

Dietetic Referral Practices for Obesity Management in Primary Healthcare: A Systematic Review

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Abstract

Background: An interprofessional approach is recommended in the management of obesity.

Objectives: To elucidate: 1) dietetic referral practices of primary care providers to prevent and manage obesity, and 2) the factors that enable or disable the use of dietetic referrals.

Methods: Inclusion criteria: 1) written in English 2) primary care settings, 3) weight-management approaches, 4) referrals to Dietitians, 5) adult patients, 6) published from 2000 and 2017, and 7) meets standard quality criteria.

Findings: Factors hindering the use of dietetic referrals included lack of accessibility to dietetic services and associated cost to patients. Working in proximity and relationship building were considered enabling factors for providing dietetic referrals.

Conclusions: Multidisciplinary primary care settings facilitate dietetic referrals through relationship building, accessibility to dietitians, and cost-free dietetic services.

Keywords: Primary care; Family physicians; Dietetic referrals; Clinical practice; Obesity; Weight management

Background

Obesity is multifactorial in its nature and is defined as a Body Mass Index (BMI) equal to or greater than 30.0 kg/m² [1]. Worldwide obesity prevalence has more than doubled between 1980 and 2014, with over 600 million adults having obesity in 2014 [2]. Obesity contributes to many diseases such as type 2 diabetes, hypertension, stroke, and certain types of cancers [3,4]. Additionally, both obesity and its comorbidities have negative consequences on healthcare costs [5].

Individualized nutrition counselling has been shown to be essential for patients to adhere to lifestyle modifications [6]. Registered Dietitians (RD) are health professionals who conduct nutrition assessments and provide counselling and monitoring to patients [6]. Many studies have demonstrated the effectiveness of their approach in the management of obesity and the prevention of chronic diseases [7-13]. Seeking dieti-

tian services can aid patients with excess weight to manage their weight effectively [7,8]. Integrating dietitians in multidisciplinary teams is seen as a way of improving interprofessional collaboration and, in turn, optimizing patient outcomes [14].

Family physicians are gatekeepers of the healthcare system and are responsible for coordinating care by referring patients to appropriate healthcare providers [14,15]. Their degree of interprofessional collaboration is dependent on the relationships developed with other health professionals [16,17]. The referral process is the initial step in developing relationships, as exchanging information related to patients is important for patient-centred care [17]. Although referrals do not guarantee collaboration, it certainly allows for it by creating an opportunity for interprofessional communication and continuity in the delivery of care [18-20]. The act of referring to other health professionals also demonstrates an understanding of other professionals' roles and knowledge of the discipline in question [21]. In fact, this was the impetus of the Canadian primary healthcare reform, which outlined the importance of appropriate referrals and multidisciplinary teams in the primary care setting [22].

The aim of this systematic review is to summarize the published evidence on the current dietetic referral practices of Primary Care Providers (PCPs) for the management of obesity in adult patients. While there are many barriers and enablers to interprofessional collaboration, this review focuses specifically on the barriers and enablers to dietetic referrals in the aim of informing ways to improve collaboration and the coordination of care.

Methods

Search strategies

The following electronic databases were searched: Medline, Scopus, ScienceDirect, PubMed, EMBASE, and CINAHL. The search was limited to articles published between January 2000 and August 2017. The reference list of articles was also systematically screened for other potentially relevant studies. The search strategy was based on the following categories:

1. Family physician OR family doctor OR general practitioner OR primary care physician;
2. Primary care;
3. Dietitians OR nutrition;
4. Adult patients;
5. Weight management OR weight loss; and
6. Referrals OR dietetic referrals OR nutrition consults.

The search strategies included keywords and their synonyms to ensure that all relevant studies were included in the review. Two authors (SA and CP) initially screened the titles. In the second screening round of the remaining publications, titles and abstracts were evaluated for relevance by pairs of reviewers independently. The final screening step consisted of assessing the full texts of the remaining publications. Two researchers (SA and CP) conducted this step independently. A third researcher (IG) was consulted when discrepancies arose between the two researchers.

Studies were included on the basis of the following criteria:

1. The setting was primary care;
2. The study examined dietetic referrals of family physicians as one of its objectives;
3. The focus of the study was on adult patients with an overweight or obesity status; and
4. The study took into consideration the perception of the PCPs or the patients themselves.

Studies were excluded on the basis of the following criteria:

1. Published in languages other than English;
2. Not relevant to the study question;
3. Reviews, books, reports, dissertations, and abstracts;
4. The setting was not primary care; or
5. The participants were not adults.

Data extraction

The quality of articles was assessed using the Standard Quality Assessment Criteria for Evaluating Primary Research Papers [23]. This quality assessment tool was used to evaluate whether specific criteria have been addressed in the studies. A criteria can be attributed a score of 2 (fully addressed), 1 (partly addressed), or 0 (not addressed) [23]. Given the fact that quantitative and qualitative studies have survived filtering, different questions are posed for each type of research design. Papers that received at least half of the total possible points were included in the review. The lower cutoff point is justified by the fact that the quality assessment tool automatically deducted approximately ten points out of 28 if the study design was not a randomized controlled trial (RCT) [23]. Articles had to meet half of the maximum allotted points to be included in this review. Two researchers assessed the quality of articles independently (SA and CP). Subsequently, they met to compare quality assessment grading. Inter-rater agreement per criteria was analyzed. Both reviewers attributed the same overall score for three studies. For the remaining eleven studies, discrepancies in the overall scores ranged from 0.03 to 0.10. These discrepancies were attributed to a difference in opinion regarding the appropriateness of the study design and the thoroughness of results. These differences, however, were minor with both reviewers assigning a “yes” or a “partial” for these criteria.

After the final selection of the papers, the following information was extracted from the articles: authors, year of publication, country, study objective and design, inclusion criteria, and sample characteristics (see Table 1). General findings regarding the dietetic referral practices of PCPs working in primary care in the aim of managing obesity were analyzed. Categorizing these findings can increase clarity. As such, data extracted included 1) PCPs’ dietetic referral practices, 2) the enablers of referring a patient to a registered dietitian, as well as 3) the disablers of providing such referrals.

Table 1. Overview of articles included in the review

Authors (year)	Country	Study objective	Design	Inclusion criteria	N**	Relevant sample characteristics
Campbell, Engel, Timperio, et al. (2000)	Australia	Documenting GP* attitudes and practices for weight management	Cross-sectional survey	Australian GPs	752	Gender: Female (26.7%), Male (73.3%) Age: 35 or younger (7.5%), 35–64 (82%), 65 or older (10.5%)
Harris, Fanaian, Jayasinghe, et al. (2012)	Australia	Describing education and referral provided to patients for nutrition and other risk factors	Cross-sectional survey	Patients aged either 40–55 years diagnosed with hypertension or hyperlipidemia, or aged 56–64 years	698	Gender: Female (56.4%), Male (43.6%) Mean Age: 57.6 years (<i>SD****</i> = 5.8 years) Education: 37.2% received primary or high school education
Wynn, Trudeau, Taunton, et al. (2010)	Canada	Examining the role of family physicians in nutrition-related issues	Cross-sectional survey	Family physicians	451	Gender: Female (43.6%), Male (56.4%) Age: 40 or younger (24.9%), 41–50 (37.2%), 50 or older (37.9%) Practice location: Urban (52.8%), Suburban (37.2%), Rural (24.8%)
Thuan & Avignon (2005)	France	Documenting attitudes and practices of GPs regarding obesity management. Two different surveys were administered to document each component in order to reduce respondent burden.	Cross-sectional survey	GPs currently practicing and registered by the Regional Representation of the Health Department	607 Attitudes (<i>n</i> = 308) Practices (<i>n</i> = 299)	<i>Attitudes</i> Gender: Female (26%), Male (74%) Age: 35 or younger (4%), 35–44 (30%), 45–54 (48%), 55 or older (18%) Practice type: Solo (52%), Group (48%) <i>Practices</i> Gender: Female (29%), Male (71%) Age: 35 or younger (6%), 35–44 (29%), 45–54 (45%), 55 or older (20%) Practice type: Solo (54%), Group (46%)
Fogelman, Vinker, Lachter, et al. (2002)	Israel	Assessing FPs*** knowledge, attitudes, and practices regarding the management of obesity	Cross-sectional survey	Family physicians	510	Gender: Female (51%), Male (49%) Mean age: 41.8 (<i>SD</i> = 8.4 years) Years in practice: 11.8 (<i>SD</i> = 9.2) Practice type: Solo (6.9%)

Notes: *GP: General practitioner; **FP: Family physician; ***N: Number of participants; ****SD: Standard deviation

Table 1. (continued)

Authors (year)	Country	Study objective	Design	Inclusion criteria	N**	Relevant sample characteristics
Claridge, Gray, Stubbe, et al. (2014)	New Zealand	Understanding the use of dietetic referrals by GPs	Semi-structured interviews	GPs in the Wellington region	12	Gender: Female (58%), Male (42%) Age: 31–39 (<i>n</i> = 33%), 40–60 (<i>n</i> = 25%), 60 or older (<i>n</i> = 42%) Length of practice: High variance Location: Urban (<i>n</i> = 83%), Rural (<i>n</i> = 17%)
Kloek, Tol, Veenhof, et al. (2014)	Netherlands	Examining GPs' weight management policy and factors associated with this policy	Cross-sectional survey	General practitioners (temporary employees were excluded) registered in the national database for primary healthcare providers of the Dutch Institute of Health Services Research	302	Gender: Female (48.6%), Male (51.4%) Age: 40 or younger (23.1%), 40–49 (29.7%), 50 or older (47.2%) Practice type: Solo (19.5%), Dual (38.8%), Group (41.7%) Location: Urban (51.5%), Suburban (18.2%), Rural (30.3%)
Teixeira, Pais-Ribeiro, & Maia (2015)	Portugal	Understanding GPs' views about obesity as well as how they perceive their role in the treatment of obesity and how it influences their practices	Semi-structured interviews	GPs working in primary health-care centres and having at least two years of experience	16	Gender: Female (<i>n</i> = 56%), Male (<i>n</i> = 44%) Mean age: 51.27 (range: 32–57 years) Mean years of practice: 25.66 (range: 5–33 years) Mean BMI: 25.55 kg/m ² (range: 20.38–30.48 kg/m ²)
Ferrante, Piasecki, Ohman-Strickland, et al. (2009)	United States	Assessing FPs' practices and attitudes regarding weight management for patients with obesity	Cross-sectional survey	FPs who are members of the New Jersey Medicine Research Network or FPs in the Blue Cross Blue Shield provider directory	225	Gender: Female (41%), Male (59%) Age: 40 or younger (24.9%), 41–50 (41.8%), 51–60 (24.5%), 60 or older (8.8%) Years in practice: 0–10 (25.6%), 11–20 (38.2%), 21–30 (25.2%), 30 or more (11%) BMI: Normal (47.4%), Overweight (40.5%), Obese (12.1%) Practice type: Solo (16.6%), Group (83.4%) Location: Urban (16.2%), Suburban (83.9%)

Notes: *GP: General practitioner; **FP: Family physician; ***N: Number of participants; ****SD: Standard deviation

Table 1. (continued)

Authors (year)	Country	Study objective	Design	Inclusion criteria	N**	Relevant sample characteristics
Lebrun, Chowdhury, Sripipatana, et al. (2013)	United States	Examining the prevalence of overweight and obesity and weight-related counselling and treatment among US adults	Cross-sectional survey	Patients registered in the health centres that were selected and that had at least one visit in the past year	4,562	Gender: Female (<i>n</i> = 2,578), Male (<i>n</i> = 1,371) Mean age: 39.9 years Education: More than high school (28.4%), High school (29.9%), Less than high school (41.7%) General health status: Fair/Poor (36.5%), Excellent/Very Good/Good (63.5%) Number of physician visits: 7 or more (31.4%), 4–6 (30.7%), 0–3 (37.9%)
Mihalynuk, Knopp, Scott, et al. (2004)	United States	Assessing patient nutrition inquiries and identification of topics about which physicians need information	Cross-sectional survey	FPs who are members of the Washington Academy of Family Physicians	778	Mean age: 44 years Years in practice: 60 percent have been practicing more than 10 years
Phelan, Nallari, Darroch, et al. (2009)	United States	Describing what physicians say to their patients with excess weight to help them lose weight	Cross-sectional survey	Physicians on the mailing list and practicing in the New England area	101 (47.4% were FPs)	Gender: Female (30.6%), Male (69.4%) Age: 31–40 (23.5%), 41–50 (38.8%), 51–60 (25.5%), 60 or older (12.2%) BMI: Normal (81.4%), Overweight (18.6%)
Shiffman, Sweeney, Pillitteri, et al. (2009)	United States	Examining weight management interventions that a broad population of adults reported receiving from their physicians	Cross-sectional telephone survey	American adults (18 years of age and older) living in the across the United States	3,500	Gender: Female (50.3%) Male (49.7%) Age: 18–24 (12%), 25–44 (38.8%), 45–59 (25.9%), 60 or older (23.3%) Education: Less than high school (46.5%), Some college or more (53.5%) BMI: Normal (41.6%), Overweight (35.9%), Obese (22.5%)
Wadden, Anderson, Foster, et al. (2000)	United States	Assessing views on weight management care provided by family physicians	Cross-sectional survey	Adult women participating in obesity trials in a university primary care clinic	259	Mean age: 44 years (<i>SD</i> = 10 years) Mean weight: 96.7 kg (<i>SD</i> = 13.2 kg) BMI: Obese (100%)

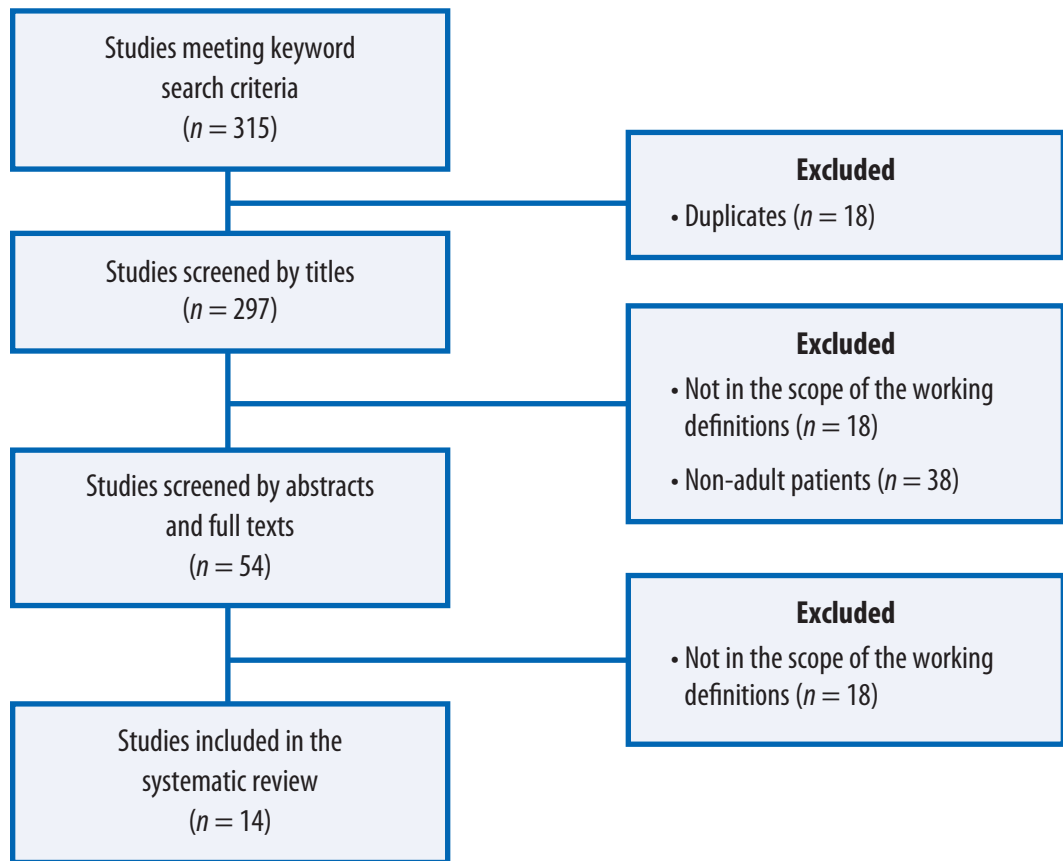
Notes: *GP: General practitioner; **FP: Family physician; ***N: Number of participants; ****SD: Standard deviation

Results

Search flow

As seen in Figure 1, a total of 315 publications were identified, of which 18 were duplicates and 297 articles remained for further scrutiny. Following the title-screening step, 205 publications were excluded because they were not in the scope of the working definition, while 38 others were excluded because they involved non-adult patients. This resulted in 54 publications that were included in further screening by reading the abstracts and full texts. This step excluded 40 publications, leaving 14 studies included in the review. The overview of the articles, as well as the quality and main findings of the studies included in this review, is found in Table 1 and Table 2, respectively.

Figure 1. Study selection flowchart



Six articles included in this review aimed to examine weight management avenues used by family physicians. Four studies sought to evaluate the perception of patients or the general population regarding weight management options offered by their family physicians. Three studies focused on family physicians’ perceptions and practices to manage nutrition-related conditions in their practice. One study specifically looked at the dietetic referral practices of family physicians as its primary objective. The majority of studies used a survey-based study design and used descriptive statistics to illustrate their results. This method of data collection and illustration was perceived as the most appropriate given the research question.

Table 2. Quality of studies and main findings

Authors (year)	Country	Points attributed for quality	Main findings
Campbell, Engel, Timperio, et al. (2000)	Australia	18	<ul style="list-style-type: none"> • Most GPs* disagreed that the best role for them was to refer patients to other health professionals, and fewer than one out of four felt that it was “very important” to refer patients to other professionals.
Harris, Fanaian, Jayasinghe, et al. (2012)	Australia	15	<ul style="list-style-type: none"> • Patients who are overweight or obese were more likely to receive dietary advice and be referred. • Poor diet scores were not associated with neither advice nor referral. • The provision of advice or referral was not linked to readiness to change for any of the risk factors.
Wynn, Trudeau, Taunton, et al. (2010)	Canada	14	<ul style="list-style-type: none"> • Overall positive attitudes towards the role of nutrition in patient health. • Most believed that more than 60 percent of their patients would benefit from nutrition counselling. Considerable gap between the proportion of patients who would benefit from the counselling and the proportion of patients who receive it (either in the family physicians’ offices or through referral to dietitians). • Rural physicians referred patients to dietitian services more frequently than urban physicians (41.7% vs. 21.7%).
Thuan & Avignon (2005)	France	15	<ul style="list-style-type: none"> • 90 percent of GPs consider obesity to be a disease. • Working with other health professionals such as dietitians is not considered to be a priority. • Their expectations are to improve their professional intervention through formation, education, and easy-to-use tools, rather than improving their collaboration with other professionals.
Fogelman, Vinker, Lachter, et al. (2002)	Israel	14	<ul style="list-style-type: none"> • Most (74%) of FPs** viewed weight management as important. • Medical advice offered: increase physical activity (95%), decrease total number of calories (81%), and referral to a dietitian (58%).
Claridge, Gray, Stubbe, et al. (2014)	New Zealand	18	<ul style="list-style-type: none"> • Even though the most consistently reported resource were dietitians, many felt that there was inadequate access due to cost and availability (“short supply” of dietitians).
Kloek, Tol, Veenhof, et al. (2014)	Netherlands	14	<ul style="list-style-type: none"> • Most considered weight management to be their responsibility. • GPs younger than 48 years old discussed weight less frequently. • Almost half of the GPs reported referring the patient to another specialized healthcare professional, preferable a registered dietitian (98.3%). • GPs with a BMI higher than 25 were less likely to refer. • GPs working in proximity to dietitians were more likely to refer.

Notes: *GP: General practitioner; **FP: Family physician

Table 2. (Continued)

Authors (year)	Country	Points attributed for quality	Main findings
Teixeira, Pais-Ribeiro, & Maia (2015)	Portugal	17	<ul style="list-style-type: none"> • Majority of doctors think they are not making a difference in getting their patients to make long-term lifestyle changes. This is leading them to play a more passive role in the treatment of obesity (sense of defeat). • The insufficient number of dietitians working in the Portuguese health institutions, in addition to the lack of resources to support weight loss, may explain the GPs reluctance to make referrals.
Ferrante, Piasecki, Ohman-Strickland, et al. (2009)	United States	17	<ul style="list-style-type: none"> • Inadequate time for counselling, lack of resources for referral, limited formal training and competence, concerns about reimbursement, beliefs about futility of treatment, and lack of patient motivation and compliance have been cited as barriers to addressing obesity. • Family physicians with over 100 patients per week were more likely to have a dietitian and case manager on site, which helped coordination and referrals. • Providing insurance coverage for obesity treatment and having nutrition and exercise therapists readily available were highly rated.
Lebrun, Chowdhury, Sripipatana, et al. (2013)	United States	17	<ul style="list-style-type: none"> • Women were more likely than men to receive referrals to a dietitian. In general, 46 percent of patients were offered a referral.
Mihalynuk, Knopp, Scott, et al. (2004)	United States	14	<ul style="list-style-type: none"> • Nearly all respondents reported referring patients to registered dietitians (most responded yes to the question "in your current practice, do you refer patients to a registered dietitian?"). Note that the frequency of this referral is not discussed. • A common barrier, however, was the reimbursement through medical nutrition therapy (not all physicians are aware of this reimbursement).
Phelan, Nallari, Darroch, et al. (2009)	United States	15	<ul style="list-style-type: none"> • Physicians only "sometimes" recommended referral to a dietitian or other weight-loss program. • Female physicians were significantly more likely than male physicians to recommend a referral to a dietitian.
Shiffman, Sweeney, Pillitteri, et al. (2009)	United States	16	<ul style="list-style-type: none"> • Doctor listing the health problems associated with being overweight (48%), suggesting diet or exercise (46.5%), referring to a dietitian or nutritionist (12.2%), prescribing a weight-loss medication (4.0%) were the interventions used. • Referral to a dietitian increased with increasing BMI.
Wadden, Anderson, Foster, et al. (2000)	United States	17	<ul style="list-style-type: none"> • Almost half of the respondents indicated that their physician had not prescribed any of the 10 weight-control methods listed in a figure (one of the methods was a dietetic referral). • According to the patients, only 6.9 percent of the physicians suggested a dietetic referral.

Notes: *GP: General practitioner; **FP: Family physician

Use of dietetic referrals

Family physicians' perspectives

Nearly all studies showed that most family physicians believe that obesity should be addressed in the primary care setting. Findings regarding PCPs' use of dietetic referrals are conflicting. In some studies that surveyed family physicians, it was shown that patient referral to other health professionals, such as a dietitian for weight management, was underutilized [24,25], while other studies showed the opposite [26-29]. Only one study evaluating this research question was conducted in Canada [26]. The study conducted by Wynn et al. [26] found that nearly all physicians (95.2%) reported referring patients to dietitians. Although most physicians reported utilizing dietetic referrals, 36.9 percent of physicians reported making fewer than ten referrals annually [26]. As such, there was a discrepancy between the number of patients who would benefit from nutrition counselling and those who received such counselling [26]. Other studies showed that nearly half of family physicians referred patients with obesity to a dietitian [30,31]. Another study showed that family physicians only "sometimes" referred to a dietitian [32].

Patients' perspectives

Studies that surveyed patients also showed similar results. For example, patients reported that a referral to other allied health professionals for addressing nutrition or weight was done less than ten percent of the time [33]. Other studies have shown that less than a quarter of patients with obesity were referred to a dietitian [34,35] while others showed a higher percentage of patients (nearly half) being referred to a nutrition expert [36].

Facilitators

The conflicting findings regarding the use of dietetic referrals can be explained by certain facilitators and barriers faced by family physicians. The main enabling factors for providing a dietetic referral were higher patient BMI [33,34] and having a dietitian on site [30,31]. Harris et al [33] found a significant difference ($P < 0.001$) in the provision of dietetic referrals between patients with different BMI. Patients with a BMI of 34.5 and higher were more likely to receive a referral than other patients [33]. Importantly, frequent contact between family physicians and dietitians was another enabler [26,30]. One study showed that 41.7 percent of rural physicians made more than 20 referrals per year compared with 21.7 percent of urban physicians, ($P < 0.0005$) [26]. This was attributed to the fact that rural clinics are generally smaller in nature, which increases contact between health professionals and, in turn, improves interprofessional collaboration and dietetic referrals [26]. In a country where dietitian services are covered, free access was an enabler for family physicians to make a referral [27]. Female physicians were also more likely to refer patients to a dietitian for weight management [32]. Older patients [33], females, minority groups [36], and those showing readiness to change their diet [33] were also more likely to be referred to a dietitian for further counselling.

Barriers

Studies also highlighted the barriers to dietetic referrals. In countries where dietitian services are not covered, such as Canada, cost of service was seen as an important barrier [25,28,29,31]. Most physicians refrained from suggesting a dietetic referral if they thought that the patient could not afford the service [37]. Lack of accessibility [28,31] and insufficient numbers of dietitians working in healthcare centres [37] were also mentioned. Interestingly, a study conducted in France [25] found that only 12 percent of family physicians felt it was “very important” to refer patients to a dietitian for weight management. Another study conducted in Portugal [37] found that family physicians sensed defeat, as they believed that weight management strategies cannot be sustained over time.

Discussion

The main aim of this review was to identify the dietetic referral practices of primary care providers for obesity management, as well as barriers and enablers for providing such referrals. Referrals are a component of interprofessional collaboration and allow for coordinated care and communication regarding patients’ plan of care [18-20]. Studies included in this review evaluated family physicians’ practices, and patients’ perspectives on weight management approaches offered by family physicians. Overall, weight management approaches such as dietetic referrals were underutilized in most studies (8 out of 14). Three studies found that dietetic referrals were utilized half of the time, while three other studies showed that dietetic referrals were highly utilized.

The difference in dietetic referral practices may be due to the facilitators and barriers elucidated in this review. The lack of accessibility to dietitians was an important barrier—highlighting the importance of multidisciplinary teams [15,17,22]. Multidisciplinary clinics allow dietitians to work more closely with physicians, which was found to enable dietetic referrals [25,29,30]. Although this suggests that having team-based clinics may be a way to encourage referrals and support an interdisciplinary approach to obesity management, other studies have highlighted that being in the same clinical site does not result in interprofessional collaboration as some may work in silos [18,39]. This reinforces the importance of not only referring but also communicating about a patient’s plan of care and developing relationships with other health professionals [17,40].

Another important barrier was the cost of dietitian services. Studies that included family physicians who did not work in team-based settings outlined that the cost of nutrition counselling with a dietitian was a barrier for referring a patient who may benefit from this counselling [25,28,29,31]. This barrier is addressed in multidisciplinary settings that offer dietitian services free of charge at point of care [22]. However, this remains an issue for patients who are not registered in these team-based settings.

Interprofessional collaboration is enforced when health professionals understand the roles and expertise of allied health professionals [21,41]. A barrier elucidated in the included studies was the fact that some physicians did not understand the impor-

tance of referring patients to a dietitian or did not perceive it as a priority [24,25]. This highlights the importance of including nutrition in the curriculum for medical students [42] and integrating simulations in professional programs [43]. Dietitians also have a role to play by educating allied health professionals regarding the importance of nutrition, which may, in turn, improve interprofessional collaboration [14].

Although current guidelines suggest that weight management avenues should be offered to all patients who would benefit from nutrition counselling [44], there seemed to be certain patient characteristics that enabled a dietetic referral. For instance, patients who were part of a minority group, older, female, and demonstrated interest in changing their diet were offered a dietetic referral [33,36]. A recent study showed that patients expect their family physicians to ask them about their weight in a supportive therapeutic relationship [45]. This highlights the importance of bringing up the topic of weight while providing resources and coordinated care by providing timely and appropriate referrals.

Limitations of this study

It is important to note that most of these studies were conducted outside of the Canadian context and may not be generalizable to family physicians practicing in Canada. To address the quality of studies, a checklist was used to evaluate both quantitative and qualitative research. As such, the cutoff point was lower for establishing quality given the lack of RCTs included in this review. However, an RCT may not be suitable for this research question and many qualitative studies involved in this review provided valuable information. As for the quantitative studies included, they mostly consisted of cross-sectional studies involving surveys. Social desirability bias may have impacted the results of these studies. Moreover, the studies involved in this review included both team-based and non-team based primary healthcare settings. A study evaluating the difference between both settings could further our knowledge on the effects of team-based settings on dietetic referral practices. Importantly, providing dietetic referrals does not necessarily result in interprofessional collaboration but allows for an opportunity to communicate about patients' plan of care.

Conclusion

The relatively new shift toward multidisciplinary primary care settings in Canada may be a promising approach for increasing access to dietitians. Family physicians who understood the importance of dietary lifestyle modifications for weight management and those who worked in proximity to dietitians utilized dietetic referrals more often. Relationship building seemed to be an important enabler for referrals. Allowing for frequent contact between health professionals may promote interprofessional collaboration and continuity in the delivery of care. Future studies examining the perceptions of primary care providers and dietitians regarding interprofessional collaboration and referrals are warranted. Specifically, a comparison between team-based and non-team based settings could highlight the effects of multidisciplinary primary care settings.

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