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Design and rationale of the medical students learning weight management counseling skills (MSWeight) group randomized controlled trial

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ABSTRACT

Physicians have an important role addressing the obesity epidemic. Lack of adequate teaching to provide weight management counseling (WMC) is cited as a reason for limited treatment. National guidelines have not been translated into an evidence-supported, competency-based curriculum in medical schools. *Weight Management Counseling in Medical Schools: A Randomized Controlled Trial (MSWeight)* is designed to determine if a multi-modal theoretically-guided WMC educational intervention improves observed counseling skills and secondarily improve perceived skills and self-efficacy among medical students compared to traditional education (TE).

Eight U.S. medical schools were pair-matched and randomized in a group randomized controlled trial to evaluate whether a multi-modal education (MME) intervention compared to traditional education (TE) improves observed WMC skills. The MME intervention includes innovative components in years 1–3: a structured web-course; a role play exercise, WebPatientEncounter, and an enhanced outpatient internal medicine or family medicine clerkship. This evidence-supported curriculum uses the 5As framework to guide treatment and incorporates patient-centered counseling to engage the patient. The primary outcome is a comparison of scores on an Objective Structured Clinical Examination (OSCE) WMC case among third year medical students. The secondary outcome compares changes in scores of medical students from their first to third year on an assessment of perceived WMC skills and self-efficacy.

MSWeight is the first RCT in medical schools to evaluate whether interventions integrated into the curriculum improve medical students' WMC skills. If this educational approach for teaching WMC is effective, feasible and acceptable it can affect how medical schools integrate WMC teaching into their curriculum.

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Abbreviations/definitions

5As	Ask, Assess, Advise, Assist, Arrange
MME	Multi-modal education
TE	Traditional education
OSCE	Objective Structured Clinical Examination
Pre-clinical coursework	occurs prior to core clerkship rotations and timing varies by school
Core clerkship rotation	occurs after pre-clinical coursework is completed (2nd or 3rd year of medical school)
SP	Standardized patient
WMC	Weight Management Counseling
RCT	Randomized Controlled Trial
MSQuit Medical Students	Medical Students Helping Patients Quit Tobacco
MSWeight	Medical Students Learning Weight Management Counseling Skills

1. Introduction

Obesity has reached epidemic proportions and is one of the most compelling health problems facing Americans. Slightly more than 70% of U.S. adults have overweight or obesity, [1] placing them at increased risk for diabetes, heart disease, and cancer [2]. National surveys demonstrate that only 20–40% of adult patients with obesity receive weight management counseling (WMC) from a physician [3–6]. This results in missed opportunities to engage patients in weight management, diet, and physical activity promotion, [3] ultimately increasing their risk of morbidity and premature mortality. Given that physicians can effectively assist patients with weight management, [7–15] the U.S. Preventive Services Task Force recommends that physicians "screen all adult patients for obesity and offer intensive counseling and behavioral interventions to promote weight loss for adults" [16].

Physicians, however, lack adequate education in WMC [6,17,18] and report low perception of their skills or self-efficacy regarding their ability to perform WMC [19,20]. The 1985 report from the National Academy of Sciences recommends at least 25–30 h of nutrition education in medical school [21]. A recent survey of U.S. medical schools found that the average required hours of nutrition were 20.4 in 2000 and 19.0 in 2012; [22,23] however only about one-third of surveyed schools achieve the recommended minimum hours [22]. A larger gap exists for skills-based practice for WMC with only 2% of the schools in the noted survey reporting patient assessment and counseling [22].

The most prominent organization of medical schools, the Association of American Medical Colleges (AAMC), seeks to address the noted deficit by recommending that WMC be strongly emphasized within the medical school curriculum [24]. They have developed curriculum guidelines providing competencies and learning objectives related to the biologic, population health, and clinical training aspects of WMC. These guidelines [16,25] have not been translated into an evidence-supported, competency-based curriculum [24,26]. To help close the gap we have developed a WMC curriculum for counseling adults, "MSWeight" (Medical Students learning Weight management counseling skills). We are evaluating its efficacy compared to traditional medical education on students' WMC skills and their perception of their skills in a group randomized controlled trial. This pair-matched RCT is similar in design to our prior study, MSQuit (Randomized Controlled Trial (RCT) for Smoking Cessation in 10 Medical Schools-5R01 CA136888) [27].

This research is the first of its kind to develop and evaluate the effect of a WMC medical school curriculum intervention on fostering WMC skills acquisition in a multi-site RCT. If efficacious, MSWeight can have an important public and clinical health impact by providing foundational education to enable physicians-in-training to help patients who have overweight or obesity achieve a healthier weight. This research is timely and critical for addressing the obesity epidemic.

2. Methods

2.1. Study design

MSWeight is a multi-modal educational intervention (MME) guided by Social Cognitive Theory, [28] Gagne's Conditions of Learning [29], and Socio-Ecological Theory [30]. An eight-school pair-matched group RCT design is used to compare MME to traditional medical education (TE) for the primary and secondary outcomes. The primary outcome of observed WMC skills is measured by an Objective Structured Clinical Examination (OSCE), the standard method for observing and evaluating medical student skills at all U.S. medical schools [31]. WMC OSCE scores will be compared between MME and TE schools for the graduating class of 2020 measured during the students' core clerkship rotation (either Family Medicine or out-patient Internal Medicine). The secondary outcome of student perceived WMC skills and self-efficacy in delivering WMC is measured by changes in scores for medical students from their first year to during their core clerkship rotation. In addition to our primary aim of comparing efficacy of MME to TE for teaching WMC, we will address the potential influence of individual, interpersonal and institutional factors on observed student WMC skills and student perceived WMC skills. The noted constructs are included in our three guiding theories [28–30] (see Fig. 1). We also will evaluate the feasibility and acceptability of implementing the MME across medical schools. If the MME approach improves students' WMC skills and is acceptable to students, faculty and school administration, then it can support integration of national recommendations for training future physicians in WMC.

It employs a nested cross-sectional study design to compare OSCE scores between MME and TE schools. The MME curriculum developed and modeled from previous on-line tested instruction [32] includes: 1) an evidence-supported and competency-based web-course; 2) a role play exercise guided by a WMC OSCE-based checklist; 3) novel use of standardized WebPatientEncounter [33] technology to provide practice and structured feedback to students on their WMC skills; and 4) an enhanced Family Medicine or outpatient Internal Medicine clerkship that provides WMC skill building experiences. A web-based patient encounter is an innovative addition that was not used in the MSQuit intervention and was added to potentially increase the impact of the intervention on WMC skills. This combination of the web-course, role play exercise, WebPatientEncounter, and preceptor facilitated teaching during an enhanced clerkship provides repeated exposure to the WMC curriculum during the first three years of medical school. The curriculum is intended to provide a structured and reinforcing foundation for helping medical students build and practice WMC skills, and to build confidence in their skills and self-efficacy [28] (i.e. belief in their ability to perform WMC) for implementing WMC (see Fig. 2 for the Study Timeline).

To capture school pre-intervention OSCE scores, a comparison cohort of students (graduating class of 2018) at each school who are not part of the intervention will complete the OSCE (see Fig. 2). The study cohort is comprised of students from the graduating class of 2020. MME students will have completed the enhanced clerkship activities during

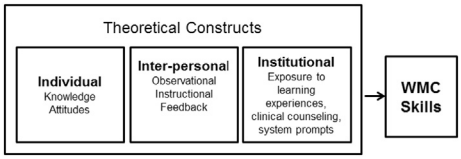

Fig. 1. Theoretical constructs that potentially influence WMC skills.
Theoretical constructs represent the constructs that are applicable to individual, interpersonal and institutional levels.