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Impact of an American Board of Pediatrics Maintenance of Certification (MOC) on Weight-related Counseling at Well-Child Check-Ups

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Abstract

Objective: The Healthy Weight Counseling Maintenance of Certification (MOC) program integrates pediatrician training and clinic changes to promote use of evidence-based, diet and physical activity (PA) health messages and counseling strategies. This interrupted time series study assessed the impact of this MOC program on provision of weight-related counseling.

Methods: We randomly selected 10–15 well-child visit charts at three time points before and three time points after 102 Georgia pediatricians began the MOC in 2012–2015. Linear binomial regression compared the frequency of behavior-change goal setting and health messaging documentation (fruit/vegetable consumption, sugar-sweetened beverage consumption, out-of-home food consumption, PA, and screen time) before and after MOC participation.

Results: At baseline, pediatricians documented behavior-change goals with 44% of patients, with an additional 49% of patients having documented goals after their pediatrician started the MOC (99.5% confidence interval [CI]: 21–77%). Similarly, absolute increases in the proportion of patients with documentation for sugar-sweetened beverage consumption (adjusted prevalence difference [aPD]: 37%; 99.5% CI: 13–62%) and out-of-home eating were observed (aPD: 38%; 99.5% CI: 12–64%).

Conclusion: The Healthy Weight Counseling MOC is associated with increased and sustained use of evidence-based health messages and counseling strategies.

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Practice Implications: Continuing education and facilitation of system changes helps improve physicians' weight-related counseling.

Keywords

Counseling; pediatricians; body weight; child; continuing education

1. Introduction

Childhood obesity affects over 12.5 million children in the US [1]. Obese children are more likely to have poor metabolic profiles compared to their normal-weight peers [2,3]. Over their lifetimes, obese children are also at greater risk of chronic obesity, diabetes, heart disease, and cancer [4,5]. Childhood is an important stage during which to intervene, as it is a sensitive period for developing eating, physical activity, and screen time patterns [6,7]. The United States Department of Agriculture recommends that children consume 1–2 cups of fruits and 1–3 cups of vegetables daily, but only 40% of children meet the fruit consumption recommendation and 7% of children eat sufficient quantities of vegetables [8]. Similarly, children should perform 60 minutes of physical activity daily, but 70% of elementary school-aged children and only 25% of adolescents meet this goal [9,10].

Pediatricians are well-positioned to counsel and promote the development of healthy diet and activity patterns among children [11,12]. Children regularly visit their physicians with their parents or primary caretakers, many of whom look to physicians for guidance on reducing their child's health risks [11]. A review of numerous studies suggests that the primary care setting is an effective place for treating childhood overweight and obesity by allowing providers to counsel or educate, offer written materials, and support behavior change of children and their caretakers [13]. For example, Nemet et al. reported that physician and dietitian-delivered education sessions, dietitian visits, and physical activity sessions led by physicians decreased body fat from 41% to 38% among intervention participants after one year of follow-up [14].

The American Academy of Pediatrics (AAP) currently recommends motivational interviewing and goal setting as tools to perform patient-centered communication during weight-related counseling [12]. In motivational interviewing, providers use reflective listening to facilitate a collaborative dialogue between providers, parents, and patients to identify impediments to and encourage behavior change [12,15]. In a 2013 randomized trial of 372 overweight children, body mass index (BMI) scores increased less (0.49 versus 0.79) over one year when comparing motivational interviewing delivered by 78 participating physicians to standard care [16]. In goal setting, physicians encourage parents and patients to set achievable behavior goals (e.g. 15 minutes of physical activity per day) [17]. Motivational interviewing and goal setting should be used to advise families on evidenced-based diet and physical activity strategies in the form of health messages [12].

Despite the AAP recommendation that pediatricians should provide weight-related counseling to all children, almost 25% of children do not report receiving any lifestyle counseling at all [18,19]. Physicians are more likely to provide weight-based counseling for obesity treatment than prevention [19], and only a few studies have assessed interventions

developed to address obesity counseling targeting both obese/overweight and normal-weight children [20–22].

Participation in Maintenance of Certification (MOC) programs was added to the American Board of Pediatrics' (ABP's) licensing requirements in 2003 to ensure that board-certified pediatricians have the knowledge and skills to deliver quality care [23]. In 2011, the Strong4Life Initiative of Children's Healthcare of Atlanta and a local pediatric practice group created the Healthy Weight Counseling MOC program, an ABP-approved MOC program designed to increase obesity prevention and treatment counseling provided by pediatricians to children 6–11 years during well-child visits [24]. The current study aimed to assess whether participation in the MOC program was associated with increased use of recommended weight-related counseling strategies, operationalized as documentation of health messaging related to goal setting, recommended behaviors, and physical exam measurement among participating Georgia pediatricians.

2. Methods

Of the 110 pediatricians from 41 practices completing the MOC between August 2012 and August 2015, 102 pediatricians were eligible for this analysis (n=8 pediatricians excluded because of simultaneous enrollment in another child obesity prevention program). The study was reviewed by the Emory University Institutional Review Board and determined to be exempt.

The six-month Strong4Life Healthy Weight Counseling MOC program included five components: 1) an in-person, 2-hour Strong4Life training highlighting recommended counseling strategies and the need for pediatricians to discuss evidenced-based strategies for healthy weight ("health messages") with patients and their parents; 2) a one-hour refresher webcast at approximately the third month of the MOC; 3) recommended updates to well-child visit forms to prompt health messaging; 4) peer reviews of patient charts; and 5) two in-practice meetings between clinical and office staff first to review changes to forms in the clinic and subsequently, to assess problem areas in counseling practices. The Strong4Life training has been previously described (<http://www.strong4life.com>) [21]. Briefly, trainings were held in groups (average size=12±9 pediatricians) at multiple conference rooms throughout Georgia to facilitate pediatrician participation. A physician, registered nurse, or registered dietitian trained in motivational interviewing, led each Strong4Life session. In each Strong4Life training, these leaders reviewed diet and activity guidelines for healthy weight management based on the United States Department of Agriculture and others [12,25], with a focus on five healthy habits: increasing fruit and vegetable consumption, decreasing outside-of-home eating, achieving 60 minutes of moderate-to-vigorous activity daily, decreasing sugar-sweetened beverages, and limiting screen time to two hours daily. The training also included an introduction to motivational interviewing and patient-centered goal setting [26]. This was done through didactics, presentations, role playing activities, and discussion of barriers and facilitators to implementation. Additionally, as per expert guidelines, the training stressed incorporation of growth monitoring (height, weight, BMI percentile or growth chart plotting) into regular practice [12,25]. All pediatricians received a toolkit containing Healthy Habits Assessment Forms (five-question forms assessing key diet

and activity patterns for parents and/or children to complete in the waiting room prior to the clinical visit), a color-coded BMI poster, and educational handouts for patients [24]. Since the Strong4Life training was available prior to the introduction of the MOC program, two training tracks were available to pediatricians. Pediatricians who previously attended the in-person training independently of the MOC program (n=76 pediatricians) were required to attend the one-hour webcast but not re-attend the in-person training. Pediatricians who had not previously received the Strong4Life training participated in both the training and webcast, so that all pediatricians received the same level of training.

In addition to the MOC's educational components, participants were encouraged to revise the well-child visit templates at their practice to facilitate discussions of health messages highlighted in the training. This could be accomplished by using the Healthy Habits Assessment Forms provided in the training toolkit, revising existing forms, or incorporating reminders for each of the individual health message into the practice's electronic medical record (EMR) system.

To promote adoption of the MOC program components, participants identified a peer pediatrician working at the same practice to conduct monthly reviews of their patients' charts. For each MOC pediatrician, fifteen well-child visit charts of children aged 6 to 11 years seen the month prior to Strong4Life training and during each month of the MOC program were randomly selected for review. For each chart, peer reviewers reported whether the MOC pediatrician documented each of the following components of the MOC: (1) a discussion regarding healthy weight-related diet and activity practices characterized by use of the Healthy Habits Assessment Form or discussion of each of the individual health message; (2) components of growth monitoring; and (3) a wellness goal.

We designed the study to ascertain data at three time points occurring before MOC initiation (at baseline six months before MOC initiation, three months before MOC initiation, and one month before Strong4Life training), and at three time points after MOC initiation (three-months into the six-month MOC, upon completion of the MOC, and six months after completion of the MOC). Chart review data abstracted by peer pediatricians one month before Strong4Life training and upon completion of the MOC were available for analysis. Since pediatricians were not available to perform chart reviews at other time points, we enlisted office managers to review charts at the other three time points, including six months and three months prior to MOC initiation and six months after MOC completion. Office managers randomly selected 10 well-child visit charts of children 6 to 11 years at each of the three time points. Research staff interviewed office managers by telephone to collect information on practice and MOC pediatrician characteristics.

For each patient, we assessed goal setting by documentation of at least one weight-related diet or activity goal in each chart. We measured communication of health messages by documentation (presence versus absence) of counseling related to each of the five healthy weight-related messages (fruit and vegetable consumption, sugar-sweetened beverages, out-of-home consumption, physical activity, screen time) individually or in combination through the use of the Healthy Habits Assessment Form. In every chart, we also assessed documentation of each growth monitoring measure. For each of the targeted counseling

components at each time point, we calculated the counseling frequency for each pediatrician by: number of charts with the counseling component documented/total number of charts reviewed.

We categorized continuous practice and pediatrician characteristic variables at the median since no a priori cut-points have been consistently used. Practice characteristics included use of EMR, practice size (≤ 7 versus >7 physicians employed at the practice), and percent Medicaid (≤ 12% versus >12%). Pediatrician demographics included pediatrician gender, age (≤ 50 versus >50 years), employment status (full-time versus part-time), and participation in Strong4Life provider training prior to initiating the MOC (yes versus no).

We computed descriptive statistics (medians and inter-quartile ranges [IQR] or sample sizes and frequencies) of pediatrician and practice characteristics. We then calculated the average proportion of patients receiving goal setting or each health message at baseline (six months before the start of the MOC), at MOC completion, and six months after MOC completion. For each outcome, we performed a multiple baseline interrupted time series analysis to compare the proportion of patients counseled, with the equation:

$$Y_t = \beta_0 + \beta_1 T_t + \beta_2 X_t + \beta_3 T_t X_t + \beta_4 A_t + e_i$$

Where β_0 is the initial proportion of patients counseled; β_1 estimates the monthly change in proportion of patients counseled before the MOC; T_t is a continuous variable indicating time in months at t since baseline; β_2 estimates the immediate change in proportion of patients counseled after the start of the MOC; X_t indicates whether time t occurs before (if 0) or after the beginning of the MOC (if 1); and β_3 estimates the difference in the pre- to post-MOC trends in proportion of patients counseled. Data from all abstractors were included in the current study and analyses were adjusted by the A_t variable, which indicates whether the data at time t were abstracted by a pediatrician or office manager. We used linear binomial regression with generalized estimating equations since we were interested in inference to the population of pediatricians while accounting for clustering of pediatricians within 41 practices [27]. Using this model, we obtained the prevalence of goal setting and each healthy weight-related message at baseline and assessed the secular monthly trend in prevalence before the MOC, the change in prevalence immediately after the MOC, and the secular monthly trend after the start of the MOC.

We also performed a sensitivity analysis to explore counseling frequency outcome misclassification which may arise when chart documentation and actual counseling practices are not concordant [28–33]. Various approaches can be used to correct for outcome misclassification bias [34]. We used sensitivities and specificities from prior studies comparing chart documentation to tape recorder data to explore the extent to which estimates in the current study could be affected by outcome misclassification (Supplementary File) [28–33].

We performed all analyses using SAS version 9.4 (Cary, NC). Using the Bonferroni correction, we set alpha to 0.005 to account for multiple outcomes.

3. Results

From the 102 pediatricians in the analytic dataset, 6,440 unique charts were drawn from a total of six time points. The median practice size was seven pediatricians (IQR: 5 to 13; Table 1). Eighty-one percent of pediatricians worked in practices using EMRs, and the median percent of Medicaid patients was 12% (IQR: 3 to 50). Pediatricians were mostly female (n=71; 70%) and employed full-time (n=86; 85%). The median pediatrician age was 49 years (IQR: 44 to 55) and most (n=76; 75%) had received Strong4Life provider training prior to enrollment in the MOC. Of the 102 pediatricians, chart review data were submitted by 100 (98%) pediatricians at MOC completion and 79 pediatricians six months after MOC completion (77%). The subset of 79 pediatricians followed-up six months after MOC completion had a lower practice Medicaid percent (median: 10%; IQR: 3 to 20%) than the analytic sample, but did not significantly differ in other practice or pediatrician characteristics, or counseling frequency before the MOC and at MOC completion (data not shown).

Growth monitoring measurements, including height, weight, BMI percentile, and blood pressure measurement, were documented in almost all charts both before and after the MOC, so we did not explore these components further. At baseline six months before the MOC, pediatricians documented goal setting with 44% of patients, which declined by 6% per month prior to the MOC (Table 2). An additional 49% of patients had documentation of a behavior-change goal immediately after pediatricians started the MOC (99.5% CI: 21% to 77%). Pediatricians continued documenting goal setting with 84% of their patients six months after completion of the MOC (slope after MOC initiation: -0.01; 99.5% CI: -0.02 to 0.01).

At baseline, the average pediatrician documented messaging on sugar-sweetened beverage consumption 50% of the time. Documentation decreased by 4% each month before the MOC, but pediatrician documentation of sugar-sweetened beverage consumption messaging increased by an additional 37% immediately after starting the MOC (99.5% CI: 13% to 62%). Six months after MOC completion, pediatricians continued to document sugar-sweetened beverage consumption messaging with 91% of patients (slope after MOC initiation: 0.00; 99.5% CI: -0.01 to 0.01). Similarly, at baseline, pediatricians documented messaging on outside-of-home eating with 51% of patients, which declined by 6% monthly in the pre-MOC period. Immediately after starting the MOC, documentation of outside-of-home-eating messaging increased by an additional 38% (99.5% CI: 12% to 64%). At six months after MOC completion, pediatricians continued to document out-of home food consumption messaging for 90% of patients (slope after MOC: 0.00; 99.5% CI: -0.01 to 0.01). At baseline, the average pediatrician frequently documented fruit and vegetable consumption messaging (71%), physical activity messaging (82%), and screen time (72%) messaging. These health messaging components did not change significantly after starting the MOC, and pediatricians continued to document these health message components with 92% (for physical activity and screen time messaging) to 93% (for fruit and vegetable consumption messaging) of patients six months after program completion.

After accounting for possible counseling misclassification due to dependence on chart review data as a proxy for counseling in the sensitivity analysis, all estimates were attenuated (data not shown). There was a significant association between the MOC program and counseling frequency for all components except when the sensitivity of documentation before the MOC decreased to 0.7 (for physical activity messaging only), 0.5 (for fruit and vegetable consumption messaging), or less (for goal setting, or sugar-sweetened beverage consumption, out-of-home food consumption, and screen time messaging).

4. Discussion and Conclusion

4.1. Discussion

This study found that the Strong4Life Healthy Weight Counseling MOC program is associated with increased pediatrician use of health messages and behavior-change goal setting during well-child visits. Associated improvements were greatest for sugar-sweetened beverage and outside-of-home food consumption messaging, as well as goal setting, the three counseling components performed the most infrequently before the MOC. The increased frequency of weight-related counseling practices was sustained six months after pediatricians completed the MOC, suggesting that the association may be long-lasting. Growth monitoring, which occurred consistently before the MOC, remained high at and after MOC conclusion.

The results from the current study support prior evaluations of interventions aiming to increase weight-related counseling among physicians [20,21]. A 2015 study assessed only the provider training program component of the Strong4Life Healthy Weight Counseling MOC six- and 12-months after training, and reported high BMI percentile plotting before and after training [21]. In contrast to the current study, the prior study reported goal-setting frequency of 4% at baseline which increased to 58% 12 months after training (versus 84% six months after MOC completion in the current study). However, pediatricians in the current study documented a higher frequency of goal setting at baseline (44%) suggesting that the two studies include somewhat different groups of pediatricians, limiting the ability to directly compare results. A 2009 quasi-experimental study conducted in 12 Maine residency programs, family practices, and pediatric practices evaluated an intervention involving a 1.5-day training on motivational interviewing, and provision of resources (e.g. posters and a parent assessment forms) [20]. Similar to the current study, the Maine study reported an increase in behavioral screening tool use from 0% to 82% one to nine years after baseline, and high (>90%) and sustained measurement of height, weight, and blood pressure through follow-up. Results from the current study are also consistent with physician-centered interventions aiming to treat or attenuate the excess weight of overweight and obese children [35].

This study has numerous strengths. First, this study fills a literature gap, as few studies have assessed pediatrician counseling practices after intervention implementation. This study further identified the counseling components most affected by MOC programs. Similarly, few studies have examined interventions designed to improve counseling for obesity prevention and treatment. Second, the final time point occurred six-months after the conclusion of the six-month MOC intervention, allowing for assessment of the associations

beyond completion of the intervention. Third, this study assessed pediatricians from varying practice types, locations, and sizes, and results may be generalized to other voluntary continuing education programs for pediatricians involving training, provision of resources, and clinic-level changes. However, given that pediatricians participating in this study selected the Healthy Weight Counseling MOC from other MOC programs, generalizability to mandatory training programs may be more limited. Finally, this study employed a relatively large sample (n=102) compared to other published studies.

Despite the strengths of this study, there are also important limitations. First, chart reviews reflected documentation and may not have reflected counseling quality or actual pediatrician counseling behavior. However, in our sensitivity analyses, the results were generally robust to outcome misclassification bias. Second, this study employed six time points, and the declining proportion of patients counseled before the MOC may suggest residual confounding by data abstractor, reflect a true decline in counseling prior to the MOC, or result from limited time points and data instability. Different data abstractors (e.g. office managers versus pediatricians) were employed at specific time points and may have resulted in variation in health messaging and goal setting counseling frequency estimation. Further, data abstractors were not study personnel and may have been biased in favor of study results. However, sensitivity analyses conducted after stratifying by abstractor (pediatrician versus office manager) showed significant changes in documentation of goal setting and health messages (Supplementary Table). Third, the pre-post repeated measures design lacked a comparison group, but the large magnitude of change in pediatrician counseling frequency after the MOC, multiple data collection points before and after the start of the MOC, and varying MOC start times for each pediatrician reduced the likelihood of chance and history biases. Finally, the multi-component nature of the MOC program precluded the ability to identify independent effects of each program element (resources, counseling, CDS). However, we explored heterogeneity in the effect of the two training tracks (prior versus concurrent Strong4Life training), and stratification produced largely overlapping CIs suggesting consistent effects of the MOC across tracks (data not shown). Further studies are still needed to identify the optimal combination of program elements to improve weight-related counseling.

Conclusion

The current study assessed the association between a six-month Strong4Life Healthy Weight Counseling MOC program consisting of a two-hour training program and tools to promote practice-level changes and provision of weight-based counseling. Few pediatricians initially documented delivery of evidence-based health messages regarding out-of-home food and sugar-sweetened beverage consumption, and counseling strategies like goal setting. The sustained increases in documentation of counseling at MOC completion and six months after program cessation suggest that the MOC may be associated with improved weight-based counseling in the long term.

4.3. Practice Implications

The current study suggests that training and promotion of the use of decisional supports similar to the Strong4Life Healthy Weight Counseling MOC program may increase pediatrician use of evidence-based weight-related health messages and counseling strategies. Simultaneous delivery of educational strategies and support from systems-level changes can be used to both develop skills and techniques and facilitate the adoption of motivational interviewing and goal setting by pediatricians. The extent to which this improvement in weight-related counseling documentation translates into long-term weight management requires further study.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

- Few pediatricians use goal setting and health messages during counseling
- Pediatrician training/decisional support increases goal setting and health messages
- Maintenance of Certification programs can offer training and decisional support

Table 1.

Descriptive statistics of 102 Georgia pediatricians completing the Maintenance of Certification program in 2012–2015.

	N or Median	% or IQR
Practice Characteristics		
Number of physicians (median, IQR)	7	5, 13
Electronic medical record use (n, %)	81	80.2%
Percent Medicaid (median, IQR)	12	3, 50
Physician Characteristics		
Male (n, %)	31	30.4%
Full-time employment (n, %)	86	84.3%
Pediatrician age (median, IQR)	49	44, 55
Prior training with webinar refresher (n, %)	76	74.5%

Abbreviations: IQR=interquartile range

Table 2.

Average proportion of patients counseled at baseline, Maintenance of Certification (MOC) completion, and six months after MOC completion, along with the adjusted difference (and 99.5% confidence interval) in proportion of patients counseled from the segmented regression models (N=102 pediatricians; 2012–2015).

Outcome parameter	Crude baseline prevalence	Crude prevalence at MOC completion	Crude prevalence six months after MOC completion	Adjusted prevalence difference ^a	99.5% confidence interval	
Goal setting	0.44	0.94	0.84			
Pre-intervention slope ^b				−0.06	0.09	0.02
Change in intercept ^c				0.49	.21	.77
Change in slope ^d				−0.01	0.02	.01
Fruit and vegetable consumption messaging	0.71	0.96	0.93			
Pre-intervention slope ^b				−0.04	0.07	0.01
Change in intercept ^c				0.17	0.06	.41
Change in slope ^d				0.00	0.01	.01
Sugar-sweetened beverage consumption messaging	0.50	0.95	0.91			
Pre-intervention slope ^b				−0.04	0.07	0.02
Change in intercept ^c				0.37	.13	.62
Change in slope ^d				0.00	0.01	.01
Out-of-home eating messaging	0.51	0.95	0.90			
Pre-intervention slope ^b				−0.06	0.09	0.03
Change in intercept ^c				0.38	.12	.64
Change in slope ^d				0.00	0.01	.01
Physical activity messaging	0.82	0.95	0.92			
Pre-intervention slope ^b				−0.03	0.05	0.01
Change in intercept ^c				0.07	0.15	.29
Change in slope ^d				0.00	0.01	.01
Screen time messaging	0.72	0.95	0.92			
Pre-intervention slope ^b				−0.02	0.05	.00
Change in intercept ^c				0.17	0.07	.41
Change in slope ^d				0.00	0.01	.01

^a Adjusted for data abstractor

^b Secular trend before MOC, per month

^c Immediate change after beginning the MOC

^dSecular trend after start of MOC, per month

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