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## ORIGINAL ARTICLE

# A case study of the impact of a dietitian in the multi-disciplinary team within primary care: a service evaluation

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## Abstract

**Background:** Expanding the primary care workforce to alleviate general practitioner (GP) workload, improve access and improve quality of care is a current UK strategy. Evidence suggests dietitians can improve patient outcomes and make cost savings. The present study aimed to evaluate a dietitian working as an expert generalist and first contact practitioner (FCP) in a general practice multi-disciplinary team (MDT) to provide appropriate care to patients and reduce GP workload.

**Methods:** A dietitian was employed for 6 months at 0.6 full-time equivalents in a group of general practices in Devon, UK. Data were collected on the referral source, patient satisfaction, health outcomes and changes in prescribing data for all patients seen by the dietitian. Focus groups and interviews provided data to understand the experience of introducing a dietitian into the team.

**Results:** This model of service delivery showed the dietitian acting as an expert generalist, a FCP and able to educate the MDT. A range of professionals within the MDT referred patients with a wide range of diagnoses (both paediatric and adults) and the dietitian acted as a FCP for 29% of patients. Savings were made for the optimisation of medicine management.

**Conclusions:** The dietitian can improve patient-centred care for several patient groups; enhance learning for staff around nutrition and dietary issues; and contribute to more efficient working and cost savings around prescription of nutritional products. This was an evaluation of one service and further research is needed to understand the value dietitians can contribute and the factors supporting effective and efficient working in this context.

## KEYWORDS

dietetics, first contact practitioner, general practice, multi-disciplinary care team, patient-centred care, primary health care

## Key points

- A dietitian fully embedded in the general practitioner primary care multi-disciplinary team can improve patient-centred care for several patient groups; enhance learning for staff around nutrition and dietary issues; and contribute to more efficient working and cost savings around prescription of nutritional products.
- Dietitians are able to act in certain situations as first contact practitioners.
- Further research is needed to understand the value dietitians can contribute and the factors supporting effective and efficient working in primary care.

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## INTRODUCTION

The UK general practitioner (GP) contract changed in 2020<sup>1</sup> to include provision to employ allied health professionals, including dietitians. This provision was made to expand the primary care workforce to alleviate workload pressures on existing staff, improve access to care and improve the quality of care.<sup>2</sup> Physiotherapists, paramedics and pharmacists have been the first professional groups to develop roles in primary care, and research among these professions identifies clinical effectiveness, cost effectiveness, safety and acceptability to patients and other staff as key issues to confirm.<sup>3–7</sup> Roles in primary care continue to evolve and currently profession specific competency and training frameworks are being developed for both advanced clinical practitioner (ACP) and first contact practitioner (FCP) roles,<sup>8</sup> based on the post-registration professional development framework.<sup>9</sup> Yet there are few studies examining the issues listed above. ACPs are registered healthcare professionals educated to master's level who have developed the skills and knowledge to allow them to take on expanded roles and scope of practice caring for patients. A FCP is a registered health professional who is the first point of contact for patients, providing new expertise and increased capacity to general practice and providing patients with faster access to the right care. This idea has recently been further defined as a diagnostic clinician able to assess and manage undifferentiated and undiagnosed presentations, working at the top of their scope of practice.<sup>8</sup> The term “expert generalist” is a more general term referring to a dietitian with the knowledge and expertise to advise patients with a wide range of diagnoses, both adult and paediatric, akin to a GP but for dietetics.<sup>10</sup>

Research in the physiotherapy and paramedicine professions has shown that there are large variations in how roles are defined and organised.<sup>3,5</sup> These variations reflect local needs and different ways of working, including the types of patients seen, the clinical problems managed, and the relationships with other acute and community services. This suggests that primary care managers need to analyse the skills of their workforce to match the needs of local populations. Given the influence of diet and nutrition on health and disease, a dietitian will have considerable skills and expertise to contribute.

Dietitians are the only qualified health professionals that assess, diagnose and treat dietary and nutritional problems at an individual and wider public health level.<sup>11</sup> Dietitians may support general practice in a variety of ways, as described in Box 1, but there is little evidence to demonstrate which of these theories deliver the best and most efficient model of care. What evidence exists shows that dietetic-led clinics in the area of irritable bowel syndrome can reduce the need for referral to secondary care and save GP time.<sup>12,13</sup> Dietitians can contribute to significant cost savings by optimising medicines

### BOX 1 Possible models of dietetic care which may support primary healthcare activity.

- Dietitians can train to become first contact practitioners (FCPs); a diagnostic clinician able to assess and manage undifferentiated and undiagnosed presentations.<sup>8</sup> In this way, they can work directly with patients accessing primary care and support the work of general practitioners (GPs). However, the ways in which these practitioners operate has yet to be defined, and the role of FCP dietitians is in its infancy and requires evaluation.
- Dietitians can treat a wide variety of patients in a range of clinical areas, such as paediatrics, gastroenterology, diabetes, cardiovascular disease, undernutrition and frailty. If dietitians act as ‘expert generalists’ (as opposed to a specialist in one condition) and support the on-going management of a full range of patients, there is the potential to displace some GP workload and improve patient outcomes.
- Dietitians can improve patient satisfaction and clinical outcomes in patients who need nutritional advice. They can help them to make informed choices about their health-related behaviours that will influence long term health outcomes. This can help prevent deterioration and the need for GP input.
- Dietitians have the necessary leadership skills to run dietetic-led clinics for specific diagnoses (e.g., irritable bowel syndrome,<sup>9</sup> coeliac<sup>10</sup> and diabetes<sup>11</sup>) and can also support the work of other multi-disciplinary team (MDT) members (e.g., practice nurse) in managing weight loss and diabetes. This frees up the GPs' time to focus on patients in most need of their care, and enables other members of the MDT to work more efficiently and effectively.

management in the areas of Advisory Committee of Borderline Substances (ACBS), such as oral nutritional supplements (ONS), paediatric formula, etc.<sup>14–16</sup> Not only can dietitians reduce costs<sup>17</sup> and save GP time, but also there is systematic review evidence that shows dietitians improve patient outcomes with individual consultations,<sup>18,19</sup> and that inter-professional collaborative practice (including a dietitian) delivers improved patient outcomes for diabetes and hypertension.<sup>20</sup> Working in primary care requires generalist training, and dietitians are trained as generalists. They are also trained in the management of chronic disease, behaviour change, continuity of care, preventative care and therapeutic

consultation, all of which are integral to working in primary care. Therefore, there is a strong rationale for the inclusion of dietitians within the primary care multi-disciplinary team (MDT).

However, dietitians cannot simply adopt models of working from other professions because it is necessary to take account of the different professional background, as well as the individual practitioner's competencies, experience and skills. Some of the primary care research on the physiotherapy profession focuses on the triage process needed to identify patients with musculoskeletal conditions, who can then be immediately treated by the first contact physiotherapist, without further reference to the GP.<sup>6,21</sup> This is a new concept for dietitians that needs further exploration, but triage would add another step requiring a dietitian or another healthcare professional to review the referral before the patient can be assigned to the relevant professional. This contrasts with musculoskeletal problems, which can be more accurately identified by the patient or receptionist. This indicates that, although research of other professionals may be informative and guide the development of new models of dietetic care, it is vital that new ways of working are evaluated to ensure they are effective. We previously reported dietitian-led management of frailty and malnutrition in primary care,<sup>22</sup> showing how a dietitian could work as a FCP to improve patient outcomes and make cost savings. The aim of the project was to evaluate a dietitian working as a FCP and expert generalist within a general practice MDT to provide appropriate care to patients and therefore reduce GP workload.

The objectives were to:

1. Evaluate the feasibility of embedding a dietitian within a MDT and assessing the tasks a dietitian can undertake. In this context "feasibility" refers to how the dietitian could integrate the role within the MDT in a primary care network.
2. Explore the views of the current MDT members, dietitian, GP and patients as to the appropriateness of the model of care.

## METHODS

### Context and design

This was a service development and evaluation project using both quantitative and qualitative methods. A registered dietitian with 9 years clinical experience was employed, for 6 months at 0.6 full-time equivalents, to work as part of the MDT in a group of general practices in Devon, UK (referred to as a primary care network in the UK). This included an induction phase to orientate the dietitian to the services provided in the group and to understand the roles of all the team members. The group incorporated six general practices, with the dietitian

working at two of these. The MDT included pharmacists and paramedics working as FCPs, as well as a physiotherapist. The group wanted to expand the scope of their MDT and volunteered to participate in this project. The dietitian's employment costs were included in the project funding. Further details of the context can be found in the Supporting information S1.

### Data collection

To fulfil the objectives, the following data was collected (detailed in Supporting information Table S2):

- Descriptive data on the referral source, diagnosis, relevant blood results, patient satisfaction questionnaire data and health outcomes (these depended on the diagnosis).
- Changes in ACBS prescribing data to calculate costs savings from optimisation of prescribing practice.
- Qualitative data from focus groups or interviews to which the whole MDT were invited, to understand the experience of introducing a dietitian into the team.

### Data analysis

Quantitative data were analysed using SPSS, version 25 (IBM Corp.). Descriptive data are presented using the mean  $\pm$  SD (or median and interquartile range when a non-parametric distribution was found using a Shapiro–Wilk test), and frequencies are indicated as percentages.

A focus group was held with the MDT members to understand the experience of having a dietitian practising within the team. The focus group took an appreciative inquiry approach<sup>23</sup> seeking to explore the positive experiences gained from the project, at the same time as exploring how the role could be amplified and further developed. The focus group was conducted using a pre-defined discussion schedule (see supplementary information for details) by one of the research team (JC), audio-recorded and transcribed verbatim. In addition, individual interviews of patients seen by the dietitian were conducted via phone by JC, using the semi-structured format to determine their experience of the new service. The objective of each discussion was to determine experience, value, productivity and outcomes for individual practitioner or patient, and service. These activities took place after the project intervention was completed (March 2020), enabling the researcher to capture the participant stories. These two data sets were analysed and identified overarching themes that inform the impact that the new dietetic provision had for service, practitioner and patient. Thematic analysis, based on the methods of Braun & Clarke,<sup>24</sup> was undertaken (by JC and AC) to agree coding and identification of themes.

## Ethical approval

Ethical approval was granted by the University of Plymouth, Faculty of Health, Research Ethics and Integrity Committee. Permission was also obtained from Medical Group for the service evaluation to be undertaken.

## RESULTS

To evaluate the feasibility of embedding a dietitian within a MDT and assessing the tasks a dietitian can undertake, it is important to understand the context of the working situation. The GP surgeries in which the dietitian worked served a rural community with low ethnic diversity, a higher proportion of older ages, but varied socio-economic groups. Further details can be found in the Supporting information S1. The data in Tables 1 and 2 outlines the number of referrals and the characteristics of the patients.

In total, 141 individuals (249 contacts) had dietary consultations (type and number of appointments are shown in Supporting information Table S3); an additional 30 patients were signposted to other professionals and/or discussed with the primary care team. The referral source and whether the dietitian acted as a FCP are shown in Table 1. We defined acting as a FCP as when the dietitian solely managed the patient's care with or without also diagnosing the condition (e.g. malnutrition, frailty, paediatric allergy). The dietitian saw 41 (29%) of the patients in a FCP role, taking responsibility for managing these complex patients, developing integrated and tailored treatment plans in partnership with patients, and reducing the need for pharmacological interventions. An example includes the ACP (a paramedic) triaging patients from the urgent care list and referring selected patients immediately to the dietitian, who then went on to manage their care. For the other patients, the dietitian

**TABLE 1** Referral source and whether the dietitian acted as a first contact practitioner.

Referral source	Number of patients ( <i>n</i> = 141)	
	<i>n</i> (%)	Seen as first contact practitioner, <i>n</i> (% of those referred)
Practice nurse	53 (37.6%)	0 (0%)
General Practitioner	42 (29.8%)	0 (0%)
Pharmacist	18 (12.8%)	18 (100%)
Advanced clinical practitioner (paramedic)	16 (11.3%)	11 (69%)
Community dietitian	11 (7.8%)	11 (100%)
Social prescriber	1 (0.7%)	1 (100%)
Total	141 (100%)	41 (29%)

**TABLE 2** Characteristics of the patients seen by the dietitian.

Characteristic	Number of patients ( <i>n</i> = 141)	%
<b>Age group (years)</b>		
Paediatric patients (0 weeks to 18 years)	21	15
Adult (18+ years)	120	85
<b>Diagnosis (adults only; <i>n</i> = 120) (some patients had more than one diagnosis)</b>		
Cardiovascular disease	79	56
Diabetes	65	46
Respiratory disease	29	21
Bone disease	31	22
Mental health disorders	28	20
Gut disorders	27	19
Chronic kidney disease	18	13
Neurological conditions	8	6
Cancers	5	4
Liver disease	5	4
Other	11	8
<b>Reasons for paediatric referral (<i>n</i> = 21) (some had more than one reason)</b>		
Food allergy and intolerance	16	76
Weaning advice	11	52
Colic	1	0.5
Constipation	1	0.5
Fussy eater	1	0.5

provided dietary assessment and treatment to support the ongoing care, working alongside another health professional, usually the referrer.

Table 2 shows the characteristics of the patients reviewed by the dietitian illustrating the range of ages and conditions seen. Most were adults and many had multiple long-term conditions with complex needs, and the highest percentage had either cardiovascular disease or diabetes. Paediatric patients were referred primarily for food allergy and intolerance or weaning advice. The dietitian used the nutrition and dietetic process in consultations.<sup>25</sup>

Other tasks included review of supplements and medication changes, which would ultimately lead to cost savings. The dietitian worked in collaboration with the pharmacist, diabetes nurse, ACP and GP to instigate appropriate changes after dietary manipulation. Examples include:

- Medications stopped – reflux suppressant (Gaviscon), histamine 2 blocker (ranitidine), laxative (Movicol), types of insulin



- Medications reduced – oral hypoglycaemic medications and insulin
- Optimisation of ONS (switching, stopping and reducing as appropriate)
- Optimisation of infant milk formula (switching, stopping and reducing as appropriate)

Seventeen patients had their ONS reviewed and all 17 had the supplement stopped, changed or reduced. The prescription changes from just these 17 patients equated to projected annual cost savings of £5258.

Twenty-two of 77 (29%) patients returned the satisfaction questionnaire. A lack of administrative support meant patients consulted over the phone could not be sent feedback forms; only patients who were seen face to face were given them. Table 3 shows that patients felt that the dietitian used a patient-centred approach during the consultation and were highly satisfied with the service.

To illustrate the range of impacts the dietitian had on the care of patients, three case studies are presented in Boxes 2, 3 and 4. These show opportunities for cost savings as a result of the optimisation of prescriptions and improvements in the patients' condition, thus preventing further healthcare service use, including GP consultation time, as well as potential future prevention of complications.

In total, 65 patients with type 2 diabetes and three with pre-diabetes were seen. Before seeing the dietitian HbA1c levels ranged from 44 to 92 mmol/mol (normal HbA1c < 42 mmol/mol). Only 20 patients had follow-up HbA1c during the project. Two were on steroids, which is known to raise glucose levels, leaving 18 patients with comparable data after the dietetic consultation. Of these 18 patients, 13 (72%) were given dietary advice only (no medication changes) and five (28%) were given both dietary advice and medication changes. Following this advice, 17 patients' HbA1c levels reduced; the one patient with no response was started on weekly glucagon-like peptide-1 injections. In one patient, HbA1c reduced from 44 to

36 mmol/mol, meaning that they were no longer pre-diabetic. Three were no longer in the diabetic range (HbA1c <48 mmol/mol), 10 lowered their HbA1c to between 48 and 58 mmol/mol and only three were above 59 mmol/mol. Lowering HbA1c is known to reduce the

## BOX 2 Case study of an infant with suspected non-IgE-mediated cow's milk protein allergy or cow's milk protein intolerance.

### Case study boxes

**PATIENT:** A 24-week-old infant presented with a rash on their face, being irritable after feeding, having constipation and frequent vomiting. The infant was on a standard formula feed and the weight had dropped from the 91st centile to below the 25th centile. An antacid had initially relieved symptoms but they had since returned. The patient was referred to the dietitian by the pharmacist.

**DIETETIC INTERVENTION:** The dietitian suspected a food intolerance and recommended switching the milk formula to an extensively hydrolysed hypoallergenic formula. This resulted in cessation of the symptoms, stopping the antacid and a diagnosis of food intolerance confirmed. The infants bowel movements returned to normal, they became less irritable, sleeping improved and weight started increasing. The dietitian then provided advice on weaning, including advice on a dairy free diet and evidence-based guidance for the reintroduction of milk and dairy at age 1 year.

**OUTCOMES:** General practitioner time saved, antacid prescription costs saved, infant thriving, improved experience for the patient and mother, and no further input required from pharmacy.

TABLE 3 Summary of the responses from patient feedback.

Question	Completely, <i>n</i> (%)	Well, <i>n</i> (%)	Somewhat, <i>n</i> (%)	Poorly	Not at all
Did you feel able to raise concerns about your health?	19 (86%)	2 (9%)	1 (5%)	0	0
Did you feel that your concerns were listened to and addressed?	19 (86%)	3 (14%)	0	0	0
How much did you feel you were involved in decisions about the treatment and care goals?	19 (86%)	2 (9%)	1 (5%)	0	0
How well did you feel supported to achieve the goals?	17 (77%)	3 (14%)	2 (9%)	0	0
	Excellent	Good	OK	Poor	Very Poor
Overall satisfaction	17 (77%)	5 (23%)	0	0	0
I was treated with dignity and respect (yes)	22 (100%)				
I would recommend the service to family and friends (yes)	21 (95%)				

**BOX 3 Case study of a woman with previous bariatric surgery and current weight regain.***Case study boxes*

**PATIENT:** A 53-year-old woman presented with weight re-gain following bariatric surgery 18 years ago. Post-surgery, she had achieved her target weight of 57 kg. Eight years ago, she had been prescribed an oral nutritional supplement but this prescription had not been reviewed since. Her weight was now self-reported as between 76 and 88 kg (body mass index 30.35 kg/m<sup>2</sup>). The patient was referred to the dietitian by the pharmacist.

**DIETETIC INTERVENTION:** The diet history revealed adequate energy and protein intake without the need for oral nutritional supplements. The dietitian advised stopping the supplement drinks and instead starting a multi-vitamin and mineral capsule in line with national guidelines, due to the risk of micronutrient deficiency following bariatric surgery.

**OUTCOMES:** Weight gain stopped and aiming for gradual weight loss. The prescription change saved £58 per month (£697 per year).

**BOX 4 Case study of a man diagnosed with type 2 diabetes.***Case study boxes*

**PATIENT:** A 57-year-old man presented with type 2 diabetes, managed on metformin but with a raised HbA1c. The practice nurse referred the patient to the dietitian, after he had attended the structured educational sessions.

**DIETETIC INTERVENTION:** The dietitian provided tailored dietary advice and agreed a diet plan with the man; reduce carbohydrate food portions, reduce alcohol intake and alternative snack choices. The man was followed up after 3 months and was found to be adhering well to the dietary plan.

**OUTCOMES:** His HbA1c reduced from 61 to 54 mmol/mol (target 53 mmol/mol) and body mass index reduced from 26 kg/m<sup>2</sup> to 24.4 kg/m<sup>2</sup> (in the healthy range); thus, he was at lower risk of diabetes complications and there was potential to reduce his metformin and make a cost saving.

risk of complications of diabetes.<sup>26</sup> In addition, there were improvement in lipids levels, reductions in blood pressure and body mass index, and an improvement in fatty liver.

Our second objective was to explore the views of the other MDT members and patients regarding the appropriateness of the model of care. The practice nurse was not able to attend the focus group but was interviewed separately. This highlighted a particular issue for the practice nurse regarding diabetes nutrition education. Prior to this project, it was covered during structured group education sessions with dietary reviews offered by the practice nurse. Therefore, the practice nurse had taken on a key role in diabetes nutrition education, but with little support and training. Having a dietitian working alongside the practice nurse allowed education and support to be offered, helping the nurse feel more confident in providing appropriate dietary education and enabling her to refer more complex patients for dietetic advice within the practice team. The dietitian offered complex patients personalised dietary advice more quickly. Patients not wishing to attend group education, or who needed to be seen individually, had long waiting times. The dietitian reduced these waiting times, thus providing a better quality service.

The focus group included a GP, pharmacist, pharmacy technician, ACP paramedic, the dietitian and two researchers (JC and AC). In addition, four patients who had been seen by the dietitian were interviewed. They were identified by the practice team and all consented to take part. These data revealed three main themes (Knowledge, Ownership and Awareness) that ran through all of the six sub-themes (Socialisation, Education, Patient Safety, Quality Referral, Compliance, Satisfaction). The themes illustrated the wide-reaching influence that the dietetic service had, creating ripples of change, productivity and influence on service, practitioner and patient alike.

**Knowledge**

Learning and education played an integral part in helping the whole team to develop new knowledge and understanding of this specialist subject. This often occurred *ad hoc* during breaks where other staff were able to ask the dietitian questions.

My confidence to signpost and give dietary advice increased ... after the impromptu teaching sessions (Paramedic) (Sub-theme: Education, Quality Referral)

We had a clinician who supports us educationally, takes ownership and does it better [referring to having a dietitian within the

team] (Pharmacist) (Sub-theme: Education, Patient Safety, Satisfaction)

I don't know a lot about nutrition, and I have learnt a lot from the dietitian (GP) (Sub-theme: Education, Satisfaction)

Staff also noted that they would consult the dietitian about specific patients, utilising specialist knowledge and skills effectively.

A variety of different patients were discussed with the dietitian (GP) (Sub-theme: Quality Referral)

Patients reported that they became an active participant in understanding the rationale and relevance of their treatment plan, and this influenced their behaviour. They became advocates of their newfound knowledge, keen to share their experience and learning with others. This expert knowledge excited greater enquiry in practitioners and patients, enabling a deeper awareness that resulted in the right care.

## Ownership

This theme linked compliance and socialisation which held significance in the specialist consultation outcomes. As a result of the nature of the collaborative relationship formed, patients engaged in the care process understanding rationale and feeling active or 'owning' within the plan, thereby strengthening compliance.

Diabetes patients were really supported with more time and dietary advice [Referring to the dietitian] (Pharmacist) (Sub-theme: Patient Safety, Satisfaction)

Dietitian worked with me rather than at me (Patient 3) (Sub-theme: Compliance, Socialisation)

This suggests that the partnership between professional expert and the patient's experience were able to develop a comprehensive and achievable treatment plan. The influence of the dietitian's role went beyond the mere treatment plan with patient 1 stating "I felt safe and understood". Here she valued the specialist knowledge held by the dietitian to accurately diagnose her baby, something that had not been achieved in a number of months. This enabled rest for the family unit, helping them to come together again, which brought security and renewed confidence in the service. Others echoed this finding:

With the dietitian there is a better experience for the patient and less time consuming

for pharmacy [referring to education on infant formula and ONS prescriptions] (Pharmacy Technician) (Sub-theme: Satisfaction, Quality Referral)

## Awareness

This theme revealed the diverse influence that the dietitian had; their presence and engagement with all practitioners, providing support and expertise, enhanced referral processes and patient satisfaction. Patients from the urgent care list were referred to the dietitian because the ACP recognised that "[the dietitian] who has been able to manage these". The pharmacist recognised traditional prescription patterns were changing to reduce some medicines, influencing the resource need and the overarching spend. An important finding was the influence that the dietitian had in supporting the inter-professional team and enhancing job satisfaction, by enabling skills to be utilised efficiently and with patients having a quality experience. Patient 4 said: "she made it simple which made me confident that I could do it".

The employment of a dietitian in the practice had significant and widespread effects, rather like the ripples on a pond. Her influence was key to improved patient-centre care and compliance of patients with their necessary treatments. She altered positively the skill utilisation within the practice and enhanced staff job satisfaction.

A specialist in nutrition allows for patient centred care, and patients to be correctly managed (GP) (Sub-theme: Patient Safety, Quality Referral, Satisfaction)

## DISCUSSION

This evaluation of a new model of service delivery shows the feasibility of dietitians being embedded into the primary care MDT as a valuable and integral member. The dietitian acted as an expert generalist and FCP, although the dietitian may not necessarily be the first point of contact for all patients. The definition of a FCP has developed since this case study occurred; therefore, it is important to understand how dietitians work in this setting and whether they can take on the role of FCP successfully. The data demonstrated that a range of professionals within the MDT will refer patients to the dietitian, and the dietitian can treat and advise patients with a wide range of diagnoses, both paediatric and adults.

The data suggest that dietitians can save money by ensuring that ONS and other medications are appropriately prescribed and monitored. These savings represented only a fraction of the patients prescribed ONS, and so additional



savings could be made with ongoing work. Other studies have shown similar saving for optimisation of ONS.<sup>14,16,22</sup> There are other potential cost savings that are more difficult to quantify and require large scale research trials to accurately assess (e.g. improved diabetic control, prevention of long-term conditions, costs of hospitalisation, health and care service use). Cost effectiveness evaluations are important to understand the impact of new roles and models of care such as this<sup>2</sup> and are an important research priority.

The data also suggest that dietitians can improve patients' health and reduce the risk of complications; examples of beneficial outcomes for paediatric allergy, weight management and type 2 diabetes are illustrated. A separate evaluation of the management of paediatric allergy shows in more detail the benefits dietetic-led care can bring.<sup>27</sup> Dietitians have a large role to play in the care of patients with diabetes and obesity. They can contribute to education through training staff, as well as seeing complex patients and delivering significant clinical improvements through dietary manipulation, as shown in this study. Diabetes and obesity are areas where dietitians, with additional training, can potentially work as a FCP. At the time of this study, the training for FCP dietitians had not been developed. Another evaluation of dietetic-led care for frail and malnourished adults also showed the value of a dietitian working as a FCP who could improve clinical outcomes,<sup>22</sup> demonstrating the scope of dietetic practice further. Dietitians are well positioned to enable practice managers to deliver tailored services to provide more effective and efficient care to their patient population, particularly for those with long-term conditions and conditions managed through dietary manipulation.

Acceptability to patients is an important element in designing new healthcare services, and we show here that patients value the input of a dietitian and feel they provide patient-centred care. Research examining paramedic input in primary care has shown mixed results in this respect<sup>4</sup>; although most patients report high levels of satisfaction, there is a minority who still wish to be assessed by their GP. Because dietitians are more likely to see patients requiring on-going disease management, it may be that the patients understand better the need for specialist dietary input instead of seeing their GP. The patient acceptability of first contact physiotherapy has also been studied<sup>28</sup> and it was found that patient expectations and understanding of the role was crucial to acceptance, as was the accessibility of the practitioner. These issues may also influence the acceptability of dietitians in primary care practice, but we were not able to examine in this project. There is little or no exploration of patients' views on accessing a dietitian directly in their GP surgery, and this is an area for further research.

The qualitative data, exploring the views of the MDT members, provides a more nuanced understanding of how the dietitian integrated and complemented the

MDT. Importantly, the dietitian was a source of information for staff, informally through general discussions, as well as planned formal training. They enhanced the skills and knowledge of other members of the team, and this is likely to improve other staff's confidence to deliver dietary advice, and the quality of that advice. In time, the level of nutritional knowledge will increase, a wider range of patients will receive accurate nutritional information and staff will be in a better position to capitalise on opportunities to deliver information when patients are receptive. These data suggest that there are other opportunities for the dietitian to provide more formal education to the primary care team to ensure nutritional issues were treated according to guidelines and identified rapidly. For example, appropriate prescribing of infant formula and ONS.

This project employed a dietitian for 0.6 full-time equivalents, yet, at the end of the project, waiting lists for her input were growing. This suggests that a dietitian could be employed for more time within similar settings. Further analysis of case mix and which diagnoses dietitians are best placed to treat is needed. The population served by a general practice or primary care centre will vary according to several factors, such as location (city centre, urban, rural), ethnic diversity, age range, economic status, etc., and this may dictate the expertise required by the dietitian, and the focus of their work. It should be noted that the dietitian was the first in this role in the practice and, as such, spent time setting up systems and establishing the role. This means the caseload size had not stabilised and therefore these figures cannot yet represent an estimate of caseload size.

## Strengths and limitations

This is one of the first case studies examining how dietitians employed directly by primary care networks, as a result of the changes in the GP contract, can contribute to the care and monitoring of a general practice population. Nevertheless, there are several limitations worthy of note. The low rate of return of the patient feedback forms limits the conclusions that can be drawn from these. The case study took place before the role of FCP was formally defined and training was developed. The information presented here was shared with Health Education England on completion and helped inform some of the developments that have occurred. We used the appreciative inquiry approach in our qualitative data collection, which specifically focuses on existing positive dynamics, noting but not focusing on negative aspects. This may result in a bias towards positivity. The presence of the dietitian in the focus group could also bias discussion away from negative or critical feedback. However, the interviews were not subject to this latter bias.

## Recommendations for practice

We can identify several factors that may influence successful model implementation. First, the dietitian was experienced and able to act as an expert generalist (i.e., had high level dietetic skills and knowledge in a wide range of diagnostic groups), including experience in managing paediatric patients and high level skills in behavioural change. She was not yet a qualified ACP, in part because, at the time of the study, the defined role and training did not exist. The framework for qualification at this level is now available.<sup>8</sup> National work by Health Education England suggests that staff in general practice roles should be working at the level of an “agenda for change” pay band 7 or 8a.<sup>8</sup> An ACP fits into the higher pay band with advanced skills and competencies (master's level) across clinical, leadership, education and research domains, and the FCP fits band 7.

Second, the primary care network organised an induction programme for the dietitian ensuring she met relevant members of the team and helping her to integrate quickly. Furthermore, the practices encouraged staff to take regular breaks in a separate staff area, and this allowed networking, informal education and raised awareness of the dietitian's presence. The Systmone database (The Phoenix Partnership, Horsforth, UK) (a database commonly used within general practice to manage patient records) included a “task” module that enabled rapid communication and action between the team and the dietitian (i.e., when the dietitian logged-in, questions and tasks from other staff were listed), supporting effective collaborative working and enabling better patient centred care.

Finally, the dietitian was employed by the community dietetic service and this department provided the service to the primary care network. This ensured that the dietitian had access to resources and professional support and education. This could be an important factor because working independently can be professionally isolating, and inefficient in terms of production of diet sheets, educational materials, etc. This could be an important consideration when setting up contracts for such a role. In addition, it will be important that dietitians working in general practice do not simply reproduce services already available within the community. The fact that this dietitian was employed by the community service meant that the role developed in the GP surgeries enhanced and integrated with current community dietetic services. Because dietitians are a limited resource, it will be critical to consider workforce supply. For these roles to expand, it may be necessary to train more students, but there are also opportunities for freelance dietitians to move into this sector.

The experience of managing this project and the learning acquired during the implementation highlighted several recommendations for improving the service

model. Importantly, administrative support for the dietitian is needed for her to work efficiently. There needs to be scope to delegate tasks that can be performed by a receptionist or administrator. For example, booking patient appointments, evaluating the service and organising follow up.

To optimise the dietitian's ability to adjust prescriptions, they would ideally have a supplementary prescribing qualification (dietitians are not yet eligible to train as independent prescribers) and a supplementary prescribing arrangement needs to be in place. In the present study, the dietitian did not have this qualification. Without this, any prescription changes need to be implemented by the GP or the ACP and this will impact on their workload. In UK law, supplementary prescribing arrangements describe a partnership between an independent prescriber (such as the GP) and a supplementary prescriber (in this case the dietitian) to implement an agreed clinical management plan for an individual patient with that patient's agreement. These agreements can support more efficient working and greater time saving for the GP.

## CONCLUSIONS

This evaluation demonstrates the feasibility and benefits of including a dietitian within a primary care network's MDT. The dietitian can contribute significantly to improving care for a number of patient groups; they provide patient-centred care; they enhance formal and informal learning for all staff and, in the longer term, will upskill the whole team around nutrition and dietary issues; and they can contribute to more efficient working and cost savings around the prescription of nutritional products.

What is not clear is whether this increased skill mix will increase GPs' job satisfaction and enhance GP recruitment and retention. These are crucial issues in view of the work force crisis in general practice. Although it is probable that dietitians can support many patients and thus, prevent patients needing GP input, it is not clear how much impact this will have on the work pressures GPs face. Nevertheless, ultimately, high-quality patient centred care is what patients need and want and, in this model of care, dietitians appeared to contribute to this goal. A top priority for research in this area is to thoroughly evaluate new ways of working, such as this, to show what changes in clinical outcomes can be achieved and what the cost–benefit relationships are as new roles are developed.

## AUTHOR CONTRIBUTIONS

All authors contributed to the conception and design of the study, the analysis and interpretation of the data, and the drafting of the paper. All authors critically reviewed

its content and have approved the final version submitted for publication.

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## CONFLICTS OF INTEREST STATEMENT

Mary Hickson and Avril Collinson are members of the BDA. Jenny Child has no conflicts of interest to declare.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available as a result of privacy or ethical restrictions.

## ETHICAL STATEMENT

Provided by University of Plymouth, Faculty of Health, Research Ethics and Integrity Committee (Reference: 18/19-1091).

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## PEER REVIEW

The peer review history for this article is available at <https://www.webofscience.com/api/gateway/wos/peer-review/10.1111/jhn.13217>.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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