UTM

UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING

PROBABILITY & STATISTICAL DATA ANALYSIS

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GROUP PROJECT 1

LECTURER:

DR. AZURAH BTE A SAMAH

GROUP:

NAME	MATRICS NO.
SRIVANI A/P MURUGAN	A19EC0305
NURSYAFRINA BINTI AHMAD	A19EC0139
NURAINA NAJWA BINTI MOHD RAUZI	A19EC0137
ELMIRA AKMA BINTI RAMAN	A19EC0042

1.0 Introduction

Caffeine is the most commonly consumed psycho-active substance by adults and children. It is present in a variety of foods and beverages and occurs naturally or as an additive. It works by blocking the inhibitory receptors for adenosine there by giving a stimulant effect. Caffeine intake by students has been a major concern due to concerns about potential health effects.

First and foremost, our objective is to find out which caffeinated beverage with its caffeine content is commonly consumed or preferred by the university's students. Caffeine intake less than 400 mg has been associated with increased reports of nervousness, and fidgetiness. Students are considered highly sensitive to caffeine because of continued brain development involving myelination and pruning processes. The use of caffeine is associated with health benefits including increased attention, mental alertness, concentration, endurance, and athletic performance. On the other hand, regular use of caffeine as part of a sugar-sweetened drink can contribute to weight gain and dental cavities. Caffeine toxicity in students has also been described and involves complaints of central nervous system agitation, tachycardia, gastrointestinal disturbance, nausea, and also diuresis. Through this survey we also identify the common side effects experienced by the students after taking a dose of caffeine into their system.

Next, carbonated soft drinks, tea, and coffee have been the major contributors of caffeine intake in students . However, in recent decades, specialty drinks, energy drinks containing caffeine, and energy shots have been introduced in the market, some specifically targeting students and youth. In this survey, we determine the reasons or indications for drinking such beverages. In comparison, the caffeine content of coffee is usually higher than carbonated soft drinks depending on the method of preparation. Caffeine consumption patterns and sources of caffeine consumption in students and youth may have changed over the past decade due to changes in the market, related sociocultural factors such as peer pressure, as well as the perceived and demonstrated benefits of caffeine. In addition, reports of energy drink related emergency room visits and toxicities have fueled interest in this topic, particularly because most cases concern students.

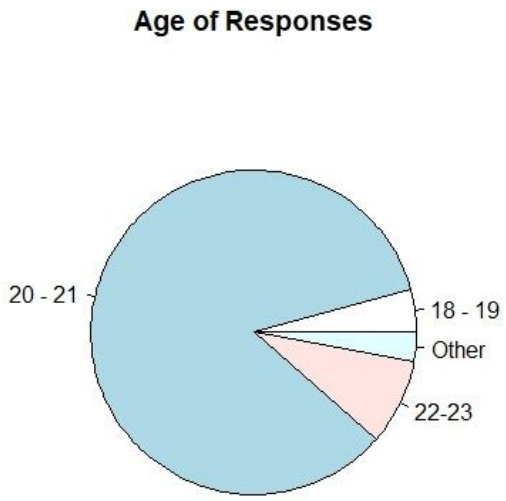
2.0 Methodology

The population for our project are university students from different genders. The sample size of this project is 70 students. In this project we used the quantitative method. We applied the method through questions distributions. We used google form as our questionnaire. We indicate the title and the list of objectives of the survey in the questionnaire. It helps the respondents to understand the aim of the survey. We asked the respondents to answer all the questions in the questionnaire. We also provide some guides to respondents to confirm they answer the question correctly. We used different types of questions such as nominal, ordinal, interval and ratio to collect data that focus on the aim of the project and support the objective of the project. This survey viralize to students through WhatsApp. The primary data of the project is the data that we obtained straight from the students through the questionnaire. We use R Programming software to analyse the data.

3.0 Data Analysis and Result.

3.1 Nominal Type

3.1.1 Age of Responses of Caffeine Intakes Among Student

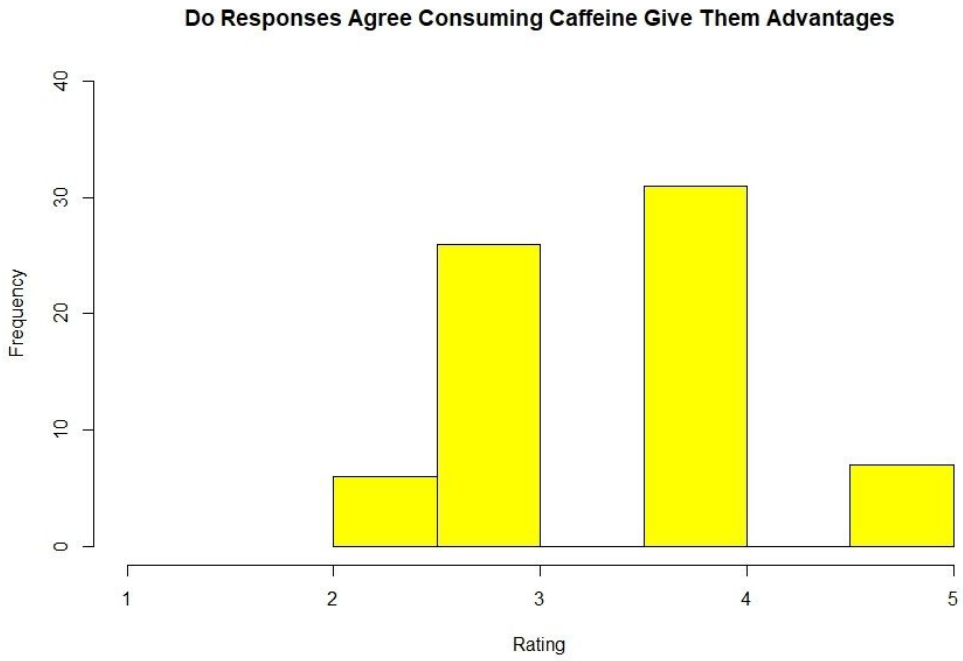


Pie Chart: Age of Responses of Caffeine Intakes Among Student

Based on this Pie Chart, we can see that age responses from 20 until 21 years old has the highest percentage of 84.3%, which means university students mostly take caffeine beverages than other age groups. The lowest percentage of 2.9% is other age groups, indicating that other age groups have the lowest responses. The second highest percentage (86) is group age of 22 until 23 and the third highest is the group age of 18 until 19 that has a percentage of 4.3%. Generally, the group age that will tend to takes caffeine beverages is the age groups of 20 until 21 and 18 until 19.

3.2 Ordinal Type

3.2.1 Do Responses Agree Consuming Caffeine Give Them Advantages



Histogram: Do Responses Agree Consuming Caffeine Give Them Advantages

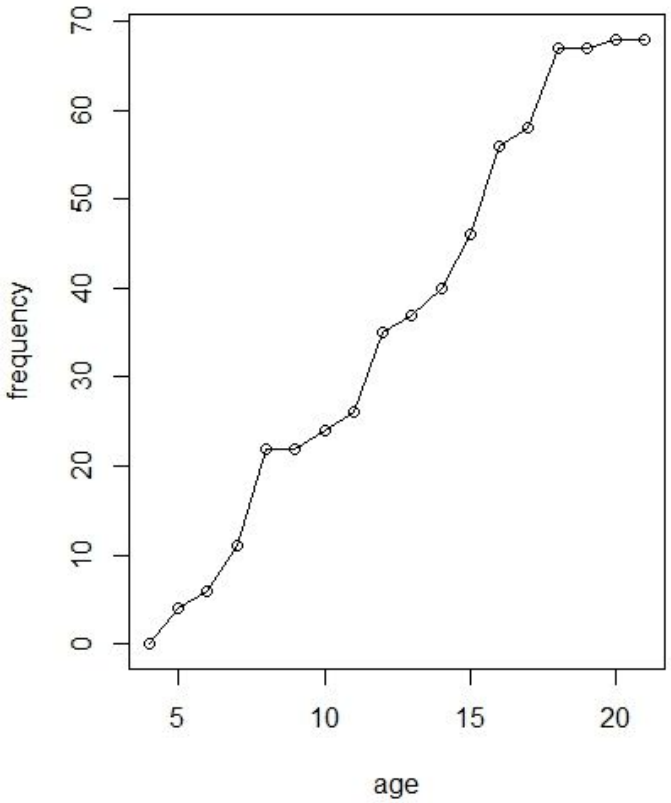
In this graph, 1-5 is an ordinal scale where it means from strongly disagree to strongly agree. We have included a question whereby we ask if responses agree that consuming caffeine gives us more advantages. However, rating 1 has zero rating hence resulting no frequency in this graph. The highest rating that most students have chosen is 4 with frequency of (31) which means that most of the students of this survey agree that consuming caffeine gives us more advantages. The second highest rating is 3 with frequency of (26) which means neutral, this students think that caffeine gives us advantages and also disadvantages at the same time. Followed with rating 5 has frequency of (7) which means they strongly agree that consuming gives more advantages. The second lowest rating is 2 with frequency (6) which means they disagree with the statement of consuming caffeine gives us more advantages.

3.3 Ratio Type

3.3.1 Age that students start consuming caffeinated beverages.

Age	Frequency	Cumulative Frequency	Relative
4	2	2	0.02857143
5	4	6	0.05714286
6	2	8	0.02857143
7	5	13	0.07142857
8	11	24	0.15714286
10	2	26	0.02857143
11	2	28	0.02857143
12	9	37	0.12857143
13	2	39	0.02857143
14	3	42	0.04285714
15	6	48	0.08571429
16	10	58	0.14285714
17	2	60	0.02857143
18	9	69	0.12857143
20	1	70	0.01428571

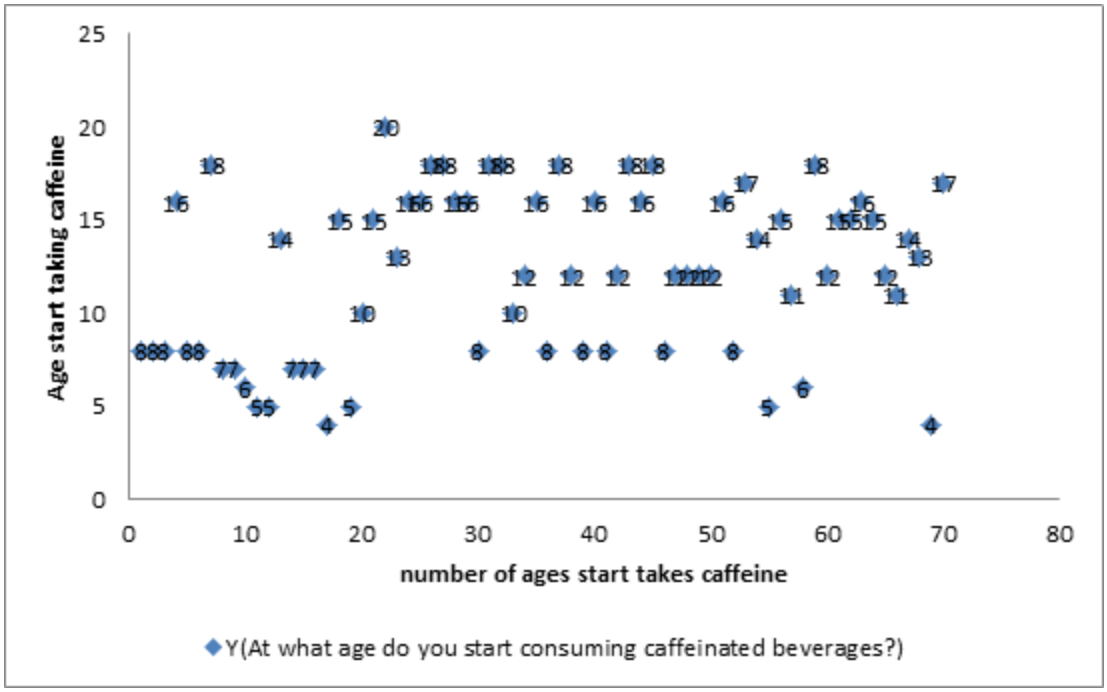
Frequency distribution table: Age that students start consuming caffeinated beverages.



Frequency distribution: Age that students start consuming caffeinated beverages.

In this project, we have collectd 70 responses. In this survey we asked a ratio scale question to find the age that students start consuming caffeinated beverages. We noticed that 16% of students who responded to our survey started consuming caffeinated beverages at eight years old and only one respondent started consuming caffeinated beverages at twenty years old. In the below, we give the diagram of age. We can conclude that most of the students start consuming caffeinated beverages from childhood.

3.3.2 Relationship between age and age start consume



Scatter plot:Relationship between age and age start consume

Figure above illustrates the relationship between age and number of age start takes caffeine. The lowest age for lowest students is around 18-19 years old where 3 of them have different ages start taking caffeine whereby both of them take caffeine during 5 years old and another one starts taking caffeine at age 6 years old.

Next we can see from the scatter plot above for students aged 20-21 years old, the number of students starting caffeine slightly increases to age 7 years old whereby the total for that age is 4 students compared to previous students. It might be some factor which made them start taking caffeine other than other students in their age. Next, we remain in the same state of age which is 20-21 years old, these student start takes caffeine during 8 years old which is the sum of students who take at that age is 11 students, we noticed that even though the result from previous analyze has a slightly big gap in number of student but they still at the same age. Other than that, for 10 years old, 13

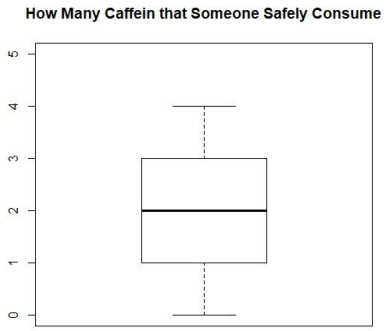
years old and 20 years old start taking caffeine there is only one student for three of them. Meanwhile for age 12 years old, these groups of students only 8 of them take caffeine during this age and for students who start at age 14 where 3 students. Furthermore for age 15 is slightly differ from age 14 which is the number of students for age 15 start takes caffeine is 5 students of it, then for 16 years old start takes caffeine increase to 9 student compared to 15 years old. At age 17 years old it can be seen in the figure above only 2 student start takes caffeine at this age meanwhile for age 18 years old the total is 8 students.

The scatter plot above not only depicts the age of 18-19 and 20-21 years old, it also shows the age of 22-23 and others, for student at age 22-23 they are minor respondent and only a little data of them and the total of them is 6 students,2 of them start at age 11 meanwhile the rest where age 10,12,15 and 16 years old. Last but not least for the others group of student which means other than range of age above this student takes caffeine at early age which is 7 years old.

In conclusion we can conclude that even though we have various range of age but most of our respondent are prefer start caffeine earlier due to some factor and most of them are from age 20-21 years old. We notice that caffeine can also start from earlier stage of age which means not only coffee intakes but other that consist of caffeine.

3.4 Interval Type

3.4.1 Relationship between age and age start consume



Boxplot: How Many Caffeine that Someone Safely Consume

From this boxplot we can see that the value of the 1st quartile is 1, median is 2, 3rd quartile is 3, the minimum value is 0 and maximum value is 4. The quartile from this boxplot shows the internal set of data that our group has. To see the detailed range of data, we can look at maximum and minimum value. So, we can see that responses agree that someone safely consume caffeine is between 0 to 4 cups.

3.4.2 Do you agree that consuming caffeinated beverages gives us more disadvantages

```
> stem(data_psda$`Do you agree that  consuming caffeinated beverages gives us more disadvantages ?`)

  The decimal point is at the |

  1 | 0
  1 |
  2 | 00000000000000
  2 |
  3 | 00000000000000000000000000000000
  3 |
  4 | 00000000000000000000
  4 |
  5 | 000
```

Stem and Leaf: Do you agree that consuming caffeinated beverages gives us more disadvantages

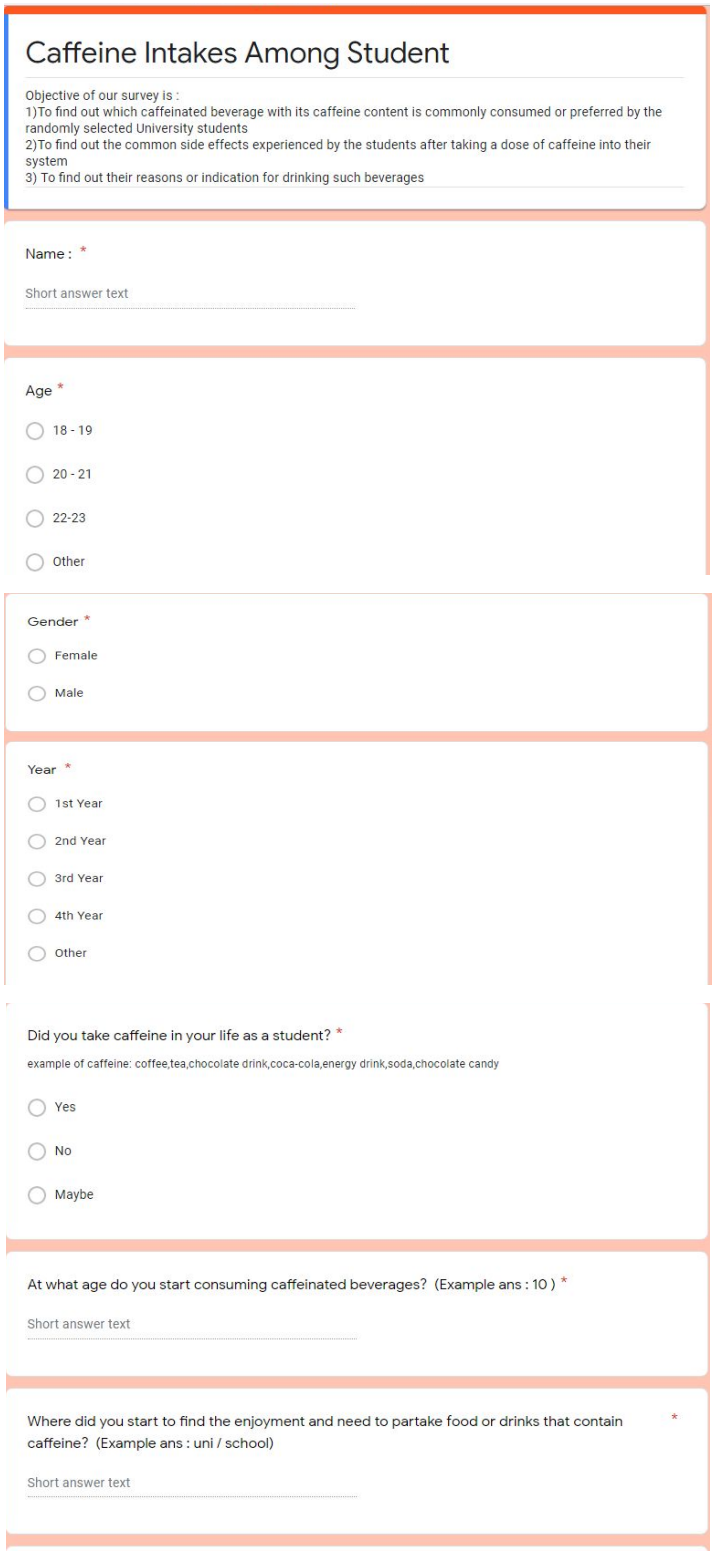
From stem and leaf for question “Do responses agree that consuming caffeinated beverages gives us disadvantages” most of them rating number 3 which is neutral. This rating shows that some of them agree that consuming caffeine gives advantages and also disadvantages at the same time. Rating for this question is 1 to 5. 1 is strongly disagree, 2 is disagree,3 is neutral,4 is agree while 5 is strongly agree. We can see that only 1 response strongly disagree and 14 disagree that caffeine can give disadvantages. 32 responses rated 3 while 20 rated 4 and 3 rated 5. So,23 students agree with this question.

4.0 Discussion and Conclusion

In summary, caffeine intake in students has remained fairly stable over time. Of course there's advantages and disadvantages of consuming caffeine but all of that depends on how someone controlled the intakes. In our topic, we are curious about the students' intake of caffeine beverages. This is proven by our survey that students tend to take caffeine beverages more than other groups in the community when 59 students out of 70 choose Yes that they take caffeine in their life as a student. Based on our survey, students agree that someone can safely consume caffeine between 0 to 4 cups for a day. From our research, up to 400 milligrams (mg) of caffeine a day appears to be safe for most healthy adults. That's roughly the amount of caffeine in four cups of brewed coffee, 10 cans of cola or two "energy shot" drinks. This means that students know their limited intakes of caffeine and how to consume caffeine safely.

Based on our research we can conclude that caffeine is the most favourite beverage among students. It can be seen through pie chart “Age of Responses of Caffeine Intakes Among Students” and scatter plot “Relationship between age and age start consume”. This chart tells us that university students always take caffeine and some of them started consuming caffeine in early age which is when they are still kids. Even though caffeine gives positive effects but it also give negative effects. We can see from the histogram “Do Responses Agree Consuming Caffeine Give Them Advantages” and stem and leaf for the question “Do Responses Agree Consuming Caffeine Give Them Disadvantages”. So, this research helps us to figure out caffeine intake among students.

Questionaire



Caffeine Intakes Among Student

Objective of our survey is :
1)To find out which caffeinated beverage with its caffeine content is commonly consumed or preferred by the randomly selected University students
2)To find out the common side effects experienced by the students after taking a dose of caffeine into their system
3) To find out their reasons or indication for drinking such beverages

Name : *

Short answer text

Age *

- 18 - 19
- 20 - 21
- 22-23
- Other

Gender *

- Female
- Male

Year *

- 1st Year
- 2nd Year
- 3rd Year
- 4th Year
- Other

Did you take caffeine in your life as a student? *

example of caffeine: coffee,tea,chocolate drink,coca-cola,energy drink,soda,chocolate candy

- Yes
- No
- Maybe

At what age do you start consuming caffeinated beverages? (Example ans : 10) *

Short answer text

Where did you start to find the enjoyment and need to partake food or drinks that contain caffeine? (Example ans : uni / school) *

Short answer text

What type of caffeinated beverage do you usually consume?

- ◯ Coffee or Coffee specialty drink
- ◯ Tea
- ◯ Soft drink
- ◯ Energy drink (ie. Red Bull, Monster, etc.)
- ◯ Pre-workout drink
- ◯ Other

About how many caffeinated beverages do you consume daily? *

- ◯ 1
- ◯ 2 - 3
- ◯ 4 - 5
- ◯ 6 - 7
- ◯ 7 and more

For what purpose would you consume a caffeinated beverage? (Choose 1 or 2 only) *

- ☐ To feel more awake
- ☐ To help with focus and concentration
- ☐ To improve physical performance
- ☐ To be more productive
- ☐ No specific purpose

Do you feel any pleasant feeling after taking caffeinated beverages? *

- ◯ Increased attention
- ◯ Increased memory performance
- ◯ Decreased risked of heart disease
- ◯ Increased physical performance
- ◯ Increased muscular recovery

Do you agree that consuming caffeinated beverages gives us more advantages ? *

1 - Strongly Disagree 2 - Disagree 3 - Neutral 4 - Agree 5 - Strongly Agree

1	2	3	4	5
○	○	○	○	○

Do you feel any unpleasant feeling after taking caffeinated beverages? *

- ○ Rapid heartbeat and irregular rhythm
- ○ Frequent urination
- ○ Insomnia
- ○ Rapid breathing
- ○ Muscular trembling and twitching

Do you agree that consuming caffeinated beverages gives us more disadvantages ? *

1 - Strongly Disagree 2 - Disagree 3 - Neutral 4 - Agree 5 - Strongly Agree (Based on

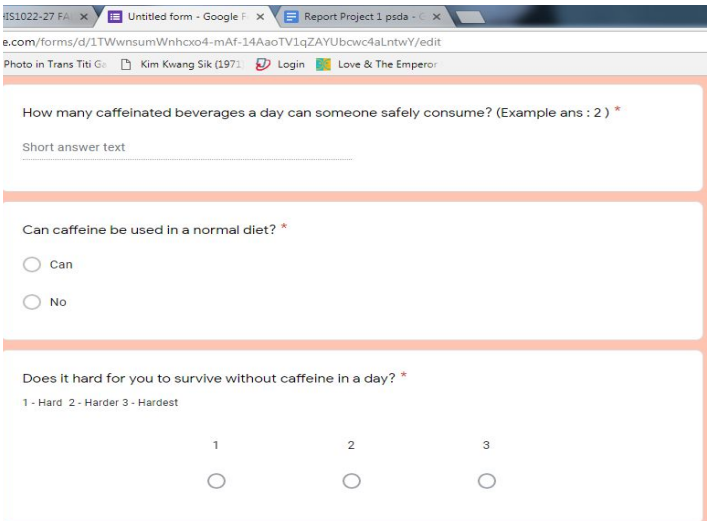
1	2	3	4	5
○	○	○	○	○

How much you spend on caffeine beverages in a month? *

- ○ <= Rm10
- ○ RM11 - RM30
- ○ RM31 - RM50
- ○ > RM50

How many caffeinated beverages a day can someone safely consume? (Example ans : 2) *

Short answer text


Untitled form - Google F
Report Project 1 psda -
e.com/forms/d/1TWwnsumWnhcxo4-mAf-14AaoTV1qZAYUbcwc4aLntwY/edit
Photo in Trans Titi Ga
Kim Kwang Sik (1971
Login
Love & The Emperor
How many caffeinated beverages a day can someone safely consume? (Example ans : 2) *
Short answer text
Can caffeine be used in a normal diet? *
Can
No
Does it hard for you to survive without caffeine in a day? *
1 - Hard 2 - Harder 3 - Hardest
1
2
3