

# An Investigation Into Dietary Fibre Intake, Bowel Function and Mood in Irish Adults

Sophie Mulligan<sup>1</sup>

Ellen Lynch<sup>1</sup> Dr Suzanne Doyle<sup>1</sup>

<sup>1</sup>Technological University Dublin

School of Biological, Health and Sports Sciences

## Introduction

- The impact of dietary fibre on human health has long been understood, with longer life expectancy, reduced risk of chronic disease<sup>1</sup> and improved bowel function<sup>2</sup> observed in those consuming high amounts of dietary fibre. Those with a high fibre intake are also less likely to experience mood alterations, such as depressive symptoms<sup>3</sup>.
- Previous studies have examined the relationship between dietary fibre intake on mood and bowel function separately, however, no cross-sectional study has yet explored the relationship between all three variables.
- The aim of this study is to examine the association between dietary fibre intake, bowel function and mood in a cohort of Irish adults in a university setting.

## Methods

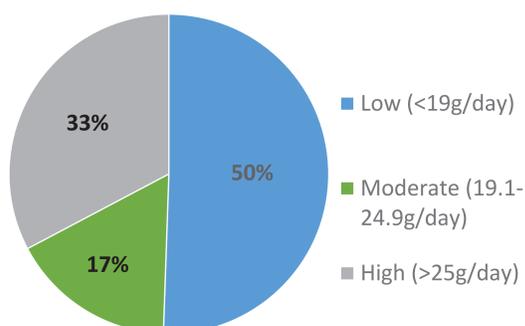
- An online Microsoft Forms questionnaire was created to assess each of the three variables; dietary fibre intake, bowel function and mood. The questions used were taken from three previously validated surveys<sup>4-6</sup>.
- The questionnaire was distributed to staff and students within TU Dublin via email and through posters containing a QR code.
- Data was collected for 13 days, after which it was analysed using SPSS statistics.

## Results

### 1. Participant Demographics

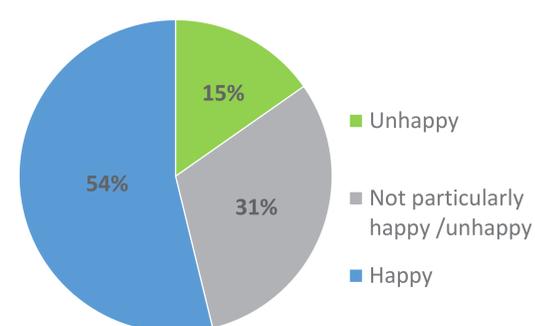
Demographics		n	%
Gender	Female	191	69.5
	Male	74	26.9
	Non-binary	7	2.5
	Prefer not to say	3	1.1
Age	17-20	116	42.2
	21-25	108	39.3
	26-30	13	4.7
	31-40	13	4.7
	41-50	15	5.5
	50+	10	3.6
Faculty of Study	Arts and Humanities	20	7.3
	Business	13	4.7
	Computing, Digital and Data	14	5.1
	Engineering and Built Environment	28	10.2
	Sciences and Health	183	66.5
	Other	17	6.2

### 2. Fibre Intake Status in the Study Cohort



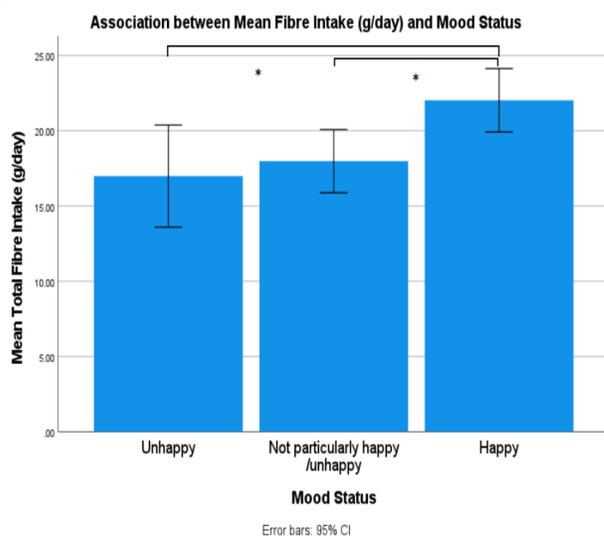
Over 50% of participants had intakes lower than the current Irish average intake (19g/day), and 67% were not consuming the recommended amount of dietary fibre ( $\geq 25\text{g/day}$ )<sup>7</sup>.

### 3. Mood Status in the Study Cohort



In the self-reported stress question, 83% of the population rated their stress as a 2, 3 or 4, while 4.7% rated their stress as a 1. Just over 12% of the population reported a stress level of 5.

### 4. Association between Fibre and Mood



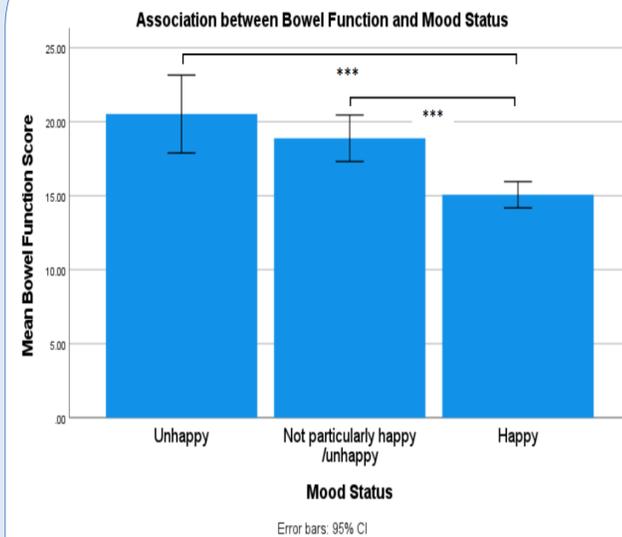
Mean fibre intake was 20.01g/day. Those who were happy had a higher mean daily intake of fibre than those who were unhappy and not particularly happy/unhappy ( $P = 0.039$  and  $P = 0.032$ ).

### 5. Association between Fibre Sources and Mood

Fibre Sources	Intakes (grams/day $\pm$ SD) in Mood Status Category			P value
	Unhappy	Neither happy / unhappy	Happy	
Fruit	2.96 ( $\pm 3.7$ )	2.97 ( $\pm 2.77$ )	3.98 ( $\pm 3.15$ )	<b>0.029</b>
Vegetable	4.36 ( $\pm 4.07$ )	4.53 ( $\pm 3.68$ )	5.7 ( $\pm 3.74$ )	<b>0.028</b>
Breads & Cereals	6.96 ( $\pm 4.23$ )	7.02 ( $\pm 4.22$ )	7.3 ( $\pm 4.39$ )	0.845
Nuts and Seeds	1.36 ( $\pm 2.35$ )	1.79 ( $\pm 2.17$ )	2.28 ( $\pm 3.53$ )	0.164
Legumes	1.35 ( $\pm 2.12$ )	1.67 ( $\pm 2.1$ )	2.77 ( $\pm 4.1$ )	<b>0.011</b>

Significant differences in fibre intakes from fruit, vegetables and legumes were observed between the groups.

### 6. Association between Bowel Function and Mood



Those who were happy had significantly better (i.e. lower) bowel function scores than those who were unhappy and not particularly happy/unhappy (both  $P < 0.001$ ).

## Conclusion

- Overall, significant associations between dietary fibre intake and mood and bowel function and mood were observed in this study. Inadequate dietary fibre intakes were observed in over 50% of the study cohort.
- These findings align with previous data and may contribute to the ongoing research in the field of gut health and mood.
- As this is a university-based study, awareness could be raised within the academic community on the importance of increasing dietary fibre for both bowel health and mental health.

## References

- Reynolds, et al., 2019. PMID: 30638909
- De Vries, et al., 2015. PMID: 26269686
- Fatahi, et al., 2021. PMID: 33220451
- Healey, et al., 2016. PMID: 27626442
- Hills P, Argyle M. The Oxford Happiness Questionnaire: a compact scale for the measurement of psychological well-being. *Pers Individ Dif* 2002; 33: 1073–1082.
- Bordeianou, et al., 2020. PMID: 31823193
- Walton J. National Adult Nutrition Survey Summary Report on Food and Nutrient intakes, Physical Measurements, Physical Activity Patterns and Food Choice Motives. 2011, pp 1–40.