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EDITED BY

Vicente Antonio Gea- Caballero,
Valencian International
University, Spain

REVIEWED BY

Stefan Buttigieg,
University of Malta, Malta
Kaifeng Liu,
Tianjin University, China

*CORRESPONDENCE

Grzegorz Bulaj
✉ bulaj@pharm.utah.edu

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Health education via “empowerment” digital marketing of consumer products and services: Promoting therapeutic benefits of self-care for depression and chronic pain

Jade L. Huntsman¹ and Grzegorz Bulaj^{1,2*}

¹OMNI Self-care, LLC, Salt Lake City, UT, United States, ²L. S. Skaggs College of Pharmacy, University of Utah, Salt Lake City, UT, United States

Increasing health care costs and high economic burden exemplify the impact of chronic diseases on public health. Multifaceted approaches to treating chronic diseases include pharmaceutical drugs, digital therapeutics, and lifestyle medicine. Chronic diseases are largely preventable, and health promotion yields positive outcomes. However, despite positive return on investment (ROI) and cost-to-benefit ratio (CBR) for health promotion (median ROI 2.2, median CBR 14.4), commercial marketing of healthy lifestyles and self-care is limited. The objective of this perspective article is to discuss how digital marketing of consumer goods and services that support therapeutic self-care can also bridge public health and for-profit interests. We describe how “empowerment” marketing campaigns can provide evidence-based associations between products/services and self-care benefits for people living with chronic pain and depression. Such a “health education as marketing” strategy is illustrated by educational ads describing how contact with nature, music, and yoga can improve chronic pain and reduce depressive symptoms. Creating associations between health-related benefits of these activities with products (outdoor and yoga apparel, audio equipment) and services (music streaming services, music mobile apps, eco-tourism, yoga studios) that support them expand their value proposition, thus incentivizing profit-driven companies to engage in public health campaigns. Long-term success of companies that incorporate evidence-based health education as marketing and branding strategies will depend on following ethical considerations and advertising guidelines defined by consumer protection regulatory agencies, such as the Federal Trade Commission (FTC). In conclusion, integration of health education about self-care and commercial marketing can support health care outcomes and disease prevention.

KEYWORDS

disease self-management, mental health, pain management, health promotion, health branding, health literacy, advertisement, digital media

1. Chronic diseases challenge public health and the economy

Six in ten people in the United States have a chronic medical condition, and four in 10 people have two or more (1). Chronic disease is the leading cause of disability and death in the U.S., contributing to the country's \$3.8 trillion annual cost of healthcare (1). Chronic pain and depression are two chronic conditions impacting the health-related quality of life and productivity of millions of Americans each year. More than 100 million people live with chronic pain, affecting more people than cancer, diabetes, and heart disease combined (2). Depression is the leading cause of disability for ages between 15 and 44, affecting more than 16 million Americans 18 and older (3). The challenges of chronic diseases also include caregiver burden (4–7).

The economic costs of depression and chronic pain are estimated to be \$210 billion (8) and between \$560 and \$635 billion, respectively, the latter alone surpassing the costs of heart disease, cancer, and diabetes (9). Costs include medical costs such as outpatient and inpatient medical services and pharmacy costs, and costs associated with loss of workplace productivity (8, 9). For example, 7.6% of the workforce is estimated to have depression and impaired job performance or chronic absenteeism as a result (8). Individuals experiencing moderate-to-severe chronic pain were found to work an average of 504 h fewer per year than individuals without pain (9).

A major challenge facing healthcare and caregivers today is meeting the complex needs of those living with chronic diseases (10). Dozens of surveys show that many people living with chronic diseases do not receive effective therapy, have poor disease control, and are dissatisfied with their care (10). Treatment of chronic diseases, including chronic pain and depression, largely relies on pharmacotherapies, while recent emergence of digital health technologies, including digital therapeutics, offers additional means to improve therapy outcomes (11–14). However, current efforts to treat and prevent chronic disease in the U.S. lack adequate resources. A 2005 assessment on chronic disease programs in the U.S. found that although chronic disease accounts for 70% of deaths nationwide, health departments allocate an average of 1.85% of their budget to chronic diseases (15). The Center for Disease Control and Prevention (CDC), one of the primary federal resources for funding public health activities in the U.S., has <\$3 per capita to spend on chronic disease prevention (16). The prevention and public health fund was allotted <10% of the total CDC funding for programs in 2020, and this number has remained steady over time, despite increasing evidence for prevention program efficacy (16).

The objective of this perspective article is to describe how promoting therapeutic benefits of self-care *via* digital marketing of consumer goods and services can also bridge

public health and for-profit interests. In the following sections, we discuss: (1) why chronic diseases are preventable, (2) how health education and promotion can impact health-related behaviors, (3) therapeutic benefits of self-care, (4) examples of digital marketing to promote self-care related to depression and chronic pain, and (5) opportunities and limitations of a “health education as marketing” approach. We hope that this cross-disciplinary work will advance future theoretical frameworks and translational studies on promotion of self-care practices. We also hope that this paper will encourage private entities and public-private partnerships to expand education about health benefits of self-care.

2. Chronic diseases and related mortality are largely preventable

Preventable chronic diseases prematurely kill more than 1.7 million Americans each year (17–19). Chronic diseases largely result from modifiable lifestyle choices including tobacco use, poor diet, lack of physical activity, excessive alcohol consumption, and uncontrolled high blood pressure (17). The World Health Organization (WHO) predicts that if the major preventable causes of chronic diseases were eliminated, 80% of heart disease, stroke, and type 2 diabetes, and more than 40% of cancer cases would be prevented (20). Ineffective management of chronic pain and depression render two examples of how chronic disease-related deaths are largely preventable. Currently, the most common form of pain relief in the U.S. is opioid prescriptions, and over 49 million Americans filled at least one opioid prescription in 2018 (21). The National Institute on Drug Abuse reported that 21–29% of patients prescribed opioids for chronic pain management misuse them, contributing to approximately 50,000 opioid overdose deaths in 2019 (22). Similarly, evidence shows that depression is the leading cause of avoidable suffering worldwide (23), with a 33% increase in suicide rates between 1999 and 2019, making suicide the 10th leading cause of death in the U.S., accounting for over 47,500 deaths in 2019 (24). An analysis of healthcare outcomes comparing the U.S. to 10 other high-income countries found that the U.S. not only yields the lowest performance despite spending a significantly larger percentage of GDP on healthcare, but also ranks last on preventable mortality with only a 5% mortality reduction compared to all other countries averaging a 20% reduction over a recent period of 10 years (25).

3. Health promotion, education, and empowerment

In this perspective article, we describe how bridging digital marketing with health promotion, health education, and empowerment can positively impact public health and

disease prevention. Health promotion is defined by WHO as “*The process of enabling people to increase control over, and to improve their health*”, and health education is defined as “*consciously constructed opportunities for learning... designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health*” (26). Empowerment is defined as “*a process through which people gain greater control over decisions and actions affecting their health*” (26). All three, health promotion, education, and empowerment aim to foster healthy lifestyles, as well as motivation and confidence necessary to take action to improve one’s health.

Research has shown the effectiveness of health promotion, education, and empowerment on increasing health-related behaviors and overall health outcomes (27–30). A single two-hour educational empowerment session, facilitated *via* Zoom, had substantial and long-lasting positive effects on pain reduction and management for individuals living with chronic pain (31, 32). A program called Creating Opportunities for Personal Empowerment was effective in reducing depression and anxiety and increasing academic performance among college students (33). A growing body of research shows positive outcomes of school-based mental health promotion programs in areas such as mental health literacy and resilience enhancement (34, 35). Studies on workplace health promotion provide evidence that health promotion can achieve long-term behavior change and risk reduction (36–38).

Social media is increasingly being used for health promotion (39–41), and digital marketing can influence health-related behaviors and beliefs (42–45). A randomized controlled study of a Facebook-based campaign targeting mental health literacy and help-seeking attitude for depression reported positive findings (46). Social media campaigns promoting mental health awareness gained more recognition during the COVID-19 pandemic (47). Media campaigns promoting chronic pain management are promising but underexplored tools toward changing related beliefs and behaviors (48). A number of internet-delivered programs for disease prevention and treatment, including mental health and chronic pain, are available as low-cost interventions and educational resources (49).

While public health benefits of health promotion and education are apparent, cost-benefit analysis of health promotion also shows positive outcomes (30, 50–53). A systematic review of the return on investment (ROI) and cost-to-benefit ratio (CBR) for public health interventions indicates that ROI for health promotion ranged from 0.6 to 6.2 (median ROI was 2.2 based on 12 studies) and CBR ranged from 2 to 29.4 (median CBR 14.4 based on 3 studies) (54) [“*The CBR is the benefit divided by the cost, and the ROI is the benefit minus the cost expressed as a proportion of the cost...*” (54)]. While economic evaluation of mental health promotion programs shows promising results, their cost-effectiveness

remains inconclusive due to limited number of relevant studies (55). In this perspective article, our main objective is to bridge health promotion with commercial interests by describing digital marketing of consumer goods and services associated with self-care.

4. Lifestyle medicine and therapeutic benefits of self-care

Lifestyle medicine involves behavioral, environmental, and motivational factors to improve physical and mental health (56, 57). Lifestyle interventions and self-care have been gaining recognition for their abilities to produce clinical effects in people living with chronic medical conditions. In 2017, the American College of Physicians published clinical guidelines recommending yoga and physical exercise as the first-line therapy for chronic low back pain (58). An increasing number of studies support health benefits of diverse self-care practices ranging from contact with nature (e.g., forest bathing, walking/hiking outside), yoga practice, mindfulness meditation, breathing exercises, listening to music, aromatherapy, sleep hygiene, and others. Lifestyle interventions have been reported for depression and anxiety (57, 59, 60), chronic pain (61, 62), arthritis (63), cancer (59), dementia and Alzheimer’s disease (64), and diabetes (65, 66).

Using PubMed and Google Scholar databases, we searched for reviews and clinical research studies that investigated therapeutic benefits of selected self-care practices for pain and depression. As summarized in Table 1, contact with nature, yoga practice, and music-based interventions have been shown to reduce chronic pain and improve depressive symptoms. Research studies show health-related benefits of exposure to nature (67), including improvements in cognitive and mental health (68–72), chronic pain conditions (73), and immune and cardiovascular functions (74, 75). Similarly, listening to music and yoga practice exert multiple physiological and clinical effects ranging from pain relief and pain management to reducing depressive symptoms and modulating the immune system (76–85). As we discuss below, therapeutic benefits of self-care practices can be disseminated *via* digital marketing and creating knowledge-based associations between specific self-care practices and products or services that support these practices.

5. Digital marketing of consumer products and services promoting health benefits of self-care

Commercial marketing of healthy lifestyles by businesses and public-private partnerships has been primarily focused on obesity, nutrition, and physical activity (90). Herein, we describe a “health education as marketing” strategy to promote consumer

TABLE 1 Examples of self-care practices and related products and services that can benefit people living with chronic pain and depression.

Self-care practices	Examples of therapeutic benefits of self-care	Examples of products/services supporting self-care (companies offering related products/services)
Contact with nature	Two SR/MA studies suggested that nature-based interventions, including forest bathing, can reduce depressive symptoms and improve positive affect (68, 86). Diverse nature interventions reduced pain and fatigue in people with fibromyalgia (87), while forest bathing can significantly reduce chronic neck pain (73).	Outdoor apparel and equipment supporting contact with nature (Arc'teryx, Backcountry, Black Diamond, Columbia Sportswear, Cotopaxi, L.L. Bean, Mountain Hardwear, Naturalist Ventures, Outdoor Research, Patagonia, REI, Salomon, The North Face)
Yoga	SR/MA suggested that yoga practice can reduce depressive symptoms among people with cancer (80). SR/MA showed yoga practice can reduce prenatal depression (88). SR/MA studies showed yoga practice can reduce chronic low back pain and disability (81), and can also reduce pain intensity and frequency/duration of migraine headaches (89). Clinical practice guidelines published by the American College of Physicians recommend yoga as first line therapy for chronic low back pain (58).	Yoga apparel, studios, and retreats supporting yoga practice (Athleta, CorePower, Gaiam, Honor Yoga, Life Time, Lululemon, Real Hot Yoga, Sunstone Yoga, The Travel Yogi, Truenature Travels, YogaFit, Yogascapes, YogaSix, Yoga to the People, YogaWorks)
Music	Systematic review of diverse music interventions revealed significant reduction in depression symptoms (76). Meta-analysis showed diverse music therapy and music medicine interventions can significantly reduce depressive symptoms (77). SR/MA showed music-based interventions can produce analgesic effects in chronic pain conditions (78). Meta-analysis showed music interventions can produce pain relief and decreased use of analgesic medications (79).	Music streaming services and mobile apps delivering music, and audio equipment (Amazon Music, Apple Music, Bose, Deezer, Harman Kardon, JBL MixCloud, Primephonic, Qobuz, Sony, SoundCloud, Spotify, Tidal, YouTube Music)

Examples of therapeutic benefits of self-care are based on systematic reviews and meta-analyses (SR/MA), other review and clinical research studies. Selected examples of companies associated with the products and services that can provide direct or indirect therapeutic benefits are also listed. Please note that the names of the companies listed are under trademark and copyright protection.

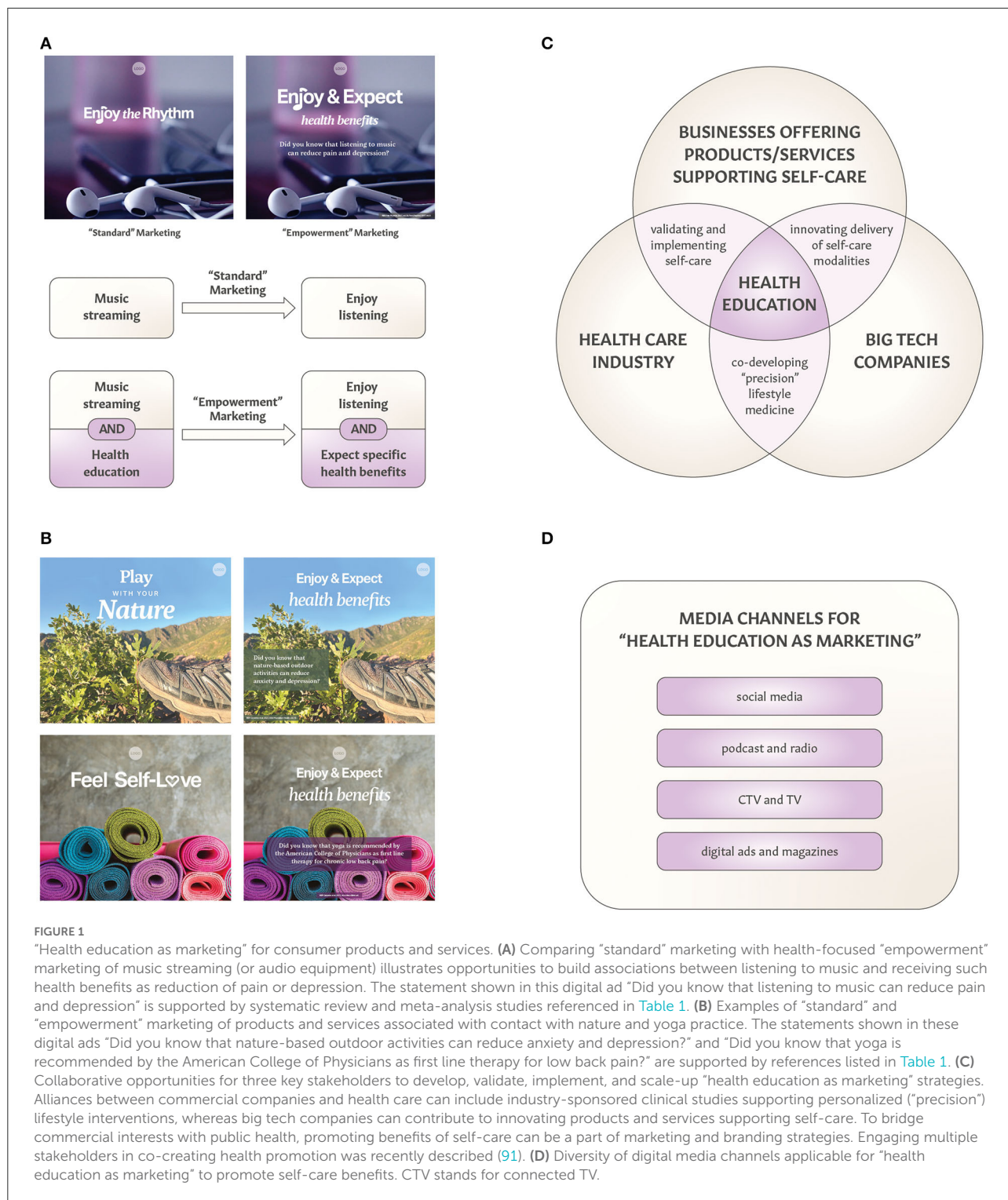
goods and services associated with diverse self-care practices. We provide examples of how for-profit businesses can expand the scope of marketing campaigns by educating customers about connections between their products/services and health-benefits of self-care. Using two examples of chronic diseases, namely chronic pain and depression, and three examples of self-care practices, namely contact with nature, yoga practice, and listening to music, we describe associations between products/services supporting the aforementioned practices and their clinical benefits. We discuss such “empowerment” marketing campaigns as public health interventions delivering evidence-based information about health benefits of self-care.

As shown in Table 1, contact with nature (forest bathing, spending time in green and blue spaces), listening to music, and yoga practice provide clinical benefits related to chronic pain management and reduction of depressive symptoms. Each of these three activities is associated with specific products and services that support daily self-care to reduce chronic pain or depression. For example, camping in the forest, hiking in the mountains, enjoying water activities at the lake, and eco-tourism are enabled by proper apparel and equipment. Similarly, participation in yoga practice includes the use of yoga apparel and equipment, as well as attending yoga classes and retreats. Listening to music is facilitated by a combination of music streaming services, mobile apps, smartphones, and audio equipment including headphones, earphones, and audio speakers. Current marketing and advertising campaigns of the forementioned products/services are commonly focused on brand awareness and/or enjoyment of specific products

and services. For example, outdoor apparel and equipment companies emphasize that contact with nature is much easier and more satisfying with the proper gear (hence people are more likely to do it).

Table 1 lists examples of companies that offer apparel and equipment enabling consumers to spend time in nature, practice yoga, or listen to music. While marketing their products and services, these companies have an opportunity to bridge their marketing and advertising with public education about health benefits of relevant self-care practices. Figures 1A, B illustrate the difference between “standard” marketing and “empowerment” marketing of consumer products/services associated with exposure to nature, yoga practice, or listening to music. The “standard” marketing of music-related products and services is focused on engagement with and enjoyment of music, whereas the “empowerment” marketing is focused on educating consumers about health benefits of music-related products/services. It is noteworthy that the general public appreciates the ability of music to elevate mood, but there is less awareness of the analgesic and antidepressant properties of music (references in Table 1).

Such health-focused “empowerment” marketing and health branding approach can also be applied to products and services that facilitate contact with nature and yoga practice (Figure 1B). The general public is largely unaware that yoga and physical exercise are recommended by the American College of Physicians as the first line therapy for chronic low back pain (58). Such a gap in public knowledge creates an opportunity for yoga studios and companies manufacturing and promoting yoga apparel to create “empowerment” marketing and digital ads



that offer relevant and evidence-based information (Figure 1B). Since nature therapies such as eco-therapy and forest bathing gain more recognition for their clinical effects (92, 93), advertising health benefits of connection with nature can be a part of health promotion campaigns (94). It is noteworthy that "positive-gain" message framing has been shown to be

more effective in promoting health-related behaviors (95, 96). As discussed below, creating associations between health-related benefits and products (outdoor equipment, yoga products and apparel, audio equipment) and services (music streaming, eco-tourism, yoga retreats) can also expand their value proposition.

From a practical perspective, companies offering outdoor apparel and equipment can expand their “standard” advertising strategy (e.g., The North Face® “Never Stop Exploring®” and “Get Outdoors” marketing campaigns) by adding information about mental health benefits of spending time in the forest. The “standard” marketing for music streaming companies (e.g., ads bridging music and real-life with fun memes and the “Listening is everything” campaign by Spotify) could be expanded by providing “real-life” information about clinical studies indicating that listening to music can reduce depression or pain. Another example is Lululemon which presents itself as “a global company rooted in yoga” that aims “to contribute to conditions that support physical, mental, and social wellbeing” through their “Be Well” Impact Agenda (quotes from corporate.lululemon.com). Lululemon campaigns such as “Feel” or “This is Yoga” focus on wellbeing and “Practice of self-discipline” or “Practice of breath”. As illustrated in [Figure 1B](#), marketing agencies can consider “empowerment” advertising of yoga apparel and activewear by providing information about yoga being recommended by the American College of Physicians as the first line therapy for chronic low back pain since 2017 (58).

6. Opportunities and limitations of “health education as marketing”

The “health education as marketing” strategy offers new opportunities for commercial businesses such as cross-disciplinary collaborations with the health care industry ([Figure 1C](#)), while expanding value proposition of products and services supporting self-care. Collaborations between commercial businesses and healthcare systems can focus on clinical studies validating therapeutic outcomes of specific self-care practices, for example, testing efficacy and effectiveness of music streaming on depression (97, 98). Joint-venture alliances between music streaming services, digital health companies, and clinical research centers could lead to expanding value proposition for music because of its additional therapeutic applications (97–100). In addition to the antidepressant and analgesic properties of music, the ability of musical compositions to reduce seizures in people with epilepsy can also be translated to clinical practice after pivotal RCTs and the regulatory approval by the FDA (101, 102). Industry-sponsored clinical studies, including large-scale RCTs, will contribute toward high-quality, rigorous evidence of self-care benefits for specific chronic diseases, ultimately contributing to lifestyle medicine and better therapy outcomes.

Currently health-targeted marketing is a multi-billion dollar industry in the U.S., led by direct-to-consumer advertising of prescription drugs and health services (103). The “health education as marketing” strategy can increase value proposition for products and services supporting such self-care practices as contact with nature and yoga, since consumers who

consider purchasing related products/services would more likely choose those that also provide information about the health benefits of using them (104, 105). Promoting “contact with nature” has already been recognized as an important public health intervention to prevent mental illness (94), therefore, marketing outdoor apparel and equipment in the context of improving mental health can also increase its value proposition. Similarly, yoga studios and companies producing yoga apparel have opportunities to create associations between their products/services and respective health benefits ([Table 1](#)). One example of expanding value proposition of otherwise commercial services is biophilic interior design fostering self-care for people living with migraines, chronic pain, and depression (106).

Digital marketing includes diverse types and strategies (107). [Figure 1D](#) illustrates examples of digital media channels applicable for “health education as marketing” campaigns. In addition to more traditional channels (e.g., social media ads, digital ads, and radio/TV ads), there are expanded opportunities for promoting health benefits of self-care *via* connected TV (CTV) ads, digital magazines, and podcasts. Video- and audio-based channels can be used for digital storytelling, which has already been used as education, marketing, empowerment, and health promotion tools (108–111). It is noteworthy that multimedia communications enable more effective outreach covering diverse demographics and interest groups.

There are apparent limitations to developing and implementing “health education as marketing” campaigns, which include ethical, regulatory, and methodological aspects (103, 112–117). All three aspects are interconnected, while ethical and regulatory aspects are also related to the quality of evidence based on which health-related claims are communicated as marketing messages. When delivering health-related information in commercial ads, it is critical to avoid deceptive marketing practices leading to consumers’ false beliefs and eventually impacting a company’s value (118). It is important that the information presented is truthful and substantiated, as stated by the Federal Trade Commission (FTC), while claims must be backed by sound, unbiased and the state-of-the-art scientific evidence. The FTC monitors for violations of fair advertising practices. Ethical issues of using digital media in public health and greater consumer protection from deceptive digital marketing have been acknowledged (119, 120). While self-care practices discussed here are considered relatively safe, it is important to emphasize that any misinterpretation of health promotion delivered as marketing information can place some individuals at risk. Implementing public health risk/benefit assessment will help to inform all stakeholders about long-term outcomes of “health education as marketing” campaigns.

The balance between opportunities and limitations of the “health education as marketing” strategy will define development, implementation, and scale-up of digital marketing

and advertising campaigns for diverse consumer products and services. Herein, we showed only examples of products/services associated with nature, yoga and music. Additional prospects include products and services associated with physical exercise (wellness and fitness industry), aromatherapy, sleep hygiene, and diverse forms of relaxation as means to reduce stress.

7. Conclusions

In this perspective article, we describe opportunities to expand health education and promotion related to self-care. Public health and non-profit spending is inadequate to bridge the gap between the prevalence of chronic diseases and positive outcomes of health promotion, thus necessitating more engagement from the commercial sector (e.g., private and public companies and corporations). The promotion of health benefits of self-care can be incorporated into commercial marketing of products and services related to contact with nature, yoga practice, and listening to music. These self-care modalities have been shown to reduce chronic pain and depressive symptoms, leading to better treatments and prevention of these two major chronic diseases. The development and implementation of the “health promotion as marketing” strategy requires integration of rigorous scientific evidence and ethical marketing strategies. We hope that this article will contribute to advancing public health interventions aiming to reduce chronic disease prevalence and burden.

Data availability statement

The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding author.

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Author contributions

GB conceived the project. JH and GB performed the literature review and wrote the manuscript. Both authors contributed to the article and approved the submitted version.

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Conflict of interest

GB is a founder and owner of OMNI Self-care, LLC, a health promotion and consulting company creating digital content for disease self-management and self-care. This work is part of an internship of JH with OMNI Self-care, LLC.

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