

Results of the Clinician Apps Survey, How Clinicians Working With Patients With Diabetes and Obesity Use Mobile Health Apps

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ABSTRACT

Objective: To develop and administer a questionnaire to determine what factors may be associated with app use (including frequency of use, reasons to recommend to clients/patients, perceived effectiveness on health, health aspects used, features, and types of apps) by clinicians working in diabetes and weight management patient care settings.

Methods: The Clinician Apps Survey was developed and contained 3 question domains (smartphone apps use, behavior theory in counseling sessions, and demographics) to explore frequency, types, preferred features, benefits/barriers of using apps, counseling techniques used, and clinician demographics. Clinicians ($n = 719$) were recruited to complete the online survey through 4 dietetics and diabetes professional groups. Clinician use and preferences for health-related apps for personal reasons and in patient care settings were determined, and comparisons were made between high and non-app users. Descriptive statistics were used with current practices and attitudes about apps. Chi-square test of independence compared those using apps both personally and professionally (app enthusiasts) vs those with no app use.

Results: There were more app enthusiasts (53%; $n = 380$) than non-app users (20%; $n = 145$). Whereas 68% recommended pen/paper methods for diet and physical activity monitoring, 62% recommended apps. Most agreed that apps were superior to traditional methods for patients to track dietary intake (62%) and physical activity (58%), make better food choices (34%), lose weight (45%), and track blood glucose (43%). App enthusiasts used the American Association of Diabetes Educators self-care guidelines ($P = .001$) and advanced counseling techniques (eg, motivational interviewing) more often than did non-app users ($P < .004$). Apps most frequently recommended to clients were MyFitnessPal ($n = 425$), CalorieKing ($n = 356$), and Fitbit ($n = 312$).

Conclusions and Implications: Health-related smartphone apps are being widely used and recommended to patients with diabetes and obesity by clinicians for self-monitoring of dietary and physical activity behaviors. Furthermore, many clinicians believe that these types of tracking apps may improve patient outcomes compared with traditional methods of monitoring dietary and physical activity behaviors.

Key Words: smartphone, mobile applications, surveys and questionnaires, nutritionist, diabetes (*J Nutr Educ Behav.* 2018;50:62–69.)

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INTRODUCTION

Approximately 95% of Americans own a cellphone and 77% are smartphone owners.¹ According to the 2017 Pew Research Center Mobile Fact Sheet,

smartphone ownership is highest in college graduates (89%) who have an annual income of $\geq \$75,000$ (93%) and live in a suburban area (79%), compared with those with less than a high school education (54%), who

make $\leq \$30,000$ a year (64%), and live in rural America (67%). Young, non-white adults with lower incomes are most likely to be smartphone dependent, meaning that they rely solely on their smartphone for online access. Another study found that 58% of US smartphone users downloaded a health-related app; fitness and nutrition apps were among the most common categories of apps that were used on a daily basis.²

Apps may be useful for clinicians working with patients with diabetes and obesity, such as registered dietitian nutritionists (RDNs), certified diabetes educators (CDEs), registered nurses, and licensed practicing nurses, to assess dietary intake, track physical

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activity levels and weight, and provide diabetes self-management tools. Indeed, there are more than 1,700 apps directed to some aspect of diabetes management.³ The 2017 American Diabetes Association Standards of Diabetes Care Position Statement added a recommendation encouraging the use of technology in the prevention and treatment of diabetes.⁴

To the authors' knowledge, no studies examined how apps were used by clinicians in the care of patients with diabetes and obesity in the US. A systematic review identified only 7 of 33 studies that were conducted in the US and none specifically addressed diabetes health care professionals.⁵ Clinician agreement with information technology (IT) is essential for integration of technology into health care. Barriers to clinician agreement included cost related to both finances and time, and the knowledge and attitudes of the user.⁶

The American Association of Diabetes Educators (AADE) uses the AADE7 Self-Care Behaviors as an educational model for essential topics to include in diabetes education, which include healthy eating, being active, monitoring, taking medication, problem solving, reducing risks, and healthy coping.⁷ The AADE recognized that apps can be instrumental in helping patients manage the AADE7 and developed the Diabetes Goal Tracker App to encourage tracking of a patient's individual goals.⁸

There have been only 2 publications concerning RDNs' acceptance of IT, specifically apps. According to Liefers et al,⁹ 57% of Canadian dietitians who responded used apps in practice, and 41% recommended a nutrition or food app to clients. Factors that affected dietitians' use of apps and their recommendations of them to clients included accessibility, content quality, usability, compatibility, cost, knowledge, interest, suitability, willingness, ability to pay, and ability to use apps at work. Diet apps were used by one-third of sports dietitians surveyed and US sports dietitians were most likely to use diet apps, compared with dietitians from other countries.¹⁰

Apps may prove useful in improving patient care and clinical outcomes. The objective of this study was to develop and administer a questionnaire to determine what factors may be associated

with app use (including frequency of use, reasons to recommend to clients and patients, perceived effectiveness on health, health aspects used, features, and types of apps) by clinicians working in diabetes and weight management patient care settings. In addition to demographics, data were collected related to counseling techniques and personal app use.

MATERIALS AND METHODS

Survey Development

The researchers developed a draft survey based on 2 studies with similar research objectives; 1 explored how sports dietitians in 5 countries used apps in dietary assessment and tracking⁹; the other explored how Canadian dietitians used mobile devices and apps.¹⁰ The questionnaire had a framework related to the Technology Acceptance Model, which posits that perceived usefulness and perceived ease of use are influential in the adoption of technology for work, and that self-efficacy and the cost-benefit of acceptance and adoption may in turn influence perception of usefulness and ease of use.¹¹ The purpose of the study was not to test the model's fit to the clinician's app use, but to inform the questionnaire development (5 items) and discussion of results.

The first draft of the survey contained 35 questions, 12 of which involved demographics. Fourteen technology and smartphone-related questions were modified and adopted from Liefers et al⁹ and Jospe et al.¹⁰ To assess behavior change taxonomy, 1 question was added from Mitchie et al.¹² The research team developed 8 original questions about types of instructional and social media used during patient counseling sessions ($n = 3$), personal use of electronic devices for dietary tracking ($n = 2$), assessment of patients' dietary intake during counseling sessions ($n = 1$), possible reasons for recommending smartphone apps to clients ($n = 1$), and preferred smartphone app features ($n = 1$).

Colleagues and health professionals who had knowledge of mobile health and nutrition-related smartphone apps conducted snowball re-

cruiting¹³ of an expert panel to review the initial instrument. Those who did not have the desired credentials or experiences or adequate time to participate were excluded. A total of 47 panelists (21 app users, 14 experts in technology, and 12 experts in nutrition) received an invitation to review and provide comments about the survey. Eleven final panelists (5 nutrition experts, 2 experts in technology, and 4 app users) consented to the terms of the study, reviewed the survey, and provided suggestions about how to change the phrasing of questions and potential questions to add; others declined owing to time or perceived lack of qualification ($n = 17$) or lack of response ($n = 19$). Participants received a \$50 electronic gift card as compensation. The Institutional Review Board at the University of Illinois at Urbana Champaign approved this study, as well as the survey administration study.

The expert panel review resulted in 49 changes. Changes were made when ≥ 2 members of the research team recommended a change or the change was thought to be an improvement. The revised survey, entitled the Clinician Apps Survey (CAS), contained 37 total questions with 2 open-ended and 35 multiple choice questions and an option of other that allowed participants to type a response; it was transferred into an online survey (Qualtrics, Provo, UT, 2017). Of the 24 non-demographic questions, the domains included technology use ($n = 5$; 3 included personal and professional or at work); clients, assessments, and counseling ($n = 9$; 2 included personal tracking as well); technology with clients ($n = 6$); and factors affecting technology use ($n = 4$; 1 included personal and professional or at-work use). Within the domain of clients, assessments, and counseling, 2 items addressed the use of AADE7, which addressed several aspects that could be reflected in apps: healthy eating, being active, monitoring, and problem solving.¹⁴ Three questions assessed personal use and professional use, in which respondents had the option to select one or the other, both, or none, to see whether there were associations between personal and professional use and recommendations to clients.

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