Dietary consumption and happiness and depression among university students: a cross-national survey

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Background

-The psychological sequels of dietary behaviours are less well known compared to the effects on physical health and wellbeing

-Fruits and vegetables are important components of a healthy diet. Reduced fruit and vegetable consumption is linked to poor health and increased risk of non-communicable diseases

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Background

➢ In studies on human happiness
-few studies dietary behaviour, fruit and vegetable consumption, in relation to happiness (Blanchflower et al., 2013, etc.)
-Findings from these studies show a positive relationship between fruit and vegetable consumption and happiness.
-Recent metanalysis found that fruit and vegetable consumption may reduce the risk of depression (Liu Yan, Li F & Zhang, 2016).

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Background

The goal of this study is to assess the association of fruit and vegetable consumption and happiness and depressive symptoms in a cross-national study among university students.

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Methods

- *Sample and procedure*

- The sample included 18,522 (42.0% male and 58.0% female) university students (Mean age 20.9, SD=2.4) from 28 low and middle-income countries

- **Measures**

- *Happiness Scale* (Lyubomirsky & Lepper, 1999)

- Center for Epidemiologic Studies Depression Scale (CES-D),

Measures

Fruit and vegetable (FV) consumption was measured with two items, "How many servings [80 grams] of fruit do you eat on a typical day?"and "How many servings [80 grams] of vegetables do you eat on a typical day?"(Hall, Moore, Harper, & Lynch, 2009).

Body mass index (BMI).
International Physical Activity Questionnaire (IPAQ)

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Results-Descriptives

Variables		Sample	Happiness	Depression
		N (%)	M (SD)	M (SD)
Sociodemographics				
Gender	Female	10,708 (58.0)	13.08 (2.7)	19.67 (4.5)*
	Male	7,758 (42.0)	13.11 (2.9)	19.27 (4.4)
Age in years	17 -19	5,826 (31.5)	13.18 (2.7)	19.83 (4.5)*
	20 -21	7,096 (38.3)	13.04 (2.8)	19.40 (4.4)
	22 -30	5,600 (30.2)	13.07 (2.7)	19.30 (4.4)
Family economic background	Quite poor/not very well off	8,870 (48.0)	12.81 (2.8)	19.42 (4.3)
	Wealthy/quite well-off	9,621 (52.0)	13.36 (2.7)*	19.58 (4.5)
Country income	Low/lower	9,775 (58.0)	12.83 (2.8)	19.50 (4.6)
	Upper/high	8,747 (42.0)	13.39 (2.7)*	19.50 (4.4)
Fruit and vegetable servings	0	887	12.74 (3.3)	20.32 (5.0)
	1	1523	13.02 (2.8)	20.19 (4.6)
	2	5834	13.07 (2.7)	19.41 (4.4)
	3	4197	13.07 (2.6)	19.49 (4.3)
	4	2639	13.23 (2.8)	19.35 (4.2)
	5	1425	13.09 (2.8)	19.48 (4.4)
	6	996	13.17 (2.7)	19.18 (4.4)
	7 or more	1021	13.23 (2.9)	19.76 (4.7)

Stepwise multiple linear regression on happiness

Variables	Model 1	Model 2 + sociodemographics	Model 3 + sociodemographics + health variables
	B (95% CI)	B (95% CI)	B (95% CI)
Fruit and vegetables			
0-1	Reference	Reference	Reference
2	0.15 (0.02, 0.28)*	0.20 (0.07, 0.32)**	0.17 (0.02, 0.33)*
3	0.15 (0.02, 0.29)*	0.21 (0.08, 0.35)**	0.16 (0.01, 0.33)*
4	0.31 (0.16, 0.46)***	0.37 (0.22, 0.52)***	0.38 (0.20, 0.57)***
5	0.16 (-0.02, 0.34)	0.26 (0.08, 0.44)**	0.29 (0.07, 0.51)*
6	0.24 (0.04, 0.44)*	0.35 (0.15, 0.55)***	0.41 (0.16, 0.65)***
7 or more	0.31 (0.11, 0.51)**	0.43 (0.23, 0.63)***	0.39 (0.14, 0.63)**

Table 3: Stepwise multiple linear regression on depression

Variables	Model 1	Model 2 + sociodemographics	Model 3 + sociodemographics + health variables
	B (95% CI)	B (95% CI)	B (95% CI)
Fruit and vegetables			
0-1	Reference	Reference	Reference
2	-0.73 (-0.93, -0.54)***	-0.75 (-0.95, -0.55)***	-0.87 (-1.12, -0.63)***
3	-0.70 (-0.90, -0.49)***	-0.73 (-0.94, -0.52)***	-0.79 (-1.05, -0.53)***
4	-0.77 (-0.99, -0.54)***	-0.80 (-1.02, -0.57)***	-0.96 (-1.25, -0.65)***
5	-0.60 (-0.87, -0.33)***	-0.60 (-0.86, -0.33)***	-0.88 (-1.24, -0.53)***
6	-0.77 (-1.07, -0.47)***	-0.79 (-1.09, -0.49)***	-1.04 (-1.43, -0.65)***
7 or more	-0.36 (-0.65, -0.06)*	-0.35 -0.65, -0.05)*	-0.55 (-0.95, -0.16)**

Discussion

After controlling for a large number of possible confounders,

-> evidence positive association fruit and vegetable consumption frequency and happiness and a negative association between fruit and vegetable consumption frequency and depression.

-largely in agreement with previous cross-sectional and longitudinal studies (Blanchflower et al., 2012; Conner et al., 2015; Lesani & Mohammadpoorasl, 2016; Liu et al., 2016; Mujcic & Oswald, 2016; White et al., 2013).

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Discussion

Possible reasons for this may be that fruits and vegetables, which are rich in antioxidants such as vitamin C, vitamin E, and folic acid and anti-inflammatory components, may enhance human optimism or happiness (Boehm, Williams, Rimm, Ryff & Kubzansky, 2013) and may reduce depression development (Khanzode, Dakhale

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Conclusion

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Overall, results are consistent with other studies that demonstrate an association between frequency of fruit and vegetable consumption and greater happiness and lesser depression symptoms.

Conclusion

Mujcic and Oswald (2016) suggest to incorporate the happiness effects of fruit and vegetable consumption into health promotion programmes that intend to increase fruit and vegetable consumption

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