mHealth in Physical Therapy Practice: What Consumers Want?

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Abstract

Purpose: Health-care delivery mode system has been evolving over the years. There has been an increase in adoption of mHealth technologies by health-care clients and providers. Physical Therapy and Society Summit (PASS) was sponsored by APTA in 2009. It envisioned current, evolving, and future health care needs that could be addressed by physical therapist. Recent COVID-19 pandemic has modified ways of working and addressing various needs for health care. This has led to adding finding new strategies to establish new normal of functioning. The focus should be on adding value-based practice with the consumers as key stakeholders. Thus, the authors aim to provide a literature review framework for mHealth in physical therapy practice and also understand consumer behavior and what are their wants from this emerging mode of health-care delivery. **Methodology:** Literature was assessed by comprehensive computerized search from January 2020 to July 2020 form multiple databases. In addition, to increase the search accuracy, reference lists of articles were also searched. Forty-six free; full-text articles, systematic reviews, RCT's, health policy perspectives, global surveys, and guidelines were included for the literature review frame work. Consumer behavior and needs were assessed using a designed questionnaire through online survey sent through various social platforms. **Conclusion:** mHealth is a definite evolving change in physical therapy practice. Focus should be on Android-based application for a probable 85% target population. Self-assessments, treatment interventions, activity tracking, and report documentation are the key features consumers look for.

Keywords: Consumer behavior, Consumer needs, eHealth, mHealth, Telemedicine, Telerehab

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Introduction

World has been changing very dynamically in the past few decades, with the revolutionary information technology (IT) development.[1,2] Physical and mental well-being is essential to increase the productivity and optimal functioning of any individual.

The WHO defines "Health" as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."[3]

Well-being is a multidimensional construct that encompasses multiple dimensions such as mental well-being, social well-being, activities and functioning, physical well-being, spiritual well-being, personal circumstances, and overall well-being in global sense. All these dimensions of well-being contribute to the WHO definition of "health."[4,5]

With advent of technology and digitalization, use of computers for work-related tasks has prolonged. It has brought about changes in work culture and organization operations affecting the use of office professional's physical and mental potential. Neck pain is commonly reported to[6] limit function in[7] office professionals with intensive use of computers.[6,8] At some point in time, about two-thirds of people experience neck pain.[9]

Interventions using digital technology have enormous potential as they have an ease of accessibility and personalization. According to a research by Accenture, there is increase in use of digital technology for health care each year. Research shows increase across the use of mobile for the same. Nearly half (48%) of health-care consumers use mHealth apps.[10]

The World Health Organization's (WHO) Global Observatory for eHealth (GOe) has defined mHealth or mobile health as "medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices".[11]

Using mobile-based digital technology in assessing symptoms, lifestyle monitoring and patient-centered training

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are probably the new era of health-care management. Mobile-based health apps are an emerging field of mHealth. mHealth and telehealth can be perfectly viewed in alignment with the Revised Research Agenda for Physical Therapy.[12] This includes developing innovative medical informatics applications for physical therapy and assessing their impact on clinical decision-making.

Thus, the authors aim to provide a literature review framework for mHealth in physical therapy practice and also understand consumer behavior and what they want from this emerging mode of health-care delivery.

Methodology

Literature was assessed by comprehensive computerized search from January 2020 to July 2020 form databases such as PubMed, J-Gate, Web of Science, CINAHL, Cochrane Central, Scopus, and

Google Scholar. Keywords mHealth, telerehab, telemedicine, evolution, history, physical therapy, health, well-being, outcome measures, physical well-being, and mental well-being were used with Booleans AND and OR. In addition, to increase the search accuracy, reference lists of articles were also searched. Mendeley for Windows was used for reference keeping. The second author reviewed and revised the manuscript.

Seventy-eight records from databases and nine records from other sources were identified. After duplication screening, 35 records were removed. Fifty-two records were screened of which six records were excluded. Forty-six free; full-text articles, systematic reviews, RCT's, health policy perspectives, global surveys, and guidelines were included for the literature review frame work.

Consumer behavior and needs were assessed using a designed questionnaire through online survey sent through various social platforms which were live for 1 month.

DISCUSSION

Health, Well-being and Physical Therapy

"Health" as defined by the WHO is "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."[3]

In the past two decades, we have seen and acknowledged a rise in the importance of well-being.[13] This has seeded many interdisciplinary research work, gaining attention of government,[14,15] and public interest toward well-being.[16]

Well-being is widely defined as a multidimensional construct encompassing multiple domains of human functioning.[4,5,17] Seven dimensions of well-being are identified in literature[4,17,18] which include, mental well-being, social well-being, functioning, physical well-being, spiritual well-being, personal circumstances, and overall well-being in global sense. All these dimensions of well-being contribute to the WHO definition of "health."

In 1979, following "Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention." The U.S. Department of Health and Human Services (HHS) started with the initiative Healthy People. Healthy People 2030 is now in its fifth edition of their initiative. They have a mission; "To promote, strengthen, and evaluate the Nation's efforts to improve the health and well-being of all people." Two of the seven foundation principles of Healthy People 2030 consider (i) health and well-being of all people essential for a thriving, equitable society and (ii) promoting health and well-being and preventing disease are linked efforts that encompass physical, mental, and social health dimensions.[19] Four Foundation Health Measures used for the initiative are general health status, health-related quality of life and well-being, determinants of health, and disparities.[20]

Physical therapists play a unique role in providing prevention, health, well-being, wellness, and fitness activities needed to address these concerns. The Guide to Physical Therapist Practice 2[21] describes various ways in which physical therapists contribute to health and well-being.

Optimal physical and mental well-being is essential for optimal functioning and productivity of any individual. The dimension of physical well-being refers to the quality performance of activities and bodily functioning. It comprises having the energy to live well, the capacity to sense the external environment, our past and present experiences of pain and comfort.[4] AANA (American Association of Nurse Anesthetists) defines; a state of physical well-being is not just the absence of disease. It includes lifestyle behavior choices to ensure health, avoid preventable diseases and conditions, and live in a balanced state of body, mind, and spirit.[22]

Mental well-being assesses an individual's psychological, cognitive, and emotional quality. It comprises the thoughts and feelings that a person has about the state of their life and their experience of happiness.[4]

Measurement instruments for well-being have been developed for the multiple models and categories which conceptualize well-being.

Myles-Jay Linton et al.[4] in a review study systematically identified well-being instruments, explored the dimensions within the instruments and also how the instruments have developed over time. They included instruments which were designed for adults, generic and were available in English version from 1993 to 2014 which was complemented by web searches and expert consultations through 2015. They included 99 self-reported measures of well-being results of which identified 196 dimensions within them. The key domains identified were mental well-being, social well-being, physical well-being, spiritual well-being, activities and functioning, and personal circumstances. Diener's model of subjective well-being and the WHO definition of health were the most referred theories in designing of the tools. The authors have also illustrated the instruments that measure each of the identified dimensions within the framework of well-being. This systematic review provides a comprehensive organized toolkit of instruments. However, the authors bring in light the need to attentively identify what needs to be assessed under the umbrella of well-being. They suggest that the most appropriate measure of well-being depends on the dimension of well-being of interest. Furthermore, there is a need to be more explicit about the dimension under evaluation.

Technology and mHealth

World Wide Web was introduced in 1990. Since then, it has brought about the biggest change in acquiring information which the modern world has seen.[23] Mobile phones have been one of the most exciting technological developments over the past few years. According to the International Telecommunication Union (ITU), there are now over 5 billion wireless subscribers; over 70% of them reside in low- and middle-income countries.[20] This means that in less than three decades, 3.2 billion people can access the internet with ease.[24]

The World Health Organization's (WHO) Global Observatory for eHealth (GOe) defines mHealth or mobile health as "medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices".[11] The National Institutes of Health (NIH) has defined mHealth as "the use of mobile and wireless devices (cell phones, tablets, etc.) to improve health outcomes, health-care services, and health research".[25] In rehabilitation, telehealth is defined by the American Physical Therapy Association (APTA) as "the use of electronic communications to provide and deliver a host of health-related information and health-care services, including, but not limited to, physical therapy-related information and services, over large and small distances".[26] Telehealth may be used to provide health education and advice, communicate patient reminders, monitor clinical status, or deliver interventions.

Google Trends shows mHealth as a topic, growing in interest worldwide and in India in the past 12 months. mHealth market is valued at USD 33.84 Billion in 2018 and expected to reach USD 214.97 billion by 2025 with the CAGR of 30.23% over the forecast period.[27] mHealth is the practice which is reinforced and sustained by mobile devices and supports public health interests.[28] It is becoming one of the extensive platform for promotion of self-care, improving patient-centered care (PCC)[29] and prompting the progression of health literacy.[30] mHealth has the potential to empower patients with information and management of their own health and supply data for predictive modeling of at-risk populations. mHealth is thus considered as a new horizon for health through mobile technologies.

mHealth; as a Health-Care Delivery Mode

Amy Leigh Rathbone et al. in a systematic review from January 2008 to January 2017 studied the efficacy, usability, and feasibility of mobile apps and SMS messages as mHealth interventions for self-guided care. Authors provide a distinctive awareness of the feasibility of mobile apps and SMS text messaging as physical and mental health interventions, alongside the usability. A total of 27 studies, inclusive of 4658 participants, were reviewed. They reviewed 19 randomized controlled trials, seven within-group studies, and one within-group study with qualitative aspect. Studies showed improvement in physical health and significant reductions of anxiety, stress, and depression. Study reported that usability and feasibility of mHealth interventions gave promising and significant results. Authors conclude while highlighting the fact that mHealth interventions can positively address toward physical and mental health issues. Although further research is indicated in the field, this review has provided promising evidence toward apps and SMS text messaging as a method of self-care, has the potential to encourage a healthier lifestyle, thus improving patient compliance. Through mHealth interventions, patients become active participants within their health-care delivery mode. However, authors suggest need for more research directed toward testing and validation of apps and SMS texting messaging interventions and their efficacy as a mHealth intervention.[31]

Stephanie Schoeppe et al.[32] in a systematic review studied the efficacy of interventions that use apps to improve physical activity, diet, and sedentary behavior. In their systematic literature searches, five databases were used to identify papers published between January 2006 and October 2016. They included studies which used a smartphone app in an intervention to improve diet, physical activity, and/or sedentary behavior for prevention. Interventions included were either stand-alone interventions using an app only, or multicomponent interventions including an app as one of several intervention components. Outcomes measured were changes in the health behaviors and related health outcomes (i.e., fitness, body weight, blood pressure, glucose, cholesterol, and quality of life). A total of 27 studies were included out of which 21 studies targeted physical activity out of which 14 showed significant health improvements. Most studies had goal-setting, self-monitoring, and performance feedback as part of the interventions in the app design. Some interventions also incorporated motivational messages, health education/tailored advice, reinforcement, gamification, social support through interaction with peers, and friendly team challenges. The authors conclude by suggesting that interventions using apps are promising. However, stand-alone app interventions remain to be tested further in controlled trials. There is a considerable scope to improve the efficacy of app-based interventions. They suggest further research areas of intervention studies gathering more app usage statistics to identify factors that improve user engagement and retention, and its relationship with intervention efficacy. This could help determine optimal information needed to maximize user engagement and ultimately intervention efficacy.

mHealth; a New Change in Physical Therapy Practice

Health-care delivery mode and system have evolved over the years. With the advent of smart phone technology, it is not hard to believe that geography has become history. This has increased the adoption of mHealth technologies by health-care providers and patients. Physical Therapy and Society Summit (PASS)[33] proposed that activity monitoring and telerehabilitation could be the technology drivers of change in physical therapy practice.[34]

Alan. Lee et al. in their paper on Telehealth as a Means of Health Care Delivery for Physical Therapist Practice[35] suggested that the challenge is to envision physical therapy practice in the dynamic digital age. They put spot light on the view that physical therapy practitioners should explore and embrace telehealth as means of health-care delivery mode for physical therapists. The focus on adding value-based practice with the consumers as key stakeholder should be stressed on.

In the consumer behavior and needs online survey which was sent through various social platforms and was live for 1 month, a total of 237 participants responded of which 31.6% were male and 68.4% were female. About 31.2% were Apple iOS users while 68.8% were Android users. About 31.2% of participants were positive in using a mobile application for receiving physiotherapy, 54.5% were potential may be category, and only 14.3% users were not keen in using any mobile application-based intervention. Features which the consumers would like to use in a mobile application were self-assessment 63.5%, treatment training videos 56.8%, online consultancy 44.6%, reminders for treatment sessions 41.9%, activity tracker 40.5%, medical reports upload for individual profile 37.8%, and daily pain tracking 32.4%.

The Revised Research Agenda for Physical Therapy[12] includes developing innovative medical informatics applications for physical therapy and assessing their impact on clinical decision-making. mHealth and telehealth can be perfectly viewed in alignment with this agenda. Health-care industry has actually been lagging in comparison to other industries in adopting technological development and using it for improving the overall efficiency of the operations.[36]

Furthermore, the recent COVID-19 pandemic has changed many norms in addressing various needs for health care. Ministry of Health and Family Welfare Government of India has moved toward digitalizing health-care delivery by launching eSanjeevani OPD a National Tele consultation service.

There is a definite need to pick this as an opportunity to adopt, develop, and implement ways to incorporate mHealth as a mode of health-care delivery system. Emphasizing primary prevention and patient-centered care which may include screening, data collection to establish relationship to identify individuals who would benefit from intervention, activities designed for health promotion, and specific educational and exercise programs

that teach prevention and provide interventions for identified problems.

CONCLUSION

Through this literature review framework and consumer survey, the authors suggest that mHealth is a definite change in physical therapy practice. It is an emerging area of health-care delivery which should be developed by understanding the needs of different population sets for which the mobile health apps are developed. The developed apps should also be assessed for its usability and efficacy on outcome measures to build an evidence-based approach for this emerging mode of health-care delivery.

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