

Using Synchronous Distance-Education Technology to Deliver a Weight Management Intervention

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ABSTRACT

Objective: To compare the effectiveness of online delivery of a weight management program using synchronous (real-time), distance-education technology to in-person delivery.

Methods: Synchronous, distance-education technology was used to conduct weekly sessions for participants with a live instructor. Program effectiveness was indicated by changes in weight, body mass index (BMI), waist circumference, and confidence in ability to eat healthy and be physically active.

Results: Online class participants (n = 398) had significantly greater reductions in BMI, weight, and waist circumference than in-person class participants (n = 1,313). Physical activity confidence increased more for in-person than online class participants. There was no difference for healthy eating confidence.

Conclusions and Implications: This project demonstrates the feasibility of using synchronous distance-education technology to deliver a weight management program. Synchronous online delivery could be employed with no loss to improvements in BMI, weight, and waist circumference.

Key Words: adult, body mass index, Internet, obesity, overweight (*J Nutr Educ Behav.* 2014;46:602-609.)

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INTRODUCTION

Overweight and obesity continue to be pressing public health problems.^{1,2} Eat Smart, Move More, Weigh Less (ESMMWL) is an evidence-based, 15-week, adult weight management program.³ It has been delivered through the Cooperative Extension and the local public health department

network⁴ as well as in partnership between health insurers, academia, and public health.⁵ The program has been effective at helping participants achieve their weight management goals.^{4,5} However, even with a community delivery system using existing infrastructure, ESMMWL has a limited reach. Hence, a real-time, online delivery of the program using

synchronous distance-education technology was developed.

Reviews of the effectiveness of Internet delivery for obesity treatments and related behavior change are mixed.⁶⁻¹⁵ Most published studies compared Web-based programs to in-person clinical treatment programs or usual clinical care. While the studies are difficult to compare because each intervention has different elements, most early reports have shown lower weight loss and poorer retention for the Internet-delivered interventions than one-on-one, face-to-face counseling. However, none of these used live instructors using synchronous distance-education technology in real time. In general, it appears that the more intense and interactive the Internet-delivered interventions are, the higher is the weight loss.^{11,14-16} The ESMMWL was built, in part, on the premise that the greater the engagement with the instructor, the greater the adherence to the program. Questions remain as to whether using the Internet as a delivery method is comparable to a face-to-face method.¹⁷ However, enthusiasm for the potential of technology-delivered weight management programs continues to

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grow.¹⁸ Studies that compared the delivery of a nonclinical weight management in-person class, similar to ESMMWL, to the same intervention delivered online in real time were not found in literature.

Best practice distance-education tools were used to duplicate the ESMMWL in-person, on-site delivery by conducting online sessions in real time. The same curriculum, program materials, incentive (\$25 refund out of the \$30 registration fee for program completion), and protocols were employed as those used in in-person classes. This paper describes the performance of ESMMWL delivered using real-time, synchronous distance-education techniques as compared to results from in-person delivery that were previously published.⁵

METHODS

Participants

Participants in the study were members enrolled in the State Health Plan for Teachers and State Employees¹⁹ across the state. Information about the program was shared via regular e-mail announcements to wellness committee leaders and key contacts at state worksites and public schools. Participants self selected to enroll in the program. An online registration system was made available for participants to sign up for an upcoming class. Prior to the first session, a welcome e-mail was sent to all participants by their assigned instructor. This e-mail contained login information for their particular class. An information packet was sent to each participant through regular mail. The packet included hard copies of the program magazine and journal, weekly report card, guidelines for measuring waist circumference and weight, and a participant waiver/contract with a self-addressed, stamped envelope. The results described in this study are from 399 participants who completed the online program, submitted an evaluation form, and had not participated in ESMMWL previously. Data from 1 participant with an outlying weight loss value (54 pounds) were deleted, yielding a final sample size of 398 participants. Results from online classes are compared to 1,314 participants who participated

in an in-person delivery of the program (methods and results reported previously⁵). One in-person class participant with an outlying weight loss of 55 pounds was deleted. Program completion was defined as attending at least 10 of the 15 weekly sessions for both online and in-person classes. The North Carolina State University Institutional Review Board approved the study.

Intervention

A total of 48 ESMMWL online classes were offered by four trained instructors from January 2011 through August 2012. The same instructors also taught the majority of the in-person classes. Each class consisted of 15 weekly, 1-hour sessions delivered online. All sessions were conducted in real time by a live instructor using the online teaching software *Illuminate Live!* (*Illuminate Live!*, versions 9.5 and 10.0, *Illuminate Inc*, Calgary, Alberta, Canada, T2A1X5). Classes were offered at different times of the day; early morning (5 classes), lunch (18 classes), and early and late evening (25 classes) times. Each class had a unique login and password. Participants attended all weekly sessions at the same day and time for which they originally signed up during registration. This allowed participants to stay with the same instructor and same cohort to build group cohesiveness. Switching between different class times was not allowed during the course of the 15-week online program. Additionally, weekly sessions were not recorded to view after the live class ended unless a session fell over a state holiday. These protocols allowed the online delivery to be as similar to the in-person classes as possible.

The ESMMWL lessons were revised to be delivered via the online environment, maintaining lesson content. Program content, instructor training, number and length of sessions, and data collected were the same for both online and in-person classes. The ESMMWL team consulted with specialists in the Distance Education Learning Technology Applications (DELTA) office at North Carolina State University to identify and employ best practices for online instruction.²⁰ Their experience and the distance education literature suggested features

that could be added to enhance online learning. Interactive features such as polling, providing Web tours (a tool to introduce and walk participants through the content of a Web site), asking participants to respond to questions, and calling on participants to share were added to keep participants engaged during the online sessions. These techniques are similar to teaching strategies used during the in-person program.

Participants met online each week for 15 weeks during a 50- to 60-minute educational/motivational session and completed a personal goal assessment with their class instructor. Participants were able to see and hear the instructor through their computers and were able to interact with the instructor as well as other participants via the chat box. Instructors monitored participants' attention by calling on them or asking questions several times during the entire session. Several other *Illuminate Live!* tools such as "raise hand," "emojicons," "green check" (symbol to indicate yes in response to a question), or "red cancel" (symbol to indicate no in response to a question) provided added interactivity during the sessions.

As with the in-person classes, online class participants set a healthy weight goal for themselves at the beginning of the program, which could be a steady loss of weight or maintenance of current weight. Weight-loss goals were set within the safe recommended weight loss range of ½ to 2 pounds per week.²¹ They could also set goals to establish a regular physical activity routine or to make healthier food choices. Additionally, each participant was encouraged to pair with another participant in the class or someone outside the class to help develop a support system throughout the program.

A Web portal with a unique login was provided to participants to allow for online reporting of their weekly weight, minutes of aerobic activity, and minutes of strength training with their class instructor. This information was also accessible by the assigned instructor for each class to allow them to provide individualized feedback and motivation to the participant on an ongoing basis in between the weekly sessions. A paper version of a weekly report card was used in the in-person classes to allow the

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