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POP-Q point C may not be equal to point D after hysterectomy

Abstract

Purpose: Adult overweight and obesity is a common problem in the United States and independently predisposes an individual for chronic disease and early mortality. The purpose of this study was to increase provider adherence to adult overweight and obesity clinical practice guidelines in a military Patient-Centered Medical Home (PCMH).

Data Sources: Retrospective analysis of 134 encounters of overweight and obesity patients from one PCMH was performed. Data were collected before and after a tailored intervention, which was developed from medical provider survey results. Completed documentation of obesity treatment quality indicators was abstracted from electronic medical records.

Conclusions: Significant improvement in the completeness of documentation regarding diagnosis of overweight and obesity, weight management referrals, and counseling for physical activity and diet was achieved.

Implications for practice: Provider adherence to overweight and obesity management guidelines in the PCMH setting can be improved through tailored interventions that alleviate provider-specific barriers in a primary care setting to guideline implementation.

Keywords: primary care, guideline implementation, quality indicators, electronic medical records, obesity treatment, coronary heart disease, stroke, osteoarthritis, sleep apnea, overweight/obesity-related diagnosis, glycemic control, blood pressure, triglycerides

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Abbreviation: PCMH, patient-centered medical home; CPGs, clinical practice guidelines; CPSs, clinical preventive services; EMR, electronic medical record

Introduction

Background knowledge

Adult overweight (body mass index [BMI] ≥25kg/m^2) and obesity (BMI≥30 kg/m^2) is a common problem in the United States (U.S.) and independently predisposes an individual for chronic disease and early mortality.[1] The prevalence of adult overweight and obesity is 68% in the U.S. Moreover, there is no evidence that this alarming epidemic is receding.[1] Similar statistics are evident among military personnel with an overweight and obesity prevalence greater than 60% and disproportionately affects racial minorities such as Blacks and Hispanics.[2] A direct correlation was demonstrated between BMI increases and chronic conditions such as hypertension, diabetes mellitus type 2, coronary heart disease, stroke, osteoarthritis, sleep apnea, and certain cancer type.[3] More than 5% of active duty service members have at least one overweight/obesity-related diagnosis.[4] In fact, military health system beneficiaries who are overweight are more likely to have multiple co-morbidities compared to normal weight beneficiaries.[5] Evidence suggests that between 1986 and 2006, overweight and obesity were the likely culprits of greater than 18% of deaths for U.S. Blacks and white men and women between the ages 40 and 85.[6] Additionally, the economic significance of obesity is also substantial. The rising prevalence of obesity is associated with a 9.1% increase in annual medical expenditures or as much as $147 billion per yeaR.[7] Medical spending is 42% greater for obese individuals versus spending for normal weight individuals.[7]

In June 2013, the American Medical Association proclaimed obesity to be a disease with its own unique presentation and physiological consequences.[8] This action allows medical providers to focus attention on strategies to manage the obesity epidemic. Updated clinical practice guidelines are readily available to assist primary care providers in the screening and management of obesity. Clinical practice guidelines (CPGs) are systematically developed evidence-based recommendations and approaches to maximizing patient care. CPGs are intended to augment the healthcare provider's skills, knowledge, and experience needed to select appropriate and individualized treatment options tailored to patient preferences.[9] The first federally issued overweight and obesity management CPGs were issued by the National Institutes of Health (NIH), National Heart, Lung, and Blood Institute.[10] In collaboration with NHLBI, updated guidelines for management of adult overweight and obesity was published jointly by the American Heart Association, the American College of Cardiology, and The Obesity Society with the goal of enhancing primary care provider effectiveness.[3] The treatment algorithm for overweight and obesity is designed to guide provider's decision making and offers recommendations for lifestyle intervention and counseling, and identification of patients who may benefit for bariatric surgical intervention.

The Department of Veterans Affairs and the Department of Defense (VA/DoD) have also released an updated guideline for screening and management of overweight and obesity in the primary care setting. VA/DoD guideline recommendations include:

1. BMI calculation and documentation on all adult patients at least annually to establish a diagnosis of overweight or obesity
2. The diagnosis of overweight or obesity should be documented in the patient's medical record at least annually.

3. Overweight patients without obesity-associated conditions, should at a minimum receive information and behavioral counseling with regard to healthy diet and physical activity during each clinic visit.

4. Overweight patients with even one obesity-associated condition, such as hypertension or dyslipidemia, and patients who are obese, should be offered a minimum of 12 intervention sessions over a 12 month period until weight loss goals achieved.

According to Ryan & Heaner,[3] similar comprehensive lifestyle programs have the potential to produce an average weight loss of more than 17 pounds over 6 months, maintained for 1 year.

Receipt of weight loss advice from healthcare providers increases the likelihood that patients will associate excess weight with poor health and attempt weight loss.[11] However, there are numerous barriers preventing the implementation of recommendations into practice.[12] Since barriers may vary from one practice setting to another, customized interventions are necessary to increase provider adherence to treatment guidelines, and more importantly to improve quality health outcomes among overweight or obese adults.

Significance of problem

Despite the publication of numerous clinical practice guidelines,[13] providers in the primary care setting routinely miss opportunities to include obesity management in a patient's plan of care. According to a study evaluating more than 2 million ambulatory care visits, obesity management appropriately took place in only one-third of those visits.[14] Similarly, Melamed et al.[15] found that providers measured and documented overweight and obese patients' BMI only 44% of the time. Furthermore, only 24% of those obese patients received a documented diagnosis of obesity in their medical record. The documented diagnosis of obesity is paramount as it positively correlates with formulation of an obesity management plan.[16] Management plans that include multi-component lifestyle interventions were shown to significantly improve chronic health conditions and cardiovascular risk factors in overweight and obese adults. For example, a modest weight loss of 5 to 10% was associated with significant improvements in glycemic control, blood pressure, and triglycerides.[17]

Patients report stigma, cost of private sector insurance, and previous weight loss failures as barriers to managing obesity. Provider barriers to managing obesity include lack of time, deficiency in practitioner skills, lack of consistency in care delivery within the practice, and believing that managing obesity is not the responsibility of the general practice provider, or that managing obesity in this setting will not lead to positive outcomes. Non-prioritization of obesity, restrictions on drug use, lack of specialists, and cumbersome referral processes are service level barriers that further complicate the process of weight management in the general practice setting.[18] On the other hand, service enablers include obesity management as a quality outcome component, and establishing patient support groups within the practice. Trusting patient-provider relationships support patients in their efforts in achieving a healthier weight. In addition, user-friendly guidelines that are built into the consultation process facilitate provider efforts in the management of obesity in general practice.[18] Some military physicians possess negative stereotypical attitudes towards treating obese patients which may hinder effective treatment practices. When implementing clinical preventive services (CPSs), nurse practitioners were most challenged by the CPS of weight loss and obesity and missed about 90% of opportunities to provide appropriate counseling because they were worried about offending patients.[19] Furthermore, providers may be less likely to promote weight management if they perceive disinterest from their patients or if they perceive a lack of work setting prioritization in prevention.[20]

Interventions aimed at improving provider guideline adherence need to be tailored accordingly as barriers to guideline adherence vary among providers and may vary from one practice setting to another. Quality improvement interventions that have incorporated provider educational components focusing on guidelines and screening for obesity have successfully improved overweight and obesity management in the primary care setting.[21] An educational intervention targeting provider-patient weight loss communication significantly improved provider rapport with patients and led to improved weight loss counseling.[22] Various reminder systems utilized in the primary care setting include medical record flags, prescriptions pads, posters, and electronic reminders to prompt weight management.[23] BMI chart reminders were shown to significantly increase provider documentation of BMI, however, these same reminders were not shown to improve provider documentation of weight diagnoses and recommended management.[24] Interventions involving the engagement of other clinic staff and community partnerships are additional suggested strategies for improving health promotion in the primary care setting. [25]

The most effective methods for resolving barriers to practice and developing tailored interventions are highly individualized. Evidence from a systematic review suggested that non-tailored interventions or simple propagation of guidelines or education materials are not as effective in improving professional practice as implementation of a tailored intervention.[26] Therefore, interventions need to be tailored to prospective barriers in a given practice setting in order to optimize quality health outcomes. Quality indicators such as BMI, diagnosis of overweight or obesity, and dietary and physical activity counseling have been shown to be effective measures of primary care provider adherence to overweight and obesity management, and serve to inform improvement interventions.

Purpose and study questions

The purpose of this study was to

1. Examine barriers to overweight and obesity management practice among medical providers in a PCMH.

2. Formulate a tailored provider intervention to overweight and obesity management guidelines based on survey-identified barriers.

3. Evaluate pre- and post-tailored intervention for increasing provider adherence to overweight and obesity management guidelines. Adherence was defined as the presence or absence of documentation of the following quality indicators: height, weight, BMI, diagnosis of overweight or obese, dietary and physical activity counseling, and weight management referrals such as nutrition, behavioral health, health promotion classes, and bariatric surgery.[13] The questions included:

a. What are the major barriers to implementing weight management interventions as perceived by providers?

b. What would be the most effective tailored intervention for the PCMH's medical providers?

c. Is there a significant difference between pre- and post-tailored intervention for provider adherence among obesity management quality indicators?

Methods

Ethical issues, setting, sample

A Naval Medical Center in the western U.S. and the University of Alabama Institutional Review Boards deemed this minimal risk study exempt from full review. The Patient-Centered Medical Home (PCMH) at a Northwest Military Treatment Facility served as the study setting for this project. The PCMH, with 18,176 enrolled beneficiaries consisted of four PCMH teams staffed by 36 primary care providers including 8 physicians, 21 family medicine residents, 4 nurse practitioners, and 3 physician assistants. Additional support staff included 9 nurses and 37 medical assistants.

All PCMH providers, excluding the PI, were invited to take part in the study. The sample size was calculated from a power analysis using PS: Power and Sample Size Calculation statistical software[27] with an alpha of 0.05, 80% power, and an anticipated 19% improvement in documentation compliance based on findings from a similar study. This calculation resulted in a sample size of 67 encounter notes for each group (total of 134 encounter notes pre- and post-tailored intervention), adults aged 19-64.

To minimize risk to provider participants, written informed consent and completed surveys from medical providers remained anonymous. The Military Health System Population Health Portal database was accessed to identify patients for inclusion. To ensure protection of health and personal information, eligible records were electronically randomized and every other record selected for review. In addition, chart audits were coded and de-identified. Inclusion criteria for encounter notes included BMI≥25, and an acute, follow-up, or wellness appointment within two months prior to the intervention or two weeks following intervention implementation on April 27, 2015. Exclusion criteria included patients who presented for procedures or with unstable conditions requiring extensive work-up during the scheduled appointment time.

Pre-intervention phase

This study used a convenience sample of medical providers in a military PCMH. Informed consents and surveys were distributed to providers via email and also informally during routine daily provider training sessions. The survey[28] contained 14 Likert scale items in which providers were asked to rate to what extent each was perceived as a barrier to implementing weight management interventions in practice. Each of the 14 items was independent of one another and scored individually. Although content validity and survey reliability scores were not available, the survey has been used in several studies examining provider adherence in obesity management[28] and was consistent with the objectives of this study. The responses included:

a. Never = 0% of the time.

b. Sometimes = less than 50% of the time.

c. Often= more than 50% of the time.

d. Usually = more than 80% of the time.

Barriers to implementing weight management interventions in the primary care setting rated as being present greater than 50% of the time were considered major barriers. Barriers rated as being present less than 50% of the time, were considered minor barriers.

During the initial phase of the study, provider surveys identified "lack of patient interest in changing behavior" as the most frequent major barrier to implementing weight management interventions in primary care. In collaboration with PCMH leadership personnel, a tailored intervention to alleviate this barrier was developed in order to improve provider adherence to obesity treatment guidelines. The decision to focus on alleviating a single major barrier was based on ease of implementation and optimizing buy-in from project participants.

The readiness ruler

The intervention was the implementation of a "Readiness Ruler" to identify a patient's readiness and interest in making a change toward healthy weight. As described by the Transtheoretical Model, individual's progress through a series of changes when it comes to modifying behaviors.[29] The readiness ruler[30] is a cost-effective and time efficient tool to elicit a patient's level of interest or motivation to change a behavior. Readiness Rulers have been shown to be effective in measuring motivation and in forecasting intentions related to behavior change.[31] Individuals who engage in change talk are more likely to change[32] and the Readiness Ruler is a convenient instrument that may douse providers' perceived barrier that patients lack interest in changing behavior. Researchers have shown Readiness Rulers to be reliable and valid tools for predicting behavior change.[33] Readiness Ruler as a trigger to prompt weight management discussions between providers and patients may in turn, improve providers' adherence to overweight and obesity management guidelines.

Quality indicators

Quality indicator selection included: height, weight, BMI, a diagnosis of overweight or obesity, counseling related to diet and physical activity, weight management referrals (nutrition, mental health, health promotions classes, and bariatric surgery), and co-morbidities (hypertension, hyperlipidemia, diabetes mellitus type 2, coronary heart disease, stroke, osteoarthritis, and sleep apnea). These quality indicators are based on data availability, the impact on the outcome to be measured, and the potential to reduce the gap between current practice and evidence-based practice.[34] Retrospective reviews of pre-established objective outcomes reduced potential bias.

Intervention phase

The intervention was implemented by the PI over a 2 week period. System change procedure training (Figure 1) was conducted with the entire PCMH staff, including providers, nursing staff (registered nurses, Navy corpsmen, and medical assistants), and administrative personnel, at a regularly scheduled departmental staff meeting. Information about location of the Readiness Ruler, how to ask patients to assess their readiness to make a healthy change in weight, tailoring a patient's weight management plan based on the patient's readiness, and how to appropriately document a weight management plan in the electronic medical record was discussed. Four additional brief training sessions with nursing staff were conducted during daily team planning meetings and focused on documentation of weight diagnosis in the electronic medical record and how to utilize the readiness ruler to engage patients in discussing their readiness to reduce their weight. Providers were also provided a copy of VA/DoD weight management clinical practice guidelines[13] and a brief outline describing the Stages of Change model.

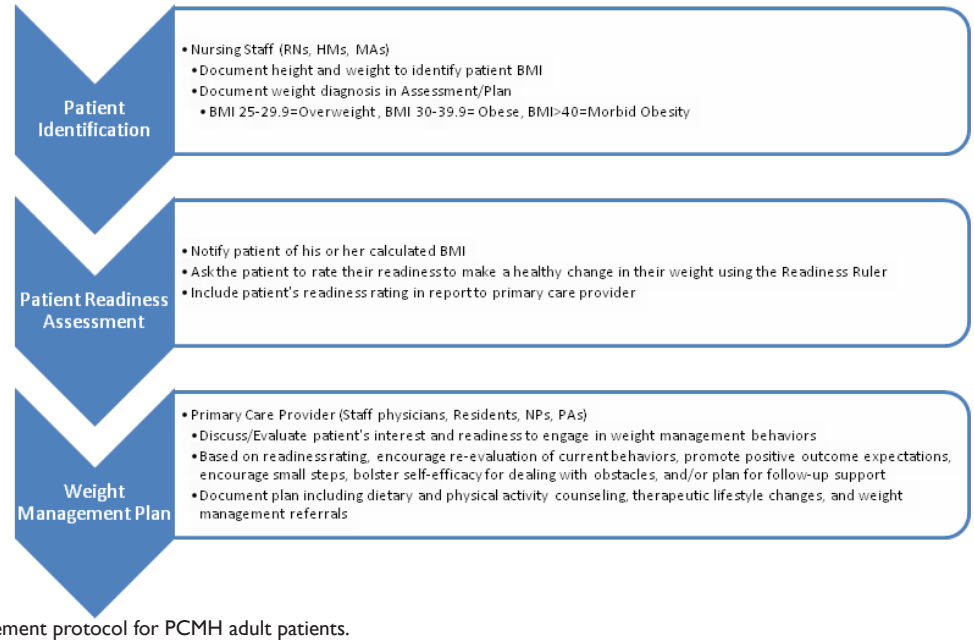

Figure 1 Weight management protocol for PCMH adult patients.

A "Readiness Ruler" (Figure 2) was hung in each exam room. During patient intake, nursing staff documented patient height and weight in the electronic medical record (EMR) to obtain computer-calculated BMI. If a patient had a BMI≥25, the nursing staff documented the appropriate weight diagnosis in the assessment and plan section of the EMR. Nursing staff also informed the patients of their BMI and asked the patients to rate their readiness and interest in making a healthy change in their weight using the Readiness Ruler. This information was then reported to the primary care provider allowing the provider to tailor assessment and plan for weight management based on an individual patient's readiness to make a change. Providers were encouraged to document their plan in the patient's EMR.

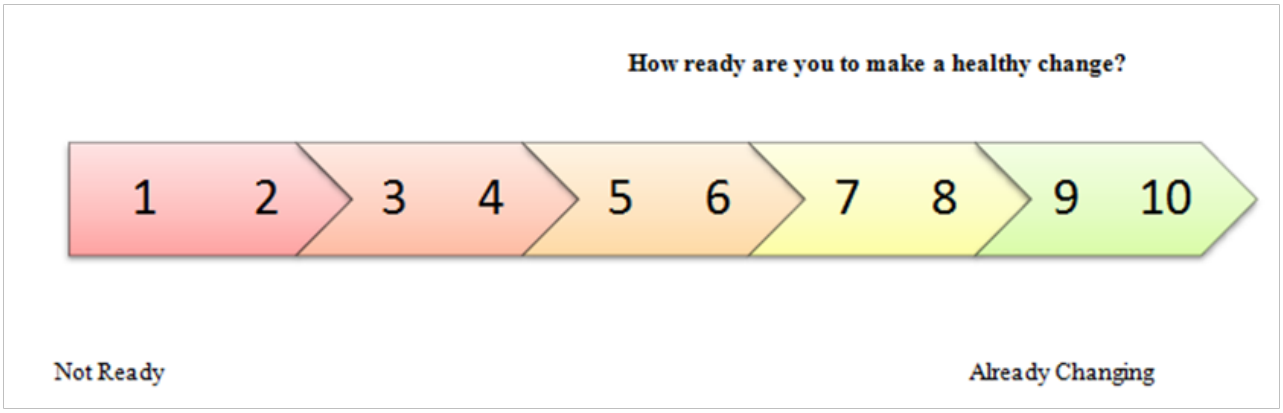

Figure 2 Readiness ruler.

Post intervention phase

The purpose of this quality improvement project was to increase provider adherence to adult overweight and obesity treatment guidelines in a military Patient-Centered Medical Home. To evaluate adherence to documented clinical practice guideline quality indicators, the PI performed a retrospective electronic medical record review. The intervention was implemented in 2015 and the PI included records from different patients 2 months prior to the intervention and 2 weeks post-tailored intervention. The Military Health System Population Health Portal database was accessed to identify patients for inclusion. From that randomized list, every other record was selected for review in AHLTA (Armed Forces Health Longitudinal Technology Application) (Version 3.3), the military's electronic health record. Each encounter was evaluated at the nominal level for the presence (adherence) or absence (non-adherence) of the following dependent variables: height, weight, BMI, weight diagnosis, nutrition counseling, physical activity counseling, and relevant referrals. Height, weight, and computer-calculated BMI are documented for each patient visit and therefore expected variables to be found in each encounter.

Data collection and analysis

Provider survey evaluation, and record selection and data collection was conducted exclusively by the PI. The presence or absence of quality indicators to include height, weight, BMI, weight

diagnosis, dietary counseling, physical activity counseling, and weight management referral were recorded to document providers' adherence to overweight and obesity management. Additional chart audit variables including age, gender, BMI, provider role, and co-morbidities were collected to evaluate similarities between pre- and post-tailored intervention groups.

Statistical Package for the Social Sciences (SPSS, Version 22) was used for data analysis. Frequencies were used to describe providers' perceived barriers to implementing weight management interventions in the primary care setting. Percentages were used to report categorical variables, and mean and standard deviation for continuous variables. Chi-square test was used to evaluate categorical data and independent samples *t*-test was used to evaluate continuous data. An alpha of 0.05 was used to test for statistical significance.

Results

Characteristics of Medical Providers

Of the 35 surveys distributed, 24 surveys were returned, yielding a 69% response rate. Respondents included 10 (42%) females and 14 (58%) males. Provider roles included: seven (29.2%) physicians, 11 (45.8%) residents, three (12.5%) nurse practitioners, and three (12.5%) physician assistants. The mean age of respondents was 40.6 (SD±11.4) and the mean years of practice was 8.3 (SD±7.4).

Outcomes

Results of medical provider survey: High relapse rate of patients with weight problems (70.8%), lack of effective interventions (58.3%), and lack of time (58.3%) were identified as major barriers to implementing weight management interventions in the primary care setting. An overwhelming 87.5% of providers indicated lack of patient interest in changing behavior as the most frequently occurring major barrier (Figure 3 & 4).

Results of Chart Audit Pre- and Post-Tailored Intervention: A total of 134 overweight and obese adult patient records were reviewed. The pre- and post-intervention patient characteristics were not statistically different in regards to age, gender, beneficiary status, height, weight, BMI, BMI categories, provider role, and co-morbidities (Table 1).

Results of Pre- and Post-Tailored Intervention Quality Indicators

Height, weight, and BMI: One hundred percent of encounters provided documentation of height, weight, and BMI.

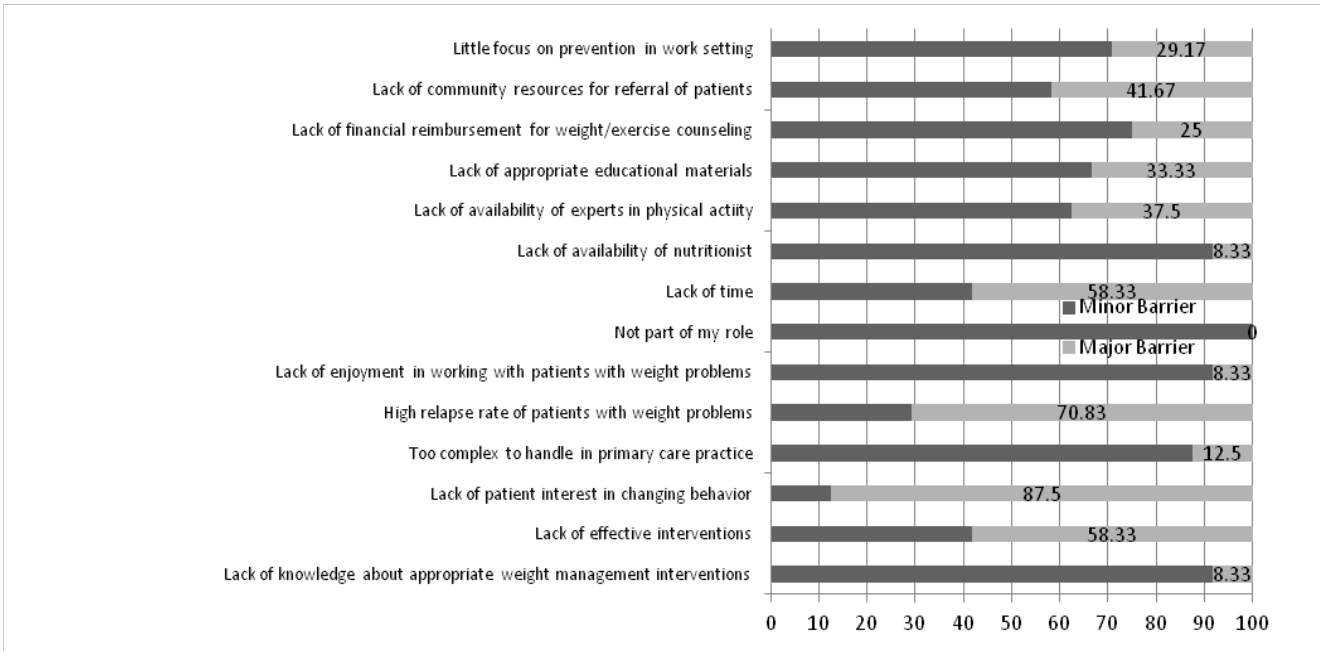

Figure 3 Provider rating (%) of barriers to providing effective health promotion related to weight management in primary care practice.

Weight diagnosis: A statistically significant increase was found from pre-tailored intervention (n=12 [18%]) to post-tailored intervention (n=32 [48%]) documentation of diagnosis for weight ($X^2(1) = 13.54$, $p<.000$).

Dietary counseling: A clinically significant increase was found from pre-tailored intervention (n=7 [10%]) to post-tailored intervention (n=13 [19%]) documentation of dietary counseling

Physical activity counseling: A statistically significant increase was found from pre-tailored intervention (n=3 [4%]) to post-tailored intervention (n=13 [19%]) documentation of physical activity counseling ($X^2(1)=7.10$, $p<.009$).

Weight management referral: A statistically significant increase was found from pre-tailored intervention (n=1 [1%]) to post-tailored intervention (n=9 [13%]) documentation of weight management referral ($X^2(1)=6.92$, $p<.009$).

Citation: Baduara LB, Wadas TM. Evaluation of a tailored intervention to improve provider adherence for adult overweight and obesity management in a military patient-centered medical home. *Nurse Care Open Acces J.* 2019;6(4):132–140. DOI: 10.15406/ncoaj.2019.06.00196

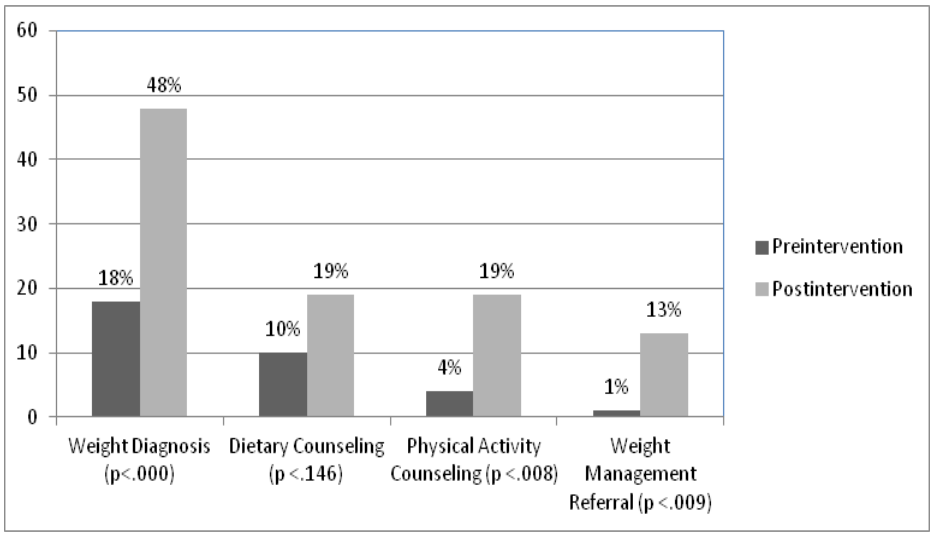

Figure 4 Comparison of preintervention (n=67) and postintervention (n=67) provider documentation.

Discussion

Effective interventions for guideline implementation rely heavily on strategies that consider and curtail the barriers experienced by targeted users.[36] Findings from this study support the proposition that a tailored provider intervention is effective in improving provider adherence to adult weight management in a military Patient-Centered Medical Home. Tailoring interventions using known provider barriers to obesity treatment guidelines is not sufficient if those barriers are not applicable to the study population.[36]

Barriers to Provider Adherence

Several methods have been utilized to identify barriers to practice including questionnaires and focus groups.[37] A strength of this study was the use of a theory-based approach to the development of an intervention alleviating one of the major barriers to practice identified by the study population. The study utilized an existing provider survey in which providers were asked to rate to what extent 14 items were perceived as barriers to implementing weight management in practice. Similar to previous studies using the same survey, lack of patient interest in changing behavior, high relapse rate of patient with weight problems, and lack of time were also perceived as major barriers for primary care and specialty providers.[28]

Quality Indicators for Weight Management

Screening for overweight and obesity seems the logical first step in addressing weight management in the primary care setting. Height, weight, and BMI was documented in 100% of the encounters and attributed to BMI calculation as an automatic feature of the electronic medical record.[38] Researchers demonstrated that the availability of height and weight to calculate BMI does not necessarily lead to increased documentation of weight diagnosis and improved treatment for overweight and obese patients.[38] Therefore, it is likely that the 30% improvement in weight diagnosis observed in this project is directly related to the implementation of the tailored-intervention. Conversely, similar to findings from other studies,[16] documentation of weight diagnosis remained substandard and documented only 48% of the time post-intervention.

Table 1 Comparison of preintervention (n=67) and postintervention (n=67) chart audit characteristics

	Preintervention	Postintervention	P
Gender (n, %)			**0.456**
Male	23 (34)	19 (28)	
Female	44 (66)	48 (72)	
Age; years ±SD	42±13	39±14	0.478
Status (n, %)			0.162
Active Duty	10 (15)	13 (19)	
Reservist	0	0	
Dependent	41 (61)	40 (60)	
Retiree	16 (24)	14 (21)	
Height, inches±SD	66±4	66±4	0.192
Weight, pounds±SD	203±45	203±37	0.077
BMI±SD	32±5	33±5	0.739
BMI Category (n, %)			0.684
25-29.9	31 (46)	27 (40)	
30-39.9	27 (40)	32 (48)	
>40	9 (13)	8 (12)	

Citation: Baduara LB, Wadas TM. Evaluation of a tailored intervention to improve provider adherence for adult overweight and obesity management in a military patient-centered medical home. *Nurse Care Open Acces J.* 2019;6(4):132–140. DOI: 10.15406/ncoaj.2019.06.00196

Table Continued..

	Preintervention	Postintervention	P
Gender (n, %)			**0.456**
Provider Role (n, %)			0.162
Physician	11 (16)	18 (27)	
Resident	13 (19)	19 (28)	
Nurse Practitioner	21 (31)	15 (22)	
Physician Assistant	22 (33)	15 (22)	
At least 1 Co-morbidity (n, %)	29 (13)	21 (31)	0.153
Hypertension	20 (30)	11 (16)	0.065
Hyperlipidemia	18 (27)	9 (13)	0.053
Diabetes	9 (13)	5 (7)	0.259
Coronary Artery Disease	1 (1)	0	0.315
Stroke	0	1 (1)	0.315
Osteoarthritis	10 (15)	16 (24)	0.492
Sleep apnea	5 (7)	3 (4)	0.466

Note*:* SD, standard deviation; BMI, body mass index

Documentation of weight diagnosis is a strong predictor to the development of a weight management plan.[39] In this study, screening for overweight and obesity was the responsibility of the nursing support staff. As noted in another study, it is undecided whether utilization of nurses to screen for obesity could subsequently improve provider management of overweight and obese patients.[40] Documentation for dietary counseling was the least improved quality indicator in this project at 9% and was not as robust of an improvement seen in a previous study. One possible reason is that dietary counseling may be perceived by some providers as an ineffective intervention to patients' achieving their weight loss goals. Nearly 50% of primary care providers believe that patients would not lose weight based on reducing caloric intake alone.[41]

Documentation of physical activity counseling occurred 4% of the time pre-intervention and 19% of the time post-intervention. These results are consistent with previous studies focused on improving obesity screening, and provider adherence to obesity treatment guidelines.[41] Encouraging patients to engage in regular physical activity is crucial. The addition of physical activity to a weight management plan has potential to promote greater weight loss and may also help patient in sustaining weight loss in the long term.[42]

Weight management referrals was the quality indicator least documented in this study. Documentation of weight management referrals occurred 1% and 13% of the time for pre- and post-intervention periods, respectively. A possible explanation for the underutilization of weight management referrals may be related to patient comorbidities and BMI status. Weight related comorbidities, and increasing BMI are associated with documentation of overweight and obesity management.[16] Given more than 40% of patients from reviewed encounters had a BMI of ≥30 and only 37% had at least one comorbidity, it is likely many of the patients were not eligible for referral to bariatric surgery. In addition, referrals for nutrition counseling in the primary care setting have been shown to be the least common treatment strategy for the treatment of overweight and obesity.[39] However, the vast majority of providers (92%) in this project did not perceive the lack of a nutritionist as a major barrier to implementing weight management practices in primary care. Therefore, it is unknown why more patients did not receive a referral to nutrition. This finding is particularly concerning as providers are missing opportunities to intervene and utilize available resources prior to overweight patients becoming obese and developing weight-related comorbidities.

Intervention development and implementation strategies should include all relevant staff members as providers do not function in isolation.[36] The current study relied on the interdependent collaboration of primary care providers and other members of the PCMH team to improve care for overweight patients. Without the assistance of the nursing staff to screen overweight and obese patients' readiness to change, and to assist with the documentation of weight diagnoses, improvements in provider adherence to weight management might not have occurred. This collaborative effort was viewed as strategic strength of the intervention design in an attempt to promote the PCMH team approach.

Limitations

There are several limitations to this study. A quasi experimental study design was utilized in an attempt to improve weight management for all PCMH patients. Lack of randomization, use of a convenience sample, and lack of a control group limit the generalizability of findings. It is also possible that the novelty of this intervention, and the fact that the PI was a member of the PCMH team unintentionally biased colleagues' adherence to weight management guidelines. To minimize direct bias, the PI did not participate in the provider survey leading to the chosen intervention, and chart selections were randomized. Another limitation was the use of medical record review as the form of data collection which served to evaluate documented care rather than actual care provided. Providers may have acknowledged patients' diagnoses of overweight or obesity and discussed weight management plans without documenting accordingly. Lastly, the short time frame from intervention to 2 week post-implementation evaluation, may have led to a placebo effect or provider perception that the intervention would indeed improve their performance. Obesity is a chronic condition requiring ongoing management and the short duration of this study did not evaluate long term sustainment of observed improvements in provider adherence to weight management.

Summary

Findings of this study support the use of tailored interventions to improve provider adherence to overweight and obesity management guidelines, thus ensuring quality health outcomes for overweight and obese patients. Specifically, statistically or clinically significant improvements in weight management diagnosis, dietary counseling, physical activity counseling, and weight management referral were achieved. Despite outcome improvements, suboptimal documentation of weight diagnoses and management plans persisted. This may be

explained by the numerous barriers identified by the pre-intervention provider surveys. The tailored intervention developed for this project focused primarily on a single major barrier. An intervention that alleviates more than one perceived provider barrier may heighten intervention intensity. However, multifaceted interventions may prove difficult to implement in the primary care setting. Such interventions may need to be implemented in stages necessitating further investigation regarding feasibility and opportunity cost.

Missed opportunities to address overweight and obesity management in primary care are numerous and the most effective methods for identifying barriers to practice and implementing tailored interventions are not clear. For this particular study, the addition of motivational interviewing intervention strategies that utilize an interdisciplinary team approach should address perceived barriers for all members involved. Increased emphasis on motivational interviewing in conjunction with the use of the Readiness Ruler may prove beneficial in alleviating providers' perception that patients lack interest in changing behavior related to weight management. The concepts of motivational interviewing have the potential to foster therapeutic patient-provider relationships in maximizing each opportunity to address overweight and obesity health concerns in the primary care setting. Chronic disease prevention and management is a principal function of primary care making the PCMH an appropriate setting for this project intervention.

Conclusion

Patient-Centered Medical Home providers are ideally positioned to stifle the growing problem of obesity while simultaneously reducing associated comorbidities and early mortality rates. This feat can be accomplished by improving provider adherence to weight management guidelines through the implementation of tailored interventions. Such interventions should be based on perceived population-specific barriers and ensure involvement of all relevant team members. Future studies will consider the impact of tailored provider interventions on overweight and obese patient outcomes.[43–47]

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None.

Conflict of interest

The authors declare that there is no conflict of interest.

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