

## Does Presenting Patients' BMI Increase Documentation of Obesity?

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**Abstract - Purpose:** Despite the associated health consequences, obesity is infrequently documented as a problem in medical charts. The purpose of this study is to determine whether a simple intervention (routine listing of the BMI on the medical chart) will increase physician documentation of obesity in the medical record.

**Methods:** Participants were resident physicians in a family medicine residency program. Participants were randomly assigned to either an experimental group or a control group. For experimental group physicians, the Body Mass Index was listed alongside other vital signs of patients seen in an ambulatory setting. Physician documentation of patient obesity was assessed by chart review after patient visits. Documentation was defined as inclusion of obesity on the problem list or in the progress note.

**Results:** The intervention did not significantly increase the rate of documentation of obesity in the medical chart. Several reasons for the lack of change are explored, including the difficulty of treating obesity successfully.

**Key Words:** BMI, documentation of obesity, medical record, documentation of vital signs

Obesity and overweight have reached epidemic proportions.<sup>1</sup> A major health threat, obesity has been shown to increase the severity of some medical illnesses and to cause disease, such as hypertension, depression, diabetes, and degenerative joint disease.<sup>2</sup> Recognition of obesity in patients by physicians should be increased so that it may be better addressed as a medical problem.<sup>3</sup> Currently there is a lack of physician counseling for overweight and obese patients.<sup>4,5</sup> Additionally, obesity is infrequently documented in medical charts. Documentation may occur infrequently because obesity is often not the presenting complaint of the patient. An additional reason for poor documentation may be that obesity is not often quantified, although most patient charts have height and weight entered for each patient as part of the nursing documentation of vital signs. Therefore, the physician must base a diagnosis of obesity on a rough estimate of the patient's weight for height as compared to a rough calculation of the ideal weight for height.

The difficulty of quantifying obesity is addressed by using the Body Mass Index (BMI).<sup>2</sup> The BMI quantifies obesity using height and weight

measurements which already are present in most patient charts. The index is calculated by dividing weight in kilograms by the height in meters squared. The calculation has been converted to use for weight in pounds and height in inches, and is easily read by lining up these values on a nomogram, resulting in a set number for the BMI. Interpretation reveals that a person is "overweight" with a BMI of 25-28 (women) and 26-29 (men), and "obese" with a BMI 29 and above (women) and 30 and above (men).<sup>2</sup> Thus, the BMI not only quantifies patients with current obesity, but may identify those "at risk" for obesity by quantifying patient's overweight status.

The purpose of this study is to determine whether the simple intervention of routinely listing the BMI on the medical chart will increase physician documentation of obesity in the medical record.

### Methods

**Participants:** Fourteen resident physicians in a family medicine residency program participated in the study. Informed consent was obtained from each participant.

**Study Design:** A pre-post control group design was used.<sup>6</sup> Participants were randomly assigned to either an experimental group or a control group, with matching for level of experience (that is an equal number of first-, second-, and third-year residents were represented in both groups). The study was reviewed and approved by the Institutional Review Board.

**Intervention:** Prior to the intervention, all participants attended a 45-minute training session on the definition, calculation, and interpretation of the BMI. Using a written post-test, each participant confirmed and documented that the educational information had been reviewed and understood. Other than the special BMI training session, physicians did not receive additional exposure to the recognition of obesity beyond the traditional residency curriculum. Following the BMI training, the experimental group physicians were provided the BMI on the list of vital signs, along with height, weight, blood pressure, and temperature at every patient visit. The information was attached to the medical chart as BMI = \_\_\_\_\_. Physicians in the control group continued to have only standard vital signs listed in their charts of each patient visit, without a listing of the BMI. For the control group physicians, the BMI was calculated separately without knowledge of the physician so that the presence of obesity, documented or not, could be ascertained.

**Data Collection:** Physician documentation of

patient obesity was assessed by chart review after patient visits. Documentation was defined as inclusion of obesity on the problem list or in the progress note. Thirty medical charts from each resident physician (a total of 420 charts) were reviewed by a research assistant prior to the intervention. Due to physician attrition (graduation from residency), an average of 19 medical charts per physician (a total of 268) were available for review following the intervention. For each physician, a proportion was calculated of times he/she correctly documented obesity when the patient was in fact obese. The BMI was calculated for all patients. "Overweight" was defined as a BMI of 25 to 28 for women and 26 to 29 for men, while "Obesity" was 20 percent or more above the desired weight, that is  $\geq 29$  for women and  $\geq 30$  for men.<sup>2</sup>

**Data Analysis:** Descriptive statistics were used to describe the BMI characteristics of patients. The t-test was calculated to determine whether a difference existed in the documentation rates of physicians the experimental and control groups following the intervention.

**Results**

The documentation of obesity is shown in Table 1. Prior to the intervention, there were no statistically significant differences in documentation rate between physicians in the experimental group (24.1%) and those in the control group (29.5%),  $t(df = 6) = -.500$ ,  $p = .626$ ). Similarly, following the intervention, the

**Table 1**  
**Summary of BMI Data**

	<u>N</u>	<u>BMI</u>	<u>Obese Patients*</u>	<u>Mean Proportion Documented**</u>
<u>Pre-intervention</u>				
Experimental group	210	26.7	59	24.1%
Control group	210	25.5	47	29.5%
Total	420	26.1	106	26.8%
<u>Post-intervention</u>				
Experimental group	145	27.4	51	30.4%
Control group	123	27.0	44	22.0%
Total	268	27.3	95	26.2%

\*Obesity defined as  $\geq 20\%$  overweight (BMI  $\geq 29$  for women,  $\geq 30$  for men)

\*\*Of the 7 physicians in each group, the mean percentage of times obesity was documented when the patient actually met the criterion of obesity

difference in documentation rates between the two physician groups was not statistically significant ( $t(df = 6) = .809, p = .434$ ). The mean documentation rate of physicians in the experimental group was 30.4%, compared to 22.0% in the control group. Physicians in the experimental group were more likely to document obesity following the intervention (30.4%) than before the intervention (24.1%) although, again, this difference was not statistically significant ( $t(df = 6) = -.737, p = .489$ ).

Of the 688 charts reviewed, 168 (24.4%) had a BMI in the "overweight" range (25-28 for women, 26-29 for men), and 201 (29.2%) had a BMI in the "obese" range. In sum, over half (53.6%) of the patients measured during the study were above the "desirable" range.

## Discussion

The intervention of routinely listing the BMI along with other vital signs did not result in a significant increase in the documentation of obesity in the medical record. Indeed, the rate of documentation was quite low for physicians in both the experimental and control groups. There are several possible explanations for the lack of effectiveness of the intervention. Possibilities include those described in the introduction, such as the lack of a clear protocol to deal with obesity, or the need for more potent interventions.

Listing conditions on the medical chart has been shown to increase physician attention to other problems.<sup>7</sup> A previous study which placed smoking status on the vital signs was shown to significantly increase physician discussion with patients about their smoking habit. That intervention may have been more effective than the present BMI listing due to the nature of the topic. That is, discussion of patient smoking habits by the physician may be perceived as less sensitive than discussions of weight. In the present study, the perceived sensitivity of the topic may have deterred physicians from addressing the issue. Research has shown that physicians are reluctant to counsel patients about weight for several reasons: 1) inadequate training in counseling obese patients, 2) lack of time, 3) perceived inability to change patient behavior, 4) disbelief in the importance of preventive counseling, and 5) perceived lack of patient concern.<sup>4</sup> Obesity is common in this patient population and underscores the need for an effective way to identify and intervene with this medical problem.

There are several limitations to this study. First, we relied exclusively on chart audit for data collection. Physicians may have discussed obesity with the patient, but did not document that discussion in the chart. Second, our data collection was performed in a family medicine residency program. This may limit the ability to generalize these results to physicians in a private practice setting. Another limitation in using the residency program is attrition of physicians due to graduation from the residency program, resulting in less post-intervention data. Finally, the small sample size may have obscured statistically significant differences due to a lack of power.

Because of the importance of obesity in disease, further study and innovative ideas must be advanced to increase physician recognition and documentation of obesity to improve its management in their patients.

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