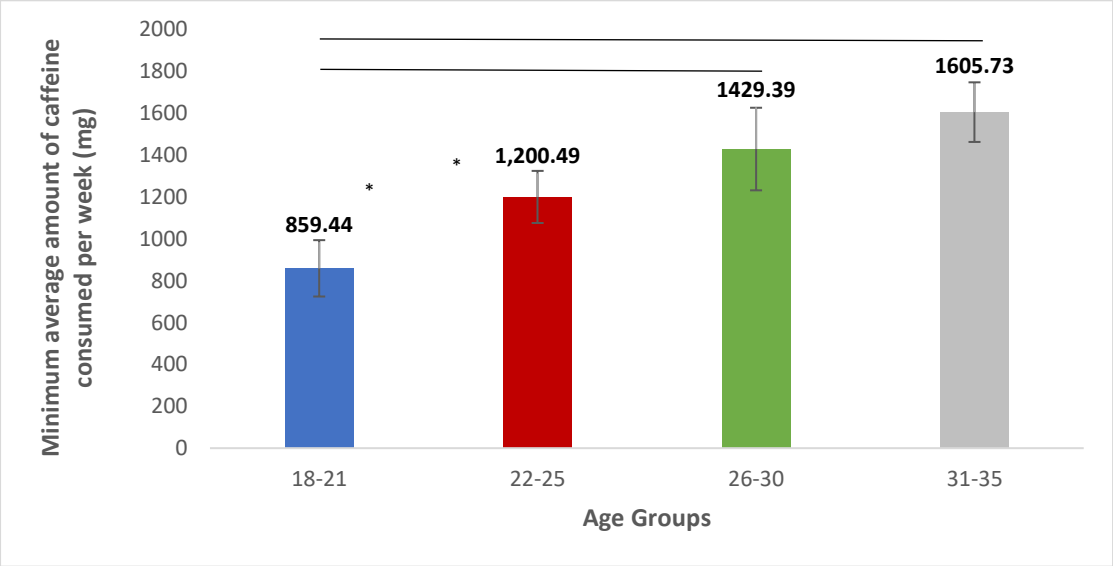

*Notes*. * = '$p$ < .001'; ** = '$p$ < .05'.

If we consider age, the age group from 31 to 35 years old is the one that consumes a greater amount of caffeine per week (mg) on the three total averages ($M_{min}$ = 1,605.73, $SE_{min}$ = 197.34; $M_{med}$ = 3,307.22, $SE_{med}$ = 434.85; $_{max}$ = 4,920.03, $SE_{max}$ = 642.92), followed by the 26 to 30 age group ($M_{min}$ = 1,429.39, $SE_{min}$ = 142.45; $M_{med}$ = 2,939.08, $SE_{med}$ = 289.13; $M_{max}$ = 4,368.3, $SE_{max}$ = 421.15) and the 22 to 25 age group ($M_{min}$ = 1,200.49, $SE_{min}$ =124.5; $M_{med}$ = 2,458.02, $SE_{med}$ = 247.34; $M_{max}$ = 3,680.65, $SE_{max}$ = 362.77). The age group that consumes the lowest amount of caffeine per week (mg) is the 18 to 21 years old ($M_{min}$ = 859.44, $SE_{min}$ = 134.66; $M_{med}$ = 1,711.34, $SE_{med}$ = 275.44; $M_{max}$ = 2,553.97, $SE_{max}$ = 401.33). A Kruskal-Wallis H test was performed and showed that there was a significant difference in

the amounts of caffeine consumed per week (mg) between the age groups on the minimum, medium and maximum averages ($\chi^2(3) = 11.98$, $p = .007$; $\chi^2(3) = 11.86$, $p = .008$; $\chi^2(3) = 11.85$, $p = .008$; respectively) (see Figures 15, 16 and 17).

**Figure 15**

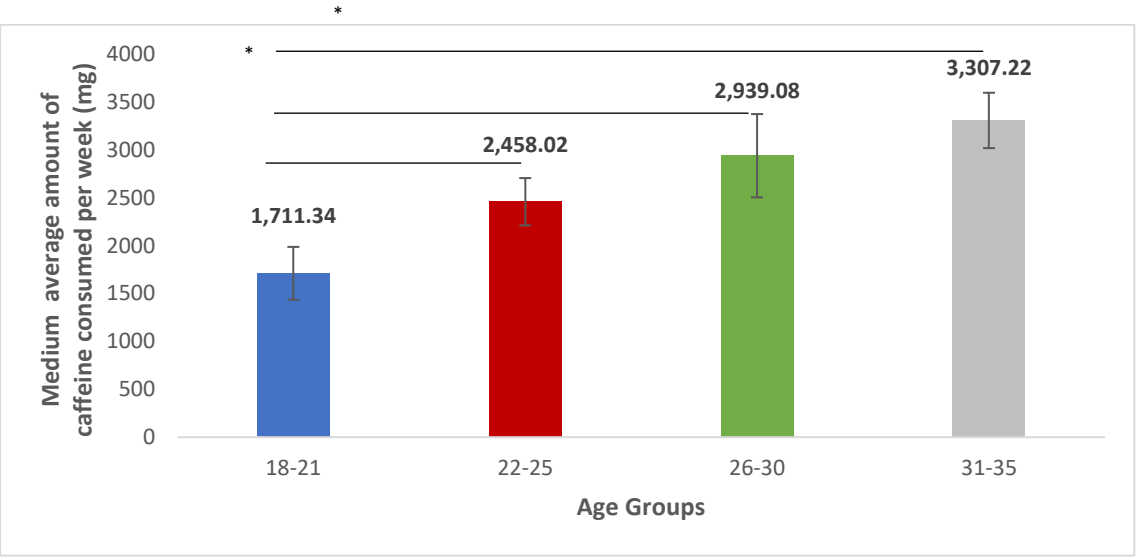
*Amount of caffeine consumed per week (mg) (by age group) – Minimum*




*Note*. * = '$p < .05$'.

**Figure 16**

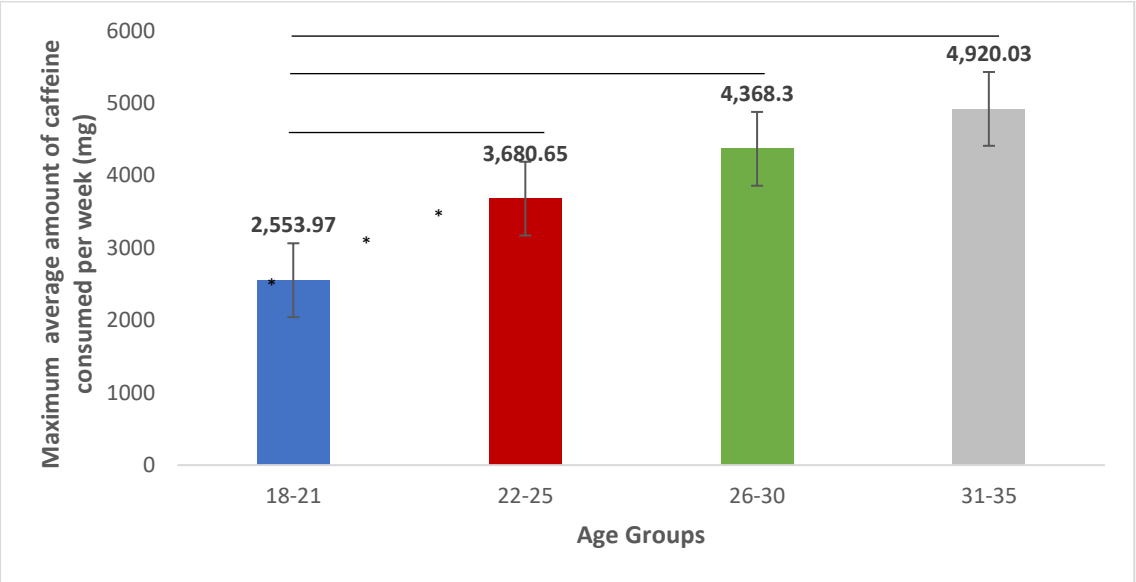
*Amount of caffeine consumed per week (mg) (by age group) – Medium*




*Notes*. * = '$p < .05$'.

**Figure 17**

*Amount of caffeine consumed per week (mg) (by age group) – Maximum*




*Notes*. * = '$p < .05$'.

If we consider the age groups by gender, males in the age group from 31-35 is the one that consumes a higher amount of caffeine per week (mg) on the three total averages ($M_{min}$ = 2,264.24, $SE_{min}$ = 260.87; $M_{med}$ = 4,644.31, $SE_{med}$ = 673.24; $M_{max}$ = 6,817.93, $SE_{max}$ = 1,010.59), followed by the 26 to 30 age group ($M_{min}$ = 1,583.72, $SE_{min}$ = 259.17; $M_{med}$ = 3,261.87, $SE_{med}$ = 527.16; $M_{max}$ = 4,811.29, $SE_{max}$ = 768.72) and the 22 to 25 age group ($M_{min}$ = 1,327.87, $SE_{min}$ = 171.23; $M_{med}$ = 2,519.96, $SE_{med}$ = 305.69; $M_{max}$ = 3,755.87, $SE_{max}$ = 448.61). The age group that has the lowest amount of caffeine consumed per week (mg) is the 18 to 21 years old ($M_{min}$ = 1,239.55, $SE_{min}$ = 387.52; $M_{med}$ = 2,396.21, $SE_{med}$ = 790.41; $M_{max}$ = 3,538.83, $SE_{max}$ = 1158.57).

On the other hand, females in the age group from 26 to 30 years old consume a higher value of caffeine per week ($M_{min}$ = 1321.35, $SE_{min}$ = 161.19; $M_{med}$ = 2713.12, $SE_{med}$ = 326.02; $M_{max}$ = 4,058.19, $SE_{max}$ = 475.02), followed by the 22 to 25 age group ($M_{min}$ = 1,114.59, $SE_{min}$ = 173.94; $M_{med}$ = 2,416.25, $SE_{med}$ = 326; $M_{max}$ = 3,629.95, $SE_{max}$ = 530.92) and the age group 31 to 35 ($M_{min}$ = 1,104.01, $SE_{min}$ = 235.62; $M_{med}$ = 2,288.48, $SE_{med}$ = 469.77; $M_{max}$ = 3,474.01, $SE_{max}$ = 696.81). The age group that has the

lowest estimated amount of caffeine consumed per day is the 18 to 21 years old ($M_{min}$ = 745.40, $SE_{min}$ = 128.52; $M_{med}$ = 1,505.88, $SE_{med}$ = 266.88; $M_{max}$ = 2,258.52, $SE_{max}$ = 387.6).

To explore if there was a significant difference in the amount of caffeine consumed per week (mg) between age groups comparing males and females, a Kruskal-Wallis H Test was performed. A marginally significant difference was detected for females among the age groups on all three averages (minimum: $\chi^2(3) = 6.74$, $p = .081$; medium: $\chi^2(3) = 6.47$, $p = .091$; maximum: $\chi^2(3) = 6.52$, $p = .089$). Results also showed a significant statistical difference for males between the age groups in all three averages (minimum: $\chi^2(3) = 8.62$, $p = .035$; medium: $\chi^2(3) = 9.11$, $p = .028$; maximum: $\chi^2(3) = 8.75$, $p = .033$). The data reveals that the significant statistical differences, on males, in the three averages of caffeine consumed are between the 31-35 age group and two other groups, the 18-21 and the 22-25 age groups ($p = .023$ and $p = .007$; $p = .017$ and $p = .006$; $p = .018$ and $p = .007$; to minimum, medium, and maximum, respectively).

***Coffee, Decaffeinated and Iced Coffee***

On this topic, 81.94% of the subjects, 89% of males and 77.6% of females, reported they consume coffee, decaffeinated, or iced coffee (Figures 18 and 19). If we consider age, all age groups reported they consume at least one of those products regularly (Figure 20).

**Figure 18**

*Weekly reported consumption of coffee, decaffeinated and iced coffee (all sample)*

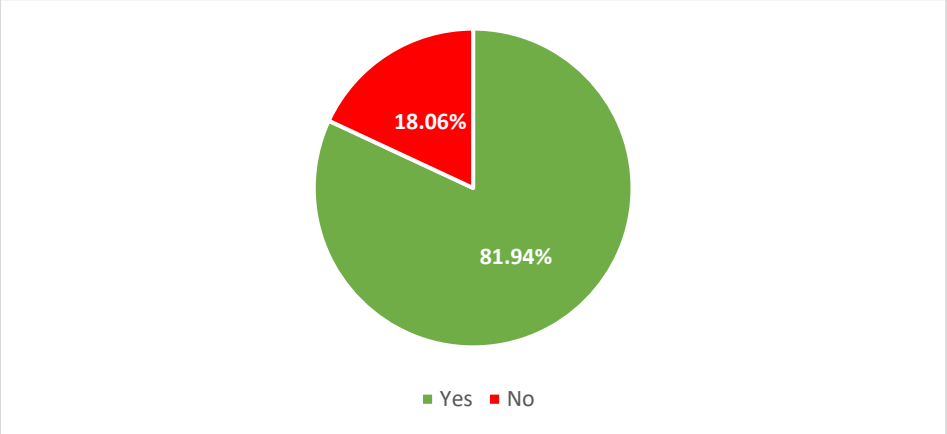


**Figure 19**

*Weekly reported consumption of coffee, decaffeinated and iced coffee (by gender)*

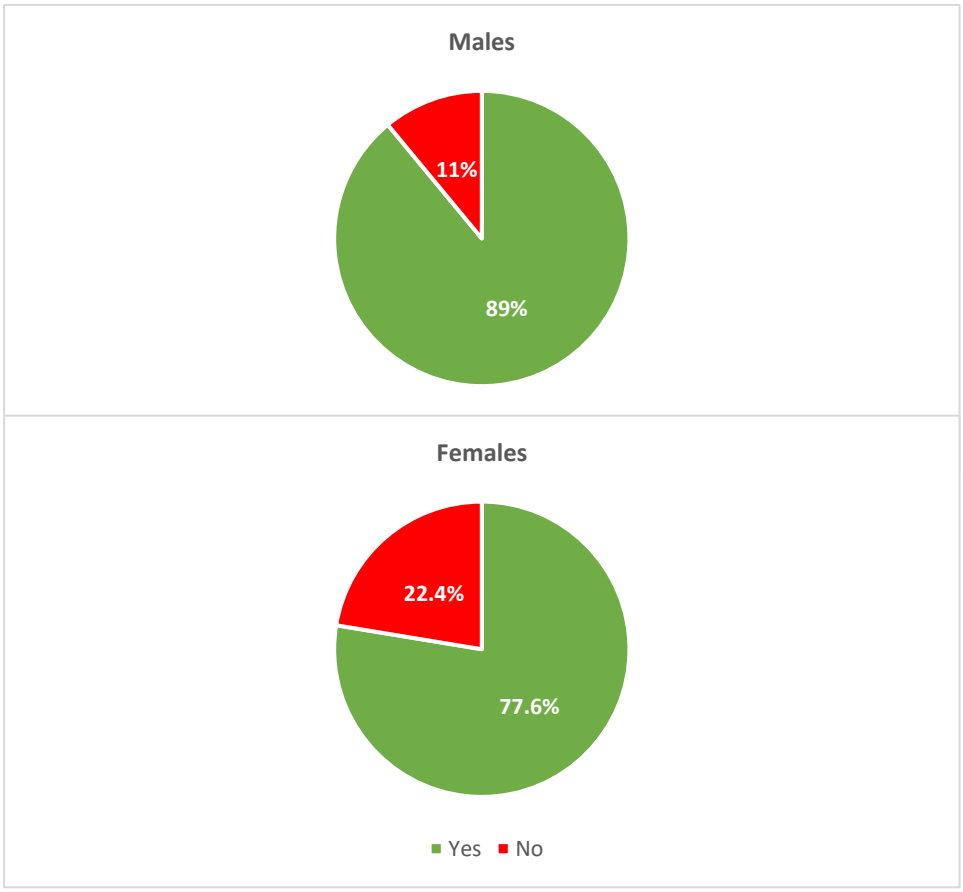
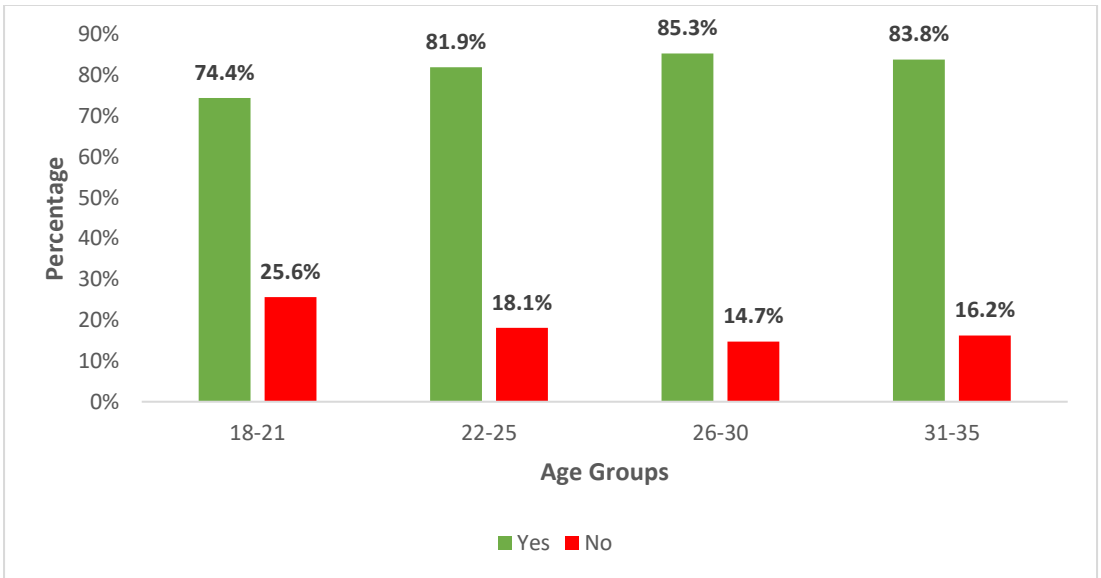



**Figure 20**

*Weekly reported consumption of coffee, decaffeinated and iced coffee (by age groups)*



**Coffee.**

***50ml Coffee.***

For this analysis we consider 214 subjects because two of the subjects provided inappropriate answers). Participants reported that, on average, they consume 8.77 portions of 50ml coffee (as known as Expresso) weekly (*SE* = .61). If we consider age, the 31-35 group reported, on average, the greatest consumption of this type of coffee (*M* = 11.17, *SE* = 1.6) (see information about the other age groups in Figure 21). If gender is considered, males reported to consume this type of product, on average, more than females (*M* = 11.73, *SE* = 1.05; *M* = 6.97, *SE* = .69, respectively) (see Figure 22).

**Figure 21**

*Weekly reported consumption of 50ml coffee (by age groups)*

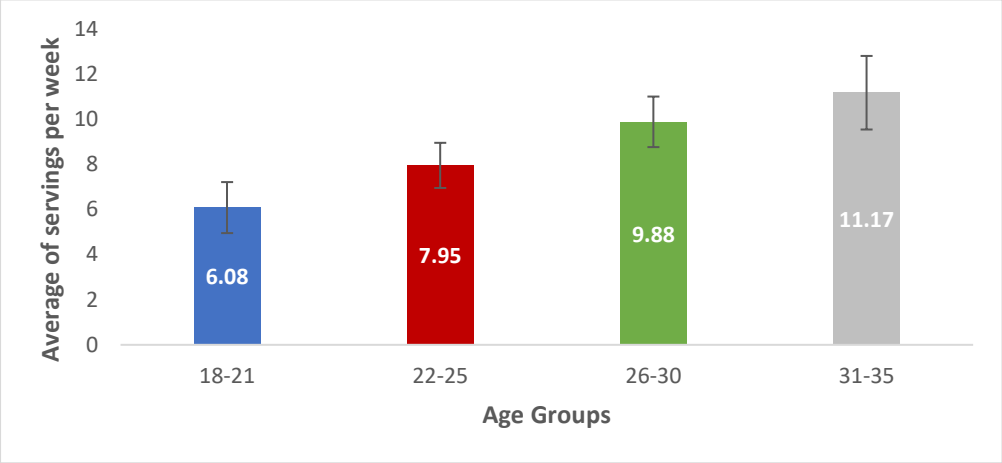
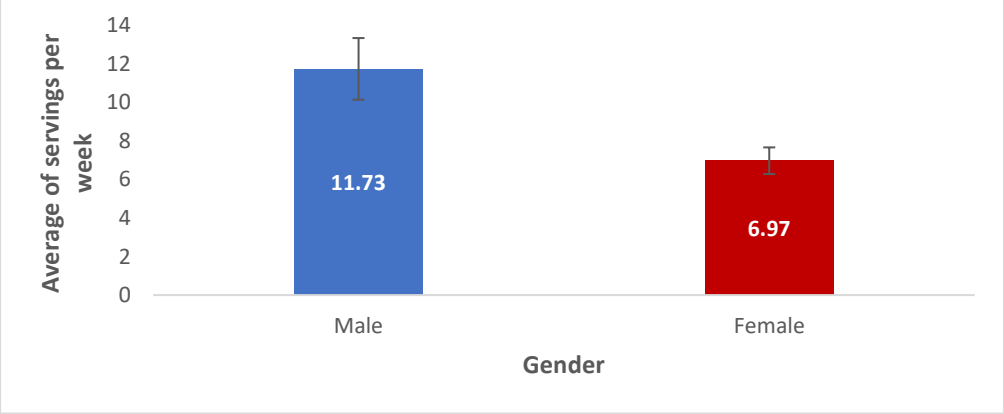



**Figure 22**

*Weekly reported consumption of 50ml coffee (by gender)*



We explored if there were differences in the consumption regarding gender, age, and age by gender. Regarding gender, a Mann-Whitney test was performed ($U$ = 3,682.5, $z$ = -3.93, $p$ = .000). The result obtained demonstrated a significant statistical difference between males and females regarding the consumption of this product. Regarding age, a Kruskal-Wallis H test was performed. The result showed a marginally significant difference regarding the amounts of this type of product consumed per week between the age groups ($\chi^2(3)$ = 7.57, $p$ = .056). Regarding the age groups by gender, a Kruskal-Wallis H test was performed. On males, there was no significant statistical difference in the amount of consumption of this type of product between age groups ($\chi^2(3)$ = 3.29, $p$ = .353). On the other hand, considering females, it was verified a marginally significant statistical difference in the amount of consumption of this product ($\chi^2(3)$ = 7.23, $p$ = .065).

***250 ml Coffee.***

Regarding 250 ml coffee, participants reported that, on average, they consumed 1.42 servings per week ($M$ = 1.42, $SE$ = .22). If we consider age, the age group 31-35 reported the greatest consumption of this type of coffee ($M$ = 1.7, $SE$ = .87) (see Figure 23). If gender is considered, both males and females reported to consume, on average, a similar quantity of this product ($M$ = 1.35, $SE$ = .43; $M$ = 1.46, $SE$ = .24, respectively) (Figure 24).

**Figure 23**

*Weekly reported consumption of 250ml coffee (by age groups)*

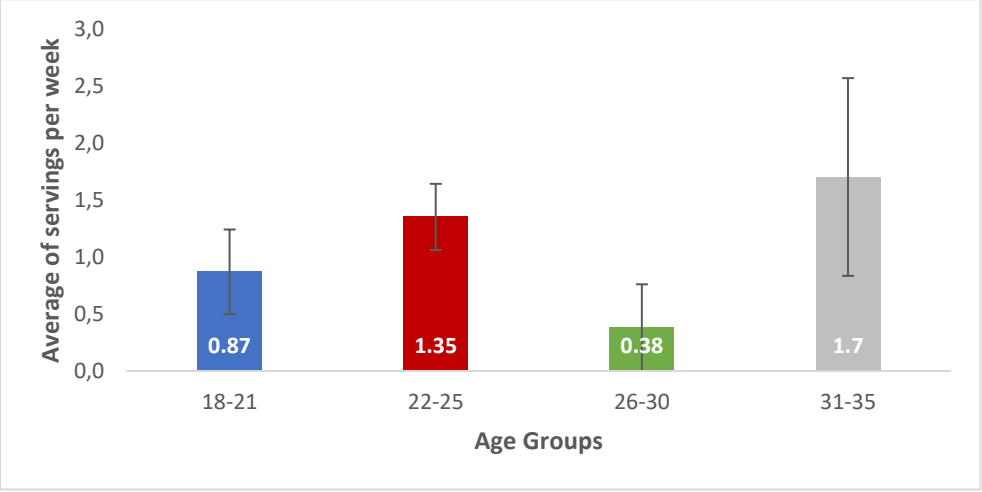
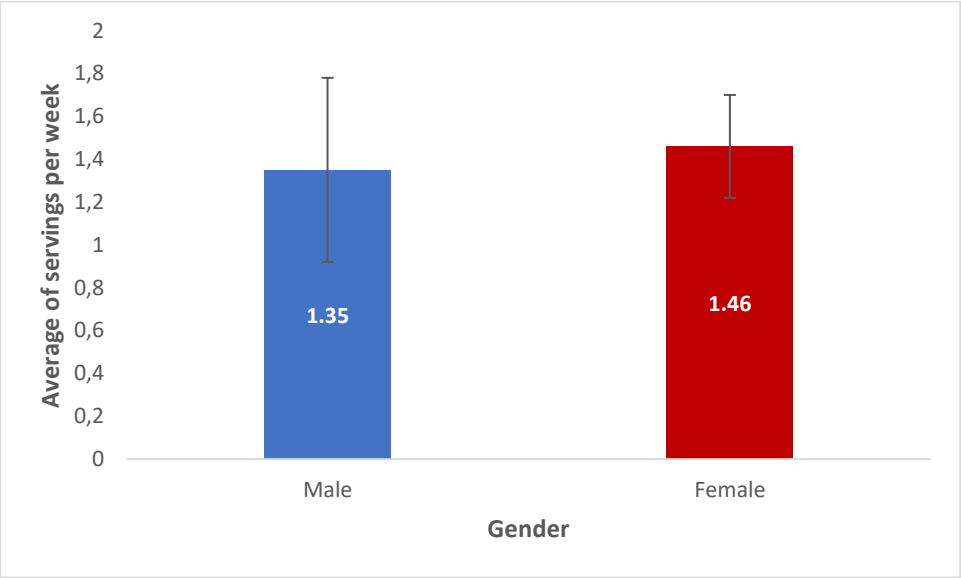


**Figure 24**

*Weekly reported consumption of 250ml coffee (by gender)*




***354 ml Coffee.***

Regarding coffee with 354 ml, participants reported that, on average, they consumed 0.069 servings per week (*M* = 0.069, *SE* = 0.05). If we consider age, the only group that has not reported the consumption of this type of product is the 18-21 age group. Other age groups (22-25, 26-30 and 31-35) reported low amounts of consumption of this type of coffee (*M* = .03, *SE* = .02; *M* = 0.3, *SE* = .03; *M* = .3, *SE* = .28; respectively). If gender is considered, males reported to consume, on average, more of this product (*M* = .12, *SE* = .12) than females (*M* = .04, *SE* = .02).

***473 ml Coffee.***

Regarding coffee with 473 ml, participants reported to consume, on average, 0.005 servings per week (*M* = 0.01, *SE* = 0.01). If we consider age, the only group that reported this type of product's consumption was the 22-25 age group (*M* = .01, *SE* = .01). If gender is considered, only females reported to consume this product weekly (*M* = .01, *SE* = .09).

***650 ml Coffee.***

Regarding coffee with 650 ml, participants reported to consume, on average, 0.019 servings per week (*M* = 0.02, *SE* = 0.02). If we consider age, only two groups reported consuming this type of product, the 22-25 age group, and the 26-30 age group. If gender is considered, males reported to consume, on average, a slightly higher quantity (*M* = .04, *SE* = .0.4) of this product than females (*M* = .01, *SE* = .01).

**Decaffeinated coffee.**

***50 ml Decaffeinated.***

Regarding the 50 ml decaffeinated coffee, participants reported to consume, on average, 0.38 servings per week (*M* = 0.38, *SE* = .1). If we consider age, the age group 26-30 reported, on average, the greatest consumption (*M* = .62, *SE* = .27). The other three age groups (18-21, 22-25 and 31-35) reported similar consumptions (*M* = .28, *SE* = .26; *M* = .26, *SE* = .01; *M* = .27, *SE* = .15, correspondingly). If gender is considered, males reported to consume, on average, marginally more of this type of product than females (*M* =.45, *SE* = .17; *M* = .34, *SE* = .13; respectively).

***250 ml Decaffeinated.***

Regarding the 250 ml decaffeinated coffee, participants reported to consume, on average, 0.069 servings per week (*M* = 0.07, *SE* = 0.1). If we consider age, the age group 18-21 and the age group 31-35 reported, on average, to consume a similar amount of this type of product (*M* = .18, *SE* = .76; *M* =.14, *SE* = .58). The other two age groups (22-25 and 26-30) reported only marginal consumptions (*M* = .03, *SE* = .03; *M* = .02, *SE* = .02; correspondingly). If gender is considered, males and females reported to consume, on average, similar amounts of this type of product (*M* =.06, *SE* = .06; *M* = .08, *SE* = .06; respectively).

***350 ml Decaffeinated.***

No subject reported consuming this type of product regularly.

***473 ml Decaffeinated.***

Regarding the 473 ml decaffeinated coffee, participants reported to consume, on average, 0.023 portions per week (*M* = 0.02, *SE* = 0.2). If we consider age, the only age group that reported to consume this type of product was the 26-30 one (*M* = .07, *SE* = .0.7). If gender is considered, only females reported to consume this type of product (*M* = .04, *SE* = .04).

***650 ml Decaffeinated.***

No subject reported consuming this type of product regularly.

**Iced Coffee.**

***300 ml Iced Coffee.***

Regarding the 300 ml iced coffee, participants reported that, on average, 0.32 servings per week (*M* = 0.32, *SE* = .02). If we consider age, the age group 22-25 reported being the one to consume the greatest quantity of this product (*M* = .06, *SE* = .04). The 18-21 age group and the 31-35 age group reported to have similar consumptions of 300ml Iced Coffee (*M* =.03, *SE* = .03; *M* = .03, *SE* = .03; correspondingly). The age group from 26-30 reported being the one that consumes this type of product less, although similar to the other two groups (*M* =.02, *SE* = .02).

If gender is considered, both males and females reported to consume, on average, similar amounts of this type of product weekly (*M* = .04, *SE* = .04; *M* = .03, *SE* = .02; respectively).

***400 ml Iced Coffee.***

No subject reported consuming this type of product regularly.

***500 ml Iced Coffee.***

No subject reported consuming this type of product regularly.

***650 ml Iced Coffee.***

No subject reported consuming this type of product regularly.

***Soft Drinks***

On this topic, 60.7% of the subjects, 58.5% of males and 61.9% of females reported they do not consume soft drinks (Figures 25 and 26). If we consider age, all age groups reported, in the majority, they do not consume this product regularly (Figure 27).

**Figure 25**

*Weekly reported consumption of soft drinks (all sample)*

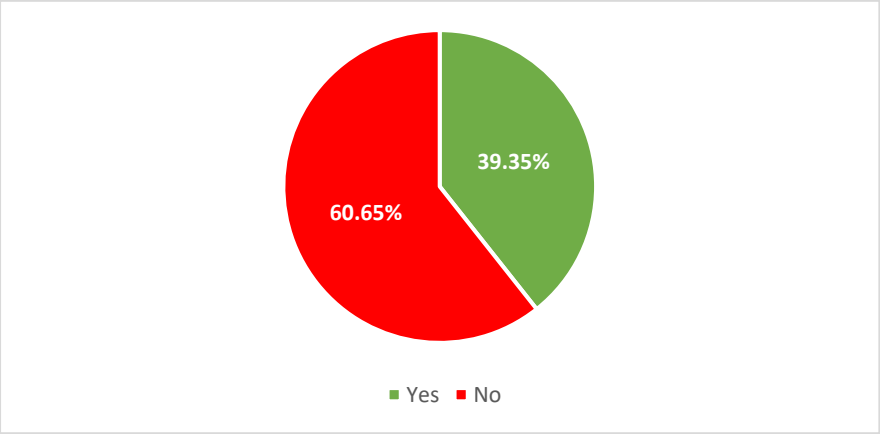


**Figure 26**

*Weekly reported consumption of soft drinks (by gender)*

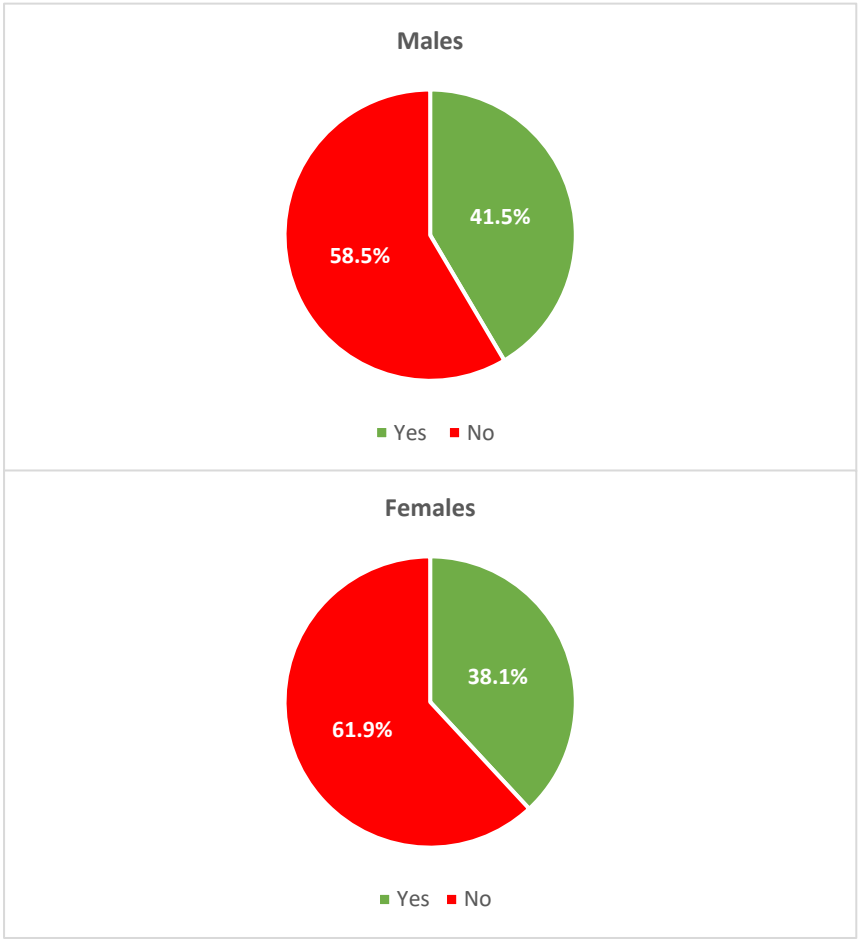
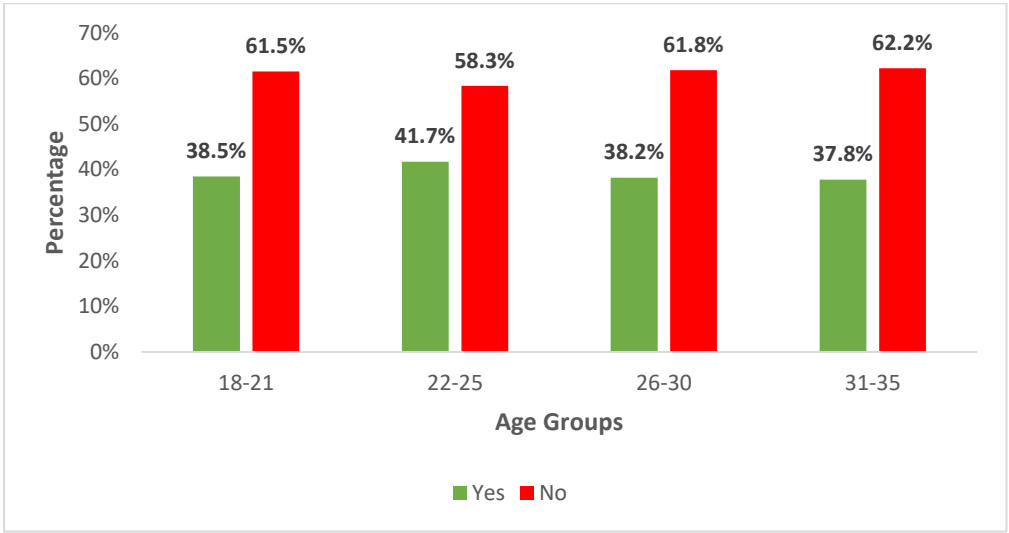



**Figure 27**

*Weekly reported consumption of soft drinks (by age groups)*



***330 ml Soft Drinks.***

Regarding the 330 ml soft drinks, participants reported that they consume, on average, 0.491 servings per week (*M* = .49, *SE* = .07). If we consider age, the age group 22-25 reported consuming marginally more of this type of product (*M* =.57, *SE* = .13). The other three age groups (18-21, 26-30 and 31-35) reported similar consumptions of the 330ml soft drink s (*M* = .39, *SE* = .13; *M* = .47, *SE* = .13; *M* = .49 *SE* = .18; correspondingly). If gender is considered, males reported to consume, on average, slightly higher amounts of this type of product (*M* =.61, *SE* = .14; *M* = .42, *SE* = .08; respectively).

***500 ml Soft Drinks.***

Regarding the 500 ml soft drinks, participants reported to consume, on average, 0.093 servings per week (*M* = .09, *SE* = .03). If we consider age, the age group 22-25 and the age group 31-35 reported, on average, to consume similarly this type of product (*M* =.07, *SE* = .04; *M* = .08, *SE* = .08; respectively). The other two age groups (18-21 and 26-30) also reported similar consumptions of the 500ml soft drink s (*M* = .1, *SE* = .1; *M* = .12 *SE* = .05; correspondingly). If gender is considered, males reported to consume, on average, slightly higher amounts of this type of product (*M* =.12, *SE* = .06; *M* = .08, *SE* = .03; respectively).

***1000 ml Soft Drinks.***

Participants reported to consume, on average, 0.042 portions of 1000ml soft drinks per week (*M* = .04, *SE* = .02). If we consider age, the age group 18-21 did not report a regular consumption of this type of product. On the contrary, subjects between 22 and 25 years old reported to consume more this type of product (*M* = .07, *SE* = .05). The other age groups (26-30 and 31-35) reported a relatively similar consumption of the 1000ml soft drinks (*M* = .0.4, *SE* = .03; and *M* = .03, *SE* = .03; respectively).

If gender is considered, males reported to consume, on average, slightly superior amounts of this type of product (*M* =.06, *SE* = .04; *M* = .03, *SE* = .02; correspondingly).

***1750 ml Soft Drinks.***

Participants reported to consume, on average, 0.083 servings of 1750ml soft drinks weekly (*M* = .08, *SE* = .02). If we consider age, the age group 18-21 and the age group 31-35 reported, on average, to consume similarly this type of product (*M* =.13, *SE* = .07; *M* = .14, *SE* = .07; respectively). The other two age groups (22-25 and 26-30) also reported similar consumptions of the 1750ml soft drinks (*M* = .06, *SE* = .03; *M* = .06 *SE* = .03; correspondingly). If gender is considered, males reported to consume, on average, superior amounts of this type of product (*M* = .15, *SE* = .05; *M* = .05, *SE* = .02; correspondingly).

***Energetic Drinks***

On this topic, 97.2% of the subjects reported they do not consume energy drinks (Figure 28). No female reported consuming energetic drinks either (Figure 29). If we consider age, all age groups reported, in the majority, they do not consume this product regularly (Figure 30).

**Figure 28**

*Weekly reported consumption of energetic drinks (all sample)*

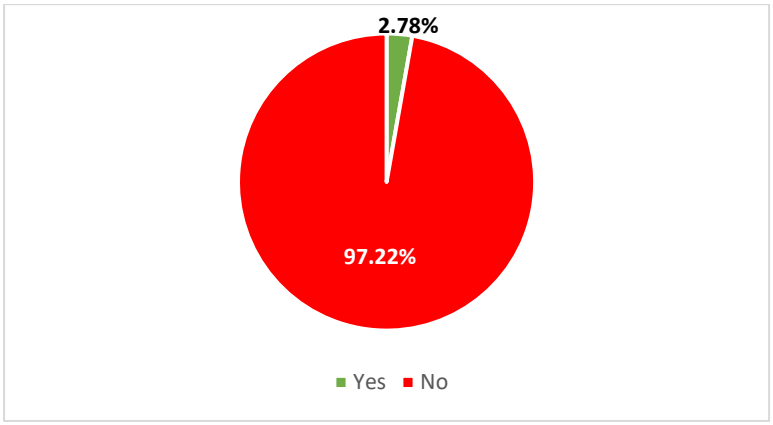
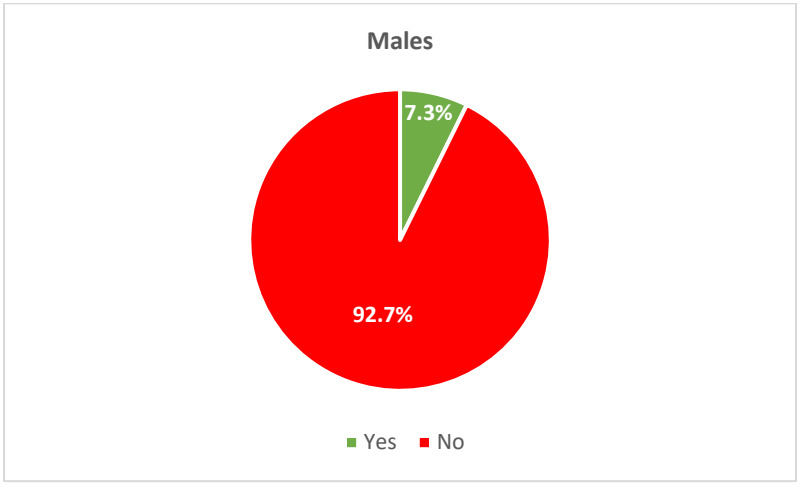


**Figure 29**

*Weekly reported consumption of energetic drinks (by gender)*



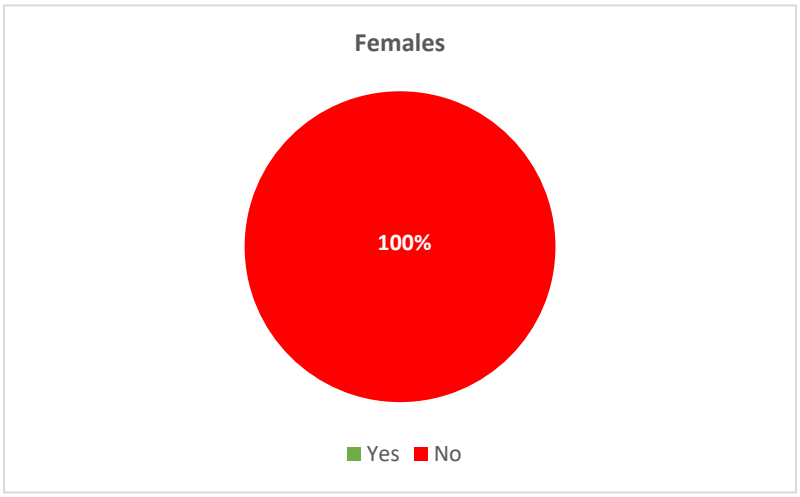
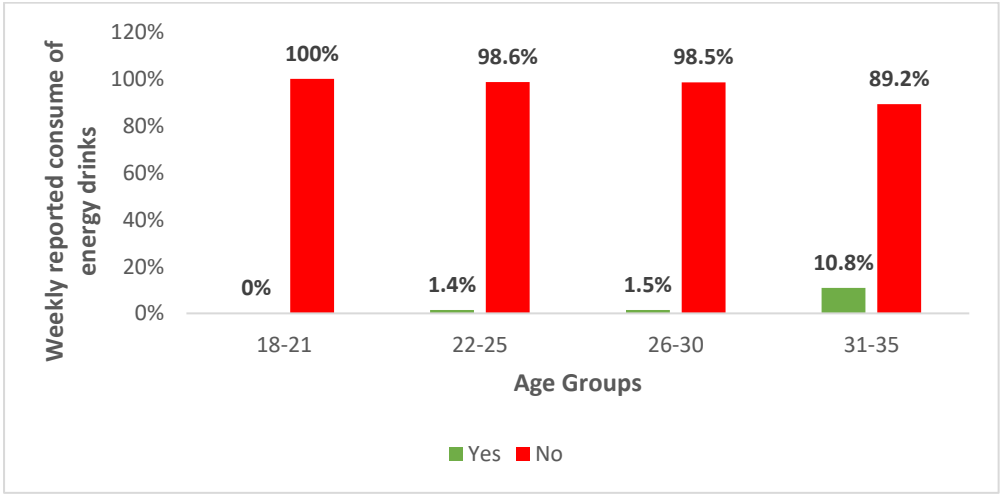




**Figure 30**

*Weekly reported consumption of energetic drinks (by age groups)*



***250 ml Energetic Drinks.***

Regarding the 250 ml energetic drinks, participants reported to consume, on average, 0.051 servings per week (*M* = .05, *SE* = .02). If we consider age, the age group 31-35 reported, on average, to consume more this type of product weekly (*M* =.16, *SE* = .08), followed by the 22-25 age group (*M* = .06, *SE* = .06) and the 26-30 age group (*M* = .02, *SE* = .15). Younger subjects (18-21) did not report the consumption of this type of product. If we consider gender, only males reported to consume this type of product (*M* =.13, *SE* = .06).

***355 ml Energetic Drinks.***

No subject reported consuming this type of product regularly.

***473 ml Energetic Drinks.***

No subject reported consuming this type of product regularly.

***Tea***

On this topic, 54.2% of the subjects, 40.2% of males, and 62.7% of females reported consuming tea regularly (Figures 31 and 32). If we consider age, the 22-25 and the 26-30 age groups reported they consume this product commonly (58.3% and 58.8%, correspondently). On the contrary, the other two age groups reported that in the majority, they do not consume this product regularly (Figure 33).

**Figure 31**

*Weekly reported consumption of tea (all sample)*

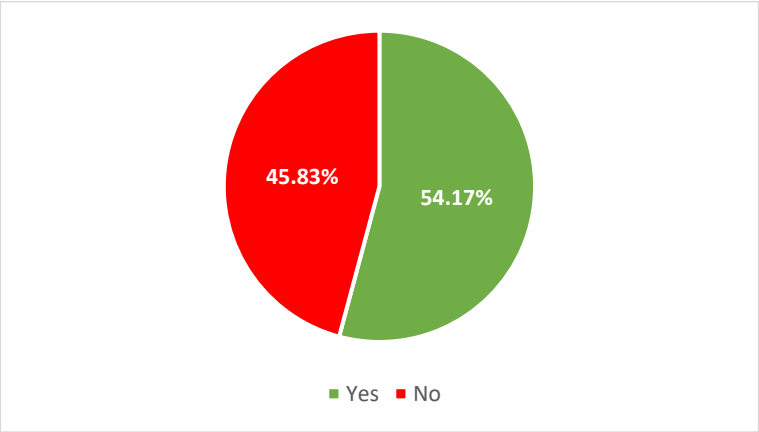



**Figure 32**

*Weekly reported consumption of tea (by gender)*

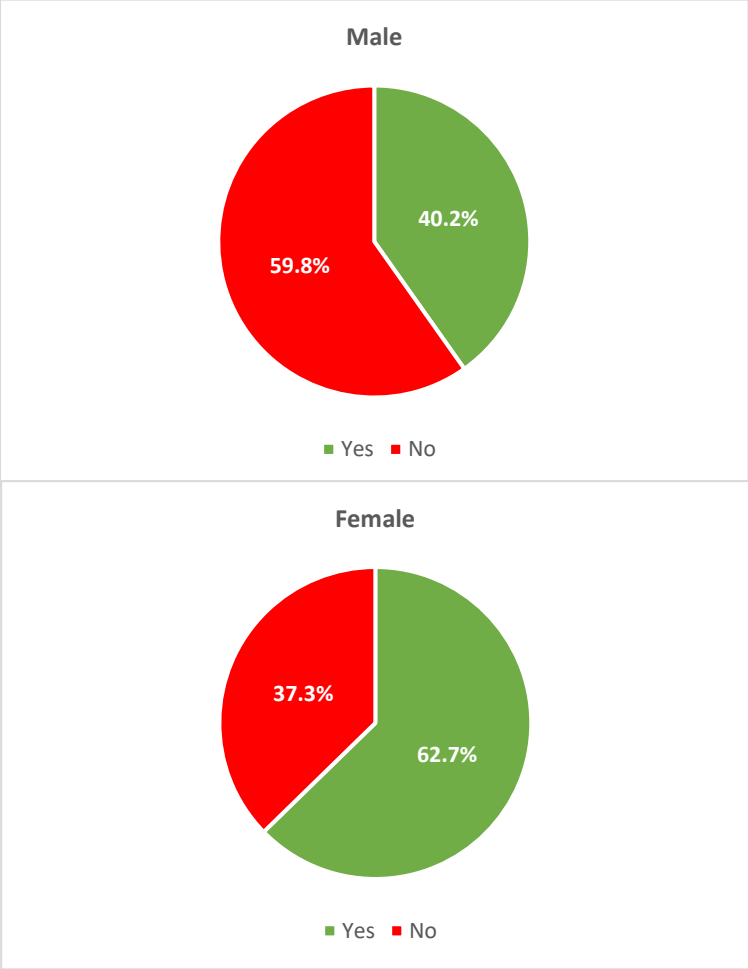
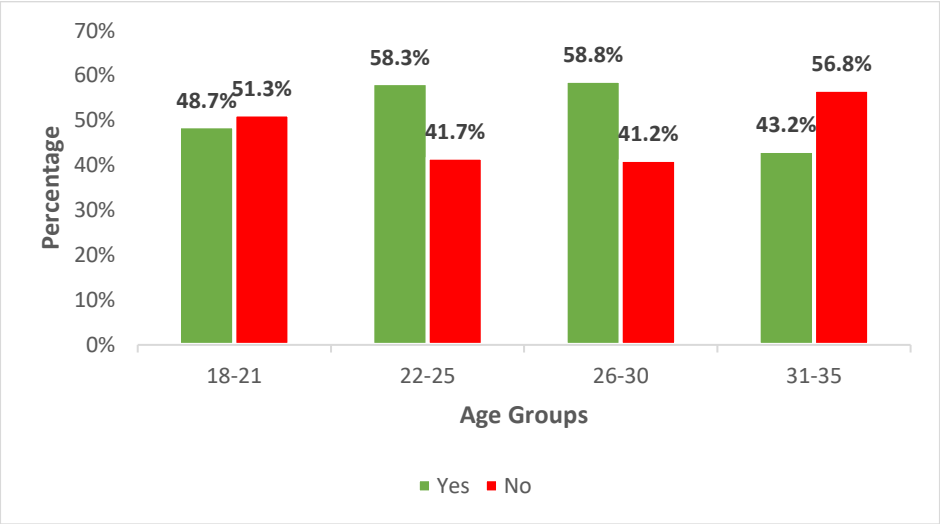


**Figure 33**

*Weekly reported consumption of tea (by age groups)*




***250 ml Tea.***

Regarding 250 ml tea, participants reported to consume, on average, 2.389 servings week (*M* = 2.4, *SE* = .25). If we consider age, the age group 22-25 reported, on average, to consume more this type of product (*M* = 2.95, *SE* = .47). The other two age groups (26-30 and 31-35) reported similar consumptions of this type of product (*M* = 2.4, *SE* = .37; n = 37, *M* = 2.46, *SE* = .8; correspondingly). The younger subjects reported the lowest consumption of this type of beverage (*M* = 1.28, *SE* = .3). If gender is considered, females reported to consume, on average, higher amounts of this type of product than males (*M* = 2.72, *SE* = .31; *M* = .85, *SE* = .4; respectively).

***354 ml Tea.***

Regarding 354 ml tea, participants reported to consume, on average, 0.218 servings per week (*M* = .22, *SE* = .09). If we consider age, the age group that consumes less this category of product is the 18-21 age group (*M* = .05, *SE* = .05). The other age groups (22-25, 26-30 and 31-35) reported to present similar consumption habits (*M* = .24, *SE* = .19; *M* = .29, *SE* = .18; *M* = .22, *SE* = .15). If we

consider gender, both males and females reported to have a similar consumption of this product (*M* = .21, *SE* = .13; *M* = .22, *SE* = .12; respectively).

***473 ml Tea.***

No subject reported consuming this type of product regularly.

***650 ml Tea.***

Regarding 650 ml tea, participants reported to consume, on average, 0.157 servings per week (*M* = .16, *SE* = .08). If we contemplate age, the 31-35 age group reported to be the ones to consume more this type of product (*M* =.43, *SE* = .38), followed by the 26-30 age group (*M* =.19, *SE* = .11). The other two groups (18-21 and 22-25) reported similar amounts of product consumed weekly (*M* = .05, *SE* = .04; *M* = .04 *SE* = .03; correspondingly).

If gender is considered, females reported to consume, on average, a slightly higher amount of this type of product than males (*M* = .19, *SE* = .11; *M* = .11, *SE* = .07; respectively).

***Chocolate Drinks***

On this topic, 78.7% of the subjects, 78% of males and 79.1% of females reported they did not regularly consume chocolate drinks (Figures 34 and 35). If we contemplate age, most subjects in each age group reported that they do not regularly consume this type of product. (Figure 36).

**Figure 34**

*Weekly reported consumption of chocolate drinks (all sample)*

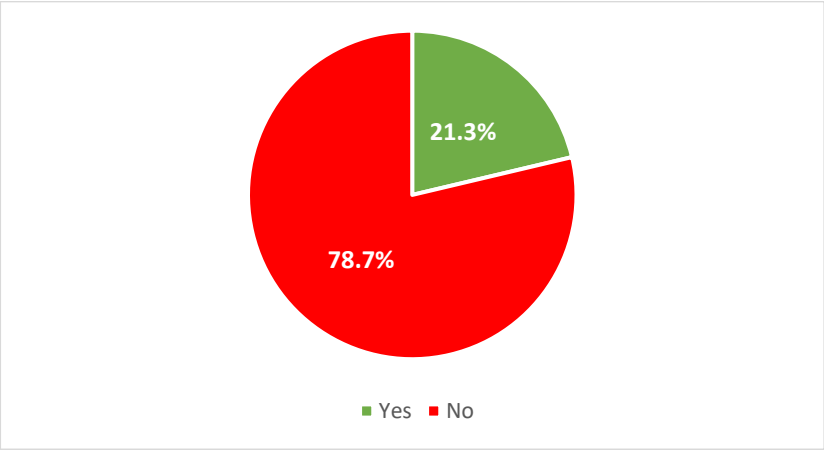
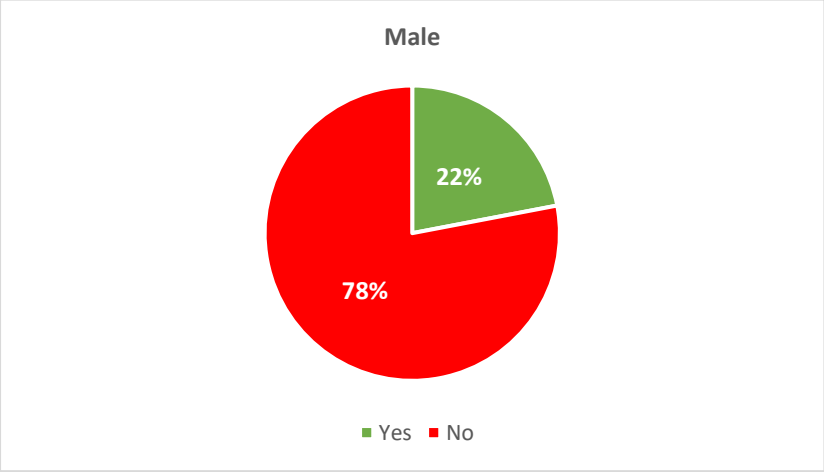



**Figure 35**

*Weekly reported consumption of chocolate drinks (by gender)*



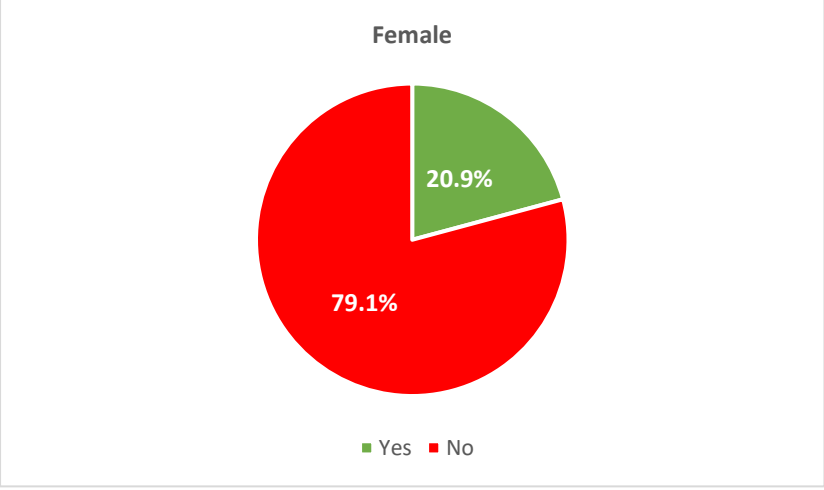
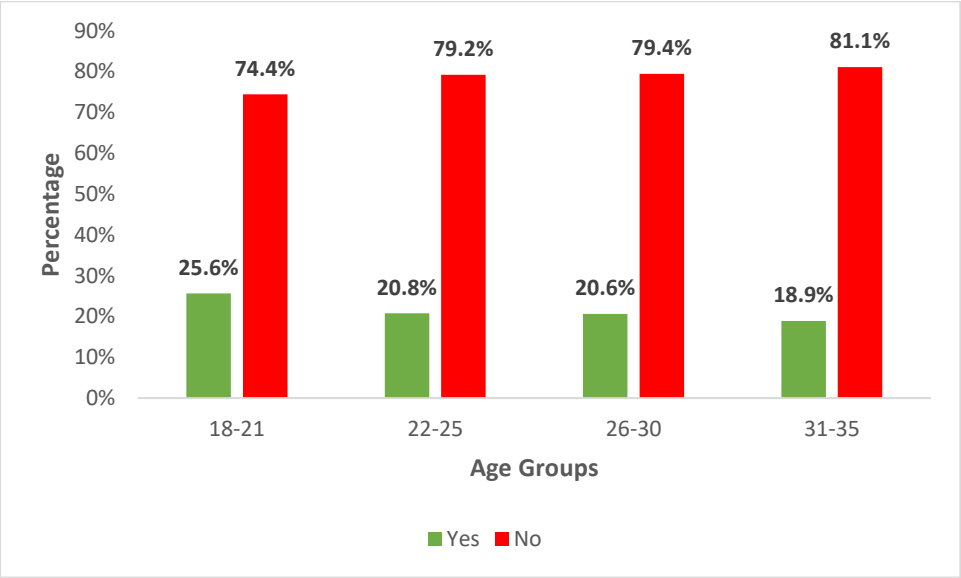



**Figure 36**

*Weekly reported consumption of chocolate drinks (by age groups)*




**Hot Chocolate.**

***236 ml Hot Chocolate.***

Regarding 236 ml hot chocolate, participants reported to consume, on average, 0.17 portions of 236ml hot chocolate weekly (*M* = .17, *SE* = .05).

If we contemplate age, the 31-35 age group reported being the ones to consume less this type of product (*M* =.08, *SE* = .05). On the contrary, subjects in the 26-30 age group reported consuming the highest amount of 236ml hot chocolate when compared with the other groups (*M* =.22, *SE* = .1). This group is followed by the 22-25 age group (*M* =.19, *SE* = .09) and the 18-21 age group (*M* =.13, *SE* = .11)

If gender is considered, both females and males reported to consume, on average, an analogous amount of this type of product (*M* = .17, *SE* = .06; *M* = .17, *SE* = .08; respectively).

***354 ml Hot Chocolate.***

Participants reported to consume, on average, 0.023 portions of 354ml hot chocolate per week (*M* = .02, *SE* = .02). If age is contemplated, only subjects from the 31-35 age group and from the

26-30 age group reported a regular consumption of this type of product (*M* =.08, *SE* = .08; *M* =.03, *SE* = .03; correspondingly). If we consider gender, only females reported to consume 354ml hot chocolate weekly (*M* = .04, *SE* = .03).

***473 ml Hot Chocolate.***

No subject reported consuming this type of product regularly.

***650 ml Hot Chocolate.***

No subject reported consuming this type of product regularly.

**Chocolate Milk.**

***200 ml Chocolate Milk.***

Regarding 200 ml chocolate milk, participants reported to consume, on average, 0.375 servings per week (*M* = .38, *SE* = .09). If age is contemplated, the 18-21 and the 22-25 age groups are the ones that reported a similar higher consumption of this product (*M* =.56, *SE* = .29; *M* =.54, *SE* = .2). These groups are immediately followed by the 31-35 age group (*M* =.27, *SE* = .15) and by the 26-30 age group who reported the lowest amount consumed per week (*M* =.15, *SE* = .07).

If we take gender in account, males reported to consume, on average, a higher amount of this type of product than females (*M* = .52, *SE* = .18; *M* = .28, *SE* = .09; respectively).

***236 ml Chocolate Milk.***

Regarding 236 ml chocolate milk, participants reported to consume, on average, 0.06 servings per week (*M* = .06, *SE* = .34). If age is contemplated, the 18-21 age group is the group that consumes this product the most (*M* = .15, *SE* = .13). The age groups from 22-25 and from 26-30 follow the 18-21 group in terms of consumption (*M* = .01, *SE* = .01; *M* = .08, *SE* = .08, respectively). The 31-35 did not report any consumption of 236 ml Chocolate Milk.

If we consider gender, males (*M* = .12, *SE* = .09) consume more 236 ml chocolate milk than females (*M* = .02, *SE* = .01).

***354 ml Chocolate Milk.***

Regarding 236 ml chocolate milk, participants reported to consume, on average, 0.056 servings per week (*M* = .06, *SE* = .03). If age is contemplated, only younger subjects (18-21) and older subjects (31-35) reported to consume this type of beverage regularly (*M* = .05, *SE* = .05; *M* = .27, *SE* = .19; respectively).

If we consider gender, males (*M* = .09, *SE* = .07) consume more 354 ml chocolate milk than females (*M* = .04, *SE* = .04).

***473 ml Chocolate Milk.***

No subject reported consuming this type of product regularly.

***650 ml Chocolate Milk.***

On average, 0.005 servings of 650ml chocolate milk are consumed per week (*M* = .01, *SE* = .01). If age is contemplated, only subjects from the 22-25 age group reported consuming this type of beverage regularly (*M* = .01, *SE* = .01).

If we consider gender, only females reported to consume this type of product (M = .01, *SE* = .01).

***Food with caffeine***

On this topic, 52.8% of the subjects, 43.9% of males, and 58.2% of females reported they consume food with caffeine regularly (Figures 37 and 38). If we contemplate age, 66.7% of subjects in the 18-21 age group, 56.9% of subjects in the 22-25 age group, 41.2% of subjects in the 26-30 age

group, and 51.4% of subjects in the 31-35 age group reported consuming food with caffeine regularly (Figure 39).

**Figure 37**

*Weekly reported consumption of food with caffeine (all sample)*

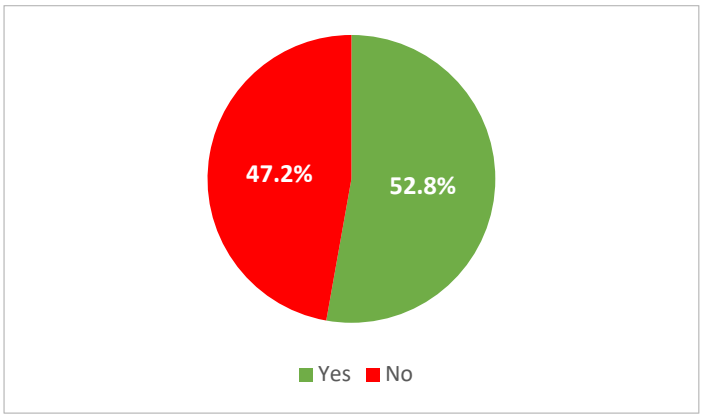



**Figure 38**

*Weekly reported consumption of food with caffeine (by gender)*

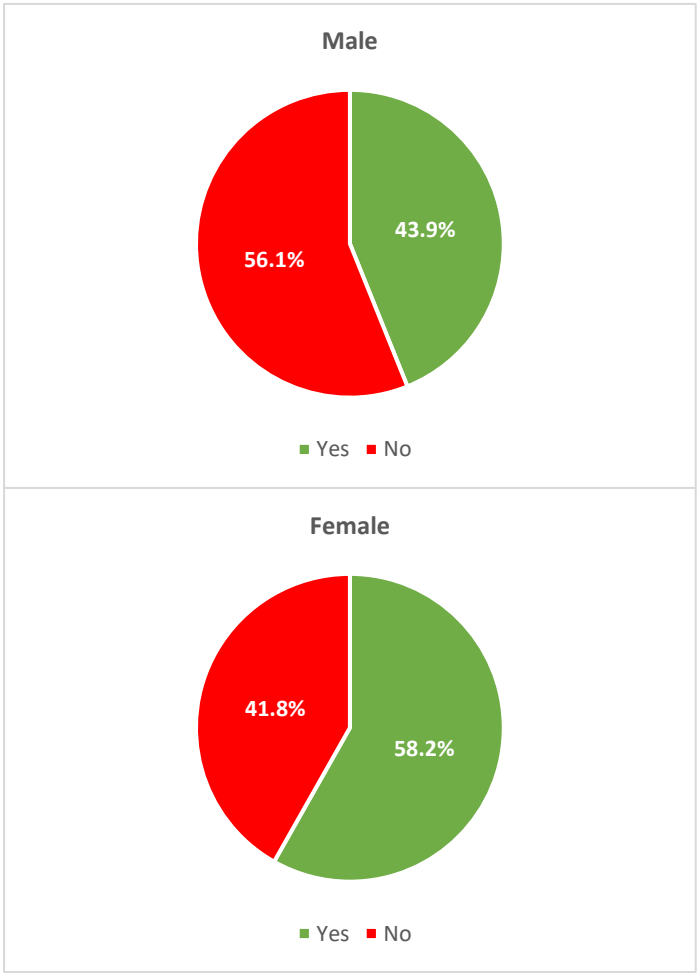
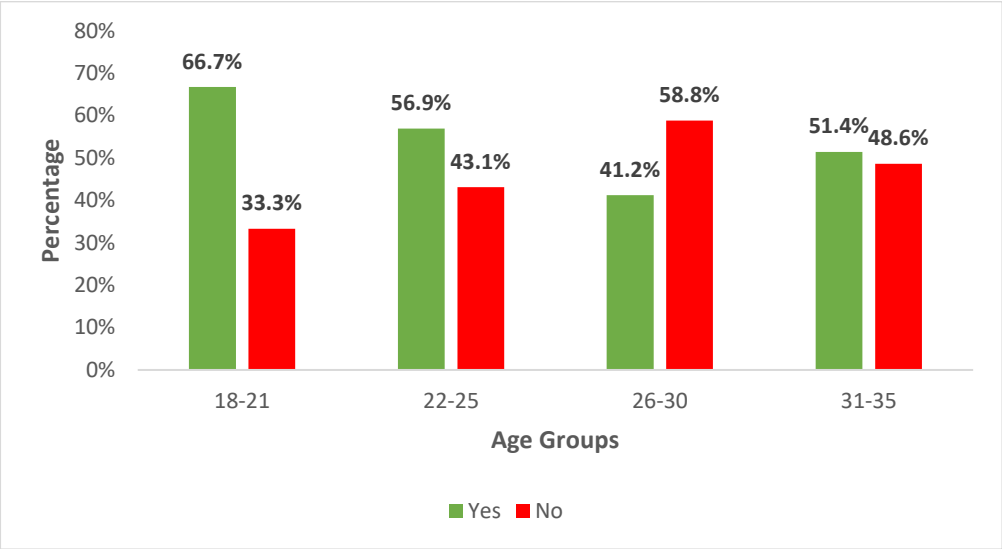


**Figure 39**

*Weekly reported consumption of food with caffeine (by age groups)*




**Food with Chocolate.**

***Chocolate Bars Totally Chocolate – 125 g.***

It was reported that an average of 0.152 servings of 125 g chocolate bars (totally chocolate) are consumed per week (*M* = .15, *SE* = .04). If age is contemplated, it is possible to understand that the consumption between all age groups (18-21, 22-25, 26-30 and 31-35) is relatively similar (*M* = .15, *SE* = .06; *M* = .19, *SE* = .08; *M* = .13, *SE* = .05; *M* = .11, *SE* = .07).

If we consider gender, both males and females reported to have a similar consumption of this type of chocolate (*M* = .15, *SE* = .07; *M* = .15, *SE* = .03).

***Chocolate Bars Totally Chocolate – 20 g.***

It was reported that an average of 0.412 portions of 20 g chocolate bars (totally chocolate) are consumed per week (*M* = .41, *SE* = .07). If age is contemplated, it is possible to realize that the consumption is higher in the 22-25 age group (*M* = .56, *SE* = .16). The 18-21 age group follows as the second group that consumes this product the most (*M* = .49, *SE* = .16). Older subjects (31-35) and the

subjects in the 26-30 age group consumption this product less than others, and reported a similar consumption (*M* = .3, *SE* = .09; *M* = .28, *SE* = .1).

In terms of gender, females (*M* = .48, *SE* = .1) consume a higher amount of 20 g chocolate bars (totally chocolate) than males (*M* = .31, *SE* = .09).

***Chocolate Bars - 41.5 g.***

It was reported that an average of 0.097 portions of 41.5 g chocolate bars are consumed per week (*M* = .1, *SE* = .02). If age is considered, we realize that the consumption is similar in the 18-21, 22-25 and 31-35 age groups (*M* = .15, *SE* = .07; *M* = .13, *SE* = .04; *M* = .14, *SE* = .08; correspondingly). The age group 26-30 reported to consume less of this product (*M* = .02, *SE* = .02).

If we consider gender, males (*M* = .07, *SE* = .04) consume slightly less amount of 41.5 g chocolate bar than females (*M* = .11, *SE* = .03).

***Chocolate Bars - 16.6 g.***

It was reported that an average of 0.208 portions of 16.6g chocolate bars are consumed per week (*M* = .21, *SE* = .05). If we take age into account, is possible to realize that the older subjects (31-35) reported to consume this type of product more (*M* = .3, *SE* = .14), followed by the 22-25 age group (*M* = .26, *SE* = .11), the 18-21 age group (*M* = .21, *SE* = .13) and finally by the 26-30 age group that reported to consume less regularly this type of chocolate (*M* = .1, *SE* = .06).

Concerning gender, females (*M* = .26, *SE* = .07) reported to consume an higher quantity of 16.6g chocolate bars than males (*M* = .12, *SE* = .07).

***Chocolate Yogurt – 100 g.***

In this matter were considered 216 subjects. It was reported that an average of 0.35 servings of Chocolate Yogurt are usually consumed per week (*M* = .35, *SE* = .08). If we consider age, is possible to understand that older subjects (31-35) did not report any consumption of this product. The subjects

that consume chocolate yogurt the most are in the 22-25 age group (*M* = .51, *SE* = .18), followed by the 18-21 age group (*M* = .46, *SE* = .23) and by the 26-30 age group (*M* = .31, *SE* = .12)

If we consider gender, males (*M* = .37, *SE* = .15) reported consuming a slightly higher amount of this product than females (*M* = .34, *SE* = .1).

***Chocolate Ice Cream – 100 g.***

It was reported that an average of 0.194 servings of Chocolate Ice Cream is consumed per week (*M* = .19, *SE* = .05).

If age is contemplated, is conceivable to understand that 18-21 age group and the 31-35 age group have relatively similar amounts of consumption reported (*M* = .26, *SE* = .12; *M* = .3, *SE* = .15). The other two age groups (22-25 and 26-30) also report similar amounts of consumption of this product (*M* = .17, *SE* = .06; *M* = .13, *SE* = .08).

Regarding gender, females (*M* = .25, *SE* = .07) reported to consume more chocolate ice cream than males (*M* = .11, *SE* = .04).

***Chocolate Baked Foods – 100 g.***

It was reported that an average of 0.318 servings of Chocolate Ice Cream are consumed per week (*M* = .32, *SE* = .08). Regarding age, is possible to comprehend that older subjects (31-35) reported the lesser consumption of this product, and the younger subjects (18-21) reported the highest amount consumed (*M* = .03, *SE* = .03; *M* = .62, *SE* = .24; respectively). The other two groups (22-25 and 26-30) reported to have a similar consumption of chocolate baked foods (*M* = .32, *SE* = .15; *M* = .31, *SE* = .16).

If we consider gender, males (*M* = .21, *SE* = .13) consume less amount of chocolate baked foods than females (*M* = .38, *SE* = .11).

**Food with Coffee.**

***Coffee Yogurt – 100 g.***

Data showed that an average of 0.093 portions of coffee yogurt is consumed weekly by the subjects (*M* = .09, *SE* = .04).

The 31-35 age group did not report any usual consumption of coffee yogurt. On the contrary, 26 to 30 years old subjects were the ones to report the higher consumption of this product (*M* =.15, *SE* = .11), followed by the 22-25 age group (*M* = .1, *SE* = .05). The age group that reported the lowest consumption of coffee yogurt was the younger subjects (*M* = .08, *SE* = .06).

If gender is considered, males reported to consume, on average, less amounts of this type of product than females (*M* =.04, *SE* = .04; *M* = .13, *SE* = .06; correspondingly).

***Coffee Ice Cream – 100 g.***

Data showed that an average of 0.06 servings of coffee ice cream is consumed weekly by the subjects (*M* = .06, *SE* = .02).

Regarding to age, 18-21 age group is the one that reported the higher quantity consumed of this product (*M* = .13, *SE* = .09), followed by the 26-30 age group (*M* = 0.6, *SE* = .05), by the 22-25 age group (*M* = 0.4, *SE* = .02) and by the 31-35 age group (*M* = 0.3, *SE* = .03)

If gender is the variable to be met, only females reported consuming coffee ice cream (*M* = .1, *SE* = .04).

***Candys with Coffee.***

Data showed that an average of 0.08 servings of caffeinated candy is consumed weekly by the subjects (*M* = .08, *SE* = .02).

If we take age into account, the age group from 22 to 25 were the one that reported the highest amount of caffeinated candys (*M* = .1, *SE* = .04). All the other age groups (18-21, 26-30 and 31-

35) reported lower quantities consumed of this product (*M* =.07, *SE* = .04; *M* =.06, *SE* = .04; *M* =.08, *SE* = .06).

Regarding gender, females reported to consume, on average, greater amounts of this type of product than males (*M* =.11, *SE* = .03; *M* = .04, *SE* = .02; correspondingly).

***Baked Foods with Coffee.***

Data showed that an average of 0.104 servings of baked foods with coffee is consumed weekly by the subjects (*M* = .1, *SE* = .06).

Also, considering age, it is possible to realize that the 31 to 35 age group did not report to consume any amount of this product. The 26-30 is the group that reported to consume more baked foods with coffee (*M* = .25, *SE* = .18), followed by the 22-25 age group (*M* =.06, *SE* = .04) and by the younger group which ranges from 18 to 21 years old (*M* =.04, *SE* = .03).

If gender is considered, only females reported to consume these products (*M* = .17, *SE* = .09).

***Caffeinated Food Supplements***

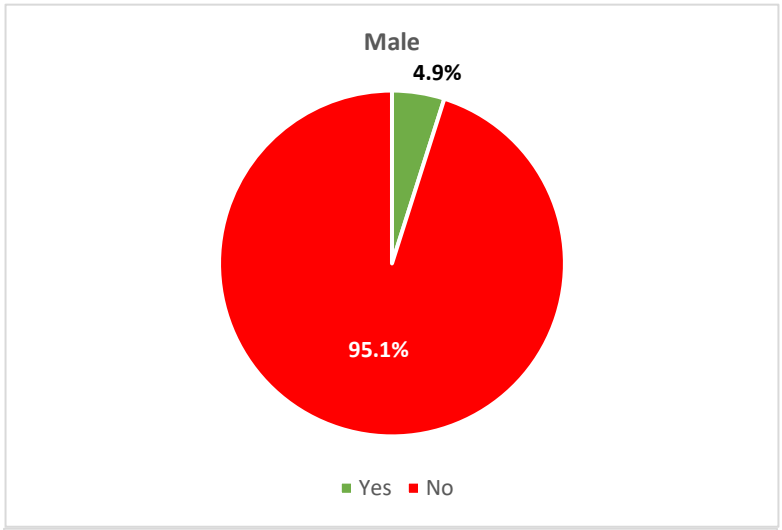
On this topic, 98.1% of the subjects, 95.1% of males and 100% of females reported they did not consume regularly caffeinated food supplements. If we consider age, all subjects in the 18-21 age group, all subjects in the 22-25 age group, 98.5%% of subjects in the 26-30 age group, and 91.9% of subjects in the 31-35 age group reported not to consume food supplements with caffeine. In this part of the questionnaire, subjects were asked to report the number of times per week, the number of times per day, and the dosage usually consumed (in ml, g, or pill). Some subjects reported consuming caffeinated food supplements as “Big-Shot” or “Energy L-Carnitine 3000” but failed to answer the followed parameters. Thus, it was impossible to do further research on this topic, although some data is presented in the following figures (Figures 40, 41, and 42).

**Figure 40**

*Weekly reported consumption of food supplements (all sample)*


**Figure 41**

*Weekly reported consumption of food with supplements (by gender)*



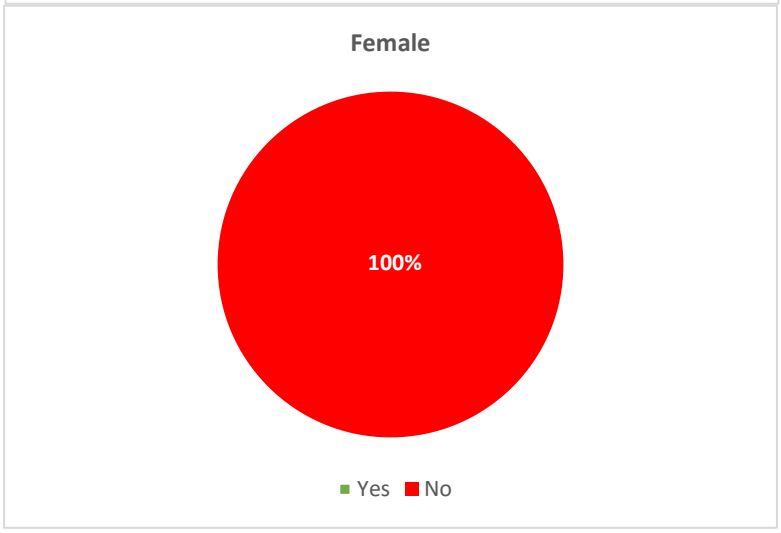
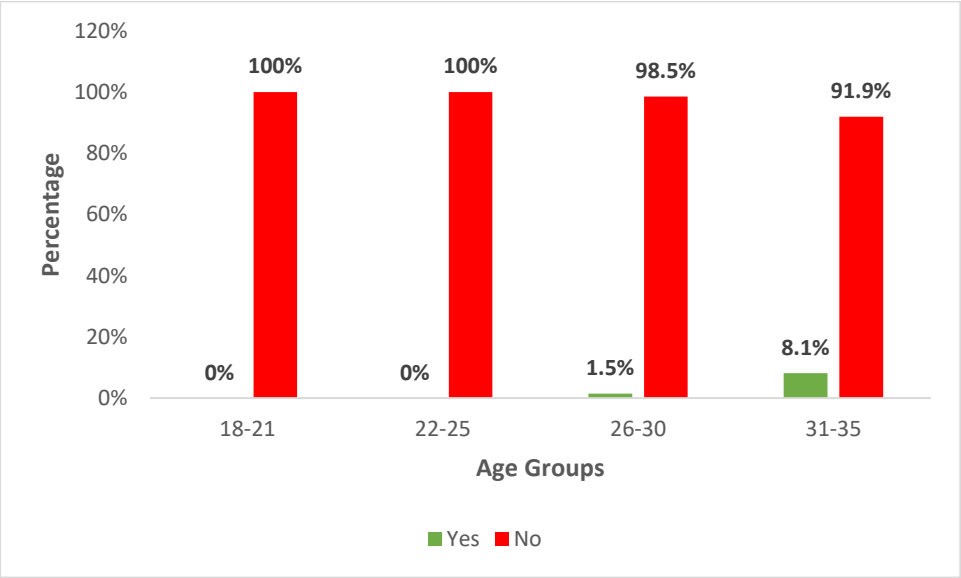



**Figure 42**

*Weekly reported consumption of food with supplements (by age groups)*




***Over-the-counter Caffeinated Drugs***

On this topic, 98.6% of the subjects, all males and 97.8% of females reported they do not consume caffeinated over-the-counter drugs frequently (Figures 43 and 44). If we consider age, all age groups reported they do not consume over-the-counter drugs with caffeine over 95% (Figure 45). In this part of the questionnaire, subjects were also asked to report the number of times per week, the number of times per day, and the dosage usually consumed (g, ml, or pill). The drugs were taken from an INFARMED table on over-the-counter drugs, and they were “Algik,” “Almigripe,” “Ben-u-ron-Caff,” “Gripetral,” “Guronsan,” “Ilvico,” “Melhoral,” “Nygen,” “Panadol Extra,” and “Salicylcafeína”. Only “Almigripe,” “Ben-u-ron-Caff,” and “Ilvico” were referred. Since there is little data to conduct further research, the results obtained are present in the following figures (Figures 43, 44, and 45).

**Figure 43**

*Weekly reported consumption of caffeinated over-the-counter drugs (all sample)*

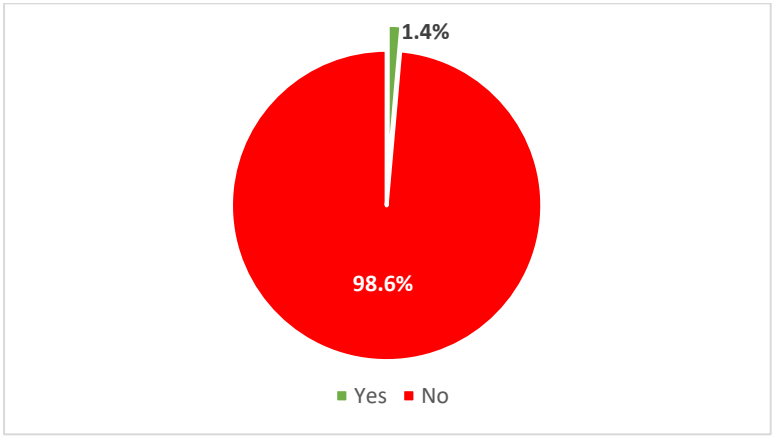



**Figure 44**

*Weekly reported consumption of caffeinated over-the-counter drugs (by gender)*

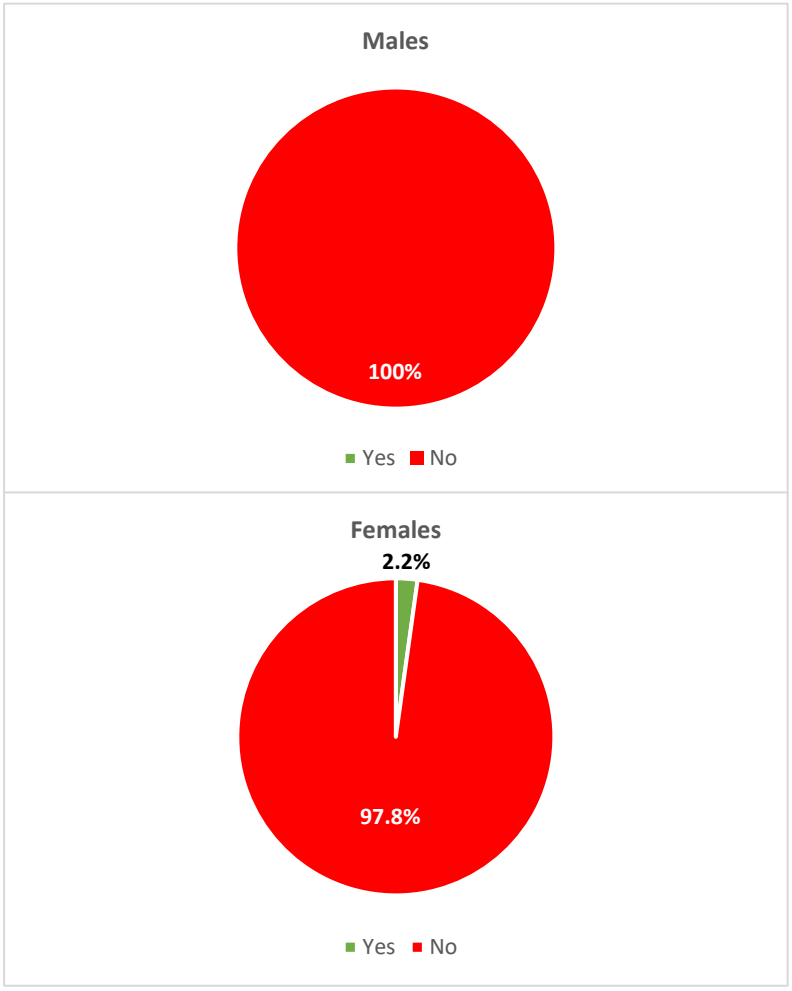
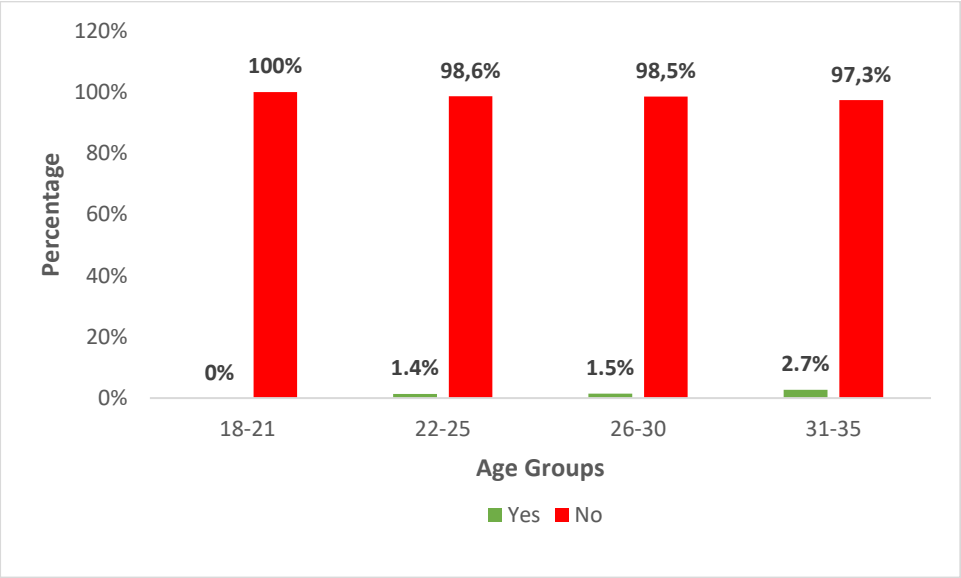


**Figure 45**

*Weekly reported consumption of caffeinated over-the-counter drugs (by age groups)*




**Study 2**

***Per total sample***

For this part of the study, a dataset with 223 subjects/responses were considered. Participants were asked about the frequency with which they consume caffeine for a particular reason (see results for all sample in Table 1).

**Table 1**

*Frequency of motives for consuming caffeine (all sample)*

| Reasons | How often… | | | | |
|---|---|---|---|---|---|
| | Never | Rarely | At times | Frequently | Always |
| 'To feel more alert' | 12.6 | 10.7 | 21.1 | **30** | 25.6 |
| 'To combat headache' | **53.8** | 14.8 | 17.5 | 9.4 | 4.5 |
| 'To help me concentrate' | **28.7** | 14.3 | 22.4 | 22.9 | 11.7 |
| 'Because I like the taste of caffeinated products' | 19.3 | 11.2 | 12.6 | 28.3 | **28.6** |
| 'To help me deal with stress in my daily life' | **55.8** | 16.7 | 15.3 | 7.7 | 4.5 |

| | | | | | |
|---|---|---|---|---|---|
| 'To help me deal with anxiety' | **70.6** | 12.7 | 8.5 | 5 | 3.2 |
| 'To help me deal with depression' | **86.4** | 6.4 | 4.5 | 2.7 | 0 |
| 'To combat drowsiness' | 16.6 | 9.9 | **28.4** | 26.6 | 18.5 |
| 'Because it is convenient to drink caffeinated beverages' | **59.2** | 16.1 | 13.5 | 9 | 2.2 |
| 'To help me focus my attention' | **30.2** | 9.5 | 27 | 18 | 15.3 |
| 'Because I like the "jolt" of energy rush that I feel' | **35.9** | 13 | 22.9 | 15.2 | 13 |
| 'To help me relax or calm down' | **64.8** | 14 | 11.3 | 6.3 | 3.6 |
| 'To stay awake' | 19.3 | 11.7 | 23.3 | **26.9** | 18.8 |
| 'As a social past time' | **28.8** | 15.2 | 21.5 | 23.3 | 11.2 |
| 'Because is an ingredient in my diet pills' | **94.2** | 3.1 | 1.8 | 0.9 | 0 |
| 'Because I crave caffeine' | **50.2** | 13 | 14.8 | 13 | 9 |
| 'As a reward for completing a task' | **74.9** | 9.9 | 10.8 | 3.1 | 1.3 |
| 'Seeing others ingest caffeine makes me crave it' | **66.4** | 13 | 13 | 2.2 | 5.4 |
| 'Because it is a powerful diuretic' | **82.4** | 8.1 | 6.7 | 2.3 | 0.5 |
| 'Because it puts me in a better mood' | 38.6 | 12.1 | **29.1** | 12.6 | 7.6 |
| 'To help lose or control my weight' | **87.9** | 7.2 | 1.8 | 2.7 | 0.4 |

*Notes.* The aforementioned values are presented in percentages (%). The highest value for each motive is shown in bold to facilitate the data reading.

***Per gender***

Subjects were asked about the frequency with which they consume caffeine for a particular motive (see results for gender in Table 2).

**Table 2**

*Frequency of motives for consuming caffeine (by gender)*

| Reasons | How often… | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Never | | Rarely | | At times | | Frequently | | Always | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| 'To feel more alert' | 8.4 | 15 | 12 | 10 | 24.2 | 19.3 | 30.1 | 30 | 25.3 | 25.7 |
| 'To combat headache' | 63.9 | 47.9 | 15.7 | 14.3 | 13.3 | 20 | 6 | 11.4 | 1.1 | 6.4 |
| 'To help me concentrate' | 30.1 | 27.9 | 10.8 | 16.4 | 24.1 | 21.4 | 25.3 | 21.4 | 9.7 | 12.9 |
| 'Because I like the taste of caffeinated products' | 13.3 | 22.9 | 6 | 14.2 | 9.6 | 14.3 | 27.7 | 28.6 | 43.4 | 20 |
| 'To help me deal with stress in my daily life' | 53.7 | 57.1 | 17.1 | 16.4 | 15.8 | 15 | 7.3 | 7.9 | 6.1 | 3.6 |
| 'To help me deal with anxiety' | 73.2 | 69.1 | 7.3 | 15.8 | 7.3 | 9.4 | 8.5 | 2.9 | 3.7 | 2.8 |
| 'To help me deal with depression' | 84 | 87.9 | 7.4 | 5.7 | 6.2 | 3.6 | 2.4 | 2.8 | 0 | 0 |
| 'To combat drowsiness' | 18.3 | 15.7 | 8.5 | 10.7 | 28 | 28.6 | 24.4 | 27.9 | 20.8 | 17.1 |
| 'Because it is convenient to drink caffeinated beverages' | 48.2 | 65.7 | 25.3 | 10.8 | 10.8 | 15 | 12 | 7.1 | 3.7 | 1.4 |
| 'To help me focus my attention' | 28 | 31.4 | 9.8 | 9.3 | 28 | 26.4 | 18.3 | 17.9 | 15.9 | 15 |
| 'Because I like the "jolt" of energy rush that I feel' | 28.9 | 40 | 10.8 | 14.3 | 24.1 | 22.1 | 19.3 | 12.9 | 16.9 | 10.7 |
| 'To help me relax or calm down' | 63.4 | 65.7 | 13.4 | 14.3 | 12.2 | 10.7 | 6.1 | 6.4 | 4.9 | 2.9 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 'To stay awake' | 16.9 | 20.7 | 15.7 | 9.3 | 22.9 | 23.6 | 21.7 | 30 | 22.8 | 16.4 |
| 'As a social past time' | 16.9 | 35.7 | 9.6 | 18.6 | 27.7 | 17.9 | 30.1 | 19.3 | 15.7 | 8.5 |
| 'Because is an ingredient in my diet pills' | 94 | 94.3 | 4.8 | 2.1 | 0 | 2.9 | 1.2 | 0.7 | 0 | 0 |
| 'Because I crave caffeine' | 47 | 52.1 | 13.3 | 12.9 | 12 | 16.4 | 15.7 | 11.4 | 12 | 7.2 |
| 'As a reward for completing a task' | 75.9 | 74.3 | 7.4 | 11.4 | 9.6 | 11.4 | 4.8 | 2.2 | 2.3 | 0.7 |
| 'Seeing others ingest caffeine makes me crave it' | 63.9 | 67.9 | 13.3 | 12.9 | 9.6 | 15 | 4.8 | 0.7 | 8.4 | 3.5 |
| 'Because it is a powerful diuretic' | 79 | 84.3 | 9.9 | 7.1 | 7.4 | 6.4 | 2.5 | 2.2 | 1.2 | 0 |
| 'Because it puts me in a better mood' | 36.1 | 40 | 9.6 | 13.6 | 33.7 | 26.4 | 13.3 | 12.1 | 7.3 | 7.9 |
| 'To help lose or control my weight' | 86.7 | 88.6 | 9.6 | 5.7 | 2.4 | 1.4 | 1.3 | 3.6 | 0 | 0.7 |

*Note.* The aforementioned values are presented in percentages (%).

***Per age groups***

Regarding age, the data were computed according to the four age groups (see the results below in Tables 3 to 26).

**Table 3**

*Frequency of motives for consuming caffeine (by age group 18 – 21)*

| Reasons | How often… | | | | |
|---|---|---|---|---|---|
| | Never | Rarely | At times | Frequently | Always |
| 'To feel more alert' | 20.5 | 13.6 | 13.7 | **29.5** | 22.7 |

| | | | | | |
|---|---|---|---|---|---|
| 'To combat headache' | **65.9** | 9.1 | 15.9 | 6.8 | 2.3 |
| 'To help me concentrate' | **31.8** | 22.7 | 15.9 | 18.2 | 11.4 |
| 'Because I like the taste of caffeinated products' | **29.5** | 13.6 | 11.4 | 25 | 20.5 |
| 'To help me deal with stress in my daily life' | **59.1** | 15.9 | 13.6 | 9.1 | 2.3 |
| 'To help me deal with anxiety' | **68.2** | 20.5 | 6.7 | 2.3 | 2.3 |
| 'To help me deal with depression' | **84.1** | 9.1 | 2.3 | 4.5 | 0 |
| 'To combat drowsiness' | 18.2 | 15.9 | **22.7** | **22.7** | 20.5 |
| 'Because it is convenient to drink caffeinated beverages' | **70.5** | 6.8 | 9.1 | 9.1 | 4.5 |
| 'To help me focus my attention' | **38.6** | 11.4 | 18.2 | 18.2 | 13.6 |
| 'Because I like the "jolt" of energy rush that I feel' | **52.3** | 6.8 | 20.5 | 13.6 | 6.8 |
| 'To help me relax or calm down' | **75** | 6.8 | 6.8 | 6.8 | 4.6 |
| 'To stay awake' | 25 | 11.4 | 18.2 | **29.5** | 15.9 |
| 'As a social past time' | **45.5** | 15.9 | 13.6 | 18.2 | 6.8 |
| 'Because is an ingredient in my diet pills' | **93.2** | 4.5 | 2.3 | 0 | 0 |
| 'Because I crave caffeine' | **59.2** | 13.6 | 15.9 | 4.5 | 6.8 |
| 'As a reward for completing a task' | **79.6** | 4.5 | 11.4 | 4.5 | 0 |
| 'Seeing others ingest caffeine makes me crave it' | **68.1** | 15.9 | 11.4 | 2.3 | 2.3 |
| 'Because it is a powerful diuretic' | **93.1** | 2.3 | 2.3 | 2.3 | 0 |
| 'Because it puts me in a better mood' | **54.5** | 6.8 | 29.5 | 9.2 | 0 |
| 'To help lose or control my weight' | **93.2** | 4.5 | 0 | 2.3 | 0 |

*Notes.* The aforementioned values are presented in percentages (%). The highest value for each motive is shown in bold to facilitate the data reading.

**Table 4**

*Frequency of motives for consuming caffeine (by age group 22 – 25)*

| Reasons | How often… | | | | |
|---|---|---|---|---|---|
| | Never | Rarely | At times | Frequently | Always |
| 'To feel more alert' | 14.9 | 8.1 | 21.6 | 25.7 | **29.7** |
| 'To combat headache' | **54.1** | 16.2 | 18.9 | 8.1 | 2.7 |
| 'To help me concentrate' | 27 | 9.5 | **28.4** | 25.6 | 9.5 |
| 'Because I like the taste of caffeinated products' | 12.2 | 14.8 | 20.3 | **27** | 25.7 |
| 'To help me deal with stress in my daily life' | **51.4** | 13.5 | 25.6 | 8.1 | 1.4 |
| 'To help me deal with anxiety' | **74** | 9.6 | 12.3 | 4.1 | 0 |
| 'To help me deal with depression' | **83.6** | 6.9 | 6.8 | 2.7 | 0 |
| 'To combat drowsiness' | 23.3 | 5.5 | 26 | **28.8** | 16.4 |
| 'Because it is convenient to drink caffeinated beverages' | **56.8** | 14.9 | 17.5 | 9.5 | 1.3 |
| 'To help me focus my attention' | 28.4 | 8.1 | **32.4** | 20.3 | 10.8 |
| 'Because I like the "jolt" of energy rush that I feel' | **35.1** | 14.9 | 24.3 | 16.2 | 9.5 |
| 'To help me relax or calm down' | **64.9** | 16.2 | 10.8 | 5.4 | 2.7 |
| 'To stay awake' | 18.9 | 10.8 | 24.3 | **25.7** | 20.3 |
| 'As a social past time' | 23 | 16.2 | 21.6 | **29.7** | 9.5 |
| 'Because is an ingredient in my diet pills' | **94.6** | 2.7 | 2.7 | 0 | 0 |
| 'Because I crave caffeine' | **48.6** | 12.2 | 16.2 | 17.6 | 5.4 |
| 'As a reward for completing a task' | **71.6** | 12.2 | 13.5 | 2.7 | 0 |
| 'Seeing others ingest caffeine makes me crave it' | **66.2** | 13.5 | 14.9 | 0 | 5.4 |
| 'Because it is a powerful diuretic' | **74** | 9.6 | 11 | 4.1 | 1.3 |

| | | | | | |
|---|---|---|---|---|---|
| 'Because it puts me in a better mood' | **37.8** | 17.6 | 28.3 | 12.2 | 4.1 |
| 'To help lose or control my weight' | **89.2** | 5.4 | 2.7 | 2.7 | 0 |

*Notes.* The aforementioned values are presented in percentages (%). The highest value for each motive is shown in bold to facilitate the data reading.

**Table 5**

*Frequency of motives for consuming caffeine (by age group 26 – 30)*

| Reasons | How often… | | | | |
|---|---|---|---|---|---|
| | Never | Rarely | At times | Frequently | Always |
| 'To feel more alert' | 5.9 | 14.7 | 19.1 | **30.9** | 29.4 |
| 'To combat headache' | **48.5** | 16.2 | 14.7 | 11.8 | 8.8 |
| 'To help me concentrate' | **29.4** | 13.2 | 20.6 | 22.1 | 14.7 |
| 'Because I like the taste of caffeinated products' | 23.5 | 7.4 | 7.3 | 26.5 | **35.3** |
| 'To help me deal with stress in my daily life' | **60.3** | 17.6 | 10.3 | 5.9 | 5.9 |
| 'To help me deal with anxiety' | **77.9** | 7.4 | 5.9 | 4.4 | 4.4 |
| 'To help me deal with depression' | **88.2** | 4.4 | 4.5 | 2.9 | 0 |
| 'To combat drowsiness' | 8.8 | 13.2 | **29.4** | 26.5 | 22.1 |
| 'Because it is convenient to drink caffeinated beverages' | **55.9** | 20.6 | 11.8 | 8.8 | 2.9 |
| 'To help me focus my attention' | **29.9** | 10.4 | 23.9 | 13.4 | 22.4 |
| 'Because I like the "jolt" of energy rush that I feel' | **27.9** | 17.6 | 26.5 | 10.3 | 17.7 |
| 'To help me relax or calm down' | **62.7** | 14.9 | 10.4 | 6 | 6 |
| 'To stay awake' | 16.2 | 17.6 | 20.6 | **25** | 20.6 |
| 'As a social past time' | 27.9 | 11.8 | **29.4** | 20.6 | 10.3 |
| 'Because is an ingredient in my diet pills' | **97.1** | 2.9 | 0 | 0 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 'Because I crave caffeine' | **55.9** | 13.2 | 8.8 | 10.3 | 11.8 |
| 'As a reward for completing a task' | **82.4** | 7.3 | 7.3 | 1.5 | 1.5 |
| 'Seeing others ingest caffeine makes me crave it' | **70.6** | 10.3 | 13.3 | 2.9 | 2.9 |
| 'Because it is a powerful diuretic' | **82.4** | 11.8 | 5.8 | 0 | 0 |
| 'Because it puts me in a better mood' | **35.3** | 10.3 | 29.4 | 13.2 | 11.8 |
| 'To help lose or control my weight' | **82.4** | 10.3 | 2.9 | 2.9 | 1.5 |

*Notes.* The aforementioned values are presented in percentages (%). The highest value for each motive is shown in bold to facilitate the data reading.

**Table 6**

*Frequency of motives for consuming caffeine (by age group 31 – 35)*

| Reasons | How often… | | | | |
|---|---|---|---|---|---|
| | Never | Rarely | At times | Frequently | Always |
| 'To feel more alert' | 10.8 | 5.4 | 32.5 | **37.8** | 13.5 |
| 'To combat headache' | **48.6** | 16.2 | 21.7 | 10.8 | 2.7 |
| 'To help me concentrate' | **27** | 16.2 | 21.6 | 24.4 | 10.8 |
| 'Because I like the taste of caffeinated products' | 13.5 | 8.1 | 8.2 | **37.8** | 32.4 |
| 'To help me deal with stress in my daily life' | **52.8** | 22.2 | 5.6 | 8.3 | 11.1 |
| 'To help me deal with anxiety' | **52.8** | 19.4 | 8.3 | 11.1 | 8.4 |
| 'To help me deal with depression' | **91.7** | 5.5 | 2.8 | 0 | 0 |
| 'To combat drowsiness' | 16.3 | 5.4 | **37.8** | 27 | 13.5 |
| 'Because it is convenient to drink caffeinated beverages' | **56.8** | 21.6 | 13.5 | 8.1 | 0 |
| 'To help me focus my attention' | 24.3 | 8.2 | **32.4** | 21.6 | 13.5 |
| 'Because I like the "jolt" of energy rush that I feel' | **32.4** | 8.1 | 16.3 | 24.3 | 18.9 |

| | | | | | |
|---|---|---|---|---|---|
| 'To help me relax or calm down' | **56.8** | 16.2 | 18.9 | 8.1 | 0 |
| 'To stay awake' | 18.9 | 2.7 | **32.4** | 29.7 | 16.3 |
| 'As a social past time' | **21.6** | 18.9 | 16.3 | **21.6** | **21.6** |
| 'Because is an ingredient in my diet pills' | **89.2** | 2.7 | 2.7 | 5.4 | 0 |
| 'Because I crave caffeine' | **32.4** | 13.6 | 21.6 | 18.9 | 13.5 |
| 'As a reward for completing a task' | **62.2** | 16.2 | 10.8 | 5.4 | 5.4 |
| 'Seeing others ingest caffeine makes me crave it' | **56.8** | 13.5 | 10.8 | 5.4 | 13.5 |
| 'Because it is a powerful diuretic' | **86.1** | 5.6 | 5.6 | 2.7 | 0 |
| 'Because it puts me in a better mood' | 27 | 10.8 | **29.7** | 16.3 | 16.2 |
| 'To help lose or control my weight' | **89.2** | 8.1 | 0 | 2.7 | 0 |

*Notes.* The aforementioned values are presented in percentages (%). The highest value for each motive is shown in bold to facilitate the data reading.

## Discussion

The purpose of this study was to characterize the consumption of caffeinated products in Portugal, considering a sample from 18 to 35 years old of males and females, and its relationship with subjective well-being. For this purpose, this study evaluated the self-perceptions on the caffeine's effect, the consumption amount of the most known caffeinated products available in the market, and why the respondents consume these products (i.e., their most relevant motives to consume a caffeinated product).

In this specific sample, most individuals of both genders and at almost all age groups, reported they do not perceive themselves as especially sensitive to caffeine's effects. However, when exploring the susceptibility through other questions, the data showed that older respondents (both males and females) reported that they perceive themselves as especially susceptible to caffeine's effects. For instance, most individuals recognized a positive/desired effect of this substance in both genders and at all ages. The fact that caffeine's positive effects are so widely recognized may be a reason that

supports its widespread consumption. Interestingly, older women, who declared to perceive themselves as being especially sensitive to caffeine's effects, were the group that most reported the perception of the effects of caffeine as negative/unwanted. The following results are contrary to the studies presented by Botella and Parra (2003) and Atwood and his collaborators (2007) who suggested that women appear to be less sensitive to the caffeine's effect and that high-dose consumers (> 200mg / day) are more likely to feel the positive effects of this substance and less likely to experience negative effects when compared to moderate-dose users (<200mg / day). In general, women reported consuming more caffeine per day than men, which is not confirmed when considering the calculation of the amount of caffeine intake on a typical day.

In reality, males reported consuming, on average, more caffeine than females. Regarding age (in all samples), and older subjects reported consuming a greater amount of caffeine, which contrasts with the levels reported by younger individuals. These findings are in line with the study carried out by Pinhão et al. (2016), who described that men consume more caffeine than women and that the age group between 30 and 44 years is the one that most consumes this methylxanthine.

Comparing the estimated values of caffeine consumed made by all subjects with the reported consumption, it is understood that the estimated value (i.e., the perceived consumption) is approximately half of the actual consumption (regarding the medium mean obtained). In the study by Irons and her collaborators (2016), it was found that the subjects' estimates of their consumption did not correlate with the CCQ-R scores of their personal use (Irons et al., 2016). This discrepancy may be because individuals are usually not aware of the amount of caffeine in each product or which products contain caffeine (reinforced by the lack of this specific information in several products). Although females estimate to consume more caffeine than males, they consume this substance less on average. It is also acknowledged that the group that estimates to consume less caffeine is, in fact, the group that consumes it the most (31-35 age group).

As expected, and already confirmed by other sources, coffee consumption in Portugal is mostly made outside the home, and the most appreciated product is the "expresso". Similar results

were found previously (AICC, 2016; Oliveira & Dias, 2011). Subjects confirmed that the most consumed caffeinated product is the 50ml coffee (also known as “espresso”). In particular, older males reported consuming this product more.

Concerning the motives to consume caffeinated products, subjects reported that the two main reasons are the taste of caffeinated drinks and its cognitive effect (i.e., to be alert). These reasons to consume caffeinated drinks are in line with the findings of two other studies (Ágoston et al., 2016; Rogers & Smith, 2011). This finding reveals that subjective well-being is not a primary goal regarding caffeine consumption. Although both men and women reported the two reasons mentioned above as the two main reasons for consuming caffeine, this study allowed us to understand that females use caffeine more often to combat headache, while males seem to like the taste of caffeinated drinks more and use it more often as a social component. Together, the product availability and the Portuguese social habit of regularly consuming caffeinated product in different social contexts can contribute to the high-dosage consumption of this kind of product. Caffeine’s consumption at a regular level to deal with depression, as a diuretic, as an adjunct to weight control, or because it is part of the medication, were the reasons less mentioned, for both males and females. Still, considering the age, older subjects reported more reasons to consume caffeine on average, which contrasts with the younger ones, who reported fewer motives to consume it so often. This finding is in line with the study’s conclusions by Pinhão and his collaborators (2016) which showed that subjects between 30 and 44 years old reported higher caffeine consumption, and the younger subjects reported lower values of consumption.

Possible limitations of this study include how the data collection was done (only online), which does not allow further explanations if participants have any questions/doubts. Also, the lack of information (by gender and age groups for a Portuguese sample) from a previous study to compare the results found in this research is another limitation. Finally, we should highlight that the data collection occurred during the lockdown caused by the COVID-19 pandemic, which could influence the perception of caffeine consumption, which can be translated into altered data.

## Conclusion

The ample availability, the expected and well-known cognitive and physiological effects, and the economic and social impacts associated with the caffeinated products, particularly to coffee, seem to be translated into a vast consumption of this substance in the Portuguese society. In fact, the effects of its consumption, such as changes in the physiological or the cognitive and emotional levels, are aspects to be considered in the scope of many psychological research and fields. This alert is particularly important when considering the clinically relevant caffeine's effects (e.g., in anxiety, poor responsivity to hypnotics, sleep disorders, eating disorders, just to cite a few). This characterization of the number of caffeinated products intake by a Portuguese sample demonstrates the importance of assessing the caffeine intake in routine psychological assessment since this substance's effects can be translated into behavioural changes or worsening symptoms associated with certain disorders. There is still a potential for abuse and addiction that also can have a massive impact on the individual physical and mental health. More research is needed to increase the understanding of how caffeinated product consumption relates to psychological well-being.

The study of this substance and its characterization (i.e., quantities consumed, form, and reasons for consumption), as well as its relationship with subjective well-being, are therefore of great importance for both research and public health since it allows the adoption of new practices or changes in current practices that contribute to better health.

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**Attachments**

**Attachment I**

## Questionário sobre o Consumo de Cafeína

Por favor, responda às seguintes questões o mais rigorosamente possível, considerando o seu consumo numa semana típica. **Indique a quantidade que consome, semanalmente, de cada produto. Utilize as imagens como guia para as suas respostas.**

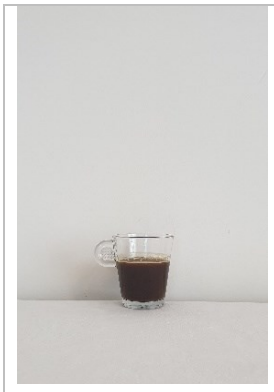
**Café**

Bebe café, pelo menos **uma vez por semana?**

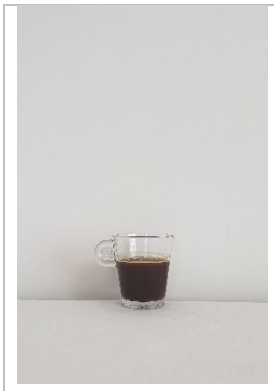
☐ Sim

☐ Não

Por favor, indique quantas unidades de **café** consome, em média, **por semana**.

| | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| **50 ml** | **250 ml** | **354 ml** | **473 ml** | **650 ml** |
| | | | | |

Por favor, indique quantas unidades de café **descafeinado** consome, em média, **por semana**.

| | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| **50 ml** | **250 ml** | **354 ml** | **473 ml** | **650 ml** |
| | | | | |

Por favor, indique quantas unidades de café **gelado** consome, em média, **por semana**.

| | | | |
|---|---|---|---|
|  |  |  |  |
| **300 ml** | **400 ml** | **500 ml** | **650 ml** |
| | | | |

**Refrigerantes**

Bebe refrigerantes, pelo menos uma vez **por semana?**

☐ Sim

☐ Não

Por favor, indique quantas unidades de refrigerantes e refrigerantes sem açúcar (por exemplo *Coca-Cola, Pepsi-Cola ou Lipton Ice Tea*) consome, em média, **por semana**. (alguns refrigerantes não contêm cafeína, por exemplo: *7Up, Fanta ou Sumol)*

| | | | |
|---|---|---|---|
|  |  |  |  |
| **330 ml** | **500 ml** | **1000 ml** | **1750 ml** |
| | | | |

**Bebidas Energéticas**

Bebe bebidas energéticas, pelo menos uma vez **por semana?**

☐ Sim

☐ Não

Por favor, indique quantas unidades de bebidas energéticas consome, em média, **por semana**.

| | | |
|---|---|---|
|  |  |  |
| **250 ml** | **355 ml** | **473 ml** |
| | | |

**Chá**

Bebe chá, pelo menos uma vez **por semana?** (por exemplo *preto, verde, oolongo, branco ou yerba mate)*

☐ Sim

☐ Não

Por favor, indique quantas unidades de chá consome, em média, **por semana**.

| | | | |
|---|---|---|---|
|  |  |  |  |
| **250 ml** | **354 ml** | **473 ml** | **650 ml** |
| | | | |

**Bebidas Achocolatadas**

Bebe bebidas achocolatadas, pelo menos uma vez **por semana?**

☐ Sim

☐ Não

Por favor, indique quantas unidades de chocolate quente consome, em média, **por semana**.

|  |  |  |  |
|---|---|---|---|
| **236 ml** | **354 ml** | **473 ml** | **650 ml** |
| | | | |

Por favor, indique quantas unidades de leite achocolatado consome, em média, **por semana**.

|  |  |  |  |  |
|---|---|---|---|---|
| **200 ml** | **236 ml** | **354 ml** | **473 ml** | **650 ml** |
| | | | | |

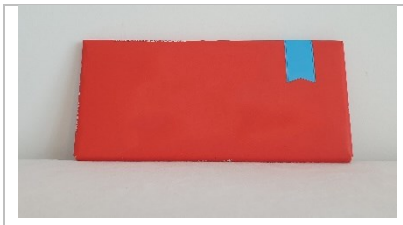
**Produtos Alimentares**

Consome produtos alimentares que contenham cafeína, pelo menos uma vez **por semana?** *Por exemplo: Produtos alimentares que contenham chocolate ou café.*

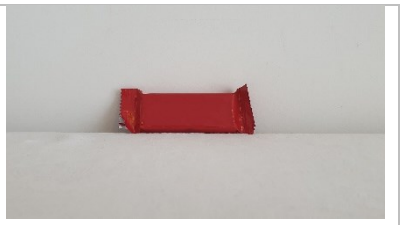
☐ Sim

☐ Não

Por favor, indique quantas barras de chocolate **(totalmente de chocolate)** consome, em média, **por semana**. Por exemplo: *Nestlé, Milka ou Avianense*

| | |
|---|---|
|  |  |
| **125 g** | **20 g (mini)** |
| | |

Por favor, indique quantas barras de chocolate consome, em média, **por semana**. Por exemplo: *Kit-Kat ou Mars.*

| | |
|---|---|
|  |  |
| **41.5 g** | **16.6 g** |
| | |

Por favor, indique quantas porções **(de 100g)** dos seguintes produtos alimentares que contêm **chocolate** consome, em média, **por semana**.

| Iogurte<br>(em média um iogurte tem 150g, ou seja, 1,5 porções) | Gelado<br>(em média um gelado individual tem 86g, ou seja, considere 1 porção) | Produtos Cozinhados |
|---|---|---|
| | | |

Por favor, indique quantas porções dos seguintes produtos alimentares que contêm **café (*100g*)** consome, em média, **por semana**.

| Iogurte<br>(em média um iogurte tem 150g, ou seja, 1,5 porções) | Gelado<br>(em média um gelado individual tem 86g, ou seja, considere 1 porção) | Doces | Produtos Cozinhados |
|---|---|---|---|
| | | | |

**Suplementos Alimentares**

Consome suplementos alimentares que contenham **cafeína**, pelo menos uma vez **por semana?** Por exemplo: *Big-Shot ou Energy L-Carnitina 3000*

☐ Sim

☐ Não

Por favor, indique a quantos **dias por semana**, quantas **vezes por dia** e a **porção** de cada dose. *Por favor, especificar se a dose é em g, ml ou comprimido.*

| ***Nome do Suplemento*** | ***Média dias semana*** | ***Média diária*** | ***Quantidade Dose (g/ml/comprimido)*** |
|---|---|---|---|
| *Big-Shot* | | | |
| BiotechUSA Caffeine + Taurine | | | |
| Energy Charge Professional | | | |
| Energy L-Carnitina 3000 | | | |
| *Outro* | | | |

**Medicamentos**

Consome quaisquer medicamentos de venda livre **com cafeína,** pelo menos uma vez por semana? Caso tome algum(uns) medicamento(s) prescrito(s) regularmente, insira posteriormente a informação na secção "Outro".

☐ Sim

☐ Não

Por favor, indique a quantos **dias por semana**, quantas **vezes por dia e porção** de cada dose consome estes medicamentos. *Por favor, especificar se a dose é em g, ml ou comprimido.*

| ***Nome do Medicamento*** | ***Média dias semana*** | ***Média diária*** | ***Quantidade Dose (g/ml/comprimido)*** |
|---|---|---|---|
| *Algik* | | | |
| *Almigripe* | | | |
| Ben-u-ron Caff | | | |
| Excedrin | | | |
| Gripetral | | | |
| *Guronsan* | | | |
| *Ilvico* | | | |
| *Melhoral* | | | |
| *Nygen* | | | |
| *Panadol Extra* | | | |
| *Salicylcafeína* | | | |
| *Outro (medicamento prescrito)* | | | |

**Outros Produtos**

Se consome outro(s) produto(s) que contenham cafeína, por favor indique abaixo. *Por favor, especificar se a dose é em g, ml ou comprimido.*

| ***N**ome* | ***Média dias semana*** | ***Média diária*** | ***Quantidade Dose (g/ml/comprimido)*** | ***mg de cafeína*** |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**Attachment II**

| Product | Min (mg caffeine per ml, g or pill) | Med (mg caffeine per ml, g or pill) | Max (mg caffeine per ml, g or pill) |
|---|---|---|---|
| Coffee | 2.15/0.64 | 3.92/1.71 | 5.65/2.53 |
| Decaffeinated | 0.038/0.008 | 0.1/0.08 | 0.156/0.098 |
| Iced Coffee | 0.64 | 171 | 2.53 |
| Soft Drinks | 0.057 | 0.08 | 0.15 |
| Energy Drinks | 0.21 | 0.24 | 0.36 |
| Tea | 0.0125 | 0.15 | 0.29 |
| Hot Chocolate | 0.068 | 0.14 | 0.34 |
| Chocolate Milk | 0.01 | 0.015 | 0.02 |
| Chocolate 125g/20g – totally chocolate | 0.2 | 0.5 | 1.09 |
| Chocolate 41.5g/16.6 | 0.04 | 0.18 | 0.25 |
| Chocolate Yogurt | 0.022 | 0.029 | 0.035 |
| Chocolate Ice Cream | 0.035 | 0.062 | 0.081 |
| Chocolate Baked Goods | 0.035 | 0.1 | 0.18 |
| Coffee Yogurt | 0.21 | 0.29 | 0.37 |
| Coffee Ice Cream | 0.13 | 0.26 | 0.39 |
| Coffee Sweets | 4.23 | 4.41 | 8.405 |
| Coffee Baked Foods | 0 | 0 | 0 |
| Big Shot | | 24.62 | |
| BioTechUSA – Caffeine + Taurine | | 80 | |
| Energy Charge Professional | | 2 | |
| Energy L-Carnitina | | 3.33 | |
| Algik | | 50 | |
| Almigripe | | 20 | |
| Ben-u-ron-Caff | | 65 | |
| Excedrin | | 65 | |
| Gripetral | | 50 | |
| Guronsan | | 50 | |
| Ilvico | | 10 | |
| Melhoral | | 30 | |
| Nygen | | 20 | |
| Panadol Extra | | 65 | |
| Salicylcafeína | | 30 | |

**Attachment III**

## Questionário sobre os Motivos do Consumo de Cafeína

Abaixo apresenta-se uma listagem dos possíveis motivos para o consumo de cafeína. Por favor, leia com cuidado e **circule o número correspondente à probabilidade** que tem em consumir cafeína por estas razões. **Use a escala abaixo:**

1 = Nunca consumo cafeína por este motivo

2 = Raramente consumo cafeína por este motivo

3 = Por vezes ingiro cafeína por este motivo

4 = Frequentemente ingiro cafeína por este motivo

5 = Consumo sempre cafeína por este motivo

**Consumo cafeína…**

| | | | | | |
|---|---|---|---|---|---|
| **1. Para me sentir mais desperto** | **1** | **2** | **3** | **4** | **5** |
| **2. Para combater a dor de cabeça (cefaleia)** | 1 | 2 | 3 | 4 | 5 |
| **3. Para me ajudar a concentrar** | 1 | 2 | 3 | 4 | 5 |
| **4. Porque gosto do sabor das bebidas cafeinadas** | 1 | 2 | 3 | 4 | 5 |
| **5. Para me ajudar a lidar com o *stress* da minha vida quotidiana** | 1 | 2 | 3 | 4 | 5 |
| **6. Para me ajudar a lidar com a ansiedade** | 1 | 2 | 3 | 4 | 5 |
| **7. Para me ajudar a lidar com a depressão** | 1 | 2 | 3 | 4 | 5 |
| **8. Para combater a sonolência** | 1 | 2 | 3 | 4 | 5 |
| **9. Porque é vantajoso beber bebidas com cafeína** | 1 | 2 | 3 | 4 | 5 |
| **10. Para ajudar a minha atenção** | 1 | 2 | 3 | 4 | 5 |
| **11. Porque gosto do "impulso" de energia** | 1 | 2 | 3 | 4 | 5 |
| **12. Porque me ajuda a relaxar e a acalmar** | 1 | 2 | 3 | 4 | 5 |
| **13. Para me manter acordado** | 1 | 2 | 3 | 4 | 5 |
| **14. Como um hábito social** | 1 | 2 | 3 | 4 | 5 |
| **15. Porque é um ingrediente que faz parte dos meus medicamentos** | 1 | 2 | 3 | 4 | 5 |
| **16. Porque desejo cafeína** | 1 | 2 | 3 | 4 | 5 |
| **17. Como uma recompensa por terminar uma tarefa** | 1 | 2 | 3 | 4 | 5 |
| **18. Porque ver as outras pessoas consumi-la faz-me desejá-la** | 1 | 2 | 3 | 4 | 5 |
| **19. Porque é um diurético poderoso** | 1 | 2 | 3 | 4 | 5 |
| **20. Porque me dá mais ânimo** | 1 | 2 | 3 | 4 | 5 |
| **21. Para me ajudar no controlo do peso** | 1 | 2 | 3 | 4 | 5 |