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# Dietary guidance from GPs – what do patients report?

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## ORIGINAL ARTICLE

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## **Background**

Diet can have a major impact on health. In this study, we surveyed the extent to which the subject of diet was raised by patients in general practice and which patients desired such discussions.

## **Material and method**

We conducted a questionnaire-based cross-sectional study of patients  $\geq 18$  years of age at GP practices in Western Norway in 2022. The questionnaire consisted of nine questions about dietary knowledge, the desire to receive dietary guidance and lose weight, and medication use. Logistic regression was used to identify groups more likely to report a desire to receive guidance on how diet affects health.

## **Results**

A total of 2105 of the 2531 (83 %) invited patients  $\geq 18$  years of age completed the questionnaire, and 2075 of these were included in the analysis. One in three had raised the subject of diet with their GP. A total of 96 % reported having the knowledge they needed about diet, 56 % wanted advice or guidance on how diet affects health, 62 % wanted to lose weight and 40 % reported being confused by diet/dietary advice. Younger patients, men, patients with lower levels of education, patients who wanted to lose weight and patients taking medication for chronic conditions more frequently wanted advice/guidance on how diet affects health.

## **Interpretation**

Over half of the patients in the GP practices wanted advice/guidance on how diet affects health. Knowing who is more likely to want guidance can be useful for prioritising which consultations are appropriate for providing guidance on diet and health impacts.

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## **Main findings**

One-third of patients in the study had raised the subject of diet with their general practitioner (GP), while half wanted advice and guidance on the association between diet and health.

The wish for dietary guidance was strongest among younger patients, men, patients with lower levels of education, patients who wanted to lose weight and patients taking medication for chronic conditions.

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Diet is an important factor for health (1–5), and conditions resulting from diet-related risk factors are estimated to cause approximately 11 million deaths and 255 million years of life lost globally (6). Obesity is a growing public health problem, and the World Health Organization estimated that the prevalence of obesity tripled in the period 1975–2016 (7). Meta-analyses consistently show how diet is strongly associated with the risk of obesity, type 2 diabetes, cardiovascular disease and a range of other conditions (1, 3, 5, 8). Assistance with lifestyle changes should be the primary approach for certain high-prevalence risk conditions (9). The effect of lifestyle interventions, such as dietary changes, on type 2 diabetes can often be significant, and in some cases surpass what can be expected from medication alone (10, 11).

One of the goals of Norway's Coordination Reform in the healthcare sector was for GPs to play a more active role in the prevention of lifestyle diseases (12). A qualitative study showed that patients with weight problems wanted their GP to raise the subject of weight and initiate a discussion about this even in consultations for other issues (13). Evidence shows that GPs are often hesitant to address weight out of fear of offending patients (14), and this tendency appears to become more pronounced as the severity of the weight problem increases (15).

Few studies address the extent to which diet is discussed with GPs in Norway and which patients have a desire for this. The aim of the study was to survey which patient groups had raised the subject of diet with their GP, who wanted guidance on how diet affects health, and whether there is correspondence between these patient groups.

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## Material and method

The cross-sectional survey is based on an anonymous survey conducted at 69 GP practices in Western Norway in 2022. The data were collected by 6th year medical students at the University of Bergen during their clinical placement in general practice (16). Each student distributed patient information and a questionnaire in the waiting room of a GP practice to 20 consecutive patients over the age of 18. The questionnaire was in Norwegian, but an English translation was also available. The patients completed the questionnaire themselves and returned it to the student in the envelope provided without any identifying markers.

Nine questions about dietary knowledge and the desire to receive dietary guidance and lose weight (questions 11–18) as well as questions about medication use (question 19) were included in the study. For the complete questionnaire, see Appendix 1 (in Norwegian) (questions 1–10 about food and finances were not part of the study). We also included sociodemographic

variables, such as age, gender, whether the patient had children of their own, whether there were children living in the household, country of birth and highest level of completed education.

Before analysis, several of the variables were dichotomised. For questions regarding how often the patient had raised the subject of diet and how often they wanted this to be discussed, the response alternatives 'sometimes' and 'often' were conflated into 'yes', and 'never' was registered as 'no' (questions 11–12). Those who answered 'not relevant' were excluded from the calculations. The response alternatives 'to some extent' and 'to a large extent' were conflated into 'yes', while 'to a small extent' was registered as 'no' (questions 13–18). For medication use (question 19), the response was registered as 'no' for missing answers, while those who answered 'don't know' were excluded from the analysis. Medication use for chronic conditions was classified as 'yes' if the participant used medications in at least one of the following categories: cholesterol-lowering, blood pressure-lowering, other medications for heart disease, or medications for diabetes/blood glucose/obesity. If the question about children in the household was unanswered, the response was registered as 'no' if they also answered 'no' to the question on having children of their own. Responses with missing answers to the relevant variable were excluded from percentage calculations in descriptive analyses. In the regression analyses, only those who had responded to all the relevant variables for the analysis were included.

We used logistic regression to examine the likelihood of a patient wanting advice/guidance on the impact of diet on health (question 16) and whether the patient had raised the subject of diet (question 11). Unadjusted and adjusted results were presented as odds ratios with 95 % confidence intervals. Explanatory variables included sociodemographic variables, desire to lose weight and medication use for chronic conditions. Stata SE 17.0 was used to analyse the data.

The Regional Committee for Medical Research Ethics Western Norway determined that the project did not require to be submitted for approval (application number 386617). The data collection was considered to be anonymous, and the patients were not compensated for participation or asked about their reason for contact with their GP.

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## Results

A total of 129 of the 166 medical students in general practice in Western Norway in 2022 contributed to the data collection. In total, 2571 patients were invited to participate. Forty of these were under the age of 18 and were excluded. Of the 2531 patients  $\geq 18$  years old, 2105 completed the questionnaire (83 % response rate). Among these, 30 did not answer questions 11–18 and were therefore excluded. Consequently, 2075 patients were included in the analyses. Of these, 1080 (52 %) were  $\geq 50$  years old and 1263 (63 %) were women (Table 1).

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### Table 1

Self-reported demographic data for patients in the waiting rooms of GP practices in Western Norway who completed a questionnaire on medication use for chronic conditions, dietary knowledge and a desire to receive dietary guidance and lose weight ( $N = 2075$ ).

Age ( $n = 2\ 063$ )	Number (%)
18–29 years	291 (14)
30–39 years	378 (18)
40–49 years	314 (15)
50–59 years	307 (15)
60–69 years	328 (16)
70+ years	445 (22)
Sex ( $n = 2015$ )	
Female	1 263 (63)
Male	752 (37)
Has children of their own ( $n = 2\ 000$ )	1 516 (76)
Has children living in the household ( $n = 1\ 671$ )	590 (35)
Place of birth ( $n = 2\ 031$ )	
Norway	1 790 (88)
Asia. Africa. Latin America	94 (4,6)
North America. Oceania	11 (0,5)
Nordic region	26 (1,3)
West Europe	35 (1,7)
East Europe	75 (3,7)
Highest completed education ( $n = 2\ 019$ )	
Primary/lower secondary school	177 (9)
Upper secondary school or vocational school	963 (48)
University/university college	879 (44)
Medication use	
To reduce cholesterol ( $n = 2\ 038$ )	478 (23)
To reduce blood pressure ( $n = 2\ 054$ )	588 (29)
Other medications for heart disease ( $n = 2\ 043$ )	273 (13)
For diabetes/blood glucose/obesity ( $n = 2\ 046$ )	224 (11)
Other medications ( $n = 2\ 033$ )	1 002 (49)

A total of 626 (33 %) of the patients had raised the subject of diet with their GP, 1023 (57 %) wanted the GP to raise the subject of diet, 1125 (56 %) wanted advice or guidance on how diet affects health, and 1243 (62 %) wanted to lose weight (Table 2). The vast majority (96 %) reported having the dietary knowledge they needed 'to a large extent' or 'to some extent'. However, 799 (40 %) reported confusion related to diet and dietary advice (Table 2).

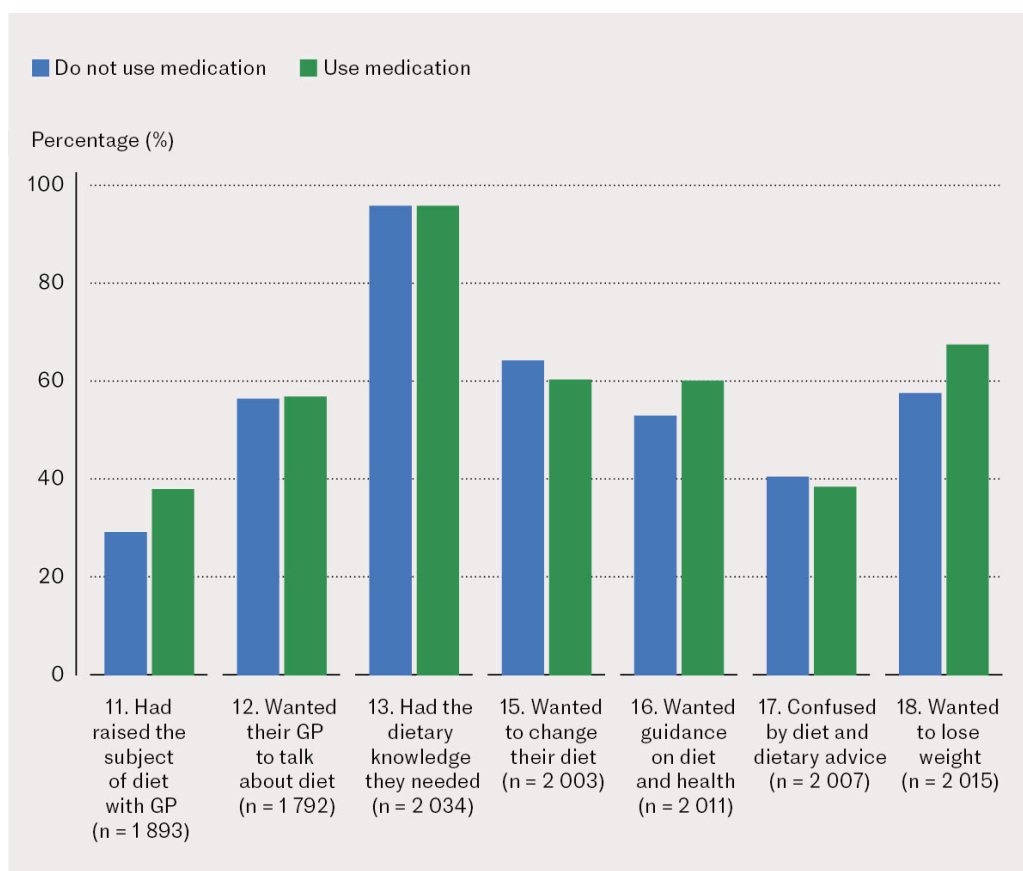
**Table 2**

Self-reported dietary knowledge and desire to receive dietary guidance and lose weight among patients in the waiting rooms of GP practices in Western Norway ( $N = 2075$ ).

Question (number)	Questions and response alternatives (number answered = $n$ )	Number (%)
11	In GP consultations, how often have you raised the subject of diet? ( $n = 1\ 905$ )	
	Never	1 279 (67)
	Sometimes	599 (31)
	Frequently	27 (1)
12	In GP consultations, how often do you wish that the subject of diet was raised? ( $n = 1\ 805$ )	
	Never	782 (43)
	Sometimes	912 (51)
	Frequently	111 (6)
13	I have the knowledge I need about diet ( $n = 2\ 040$ )	
	To a large extent	1 195 (59)
	To some extent	761 (37)
	To a small extent	84 (4)
14	I would like my GP to talk to me about diet ( $n = 2\ 015$ )	
	To a large extent	144 (7)
	To some extent	781 (39)
	To a small extent	1 090 (54)
15	I would like to change my diet ( $n = 2\ 005$ )	
	To a large extent	259 (13)
	To some extent	998 (50)
	To a small extent	748 (37)
16	I would like advice/guidance on how diet impacts on my health ( $n = 2\ 013$ )	
	To a large extent	301 (15)
	To some extent	824 (41)

Question (number)	Questions and response alternatives (number answered = n)	Number (%)
	To a small extent	888 (44)
17	Diet and dietary advice confuse me (n = 2 008)	
	To a large extent	168 (8)
	To some extent	631 (31)
	To a small extent	1 209 (60)
18	I would like to lose weight (n = 2 016)	
	To a large extent	510 (25)
	To some extent	733 (36)
	To a small extent	773 (38)

A total of 845 (41 %) patients used medication for a chronic condition. Of these, 295 (38 %) reported raising the subject of diet, compared to 328 (29 %) who did not use such medication. Of those who used medication for a chronic condition, 486 (60 %) indicated a desire to receive advice/guidance on how diet impacts on their health, compared to 637 (53 %) who did not use such medication (Figure 1).



**Figure 1** Self-reported knowledge about diet and a desire to receive dietary guidance and lose weight (questions 11–13 and 15–18) among patients in the waiting rooms of GP practices in Western Norway, divided into those who use and do not use medication for chronic conditions. Medications included those to reduce cholesterol, reduce blood



pressure, other medications for heart disease as well as medications for diabetes/blood glucose or obesity.

Logistic regression analysis for the desire to receive advice/guidance on how diet affects health showed that younger patients, men and patients with a lower level of education were more likely to want advice/guidance (Table 3). There was no difference in the desire to receive dietary guidance between patients born in Norway and others, or between patients with and without children of their own. Those who wanted to lose weight and those using medication for a chronic condition were more likely to want dietary guidance. The highest probability of wanting dietary guidance was found among patients who wanted to lose weight (odds ratio 2.62; 95 % confidence interval 2.14 to 3.20).

**Table 3**

Probability (odds ratio and 95 % confidence interval (CI)) of wanting advice/guidance about how diet affects health, and proportion (%) of respondents indicating that they wanted this, based on responses from patients in the waiting rooms of GP practices in Western Norway. Significant findings are highlighted.

	Wanted guidance (%)	Unadjusted odds ratio (95 % CI)	Adjusted <sup>1</sup> odds ratio (95 % CI) (n = 1 850)
<b>Age</b> (n = 1999)			
18–29	60	1	1
30–39	58	0.90 (0.66 to 1.24)	1.01 (0.69 to 1.47)
40–49	57	0.87 (0.63 to 1.21)	0.87 (0.58 to 1.30)
50–59	54	0.78 (0.56 to 1.08)	<b>0.64 (0.43 to 0.98)</b>
60–69	57	0.87 (0.63 to 1.20)	0.74 (0.48 to 1.12)
70+	51	<b>0.70 (0.51 to 0.94)</b>	<b>0.56 (0.36 to 0.86)</b>
<b>Sex</b> (n = 1 953)			
Female	53	1	1
Male	60	<b>1.34 (1.11 to 1.62)</b>	<b>1.41 (1.15 to 1.73)</b>
<b>Do you have children of your own?</b> (n = 1 940)			
No	60	1	1
Yes	54	<b>0.80 (0.65 to 0.98)</b>	0.80 (0.60 to 1.05)
<b>Country of birth</b> (n = 1 975)			
Norway	56	1	1
Other	56	1.00 (0.76 to 1.31)	0.98 (0.72 to 1.32)
<b>Highest completed education</b> (n = 1961)			
Primary/lower secondary school	67	1	1

	Wanted guidance (%)	Unadjusted odds ratio (95 % CI)	Adjusted <sup>1</sup> odds ratio (95 % CI) (n = 1 850)
Upper secondary school or vocational school	59	<b>0.70 (0.49 to 0.99)</b>	<b>0.68 (0.46 to 0.99)</b>
University/university college	50	<b>0.49 (0.34 to 0.70)</b>	<b>0.51 (0.34 to 0.74)</b>
I want to lose weight (n = 1 980)			
No	41	1	1
Yes	65	<b>2.67 (2.22 to 3.22)</b>	<b>2.62 (2.14 to 3.20)</b>
Medication use (n = 2 006)			
No	53	1	1
Yes	60	<b>1.33 (1.11 to 1.59)</b>	<b>1.42 (1.11 to 1.81)</b>

<sup>1</sup>Adjusted for the other variables in the table.

When adjusting for a desire to lose weight and medication use, younger patients were more likely than older patients to have raised the subject of diet and how this affects their health (Table 4). There was no disparity between men and women, while patients without children were more likely than those with children to have raised the subject of diet with their GP.

**Table 4**

Probability (odds ratio and 95 % confidence interval (CI)) of having previously raised the subject of diet with a GP, and proportion (%) who responded that they had done this, based on responses from patients in the waiting rooms of GP practices in Western Norway. Significant findings are highlighted.

	Had raised the subject of diet with GP (%)	Unadjusted odds ratio (95 % CI)	Adjusted <sup>1</sup> odds ratio (95 % CI) (n = 1 732)
Age (n = 1 890)			
18–29	35	1	1
30–39	33	0.94 (0.67 to 1.32)	1.03 (0.69 to 1.54)
40–49	38	1.13 (0.80 to 1.60)	1.10 (0.72 to 1.67)
50–59	37	1.10 (0.78 to 1.56)	0.97 (0.63 to 1.51)
60–69	30	0.81 (0.57 to 1.15)	0.67 (0.42 to 1.06)
70+	27	<b>0.68 (0.49 to 0.96)</b>	<b>0.49 (0.30 to 0.78)</b>
Sex (n = 1 847)			

	Had raised the subject of diet with GP (%)	Unadjusted odds ratio (95 % CI)	Adjusted <sup>1</sup> odds ratio (95 % CI) (n = 1 732)
Female	32	1	1
Male	34	1.12 (0.92 to 1.37)	1.04 (0.84 to 1.29)
Do you have children of your own? (n = 1 837)			
No	38	1	1
Ja	31	<b>0.73 (0.59 to 0.92)</b>	<b>0.70 (0.52 to 0.93)</b>
Country of birth (n = 1 869)			
Norway	32	1	1
Other	39	1.34 (1.00 to 1.78)	1.18 (0.86 to 1.61)
Highest completed education (n = 1 855)			
Primary/lower secondary school	30	1	1
Upper secondary school or vocational school	33	1.15 (0.80 to 1.67)	1.15 (0.76 to 1.72)
University/university college	33	1.11 (0.77 to 1.62)	1.21 (0.80 to 1.82)
I would like to lose weight (n = 1 852)			
No	26	1	1
Yes	37	<b>1.67 (1.36 to 2.05)</b>	<b>1.44 (1.16 to 1.80)</b>
Medication use (n = 1 889)			
No	29	1	1
Yes	38	<b>1.49 (1.22 to 1.80)</b>	<b>2.13 (1.63 to 2.77)</b>

<sup>1</sup>Adjusted for the other variables in the table.

Patients who wanted to lose weight or who used medication for a chronic condition were more likely to have raised the subject of diet with their GP, and patients using medication for a chronic condition were most likely to have done so (odds ratio 2.13; 95 % CI 1.63 to 2.77).

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## Discussion

In this survey, we found that even though more than half of the patients wanted the subject of diet to be raised, only one-third indicated that they had raised the subject in a GP consultation. Among patients using medication for a chronic condition, 60 % reported wanting advice on how diet affects their health. There is ample evidence that dietary interventions have potential in such contexts ([1–11](#)). Nevertheless, only 38 % of these patients had raised the subject of diet. We found a significantly higher proportion of patients who wanted dietary guidance among younger patients, men, those with a lower level of education, patients who wanted to lose weight and patients using medication for a chronic condition.

Two out of five reported being confused by diet and dietary advice. Meanwhile, only 4 % reported lacking the necessary knowledge. A population survey conducted by Norstat showed that only 59 % of respondents were aware of the Norwegian Directorate of Health's dietary advice ([17, p. 44](#)). This suggests a possible need in the population for more evidence-based information about diet.

Despite the goal of the Coordination Reform for GPs to play a more active role in preventive health care ([12](#)), there has been a decline in preventive efforts among GPs in Norway ([18](#)). An increasing proportion of the population is also receiving preventive pharmacotherapy for cardiovascular diseases ([19](#)). These patients are candidates for targeted information about the benefits of a healthy diet as an alternative or supplement to medication ([9](#)). Based on a range of recommended guidelines, GPs must prioritise which interventions and guidelines are most relevant for different patients ([20](#)).

Around 60 % of the study participants reported wanting to lose weight. The proportion of men and women with overweight or obesity (BMI > 25) in Norway in 2020 was 59 % and 47 %, respectively ([21](#)). A qualitative study based on interviews with eight adults with overweight found that they wanted their GP to raise the subject of overweight, but experienced that the GP either did not do this, quickly closed down discussion on the subject, or simplified the problem ([13](#)). The interviewees also had an expectation that GPs would be knowledgeable about overweight and measures for weight regulation, as well as a shared responsibility for helping to prevent negative weight development.

Our findings pointed towards patient groups who were more likely to consider diet an important subject and who may be more receptive to guidance ([22](#)). Participants with a lower level of education wanted more information about diet. Focussing on this group can help reduce social inequalities, as those with a higher level of education tend to have a healthier diet ([17](#)). Men were more likely to want dietary guidance than women. This should be viewed in light of the fact that morbidity and mortality rates are higher for men as a whole.

The 83 % response rate was a strength of our study, and we can consider the study population to be representative of adults in GP consultations. Anonymous data collection reduced the risk of various response biases ([23](#)).

Sensitivity analyses indicated robust findings (results not shown).

A weakness of the study was the use of non-validated questions/questionnaires, where, for example, the order of the questions may have influenced the responses (24). Furthermore, the concept of diet was not defined in the patient information or in the questionnaire and was open to individual interpretation. Another limitation of the study was that we cannot know if there was alignment between those who wanted dietary guidance and those who needed it. Language problems may have been a barrier to participation. Any disparities between different migrant groups were not captured in the study.

We found that many patients were concerned about diet, and half wanted guidance on how diet affects health. However, only one-third reported raising the subject of diet in their GP consultation. In addition, the majority reported a desire to lose weight. The desire to receive dietary guidance was more common among younger patients, men, those with a lower level of education, those who wanted to lose weight and those who used medication for a chronic condition. Such knowledge can be useful for primary healthcare providers to determine when a focus on diet can be particularly beneficial.

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