

Fostering pediatric primary care providers promotion of weight management programs to patients

Abstract

Pediatric weight management programs generally obtain new patients by referrals from primary care providers (PCPs). Referrals are not always endorsed by PCPs. Research shows that there are multiple factors promoting or inhibiting referrals from occurring. The intent of this research project was to determine the reasons why patients are not being referred to weight management programs and develop recommendations to improve the referral rate. This was a cross-sectional study of PCP providers in Delaware (DE). The sample consisted of all physician and resident members of the Delaware Chapter of the American Academy of Pediatrics (DEAAP). The findings from this study offer methods in which weight management programs can potentially improve referral rates. These include marketing to parents and patients, opening additional clinic sites, providing positive experiences for patients, improving obesity education and developing guidelines on obesity management for PCPs.

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Abbreviations: PCPs, primary care providers; DE, Delaware; DEAAP, Delaware Chapter of the American Academy of Pediatrics; BMI, body mass index; NAFLD, non-alcoholic fatty liver disease; YMCA, Young Men's Christian Association

Introduction

Pediatric weight management programs are becoming more prevalent in the United States (US) secondary to the rise of childhood obesity. These programs offer a multidisciplinary and specialized approach in treating pediatric obesity. Pediatric weight management programs are offered from infancy to adolescence to help overweight and obese individuals lose weight, manage co-morbid conditions, or at least slow the rate of weight gain. Many of these programs include physicians, psychologists, registered dietitians and exercise physiologists. Providers working in weight management are typically trained in motivational interviewing, which is defined as "a directive, client-centered counseling style for eliciting behavior change by helping clients to explore and resolve ambivalence".¹ Providers are also familiar with behavior change techniques. "These techniques help to increase awareness of eating and activity patterns, normalize eating patterns, reduce exposure to cues for unhealthy eating or activity patterns and alter responses to difficult situations".² These aspects of care are not always offered in primary care settings because PCPs do not feel comfortable with motivational interviewing and lack confidence to utilize this method.³ There are multiple pediatric weight management programs in the US, each providing similar services but these programs can differ in their approach to treating obesity. Some programs are inpatient based, while others are outpatient based. For the purpose of this study, the focus will be on outpatient pediatric weight management programs.

Pediatric weight management programs generally obtain new patients by referrals from PCPs. In one particular study, 75% of physicians reported referring patients to a weight management program,⁴ but in another only 18.3% and 42% reported always or often referring patients for further evaluation and treatment in regards

to weight.⁵ These results indicate major inconsistency among PCPs regarding referrals to weight management programs.

In reviewing the literature, there are factors contributing to referral to weight management programs, but more factors exist for non-referral to weight management programs. Two factors promoting a referral from PCPs include that they want a place for coordinated diet, activity and behavioral therapy (80%) and family focused weight management therapy (77%).⁴ While referrals are not always made, pediatricians are more aware of existing weight management programs versus family physicians.⁴ A major barrier to making a referral was availability and accessibility of weight management programs.⁴ Other barriers included lack of willingness to bring up a weight issue with parents, inability to determine success rate of the program and lack of time and reimbursement of time for weight management counseling.⁶ The purpose of this study is to determine which factors affect referral or non-referral to pediatric weight management programs. This study will also attempt to determine what may help improve the PCP referral rates to pediatric weight management programs.

As is standard in healthcare, weight management programs are continuously seeking to improve and grow. It would be helpful to know if there are factors promoting or inhibiting referrals to these programs. Pediatric weight management programs offer valuable resources including specialized physicians, psychologists, dietitians and potentially an exercise physiologist to patients who are struggling with obesity. Weight management providers are able to spend more time with the patients and the visit's primary focus is on weight management.

In the pediatric primary care setting, patients are most likely being seen for reasons unrelated to weight. Time is lacking in pediatric primary care visits to address weight concerns. Studies reported lack of time as a constraint in providing weight management counseling, specifically limited time for each patient visit.^{4,5} Therefore, pediatric weight management programs are superior to most PCP office visits in providing weight management counseling, as the providers have more

time. Another factor is that primary care providers feel unprepared to care for obese patients,⁷ which may be due to a lack of specific training in obesity during medical school.⁸

Practitioners in weight management programs are looking to reach every patient they can, while in the process of growing their programs. Revenue must be generated to keep the program operating. The other major importance of weight management programs is to combat the rise of childhood obesity and lessen the development of co-morbid conditions including type 2 diabetes, high blood pressure and heart disease. “Childhood obesity has more than doubled in children and tripled in adolescents in the past 30years”.⁹ Since these programs specialize in this arena, practitioners hope that the patients will benefit more from utilizing these services. In the long-term, health care costs for these patients may be less overall, as weight management programs are attempting to address the problem early. Pediatric weight management programs can continue to develop with each new patient referred, as the patient’s health is improved.

Problem statement

Pediatric primary care providers do not always endorse referrals of their patients to weight management programs. The intent of the proposed research effort is to determine the reasons why patients are not being referred to weight management programs and develop recommendations to improve the referral rate.

Research question

What factors affect the primary care provider’s referral of patients to weight management programs?

Subset research questions

Why do pediatric primary care providers choose to refer or not refer patients to weight management programs? What difficulties present that inhibit pediatric primary care providers from referring patients to weight management programs? How can referral rates to weight management programs be improved?

Hypothesis

Weight management programs can increase the number of referrals by improving accessibility, providing better marketing and assuring primary care providers that the care delivered will be effective. If patients are referred to weight management programs, the patients will receive greater benefits including individualized care and specialized professionals that can improve the overall health of the patients.

Definitions

A primary care provider (PCP) is someone who sees individuals with common medical problems; they provide preventative care and make referrals to specialists as needed.¹⁰ In the context of this research project, a PCP is referring to physicians and residents who specialize in pediatrics. A resident is defined as “a physician who has completed medical school and is receiving training in a specialized area”.¹¹ A family physician “provides continuing and comprehensive medical care, health maintenance and preventive services to each member of the family regardless of sex, age, or type of problem”.¹² A referral is the directing of a patient to a medical specialist by a primary care provider. A network is “a group of primary care physicians who contract among themselves and/or with health plans to care for a group of covered persons”.¹³ A weight management program specializes in the treatment of individuals who are overweight or obese to work

towards weight loss or stability and manage comorbid conditions. Obesity in children is defined by utilization of growth curves in which “BMI is at or above the 95%ile for children of the same age and sex”.¹⁴ Body mass index (BMI) relates to weight to height ratio. Non-alcoholic fatty liver disease is a disease in which fat accumulates in the liver, in the absence of alcohol consumption.¹⁵ Dyslipidemia is disordered lipids in the blood, for example, elevation of cholesterol in the blood.¹⁶ Metabolic syndrome refers to patients with high blood pressure, high blood sugar level, excess fat in the waist region, as well as abnormal cholesterol levels.¹⁷

Methodology

This was a cross-sectional study of PCP providers in Delaware (DE). The sample consisted of all physician and resident members of the Delaware Chapter of the American Academy of Pediatrics (DEAAP). The study was approved by Wilmington University.

The survey consisted of sixteen questions developed by reviewing prior literature ([Appendix](#)). They focused on obtaining information regarding referral practices of PCPs to weight management programs. Survey questions focused on factors that promoted or inhibited PCP’s from referring patients to weight management programs. Demographic and practice characteristics, open-ended and multiple choice questions were included in the study. The 5-point Likert scale was utilized for 4 out of the sixteen questions with answers ranging from strongly agree to strongly disagree. Demographic questions included gender, race or ethnicity, type of provider (physician or resident), years out of training, primary practice location and whether or not the PCP received prior training in the management of obesity. The survey required about 10 minutes to complete.

A brief description of the survey purpose, the survey and consent were forwarded to the Executive Director (ED) of the DEAAP. She then forwards the survey and consent to the 293 members of the DEAAP. If the survey was completed, consent was implied. The survey was not randomized and there were no exclusions. The respondents were given one and a half weeks to complete the survey. A reminder email was sent three days prior to the close of the survey to improve the response rate. Data were reported in aggregate form with no identifying information was used in data analysis or report.

Of the 293 providers, 34 completed the survey. This is a response rate of about 12%, thus, the sample size was small. The acceptable response rate for online surveys is 30%.¹⁸ According to Nicholls et al.,¹⁹ there was a lack of interest in electronic versions of surveys; less than 2% of physicians completed the online survey.

The survey data were collected and analyzed using Survey Monkey. Each survey item was analyzed using descriptive statistics. Percentages, frequencies and comparisons were completed.

Literature review

This study will look at the reasons why patients are being referred or not referred to pediatric weight management programs. Referrals are the main method in which weight management programs obtain new patients. While reasons for PCP referrals are important, the other important factor is how to improve the referral rate. Within the literature, there are studies looking at factors promoting and negating the use of weight management programs. Not included in this literature review is the success rate of patients in weight management programs versus the success rate of patients seen by PCPs. This information

is not included in the study, as the objective is to determine why referrals are not being made rather than on success rates of patients with different treatment approaches.

As previously mentioned above, “Childhood obesity has more than doubled in children and tripled in adolescents in the past 30 years”.⁹ Based on the National Health and Nutrition Examination Survey “there was an obesity prevalence of 16.9% among children and adolescents 2-19 years of age with 31.8% being either overweight or obese”.²⁰ Males and non-Hispanic black children and adolescents had the highest prevalence followed by Hispanic children and adolescents, then white children and adolescents. Causes for obesity are multifactorial, the main reason being an imbalance of energy intake and energy expenditure.²¹ Psychological, environmental and genetics are also cited as factors of obesity. Obese children and adolescents are at increased risk of developing co-morbid conditions including hypertension, type 2 diabetes, dyslipidemia and non-alcoholic fatty liver disease (NAFLD). If children are obese, they are more likely to be obese adults, therefore their mortality and morbidity rate is higher. Obesity also affects children’s and adolescents’ quality of life in regards to physical, social and psychological functioning.²² “Most experts agree that the treatment of obesity should begin while patients are young and lifestyles and behaviors are easier to change”.²³ Even though it looks as if obesity prevalence rates in children and adolescents are plateauing, the rates are still high. There is a continued need for specialized care in the weight management arena.

Treatment and prevention for obesity in childhood and adolescence exist in many forms, the most studied form is the comprehensive approach which includes behavioral therapy, nutrition and physical activity.²¹ Other forms include public health promotion and prevention efforts by schools, childcare centers, community and at home. According to Owens,²⁰ primary care providers are able to address the obesity issue prior to it spiraling out of control. “The front lines of the obesity epidemic often lie in a primary care doctor’s office. Obesity is often relegated to the bottom of the problem list, as there are no wonder drugs, no useful biomarkers that define or predict prognosis and no standard protocol that works for every patient”.²³ The PCP needs to make appropriate recommendations and refer patients to specialized support as needed. Again family based lifestyle weight management programs are the current recommended treatment for obesity and PCPs have the ability to promote utilization of these programs to patients. While referrals are not always made, pediatricians are more aware of existing weight management programs versus family physicians;⁴ however there is no registry of weight management centers or programs at the present time.²¹

In regards to referrals, female physicians are more likely to refer to weight management programs than male physicians. According to Woolford et al.,⁴ 88% of female physicians referred patients to weight management programs versus 65% of male physicians. Women physicians are also more likely to provide general counseling on weight management or specific guidance on diet and physical activity.⁵ According to Frank et al.,²⁴ half of female physicians thought that it was important to discuss nutrition and weight with patients. Predictors for discussion of weight included nonwhite ethnicity, primary care specialty, vegetarian diet, personal history of obesity, belief in the relevance of weight counseling in their practice, self-confidence about counseling, more training and residence in the US territories. The above predictors were the same for discussion of nutrition, except an additional predictor was efforts to lose weight.²⁴ The findings from the above study “suggest that physicians who have intentionally altered

their diets and thus may have a higher personal awareness of diet, are more likely to counsel patients about nutrition and weight”.²⁴ Ferrante et al.²⁵ found that female family physicians were more likely to be a normal weight compared to males. “Normal BMI physicians are more likely to provide obesity care to their patients and feel confident doing so”.²⁶ This can potentially explain why female physicians are more likely to refer to weight management programs.

Primary care providers report referring patients to weight management programs when they want a place for coordinated diet, activity and behavioral therapy (80%) and family focused weight management therapy (77%).⁴ According to Woolford et al.,⁴ 75% of physicians did refer patients to weight management programs. A factor that seemed to play a major part in whether or not patients were referred had to do with parent or patient request for assistance.^{4,6} According to Forrest et al.,²⁷ about one in six referrals occurred due to parental request for specialty care. Another factor had to do with presence of comorbid conditions, therefore sicker patients were referred to weight management programs.²⁸ In general, two of the biggest reasons why physicians refer patients to specialists is due to “patients having good experiences with the physician or the physician has a good patient rapport”.²⁹ Physician communication was also an important referral factor. Physician communication included working in the same hospital or practice, communication between the specialist and referring physician and shared medical record system. PCPs were more likely to be concerned with aspects of physician communication and access to a weight management facility.²⁹ The request from parent or patient for a referral is an important topic; perhaps programs need to be marketed more to parents or patients, rather than to PCPs.

In another study looking at referral rates of primary care providers, only 18.3% and 42% reported always or often referring patients for further evaluation and treatment regarding weight management.⁵ In another program seeking to obtain patients, the physician referral was the lowest (24.8%) accounted factor in enrolled patients.²⁸ In review of multiple studies^{4,6,8} many factors contributed to non-referral. Factors that contributed to non-referral included availability and accessibility of weight management programs.⁴ Availability and accessibility seem to play a part in success rates of individuals in weight management programs. Transportation is challenging for some families, especially due to the frequency of visits and locations of weight management programs. If continued attendance is needed, more accessible locations need to be sought out. Other barriers included PCP’s lack of willingness to bring up a weight issue with parents, inability to determine success rate of the program and lack of time and reimbursement of time for weight management counseling.⁶ Specific training in pediatric weight management may yield more comfort of PCPs in discussing weight issues with parents, although this is not confirmed. It may also be important to share data with PCPs regarding success rates of weight management programs.

Many PCPs cite lack of time as a concern in providing weight management counseling, even in regards to making a referral. PCPs are typically seeing multiple patients in a day, therefore it is difficult to spend time on weight related concerns. A study reported lack of time as a constraint in providing weight management counseling, specifically limited time for each patient visit.^{4,5} Many providers feel they do not have time for appropriate counseling related to obesity.³¹ According to Rice et al.,⁶ lack of time and reimbursement of time for weight management counseling was a barrier to referring patients. Practitioners in weight management programs typically have more time to address weight concerns, as this is their sole purpose.

Many PCPs do not even address the problem of obesity during their visits; therefore they cannot make a referral to a weight management program. "Active participation of primary care providers in assessing and managing childhood obesity in the primary care setting appears low relative to the frequency of the problem in the United States".⁵ "Obesity is under recognized and undertreated by pediatric health care providers; providers failed to identify obesity in one half of their health supervision visits with obese patients, especially when evaluating preschool children".³¹ Another author reiterated that most overweight and obese children were not diagnosed and did not receive appropriate interventions, especially in children under the age of five. However, this article also brings up that patients are not screened for co-morbid conditions, such as NAFLD and metabolic syndrome.³² Better screening practices and treatment guidelines are needed for PCPs to assess obesity and the co-morbid conditions associated with it. "Physicians will also benefit from the development of clear guidelines for diagnosing and managing these at-risk children".³² Further education on parameters for overweight and obesity should be reviewed with PCPs so they make proper diagnoses and refer patients to weight management programs when needed.

Specific training for weight management care is lacking in medical school education.⁸ Although it seems that education in medical school for obesity care has improved over the past 20years, physicians that have been out of medical school for greater than 20years report less of an ability to help obese patients lose weight. These physicians may feel frustrated with failed attempts at treating patients with obesity and therefore reported less of an ability to help obese patients. PCPs believe that to improve obesity care additional training is needed, a potential area to improve would be in medical and post-graduate medical obesity education.²⁶ PCPs can lack proper training in overweight and obesity management, whereas weight management programs have trained specialists to provide care to the patients.

Cost effectiveness for weight management programs is unknown. While one author states that healthcare costs will be less overall if obesity is addressed in childhood,³³ cost per visit to a weight management program is hard to quantify. Weight management programs are listed as being more expensive.³⁴ Weight management is considered a specialty, thus cost per visit is slightly higher than it would be to see a PCP. Frequency of visits are greater in weight management programs and multiple providers may be seen, therefore, there will be more frequent co-pays but with PCPs there is only one co-pay per visit. It seems that weight management programs are more cost effective in the long run because they are better able to address the problem, but this may be on an individual patient basis. Cost is also listed as a barrier to referrals to weight management programs, as they are poorly reimbursed.⁴ The cost effectiveness of pediatric weight management programs is unknown and requires further research.

One other issue to consider is even when patients are referred to weight management programs, the patients and their parents do not have to follow through with the referral. "Parents represent the largest barrier to participation in weight management programs. Only 10% of parents who were referred by their pediatrician inquired about the program".⁶ Reasons parents reported as barriers to participation included denial about their child's medical condition, incapability of changing the home environment and discussing weight issues with child, inability to make time in their schedule to accommodate the weight management program and lack of recognition that they contributed to their child's weight status.⁶ Scheduling was the largest barrier in attrition. Other problems included barriers to the

implementation of the recommendations, transportation problems and patient and family motivation.³⁵ Even when parents report readiness to take action, it does not correlate with lifestyle behavior changes.³⁶ This poses a problem in referral of patients to weight management programs, as PCPs may not necessarily find it worth their time to refer patients. PCPs may also be concerned that patients will be lost to follow-up.

Finally, an obesity center of excellence is needed to tackle childhood obesity. This center of excellence would include focused interventions, emphasize individual needs and have skilled professionals. According to Gately & Curtis,³⁷ a center of excellence is one that has a high quality practice, as well as research. This study was completed in England, so care for obesity may be different from that in the United States. There are several obesity centers of excellence in the US that may be underutilized due to inadequate referrals.

There is a paucity of studies looking at how referral rates can be improved. While there are multiple reasons listed in the above studies why referrals are made or not made, improvement factors are unknown. The purpose of this study is to validate, disprove, or add to the factors listed above, as well as to determine what may help improve the referral rates.

Results

A total of 34 individuals completed the online survey. Seventy six percent were female and 24% were male. Caucasian was the most represented ethnicity at 78%, followed by African American (16%) and Asian/Pacific Islander (6%). Seventy percent of the survey population was attending physicians, while 30% were residents. As shown in Table 1, the largest percentage (36%) of survey respondents has been out of training for 0-5years and the smallest percentage (7%) of survey respondents has been out of training for 16-20years. The two highest percentages of survey respondents' years out of training were the 0-5years, as mentioned above and > 20years. New Castle County represented the primary location of survey respondents (93%) and Kent Country represented the other 7%. No PCPs from Sussex County completed the survey. Thirty four percent of the respondents reported receiving specific training on the management of obesity, while 66% had not.

Table 1 PCPs number of years out of training (Medical School)

Years	Number	Percentage
0-5	10	36%
6-10	6	21%
11-15	3	11%
16-20	2	7%
>20	7	25%

Most PCPs (71%) make a referral with shared management of obesity and co-morbid conditions versus 29% who refer with complete transfer of management to the program. Nine percent of PCPs consult the weight management program for guidance with no transfer of responsibility. As shown in Table 2, the highest percentage (56%) of PCP referrals to weight management programs was in the 0-5% range. The lowest percentage (0%) was in the 16-20% range.

PCPs strongly agreed (56%) that accessibility was a concern in referring patients to weight management clinics, followed by 30%

that agreed. Six percent disagreed that accessibility was a concern. As far as cost being a concern in referrals of patients to weight management clinics, the data are somewhat evenly distributed across the Likert scale. Twenty one percent strongly agreed and 24% agreed that cost was a concern in referring patients to weight management clinics. Twenty percent were neutral and 32% disagreed. In regards to weight management clinics offering resources that primary care may be lacking, 58% strongly agreed and 42% agreed. There was no disagreement to this statement. As shown in Table 3, the majority of PCPs (57%) did not feel that there were resources in the community that provided similar services to weight management.

Table 2 PCPs percentage of patients referred to weight management clinics

Referral rates (%)	Number	Percentage
0-5	18	56%
6-10	5	16%
11-15	1	3%
16-20	0	0%
>20	4	12.5%
Unknown	4	12.5%

Table 3 PCPs belief regarding resources in the community that provide similar services as Weight Management Clinics

Likert scale	Number	%
Strongly Agree	0	0%
Agree	5	15%
Neutral	9	27%
Disagree	15	46%
Strongly Disagree	4	12%

As shown in Figure 1, the most important patient factor contributing to a referral was the presence of comorbid conditions at 97%. The second most important factor was severity of obesity at 88%. The least important factor was distance from the weight management clinic at 36.36%. Three other factors mentioned by PCPs were parental willingness, motivation and transportation. Two practice factors (Figure 2) that shared the most importance were accessibility of appointments and availability for consultation (73%). The second most important factor was coordinated and multidisciplinary care at 70%. The least important factor was professional network affiliation at 9%. Figure 3 demonstrates that the resources that PCPs found most important in weight management clinics were registered dietitians and increased time for counseling at 85%. The resources that PCPs found least important included more frequent visits and monitoring of laboratory results both at 33%. Two other resources that were indicated included ability for referral to a bariatric program and health educators. PCPs also refer patients to other entities; the most common referral was to specialists including endocrinologists and cardiologists (61%). The second most common referral was to a community dietitian at 43% and the least common referral was made to Weight Watchers or other diet programs (25%). Thirty nine percent reported referring to a behavioral specialist and 36% reported referring to the Young Men’s Christian Association (YMCA), or other recreational facilities.

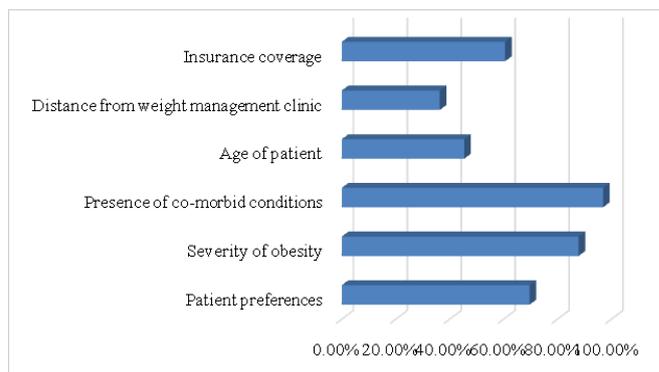


Figure 1 Percentage of PCPs that indicated importance of patient factors above when referring patients to weight management.

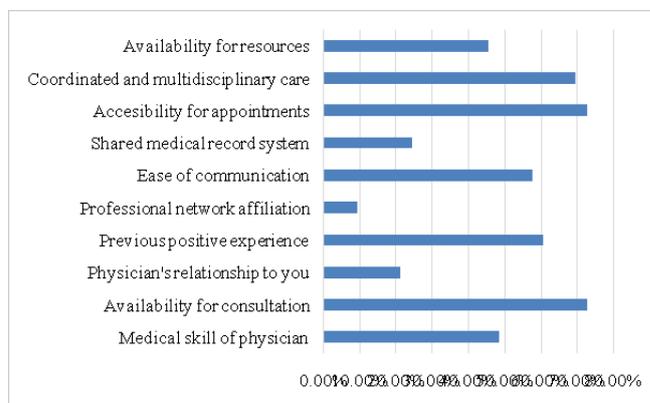


Figure 2 Percentage of PCPs that indicated importance of practice factors above when referring patients to weight management.

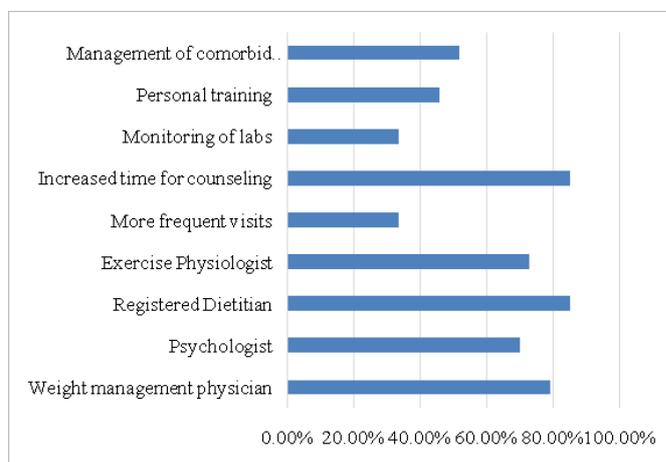


Figure 3 Percentage of PCPs indicated that the above resources were available at weight management clinics versus primary care.

Discussion

PCP referrals to weight management programs are the primary method that new patients are obtained. Results from this study showed the percentage of patients referred ranged from 0 to 30%. The results in the literature of patient referrals ranged from 18 to 75%. Seventy five percent was an outlier compared to other percentages and the typical percentage of referrals was below 50%. There are multiple factors that could be affecting referral rate. These factors include

awareness about the program, access to the program, cost of the program, lack of knowledge in treating patients who are overweight or obese and presence of alternate resources in the community. When patients are referred, PCPs (71%) report sharing the management of patient's obesity and related comorbidities, versus complete transfer of management or 1time consultation.

More than half of the PCPs reported that access was a barrier to referral. This coincides with multiple studies reviewed in this paper.^{4,29} Seventy three percent of PCPs in this study reported accessibility to appointments being an important practice factor for referrals. A potential solution would be to open satellite locations in addition to the main location. Satellite locations could be closer to transportation facilities, such a bus stops or train stations. Also in areas of lower socioeconomic status, as these individuals typically struggle with transportation. Cost of the program was not as significant as a barrier compared to access. About 20% of PCPs reported cost to be a concern. Although, 61% reported insurance coverage as an important patient factor for referral. Per the literature, weight management programs are more expensive³⁴ and are poorly reimbursed.⁴ It does not appear that cost is affecting referral rates, although insurance coverage seems to pose an issue. With the increasing number of overweight and obese individuals, PCPs may view specialized treatment as more important than cost of treatment. Also with the rise of overweight and obesity and corresponding comorbidities, insurance companies should be more on board with patients seeking care.

A positive factor gained from this study is that PCPs feel that weight management programs offer resources to patients that are lacking in primary care (58% strongly agreed and 42% agreed). PCPs also did not feel there were other resources in the community similar to that of weight management programs (57%). In this study, PCPs do refer to other entities. The most reported entity was other subspecialties for weight including endocrinology and cardiology. According to the literature, PCPs want a place that coordinates diet, activity and behavioral therapy, also that focuses on families.⁴ Per this study, 70% of PCPs reported that coordinated and multidisciplinary care was an important practice factor in referral. Most PCPs reported that registered dietitians, weight management physicians, exercise physiologists and psychologists were lacking in the primary care setting. Weight management programs have all the above available in one place. With primary care facilities, psychologists, registered dietitians and exercise physiologists are not readily available. PCPs may have to make multiple referrals to community providers in order for a patient to receive the appropriate care, whereas with a weight management program they know all these services are available. Another factor that most PCPs reported as lacking in primary care was increased time for counseling (85%). Many PCPs cite lack of time as a barrier to weight management counseling, even in regards to making a referral.^{4,5,30} PCPs are seeing multiple patients in one day and typically they come for another purpose unrelated to weight. While patient volume for PCPs will not decrease, if they lack time for counseling on weight management that is more of a reason to refer those patients to a weight management program.

PCPs are more likely to refer patients to a weight management program if parent or patient requests a referral or if the patient has comorbid conditions.^{4,6,28} PCPs in this study reported presence of comorbid conditions (97%), severity of obesity (88%) and patient preference (70%) being important patient factors when making a referral. There is a potential for weight management programs to not only market to PCPs but also to parents and patients. If parents and patients are aware of the resources that weight management programs

provide they may be more likely to inquire about a referral. PCPs are also more likely to refer patients to a weight management programs based on practice factors including availability for consultation (73%), previous positive experience (61%) and ease of communication (58%). According to the literature, referrals are more likely to be made when "patients have good experiences with the physician or the physician has a good patient rapport".²⁹ Physician communication was also important, meaning that the PCP and specialist work together and are able share information. In my opinion this information speaks for itself. Positive experience with a physician, or with the program in general is going to promote use of the program.

According to the literature female physicians are more likely to refer to weight management programs.⁴ Per this study, referral percentages greater than 11% were all reported by female physicians. Referral percentages for males were less than or equal to 10%. This corresponds to the literature but the reason is not known. Potential reasons are that women are more concerned about weight and nutrition in general, or feel more confident in addressing the issue. Per the literature, individuals that are a normal BMI are more likely to provide obesity care and female physicians were more likely to be a normal weight compared to males.^{25,38} It is important to be aware of this information and potentially alter marketing techniques to reach the male physician population. The other option would be to provide resources to male physicians to help them maintain a healthy weight. There was no information on why male physicians refer less than female and this may be a future area to study.

PCPs in this study were less likely to have specific training on the management of obesity (66%). Weight management training is lacking in medical school.⁸ More education is needed in medical school and post-graduate medical obesity education.³⁸ Over the years, obesity education in medical school has improved. Physicians who have been out of medical school for greater than 20years report less of an ability to help obese patients lose weight.³⁸ Six out of 7 PCPs (86%) who reported being out of medical school for >20years were less likely to refer to weight management programs with referral rates of 5% or less. This is interesting as per the literature these physicians are the least educated on obesity and one would think they would be referring more. Potential reasons for less referrals are they do not address obesity management in the appropriate way, feel they can address the problem on their own, or they are unsure about the effectiveness of weight management programs. According to a study by Rice et al.,⁶ a barrier to referral was inability to determine success rate of the program. It is clear that there is increased need for education on obesity management, as well as guidelines for PCPs to use with obese patients. Another piece for education may be to provide success rates of weight management programs to PCPs. This study did not include the practice factor of weight management providing effective care.

With all of the above findings, there are multiple ways in which weight management programs can potentially improve referral rates. These include marketing to parents and patients, opening additional clinic sites, providing positive experiences for patients, improving obesity education and developing guidelines on obesity management for PCPs.

This study has several limitations. First, it was a small, non-randomized sample size and limited to PCPs in the DEAAP. The information found in this study is not generalizable to the entire PCP population. The majority of PCPs who filled out the survey were attending physicians from New Castle County that were Caucasian and female; this could skew the results. As reviewed above female

referring practices may be different than males and residents have less experience than attending physicians, therefore they may be more likely to refer to weight management programs. PCPs who completed the survey may be more interested in obesity, therefore there may be a bias present in the results. The information collected in this survey was self-reported and may not be entirely accurate.

Conclusion

Weight management programs are a crucial part of managing pediatric overweight and obesity. These programs provide specialized care to individuals from infancy to adolescence. The main way these programs obtain patients is by referrals from PCPs. There are many factors that promote and inhibit utilization of weight management programs. Some of these factors include access, parent or patient request, presence of comorbid conditions, insurance coverage and lack of education regarding obesity management. In light of the growing population of overweight and obese children and adolescents with comorbid conditions, weight management programs should be utilized to the fullest. Without these programs, the rates of overweight and obesity in children and adolescents would be higher.

While changes can be made by weight management programs to better inform PCPs; changes have to be made at a higher level. There needs to be a greater focus on obesity education in medical school and post medical school. Guidelines need to be produced to direct PCPs on appropriate care for overweight and obese patients. If the PCP starts with treating the patient and is unsuccessful that would be the time to refer to a weight management program. Access to weight management programs needs to be improved, whether it by opening new locations or providing transportation to and from appointments. Lastly, the most important part is to promote the value of the program to PCPs, specialists, patients and parents. Speaking from experience, weight management programs offer optimal resources with practitioners that truly care about improving the health of their patients. While this can be found in the primary care setting, the focus on weight management cannot.

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None.

Conflict of interest

The author declares no conflict of interest.

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