Responses to a GP survey: current controversies in diet and cardiovascular disease

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Abstract

Background: When advising patients on diet and health, the general practitioner (GP) makes judgements based on the evidence available. Since current evidence on diet and cardiovascular disease is conflicted and confusing, we surveyed the current consensus amongst GPs. The aim of this study was to determine the views of GPs on dietary saturated fat, carbohydrates and long chain omega-3 fatty acids in the management of cardiovascular disease.

Method: An online questionnaire inviting participants to comment on seven contentious statements on diet and cardiovascular disease. Questionnaire circulated to the 1800 members of South West Thames Faculty of the Royal College of General Practitioners (RCGP). Participants were invited to tick “Agree”, “Disagree” or “Not sure” and were encouraged to add comments for each question. The results were analysed with a combination of statistical analysis and thematic analysis of comments.

Results: There were 89 responses. Most GPs seem well aware that drug treatment alone is inadequate and that dietary advice is important. However, there was considerable disagreement about the roles of saturated fats and carbohydrates in cardiovascular disease and “Not sure” responses ranged from 12 to 40.7%. The 40.7% related to a statement on long chain omega-3 fatty acids. Analysis of comments revealed more opinions including an awareness of the need to warn patients about trans-fatty acids.

Conclusions: Although the GP response rate was poor, responders do seem to see dietary advice as part of their role but do not consider themselves as experts. Education in this area should have a higher priority.

Keywords: Cardiovascular diseases, Primary health care, Nutrition science, Dietetics, Medical education

How this fits

General practitioners need to give advice on nutrition, diet and health, especially cardiovascular health concerns. There has been concern that medical school gives little if any time to these issues. This survey shows that there is a good deal of confusion in this area and our data suggest that most knowledge is gained through experience working in primary care.

Background

The average general practitioner (GP) in the United Kingdom (UK) will have received very little education at medical school on the role of nutrition in health and disease [1–3], but should be well versed in Pharmacology as a prescribing doctor. In a recent survey [2], only 33% of medical school academics felt that they were providing adequate teaching on nutrition and health. Therefore, GPs may feel more confident in providing advice on drug therapy rather than diet for the prevention of cardiovascular disease (CVD). However, an experienced GP may have acquired information about diet and lifestyle through their professional experience. Current controversies over the relevance of free sugars (as opposed to endogenous sugars in fruit (fructose) and milk (lactose)) and fats to the aetiology of CVD [4–6] has caused confusion amongst the general public [7, 8] and we wondered what the consensus was amongst GPs. Also, since 2013, the National Institute for Health and Care Excellence (NICE) clinical guidelines have de-emphasised the
role of long chain omega-3 fatty acids in the management
of CVD and advise against routine prescribing of omega-3
acid ethyl esters (Omacor) [9]. However, NICE continue to
recommend an increase in dietary fish as part of a Medi-
terranean diet [9]. There is a substantial body of evidence for
benefits to both primary and secondary cardiovascular
health from long chain omega-3 [10–13], and an equally
impressive body of evidence that has influenced NICE to be
cautious [14–16]. A 2017 study lasting 19 years has shown
a lower CVD death rate (hazard ratio 0.73) in subjects tak-
ing a long term regular daily dose of a long chain omega-3
fatty acid supplement [17].

The aim of our study was to assess the views of GPs on
a range of issues relating to nutrition and cardiovascular
disease by measuring their response to several emotive
and contentious questions about diet and health.

Methods
A survey monkey questionnaire was sent by email to
1800 GPs in the SW Thames section of the RCGP. One
follow-up reminder was sent with a link to the question-
naire as recommended by Pealer et al. [18]. This was
followed by asking non-responders to complete the same
questionnaire at an NHS Clinical Commissioning Group
(CCG) meeting for all GPs in the Guildford and Waverly
area of Surrey (approximately 6% of SW Thames GPs).
The questions were framed as tests of opinion rather
than tests of knowledge with tick box options “Agree”,
“Disagree” and “Not sure”. Participants were also en-
couraged to add comments and the comments were ana-
lysed using thematic analysis.

Questions:

1. Once you start a patient on a statin, diet isn’t very
important.
2. Omega 3 intake is key to recovery from a cardiac
event.
3. LDL cholesterol is more important than HDL
cholesterol when interpreting a lipid profile.
4. The latest evidence on dietary fat means that we
can now advise that it is safe to consume saturated
fat-rich foods.
5. Diet and dyslipidaemia are linked to dysfunction of
the endothelium.
6. Non-alcoholic fatty liver disease is a major risk
factor for cardiovascular disease.
7. Dietary carbohydrates are neutral with respect to
cardiovascular disease.

Statistics
The completed questionnaires were analysed using chi-
squared foursome tables to determine differences be-
tween internet responders and non-responders and
calculate p values. IBM SPSS Statistics software was
used to analyse gender differences, significance of years
in general practice using the student t-test and correla-
tion coefficients to show any correlations between
different components of the questionnaire and to calcu-
late p values for this data. An analysis of respondents’
comments was made for recurrent themes.

Results
A total of 89 GPs responded to the initial questionnaire
and a further 19 non-responders completed the ques-
tionnaire at the CCG meeting. The total sample was
108, which was 6% of the targeted GPs.

There were 74 (68.5%) female GPs and 33 (30.5%) male GPs. Although age was not recorded for partici-
pants the number of years in general practice was re-
corded. The significance of age and experience was
reflected in this data (Additional file 1: Appendix 1). The
mean number of years in general practice was 13.7 yrs.
(range 0.5–42) and for male GPs average was 17.6 yrs.
(range 2–42) and for female GPs average was 12 yrs.
(range 0.5–33). This data was similar to regional data for
age and gender for GPs in South England although there
was a slight bias in favour of female GPs responding to
the questionnaire which failed to reach statistical signifi-
cance (Additional file 2: Appendix 2).

The combined results are summarised in Table 1. There was no statistically significant difference between
internet responders and non-responders. However there
was a trend for Question 2 with a greater proportion of
non-responders disagreeing with the statement “Omega
3 intake is key to recovery from a cardiac event”: Re-
ponders disagreed 30/89 (33.7%) Non responders dis-
agreed 10/19 (52.6%), p = 0.076. Responders were twice
as likely to respond “Not sure” than non-responders:
Responders “not sure” 40/89 (44.9%) and non-re-
ponders “not sure” 4/19 (21.1%), p = 0.054.

Table 1 Summary of results from questionnaire

| Questions                                                                 | Agree | Disagree | Not sure |
|---------------------------------------------------------------------------|-------|----------|----------|
| 1. Diet is unimportant for patients on statins                           | 3 (2.8%) | 105 (97.2%) | 0 (0%)  |
| 2. Omega-3 relevant to cardiac events                                     | 24 (22.2%) | 40 (37%) | 44 (40.7%) |
| 3. LDL more important than HDL                                           | 49 (45.4%) | 42 (38.9%) | 17 (15.7%) |
| 4. Dietary saturated fat safe                                             | 18 (16.7%) | 57 (52.8%) | 33 (30.6%) |
| 5. Endothelial dysfunction and dyslipidaemia                             | 80 (74.1%) | 3 (2.8%) | 26 (24.1%) |
| 6. NAFLD major risk factor for CVD                                        | 77 (71.3%) | 6 (5.6%) | 26 (24.1%) |
| 7. Dietary carbohydrates neutral with respect to cardiovascular disease  | 11 (10.2%) | 84 (77.8%) | 13 (12%) |
There was a trend for female GPs to be more likely to chose “Not sure” responses (Table 2), but this was only statistically significant for Question 4 which suggested that dietary saturated fat is now considered “safe”. 78.8% of male GPs disagreed with this statement, whereas only 41.9% of female GPs disagreed and 35% were “Not sure.”

There was a trend for years in practice as a GP to be a factor in responses to the statements about omega-3 and cardiac events, interpretation of lipid profiles and non-alcoholic fatty liver disease with responses from younger GPs reflecting their lack of experience (Table 3). There was a degree of overlap between questions which did not reach statistical significance: 42.6% disagreed that dietary saturated fat is safe 26% disagreed that LDL more important than HDL and 33% being unsure what advice they should be giving on dietary carbohydrates neutral for CVD and disagreed with the statement that dietary saturated fat is now considered “safe”. 78.8% of male GPs disagreed with this statement, whereas only 41.9% of female GPs disagreed and 35% were “Not sure.”

Although there was an even split for statement 3 on the relative importance of HDL and LDL cholesterol with 15.7% of respondents opting for “not sure” (Table 1), 5.6% added the comment that the HDL/cholesterol ratio is more significant.

Subjects were invited to add comments to all questions and at the end of the questionnaire. There were 37 comments that varied from very brief such as “in moderation” for the question on safety of saturated fats, to longer detailed comments on the role of nutrition science in primary care. Comments of 4 words or less that conveyed little or no meaning, were excluded (5/37). Comments that could be classified thematically (32/37) tended to come from respondents who had been GPs a little longer (Table 4).

From a total of 32 such comments, the commonest comment (10/32) was an acknowledgement that a wide range of nutrients are important to cardiovascular health, and that a pharmaceutical approach alone is inadequate. Comments that are representative examples of each type of response are summarised in Table 5.

### Table 2 Gender trend for response: not sure

| Questions                                                                 | Female | Male |
|--------------------------------------------------------------------------|--------|------|
| (n = 74)                                                                 | (n = 33) |
| 1. Statins more important than diet                                       | 0%     | 0%   |
| 2. Omega-3 relevant to cardiac events                                    | 45.9%  | 27.3%|
| 3. LDL more important than HDL                                           | 14.9%  | 18.2%|
| 4. Dietary saturated fat safe                                            | 35.1%  | 18.2%|
| 5. Endothelial dysfunction & dyslipidemia                                | 28.4%  | 12.1%|
| 6. NAFLD major risk factor for CVD                                        | 24.2%  | 23.0%|
| 7. Dietary carbohydrates neutral for CVD                                 | 14.9%  | 6.1%  |

*Significant gender difference at p < 0.05
*Borderline non-significant gender difference at p = 0.07

### Table 3 Years as a GP influence on responses

| Question numbers | Omega-3 relevant to cardiac events | LDL more important than HDL | Dyslipidaemia linked to endothelial dysfunction | NAFLD major risk factor for CVD |
|------------------|-----------------------------------|-----------------------------|-----------------------------------------------|-------------------------------|
| Q3               | “Agree” sub-group had been mean of 5 yrs. longer as a GP than “Disagree” sub-group | “Uncertain” sub-group had been mean of 6 yrs. longer as a GP than “Agree” and “Disagree” combined | “Disagree” (n = 3) were recent recruits to GP with mean of 5.8 yr. as a GP | “Disagree” (n = 6) were recent recruits to GP with mean of 6.9 yrs. as a GP |
| Q2               |                                  |                              |                                               |                               |
| Q5               |                                  |                              |                                               |                               |
| Q6               |                                  |                              |                                               |                               |

**Discussion**

**Summary**

Comments by participants (Table 5) seem to show a genuine interest in dietary factors that influence cardiovascular disease (CVD). Most GPs (97%) were well aware that diet is of crucial importance in the control of CVD (Tables 1 and 5). However, there was considerable confusion about certain aspects of this topic with 44% being “Not sure” about the role of omega-3 in recovery from cardiovascular events, and 33% being unsure what advice they should be giving on the safety of saturated fats in the diet (35% for female GPs). The lack of teaching on nutritional science in medical schools is illustrated by some responses from new recruits to general practice (Tables 3 and 4).

The uncertainty and doubts about the evidence regarding the heart and long chain omega-3 supplementation is illustrated by a response to the Question 2; “Omega-3 is key to recovery from a cardiac event” with the comment: “If it was, why was it taken off prescriptions?”, whereas others were impressed with the evidence for the anti-arrhythmic and anti-thrombotic activity of dietary long chain omega-3 fatty acids. Although controversial, there is good evidence for the anti-arrhythmic and anti-thrombotic properties of

| Type of comments | N     | Mean years as a GP | Std. Deviation | Std. Error Mean |
|------------------|-------|---------------------|----------------|-----------------|
| None or insignificant | 76 | 13.2 | 9.7196 | 1.1149 |
| Significant | 32 | 15.1 | 11.1773 | 1.9759 |

χ² test: ρ = 0.038
long chain omega-3 fatty acids [10–13]. However, there was an impression of general confusion rather than an informed consensus on this issue amongst these GPs.

While dietary trans-fatty acids were not mentioned in the questionnaire, six GPs commented on the importance of these fatty acids as a risk factor for CVD. There was some agreement on the role of dietary free sugars and saturated fats in CVD with 42.6% of GPs disagreeing with both the statement that dietary saturated fat is safe (Q4), and that dietary carbohydrates are neutral for CVD (Q7). Several comments highlighted the importance of the differences between free sugars (as a CVD risk factor) and complex carbohydrates, with the latter being generally viewed as being beneficial to cardiovascular health.

The overall outcome of this survey provides evidence of a body of professional doctors who have vested interest in diet and health. However, as several GPs indicated, their knowledge of the topic is inadequate and this may apply especially in the early stages of their career.

**Strengths and limitations**

Strengths of this study include canvassing of grass roots GPs who are dealing with the issue of diet and CVD regularly. The main weakness of the study is the poor response rate to the initial e-mailed online survey monkey with only 89 (5.9% of targeted group) responding. However, this response rate is fairly typical for mailings to members of the RCGP. A recent election for places on the college council got an 8.4% response (personal communication from Professor Kamila Hawthorne). While these responders may represent a select group of GPs with a greater interest in nutrition, there was very little difference between the responders and the 19 non-responders. An exception was that more responders disagreed about the value of long chain omega-3 fatty acids for recovery from a cardiac event than non-responders (52.6% versus 33.7%, \( p = 0.076 \)). Responders were twice as likely to opt for "Not sure" for this statement.
Comparison with existing literature
Previous research in this area is limited to the teaching of nutritional science for medical students and associated academic departments [1–3], but tends to be in accord with the impression from this trial that teaching of nutritional science both in medical school and after medical school is inadequate.

Implications for future research
To get an accurate assessment of the needs of GPs in relation to teaching on nutrition and health, a larger sample is needed. However, adequate coverage of this topic could be ensured by starting with focus groups to determine the best questions and format to use for any future research.

Conclusions
GPs see dietary advice as part of their role, but do not consider themselves as experts. Despite the poor response rate, the value of this paper is that it can inform those designing diet/CVD related interventions for GP settings as it highlights information needs of GPs and maybe also practice nurses who are likely to deliver most of this care. The uncertainty about the interpretation of the nutrition science that underlies many of the diet-related issues that GPs experience could, perhaps, be rectified by raising the profile of nutrition on the curriculum in medical schools [1, 2].

Additional files

Additional file 1: Appendix 1. Complete summary of trial data (raw study data used in SPSS analysis downloaded into an Excel file and edited to improve comprehension). (XLSX 20 kb)

Additional file 2: Appendix 2. Comparator data on Southern England GPs from other sources (data on age and gender balance from RCGP and government sources and statistical tests to show how they compared with our respondents). (DOCX 46 kb)

Abbreviations
CVD: Cardiovascular disease; GP: General practitioner; HDL: High density lipoprotein; LDL: Low density lipoprotein; RCGP: Royal College of general Practitioners

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Availability of data and materials
Full data is available as an Excel spreadsheet (Additional file 1: Appendix 1).

Authors’ contributions
JAAN conceived the idea and devised the online questionnaire in collaboration with BAG and analysed the results of the questionnaire and wrote the first draft of the paper. He also found a sample of non-responders and recruited them to complete the same questionnaire. BAG is a professor of human nutrition and was able to give expert advice on the questionnaire. He also read the first draft and suggested amendments and additions to it. Both authors read and approved the final manuscript.

Ethics approval
Patient participation was not involved and this was an anonymised questionnaire for general medical practitioners (GPs). Therefore, after referring to the NHS Health Research Authority we deemed it unnecessary to seek ethical approval.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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