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An online questionnaire survey of UK general practitioners' knowledge and management of familial hypercholesterolaemia

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ABSTRACT

Objective: Early diagnosis and treatment of heterozygous familial hypercholesterolaemia (HeFH) is known to be associated with reduced mortality from premature coronary artery disease, but HeFH remains underdiagnosed. This survey aims to determine knowledge and current management of HeFH in general practice.

Setting: An online questionnaire was administered to general practitioners' (GPs') in the North West of England to assess their knowledge and management of HeFH.

Participants: Practising GPs in the North West of England were contacted by email and invited to complete an online questionnaire. Recruitment discontinued when the target of 100 was reached.

Primary outcome: An assessment of the knowledge and current management of HeFH in GPs.

Results: 100 GP responses were analysed. Although only 39% considered themselves to have reasonable knowledge of HeFH, 89% knew that HeFH was a genetic disorder and 74% selected the correct lipid profile for diagnosing the condition. More than half (61%) were aware of current guidelines on HeFH. Gaps in knowledge were evident when only 30% correctly identified the prevalence of HeFH and half were not aware of the pattern of inheritance. Increased cardiovascular risk was underestimated by majority. 33% thought that they had HeFH patients in their practice confirming underdiagnosis of the condition. Statin therapy was recognised by 94% to be the right medication for treating HeFH. The majority (82%) regarded GPs to be the most effective healthcare professional for early recognition of HeFH.

Conclusions: GPs have an above-average knowledge of familial hypercholesterolaemia (FH) and almost universally consider that they have a key role in the early recognition of undiagnosed HeFH patients in the community. However, there are gaps in awareness that need to be addressed to further enhance the care of FH in the community.

Strengths and limitations of this study

- Our survey was confined to the North West of England and may not therefore be wholly representative of GPs in England.
- In the North West of England, only a small percentage of the population lives in rural districts. Majority of the GP practices are therefore urban and suburban.
- The self-selected cohort was likely to be biased as GPs who had more interest in the subject would be expected to respond more readily and these respondents were more likely to have better knowledge of the subject.
- As the survey was conducted anonymously online, there was no information on non-responders.
- We followed a standardised survey model used in 10 countries. This enables responses from different countries to be compared in due course.

INTRODUCTION

Heterozygous familial hypercholesterolaemia (HeFH) is an autosomal dominant condition characterised by elevated levels of circulating low-density lipoprotein from birth. If untreated, it leads to early-onset coronary artery disease.[1] The prevalence of HeFH is about 1 in 500, and early diagnosis and treatment can improve morbidity and mortality from cardiovascular disease.[2] NICE recommends the use of Simon Broome criteria (see online supplementary appendix box S1) for diagnosing HeFH and children aged 2–10 years can be screened for familial hypercholesterolaemia (FH)[3] while European Atherosclerosis Society advocates using the Dutch Lipid Clinic Network criteria (see online supplementary appendix box S2).[4] Both recommend offering genetic testing to patients who have been clinically diagnosed to confirm diagnosis and to aid screening of family members for the condition.

It is estimated that <25% of HeFH patients are recognised and diagnosed in the UK.[4 5] General practitioners (GPs) request over 90% of lipid profile testing[6] and are

therefore in a good position to identify undiagnosed HeFH patients. Early recognition of HeFH patients and confirmation of diagnosis by genetic testing can lead to accurate referral of patients to secondary care lipid clinics for appropriate cascade screening.[7] Cascade screening aims to identify first-degree relatives of patients with monogenic mutation who may also have HeFH.

Before strategies are formulated to improve the early recognition and diagnosis of HeFH in the community, the current level of understanding and awareness of the condition by GPs needs to be assessed.

METHOD

This survey was part of the '10 countries studies' on HeFH originating from Australia. GPs were requested to complete an online questionnaire to assess their knowledge and understanding of HeFH and their current clinical practice. The questionnaire was designed to answer key questions concerning the detection, management and care of FH by expert members of FH Australasia Network[8] and by GPs in the Health Networks of the Department of Health of the Government of Western Australia and subsequently piloted in a group of GPs in Western Australia and used in a state and international survey.[9 10]

The questionnaire comprised 19 questions on HeFH and 5 questions on the participant's demographics (complete questionnaire is listed in the Appendix). The study method has been described before.[9] The HeFH questions assessed participant's knowledge of HeFH including clinical features of HeFH, diagnostic lipid profile, prevalence and inheritance of the condition, awareness of genetic confirmation of diagnosis and the association of HeFH with premature coronary heart disease. They were asked about their awareness of current guidelines and treatment options for HeFH and their management of patients with the condition, whether they would carry out family screening and whether they would refer to specialist clinics. They were also asked about methods that might help in alerting the possibility of HeFH and which healthcare professional they considered best placed for early recognition of the disorder.

Demographic data gathered included information on the participant's gender, practice type and clinical experience.

There were no open questions and participants were asked to select the most correct statement. They could choose more than one option in some of the questions.

A minimum of 100 responses were sought from each participating country, and the results of the questionnaire were collected and analysed by Survey Monkey and STATA 12 (StataCorp LP, USA). All participants were anonymised.

GPs in the North West region of England were contacted by email by the Deanery of Health Education North West and Greater Manchester Comprehensive Local Research Network. A brief outline of the survey was contained in the email which clearly stated that only practising GPs were invited to take part and the link for the online questionnaire was embedded in the email. Recruitment was discontinued when the target was reached.

RESULTS

A total of 350 GPs were contacted and invited to participate in the survey. Recruitment by email started in June 2015. In total, 111 responses were collected by November 2015 (response rate 31.7%). Of the respondents, 11 did not fully complete the survey; the remaining 100 responses were analysed.

Of the GP responders, 55% were women. Majority of responders practised in urban (41%) and suburban (39%) areas. The mean years in practice of this cohort were 10.3 (±9.2) years. The demographics of this survey cohort reflect current general practice in the UK, where 65% of entrants to general practice specialty training are women.[11]

When asked for familiarity with HeFH, 39% rated themselves to be above average (scoring themselves >4). Sixty-one per cent of them were aware of guidelines on the detection and management of HeFH. Eighty-nine per cent correctly described HeFH as a genetic disorder, and 74% chose the correct lipid profile consistent with diagnosis of HeFH. Thirty per cent chose 1 in 500 for HeFH prevalence, 29% underestimated the prevalence, while 30% chose 'Don't know'. Fifty-one per cent thought there was a 50% chance of first-degree relatives of HeFH patient also having the condition and 21% chose 'Don't know'. Fourteen per cent were correct in estimating increased risk of heart disease in HeFH, and 26% chose 'Don't know'. Fifty-four per cent underestimated the associated risk. On average, responders defined age of onset of premature heart disease to be 49 years in men and 54 years in women. Twenty-eight per cent thought an accurate diagnosis of HeFH could only be made via genetic test, 52% disagreed and 20% chose 'Don't know'. In choosing drugs for treatment of hypercholesterolaemia, respondents could select more than one option. Statins were chosen by the majority of respondents (94%), and 51% chose ezetimibe. Statin and ezetimibe combination was chosen by 50% of respondents for treatment of severe hypercholesterolaemia.

When asked about routine care of patients with documented premature heart disease, respondents could choose more than one option. Taking a detailed family history of coronary artery disease was chosen by 90%. Sixty-five per cent of respondents would also look for tendon xanthomata. Fifty-three per cent looked for arcus cornealis, and 48% would go on to screen close relatives for HeFH. Table 1 gives a summary of the responses from the survey. Though GPs would not know

Table 1 Summary of GP's responses to questions about FH awareness, knowledge and practice

Awareness	
Familiarity of FH rated as above average	39%
Awareness about FH guidelines	61%
Awareness about lipid specialists	50%
Knowledge	
Correctly described FH	89%
Correctly identified lipid profile	74%
Correctly identified prevalence of FH in the community	30%
Correctly identified the transmission rate of FH to first-degree relatives	51%
Correctly identified the cardiovascular disease risk in untreated FH patients	14%
Correctly identified that genetic testing was not required to accurately diagnose FH	52%
Selected statins to best treat hypercholesterolemia	94%
Selected a combination of statin and ezetimibe to treat severe hypercholesterolemia	50%
Practice	
Screened patients with premature CAD for family history	90%
Performed routine family screening of patients with FH (if GP has FH patients under their care)	73%
The most prevalent age for screening young people in a kindred with FH was 13–18 years, which was selected by	45%
Have referred FH patients to a lipid specialists (if aware of lipid specialist)	72%
Opinions on detection	
Selected GPs as the most effective healthcare provider for the early detection of FH	82%
Selected interpretive commenting[17] on lipid profiles to highlight patients at risk of FH	88%

FH, familial hypercholesterolaemia; GP, general practitioner.

all the FH patients in their practices, 33% of respondents believed that they had patients with HeFH in their practices. In 33 respondents who had HeFH patients in their care, 73% would routinely screen patient's children and/or close relatives. In a family with premature heart disease, 45% would test young family members aged 13–18 years despite NICE recommendation of screening children for FH aged 2–10 years,[3] 15% would test those aged 7–12 years and 21% chose 'Don't know'. Fifty per cent of respondents (50 responses) were aware of specialist clinical services for lipid disorders. Of this 50%, 72% (36 responses) had referred patients to the service. Figure 1 shows patterns of current management of HeFH in general practice.

To increase the detection of HeFH in the community, the majority (92%) would welcome assistance. Of these, 46% thought that laboratory alert in a lipid profile report would be useful and 44% preferred a combination of laboratory report alert, clinical software alert and telephone contact from the laboratory. When asked which healthcare providers were perceived to be most effective at early detection of HeFH, 82% thought that GPs would be the most effective, 48% chose specialist nurses, 38% chose lipid specialists and 24% selected cardiologists.

DISCUSSION

There was uncertainty among GPs in their own knowledge of HeFH, and only less than half of respondents considered themselves to be familiar with HeFH. Nonetheless, more than half were aware of guidelines and majority showed that they had good knowledge of the diagnostic criteria and treatment of HeFH. The prevalence of HeFH was less well recognised by the participants and only a third of respondents chose the correct option. Half were not aware of the dominant pattern of inheritance of the condition. Only a third thought that they had HeFH patients in their care; this reflects the continuing low rate of recognition and diagnosis of the condition.[5]

In the Simon Broome criteria, premature heart disease is defined as heart disease before the age of 50 years in second-degree relatives and before the age of 60 years in first-degree relatives. Majority of answers in this survey defined prematurity at a younger age. The association of HeFH with premature heart disease was recognised, but majority underestimated the risk. Most of respondents realised the importance of taking a detailed family history of coronary artery disease in patients with premature heart disease, and half would look for clinical features of HeFH. When managing patients with diagnosed HeFH, majority would screen the patient's children and/or close relatives for the condition, thus acknowledging it as a genetic disorder. More than half of respondents who were aware of specialist lipid clinics had referred patients to the service. This may reflect the need for GPs to refer patients for confirmation FH diagnosis.

Undoubtedly, primary care is well placed for early diagnosis of HeFH.[12 13] This was acknowledged by most of the respondents who considered GPs to be the most effective healthcare professional at early detection of HeFH.

Responses to a comparable questionnaire by 191 GPs in Australia were not different to our results.[9] Twenty-seven per cent knew the correct prevalence, and 29% recognised the increased cardiovascular risk. An

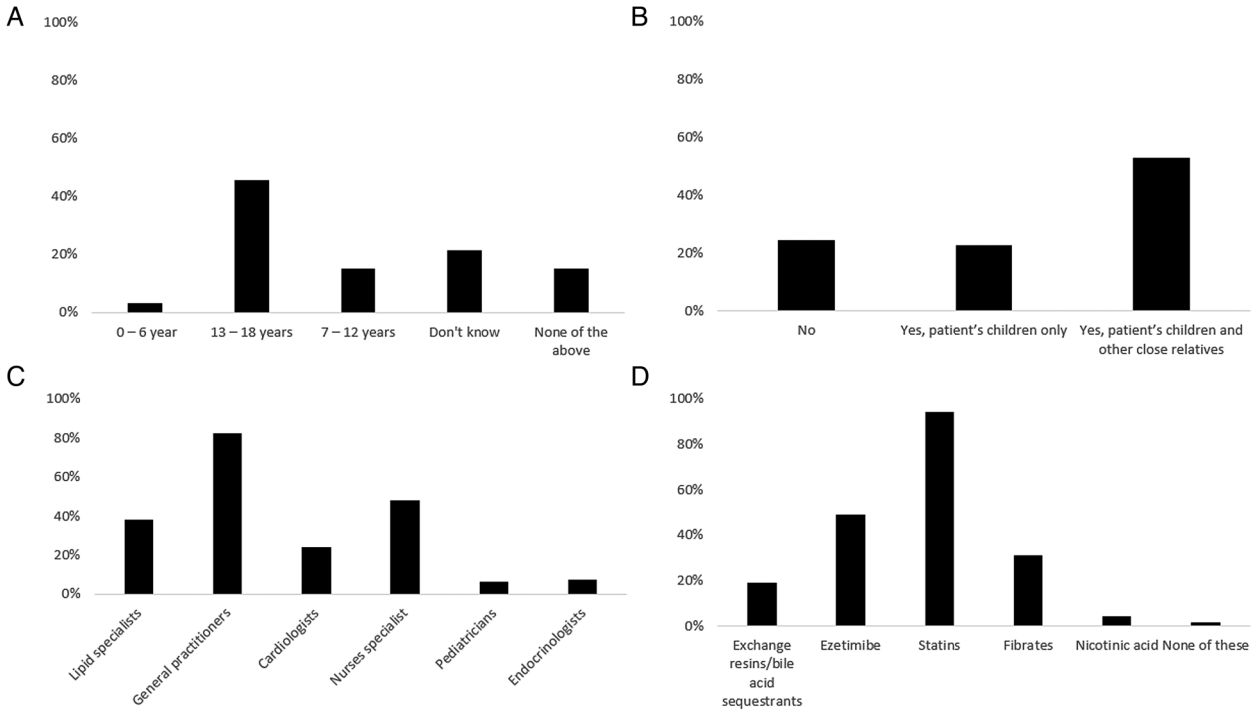

Figure 1 Proportion of GPs who (A) specified these age ranges as the age to test young individuals for FH, (B) would routinely screen close relatives of FH patients, (C) identified that these healthcare providers have a major role in the early detection of FH and (D) selected these drugs as useful in the treatment of FH.

internet-based survey of 500 cardiologists in USA showed that there was limited knowledge of FH.[14] Only 10% reported good understanding of FH, 80% were unaware of prevalence and 63% underestimated the associated increased cardiovascular risk. An online questionnaire survey of 230 physicians from 3 economically developed countries in Asia observed that although 70% considered themselves familiar with FH, only 27% were aware of prevalence and 70% underestimated the increased risk.[8] A recent UK-based questionnaire on FH knowledge surveyed 443 healthcare professionals.[15] The results showed that FH prevalence was underestimated by 23.7% with 25.5% unsure and the associated risk underestimated by 77.7%.

If GPs can improve their knowledge of HeFH and become more confident in making the diagnosis, primary care has immense potential to become an important integrated part of regional screening programme for early recognition and diagnosis of patients with HeFH. These patients can then be referred to Lipid Clinics for cascade screening of their families.[16]

CONCLUSION

This survey not only showed that GPs recognised they were in an important position to identify undiagnosed HeFH but also demonstrated that they were unfamiliar with the condition. Knowledge of HeFH was patchy, and majority would like assistance with early detection. Appropriate training and educational opportunities would improve the knowledge and awareness of the condition. If these could be partnered by a combination of laboratory input and software alerts, the early diagnosis of HeFH could be increased effectively.

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