



# Fruit and vegetable consumption in older people in Northern Ireland: Levels, patterns, barriers and solutions

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# Background

High intakes of fruits and vegetables have considerable health benefits (WHO, 1990)

Current recommendations - 400g (5 portions) fruit & veg per day

Current intakes in older people in Great Britain (NDNS survey) – 3.5 portions per day

Current intakes in Northern Ireland - ?

This project aimed to investigate current levels of fruit and vegetable consumption in the older population of Northern Ireland

# Background

Different consumption patterns in different individuals in Great Britain (NDNS survey) – gender, age, manual / non-manual  
Consumption patterns in Northern Ireland - ?

This project aimed to investigate current patterns of fruit and vegetable consumption in the older population of Northern Ireland

# Background

In attempts to improve fruit and vegetable intakes, research has identified barriers to increasing intakes (Cox et al, 1998)

Barriers may be age-specific

Barriers may be locations-specific

Barriers may be time-specific

This project aimed to investigate current barriers to increasing fruit and vegetable consumption in the older population of Northern Ireland

# Background

In attempts to improve fruit and vegetable intakes, little research has investigated suggested solutions (Cox et al, 1998)

This project aimed to investigate suggested solutions for increasing fruit and vegetable consumption in the older population of Northern Ireland

# Research Objectives

This project aimed to:

Investigate current levels of fruit and vegetable consumption in the older population of Northern Ireland

Investigate current patterns of fruit and vegetable consumption in the older population of Northern Ireland

Identify current barriers to increasing fruit and vegetable consumption in the older population of Northern Ireland

Identify suggested solutions for increasing fruit and vegetable consumption in the older population of Northern Ireland

# Method



Telephone Survey of 1000 older people living in Northern Ireland

Older people

Representative of the Northern Ireland population wrt gender,  
age, marital status, area of residence in line with 2001 census

Contacted by telephone during working hours

# Method

## Fruit and vegetable intakes

Type and amount of all fruits and vegetables consumed for breakfast, morning snacks, lunch, afternoon snacks, dinner, evening snacks

## Weekdays and weekends

Prompts – fruit juice, fresh fruit and vegetables, frozen fruit and vegetables, canned fruit and vegetables, dried fruit and vegetables

# Method

Barriers to increasing fruit and vegetable intakes

22 closed-response questions, strongly agree – strongly disagree

e.g. I like the taste of fruit and vegetables

I find fruit and vegetables easy to prepare and cook for eating

Buying more fruit and / or vegetables than I already do would be difficult for me due to the cost

1 open-response question – Are there any reasons why you do not eat more fruit and vegetables than you currently do? (list all reasons)

# Method

Suggested solutions for increasing fruit and vegetable intakes  
1 open-response question – What can be done to help people eat more fruit and vegetables? (list all reasons)

Demographic and lifestyle variables

Gender, age, marital status, region of residence,

Living status, MDM deprivation score based on home postcode

Distance travelled for food shopping

Frequency with which individuals: received help with food shopping; received help with food cooking; had food delivered; consumed food out of the house

# Findings

Older people

426 (43%) provided data that could be used

338 did not answer / were not available

190 did not wish to participate

25 were not contactable

9 deceased

7 provided data but then withdrew

5 provided data that could not be used

# Older people

159 men, 267 women

244 aged 65-74 years, 88 aged 75-79 years, 55 aged 80-84 years, 26 aged 85-89 years, 13 aged 90+ years

213 married, 213 unmarried

81 living in Belfast, 95 living in NE NI, 108 living in SE NI, 79 living in South NI, 63 living in West NI

Distance to shops: mean 4.1 miles, range 0-30 miles

Helped with shopping: mean 173 days, range 0-365 days/year

Helped with cooking: mean 136 days, range 0-365 days/year

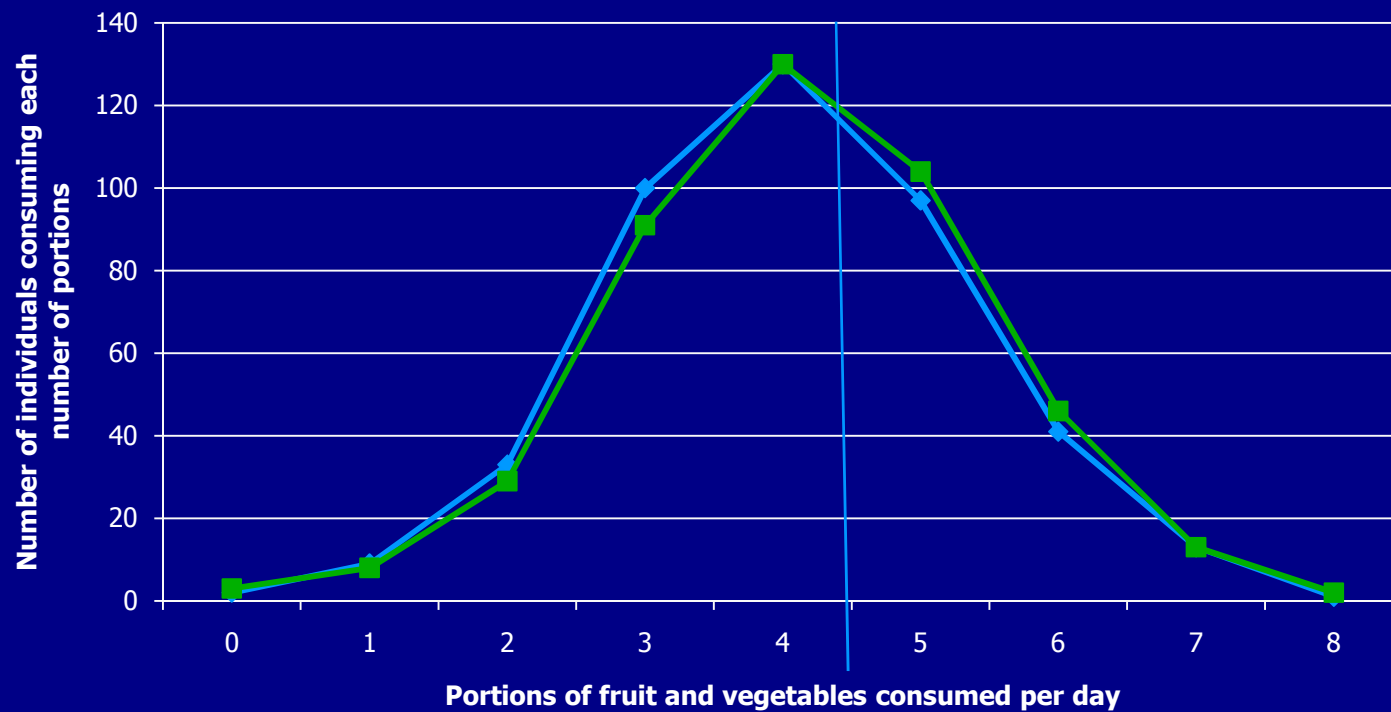
Food delivered: mean 11 days, range 0-365 days/year

Eat out: mean 30 days, range 0-365 days/year

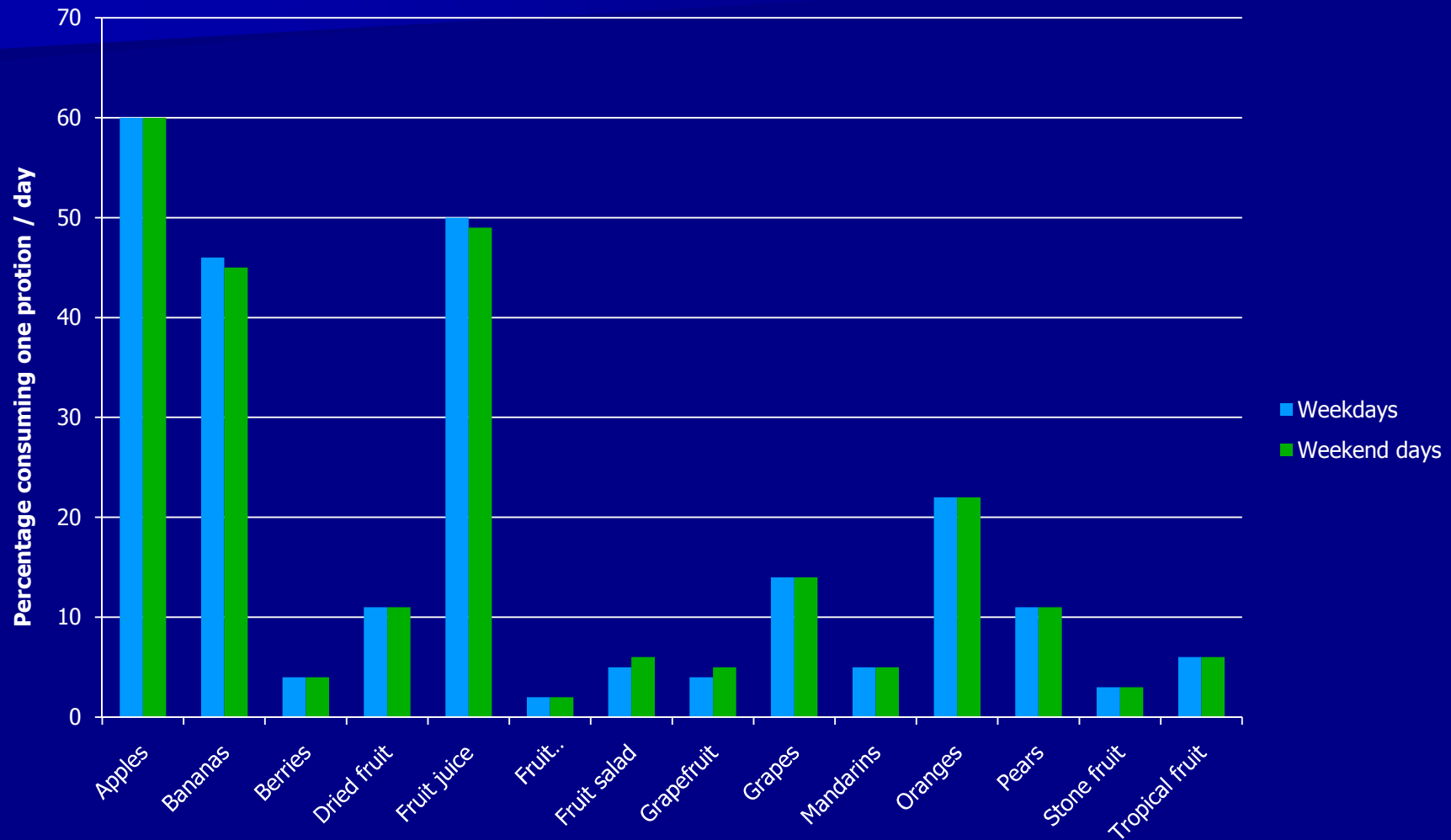
# Levels of Fruit and Vegetable consumption

Weekdays: mean 4.0 portions, range 0-8 portions / day

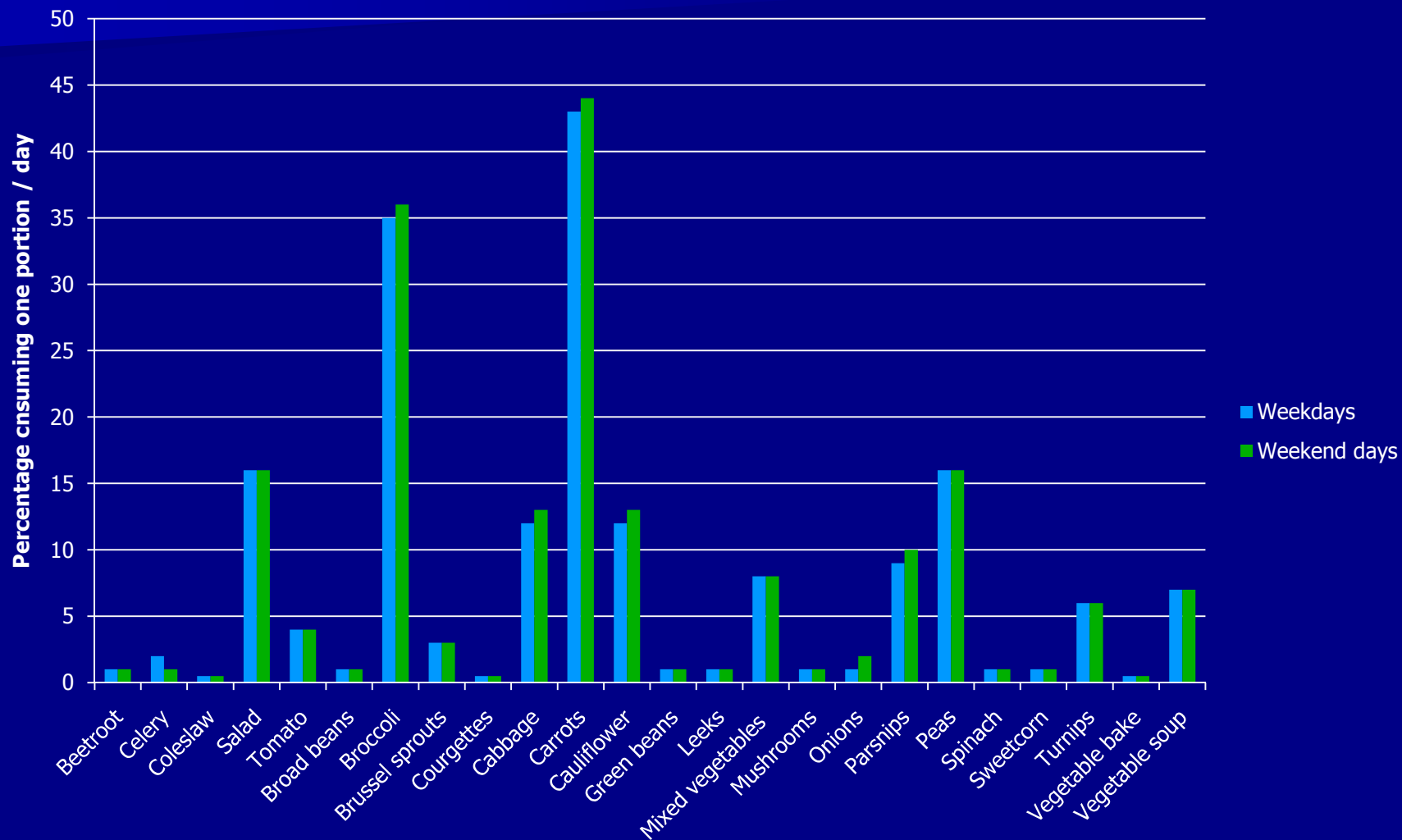
Weekend days: mean 4.1 portions, range 0-8 portions / day



# Levels of Fruit and Vegetable consumption



# Levels of Fruit and Vegetable consumption



# Patterns of Fruit and Vegetable consumption

Weekdays: Fruit and vegetables intakes significantly predicted  
( $R^2=0.08$ , adj.  $R^2=0.06$ ,  $F(10,418)=3.63$ ,  $p<0.01$ )

Variable	Unstandardized Co-efficient	Standardized Co-efficient	t	Sig.
<b>Gender</b>	<b>0.520</b>	<b>0.198</b>	<b>3.63</b>	<b>&lt;0.01</b>
<b>Age</b>	<b>-0.025</b>	<b>-0.140</b>	<b>2.63</b>	<b>0.01</b>
Living Status	0.042	0.016	0.26	0.79
Region	-0.027	-0.028	0.58	0.56
<b>Deprivation score</b>	<b>-0.010</b>	<b>-0.098</b>	<b>2.05</b>	<b>0.04</b>
Distance to shops	-0.003	-0.010	0.20	0.84
Help with food shopping	0.000	0.052	0.81	0.42
Help with food cooking	0.000	-0.026	0.38	0.70
Food delivered	-0.001	-0.042	0.83	0.41
Food consumed out of the house	0.003	0.082	1.72	0.09

# Patterns of Fruit and Vegetable consumption

Weekend days: Fruit and vegetables intakes significantly predicted  
( $R^2=0.08$ , adj.  $R^2=0.06$ ,  $F(10,418)=3.50$ ,  $p<0.01$ )

Variable	Unstandardized Co-efficient	Standardized Co-efficient	t	Sig.
<b>Gender</b>	<b>0.532</b>	<b>0.199</b>	<b>3.65</b>	<b>&lt;0.01</b>
<b>Age</b>	<b>-0.026</b>	<b>-0.140</b>	<b>2.64</b>	<b>0.01</b>
Living Status	0.060	0.023	0.37	0.71
Region	-0.025	-0.025	0.52	0.60
Deprivation score	-0.007	-0.069	1.44	0.15
Distance to shops	-0.005	-0.019	0.39	0.70
Help with food shopping	0.001	0.078	1.20	0.23
Help with food cooking	0.000	-0.052	0.77	0.44
Food delivered	-0.001	-0.049	0.98	0.33
Food consumed out of the house	0.002	0.067	1.40	0.16

# Barriers to increasing consumption

22 closed-response items - Principle Component Analysis

Willingness to change (6 items)

Liking (5 items)

Ease (4 items)

Difficulties (6 items)

Awareness (1 item)

Whole sample: Fruit and vegetables intakes significantly predicted  
 ( $R^2=0.50$ , adj.  $R^2=0.25$ ,  $F(14,412)=9.12$ ,  $p<0.01$ )

Variable	B	Beta	t	Sig
<b>Willingness to change</b>	<b>0.184</b>	<b>0.126</b>	<b>2.74</b>	<b>&lt;0.01</b>
<b>Liking</b>	<b>0.712</b>	<b>0.345</b>	<b>7.59</b>	<b>&lt;0.01</b>
Ease	-0.083	-0.030	0.64	0.52
Difficulties	0.222	0.057	1.22	0.22
<b>Awareness</b>	<b>0.240</b>	<b>0.235</b>	<b>5.12</b>	<b>&lt;0.01</b>
<b>Gender</b>	<b>0.384</b>	<b>0.143</b>	<b>2.87</b>	<b>&lt;0.01</b>
Age	-0.009	-0.050	0.97	0.34
Living status	0.036	0.014	0.25	0.81
Region	0.003	0.003	0.08	0.94
MDM	-0.008	-0.077	1.76	0.08
Distance to the shops	-0.002	-0.008	0.19	0.85
Help with shopping	0.001	0.079	1.34	0.18
Help with cooking	0.000	-0.089	1.44	0.15
Food delivered	-0.001	-0.038	0.84	0.40
Food eaten out	0.002	0.056	1.28	0.20

Females: Fruit and vegetables intakes significantly predicted  
 (R<sup>2</sup>=0.53, adj. R<sup>2</sup>=0.28, F(14,262)=6.89, p<0.01)

Variable	B	Beta	T	Sig
<b>Willingness to change</b>	<b>0.318</b>	<b>0.229</b>	<b>3.97</b>	<b>&lt;0.01</b>
<b>Liking</b>	<b>0.771</b>	<b>0.397</b>	<b>7.02</b>	<b>&lt;0.01</b>
Ease	-0.081	-0.030	0.52	0.60
Difficulties	0.158	0.044	0.75	0.45
<b>Awareness</b>	<b>0.316</b>	<b>0.289</b>	<b>5.07</b>	<b>&lt;0.01</b>
Age	-0.005	-0.027	0.42	0.68
Living status	0.060	0.024	0.36	0.72
Region	0.004	0.004	0.08	0.94
MDM	-0.004	-0.043	0.78	0.44
Distance to the shops	-0.005	-0.019	0.34	0.73
Help with shopping	0.000	0.041	0.61	0.54
Help with cooking	0.000	-0.085	1.33	0.18
Food delivered	-0.001	-0.030	0.55	0.58
Food eaten out	0.001	0.022	0.40	0.69

Males: Fruit and vegetables intakes significantly predicted  
 (R<sup>2</sup>=0.22, adj. R<sup>2</sup>=0.14, F(14,155)=2.79, p<0.01)

Variable	B	Beta	T	Sig
Willingness to change	-0.048	-0.032	0.38	0.71
<b>Liking</b>	<b>0.668</b>	<b>0.305</b>	<b>3.68</b>	<b>&lt;0.01</b>
Ease	0.102	0.036	0.42	0.67
Difficulties	0.249	0.057	0.69	0.49
<b>Awareness</b>	<b>0.167</b>	<b>0.180</b>	<b>2.12</b>	<b>0.04</b>
Age	-0.010	-0.055	0.60	0.55
Living status	-0.316	-0.114	0.91	0.37
Region	0.005	0.005	0.06	0.95
MDM	-0.015	-0.133	1.68	0.10
Distance to the shops	0.006	0.022	0.27	0.79
Help with shopping	0.002	0.001	1.86	0.07
Help with cooking	0.000	0.001	0.29	0.77
Food delivered	-0.002	0.002	0.84	0.40
Food eaten out	0.003	0.002	1.51	0.13

Those consuming less than 5 portions of fruit and vegetables / day  
 (N=275): Fruit and vegetables intakes significantly predicted  
 ( $R^2=0.17$ ,  $\text{ajd. } R^2=0.12$ ,  $F(15,268)=3.42$ ,  $p<0.01$ )

Variable	B	Beta	t	Sig
Willingness to change	0.081	0.087	1.43	0.16
<b>Liking</b>	<b>0.410</b>	<b>0.316</b>	<b>5.28</b>	<b>&lt;0.01</b>
Ease	0.010	0.006	0.09	0.93
Difficulties	0.274	0.106	1.70	0.09
<b>Awareness</b>	<b>0.088</b>	<b>0.153</b>	<b>2.47</b>	<b>0.01</b>
Gender	0.176	0.105	1.61	0.11
Age	0.003	0.025	0.37	0.71
Living status	0.110	0.066	0.87	0.39
Region	-0.047	-0.077	1.30	0.20
MDM	-0.006	-0.100	1.70	0.09
Distance to the shops	-0.014	-0.072	1.23	0.22
Help with shopping	0.000	0.043	0.51	0.61
Help with cooking	0.000	-0.126	1.49	0.14
Food delivered	0.000	-0.045	0.74	0.46
Food eaten out	0.000	0.021	0.37	0.71

Those over the age of 80 years (N=94):

Fruit and vegetables intakes significantly predicted  
( $R^2=0.34$ ,  $\text{ajd. } R^2=0.22$ ,  $F(14,89)=2.74$ ,  $p<0.01$ )

Variable	B	Beta	T	Sig
Willingness to change	-0.066	-0.046	0.45	0.65
<b>Liking</b>	<b>0.519</b>	<b>0.278</b>	<b>2.75</b>	<b>&lt;0.01</b>
Ease	0.369	0.157	1.51	0.14
Difficulties	-0.028	-0.009	0.09	0.93
<b>Awareness</b>	<b>0.218</b>	<b>0.294</b>	<b>2.72</b>	<b>&lt;0.01</b>
Gender	0.281	0.114	1.04	0.30
Living status	-0.110	-0.042	0.37	0.72
Region	-0.012	-0.013	0.13	0.89
MDM	-0.017	-0.151	1.54	0.13
Distance to the shops	0.022	0.073	0.76	0.45
Help with shopping	0.001	0.080	0.71	0.48
Help with cooking	0.000	-0.081	0.70	0.49
Food delivered	-0.001	-0.075	0.74	0.46
Food eaten out	0.006	0.134	1.38	0.17

Those living in the most deprived areas:  
 Fruit and vegetables intakes significantly predicted  
 ( $R^2=0.27$ ,  $\text{ajd. } R^2=0.15$ ,  $F(14,97)=2.239$ ,  $p=0.01$ )

Variable	B	Beta	t	Sig
Willingness to change	0.299	0.180	1.70	0.10
<b>Liking</b>	<b>0.570</b>	<b>0.259</b>	<b>2.52</b>	<b>0.01</b>
Ease	-0.164	-0.059	0.53	0.60
Difficulties	-0.248	-0.059	0.55	0.58
Awareness	0.203	0.198	1.83	0.07
Gender	0.510	0.185	1.70	0.09
Age	0.010	0.053	0.45	0.65
Living status	-0.293	-0.106	0.83	0.41
Region	0.007	0.007	0.07	0.95
Distance to the shops	-0.039	-0.106	1.05	0.30
Help with shopping	0.001	0.107	0.91	0.37
Help with cooking	-0.001	-0.139	1.09	0.28
Food delivered	-0.002	-0.090	0.87	0.39
Food eaten out	0.001	0.030	0.31	0.76

# Barriers to increasing consumption

Open-response question – content analysis

- Already eat enough, e.g. "I couldn't eat any more";
- Medical reasons, e.g. "I'm on dialysis – I have to be careful what I eat".
- Effort involved in preparing / eating, e.g. "laziness".
- Not in the habit of eating fruit and vegetables, e.g. "I hadn't been accustomed to eating fruit and vegetables as a child".
- Small appetite, e.g. "can't eat so much".
- Not liking fruit and vegetables, e.g. "I hate fruit".
- Choose not to eat, e.g. "I have a sweet tooth – I eat sweets when I should be eating fruit and vegetables".
- Lack of control of intake, e.g. "home help just puts in front of me what I eat and that's it".
- Age, e.g. "I'm 85 - not important at my age".
- Lack of supply, e.g. "not good quality, not fresh by the time they reach Northern Ireland".
- Price, e.g. "too dear".
- No reason

# Suggested solutions for increasing consumption

Open-response question – content analysis

- Nothing, e.g. "I don't think there's anything you could do"
- Individual's personal choice, e.g. "it's up to yourself"
- Reduce price, e.g. "drop price";
- Increase Supply, e.g. "increase local produce", "supermarkets don't cater for single people"
- Focus on children, e.g. "start with children"
- Schemes, e.g. "give vouchers for fruit and vegetables"
- Advertise, e.g. "Advertise fruit and vegetables more"
- Target attitudes, e.g. "people don't care nowadays"
- Focus on deterring other foods, e.g. "instead of trying to encourage fruit and veg, try to discourage fast foods instead"
- Education, e.g. "my rheumatologist told me to eat more broccoli"
- Reduce effort involved , e.g. "Mothers don't have time to cook, make it easier for them"
- Habit, e.g. "you just need to be in a routine"
- Liking, e.g. "you either like them or you don't"
- Don't know

# Conclusions

Older people of Northern Ireland are consuming less fruit and vegetables than that currently recommended for optimum health

Males, older older people and those living in more deprived areas are consuming least

# Conclusions

Barriers include low levels of liking, low awareness of current recommendations and low willingness to change

And low awareness of the details of recommendations, low awareness of the reasons for recommendations, low awareness of current inadequate consumption, and some environmental constraints

Suggested solutions include increasing willingness to change, increasing knowledge, reducing environmental constraints

# Conclusions

Older people in Northern Ireland, and particularly males, older individuals and those living in more deprived areas may benefit from interventions aimed at increasing fruit and vegetable consumption.

Greatest benefit may be gained from interventions aiming to increase liking, increase awareness of current recommendations, details of recommendations, and reasons for recommendations, and strategies to increase willingness to change.

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Participants

[www.changingageing.org/research](http://www.changingageing.org/research)

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Conferences – NI British Psychological Society, Nutrition Society – Irish Section, CAP/SPARC