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Study Into The Frequency Of Defecation Of Ten 20-22-Year-Old Males

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Abstract

This study looks at the defecation rates of twelve 20–22-year-old male subjects and by asking questions about their lifestyle, reveal dietary or behavioural factors that may affect these rates, and how well defecation rates may be predicted. Significant differences in defecation rates occurred during differences in hours slept per night, as well as a linear relationship between mass and yearly defecation rates, suggesting those that need to increase their bowel movements should firstly look at their sleep schedule. It is hopeful that this research will lead to a further understanding of how lifestyle factors can affect bowel movement and help those suffering from gastrointestinal related disorders such as IBS or constipation.

Keywords: *Health; Biology; Defecation; Caffeine Consumption; Sleep; Diet*

1. Introduction

Defecating is the act of discharging faeces from the body, and it is performed regularly by every member of the human race. Although inherently a simple process, 16% of the world's population suffer from constipation [1], and up to 15% of the world's population suffer from Irritable Bowel Syndrome [2], a condition commonly associated with diarrhea. Defecation frequency has only previously been studied over a much shorter period of time, most notably Heaton et al. 1992 [3].

This study intends to investigate dietary and lifestyle factors that may be influencing the frequency at which the subjects defecate, as well as look at overall trends in the frequency of defecation over the whole year.

2. Methods

The number of defecations was recorded in a Snapchat group chat, in which every time a subject defecated they would type and send a number of higher-order than entered before. To record lifestyle and dietary factors, a simple survey was created on freeonlinesurveys.com. Questions asked included information about their activity level, their diet, body mass, and any medical conditions such as chronic or acute diseases, or medicine that may affect their

regularity. OriginPro was used to plot the graphs and lines of best fit. Two subjects dropped out of the study.

3. Results

3.1 Defecation Rates

To analyse monthly defecation rates in comparison to the yearly rates, two monthly rates were chosen and plotted alongside the yearly rates.

Subject	Defecations Per Year	July 2021 to August 2021 defecations	December 2021 to January 2022 Defecations
1	756	66	77
2	648	59	36
3	255	24	13
4	717	63	65
5	327	23	31
6	636	78	39
7	366	30	37
8	442	31	37
9	306	24	19
10	424	34	32

Table 1 – Table showing Defecation rates per year and two selected months for each subject.

There is a large variation for several subjects from month to month. Most notably in table 1, subjects 3 and 6, who almost halved their defecations in comparison of July to December. Some Subjects (10 and 4) only varied by 2 defecations between the two months.

3.2 Sleep

Subjects were asked about the number of hours of sleep they got per night and this was compared to their defecation frequency.

Subjects' sleep patterns were evenly split between those that got more than 7 hours of sleep per night and those that got less than 7 hours, with one subject getting less than 5 hours of sleep per night. The mean number of defecations of a person that slept less than 7 hours of sleep a night was 339.2 defecations per year. Whereas the mean number of defecations of a person that slept more than 7 hours of sleep was 636.2, a 189% increase in comparison to the other group.

A t-test of the two groups gives a p-value of 0.0019 so we can conclude that there is a significant difference between the two groups. This was plotted on a grouped barplot.

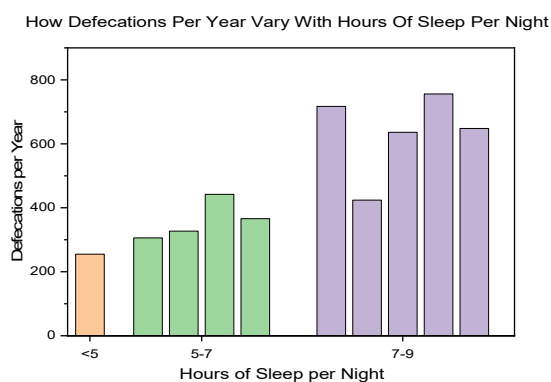


Figure 1 – Shows a barplot of the defecation rates in each sleep group.

3.3 Body Mass

The body mass of each subject was taken and their defecations per year were plotted against it.

Body mass was a good predictor of frequency of defecation, with a clear positive linear correlation. The data gives us a line of best fit with the equation to obtain defecations per year, Y , with body mass, x , is:

$$Y = 6.5x - 13.6,$$

with a p-value of 0.08 given.

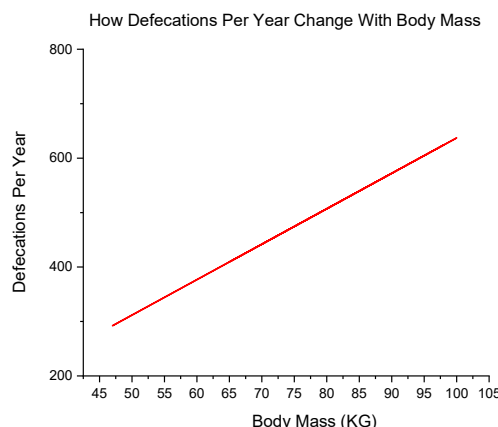


Figure 2 – Line of best-fit trend for body mass and defecations per year.

3.4 Caffeine, and Fruit and Vegetable Consumption

Subjects were asked about their caffeine consumption and split into three groups with their defecation rates plotted against their consumption.

Caffeine consumption varied among the subjects, however, there appeared to be no obvious trends in the data, with a wide range of defecation rates with each category of mass-consumed per day.

Fruit and vegetable consumption was grouped into what is considered a low, medium, and a high number of fruit or vegetables eaten per day as guided by the World Health Organisation [4], and their defecations per year were plotted against it. There appeared to be no trends to suggest that it may affect rates of defecation with a wide range of rates per category, with caffeine concentration differences giving a p-value of 0.3868, and Fruit and Vegetable consumption giving a p-value of 0.8396. Two results both considered not statistically significant.

5. Conclusion

This study has revealed several trends in the data, as well as some significant non-trends that require further analysis. Significant differences in defecation rates have been found in those that sleep more or less than 7 hours sleep, as well as a linear trend of defecation rates for increased body mass. Caffeine and fruit and vegetable consumption showed no trends in defecation rates, despite our current understanding of how the consumption of either negatively affects our bowels [5].

References

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