

Eating habits, beliefs, attitudes and knowledge among health professionals regarding the links between obesity, nutrition and health

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Abstract

Objective: To document knowledge, attitudes, beliefs and eating habits of health professionals with respect to obesity, nutrition and weight management.

Design: A self-complete questionnaire postal survey.

Setting: Primary care and dietetic practice in Scotland.

Subjects: A systematic stratified sample of 2290 subjects incorporated general practitioners ($n = 1400$), practice nurses ($n = 613$) and all practising dietitians ($n = 360$) who were members of the British Dietetic Association.

Results: The overall response rate was 65%. All professionals showed a clear understanding of nutrition and health. Understanding of obesity as a disease and of the effectiveness of weight management using low-energy diets was limited. Below 10% had carried out audit to determine the incidence of obesity and overweight, and most were uncertain about their own effectiveness in delivering weight management advice.

Conclusion: This study confirms that health professionals have some knowledge of nutrition and weight management but are unclear how to deliver effective weight management advice. Further training is justified to ensure the effective provision of nutritional advice to patients.

Keywords
Nutrition knowledge
Obesity and overweight
General practitioners
Practice nurses
Dietitians

Nutritional balance is essential to maintain health and central to preventing major diseases, importantly type 2 diabetes^{1,2}, coronary heart disease, stroke and cancer. Obesity, a disease that has had an international classification of disease code since 1948, has a complex aetiology, being influenced by genetic, metabolic and environmental factors. Both overweight and obesity affect health and favour the development of secondary conditions³. The prevalence of obesity in the UK has doubled over the last 10 years and is recognised as reaching epidemic status by the World Health Organization⁴. In the UK half of women and two-thirds of men are overweight or obese, with 20% of all adults being obese^{5,6}. The estimated cost of obesity to health services is 4–7% of the total healthcare budget⁵.

Multidisciplinary primary healthcare teams face a range of nutritional issues on which they are required to provide advice⁷. They are considered a trusted source of nutritional advice, and primary care is the suggested appropriate setting for effective weight management⁸. Patients view general practitioners (GPs) as the main source of information about nutrition⁹. They are accessible to 98% of the population, who each consults around five times

annually¹⁰. Practice nurses (PNs) have an important role in providing nutritional advice¹¹. Dietitians provide a training resource for other professionals and regard themselves as potential leaders in the weight management field¹².

National clinical guidelines, available to all health professionals, provide resources for the nutritional management of patients in routine practice and appropriate approaches for prevention⁸. However, competency in the principles of nutrition would ensure clarity when advising patients⁹. Relevant areas of knowledge include healthy eating, national dietary targets¹³ and weight management principles⁸.

The present study aimed to document the knowledge, attitudes, beliefs and eating habits of primary care health professionals with respect to obesity, nutrition and weight management.

Methods

Subjects

Samples of 1400 GPs and 613 PNs from Scotland were drawn from listings at the Information and Statistics Division, Scotland. Stratification was by health board,

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practice deprivation score¹⁴ and GP seniority. A census of all members of the British Dietetic Association in Scotland was undertaken ($n = 405$) and the sample comprised those active in clinical practice ($n = 360$). The survey was carried out in 1998, and the data collection methodology previously reported¹⁵.

Survey development and administration

A self-complete survey questionnaire, 'Improving the Nutrition and Care of the Overweight Patient Survey' (INCOPS), was developed. Information was requested on opportunities for audit and perceived skills in relation to weight management. These questions explored beliefs, attitudes and knowledge about the links between obesity, nutrition and health. Respondents were requested to complete an eating habits questionnaire¹⁶, which classified them as healthy or unhealthy eaters, and to report personal anthropometric measurements: waist circumference, height and weight.

Critical evaluation of the INCOPS questionnaire was by a panel of health professionals, and piloting was conducted among 30 GPs, 20 PNs and 10 dietitians from Greater Glasgow Health Board. No participation incentives were offered. Ethical approval was secured from the Scottish Multi-Centre Research Ethics Committee.

Statistical analysis

Data were managed and analysed using SPSS 9.0 (SPSS Inc., Chicago, IL, USA). Comparisons between groups of professionals agreeing with a statement and comparisons of the distributions of responses to a question were examined using Chi-square and Mann-Whitney tests. Comparisons of the distributions of responses to different questions were carried out using the Wilcoxon signed rank test. Regression analyses were used to assess relationships between responses to a particular question and demographic variables.

Results

Sample response

Response rate varied by profession: 89.8% among PNs ($n = 509$), 54.4% among GPs ($n = 741$) and 72.2% among dietitians ($n = 255$). There was a small response bias and appropriate weighting was used to adjust for this within the 65% overall response rate.

Table 1 presents demographic details of the 1505 respondents. For medicine the year of qualification ranged from 1957 to 1997, for nursing from 1952 to 1994 and for dietetics from 1958 to 1996. Mean list size in primary care was 7105 (range 160 to 31 000) patients.

Anthropometric measurements and dietary practices of respondents

Less than a third of respondents were categorised as either overweight or obese (Table 1). Only 6.9% ($n = 78$) of all

Table 1 Sociodemographic and anthropometric profile for INCOPS participants*

	GPs ($n = 741$)		PNs ($n = 509$)		Dietitians ($n = 255$)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Gender						
Male	455	61.8	1	0.2	3	1.2
Female	281	32.2	503	99.8	252	98.8
Age (years)						
18–24	0	0	0	0	3	1.2
25–34	101	13.7	68	13.5	95	37.3
35–44	328	44.6	206	41.0	100	39.2
45–54	244	33.2	178	35.4	48	18.8
55–65	62	8.4	51	10.1	9	3.5
Body mass index† (kg m⁻²)						
< 25	491	69.7	347	71.4	217	87.5
25–29.9	184	26.1	110	22.6	28	11.3
≥ 30	29	4.1	29	6.0	3	1.2
Waist circumference‡						
Acceptable	477	91.0	316	87.1	177	93.7
Moderate health risk	37	7.1	29	8.0	7	3.7
High health risk	10	1.9	18	5.0	5	2.5
Location of practice/hospital						
Rural	142	23.8	116	26.7	32	13.7
Town	241	40.4	172	39.5	72	30.9
City	163	27.3	132	30.3	99	42.5
Other	51	8.5	15	3.4	30	12.9

INCOPS – Improving the Nutrition and Care of the Overweight Patient Survey; GP – general practitioner; PN – practice nurse.

*Some health professionals declined to complete selected sociodemographic details; hence numbers for individual variables may be less than total *n* for each group.

† Significant differences between professional groups at $P < 0.001$.

‡ Significant differences between professional groups at $P = 0.029$.

respondents were classified as 'unhealthy eaters'; this comprised 0.9% ($n = 2$) of dietitians, 3.1% ($n = 12$) of PNs and 12.6% ($n = 64$) of GPs ($P < 0.001$). Male GPs were more likely to be classified as unhealthy eaters than were female GPs (15.1% ($n = 46$) vs. 8.8% ($n = 18$), $P < 0.05$).

Awareness of guidelines

Almost half the survey sample reported having read the three Scottish national reports: *The Scottish Diet*¹⁷, *Eating for Health: An Action Plan for Scotland*¹³ and the Scottish Intercollegiate Guidelines Network (SIGN) clinical guideline *Obesity in Scotland: Integrating Prevention with Weight Management*⁸ (Table 2). There were significant between-group differences ($P < 0.001$), with over 90% of dietitians indicating they had read all reports (Table 2).

General nutrition knowledge

All professions gave similar responses to the general nutrition knowledge questions concerning fruit in the diabetic diet, and the link between raised plasma cholesterol concentrations and the likelihood of developing heart disease. More GPs who had read the SIGN clinical guideline on obesity⁸ answered the question regarding plasma cholesterol and heart disease correctly ($P < 0.001$). The question whether starchy foods were fattening was answered incorrectly by 21% of all GPs and more overweight GPs agreed with the statement

Table 2 Reported readership of three key reports, by professional group

Report	GPs		PNs		Dietitians		Total	
	n	%	n	%	n	%	n	%
<i>The Scottish Diet</i> ¹⁷	130	24.0	136	34.7	238	97.9	504	42.8
<i>Eating for Health: An Action Plan for Scotland</i> ¹³	185	33.5	220	53.1	229	94.6	634	52.4
<i>Obesity in Scotland: Integrating Prevention with Weight Management</i> ⁸	319	45.6	148	32.1	236	94.8	703	49.9

GP – general practitioner; PN – practice nurse.

($P < 0.05$). A quarter of GPs failed to choose the correct answer for weaning practices. Few dietitians deviated from the majority response given for all questions (Table 3).

Beliefs about links between nutrition and obesity

Overall agreement was evident in the responses to the statements concerning physical activity and hypertension in obesity (Table 4). Beliefs regarding hypertension and salt intake and the dietary causes of obesity varied significantly by professional group (Table 3). Most

Table 3 Responses to general nutrition knowledge questions and reported beliefs about nutrition–public health links, by professional group

	% (weighted data)*			Significance level
	GPs	PNs	Dietitians	
People with diabetes should not eat fruit				
Disagree (correct response)	95	95	100	NS
Neutral	1	1	0	
Agree	3	4	0	
Starchy foods such as bread, potatoes and pasta are fattening				
Disagree (correct response)	79	92	100	$P < 0.001$
Neutral	9	3	0	
Agree	12	5	0	
Children under the age of two should drink whole, not semi-skimmed milk				
Disagree	16	7	4	$P < 0.001$
Neutral	9	3	1	
Agree (correct response)	76	90	95	
In the treatment of hypertension, a low-salt diet is indicated routinely				
Disagree	29	11	30	$P < 0.001$
Neutral	16	8	18	
Agree (correct response)	56	81	53	
There are clearly established links between diet and certain cancers				
Disagree	9	10	3	$P < 0.01$
Neutral	8	14	4	
Agree (correct response)	82	76	94	
A high blood cholesterol increases the likelihood of developing heart disease				
Disagree	3	3	3	NS
Neutral	4	2	3	
Agree (correct response)	93	95	95	
High sugar intake is a more major cause of obesity than a high fat intake				
Disagree (correct response)	57	62	75	NS
Neutral	20	19	17	
Agree	23	19	9	

GP – general practitioner; PN – practice nurse; NS – not significant. * Percentages are rounded to the nearest integer.

respondents chose the correct answers, but a large proportion did not for the statements: (1) ‘High sugar intake is a more major cause of obesity than a high fat intake’ and (2) ‘In the treatment of hypertension, a low-salt diet is indicated routinely’ (Table 3).

A majority of respondents agreed with the statement that ‘Some overweight patients can live on 800–1200 kcal/day without losing weight’ (Table 4), only slightly more dietitians disagreed than agreed. Within-group analysis according to whether or not respondents had read the SIGN clinical guideline on obesity⁸ or were themselves a healthy weight revealed significant differences. Practice nurses who had read the SIGN obesity guideline⁸ were more likely to disagree (correctly)¹⁸ with the statement ($P < 0.05$) while GPs with a raised body mass index (BMI) were more

Table 4 Reported beliefs about overweight and obesity, by professional group

	% (weighted data)*			Significance level
	GPs	PNs	Dietitians	
Some overweight patients can live on 800–1200 kcal day ⁻¹ without losing weight				
Disagree (correct response)	34	35	48	$P < 0.05$
Neutral	16	20	11	
Agree	50	45	41	
Physical inactivity is a major cause of regaining weight				
Disagree	6	6	5	NS
Neutral	6	8	5	
Agree (correct response)	89	86	90	
Hypertension is aggravated by obesity and improved by weight loss				
Disagree	2	2	1	NS
Neutral	1	3	4	
Agree (correct response)	97	95	95	
If overweight, sufferers of urinary incontinence should reduce their body weight				
Disagree	2	5	3	$P < 0.001$
Neutral	2	9	11	
Agree (correct response)	97	86	86	
There is no relationship between overweight and sleep disturbances				
Disagree (correct response)	87	66	78	$P < 0.001$
Neutral	9	23	15	
Agree	5	11	8	
Increasing body weight leads to increasing psychological problems				
Disagree	5	11	8	$P < 0.001$
Neutral	9	13	17	
Agree (correct response)	86	76	76	

GP – general practitioner; PN – practice nurse; NS – not significant. * Percentages are rounded to the nearest integer.

likely to agree with the statement ($P < 0.01$). Those GPs who had read the SIGN clinical guideline on obesity⁸ were more likely to recognise the value of physical activity in preventing weight gain ($P < 0.01$).

Beliefs about medical consequences of overweight and obesity

The majority of survey respondents understood the medical consequences of overweight and obesity (Table 4). Reported beliefs about the consequences of weight gain on sleep disturbances, incontinence and psychological problems showed significant between-group differences. General practitioners showed most agreement with the statements 'Increasing body weight leads to increasing psychological problems' and 'If overweight, sufferers of urinary incontinence should reduce their body weight' and disagreement with the statement 'There is no relationship between overweight and sleep disturbances' (Table 4). Analyses within professional groups showed that PNs and GPs with a healthy BMI were more likely than their overweight colleagues to know that obesity can cause disturbed sleep ($P < 0.01$ and 0.05 , respectively).

Professional attitudes to providing weight management

A positive attitude was seen across the professions to three statements: (1) 'General practitioners should offer advice to their patients who are overweight', (2) 'There should be specialist posts for dietitians in weight management' and (3) 'Specially trained nurses are valuable in providing weight-reduction diets for patients' (Table 5). Practice nurses who had read the SIGN obesity guideline⁸ were more likely than those who had not to support the idea of training of specialist dietitians for weight management ($P < 0.001$). They also agreed with the statement that GPs should provide weight management advice to patients with raised BMI ($P < 0.05$). Reported attitudes towards recommending attendance at commercial slimming groups showed mixed responses across the professional groups, although close to 40% of respondents indicated that they would recommend this treatment to their patients. A lack of consensus was also evident in attitudes towards referral to a clinical psychologist, with 56% of the survey respondents showing a positive attitude towards referral. Within the professional groups dietitians were particularly supportive of this approach. In contrast, PNs who had not read the SIGN clinical guideline on obesity⁸ were more likely to disagree with the statement about referral to a clinical psychologist than were those who had ($P < 0.05$).

Waist circumference

The majority of dietitians agreed with the statement 'Measurement of waist circumference best reflects

Table 5 Reported attitudes to health professionals delivering weight management advice, by professional group

	% (weighted data)*			Significance level
	GPs	PNs	Dietitians	
General practitioners should offer advice to their patients who are overweight				
Disagree	17	11	25	$P < 0.05$
Neutral	17	17	19	
Agree	66	73	56	
There should be specialist posts for dietitians in weight management				
Disagree	20	9	6	$P < 0.001$
Neutral	24	15	8	
Agree	56	76	86	
Specially trained nurses are valuable in providing weight-reduction diets for patients				
Disagree	6	5	15	$P < 0.001$
Neutral	15	9	18	
Agree	78	86	68	
Commercial slimming groups should be recommended by health professionals to patients needing help to lose weight				
Disagree	29	35	30	NS
Neutral	28	31	33	
Agree	48	34	37	
Referral to a clinical psychologist would make little contribution to the weight management of a patient				
Disagree	41	47	81	$P < 0.001$
Neutral	30	30	11	
Agree	29	23	8	

GP – general practitioner; PN – practice nurse; NS – not significant.

* Percentages are rounded to the nearest integer.

intra-abdominal fat mass without any need to adjust for height' (Fig. 1). However, less than 40% of GPs and less than 50% of PNs agreed with the statement.

Audit within practices or hospitals

Only 10% of all respondents reported having audited patient records to identify those with elevated BMI (Table 6). Dietitians were most active in conducting audits ($P < 0.001$).

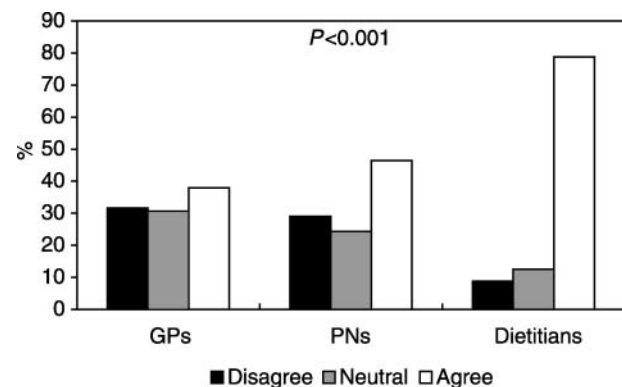


Fig. 1 Knowledge of the relationship between waist circumference and intra-abdominal fat mass. Health professionals (GPs – general practitioners; PNs – practice nurses) were asked to respond to the statement: 'Measurement of waist circumference best reflects intra-abdominal fat mass without any need to adjust for height' (disagree to agree on a 7-point Likert scale)

Table 6 Responses to the question 'Has a local audit of the care of overweight patients been carried out?', by professional group

	GPs		PNs		Dietitians		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Yes, by myself	11	1.8	13	3.0	25	10.9	49	3.9
Yes, by practice member	27	4.5	16	3.7	54	23.6	97	7.7
Yes, by external audit	4	0.7	4	0.9	1	0.4	9	0.7
No, never	439	73.3	266	61.9	88	38.4	793	63.0
Uncertain	118	19.7	131	30.8	61	26.6	310	24.6

GP – general practitioner; PN – practice nurse.

Discussion

The aims of this survey were to re-examine the competence of the primary healthcare team in nutrition, obesity and weight management. Using a postal survey approach, competence was measured, or implied, by the reported knowledge of nutrition, links with public health, and the medical consequences of overweight and obesity.

The high response rate in comparison with other studies of health professionals may reflect: (1) a high level of interest and/or concern for the subject area and (2) the use of a careful methodology, where two reminder letters and a duplicate questionnaire were sent to potential respondents. However, we acknowledge that respondents were a motivated subset of health professionals who appear unusual in terms of their personal health, showing a much lower prevalence of overweight and obesity than the general population, and better eating habits. This may indicate a 'halo effect', where professionals provide answers to given questions in the way they considered correct, rather than report actual practice.

Early surveys of primary healthcare professionals indicated that nutritional knowledge related to obesity and weight management was inconsistent and sometimes incorrect^{19,20}. More recently improvements have been recorded^{9,21} but limitations remain, particularly in translating this knowledge into practice. In the present study there were a few surprising answers concerning nutrition knowledge and the links between nutrition and obesity.

Nutrition knowledge

All dietitians disagreed with the statement 'Starchy foods such as bread, potatoes and pasta are fattening'. Within the context of healthy eating principles this was the correct answer²², given the phrasing of the question and current professional emphasis on the role of fat in obesity. However, it should be remembered that excess energy intake, regardless of the source, will lead to overweight and those who consume excess calories from carbohydrate sources (e.g. pasta) can also become overweight.

Disagreement was also evident within the professional groups regarding the role of fat and sugar in promoting

obesity, with 75% of dietitians correctly responding that fat was more influential^{18,23}. Almost half the GPs and 38% of PNs answered incorrectly, showing the potential to give misleading advice. These differences confirm a need for greater nutrition education.

Beliefs about links between nutrition and obesity

The most concerning response was the belief, accepted by close to 65% of all GPs, PNs and dietitians, that obese people can adhere to an 800–1200 kcal day⁻¹ diet without weight loss, which is physiologically impossible²⁴. Under-reporting of food intake is a well-recognised aspect in the management of overweight and obesity²⁵. The failure to recognise these fundamental issues indicated a lack of knowledge and an inability to undertake effective weight management. Interestingly, more GPs with raised BMI agreed with the statement.

Waist circumference

The finding that a well-publicised issue such as 'Measurement of waist circumference best reflects intra-abdominal fat mass without any need to adjust for height'²⁶ appears poorly understood by GPs and PNs is also of concern. Awareness of those who are overweight could be raised through the use of tools such as silhouettes²⁷ and waist watcher tapes²⁸.

Professional attitudes to providing weight management

The professions showed diversity with respect to their own relative importance in weight management. Certain dietitians consider themselves to be the profession most suited to managing the epidemic of obesity and overweight, whereas some GPs indicated a clear recognition of their limitations in weight management.

Professional differences were evident with respect to the value attached to external agencies. The mixed responses to the statement that referral to a clinical psychologist could make little contribution to weight management is probably understandable given the lack of evidence for benefit in routine weight management²⁹. One-third of dietitians and half of GPs were willing to recommend commercial slimming groups despite there

being no published results or external audit of efficacy, although the SIGN clinical guideline on obesity⁸ cautiously proposes a role for commercial slimming groups. Promotion of commercial slimming groups to patients may reflect professionals feeling either unable³⁰ or unwilling³¹ to address the task of weight management successfully.

Audit

Only 10% of respondents reported having audited their practice population with respect to overweight and weight management. This suggests that the majority of respondents had not begun to address the problem systematically and this may reflect a lack of interest. Dietitians reported that obesity and weight management were important components of their remit, but indicated it is an area that leads to considerable professional frustration in the quest for success¹².

Conclusions

The need for health professionals to be life-long learners is well-recognised³¹. The present results show that GPs, usually the first point of contact for patients, have gaps in their knowledge of nutrition and weight management. Practice nurses report feeling unskilled when it comes to offering weight management and dietary change advice¹¹, and our findings concur with others¹¹ that PNs would benefit from training in this area. Appropriate training in general nutrition for PNs has shown benefit³² but, whilst keen to receive training in nutrition and weight management, many reported having insufficient time allocated. The finding that overall the majority of respondents felt weight management advice should be delivered by expert professionals who have had specific training was reassuring. It showed that professionals acknowledged a need for specific expertise and training in the area of weight management. Additionally, it may reflect an appreciation of the scale of the problem of overweight and obesity, and that its effective management would represent a considerable addition to the present workload of those surveyed.

This survey confirmed that the majority of the sample had reasonable knowledge of nutrition, obesity and weight management; however, disparity between professional groups was evident. The likelihood that systematic management of overweight and obesity was already taking place seems remote. The sample as a whole indicated that a multidisciplinary team approach to weight management was preferable, with training of specialised dietitians and nurses needed to begin to address this issue.

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