

## INSTRUCTIONAL DESIGN AND ASSESSMENT

### Incorporating a Weight Management Skills Workshop in Pharmacy Curricula in Australia

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**Objective.** To develop, implement, and evaluate a competency-based weight management skills workshop for undergraduate pharmacy students in an Australian university.

**Design.** A 3-hour workshop titled “Weight Management in Pharmacy” was implemented with a cohort of fourth-year undergraduate pharmacy students (n=180). Learning activities used included case-based learning, hands-on experience, role-play, and group discussion.

**Assessment.** A 22-item attitudinal survey instrument and the validated Obesity Risk Knowledge (ORK-10) scale were administered at baseline and postworkshop to evaluate the impact of this educational workshop. There was significant improvement in the students’ ORK scores and students’ perceived level of self-confidence in performing weight management skills.

**Conclusion.** An educational workshop designed to enhance professional competencies in weight management ensured graduates were “service-ready” and had the appropriate knowledge, skills, and attributes to deliver patient-centered pharmacy-based weight management services.

**Keywords:** weight management, pharmacy student, competency-based workshop

## INTRODUCTION

In 2010, a Lancet Commission proposed a new generation of educational reforms for professional health education to meet the demands of changing health systems.<sup>1</sup> It recommended adoption of competency-based curricula to identify and achieve professional competencies required of graduates.<sup>1</sup> According to Epstein and Hundert, professional competency is “the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served.”<sup>2</sup>

The International Pharmaceutical Federation (FIP) also recognized that a transformation of pharmacy education is needed to support the current transition of the pharmacy profession toward provision of patient-centered services.<sup>3</sup> In the United States, The Accreditation Council for Pharmacy Education (ACPE) Standards support this, with Standard 9 requiring pharmacy schools to establish curricula that provide graduates with the professional competencies to enter pharmacy practice.<sup>4</sup> Additionally, the

2013 Center for the Advancement of Pharmacy Education (CAPE) Outcomes included an affective domain of learning, which refers to the growth of feelings or emotional areas, and personal attitudes.<sup>5</sup> This shift in educational outcomes requires development of personal skills, attitudes, and attributes to facilitate delivery of patient-centered care beyond foundational scientific knowledge.<sup>5</sup>

With the increasing rate of obesity in populations around the world and its burden on society, pharmacy-based weight management is a potential key area through which pharmacists can contribute to the public health agenda.<sup>6</sup> Several studies worldwide demonstrate pharmacy-based health interventions can produce positive outcomes including weight loss.<sup>7-9</sup> Barriers to implementation of these services include perceived lack of expertise, knowledge, skills, and self-confidence.<sup>10,11</sup>

In Australia, two major professional pharmacy organizations have strongly advocated for implementation of pharmacy-based weight management initiatives.<sup>12,13</sup> Um et al demonstrated positive results of a nonproduct-centered weight management program delivered in Australian pharmacies by a trained pharmacist.<sup>14</sup> Australian pharmacists expressed willingness to provide evidence-based weight management services, but acknowledged their lack of expertise and perceived need for up-skilling.<sup>15</sup>

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Fakih et al's national survey found the majority of Australian pharmacists needed additional training, particularly in counseling skills for providing advice on healthy eating, physical activity, and weight loss products.<sup>16</sup> Although there is potential for pharmacy to contribute in this area, educational institutions have been slow to update curricula to increase skills of pharmacy graduates in this domain to enable successful implementation of weight management services.

In response, The University of Sydney elected to introduce a competency-based educational workshop called "Weight Management in Pharmacy" into the curriculum for final-year pharmacy students in the 4-year undergraduate bachelor of pharmacy program. The goal was to ensure pharmacy graduates had the knowledge, skills, and attributes to effectively deliver patient-centered weight management services. The workshop was incorporated into the Professional Practice unit (course), a 12-credit core unit in the final-year program. This unit focused on application of knowledge into delivery of several disease state management services such as smoking cessation and diabetes management.

The aim of this study was to develop, implement, and evaluate a weight management skills workshop for final-year undergraduate pharmacy students. In this paper, we describe the design of the workshop, and compare pre/postworkshop survey data to assess the impact on students' obesity-related knowledge, personal attitudes toward providing weight management services in pharmacy, and perceptions of self-confidence in performing skills.

## DESIGN

The weight management workshop was developed and pilot-tested with 63 final-year pharmacy students enrolled in the 2-year postgraduate master of pharmacy program at The University of Sydney, during the first semester of 2014. After this pilot-test, several changes were made to the workshop including increasing the duration from 2.5 to 3 hours and changing the order of class activities. In the second semester of 2014, 180 final-year pharmacy students enrolled in the 4-year undergraduate bachelor of pharmacy program attended the Weight Management in Pharmacy workshop.

One week prior to the workshop, a 2-hour didactic lecture was delivered that provided theoretical knowledge of weight management, which the students would then apply to activities during the workshop. The learning objectives of the lecture were to: (1) identify the prevalence, impact, and cause of overweight and obesity globally and in Australia; (2) describe the treatment pathways in managing overweight and obesity, and distinguish the role of nonprescription weight-loss products including

complementary therapies and very low calorie diets, pharmacotherapies, and bariatric surgery in weight management; and (3) recognize the theoretical basis of motivational interviewing and apply counseling tools that can be used, such as readiness rulers, agenda-setting and decisional-balance, and goal-setting.

The 3-hour workshop was then delivered to five groups of 30 to 50 students over two weeks. Learning outcomes of the workshop were based on competencies required by a pharmacist to deliver weight management services, identified in a previous study.<sup>14</sup> The competencies were mapped to the "5As" approach to weight management (ask and assess, advise, assist and arrange) set out in the National Health and Medical Research Council's *Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults, Adolescents and Children in Australia*.<sup>17</sup>

A variety of learning activities, including case-based learning, group discussion, hands-on experience, and role-play were strategically designed to achieve these learning outcomes. Table 1 outlines the learning outcomes, associated activities, and assessments involved. To facilitate case-based learning, two cases were developed based on real-life patients encountered during the delivery of pharmacy-based weight management services in a previous study.<sup>14</sup> These patient scenarios were chosen to represent typical encounters in the pharmacy regarding weight management. Students were divided into two subgroups to work on each case. For each group an instructor played the role of the case-based patient in the role-play activities. A third case, presented via video, was a demonstration of a real-life motivational interviewing session between a pharmacist and patient, as part of a pharmacy-based weight management service. The cases are illustrated in Table 2.

The workshop was intended to promote active and collaborative learning in line with adult learning theory.<sup>18,19</sup> Students were encouraged to work collaboratively within their groups, pool their ideas and knowledge, and use available computers to seek and access appropriate evidence-based resources to complete the activities. During the activities, the instructors moved among students, facilitated discussions, answered questions, and provided individualized formative feedback.

The following resources were required for the workshop: two trained instructors; a standard classroom equipped with video playing capabilities and computers allowing students access to resources (eg, Australian Dietary Guidelines; pre-recorded video of motivational interviewing session; tape measures; height stadiometers); and electronic weight scales. The main instructor, who led class discussions, specialized in weight management,

Table 1. Learning Outcomes and Associated Activities for Weight Management in Pharmacy Workshop

Learning Outcomes <sup>a</sup>	Workshop Activity	Type of Learning <sup>b</sup>	Measures
After completing the workshop, students will be able to:			
Ask and Assess			
Identify and engage individuals who may benefit from weight management; Assess for overweight or obesity.	1. Instructor led class discussion about initiating a discussion with an overweight or obese individual about their weight. 2. Instructor led demonstration followed by student hands-on activity, using scales, tape measure, and height stadiometer, to measure partner's weight, waist circumference, and height respectively.	Attitude and Skill: comprehension, application Skill: application	Participation in class discussion. Observation of attentiveness during demonstration. Instructor supervision during the activity.
Collect a weight history and identify factors that may contribute to weight gain; Assess for risk or presence of comorbidities;	3. Role-play activity. Each subgroup of students was given a case about a different weight-related clinical scenario that could be encountered in practice (cases 1 and 2 from Table 2). As a group, students discussed and formulated questions to collect a weight history (including medication history, comorbidities and lifestyle). Students role-played with the instructor (role of the case-based patient).	Attitude and Skill: comprehension, application, analysis, synthesis, evaluation	Participation in group discussion, role-play, and successful completion of weight assessment.
Determine an individual's current lifestyle behaviors and assess their readiness to change.	4. Instructor delivered a short overview, summarizing key elements of "Ask and Assess."		
Advise			
Explain the risks associated with overweight and obesity; Explain the benefits of weight loss.	5. Role-play activity. Each subgroup of students discussed and interpreted body mass index and waist circumference of case-based patient and explained to instructor (role of the case-based patient) the relevant risks and benefits in a nonjudgmental way.	Knowledge, Attitude, and Skill: comprehension, application, analysis, synthesis, evaluation	Participation in group discussion and role-play.
Assist			
Recommend lifestyle changes which addresses all three areas: diet, physical activity, and behavior change; Deliver patient-centered care; Support self-management.	6. Video demonstration. Students watched a prerecorded real-life motivational interviewing session (Table 2) between a trained pharmacist and overweight patient, discussing lifestyle change. Instructor led a class discussion and analyzed the interaction. 7. Role-play activity. Students practiced motivational interviewing skills using counseling tools identified in the preworkshop lecture such as readiness rulers, agenda-setting and decisional-balance and goal-setting. Students role-played their relevant cases (cases 1 and 2) with one student acting a peer-assessor.	Knowledge, Attitude, and Skill: comprehension, application, analysis, synthesis, evaluation	Observation of attentiveness during video. Participation in class discussion. Peer-assessment and instructor supervision and feedback during role-plays.

(Continued)

Table 1. (Continued)

Learning Outcomes <sup>a</sup>	Workshop Activity	Type of Learning <sup>b</sup>	Measures
Understand the role of intensive interventions: very low energy diets, weight loss medication, and bariatric surgery. Arrange	8. Instructor led a class discussion about appropriateness of intensive intervention use on case-based patients.	Knowledge: comprehension, application	Participation in class discussion.
Understand the importance of reviewing and monitoring progress; Identify situations when referral to allied health care professionals and specialist services would be appropriate; Consider the challenges of long-term weight management.	9. Instructor led a class discussion about reasons for follow-up review, when to refer and long-term weight management.	Knowledge: comprehension	Participation in class discussion.

<sup>a</sup>Learning outcomes based on pharmacist core competencies for weight management in adults<sup>14</sup>

<sup>b</sup>Classification of Cognitive Domain According to Bloom's Taxonomy of Learning<sup>20</sup>

having extensive knowledge, skills, and experience related to pharmacy-based weight management services, and had completed training to attain competencies in this domain.<sup>14</sup> The second instructor had previous training and experience in motivational interviewing. Both instructors completed 2-hour prereading for the workshop.

A single-group pre/post self-administered survey design was used to evaluate the impact of this workshop on pharmacy students' attitudes, obesity-related knowledge, and perceptions of self-confidence in performing weight management skills. Students were also encouraged to provide qualitative feedback regarding the workshop. The study was approved by The University of Sydney Human Research Ethics Committee.

The survey instrument consisted of 16 items relating to self-confidence in performing weight management skills (eg, "Measure an individual's waist circumference"); six items relating to attitudes toward provision of weight management services in pharmacy; and the validated Obesity Risk Knowledge (ORK-10) scale.<sup>21</sup> The survey was also pilot-tested with the 63 master of pharmacy students who had undertaken the weight management workshop during the first semester of 2014.

The items on weight management skills were derived from the learning outcomes of the workshop and a previous survey by Newlands et al,<sup>10</sup> which measured pharmacists' confidence in performing weight management related services in Scotland. Responses were based on a 7-point semantic differential scale (1=not at all confident to 7=highly confident). The six items relating to attitudes toward provision of weight management services were based on surveys of pharmacist<sup>10,16</sup> and consumer<sup>22</sup> views. These were measured on a 5-point Likert scale (1=strongly disagree, 2=disagree, 3=neither disagree nor agree, 4=agree, 5=strongly agree). The ORK-10 is a valid self-report 10-item questionnaire measuring knowledge of health risks associated with obesity with the options of answering true, false, or don't know.<sup>21</sup> It has been successfully used to assess the knowledge of health care professionals,<sup>23</sup> and dietetic, nursing, and medical students.<sup>24</sup> A correct response scores one point, while incorrect and don't know responses score zero points. Scores range between 0 and 10 with higher scores indicating higher levels of obesity-related knowledge.

Demographic information was also collected including age, gender, and whether they had previously completed any formal education or training regarding weight management. The survey was administered to the students at the beginning of the workshop to gather baseline data and again at the end of the workshop.

Survey data from before and after the workshop were matched using unique identifiers created by the students

Table 2. Description of Cases for Weight Management in Pharmacy Workshop

Cases	Description
1	A 57-year-old Fijian woman with a weight of 96.3 kg, height 1.74 m and waist circumference 115.7 cm. Medical conditions include hypertension, dyslipidemia, and gastro-esophageal reflux disease. Family history of lung cancer and diabetes. Works part-time as a carer. Does not have three regular meals a day, and her main and biggest meal is at dinner time. Also eats biscuits (cookies) and banana cake daily. As part of her job, she does some heavy lifting and during her lunch breaks she leisurely walks around the shops for half an hour. Unaware of what areas in her life need to be changed, but is willing to try.
2	A 58-year-old Australian man with a weight of 89.4 kg, height 1.77 m and waist circumference 103.5 cm. Medical conditions include mild shoulder pain due to a previous sports injury. Family history of cardiovascular disease. Works full-time at a desk in the city. Has three very large meals a day regularly and has fast-food once a week. Also enjoys dessert every evening. Does not do any physical activity apart from very minimal walking to and from the bus stop each day. Very motivated to become healthier and improve his lifestyle.
Video demonstration	A 32-year-old New Zealander man with a weight of 125.5 kg, height 1.82 m and waist circumference 128 cm. Medical conditions include pre-diabetes. Family history of prostate cancer, cardiovascular disease, and diabetes. Works full-time as a night security guard. Buys fast-food such as hot chips (fries) and two meat pies (savory pies) for lunch and dinner on most days of the week. Also drinks about a case of beer (24 cans) once to two times a week. Does not do any physical activity apart from walking around buildings for his job. Very motivated to lose weight and become physically active as he used to be a competitive rugby player.

themselves. Only data that could be matched were included in the analyses. Accuracy of data entry was checked by re-entering data from a random sample (10%) of all surveys collected. Descriptive statistical methods were used to present demographic data of students. All semantic differential scale items, Likert-scale items, and ORK-10 scores were tested for normality using the Kolmogorov-Smirnov test and, as the data violated the normality assumptions, nonparametric tests were performed. Wilcoxon signed-rank tests were performed to compare students' responses postworkshop with baseline responses. Median and inter quartile range (IQR) of survey items were determined as the data were not normally distributed, and these were the appropriate measures of central tendency and spread respectively. A significance threshold of 5% was used ( $p < 0.05$ ). All statistical analyses were conducted with SPSS, v22.0 (IBM Corp., Armonk, NY).

## EVALUATION AND ASSESSMENT

The survey was completed by 168 students (response rate 93.3%) at baseline and 161 students (response rate 89.4%) postintervention. Only the data that could be matched ( $n = 159$ ) were included in the analyses. The mean age of the students at baseline was 22.5 years ( $SD = 2.0$ ) and 65% were female. Ninety-two percent of students had no previous education or training regarding weight management, while nine students reported they had received training by a pharmaceutical company, and three students had received training from a previous degree.

Postworkshop, the ORK-10 median score was 9.0 (IQR 8.0-9.0) compared to the median score at baseline of 7.0 (IQR 6.0-9.0), which was a significant improvement ( $p < 0.05$ ). Comparing responses postworkshop with baseline, there was significant improvement ( $p < 0.05$ ) in all items relating to students' perceived level of confidence in performing weight management skills (Table 3). For items relating to students' attitudes toward provision of weight management services in pharmacy, there was a significant change ( $p < 0.05$ ), except for the item "Pharmacists should only sell weight-loss products when dealing with weight loss requests in the pharmacy" ( $p = 0.06$ ) (Table 4).

Overall, the workshops were well received and students found content and delivery "useful" and relevant to professional practice. Students commented positively about the use of real-life cases. In particular, presentation of the real-life video broadened their empathy for people dealing with weight problems, which could not have been gained through textbooks. Many students commented that the cases were a "valuable learning experience." Some students mentioned that after the workshop, they felt "more motivated" to speak to patients about weight issues and to deliver patient-centered weight management services in the pharmacy.

## DISCUSSION

Previous studies demonstrated interventions that improved pharmacy students' knowledge and self-confidence

Table 3. Pharmacy Students' Self-Confidence in Performing Various Weight Management Skills

Item <sup>a</sup>	Baseline Median (IQR <sup>b</sup> )	Postworkshop Median (IQR <sup>b</sup> ) <sup>c</sup>
<b>Ask and Assess</b>		
Conduct a weight-loss history.	3.0 (2.0-5.0)	6.0 (5.0-7.0)
Conduct a medical history and assess for risk or presence of comorbidities.	5.0 (3.0-6.0)	6.0 (5.0-7.0)
Identify medicines that may contribute to weight gain.	4.0 (3.0-5.0)	6.0 (5.0-6.0)
Measure an individual's weight.	7.0 (6.0-7.0)	7.0 (6.0-7.0)
Measure an individual's waist circumference.	6.0 (5.0-7.0)	7.0 (6.0-7.0)
Calculate an individual's Body Mass Index.	7.0 (6.0-7.0)	7.0 (7.0-7.0)
Assess an individual's lifestyle behaviors (eg, dietary intake and physical activity).	6.0 (5.0-6.0)	6.0 (6.0-7.0)
<b>Advise</b>		
Explain the health risks associated with overweight and obesity.	6.0 (5.0-6.0)	6.0 (6.0-7.0)
Explain the benefits of weight loss.	6.0 (5.0-7.0)	6.0 (6.0-7.0)
<b>Assist</b>		
Provide evidence-based advice on dietary intake to achieve weight loss.	4.0 (3.0-5.0)	6.0 (5.0-6.0)
Provide evidence-based advice on over-the-counter weight-loss products.	4.0 (3.0-5.0)	5.0 (4.0-6.0)
Provide evidence-based advice on weight-loss pharmacotherapy.	4.0 (3.0-5.0)	5.0 (4.0-6.0)
Assist an individual in goal-setting to support weight management.	4.0 (4.0-5.0)	6.0 (5.0-7.0)
Engage in motivational interviewing to support weight management.	4.0 (3.0-5.0)	6.0 (5.0-7.0)
<b>Arrange</b>		
Discuss weight maintenance and long-term monitoring with an individual.	4.0 (3.0-5.0)	6.0 (5.0-6.0)
Recognize when to refer an individual to allied health care professionals.	4.0 (3.0-5.0)	6.0 (5.0-7.0)

<sup>a</sup>Responses based on a 7-point semantic differential scale: 1=not at all confident to 7=highly confident

<sup>b</sup>Inter quartile range

<sup>c</sup> $p < 0.05$ ; Wilcoxon signed-rank tests

in nutrition counseling,<sup>25,26</sup> but the workshop described in this study was the first attempt to develop students' skills related to weight management in a wider, more practical scope. According to Miller's triangle,<sup>27</sup> the next stage of investigation should involve testing the acquisition of competencies (ie, assessing the "shows how" and further on, test performance in professional practice or the "does"). The achieved outcomes including positive attitudes toward the provision of weight management services and improved levels of confidence are encouraging at this early stage.

Case-based learning was the main method used in this workshop. Thistlethwaite et al defined the goal of case-based learning as preparing students for clinical practice, through the use of authentic clinical cases, which links theory to practice, through the application of knowledge, using inquiry-based learning methods.<sup>28</sup> The case-based learning format uses a guided inquiry method and is

more structured and time efficient compared to the more common problem-based learning approach,<sup>29</sup> which made the former ideal for this setting. The cases in this workshop provided a vehicle for students to be introduced to and guided through applying the 5As approach to weight management. Case-based role-play allowed students to actively engage in the 5As approach, potentially enhancing their confidence in the provision of weight management services in pharmacy.

Hudson and Buckley evaluated a case-based teaching initiative in an undergraduate medical curriculum, and similarly observed that this strategy fostered students' confidence and allowed for the gradual emergence of clinical skills.<sup>30</sup> In Dupuis and Persky, case-based learning was incorporated into a clinical pharmacokinetics course, and pharmacy students rated the experience highly.<sup>31</sup> We cannot conclude that the case-based learning method

Table 4. Pharmacy Students' Attitudes toward Provision of Weight Management Services in Pharmacy

Item <sup>a</sup>	Baseline Median (IQR <sup>b</sup> )	Postworkshop Median (IQR <sup>b</sup> ) <sup>c</sup>
Pharmacists have a role to play in weight management in the community.	4.0 (4.0-5.0)	5.0 (4.0-5.0)
Pharmacists should only sell weight-loss products when dealing with weight-loss requests in the pharmacy.	2.0 (1.0-3.0)	2.0 (1.0-2.0) <sup>d</sup>
Pharmacists should provide nonproduct-centered weight management services in the pharmacy.	4.0 (3.0-4.0)	4.0 (4.0-5.0)
I have the knowledge to provide weight management services in pharmacy.	3.0 (3.0-4.0)	4.0 (4.0-4.0)
I have the skills to provide weight management services in pharmacy.	3.0 (3.0-4.0)	4.0 (4.0-4.0)
I feel confident to provide weight management services in pharmacy.	3.0 (2.0-4.0)	4.0 (4.0-4.0)

<sup>a</sup>Responses based on a 5-point Likert scale: 1=strongly disagree, 2=disagree, 3=neither disagree nor agree, 4=agree, 5=strongly agree

<sup>b</sup>Inter quartile range

<sup>c</sup> $p < 0.05$ ; Wilcoxon signed-rank tests

<sup>d</sup> $p = 0.06$ ; Wilcoxon signed-rank tests

alone was responsible for the achieved outcomes in this study; however, it appears to have promoted active learning and students enjoyed the experience.

This study demonstrated that pharmacy students recognize pharmacists should provide nonproduct-centered weight management services. Interestingly, these views are contrary to the actions of practicing pharmacists who are predominantly product supply-focused.<sup>16</sup> Pharmacists' strong adherence to the supply-only model is a major barrier to envisioning and adopting patient-centered roles.<sup>32</sup> With the current shift of the pharmacy profession towards a patient-centered care service model, it was promising to see that students who will soon enter the profession perceived this role and may become agents of change.

Recommendations applicable to other institutions include adopting more robust evaluation methods of students' competencies. In this study, instructors primarily supervised activities and provided formative feedback about students' demonstration of weight management skills. Assessment of students' acquisition of competencies was not measured. In Goggin et al, pharmacy students received one-on-one supervision from a clinical health psychology doctoral student who reviewed prerecorded motivational interviews by pharmacy students and rated their skills on a 7-point Likert scale (1=poor/never to 7=excellent/always).<sup>33</sup> This type of supervision and assessment could be considered, but it can be labor intensive, costly, and not appropriate for a large number of students. Alternative assessment options include the objective structured clinical examination (OSCE) with simulated patients. In addition, specifically designed case vignettes may be used to assess students' application of

knowledge more than simply testing general obesity-related knowledge using the ORK-10 scale.

Overall, the workshop was considered to be a success, it has been retained in The University of Sydney pharmacy program, and will be delivered to final-year pharmacy students in future. Similar to Jungnickel et al's view, we recognize pharmacy students may not be "fully developed" in this domain and likely require additional training following graduation.<sup>34</sup> However, students' positive engagement in activities and higher levels of self-confidence supported the evidence for successful learning in this new domain of service.

With the worldwide shift in focus of pharmacists' role to patient-centered services, affective and competency-based learning will equip students with professional characteristics, facilitating the provision of pharmacy services in the future. Although the workshop was designed to be in line with Australian obesity management guidelines, they are similar to other national guidelines. Moreover, key elements of the workshop (eg, taking a weight history, measuring waist circumference, and patient-centered care) are universal, relevant to all pharmacy practice settings, and could be adopted by pharmacy education institutions worldwide. In contributing to addressing the obesity problem, this study was also a positive step in transforming pharmacy curricula to meet the health care needs of society.

A possible limitation of this study was the administration of surveys after the introductory lecture, which may have inflated students' baseline obesity-related knowledge scores. However, the purpose of the survey was to measure the effect of active learning, whereby students applied knowledge they already possessed from the introductory lecture to developing new skills in

practice. We wanted to differentiate the active learning strategies in the workshop from the traditional didactic form of teaching in a lecture that is typically dominated by passive learning. Future investigations could administer the survey prior to the introductory lecture.

Some changes were implemented to the workshop in 2015 as a result of the evaluation. First, the instructor-led class discussion corresponding to the learning objectives under “arrange” was reallocated to the preworkshop lecture to create time for in-class role-play demonstrations. Second, to address the lowest confidence-scoring items, an additional role-play activity involving nonprescription weight-loss products and weight-loss medicines counseling was included to develop competencies in providing evidence-based advice when supplying or dispensing these products. Finally, the survey item “Pharmacists should only sell weight-loss products when dealing with weight-loss requests in the pharmacy” was amended to “It is adequate for pharmacists to only supply weight-loss products when dealing with weight-loss requests in the pharmacy” to be more reflective of students’ perceptions of pharmacist’s responsibilities.

## SUMMARY

A 3-hour competency-based weight management workshop for final-year undergraduate pharmacy students was successfully designed and implemented. This study demonstrated how case-based learning and role-play could develop students’ skills in providing weight management services. Pharmacy students’ obesity-related knowledge and self-confidence in performing weight management skills significantly increased after the workshop. Students also reported being motivated and confident to provide weight management services in the pharmacy. Future investigation should include assessment of students’ performance of skills, possibly conducting OSCEs with simulated patients.

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