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Consumption Patterns and Adherence to the Food Pyramid

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Consumption Patterns and Adherence to the Food Pyramid

Key Findings

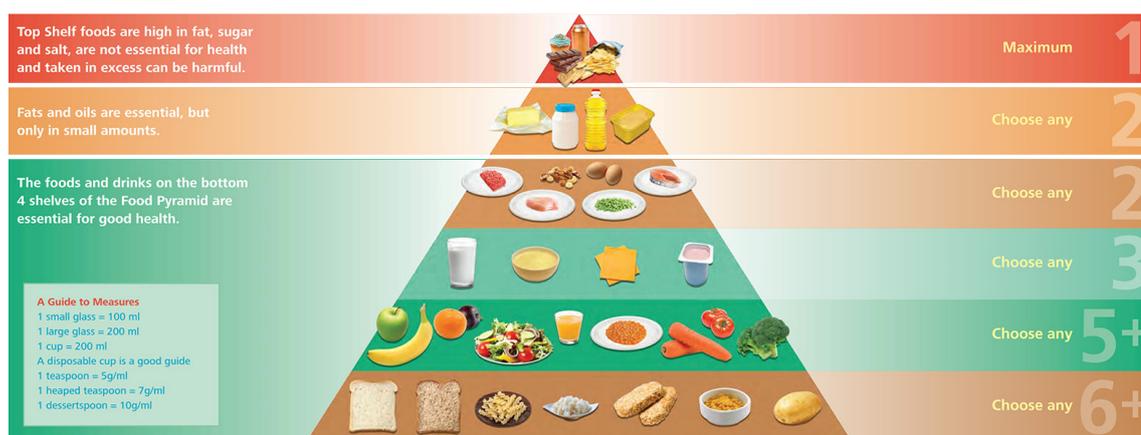
- Adherence to the Food Pyramid recommendations is poor in adults aged 54 years and over in Ireland; 15% do not achieve the recommended daily intake for any of the main food groups.
- One fifth of older adults in this population meet the recommended 6 or more daily servings of Bread, Cereals, Potatoes, Pasta and Rice, with compliance levels lower in women (18%) than men (24%) and in those with higher education.
- Three-quarters of older adults do not consume the minimum recommendation of 5 servings of Fruit and Vegetables per day, with men consuming less than women.
- 70% of older adults consume less than the recommended 3 servings of Milk, Yoghurt and Cheese products per day.
- Two-fifths comply with the recommended intake of Meat, Poultry, Fish, Eggs, Beans and Nuts, however another two-fifths consume less than the daily intake.
- Two-thirds consume excessive amounts of Foods and Drinks high in Fat, Sugar and Salt while one-third over-consume Fat & Oils - this may be associated with overconsumption of energy dense and highly palatable foods.
- Those with moderate to high physical activity levels are more likely to consume the recommended 5 or more daily servings of Fruit and Vegetables than those with low physical activity.
- Those in a higher socio-economic group are more likely to comply with the recommended intake for Fruit and Vegetables, Meat, Poultry, Fish, Eggs, Beans, and Nuts and Fat and Oils.

4.1 Introduction

The ageing process is typically accompanied by physiological changes, that include loss of muscle mass, digestive issues such as impaired nutrient absorption and slower gastrointestinal transit times. These are in addition to the development of frailty, the deterioration of oral and ocular health and the onset of non-communicable diseases, for example, cardiovascular disease (CVD), type-2 diabetes mellitus and osteoporosis. Furthermore, the reduction of sensory capacity can lead to changes in taste perception and subsequent enjoyment of food and beverages (1). All of these factors significantly modify nutritional intake and requirements of older people. Healthy eating practices and food choices such as consumption of high fibre foods, fruit and vegetables, adequate protein intake, sources of low-fat dairy and limited consumption of food products that are high in saturated fat, salt and sugar are important for the health of the older population. Coupled with physical activity, a healthy balanced diet is associated with increased life expectancy, improved quality of life, and reduced risk for chronic diseases (2). Therefore, it is important that as people age, they maintain a healthy weight and body composition to ensure optimum health.

Healthy eating guidelines for the population in Ireland are based on the Food Pyramid Model which specifies a recommended number of daily servings from each of six main food groups (Figure 4.1). These groups are represented as six shelves which are (from the bottom): Breads, Cereals, Potatoes, Pasta and Rice; Fruit and Vegetables; Milk, Yoghurt and Cheese; Meat, Poultry, Fish, Eggs, Beans and Nuts; Fats and Oils and Foods and Drinks high in Fat, Salt and Sugar (3). Until the introduction of an updated Food Pyramid in December 2016 (4), the healthy eating guidelines in place were generalised for all adults in Ireland and children over the age of 5 years (3). However, while total energy requirements diminish with advancing age, the intake of protein and vitamins and minerals should remain the same as for younger adults (5). Therefore, nutrient-dense food choices are often recommended for older adults in order to prevent or delay chronic diseases and frailty (6-8).

Figure 4.1: Department of Health Food Pyramid (3)



Up-to-date data on dietary intake specific to older adults in Ireland is limited. Findings from earlier nationally representative studies such as the Survey of Lifestyle, Attitudes and Nutrition in Ireland (SLÁN, 2007) (9) and the National Adult Nutrition Survey (NANS, 2011) (10), may not be generalizable to the current older population.

This chapter uses data from Wave 3 of TILDA (2014-2015) to describe the habitual dietary intake of older adults aged 54 years and over in Ireland, with specific reference to the 2012 Food Pyramid (Figure 4.1), which has been in use from 2012-2016 (3).

4.2 Methodology

A Food Frequency Questionnaire (FFQ) was completed by 5,279 participants in Wave 3 (79% response rate). This was the first time a dietary assessment tool was used in TILDA. The FFQ was adapted from a questionnaire used in SLAN 2007 (9) and the European Prospective Investigation of Cancer (EPIC) study (11). It was designed to assess the whole diet and included 52 food items or aggregate groups arranged into the primary food groups consumed in the typical Irish diet. Respondents were asked to indicate their habitual frequency of consumption of each item over the last year. Typical weights and portion size estimates were based on recommendations established by food composition tables (12) and the Irish Food Portion Size database (13). For each food item/aggregate group, answers could be chosen from 9 different frequency categories: never or less than once a month, 1-3 times per month, once a week, 2-4 times per week, 5-6 times per week, once a day, 2-3 times per day, 4-5 times per day, and 6+ times per day, as shown in Figure 4.2.

Figure 4.2: Example of a food item from the FFQ used in TILDA

Potatoes, Rice, Pasta (medium serving)	Never/ less than once a month	1-3 per month	Once a week	2-4 per week	5-6 per week	Once a day	2-3 per day	4-5 per day	6+ per day
Potatoes, including boiled, mashed, baked potatoes, but excluding roast potatoes, chips or potato products (e.g. waffles)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				

4.3 Dietary intake and adherence to the Food Pyramid

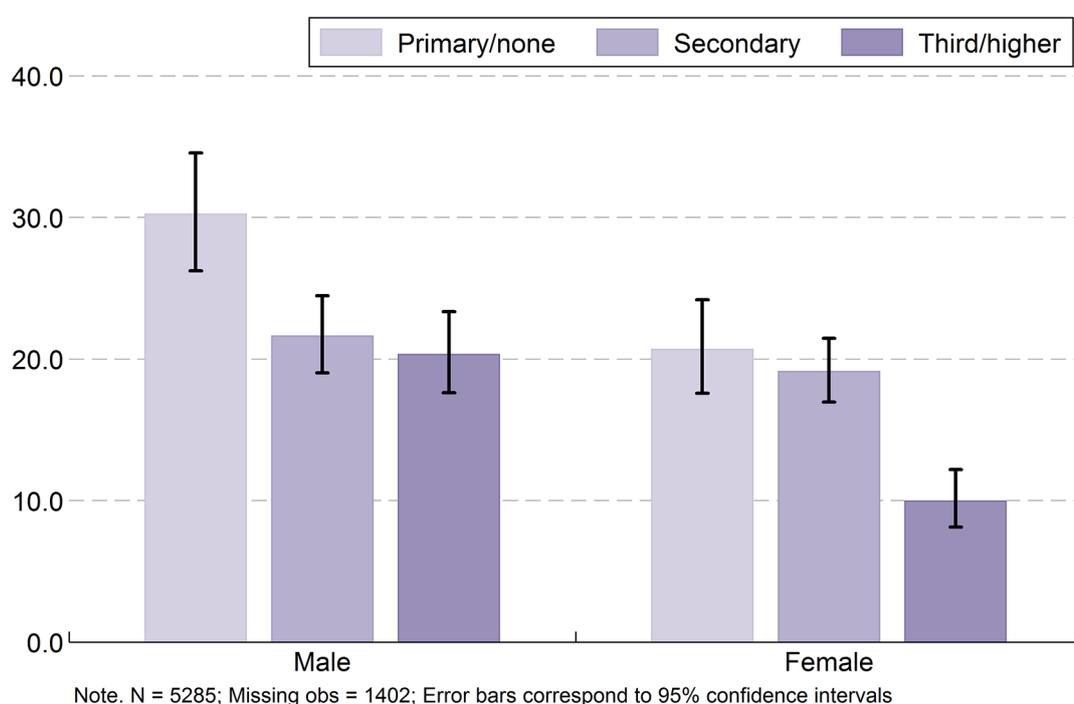
This section describes the mean daily consumption and compliance with the Food Pyramid recommendations for each food group in adults aged 54 years and over. A detailed breakdown of this information, stratified by age group, sex and educational attainment is also provided in the Appendices (Tables 4.A1 to 4.A6).

4.3.1 Bread, Cereals, Potatoes, Pasta and Rice

Table 4.A1 shows the mean daily intake of and compliance with recommendations for Bread, Cereals, Potatoes, Pasta and Rice in adults aged 54 years and over in Ireland. Overall, older adults consume 4 servings per day, with men consuming more than women (4.3 versus 3.8 servings), compared to the recommended 6 or more daily servings. Consumption of foods from this shelf increases with increasing age, with those aged 75 years and over consuming more than those aged 54 to 64 years (4.2 versus 3.9 servings). Mean daily consumption decreases from 4.2 servings in those with primary or no education to 3.8 servings in those with third level education.

One-fifth (21%) meet the recommended 6 or more daily servings of Bread, Cereals, Potatoes, Pasta and Rice. Compliance levels are lower in women (18%) than men (24%) and increase from 18% in the youngest age group to 25% in those aged 75 years and over. Just 15% of those with third level education comply with the recommendations, compared to 25% of those with primary or no education. Figure 4.3 shows that this association with educational attainment is evident in both men and women.

Figure 4.3: Proportion (%) of adults in Ireland aged 54 years and over meeting the recommended daily intake of 6 servings of Bread, Cereals, Potatoes, Pasta and Rice, by sex and educational attainment

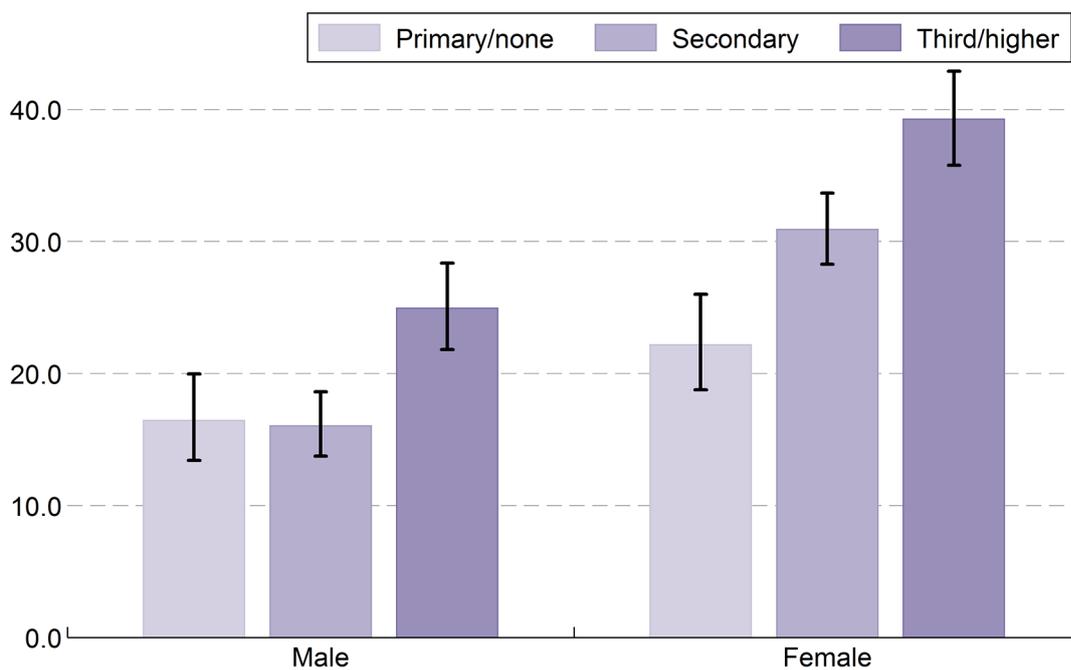


4.3.2 Fruit and Vegetables

Compared to the minimum recommendation of 5 or more daily servings, older adults in Ireland consume an average of 3.6 servings of Fruit and Vegetables per day, with men consuming less than women (3.2 versus 4.0 servings) (Table 4.A2). Adults aged 75 years and over consume fewer servings than the youngest age group (3.4 versus 3.8 servings), as do those with primary or no education compared to those with third level education (3.2 versus 4.2 servings).

Only one quarter (25%) of older adults meet the minimum guideline for foods from this shelf. Compliance is higher in women compared to men (30% versus 18%) and increases with increasing education. However, this association with education is much stronger in women where having third level education almost doubles compliance with the recommendation for Fruit and Vegetables intake (39% versus 22%) (Figure 4.4).

Figure 4.4: Proportion (%) of adults in Ireland aged 54 years and over meeting the recommended daily intake of 5 servings of Fruit and Vegetables, by sex and educational attainment



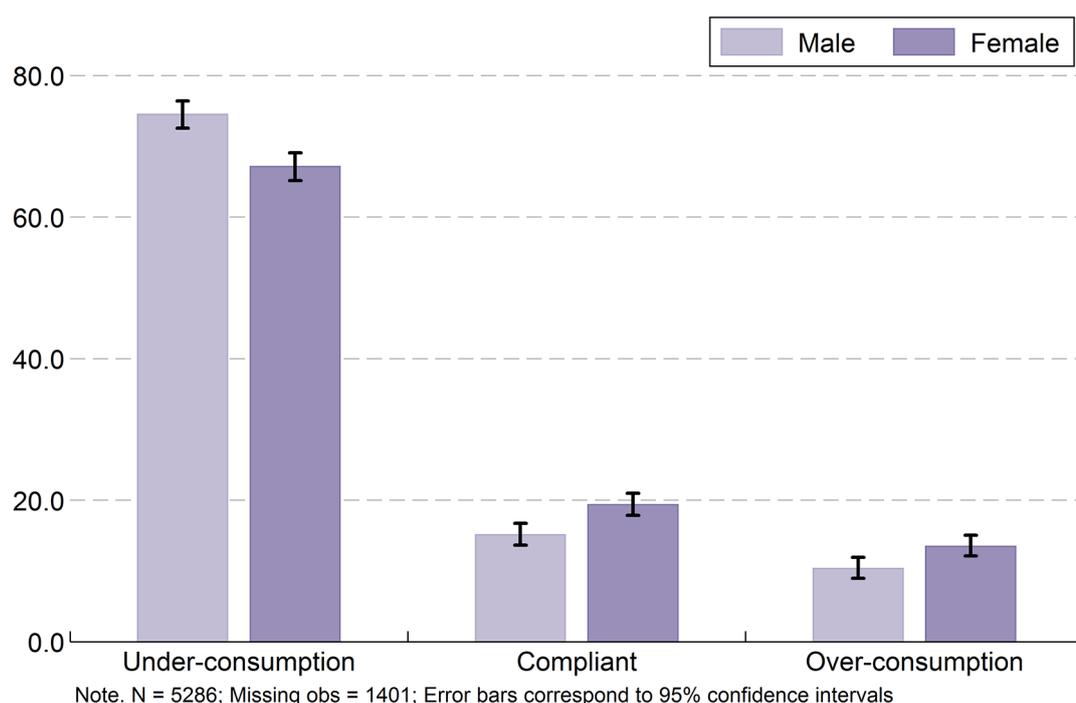
Note. N = 5285; Missing obs = 1402; Error bars correspond to 95% confidence intervals

4.3.3 Milk, Yoghurt and Cheese

Table 4.A3 shows that older adults in Ireland consume an average of 2.1 daily servings of food from this shelf compared to the recommended 3 servings. Women consume slightly more than men (2.2 versus 2.0 servings) however there is no difference with age or education.

Overall, just 17% of older adults in Ireland comply with the recommended 3 daily servings from the Milk, Yoghurt and Cheese shelf, with 70% consuming less than this and 12% exceeding this. Figure 4.5 shows that men are more likely to under-consume foods from this shelf while women are more likely to over-consume or comply with the recommendation.

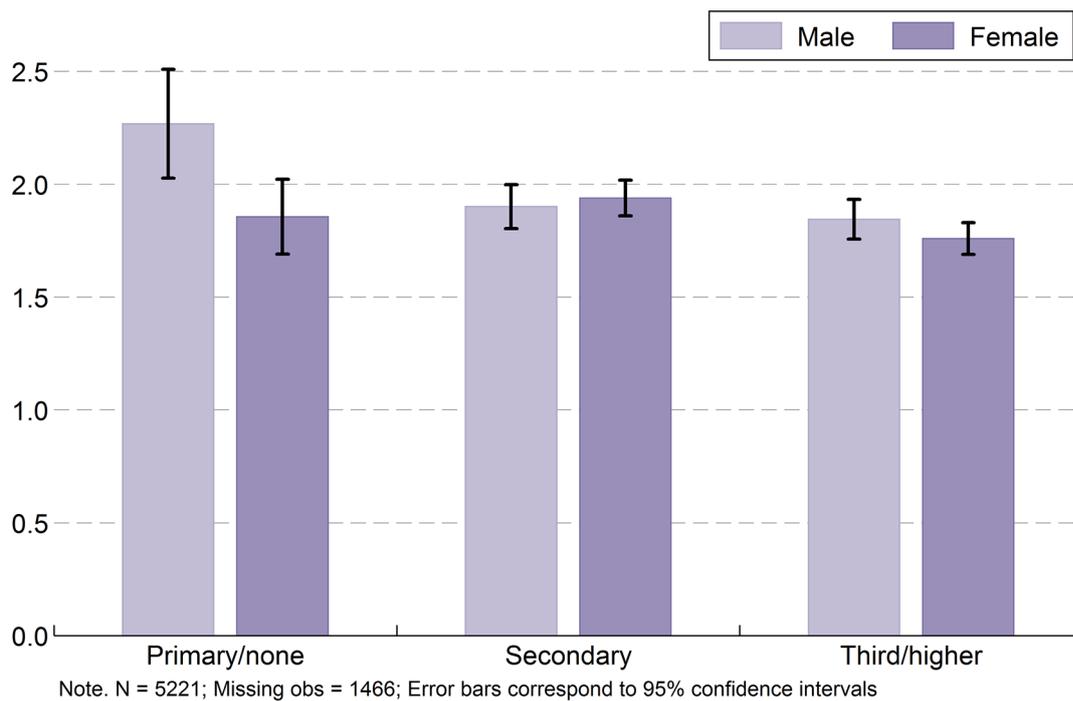
Figure 4.5: Proportion (%) of adults in Ireland aged 54 years and over who comply with, under- or over-consume the recommended 3 daily servings of Milk, Yoghurt and Cheese, by sex



4.3.4 Meat, Poultry, Fish, Eggs, Beans and Nuts

Older adults in Ireland consume an average of 1.9 servings per day compared to the recommended 2 servings (Table 4.A4). There are no overall age or sex effects, however men with primary or no education report the highest consumption of foods from this shelf (2.3 servings) (Figure 4.6).

Figure 4.6: Mean daily servings of Meat, Poultry, Fish, Eggs, Beans and Nuts consumed by adults in Ireland aged 54 years and over in Ireland, by sex and educational attainment



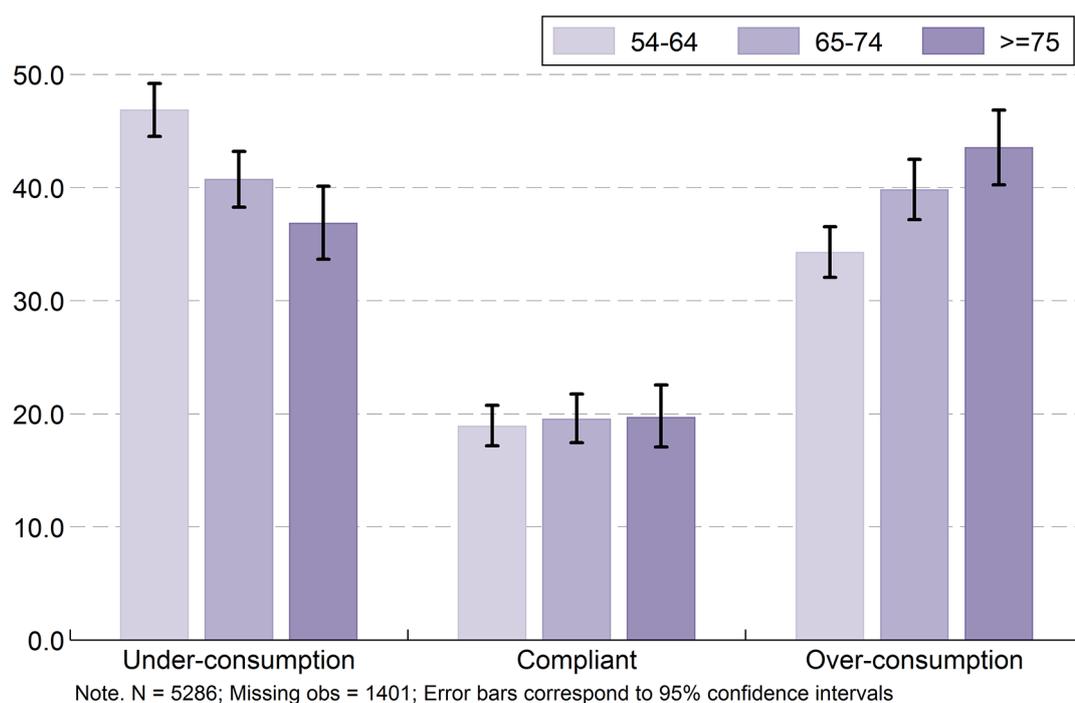
Forty-one percent of older adults consume the recommended 2 daily servings of Meat, Poultry, Fish, Eggs, Beans and Nuts foods. A further 41% consume less than this while 18% exceed this amount. Just one in three (36%) of those with primary or no education comply with the recommendation compared to 44% of those with third level education. Over-consumption is more common in 54 to 64 year old men with primary or no education (25%) compared to those with third level education (16%). Compliance levels do not differ by age group or sex.

4.3.5 Fats and Oils

On average, older adults in Ireland consume 2.4 servings of Fats and Oils per day (Table 4.A5). The average daily intake is lower in women than men (2.3 versus 2.5 servings) and consumption is lower in those aged 54-64 years (2.3 servings) compared to those aged 65 years and over (2.6 servings). Those with third level education consumed less than those with primary or no education (2.2 versus 2.6 servings).

Overall, 19% of older adults in Ireland consume the recommended 2 daily servings with 43% and 37% under- and over-consuming, respectively. Figure 4.7 shows that those aged 54-64 years are most likely to under-consume and least likely to over-consume the foods from this group. Compliance levels did not differ by sex or educational attainment.

Figure 4.7: Proportion (%) of adults in Ireland aged 54 years and over who comply with, under- or over-consume the recommended 2 daily servings of Fats and Oils, by age group

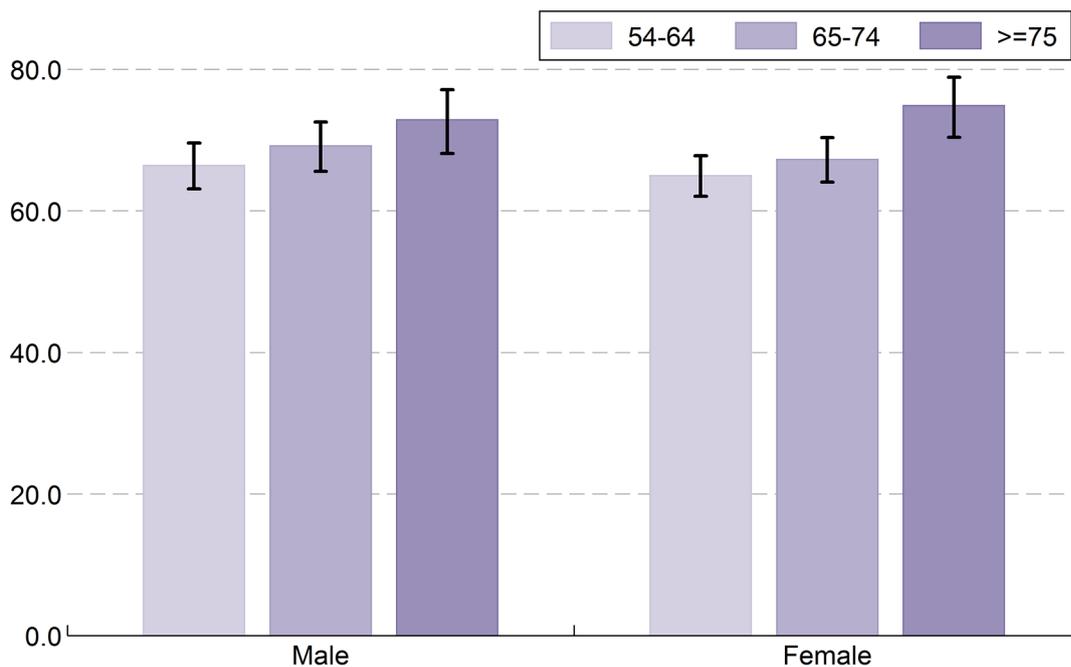


4.3.6 Foods and Drinks high in Fat, Sugar and Salt

The Food Pyramid recommendation is for a maximum of 1 daily serving of Foods or Drinks high in Fat, Salt and Sugar. Older adults in Ireland consume an average of 2.9 servings per day, with both men and women in all age groups exceeding the recommended amount (Table 4.A6). While consumption of foods from this shelf does not differ by education in women, men with primary education or less report higher consumption levels than men with third level education (3.2 versus 2.7 servings).

Two thirds (68%) of the older adult population consume at least 1 serving per day of foods from this shelf. Levels of compliance are similar in men and women and across educational levels; however there is an age gradient in women with 65% of those in the youngest age group consuming at least 1 serving per day compared to 75% of those in the oldest age group (Figure 4.7).

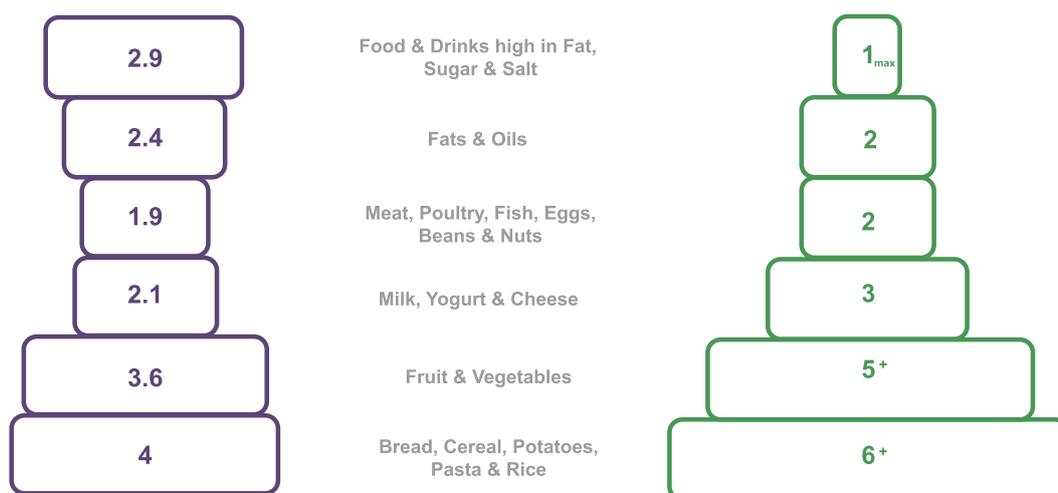
Figure 4.8: Proportion (%) of adults in Ireland aged 54 and over who consume at least one daily serving of Foods and Drinks high in Fat, Sugar and Salt, by age group and sex



4.3.7 Mean daily consumption of food from the shelves of the Food Pyramid

Figure 4.9 combines the mean daily consumption of foods from each shelf of the Food Pyramid for older adults. This is presented as a stacked pyramid to allow direct visual comparison with the recommended daily intake from the 2012 Food Pyramid (3).

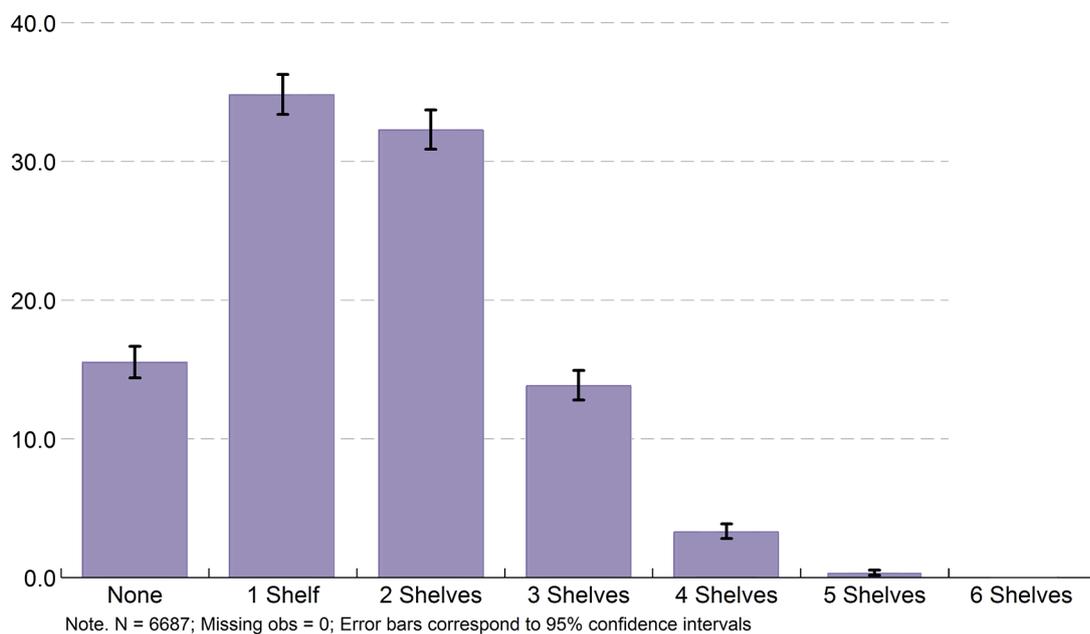
Figure 4.9: Overall mean daily consumption of foods from each group compared to the recommended daily intake based on the 2012 Food Pyramid recommendations



4.4 Overall compliance with the Food Pyramid

One in seven older adults (15%) in Ireland do not adhere to the recommendations for any of the shelves of the Food Pyramid. Two-thirds adhere to the recommendations for one or two shelves, while less than 1% meet the recommendations for either five or six shelves (Figure 4.10). A detailed breakdown of compliance with multiple shelves of the Food Pyramid indicates that there is little variation when stratified by age, sex and education (Table 4.A7).

Figure 4.10: Proportion (%) of adults in Ireland aged 54 years and over meeting the recommended daily intake of food from the shelves of the Food Pyramid



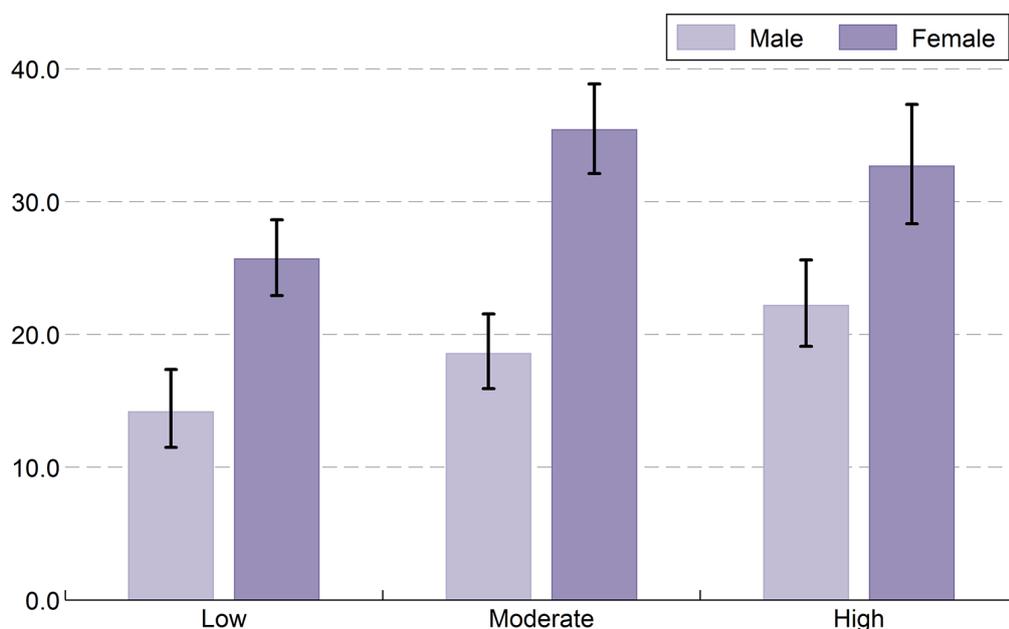
4.5 Associations with physical activity levels and body mass index

4.5.1 Physical activity levels

Physical activity level is assessed in TILDA using the short-form International Physical Activity Questionnaire (IPAQ), a standardised measure which estimates habitual physical activity (16). During this 8-items questionnaire, participants were asked to indicate the number of days and hours spent sitting, walking and performing exercise of moderate and vigorous intensity. Participants were then classified as having low, moderate or high levels of physical activity, based on established criteria. In this analysis, two thirds of older adults in Ireland report moderate (35%) or high (28%) levels of physical activity, while 38% report low levels of physical activity.

Older adults with moderate to high physical activity levels are more likely to consume the recommended 5 or more daily servings of foods from the Fruit and Vegetables shelf compared to those with low activity, with no differences observed for other food groups. Figure 4.11 shows that this pattern is evident in men and women, however women are more likely to meet the recommendation than men are at all levels of activity.

Figure 4.11: Proportion (%) of adults in Ireland aged 54 years and over meeting the recommended daily intake of 5 or more servings of Fruit and Vegetables, by physical activity level and sex

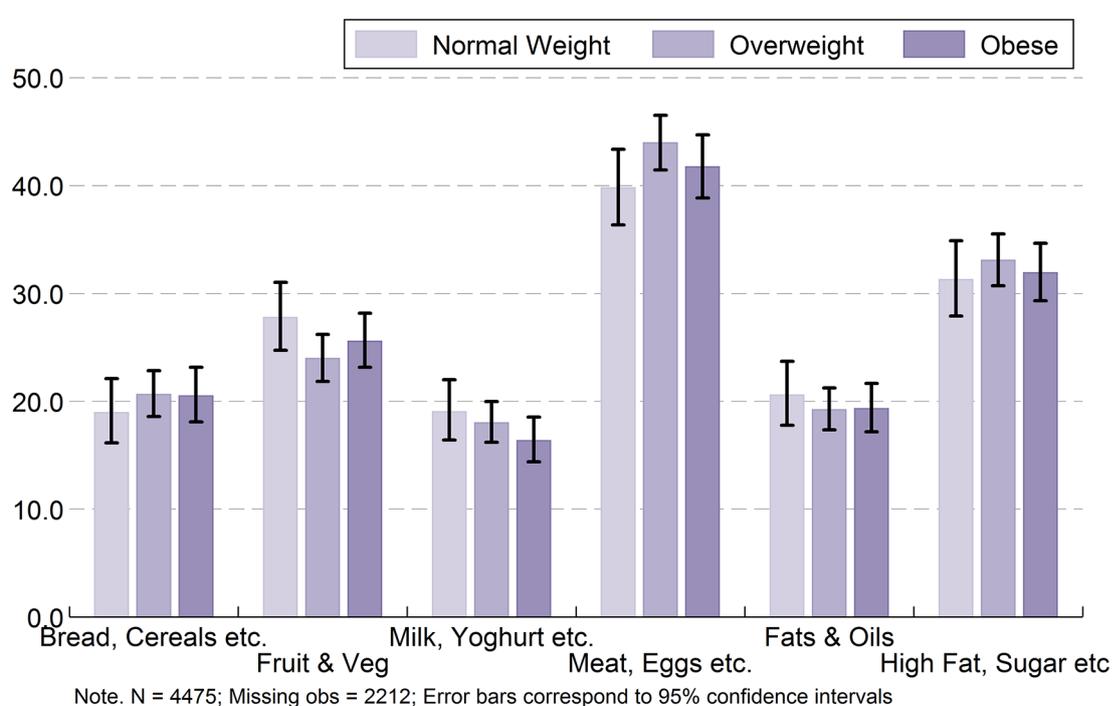


4.5.2 Body mass index

Of the TILDA participants who completed a FFQ, 85% attended a health assessment where their height and weight was measured and body mass index (BMI) was calculated. Twenty-one percent of older adults are categorised as normal (BMI of 18.5–24.9), almost half (45%) are overweight (BMI of 25.0–29.9) and one third (34%) are obese (BMI of 30+).

Figure 4.12 illustrates the proportion of older adults who comply with the recommended daily intake of foods from each shelf of the Food Pyramid, by BMI category. There is no evidence of an association between compliance with healthy eating guidelines and BMI.

Figure 4.12: Proportion (%) of adults in Ireland aged 54 years and over meeting the recommended daily intake of each food group, by BMI category

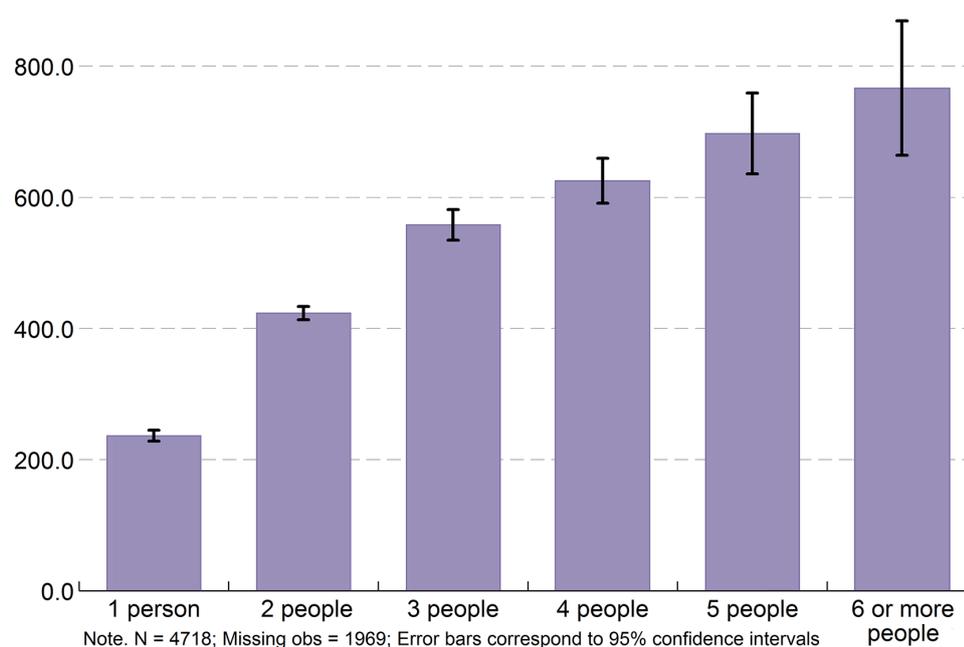


4.6 Expenditure on food

During Wave 3, income expenditure on food was captured by asking participants two questions - 'How much did you and your household spend on food that you use at home in the past month?' and 'How much did you and your household spend eating out in the past month?'.

For food consumed in the home, the average monthly spend per household is €448.20 and this increases with an increasing number of people in the household. Proportionally, those living alone spend more on food than those living with one or more people, per capita (Figure 4.13).

Figure 4.13: Mean monthly expenditure (€) on food consumed in the home, by household size



4.7 Monthly spend on food and compliance with the Food Pyramid

The total household spend on food (for food consumed both in and out of the home) was divided into quintiles for analysis. Compared to those in the highest (5th) quintile, households in the lowest (1st) quintile for total spend on food were less likely to be compliant with the Food Pyramid recommendations for Fruit and Vegetables (21% versus 31%), Meat, Poultry, Fish, Eggs, Beans and Nuts (35% versus 46%) and for the Fats and Oils Shelf (17% versus 23%) (Table 4.1).

Table 4.1: Compliance with recommendations for selected shelves of the Food Pyramid, by quintiles of household food spend

Quintile of Food Spend	Fruit & Vegetables		Meat, Eggs, etc.		Fat and Oils		
	Compliant % (95% CI)	Under-consumption % (95% CI)	Compliant % (95% CI)	Over-consumption % (95% CI)	Under-consumption % (95% CI)	Over-consumption % (95% CI)	
First	21 (18-24)	46 (43-50)	35 (32-38)	19 (16-22)	45 (42-49)	17 (15-20)	37 (34-41)
Second	24 (21-27)	43 (40-46)	38 (35-42)	19 (16-21)	44 (41-47)	17 (14-19)	39 (36-43)
Third	25 (22-29)	40 (36-44)	43 (39-46)	18 (15-21)	46 (42-50)	20 (17-24)	34 (30-37)
Fourth	26 (23-29)	38 (34-42)	46 (42-50)	16 (13-19)	42 (38-45)	20 (17-23)	39 (35-42)
Fifth	31 (28-35)	37 (33-41)	46 (42-50)	17 (14-21)	40 (37-44)	23 (20-26)	37 (33-40)
Total	25 (24-27)	41 (39-43)	41 (40-43)	18 (17-19)	43 (42-45)	19 (18-21)	37 (36-39)

4.8 Discussion

The majority of older adults in Ireland do not meet the 2012 Department of Health Food Pyramid recommendations. A lack of compliance with recommended daily intakes is evident across all six shelves of the Food Pyramid, with one in seven older adults in Ireland not adhering to the recommendations for any of the shelves. Of particular concern is the failure of a large majority of those aged 54 years and over to meet the recommendations for Fruit and Vegetable intake (76%), while 68% over-consume items from the Foods and Drinks high in Fat, Salt and Sugar shelf.

Sex differences in consumption and adherence to guidelines are evident whereby a lower proportion of women than men comply with the guidelines for daily intake of Breads, Cereals, Potatoes, Pasta and Rice, whilst a higher proportion of women comply with the daily Fruit and Vegetables recommendation. Men are also more likely than women to report under-consumption of foods from the Milk, Yoghurt and Cheese shelf. Differences in consumption and compliance patterns by socio-economic status are also evident. For example, those with third level education are less likely to comply with recommendations for Breads, Cereals, Potatoes, Pasta and Rice, but more likely to meet recommendations for both the Fruit and Vegetables and Meat, Poultry, Fish, Eggs, Beans and Nuts shelves, compared to those with primary or no education. Those who report a higher household-level food spend are also more likely to comply with Food Pyramid recommendations in relation to intake of Fruit and Vegetables, Meat, Poultry, Fish, Eggs, Beans and Nuts and Fats and Oils.

Our data suggest that older adults in Ireland tend to under-consume foods that typically provide the main bulk of the modern diet, i.e. foods from the Breads, Cereals, Potatoes, Pasta and Rice and Fruit and Vegetables shelves, while over-consuming items from the Fats and Oils and Food and Drinks high in Fat, Salt and Sugar shelves. Assuming that these findings are representative of habitual food intake over a prolonged period of time, it is likely that a gradual over-consumption of energy dense and highly palatable foods has led to a positive energy balance in this population, as evidenced by high levels of overweight and obesity (17). Under-nutrition, as well as over-nutrition can have an impact on health conditions that are common in older adults. For example, adequate intake of calcium and vitamin D is necessary to prevent osteoporosis and bone fractures (18). Previous research from TILDA indicates that 16% of women and 2% of men report a doctors' diagnosis of osteoporosis (19). It is therefore a concern that 70% of older adults consume less than the recommended daily intake of foods from the Milk, Yoghurt and Cheese shelf as these are major sources of calcium, vitamin D, B-vitamins and protein.

While the changing nutritional needs of older adults are considered somewhat in the updated Food Pyramid (4), there is an urgent need for a contemporary national nutrition policy that recognises older persons as a unique group who are at high risk of lifestyle-related illness. Such a policy should include specific strategies to minimise the risk of both over- and under-nutrition and promote measures that ensure appropriate food availability and affordability as people age.

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Appendix 4A: Consumption Patterns and Adherence to the Food Pyramid

Table 4.A.1: Mean daily intake and percentage compliance with the Food Pyramid recommendations for Breads, Cereals, Potatoes, Pasta and Rice, by age group, sex and educational attainment

	Men		Women		Total	
	No. of servings (95% CI)	Percentage compliance % (95% CI)	No. of servings (95% CI)	Percentage compliance % (95% CI)	No. of servings (95% CI)	Percentage compliance % (95% CI)
Age Group						
54-64	4.2 (4.0-4.4)	21.4 (18.8-24.2)	3.6 (3.5-3.8)	15.0 (13.0-17.3)	3.9 (3.7-4.0)	17.8 (16.2-19.6)
65-74	4.3 (4.1-4.5)	24.9 (21.9-28.0)	4.0 (3.8-4.2)	21.5 (18.9-24.3)	4.1 (4.0-4.3)	23.1 (21.0-25.3)
75+	4.6 (4.3-5.0)	31.2 (26.8-35.9)	3.8 (3.6-4.1)	19.5 (16.0-23.7)	4.2 (4.0-4.4)	24.6 (21.7-27.7)
Education						
Primary/none	4.6 (4.3-4.9)	30.2 (26.2-34.6)	3.9 (3.6-4.1)	20.7 (17.6-24.2)	4.2 (4.0-4.4)	25.4 (22.7-28.3)
Secondary	4.1 (3.9-4.3)	21.6 (19.0-24.5)	3.9 (3.7-4.0)	19.1 (17.0-21.5)	4.0 (3.9-4.1)	20.1 (18.4-22.0)
Third/higher	4.1 (4.0-4.3)	20.3 (17.6-23.4)	3.5 (3.3-3.6)	10.0 (8.1-12.2)	3.8 (3.6-3.9)	14.8 (13.2-16.7)
Total	4.3 (4.1-4.4)	24.2 (22.3-26.1)	3.8 (3.7-3.9)	17.5 (16.0-19.0)	4.0 (3.9-4.1)	20.5 (19.3-21.8)

Note. CI = confidence interval

Table 4.A.2: Mean daily intake and percentage compliance with the Food Pyramid recommendations for Fruit and Vegetables, by age group, sex and educational attainment

	Men		Women		Total	
	No. of servings (95% CI)	Percentage compliance % (95% CI)	No. of servings (95% CI)	Percentage compliance % (95% CI)	No. of servings (95% CI)	Percentage compliance % (95% CI)
Age Group						
54-64	3.2 (3.0-3.3)	18.6 (16.3-21.2)	4.2 (4.0-4.4)	32.2 (29.4-35.1)	3.8 (3.6-3.9)	26.2 (24.2-28.2)
65-74	3.3 (3.1-3.5)	18.6 (16.0-21.4)	3.9 (3.7-4.2)	30.1 (27.0-33.3)	3.6 (3.5-3.8)	24.4 (22.3-26.7)
75+	3.1 (2.8-3.4)	17.4 (13.7-21.8)	3.6 (3.3-3.9)	25.7 (22.0-29.9)	3.4 (3.2-3.6)	22.1 (19.4-25.2)
Education						
Primary/none	3.0 (2.8-3.2)	16.4 (13.4-20.0)	3.5 (3.2-3.8)	22.2 (18.8-26.0)	3.2 (3.0-3.4)	19.3 (16.8-22.1)
Secondary	3.0 (2.9-3.2)	16.0 (13.7-18.6)	4.1 (3.9-4.3)	30.9 (28.3-33.7)	3.6 (3.5-3.8)	24.7 (22.9-26.7)
Third/higher	3.7 (3.5-3.9)	24.9 (21.8-28.4)	4.6 (4.4-4.8)	39.3 (35.7-42.9)	4.2 (4.0-4.3)	32.5 (30.0-35.2)
Total	3.2 (3.1-3.3)	18.4 (16.7-20.1)	4.0 (3.9-4.2)	30.4 (28.4-32.4)	3.6 (3.5-3.7)	24.9 (23.6-26.4)

Note. CI = confidence interval

Table 4.A3: Mean daily intake and percentage compliance with the Food Pyramid recommendations for Milk, Yoghurt and Cheese, by age group, sex and educational attainment

Age Group	Men			Women			Total						
	No. of servings Mean (95% CI)	Under-consumption % (95% CI)	Percentage compliance % (95% CI)	Over-consumption % (95% CI)	No. of servings Mean (95% CI)	Under-consumption % (95% CI)	Percentage compliance % (95% CI)	Over-consumption % (95% CI)	No. of servings Mean (95% CI)	Under-consumption % (95% CI)	Percentage compliance % (95% CI)	Over-consumption % (95% CI)	
Age Group	54-64	2.1 (2.0-2.2)	73 (70-76)	16 (13-18)	11 (9-14)	2.2 (2.1-2.3)	68 (65-71)	19 (16-21)	13 (11-15)	2.1 (2.1-2.2)	70 (68-72)	17 (16-19)	12 (11-14)
	65-74	1.9 (1.8-2.0)	76 (73-79)	15 (13-18)	9 (7-11)	2.2 (2.1-2.3)	67 (64-71)	19 (17-22)	13 (11-16)	2.1 (2.0-2.1)	72 (69-74)	17 (15-19)	11 (10-13)
	75+	1.9 (1.8-2.0)	76 (72-80)	14 (11-18)	10 (7-13)	2.2 (2.1-2.4)	64 (59-68)	21 (17-25)	15 (12-19)	2.1 (2.0-2.2)	69 (66-72)	18 (16-21)	13 (11-15)
Education	Primary/ none	2.1 (1.9-2.2)	74 (69-77)	14 (12-18)	12 (9-15)	2.2 (2.0-2.3)	67 (63-71)	19 (16-23)	14 (11-18)	2.1 (2.0-2.2)	70 (67-73)	17 (15-19)	13 (11-16)
	Secondary	1.9 (1.8-2.0)	76 (73-79)	14 (12-17)	9 (7-11)	2.2 (2.1-2.3)	68 (65-70)	18 (16-20)	14 (12-16)	2.1 (2.0-2.2)	71 (69-73)	17 (15-18)	12 (11-14)
	Third/higher	2.0 (2.0-2.1)	73 (69-76)	17 (15-20)	10 (8-13)	2.2 (2.1-2.2)	66 (63-70)	22 (19-25)	11 (9-14)	2.1 (2.0-2.2)	69 (67-72)	20 (18-22)	11 (9-13)
	Total	2.0 (2.0-2.1)	75 (73-76)	15 (14-17)	10 (9-12)	2.2 (2.1-2.2)	67 (65-69)	19 (18-21)	14 (12-15)	2.1 (2.0-2.2)	70 (69-72)	17 (16-19)	12 (11-13)

Note. CI = confidence interval

Table 4.A4: Mean daily intake and percentage compliance with the Food Pyramid recommendations for Meat, Poultry, Fish, Eggs, Beans and Nuts by age group, sex and educational attainment

	Men			Women			Total		
	No. of servings Mean (95% CI)	Under-consumption % (95% CI)	Over-consumption % (95% CI)	No. of servings Mean (95% CI)	Under-consumption % (95% CI)	Over-consumption % (95% CI)	No. of servings Mean (95% CI)	Under-consumption % (95% CI)	Over-consumption % (95% CI)
Age Group									
54-64	2.1 (1.9-2.2)	38 (35-41)	20 (18-23)	1.9 (1.8-1.9)	41 (38-44)	15 (13-18)	2.0 (1.9-2.0)	40 (37-42)	18 (16-19)
65-74	1.9 (1.8-2.0)	41 (37-45)	16 (14-19)	1.8 (1.7-1.9)	46 (42-49)	15 (13-18)	1.9 (1.8-1.9)	43 (41-46)	16 (14-18)
75+	2.1 (1.8-2.3)	37 (32-42)	24 (20-28)	2.0 (1.8-2.2)	43 (39-47)	20 (16-24)	2.0 (1.8-2.2)	40 (37-44)	22 (19-25)
Education									
Primary/none	2.3 (2.0-2.5)	37 (33-41)	25 (21-29)	1.9 (1.7-2.0)	49 (44-53)	17 (14-21)	2.1 (1.9-2.2)	43 (40-46)	21 (18-24)
Secondary	1.9 (1.8-2.0)	39 (36-42)	18 (16-21)	1.9 (1.9-2.0)	39 (36-42)	17 (15-20)	1.9 (1.9-2.0)	39 (37-41)	18 (16-20)
Third/higher	1.8 (1.8-1.9)	41 (37-44)	16 (13-19)	1.8 (1.7-1.8)	42 (38-46)	13 (10-16)	1.8 (1.7-1.9)	41 (39-44)	14 (13-16)
Total	2.0 (1.9-2.1)	39 (36-41)	20 (18-22)	1.9 (1.8-1.9)	43 (40-45)	16 (15-18)	1.9 (1.9-2.0)	41 (39-42)	18 (17-19)

Note. CI = confidence interval

Table 4.A5: Mean daily intake and percentage compliance with the Food Pyramid recommendations for Fats and Oils, by age group, sex and educational attainment

	Men			Women			Total					
	No. of servings Mean (95% CI)	Under-consumption % (95% CI)	Percentage compliance % (95% CI)	Over-consumption % (95% CI)	No. of servings Mean (95% CI)	Under-consumption % (95% CI)	Percentage compliance % (95% CI)	Over-consumption % (95% CI)	No. of servings Mean (95% CI)	Under-consumption % (95% CI)	Percentage compliance % (95% CI)	Over-consumption % (95% CI)
Age Group												
54-64	2.3 (2.2-2.5)	44 (40-47)	20 (18-23)	36 (33-39)	2.2 (2.1-2.3)	49 (46-52)	18 (16-20)	33 (30-36)	2.3 (2.1-2.4)	47 (45-49)	19 (17-21)	34 (32-37)
65-74	2.5 (2.3-2.7)	41 (37-44)	20 (17-23)	40 (36-43)	2.6 (2.4-2.8)	41 (37-44)	19 (17-22)	40 (37-43)	2.6 (2.4-2.7)	41 (38-43)	20 (17-22)	40 (37-42)
75+	2.8 (2.5-3.0)	36 (32-41)	19 (15-23)	45 (40-50)	2.5 (2.3-2.7)	37 (33-42)	20 (17-24)	43 (38-47)	2.6 (2.5-2.8)	37 (34-40)	20 (17-23)	43 (40-47)
Education												
Primary/ none	2.7 (2.5-3.0)	39 (34-43)	21 (17-25)	40 (36-45)	2.5 (2.3-2.7)	44 (39-48)	16 (13-19)	40 (36-45)	2.6 (2.4-2.8)	41 (38-44)	18 (16-21)	40 (37-43)
Secondary	2.3 (2.2-2.4)	44 (40-47)	19 (17-22)	37 (34-41)	2.4 (2.2-2.5)	44 (41-47)	19 (17-22)	36 (34-39)	2.3 (2.2-2.4)	44 (42-46)	19 (18-21)	37 (35-39)
Third/higher	2.4 (2.2-2.5)	42 (38-46)	20 (17-24)	38 (34-42)	2.1 (2.0-2.2)	47 (44-51)	20 (17-23)	33 (29-36)	2.2 (2.1-2.3)	45 (42-48)	20 (18-22)	35 (32-38)
Total	2.5 (2.4-2.6)	42 (39-44)	20 (18-22)	38 (36-41)	2.3 (2.3-2.4)	45 (43-47)	19 (17-20)	37 (35-39)	2.4 (2.3-2.5)	43 (42-45)	19 (18-20)	37 (36-39)

Note. CI = confidence interval

Table 4.A6: Mean daily intake and percentage non-compliance with the Food Pyramid recommendations for Foods and Drinks high in Fat, Salt and Sugar, by age group, sex and educational attainment

	Men		Women		Total	
	No. of servings (95% CI)	Non-compliance % (95% CI)	No. of servings (95% CI)	Non-compliance % (95% CI)	No. of servings (95% CI)	Non-compliance % (95% CI)
Age Group						
54-64	3.0 (2.7-3.2)	66.4 (63.1-69.6)	2.7 (2.5-2.9)	65.0 (62.1-67.8)	2.8 (2.7-3.0)	65.6 (63.4-67.8)
65-74	2.7 (2.5-2.9)	69.2 (65.6-72.6)	2.9 (2.6-3.1)	67.3 (64.1-70.3)	2.8 (2.6-2.9)	68.2 (65.7-70.6)
75+	3.2 (2.9-3.5)	72.9 (68.1-77.1)	3.1 (2.8-3.3)	74.9 (70.4-78.9)	3.1 (2.9-3.4)	74.0 (70.7-77.0)
Education						
Primary/none	3.2 (2.9-3.5)	67.2 (63.0-71.2)	2.9 (2.6-3.2)	66.5 (62.2-70.5)	3.0 (2.8-3.3)	66.9 (63.9-69.7)
Secondary	2.9 (2.7-3.2)	68.9 (65.5-72.0)	2.9 (2.7-3.0)	67.9 (64.9-70.8)	2.9 (2.8-3.0)	68.3 (66.0-70.5)
Third/higher	2.7 (2.5-2.9)	69.1 (65.4-72.5)	2.6 (2.4-2.7)	67.9 (64.4-71.3)	2.6 (2.5-2.8)	68.5 (65.8-71.0)
Total	2.9 (2.8-3.1)	68.4 (66.2-70.4)	2.8 (2.7-2.9)	67.5 (65.5-69.5)	2.9 (2.8-3.0)	67.9 (66.4-69.4)

Note. CI = confidence interval

Table 4.A7: Percentage compliance with shelves of the Food Pyramid in adults aged 54 years and over, by age group, sex and educational attainment

	None % (95% CI)	1 shelf % (95% CI)	2 shelves % (95% CI)	3 shelves % (95% CI)	4 shelves % (95% CI)	5 shelves % (95% CI)	Total	Number in sample
Male								
Age Group								
54-64	15 (13-18)	36 (33-40)	33 (30-37)	12 (10-14)	3 (2-4)	0 (0-1)	100	1061
65-74	18 (15-21)	34 (30-37)	32 (29-36)	13 (11-16)	3 (2-5)	0 (0-1)	100	794
75+	18 (14-22)	36 (31-41)	32 (27-36)	12 (9-16)	2 (1-4)	1 (0-3)	100	476
Education								
Primary/none	16 (14-20)	34 (30-38)	34 (30-39)	11 (9-15)	3 (2-5)	1 (0-2)	100	564
Secondary	18 (15-20)	36 (33-40)	32 (29-36)	11 (9-13)	3 (2-4)	0 (0-1)	100	947
Third/higher	14 (12-17)	37 (33-40)	31 (27-35)	15 (12-18)	3 (2-5)	0 (0-1)	100	820
Total	16 (15-18)	36 (33-38)	33 (31-35)	12 (11-14)	3 (2-4)	0 (0-1)	100	2331
Female								
Age Group								
54-64 years	14 (12-16)	35 (32-38)	31 (29-34)	15 (13-18)	4 (3-5)	0 (0-1)	100	1464
65-74 years	14 (11-16)	34 (31-38)	32 (29-35)	17 (14-20)	3 (2-5)	0 (0-0)	100	960
75+ years	19 (16-23)	31 (27-36)	34 (30-38)	13 (10-16)	3 (2-4)	0 (-.-)	100	531

Table 4.A7 continued

	None		1 shelf		2 shelves		3 shelves		4 shelves		5 shelves		Total	Number in sample
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)		
Education														
Primary/none	18	(15-22)	36	(32-40)	32	(28-36)	12	(10-15)	2	(1-4)	0	(0-2)	100	575
Secondary	14	(12-16)	34	(32-37)	31	(29-34)	16	(14-18)	4	(3-6)	0	(0-1)	100	1223
Third/higher	13	(10-15)	32	(28-35)	34	(30-38)	17	(15-20)	4	(3-5)	0	(0-1)	100	1156
Total	15	(13-16)	34	(32-36)	32	(30-34)	15	(14-17)	4	(3-4)	0	(0-1)	100	2955
Age Group														
54-64	14	(13-16)	36	(34-38)	32	(30-34)	14	(12-15)	4	(3-4)	0	(0-1)	100	2525
65-74	16	(14-18)	34	(32-37)	32	(30-34)	15	(13-17)	3	(3-4)	0	(0-0)	100	1754
75+	18	(16-21)	33	(30-36)	33	(30-36)	13	(11-15)	2	(2-4)	0	(0-1)	100	1007
Education														
Primary/none	17	(15-20)	35	(32-38)	33	(30-36)	12	(10-14)	3	(2-4)	0	(0-1)	100	1139
Secondary	15	(14-17)	35	(33-37)	32	(30-34)	14	(12-16)	4	(3-4)	0	(0-1)	100	2170
Third/higher	13	(12-15)	34	(31-37)	32	(30-35)	16	(14-18)	4	(3-5)	0	(0-0)	100	1976
Total	15	(14-17)	35	(33-36)	32	(31-34)	14	(13-15)	3	(3-4)	0	(0-1)	100	5286

Note. CI = confidence interval