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PERSPECTIVE

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Success and failures of telehealth during COVID-19 should inform digital applications to combat obesity

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Abstract

Background: In response to the COVID-19 pandemic, telehealth digital applications (apps) permitted the delivery of health care to millions of individuals, including those with poor access to health services.

Aim: To review a body of evidence demonstrating that telehealth and mobile health (mHealth) apps can promote clinically meaningful weight loss, and thus hold potential to increase access to treatment and weight loss care for individuals suffering from obesity.

Results: Data from COVID-19 pandemic revealed that access to telehealth and mHealth remains a challenge for underserved communities that are disproportionately affected by obesity.

Conclusions: The development of telehealth and mHealth for obesity treatment must be informed by the success and failures of telehealth during the COVID-19 pandemic. Failure to do so, risks alienating the very populations that stand most to benefit from telehealth and mHealth apps for obesity treatment.

KEYWORDS
behavioral support, COVID-19, mHealth, obesity, technology, telemedicine, web

1 | TELEHEALTH AND mHealth FOR OBESITY TREATMENT

Evidence shows that telehealth and mobile health (mHealth) technologies are effective tools for the treatment of obesity,[1-7] reviewed in Ref.[8] and that these technologies are acceptable to individuals with obesity in rural settings,[9] which typically lack convenient access to health care. The term telehealth, sometimes used interchangeably with telemedicine, or electronic health (eHealth), broadly refers to use of a technology to deliver all aspects of health care, including health information management, disease prevention, monitoring, and medical care.[10] Whereas, mHealth, as defined by the World Health Organization, is "medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices,"[11] allowing consumers to capture their own health data without medical assistance.

Many of the traditional commercial weight loss companies (i.e., WW, Jenny Craig, and Nutrisystem),[1,12,13] as well as newer companies (i.e., Noom),[6] now offer both telehealth and mHealth apps, some of which have been demonstrated to foster behavioral change and promote weight loss.[1,6] Although, telehealth and

Abbreviations: DPP, diabetes prevention program; IBT, intensive behavioral therapy; mHealth, mobile health; MNT, medical nutrition therapy; WLM, weight loss maintenance.

mHealth app-based approaches to treat obesity are in their infancy,[8] they are quickly evolving and transforming the essential modalities for obesity treatments, including medical nutrition therapy (MNT),[14] self-monitoring weight loss tools,[15,16] promotion of physical activity,[17,18] and intensive behavioral therapy (IBT).[19] For example, just-in-time adaptive interventions (JITAIs),[20] which utilize technology that dynamically adjusts intervention approaches based on an individuals' changing behaviors in real-time, have been shown to diminish sedentary behaviors and increase physical activity in individuals with obesity.[17,18] With MNT for obesity, mHealth apps have the potential to remove the time burden of manually completing written food diaries after meals,[16] give individuals instant access to daily caloric intake, and more frequent medical feedback, allowing participants to quickly adjust short and medium-term goals.[16] Self-monitoring of body weight is another important aspect of self-guided weight loss,[21] and a number of studies have shown that telehealth and mHealth apps are effective in promoting increased self-monitoring, behavioral change, and weight reduction.[1,22,23] For example, a study by Thomas et al. showed that a higher proportion of users of the WW Online app that included self-monitoring tools, lost ≥5% of their initial body weight, than those that did not have self-monitoring tools.[1] Evidence also demonstrates that IBT, which is now recognized as a key component of successful weight loss treatment,[24,25] can be effectively delivered using telehealth approaches.[8,19,26] Consistent with this, the 2013 Guidelines for Managing Overweight and Obesity include telehealth approaches as a viable option for IBT for obesity treatment.[26]

2 | ARE TELEHEALTH AND mHealth APPS SUPERIOR TO IN-PERSON OBESITY TREATMENT?

A number of studies have examined the efficacy of telehealth and mHealth apps compared to in-person obesity treatment and medical care.[2,16,27-31] A systematic review on the effectiveness of smartphone applications on weight loss among adults found that all the participants that used apps for dietary tracking lost some weight over the course of the study intervention, with four studies reporting clinically significant weight loss over standard in-person care.[16] Three studies,[28-30] reported that diet adherence was higher for subjects using mHealth apps compared to those using non-technology methods of diet monitoring. A systematic review by Bennett et al. comparing telehealth and mHealth to standard and in-person care for obesity treatment among racial and ethnic minorities, found that in the short-term (≤6 months), telehealth and mHealth approach produced superior weight loss.[2] For long-term maintenance of weight loss, which remains a challenge,[32] evidence from the treatment of Obesity in Underserved Rural Settings trial, showed that administering extended care through telephone counseling was as effective, and less costly than in-person therapy for weight loss maintenance (WLM).[33] The WLM trial, reported that health team contact, either in-person or by telephone, produced superior WLM compared to exclusively self-directed web-based technology approaches.[34] Similarly, a meta-analysis[27] found that individuals using technology apps had significantly greater degree of weight loss with more frequent interactions with a health team, either by in person-contact, or through automated technology interactions (i.e., phone text messaging, email), than those that did not have any in-person health team contact.[27] Although large gaps of knowledge on the superiority of telehealth and mHealth apps to in-person care remain, these data suggest that telehealth approaches are equally effective, but are not superior to in-person obesity treatment. They also suggest that mixed-approaches for treating obesity that include in-person and technology approaches that bolster the frequency of medical contact, may be superior to either exclusive in-person, or technology-based approaches. Clinical approaches that emphasize long-term therapeutic alliances for maintaining weight reductions, and overall health and well-being,[35] stand to benefit most from even more modest telehealth approaches, such as telephone and email, in light of their relative ease of use, and low-cost of implementation.[36] More long-term studies that compare the side by side efficacy of telehealth and mHealth apps for both weight loss and WLM compared to in-person care are needed.[8] Still, these data show that telehealth and mHealth should have a prominent role either along-side, or in place of traditional in-person obesity treatments.

3 | WHAT CAN BE LEARNED FROM THE SUCCESS AND FAILURES OF TELEHEALTH DURING COVID-19 PANDEMIC IN THE TREATMENT OF OBESITY?

In response to the COVID-19 pandemic, robust action by lawmakers, medical organizations and insurance companies eliminated most of the financial and regulatory barriers that impeded the expansion of telehealth.[37] Compared to the same time in 2019, uptake and use of telehealth across the United States increased by almost 200% by the end of March 2020.[38] After years of being touted as the future of medical care, telehealth has quickly become the norm.[38] The rapid and successful expansion of telehealth to both urban and rural populations will likely change the landscape of health care in the United States permanently,[39] which is where future development of telehealth and mHealth apps for treatment of obesity can learn and benefit the most. For example, in 2011 the Centers for Medicare and Medicaid Services (CMS) approved reimbursement for an IBT obesity treatment based on the diabetes prevention program (DPP) model.[25] In response to the COVID-19 emergency, the IBT DPP model is currently included for telehealth obesity treatment under the CMS emergency waiver of telehealth coverage.[40] With the success of telehealth in response to COVID-19, and evidence of a strong association between obesity and risk for serious COVID-19 infection and mortality,[41] there is now strong political support to make the CMS telehealth waivers permanent.[42] In doing so, CMS would drastically improve and expand coverage for treatment and prevention of obesity going forward.[43]

Telehealth expansion during the pandemic has also provided much needed data on remote treatment and care for obesity[44] that should inform development of technologies for obesity treatment. For example, telehealth and mHealth apps should permit ease of patient contact and integration of remote health data collection in order to triage individuals with obesity for either continued remote care or inpatient care, depending on the severity of any obesity-related comorbidities. Doing so, can liberate precious hospital and medical resources for obesity-related, and other medical conditions that necessitate in-person care.

However, numerous short-comings of telehealth during COVID-19 have been identified,[45] and none are as great as the failure of telehealth to sufficiently address health care in communities of the highest need during the pandemic.[37,46] Evidence shows that, although COVID-19 infections, hospitalizations and deaths are highest among racial and ethnic minorities,[47] telehealth use was lowest in these communities,[46,48] where obesity prevalence is often the highest.[49,50] Not for lack of demand, but lack of access was identified a major force behind the low use of telehealth among poor communities of color.[37,46] These include insufficient community broadband, and access to a laptop computer or mobile devices with a camera.[37,46] Moreover, digital literacy, and knowledge of the availability of remote health options, are also factors identified as barriers to telehealth access for underserved communities of color during COVID-19.[37,46,51]

The expansion of telehealth during COVID-19 demonstrates the unique potential of technology to bring low-cost, scalable treatment and care, to rural and underserved populations disproportionately affected by obesity.[49,50] However, failure to address the barriers to telehealth access that have been identified during COVID-19, risks exacerbating the longstanding disparities in rates of obesity, and access to obesity treatment in the United States, based on race, ethnicity and income.[49,50]

4 | GOVERNMENTAL AND PROFESSIONAL MEDICAL SOCIETY SUPPORT IS CRITICAL FOR THE SUCCESS OF TELEHEALTH AND mHealth FOR OBESITY TREATMENT

With the growth of telehealth and mHealth in response to the COVID-19 pandemic,[45,52] it is likely that some aspects of mHealth will remain a part of heath care systems post-COVID-19. However, without Federal and State oversight, and financial commitments for the deployment of telehealth and mHealth apps for treatment of obesity, particulary in the most disenfranchised communities, these technologies will fail to achieve their intended health goals.[36] Similar calls for removing the barriers to telehealth for mental health services have also been made.[53] It is encouraging that the 2021 Consolidated Appropriations Act includes funding for the expansion of broadband networks, and telehealth access in rural and medically underserved communities.[54] As discussed above, the CMS waivers for the expansion of traditional Medicare and Medicaid coverage of telehealth for obesity treatment must become permanent after the COVID-19 public health emergency is deemed over. The failure of CMS to do so will severely diminish equitable distribution and access of telehealth for obesity treatments in the future.

Dietetic and obesity medical societies, and their professional practitioners, will also play an important role in ensuring the success of telehealth and mHealth apps for treatment of obesity. For example, though counseling with a registered dietitian (RD) is a key component for the treatment of obesity,[26,55] there is little knowledge about the features and characteristics that RDs seek in telehealth and mHealth apps in order to support their professional practice.[56] A survey of more than 380 RDs shows that there are numerous gaps in knowledge, and barriers for the wide-spread use of technology apps for RDs,[56] including a lack of trust in apps that are not specifically designed by or endorsed by dietetic organizations.[56] It was also found that RDs look to apps that include technologies and relevant remote support that addresses their specific needs in clinical practice, such as in dietary assessments and MNT.[56] Beyond the technology itself, there are also multiple aspects in the development of effective telehealth and mHealth apps that require practitioner input and professional oversight, including acceptability, usability, and social validity.[57] Therefore, it imperative that professional medical, dietetics and obesity organizations engage with their members and stakeholders, in order to maintain an active position in the development and testing of these telehealth and mHealth technologies. This will ensure that only medically endorsed, effective, and evidence-based approaches are used in the remote treatment of obesity.

5 | CONCLUSIONS

The development and use of telehealth and mHealth apps are revolutionizing the medical and healthcare industries, and hold the potential to greatly improve health outcomes.[36] Telehealth and mHealth apps could provide a unique opportunity for a much-needed re-calibration of years of failed approaches for combating obesity across populations, in particular the poorest communities where medical and social costs of obesity are highest.[49,50] However, without public and private support, the current trajectory of telehealth mHealth apps favors privileged communities,[37,46] and thus runs the risk of worsening health care disparities among the poor and underserved. Still, without long-term side-by side studies of telehealth and mHealth apps compared to face-to face care, our understanding of the inherent clinical limitations and challenges of incorporating telehealth and mHealth apps for treatment of obesity will be limited. In the short to medium term, it is warranted to expand the use of telehealth and mHealth alongside in-person professional medical, nutrition and behavioral care, in order to help individuals with goal setting and behavior changes for long-term success for weight loss.

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CONFLICT OF INTEREST

Joseph R. Vasselli, Susan Juray, and Steven E. Trasino have no affiliations with or involvement in any organization or entity with any financial interest in the subject matter or materials discussed in this manuscript.

AUTHOR CONTRIBUTIONS

Joseph R. Vasselli, Susan Juray, and Steven E. Trasino wrote, edited, and revised the manuscript.

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