Preface

Several terms have been used interchangeably, such as telehealth, telemedicine, and digital health, but these are not. Telehealth refers to the comprehensive and broader strategy of providing care, training for developing health professionals, administrative meetings or electronic patient records, and other patient services. Telemedicine is a specific application of telehealth that enables clinical care delivery at a distance, with technology being a means and not an end. Digital health is enriched by technology trends such as augmented reality, robots, artificial intelligence, and big data to analyze information and propose treatments, although it does not necessarily mean direct contact with patients.

This book focuses on telemedicine as a social, digital, and connectivity strategy that utilizes telecommunications and technologies to enable new healthcare formats in the broadest sense. It integrates different forms of transmission: voice, sound, video, images, and text; also, communication technologies: telephone lines, satellite networks, and the Internet; and it does so through different user interaction interfaces: computers, physical telephones, cell phones, robots, and some other peripherals.

Some of its benefits are receiving care at home, which is a need especially for people who cannot easily travel to private offices and care centers, and the professional "portability," which refers to having access to care by specialized health professionals who are in a distant location. Additionally, one benefit is receiving care at special schedules, when a medical emergency arises in the middle of the night or during weekends. It also enables increased communication with health care providers, for example, patient monitoring, and the most obvious, the lower cost for the patient, since virtual visits make it possible to optimize costs in the management and logistics of the care process.

Their applications are varied; for example, to care for a patient with diabetes, providers can use a cellphone to document food, medications, blood sugar levels for nursing staff to do electronic monitoring in a database and suggest specific strategies. As health professionals, we can use a mobile app to estimate the amount of insulin needed based on diet and physical activity level. In addition, the healthcare team could provide videos that support an educational strategy to improve the level of adherence to management or treatment.

Although its benefits are vast and recognized, there are some barriers to its mass adoption, such as the lack of ethical and legal regulations, the lack of resources and infrastructure to offer a sustained telehealth service, and the lack of evidence to demonstrate the impact it has on the relationship between the health care provider and the patient. The latter refers to health professionals from different disciplines, nurses, nutritionists, physicians, psychologists, and the administrative team immersed in clinics, hospitals, and other health care centers.

THE CHALLENGES

International news agencies have labeled the COVID-19 pandemic the most significant challenge we face as humanity since World War II. Since its appearance at the end of 2019, this virus has spread to all corners of the globe. The costs have been huge, more than 200 million people have been infected with the virus, and we have lost over four million people who died from COVID-19 related complications. As a result, the new "normal" of doing things demands urgent changes in our relationship with the community.

The challenge of caring for the health of patients and their families, and our surrounding communities, is titanic. How do we provide quality health care during this crisis? How do we continue caring for chronically ill patients while avoiding exposing them to unnecessary risk? One of the most popular solutions is telemedicine, which we will address in this book.

Although telemedicine existed before the pandemic, it was more like a dreamy proposal used in limited conditions such as rural communities that access care remotely as part of a health system and in elite hospitals that can afford to experiment with high tech. It was a trend that could be opted in or out. However, the current adoption has proven that telemedicine is no longer optional and is here to stay. Health professionals need to adapt and learn to be competent providers in presence-based or distant models. For them, this book is a practical guide to structure training and include telemedicine as a feasible alternative to care for patients.

The need emerged amid the pandemic to provide patients with support and guidance, but it also brought opportunities for students to continue training and be involved in this once-in-a-lifetime experience. Although institutions were not prepared for a crisis of this magnitude, the challenges have made them thrive as a community learning from the experience. Many innovative proposals were developed to accompany the students in their first encounters with patients, other developed simulated scenarios where students could experiment with the dynamics and critical decision-making on public health and recreated virtual laboratories. Through the different chapters, the readers could examine and contrast the different experiences to develop their alternatives on maximizing the potential of available technologies and infrastructure of telehealth, telemedicine, and e-health.

ORGANIZATION OF THE BOOK

This book is organized into two sections: 1) "Caring for Patients and Communities" and 2) "Applications in Health Education." The first section analyzes experiences and reflections on how different specialties incorporate telemedicine to deliver care.

Chapter 1, "Telemedicine: A Bridge to Unprivileged Populations," challenges the incorporation of telemedicine to reach vulnerable communities, particularly low-income, rural communities and minorities who often lack access to comprehensive health. The authors call for the development of cooperation programs between the different parties and sectors within the health system to use technology as a feasible way to bridge the gaps of care. The chapter integrates a critical analysis of applications in different specialties and includes its contributions to patient-centered care.

Chapter 2, "Telenutrition: The Fine Line Between Nutritional Coaching and an Effective Professional Practice," describes a model to develop an effective nutritional practice that can help patients take control of their health. First, the authors describe how the traditional steps in nutritional care: assessment and reassessment, diagnosis, intervention, and monitoring and evaluation, take place in a telemedicine format.

Next, the chapter presents a critical review of previous experiences to manage obesity, diabetes type 1 and type 2, arterial hypertension, celiac disease, epilepsy, chronic kidney disease, and malnutrition. To finalize, the authors discuss the application of bioethical aspects to telenutrition, for both nutritionists and patients.

Chapter 3, "Design Specification for an M-Health Solution to Improve Antenatal Care: Analytical and Technical Perspective," presents the process of development and validation of a Mhealth solution. First, the authors describe how limited the use of technology was. Its uses would be on booking and managing appointments. However, through a participatory process with patients, practitioners, and developers, they designed a feasible solution to improve the quality of care. Next, the chapter describes the development and evaluation methodology of the solution. A significant contribution is an analysis of how the technical and conceptual needs are addressed. To finalize, the authors discuss future projects such as the opportunity to predict health risks in pregnancy through data analytics and its documentation in health records.

Chapter 4, "Going Online! A New Model for Telepsychology Considering Adjustments for Online Clinical Interventions," presents the alterations that psychology went through to offer mental health interventions despite COVID. Although telepsychology existed before the pandemic, it broadened the interaction amid the sustained isolation enduring during this period. The authors describe the challenges for health professionals to develop new skills and the need to include those in the undergraduate educational programs.

Chapter 5, "The Challenges of Training in Psychology: Lessons Learned During COVID-19 With a View to the Future of Psychology Education," reflects on the evolution of paradigms on psychology. These conceptions are not only part of the clinicians' practice but are reflected as well in how universities train the new generations. The author describes educational practices that were implemented during the COVID-19 pandemic and analyzes how these can be integrated into the curriculum. Finally, this chapter discusses the new demands of the creation of new educational programs in psychology.

Chapter 6, "Disease Awareness Campaigns: Education for Citizenship in Medical Schools," explains the need for health sciences programs to develop both disciplinary and transversal skills. Although these transversal skills, often called soft skills, have always been an essential part of the character of physicians, psychologists, odontologists, and nutritionists, the pandemic has amplified the need to prepare graduates for uncertainty. Citizenship, in particular, has made thousands of health sciences students graduate early or take volunteer roles to help battle the pandemic. Finally, this chapter discusses a proposal for engaging students in disease awareness campaigns focusing on different health problems.

Chapter 7, "They Won't Teach You This in School: Education in Type 2 Diabetes Mellitus, a Social Media Campaign," discusses the need to educate in Type 2 Diabetes Mellitus. As the number of patients battling to control the disease during adulthood increases, awareness of the risk factors needs to grow. At first, the authors describe the complexity of the problem and the health implications. Later, they describe traditional strategies for patient education and analyze advantages for different formats. Finally, the chapter describes a campaign using social media to reach the younger generations in a format and tone that sparks awareness.

Chapter 8, "Dyslipidemia Awareness Campaign: A Beautiful Day to Save Lives," describes the challenge that health professionals face in changing from *managing the disease* paradigm to *caring for health*. For example, at-risk patients with high cholesterol and triglyceride levels often receive dietary and lifestyle changes once detected. However, the problem is more complex, as dyslipidemias, or lipid and cholesterol metabolism alterations, might also be present. The chapter presents how innovative solu-

tions in telemedicine leverage emergent technologies and connectivity as an intervention to strengthen awareness and inform the public about dyslipidemias.

Chapter 9, "Ending Health Promotion Lethargy: A Social Media Awareness Campaign to Face Hypothyroidism," presents strategies based on social media to describe the often missed signs of hypothyroidism. In addition, the authors describe that, either congenital or that symptoms occur later in life, complications might arise. The proposed digital strategy of patient education has two phases: digitalization of multiple learning activities and evaluation and assessment strategies.

Chapter 10, "Social Media Campaign as a Tool for Patient Education of Disease Prevention and Health Promotion: Digital Health Campaign on Osteoporosis Knowledge," depicts the results of an Instagram-based campaign to reach youth and inform them about health. The topic that the authors targeted was osteoporosis. The intervention proved to be effective in translating journal articles, evidence-based research, and health consensus in a validated ut simple way to reach the communities where we work, serve and live.

The second section reflects on how the transformation in health sciences and technology is changing education. Universities and academic health centers need to foster learning environments that are an academic challenge and a safe place to grow as professionals and individuals.

Chapter 11, "The Revolution of Education Accelerated as a Consequence of the Pandemic," describes the transitions and transformation that medical education faced during the COVID-19 pandemic. The authors categorize the changes in theoretical and more hands-on experiences such as simulation. Finally, the chapter proposes recommendations for complementing clinical training as an immediate response to assure academic continuity.

Chapter 12, "Updating Training in the Medical Field: The TARGET Model and Its Applications to Remote Learning," presents a framework to analyze the curriculum transformation to remote learning. The authors argue that focusing on maximizing mastery, self-efficacy, reflective practice, and deliberate practice must be part of the training model of new generations of health professionals.

Chapter 13, "Teaching Clinical Skills During Pandemic Times: Online Clinical Simulation," presents a framework for online simulation practices. First, the authors assess the readiness for online practices and present instruments to guide the process. The last part of the chapter discusses the implementation and provides valuable recommendations for newcomers and experienced educators that decide to embark on the online clinical simulation.

Chapter 14, "Undergraduate Medical Training in Communication Skills: From Face-to-Face to Virtual Environments," shows the need to train medical professionals in communication skills to offer accurate identification to patients, improve treatment adherence, and increase the effectiveness of the health team dynamics. Through sharing an experience in Colombia, the authors highlight different elements of how communication was taught in the presence-based format and how those practices were transformed in the distance model.

Chapter 15, "The Role of Telemedicine and Globalization in Medical Education," reflects on the changes that the pandemic made in residency programs. The critical part of the training is acquiring complex skills, such as surgical procedures, which brought an additional challenge for instruction. The authors describe strategies such as globalization groups in e-learning and telemedicine in the programs to reflect the professional practices that graduates will face.

Chapter 16, "Telesimulation and Academic Continuity of Health Professions Education," presents definitions of key terms associated with telesimulation. The authors describe specific processes and re-

sources to enable this practice in health sciences. Finally, the chapter gives examples of implementations that the authors have made and provides guidance on how readers can implement their own.

Chapter 17, "Focusing on Continuous Professional Development for Health Professionals: The Inward Transformation," describes the vital need for professionals to engage in life-long learning. After graduation and specialization, the educational journey is mainly settled by the employer, either the university or the hospital. In it, the professionals continue training the skills and knowledge that are a need for their jobs. Few question if that is the pathway they want to pursue or if it will prepare them to fulfill their professional and personal dreams. The chapter proposes a model to analyze and develop a continuous professional development plan.

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