RESEARCH

Pharmacy Student Self-Perception of Weight and Relationship to Counseling Patients on Lifestyle Modification

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Objective. To assess the accuracy of pharmacy students' self-assessment of body mass index (BMI) and determine the relationship of this to comfort level in counseling patients regarding lifestyle modification.

Methods. A prospective, observational, cohort study was conducted that included first-, second-, and third-year pharmacy students who had previously undergone training in BMI self-assessment. Data on students' weight and height were collected and a survey that contained questions on self-perception of body weight and comfort with lifestyle counseling was conducted. Perceived BMI categories (underweight, normal, overweight, and obese) were then compared to actual calculated BMI to determine the accuracy of the student's self-perception.

Results. At baseline, participants' accuracy in self-assessment of BMI was 74%, 73.3%, and 75.6% respectively, for first-, second-, and third-year students ($p=0.911$). Students accuracy increased but not significantly as they progressed through the curriculum (7.2% and 13.3%, respectively; $p=0.470$ and $p=0.209$). Neither accuracy in self-assessment of BMI nor students' actual BMI significantly affected students' comfort level with lifestyle modification counseling within healthy weight, overweight, or obese patient categories. However, as the patients' BMI category increased, comfort level differences were observed among students of normal and overweight categories.

Conclusion. Patients' BMI category may be a significant barrier to pharmacy students' comfort level in providing lifestyle modification counseling. This finding suggests the need to implement curriculum changes to better prepare students for lifestyle modification counseling.

Keywords: lifestyle, counseling, body weight, weight loss

INTRODUCTION

Lifestyle modifications play an important role both in prevention and management of diseases such as hypertension, diabetes, and dyslipidemia.¹⁻³ Included in these lifestyle modifications are eating a healthy diet and obtaining adequate physical activity to promote weight loss. Healthcare providers play a pivotal role in facilitating a patient's lifestyle changes in these 2 areas.⁴ However, healthcare providers' perception of their own weight can affect their confidence in providing lifestyle modification counseling.^{5,6} A study of pediatricians in North Carolina who were surveyed regarding their weight and confidence in patient counseling found that those providers who perceived themselves as either thin or overweight had more difficulty when counseling patients as compared with their average weight counterparts.⁵ Only 51% of those

survey respondents who were overweight per BMI category classified their weight appropriately. Healthcare providers with a normal BMI are more likely to engage their patients in such conversations.⁶ A patient's perception of the healthcare provider's weight can also have an impact on the results of lifestyle counseling as patients who see non-obese healthcare providers are likely to have greater confidence in recommendations they receive related to weight management as compared with patients who receive recommendations from overweight providers.⁷

A study of pharmacists participating in obesity management using several aspects of counseling including lifestyle modifications found a positive correlation between comfort level of the pharmacists and frequency of counseling, as well as perceived effectiveness of the counseling.⁸ Also, a study that assessed physicians' comfort level with counseling and feelings of competence in providing lifestyle modification counseling reported that those physicians with a BMI greater than 25 (overweight or obese) felt less confident and less competent in providing lifestyle modification counseling to

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their patients.⁹ Among these same physicians, those with self-reported higher quality education in the area of obesity-related training felt more confident and competent.

According to data published by the US Department of Health and Human Services in 2012 (data from 2000, 2005, and 2010), physicians and other healthcare professionals' tendency to recommend physical activity to their patients had increased but still was not sufficient (pharmacists were not included in the study).¹⁰ Healthcare professionals reportedly discussed and recommended physical activity for patients with hypertension, cardiovascular disease, and diabetes only 44.2%, 41.2%, and 56.3% of the time, respectively. Similarly, when considering BMI, these recommendations were only provided 30.5% of the time for overweight patients and 46.9% of the time for obese patients.

Pharmacists practicing in the community and ambulatory care settings are well positioned to provide lifestyle counseling and, in turn, affect weight management of patients—a role many pharmacists are willing to fill.¹¹ Pharmacists in the ambulatory care setting have greater accessibility to patients and have more time to commit to lifestyle modification counseling as compared to other healthcare providers. However, pharmacists may face the same barriers, such as comfort level, as any other healthcare provider when engaging in lifestyle modification counseling. The purpose of this study was to determine pharmacy students' accuracy of self-perceptions of weight and the effects this has on comfort level with lifestyle modification counseling in order to identify a potential barrier to such counseling in clinical practice.

METHODS

This single-center, observational, cohort study was designed to compare prospectively collected data to historical data. The population studied included first-, second-, and third-year pharmacy students at Butler University College of Pharmacy and Health Sciences, all of whom had completed the My First Patient program (previously described) during the first semester of their first year.¹² Students from all 3 years were included in the historical portion of the data, whereas only second- and third-year students were included in the follow-up portion of the study. First-year students were not included in the follow-up because of the lack of experience with providing lifestyle modification counseling up to this point in their training. Students who declined to participate in the study or those who did not complete the entire survey instrument were excluded from the study.

Prospective data were collected in March and April 2013 during course recitation; historical data were collected from August 2010 to November 2012 during the

My First Patient Program. Data collected included actual weight (as determined using a professional scale) and self-reported height, which were needed to calculate BMI. The survey used in the My First Patient program was modified for this study to include additional questions to evaluate the student's comfort in lifestyle modification counseling using a Likert scale with responses ranging from "extremely uncomfortable" to "extremely comfortable." The only difference between data collected prospectively vs retrospectively was the addition of the comfort-level assessment questions. These additional items were added to the existing My First Patient program survey to limit the risk of confounding compared to using a survey that only contained the comfort-level items. Students' current weight and BMI information were collected prior to administration of the survey. SurveyMonkey was used to send an e-mail containing a link to the online survey to participants. Two e-mails were sent to each student approximately 1 week apart. Data collection was completed as close to the end of the spring semester as possible to allow second-year students to complete the lifestyle modification counseling simulation conducted at that point in the curriculum.

The data were analyzed using SPSS Statistics, version 19.0 (IBM SPSS, New York), and included descriptive statistics, one-way ANOVA for continuous variables comparing the 3 classes within baseline characteristics, and chi-square or Fisher exact tests for nonparametric data.

RESULTS

Few differences among professional classes were noted in students' baseline characteristics recorded during the My First Patient program (Table 1). The average age of second year (P2) students was younger than that of first- (P1) and third- (P3) year students. There were also more Caucasian students in the P2 class than in the other 2 classes. Other ethnicities reported included African American, Hispanic, and Native Hawaiian. Of the 258 students in the P2 and P3 classes eligible for inclusion in the follow-up portion of the study, 146 consented to participate and completed weight/BMI data collection (56.6% participation). Of those who consented to participate, 68 students also completed the survey instrument (46.6% of participants).

At baseline, accuracy of self-assessment of BMI was 74%, 73.3%, and 75.6%, respectively, for the 3 classes, with no difference in accuracy noted between the 3 groups ($p=0.911$; Figure 1). Accuracy of self-assessment did not change significantly as the students progressed through the curriculum (Figure 2); however, accuracy did increase from baseline by 7.2% for the P2 class ($p=0.470$) and

Table 1. Baseline Characteristics of Pharmacy Students Who Participated in a Study Regarding Self-Assessment of Body Mass Index and Comfort With Counseling Patients Regarding Lifestyle Modification

	P1 Class	P2 Class	P3 Class	P
Age, Mean (SD)	20.8 (2)	20.2 (0.4)	21 (0.3)	0.002 ^a
Gender, No. (%)				0.276
Male	42 (32.6)	55 (42)	45 (35.7)	
Female	87 (67.4)	76 (58)	81 (64.3)	
Ethnicity, No. (%)				0.04 ^a
Caucasian	112 (86.8)	124 (93.9)	116 (91.3)	
Asian American	15 (11.6)	4 (3)	6 (4.7)	
Other	2 (1.6)	4 (3)	5 (3.9)	
BMI, Mean (SD)	23.7 (4.4)	24.1 (4.1)	24.1 (4.3)	0.688
BMI Classification, No. (%)				0.963
Underweight	7 (5.5)	7 (5.3)	4 (3.1)	
Normal	82 (64.6)	82 (62.6)	81 (63.8)	
Overweight	26 (20.5)	27 (20.6)	29 (22.8)	
Obese	12 (9.4)	15 (11.5)	13 (10.2)	
% Body Fat, Mean (SD)	24 (9.2)	23.5 (9.4)	25.1 (9.2)	0.359

^a Difference noted between P1 and P2, P2 and P3 classes.

13.3% for the P3 class ($p=0.209$), respectively. No significant changes in students' actual BMI were noted from baseline to follow up, although there were smaller percentages of students in both the underweight and obese BMI groups at follow up (Figure 3).

Accuracy of self-assessment of BMI did not significantly affect students' comfort level with lifestyle modification counseling among the pharmacy students included in this study for any of the 3 patient groups assessed: healthy weight, overweight, or obese patients (Table 2). When comfort level was assessed based on students' actual BMI, there were no significant differences noted for any of the 3 patient BMI groups (Table 3). However, comfort level differences were observed among those students of normal and overweight BMI categories as the patient's BMI category increased. As the BMI of the patient to be counseled increased from one category to the next, the students in the normal and overweight BMI groups were less comfortable with lifestyle modification

counseling ($p<0.01$ and $p=0.038$, respectively, for normal and overweight students). No significant differences were observed in the underweight or obese student groups ($n=3$).

DISCUSSION

This study showed a much higher accuracy of self-assessment of BMI among first-year pharmacy students than seen among healthcare providers studied previously.⁵ Accuracy in their self-assessment of BMI did not change significantly as students progressed through the pharmacy curriculum. Two potential explanations for a lack of significant difference in students' BMI rates over time are the high rate of accuracy at baseline and the small number of students who completed the study. Also noted was the tendency of students to move from the underweight and obese BMI categories into the normal and overweight groups as they progressed through the curriculum.

The most significant finding from this study with regard to pharmacy education was the change in comfort

Figure 1. Body Mass Index Self-Assessment: Baseline (N=385)

Figure 2. Body Mass Index Self-Assessment: Follow-Up (N=68)

Figure 3. Change in body mass index (BMI) category from baseline (N=385) to follow-up (N=68). No significant differences were found.

level as the patient's BMI increased. This change was seen in the normal and overweight BMI student groups, but not in the underweight or obese student groups. There were only 3 students in the underweight BMI group and 3 in the obese BMI group who completed the study, and the small numbers could account for no differences detected in these groups. Although identifying changes in comfort level among a specific student BMI category as patients' BMI increased was a secondary objective of the study, it raises the question of whether the pharmacy curriculum adequately prepares students to counsel patients of different BMI categories on lifestyle modifications. Students at our institution were exposed to counseling scenarios that included simulated patients with various BMIs; however, the actor playing the role of the patient did not necessarily fit the demographics specified in the scenario. If the

volunteer patient was of normal weight but was simulating an obese patient, the student may not have approached the counseling session with the same presuppositions that may arise when presented with an actual obese patient. Because of this discrepancy between the simulated patients and actors, this exercise may not have been a realistic training experience for the students and may not have succeeded in making them feel comfortable with counseling patients across the BMI spectrum. Because lifestyle modifications, specifically weight loss, are usually more important to discuss with patients who are overweight or obese, it is essential that pharmacy students are prepared to assume this counseling role when they begin practice.

No difference in comfort level in lifestyle modification counseling was noted when examined based on accuracy of self-assessment in this study or when analyzed

Table 2. Pharmacy Students' Comfort Level With Counseling Patients About Lifestyle Modification Based on Accuracy of BMI Self-Assessment^a

Patient Weight Category/Accuracy of Student BMI Self-Perception	Student Comfort Level (Number of Students)				
	Extremely Uncomfortable	Uncomfortable	Neutral	Comfortable	Extremely Comfortable
Healthy weight					
Accurate	1	1	5	27	23
Inaccurate	-	-	1	5	5
Overweight					
Accurate	1	8	13	30	5
Inaccurate	-	2	1	5	3
Obese					
Accurate	2	16	11	25	3
Inaccurate	1	2	2	5	1

Numerical values represent number of students.

^a No significant differences found.

Table 3. Pharmacy Students' Comfort Level With Counseling Patients About Lifestyle Modification Compared Based on Students' Actual Body Mass Index^a

Patient Weight Category/Actual Student BMI	Students Indicating Each Comfort Level, No.				
	Extremely Uncomfortable	Uncomfortable	Neutral	Comfortable	Extremely Comfortable
Healthy weight					
Underweight	-	-	1	1	1
Normal	1	1	4	27	22
Overweight	-	-	-	5	6
Obese	-	-	1	1	1
Overweight					
Underweight	-	1	1	1	-
Normal	1	8	11	29	6
Overweight	-	-	1	8	2
Obese	-	1	1	1	-
Obese					
Underweight	-	1	1	1	-
Normal	2	13	12	25	3
Overweight	-	3	-	7	1
Obese	1	1	1	-	-

Numerical values represent number of students.

^a No significant differences found.

by student BMI group. Again, this could be the result of the high accuracy of self-assessment at both baseline and follow-up and the small number of students who participated overall.

The number of students who completed the study was small, with less than 50% of the students who elected to participate in the weight/BMI measurements going on to complete the survey portion of the study. One explanation for the low survey completion rate could be that it was distributed by e-mail near the end of the semester and this was a busy time with course work and examinations.

This study has several limitations. The sample of pharmacy students studied was from a single institution, which can limit the generalization of findings to other pharmacy institutions. However, there is no specific reason to believe that the students at our college differed from those at other institutions. The timing of the weight/BMI measurements in relation to the survey was also a limitation. Students were given the results of these measurements prior to the survey, which may have increased the accuracy of BMI self-assessment in the follow-up survey portion of the study (although this was not the case for the baseline self-assessments). Yet another limitation was the small sample of students who completed all portions of the study.

CONCLUSION

The comfort level of pharmacy students with providing lifestyle modification counseling decreased as

patients' BMI category increased; however, the students' self-perception of BMI had no effect on comfort level with counseling. Comfort level with counseling patients with higher BMIs may be a barrier to a pharmacists' effectiveness in promoting lifestyle changes that will benefit patients' health. These findings suggest the need to implement curriculum changes to better prepare students in this area. More experiences with counseling patients of varying BMI categories during pharmacy students' education may better prepare them for lifestyle modification counseling in practice.

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