

# Obesity Management Education Needs Among General Internists: A Survey

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## Abstract

**Objective:** The purpose of this study was to determine self-reported knowledge, attitudes, prior experience, and perceived needs for the management of overweight and obese patients within a General Internal Medicine Practice. **Patients and Methods:** An emailed cross-sectional survey was sent between June 20, 2019 and September 12, 2019 to 194 healthcare workers (93 primary care providers (PCPs) and 101 nurses) which focused on management of patients with weight issues. **Results:** In total, 80 of the eligible 194 participants completed the survey (nurses=42, PCPs=38). Up to 87% were white, 74.7% female (74.7%). Most of the responders were either in the age group of 30's (30%) or 50's (30%). Among the responders, 48.8% reported some type of specialty training in weight management since their medical training with lectures being the most common form of training (36%). When asked about their interest in either weight management training or strategies to initiate weight conversations, 79% of the respondents reported an interest in education on weight management or strategies to initiate weight conversations, while 65.8% indicated they would be interested in both topics. **Conclusion:** Our study suggests that healthcare workers have a self-reported need for further training in management of overweight and obese patients, irrespective of previous training in this area.

## Keywords

primary care, providers, education, obesity, health care

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## Introduction

Obesity is a well-known risk factor for multiple medical comorbidities such as hypertension,<sup>1</sup> coronary artery disease,<sup>2</sup> stroke,<sup>3</sup> diabetes,<sup>4</sup> dyslipidemia,<sup>5</sup> reproduction,<sup>6</sup> renal disease,<sup>7</sup> hyperglycemia,<sup>8</sup> sleep apnea,<sup>9</sup> respiratory problems,<sup>10</sup> certain infections,<sup>11</sup> (such as Covid-19<sup>12</sup>) certain cancers,<sup>13</sup> and osteoarthritis,<sup>14</sup> and is associated with increased risk of all-cause mortality<sup>15</sup> and increased health care spending.<sup>16,17</sup> As of 2016, the Global rate of overweight among adults (18 years of age or older) was 39% and 13% for obesity,<sup>18</sup> which is triple the rate since 1975 and by 2030 the rate is projected to increase from the current 13% obesity worldwide to 20% obesity worldwide.<sup>19</sup>

The United States Preventive Services Task Force (USPSTF) recommends that clinicians offer or refer all adults with Body Mass Index (BMI) of 30 kg/m<sup>2</sup> or higher

to intensive multicomponent behavioral interventions to prevent obesity related morbidity and mortality.<sup>20</sup> Health Care Providers (HCP), specifically primary care providers (PCPs) and nurses are best suited to screen adults for obesity and offer evidence-based intervention options. Unfortunately, barriers exist which prevent this recommendation from being adopted as it should. These barriers include the HCP lack of knowledge of to recognize obesity in patients, and how to provide/counsel on treatment options, the HCP conscious or unconscious negative

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attitudes towards patients with obesity, lack of clinical time to spend with the patient and resource constraints, as well as lack of self-perception of obesity by the patient.<sup>21-23</sup> Many of these barriers can be addressed with early education of the HCP which focuses on recognizing obesity, counseling on the diverse options for treatments (thereby being knowledgeable on the options available), understanding the societal social stigma associated with obesity, and the health risks and comorbidities of obesity which impact the patient.<sup>24</sup> A recent systematic review of 27 clinical trials (23 in the USA, 2 in the UK and 1 in Canada) focusing on obesity education in medical schools has shown that whereas the curriculum varied between studies, as well as duration of the education module, 81% of the studies positive findings by way of confidence and empathy.<sup>24</sup>

The present cross-sectional study focused on exploring the level of knowledge, attitudes, prior experience, and perceived needs for the management of overweight and obese patients within an ambulatory general internal medicine (GIM) practice based in Rochester, Minnesota. We hypothesized that GIM PCPs and nurses need more knowledge and training on how to manage overweight and obese patients.

## Methods

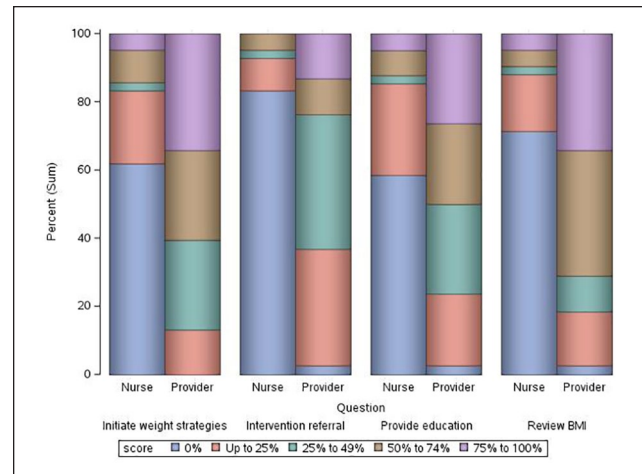
This cross-sectional survey study was reviewed by Mayo Clinic Institutional Review Board (IRB) and determined to be exempt under section 45 CFR 46.101, item 2. During the study, all significant changes to study design and procedures were appropriately filed, reviewed, and approved with the IRB.

### Survey Development

The survey consisted of 60 questions previously developed, tested and delivered in a prior study.<sup>10</sup> It focused on opportunities, practices, knowledge, confidence, attitudes, and beliefs around weight management. Several questions had branching logic and a majority of the questions had Likert scale responses which included responses such as “strongly agree,” “agree,” “neutral,” “disagree,” and “strongly disagree”. The 7 overarching components of the survey were: (1) Demographics; (2) Training; (3) Beliefs/Opinions; (4) Knowledge; (5) Attitudes; (6) Practices; and (7) Perceived Needs.

### Study Population and Survey Administration

Inclusion criteria for this study comprised of being a HCP whose primary assignment was within our Institution GIM Division, being at least 18 years of age, and having the ability to provide passive consent and complete an online survey. The survey was sent out via official email to all medical



**Figure 1.** Results by job type for what percentage of the overweight or obese patients do they discuss each of the weight related issues.

doctors (MD), osteopathic doctors, nurse practitioners (NP), Clinical Nurse Specialist (CNS), Licensed Practical Nurses (LPN’s), and Registered Nurses (RNs) of the GIM Division, accompanied by a recruitment letter on June 20, 2019. The non-responders received a reminder email with the survey attached on July 18, 2019 and another on August 15, 2019. The final reminder email with attached survey was sent to non-responders on September 12, 2019. Study collection was closed on October 31, 2019. A detailed summary of the above is found in the consort diagram presented in Figure 1, which adheres to consort guidelines.<sup>25</sup> No compensation was offered to participation. Responses were consolidated, anonymized, and analyzed by the authors. For purposes of the present report “nurses” will refer to LPNs/RNs and “PCPs” will refer to NP/CNS, MD/DO.

## Data Analysis

Respondents were divided into 2 main groups, Nurses and PCPs. The characteristics of these 2 surveyed groups, as well as current clinical practices showed interest in further training opportunities, were reported using frequencies and percentages. Histograms were used to check the distributions of each question. Knowledge scores were compared between groups using the Wilcoxon rank sum test and were described using mean, standard deviation, median, and upper and lower quartiles. Cronbach alpha was calculated to measure reliability using the results of this study for the factors created in the previous study.<sup>26</sup> Wilcoxon rank sum tests were run to compare nurses versus PCPs for each factor score. A *P*-value less than .05 was considered significant. SAS statistical software was used for all analysis (SAS 9.4; SAS Institute Inc.).<sup>27</sup>

**Table 1.** Descriptive Characteristics for Survey Respondents by their Job Type.

	Total N=80 (%)	Nurse (N=42) (%)	PCP (N=38) (%)
Gender	*		*
Female	59 (74.7)	39 (92.9)	20 (54.1)
Male	20 (25.3)	3 (7.1)	17 (46.0)
Race	*		*
Asian	4 (5.1)	0 (0)	4 (10.8)
Black/African American	3 (3.8)	0 (0)	3 (8.1)
White	69 (87.3)	40 (95.2)	29 (78.4)
Do not wish to answer	3 (3.8)	2 (4.8)	1 (2.7)
Ethnicity			
Non-Hispanic/Latino	76 (95.0)	40 (95.2)	36 (94.7)
Hispanic/Latino	2 (2.5)	1 (2.4)	1 (2.6)
Do not wish to answer	2 (2.5)	1 (2.4)	1 (2.6)
FTE patient contact			
49% or less	18 (22.5)	16 (38.1)	2 (5.3)
50% to 74%	13 (16.3)	10 (23.8)	3 (7.9)
75% to 100%	49 (61.3)	16 (38.1)	33 (86.8)
Worked for Mayo	*	*	
<5 years	16 (20.3)	6 (14.6)	10 (26.3)
5 to 9 years	11 (13.9)	4 (9.8)	7 (18.4)
10 to 14 years	10 (12.7)	5 (12.2)	5 (13.2)
15 to 19 years	13 (16.5)	5 (12.2)	8 (21.1)
20 to 24 years	9 (11.4)	6 (14.6)	3 (7.9)
25 years or more	20 (25.3)	15 (36.6)	5 (13.2)
Current age			
30 years or less	5 (6.3)	4 (9.5)	1 (2.6)
31 to 40 years	24 (30.0)	10 (23.8)	14 (36.8)
41 to 50 years	14 (17.5)	7 (16.7)	7 (18.4)
51 to 60 years	24 (30.0)	11 (26.2)	13 (34.2)
60 years or more	13 (16.3)	10 (23.8)	3 (7.9)
BMI range	*	*	
Below 25	30 (38.0)	9 (22.0)	21 (55.3)
25 to 29.9	18 (22.8)	8 (19.5)	10 (26.3)
30 to 34.9	13 (16.5)	10 (24.4)	3 (7.9)
35 to 39.9	5 (6.3)	2 (4.9)	3 (7.9)
40 to 45.9	2 (2.5)	1 (2.4)	1 (2.6)
46 and above	3 (3.8)	3 (7.3)	0 (0)
Don't know	8 (10.1)	8 (19.5)	0 (0)

\*1 person didn't answer question.

## Results

Among the 194 eligible PCPs and nurses who were emailed a survey, 101 (52.1%) were licensed nurses (30 were LPNs and 71 were RNs) and 93 (47.9%) were licensed PCPs (13 were NP or CNS and 80 were MD or Doctor of Osteopathic Medicine [DO]). For purposes of the present report “nurses” will refer to LPNs/RNs and “PCPs” will refer to NP/CNS, MD/DO.

In total, there were 80 (41.2%) participants who completed the survey (Nurses=42, PCP=38). Majority of the participants were female (75%), white (87%), and had

normal BMI (38%). Thirty-seven percent of the nurses had worked 25 years or more at the current healthcare institution, while 26% of PCPs had worked less than 5 years at the institution (Table 1).

Table 2 contains the weight management knowledge scores and training history and interest. On the knowledge test PCPs scored significantly higher than nurses (4.2 vs 3.0,  $P < .001$ ). About half of the participants reported some type of specialty experience in weight management since their medical training. Lectures were the most common form of training (36%). When asked about their interest in either weight management training or strategies to initiate

**Table 2.** Previous Training and Obesity Knowledge of the Survey Respondents.

	Total (N=80)	Nurse (N=42)	PCP (N=38)
Knowledge score, N (%) <sup>†</sup>			
0	1 (1.3)	1 (2.4)	0 (0)
1	5 (6.3)	5 (11.9)	0 (0)
2	11 (13.8)	11 (26.2)	0 (0)
3	12 (15.0)	6 (14.3)	6 (15.8)
4	32 (40.0)	15 (35.7)	17 (44.7)
5	19 (23.8)	4 (9.5)	15 (39.5)
Median (25, 75)	4 (3, 4)	3 (2, 4)	4, (4, 5)
Mean ± SD	3.6 ± 1.2	3.0 ± 1.3	4.2 ± 0.7
P-value <sup>††</sup>		<.001	
During medical training, did you have any special training in weight management?	*	*	
Yes	14 (17.7)	4 (9.8)	10 (26.3)
No	59 (74.9)	32 (78.1)	27 (71.1)
Don't remember	6 (7.6)	5 (12.2)	1 (2.6)
Did the training include strategies on how to initiate discussion of weight?			
Yes	13 (92.9%)	3 (75.0%)	10 (100%)
No	1 (7.1%)	1 (25.0%)	0 (0%)
Since your medical training, have you had any special training in weight management?			
Yes	39 (48.8)	17 (40.5)	22 (57.9)
No	41 (51.3)	25 (59.5)	16 (42.1)
Types of training (can choose more than one)			
Lectures	29 (36.3)	14 (33.3)	15 (39.5)
Classes	9 (11.3)	5 (11.9)	4 (10.5)
Conferences	15 (18.8)	4 (9.5)	11 (29.0)
Workshops	6 (7.5)	3 (7.1)	3 (7.9)
Fellowship training	3 (3.8)	0 (0)	3 (7.9)
Rotations	0 (0)	0 (0)	0 (0)
Would be interested in further training?	*	*	
Yes, weight management strategies	9 (11.4)	5 (12.2)	4 (10.5)
Yes, strategies on initiating weight discussions	1 (1.3)	1 (2.4)	0 (0)
Yes, both	52 (65.8)	25 (61.0)	27 (71.1)
No	17 (21.5)	10 (24.4)	7 (18.4)

\*1 person didn't answer question.

<sup>†</sup>Scale of 0 to 5, with 5 equal to all questions answered correctly.

<sup>††</sup>Wilcoxon Rank Sum test.

weight conversations, 79% said they would be interested in either one of both or those topics.

The results from the survey questions pertaining current clinical practices to manage overweight or obese patients are displayed in Figure 1. PCPSs were far more likely to implement treatment strategies, give intervention referrals, provide education, or review BMI compared to nurses.

For each of the 4 factors (opportunities and practices, knowledge and confidence, attitudes, and beliefs), the Cronbach alpha was calculated and was .7 or above. All questions that fell into each factor were scaled from -1 to 1, with -1 being that they strongly disagreed or disagreed, 0 was neutral, and 1 was that they agreed or strongly agreed. The average of the score was calculated for the factor for each individual and then averaged together within the group. Nurses and PCPs both had strong beliefs that obesity is a serious health problem. Both groups did not have

a significant difference in opportunities and practices or attitudes. The knowledge and confidence score was significantly different between groups ( $P=.02$ ). PCPs scored higher than nurses, but still only had a mean score of neutral for the knowledge and confidence questions (Table 3).

## Discussion

This study focused on HCP in a GIM practice in a tertiary care institution within the Midwestern United States of America. The practice serves both national and international patients. Our study indicated that whereas the PCPs (physicians, NP, and physician assistant [PA]) scored greater on the knowledge questions compared to nurses (RN and LPN) (84.2% vs 45.2%, PCPs vs nurses respectively), and PCPs had extra training in obesity management (57.9% vs 40.5 %, PCPs vs nurses respectively), overall

**Table 3.** Factor Scores from Survey Questions Compared by Job Type.

	Nurse		PCP		P-value*
	Mean $\pm$ SD	Min, max	Mean $\pm$ SD	Min, max	
Opportunity and practices	-0.36 $\pm$ 0.38	-1, 0.75	-0.52 $\pm$ 0.33	-1, 0.25	.060
Knowledge and confidence	-0.32 $\pm$ 0.40	-1, 0.67	-0.06 $\pm$ 0.53	-1, 0.67	.019
Attitudes	-0.64 $\pm$ 0.32	-1, 0.57	-0.70 $\pm$ 0.32	-1.0, 0.29	.236
Beliefs	0.96 $\pm$ 0.15	0.33, 1.0	0.98 $\pm$ 0.08	0.67, 1.0	.706

On scale of -1 = disagree, 0 = neutral, 1 = agree. Average factor score was taken for each subject, and then an average score was calculated for each group.

\*Wilcoxon rank sum test.

both groups indicated a need for more training both on how to approach a patient to initiate a discussion on obesity and how to manage the patient for obesity (71.9% vs 61.0%, PCPs vs nurses respectively).

This is in keeping with the call to action by the Society of Behavioral Medicine which includes the training, teamwork, and reimbursement of physicians to manage patients with obesity. This call to action includes proper training of the HCP on obesity management, the organizational set up of a multidisciplinary team approach to help manage the patient with obesity, and reimbursement for the management of the patient with obesity.<sup>28</sup>

Patients have clear expectations that their primary care physicians ask them about their weight<sup>29</sup> but only 1/3 of patients who are overweight or obese have received counseling focused on management of their weight (overweight or obesity) from their PCP.<sup>29</sup> So why the discrepancy? Studies have shown that physicians may not have knowledge about metabolic effects of weight loss.<sup>30</sup> In our study 47% of PCPs and 71.5% of nursing staff were neutral or disagreed when asked whether they feel trained enough to intervene with the obese patients. A recent study by Iwamoto demonstrated similar findings and also clarified the additional impact of physician training.<sup>31</sup> In his study, Iwamoto found that physicians felt comfortable with treating obesity, but their level of comfort was limited to general treatment knowledge such as the importance of exercise, and most of their advice and counseling focused on general advice that exercise was a solution for weight loss. However, once they were educated on the proper medication use for weight loss, their level of confidence to discuss other options increased.<sup>31</sup> With this increase in confidence, physician's knowledge and advice for their patients with obesity changed and became more specific to the patients' needs.<sup>31</sup> The study illustrates that whereas PCPs indicate they are knowledgeable about obesity treatment; their knowledge may be limited to general treatment options and their comfort lie in discussing information within their knowledge base. Further education is needed to improve not just knowledge on new treatment options for obesity, but also to address comfort level in discussing and implementing the new knowledge and individualizing the management plan to the patient.

Of those surveyed, we noted that only 26.3% of the PCPs and 9.8% of the nurses received education on weight management during medical training with the majority of the training being the occasional lecture/presentation format. Prior reports have noted similar findings.<sup>26</sup> One prior survey included PCPs and nurses and while the PCPs reported they had more training than the nurses in obesity management, both felt they needed more training.<sup>26</sup> Whereas the occasional lecture on specific topics is important in keeping up to date, it does not replace the educational impact a full day educational course can have on the practice of weight management, as well as the confidence in managing patients with obesity. Recently, Sanchez et al<sup>32</sup> organized a 1-day educational course focused on obesity targeting HCP. All course participants were invited to complete an anonymous pre- and post-survey, as well as a 6-month post-event survey. The survey was focused on perceived skills and challenges as well as professional attitudes toward providing care for the patient with obesity. The survey data was able to provide tangible evidence of the success of the one-day course. The surveyed participants (N=67) reported an improvement in skills such as the ability to assess weight, address weight management issues and motivate patients. There were also changes in professional attitudes, with respondents indicating more confidence in their ability to manage patients with obesity, refer them to specialists and felt less frustration at low success rates. Most importantly, these changes in attitude and confidence persisted 6 months post-event. Finally, the changes were mostly associated with young male professionals early in their professional practice who were not physicians.<sup>32</sup>

Continuing Professional Development (CPD) activities range from 1-h didactic lectures/presentations to highly interactive learning approaches (eg, workshops). The mode can be in person or virtual. But as clinical practice demands increase and personal time with family decreases, there is little time for personal growth/continued education. Therefore, educators are tasked with finding novel ways to reach PCPs for continued medical education. The initial steps in creating good CPD activities is to do a "needs assessment." It is quite evident from this current survey that there exists a need for CPD activity about obesity awareness

and management. Healthcare professionals do want and need more education/information on managing the patient with obesity. Creating an educational curriculum which meets the needs of the targeted audience could be done by surveying the potential professionals one hopes to invite to these activities, as well as looking to successful programs, such as what was created by Sanchez et al,<sup>32</sup> as a starting point.

This current study has a number of limitations, as well as strengths. The generalizability of our findings is limited due to the fact that we surveyed only one division within one health care system. The division of GIM serves both national and international patients, and this is reflected in the staffing. Our respondents were 87% white (vs the 95% white of this general area), 74.7% female, and most of the responders were either in the age group of 30's (30%) or 50's (30%). Our survey resulted in a 41% response rate and the survey analysis was performed using a convenience sample which may have been influenced by unmeasurable nonresponse bias. By making the survey digital, so that it could be completed in the course of a work-day; minimizing the number of questions asked so that it reduced the responders burden and making it anonymous so that the responders could respond honestly, we facilitated study participation and gave the PCP and nurses the ability to share their thoughts and opinions with the study team on the need for more training in obesity management.

## Conclusion

This report on a survey of general internal medicine division regarding the need for obesity management training demonstrates a learning opportunity. The survey respondents including physicians, Nurse Practitioners, Clinical Nurse Specialists, and nurses agreed that they would like to learn more about weight management strategies and initiating weight discussion with patients. This represents an opportunity to address the needs by developing specific needs-based education on obesity management for our physicians, Nurse Practitioners, Clinical Nurse Specialists, and nursing staff.

## Acknowledgments

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## Authors' contributions

All the authors participated in the study concept and design, analysis and interpretation of data, drafting and revising the paper, and have seen and approved the final version of the manuscript.

- ITC and SN conceived of the study concept and design and provided administrative, technical, and material support; had full oversight of the study conduct during data collection; They take responsibility for the integrity of the data

and the accuracy of the data analysis; and together they drafted the manuscript and participated in critical revision of the manuscript for important intellectual content.

- RTH,KG, JA, MCH, SK, CLK, NL, BMR, LAT, DR, and EW participated in the study design, review and editing of the protocol and survey and participated in the safety and ethics oversight of the study subjects while on study. They also participated in the review and interpretation of study results, and critical revision of the manuscript for important intellectual content.
- KF & DRS participated in the study design and was responsible for data quality checks and data analysis; he also had full access to all the data in the study and takes full responsibility for the integrity of the data and the accuracy of the data analysis as well as participating in the manuscript reviews and edits.

## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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## Ethics and Consent to Participate

In accordance with the Declaration of Helsinki, this study was reviewed and approved (ID 16-004817) by the Mayo Clinic Institutional Review Board (IRB). Mayo Clinic IRB approved written informed consent was obtained for all study participants prior to study participation.

## Consent to Publish

Not applicable

## Ethical Standards

This study was determined to be EXEMPT under 45 CFR 46.101, item 2 by the Mayo Clinic Institutional Review Board which had ethical oversight for this study. In addition, the authors assert that all procedures contributing to this work comply with the ethical standards of the Mayo Clinic Institutional Review Board guidelines on human experimentation in accordance with the Declaration of Helsinki of 1975, as revised in 2008. Protocol-approved passive consent was obtained from all study participants prior to study initiation.

## Availability of Data and Materials

All data supporting the study findings are contained within this manuscript

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## Supplemental Material

Supplemental material for this article is available online.

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