

# Telemedicine after COVID-19: The Israeli Perspective

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The first half of the year 2020 might be remembered as important for telemedicine in Israel amid the coronavirus disease-2019 (COVID-19) outbreak. The immediate deployment of video conferencing technologies and digital monitoring systems during the Covid-19 outbreak demonstrated the acceptance and ability of medical staff to cope with technology, which is usually one of the barriers to the successful implementation of telemedicine [1].

Telemedicine has long been established as a treatment modality. The progress of communication and information technologies throughout recent decades both in capacity and quality facilitated its massive implementation worldwide [2]. Although published studies in Israel demonstrated the clinical effectiveness and cost-effectiveness of telemedicine, as well as improved patient quality of life, its implementation as a mainstream service remained relatively slow [3,4].

A PubMed search (using the terms: MeSH “telemedicine”, “telehealth”, “remote care” and “Israel”) of studies on the evaluation of telemedicine in the Israeli clinical environment over the last 5 years yielded only a limited number of clinical research specialties, which may indicate limited attention given to the remote patient care in a pre-pandemic era [Table 1].

During the COVID-19 outbreak, telemedicine was mentioned as a major modality of patient care. However, the question of telemedicine development and deployment amid COVID-19 and beyond remains open with additional challenges to be met for successful dissemination of telemedicine.

First, the labor agreement, legal and fiscal, of a physician utilizing telemedicine, has to be defined, given a new promising clinical treatment modality. The existing physician's anxiety of an increased workload due to an additional treatment method would be resolved, leading to a wider remote care acceptance.

The actual development and deployment of telemedicine as a mainstream service require a multi-faced approach including clinical, technical, legal, financial, and organizational considerations, rather than just utilizing the existing communication facilities. While the general concept of telemedicine today is a well-defined, there is no uniform telemedicine application or setup [2]. Additional research would be appropriate to demonstrate the effectiveness of remote medical care in each specific morbidity and environment. Evidence-based considerations may lead to better health care.

Contrary to some concerns, telemedicine as a remote care method may not replace the standard face-to-face intervention in all morbidities. Probably the effective way of utilization would be a consolidation of both. A demand for a physical check-up would be satisfied in both self-care and an assisted-care mode. Virtual sessions following the initial face-to-face intake may save

patient visits to the hospital/clinic, and effort in time and costs related to travel, parking, and loosing working hours. Subsequently, it may lead to better satisfaction and patient quality-of-life. Medical and support staff may gain a better working environments with less crowded waiting rooms. Consolidation of methods may be a win-win solution to stakeholders and patients, including better distribution of medical services within a country.

During the COVID-19 outbreak, many hospital employees had to be quarantined at home, intensifying the enormous workload imposed by the pandemic. The remote availability, if provided similarly to high-tech workers from home, of this much-required staff, would mitigate some of the stress at the corona wards. However, a COVID-19 outbreak demonstrated that only those who had operational telemedicine services could respond to the immediate demand imposed by the highly contagious environment [5].

Telemedicine may change the effectiveness of treatment and the pattern of treatment and may increase the availability of medical care. New jobs and positions may be needed to define, design, and support telemedicine services [1]. The conditions for the successful deployment of telemedicine in Israel are promising: the population has unique identification numbers, digital medical records kept in large databases, medical insurance is provided to all, a level of medicine is high, communication technologies are of good quality and availability countrywide.

**Table 1.** Published studies of telemedicine in Israel from 2016 to 2020

#	Authors and title	Population size	Study type	Comparator	Conclusion
1	Haimi M, Brammli-Greenberg S, Baron-Epel O, Waisman Y. Assessing patient safety in a pediatric telemedicine setting: a multi-methods study. <i>BMC Med Inform Decis Mak</i> 2020; 20 (1): 63.	339	Retrospective mixed method	Safety of a pediatric telemedicine service	Overall high patient safety in the pediatric tele-triage service
2	Shemesh T, Barnoy S. Assessment of the intention to use mobile health applications using a technology acceptance model in an Israeli adult population. <i>Telemed J E Health</i> 2020; 10.1089/tmj.2019.0144.	168	Questionnaire-based survey	Factors affecting behavioral intention to use mHealth apps in an Israeli adult population	Developers of health care-related technologies will need to elucidate the behavior using technology
3	Chudner I, Goldfracht M, Goldblatt H, Drach-Zahavy A, Karkabi K. Video or in-clinic consultation? selection of attributes as preparation for a discrete choice experiment among key stakeholders. <i>Patient</i> 2019; 12 (1): 69-82.	Ten focus group interviews	Qualitative study	Attributes and levels for a discrete choice experiment (DCE) of stakeholders' choice-VC or traditional in-clinic consultation (I-CC)	Adds to the literature about the stakeholder benefits in the area of telemedicine in healthcare
4	Gamus A, Chodick G. Costs and benefits of telemedicine compared to face-to-face treatment in patients with lower extremity ulcers. <i>Adv Wound Care (New Rochelle)</i> 2019; 8 (7): 291-7.	650	Observational study	Costs and benefits of telemedicine in Lower Extremities Ulcer treatment	Telemedicine costs per patient may be lower than the face-to-face intervention
5	Haimi M, Brammli-Greenberg S, Waisman Y, Stein N, Baron-Epel O. The role of non-medical factors in physicians' decision-making process in a pediatric telemedicine service. <i>Health Informatics J</i> 2020; 26 (2): 1152-76.	339	Mixed method	A role of non-medical factors in doctors' decision-making process in a telemedicine setting	Non-medical factors have an impact on doctor decisions
6	Video instead of in-clinic consultations in primary care in Israel: discrete choice experiment among key stakeholders-patients, primary care physicians, and policy makers. <i>Value Health</i> 2019; 22 (10): 1187-96.	508 patients, 311 physicians, and 141 policy makers.	Survey	To quantify the preferences of key stakeholders	Findings show key stakeholders' preferences about VC integration
7	Power gaps among stakeholders in Israel's primary care and the role of primary care physicians' relative power in their intention to use video consultations with patients. <i>Telemed J E Health</i> 2020; 26 (2): 190-204.	508 patients, 311 PCPs, and 141 PMs	A convergent parallel mixed-methods design	Primary care physicians, of patients and policy makers' views of their power to use video technologies	Primary care physicians power should be strengthened by
8	Maor E, Abend Y, Ganem D, et al. Sex disparities in first medical contact of patients with suspected acute coronary syndrome using telemedicine technology. <i>Telemed J E Health</i> 2020; 26 (4): 411-18.	14420 calls	Observational study	Sex differences in first medical contact using telemedicine	Women with prehospital chest pain or ischemic ST segment changes tend to seek medical help later than men
9	Gamus A, Kaufman H, Chodick G. Remote care of lower extremities ulcers: an observational pilot study. <i>IMAJ</i> 2019; 21 (4): 265-8.	111	Observational pilot study	The effectiveness of a telemedicine with the face-to-face treatment	Telemedicine may be a feasible and efficient method for LEU treatment

#	Authors and title	Population size	Study type	Comparator	Conclusion
10	Gamus A, Keren E, Kaufman H, Chodick G. Synchronous video telemedicine in lower extremities ulcers treatment: A real-world data study. <i>Int J Med Inform</i> 2019; 124: 31-6.	650	A Real-world data study	Effectiveness of synchronous video Telemedicine compared to the conventional face-to-face treatment	Synchronous video- based telemedicine may be a feasible and efficient method of LEU management
11	Haimi M, Brammli-Greenberg S, Waisman Y, Baron-Epel O. Physicians' experiences, attitudes and challenges in a pediatric telemedicine service. <i>Pediatr Res</i> 2018; 84 (5): 650-6.	15	Qualitative study	Experiences, attitudes, and challenges of the physicians in a Pediatric Telemedicine Service operated in Israel	Special measures are needed to obtain proper diagnosis and decisions
12	Yulzari R, Bretler S, Avraham Y, Sharabi-Nov A, Even-Tov E, Gilbey P. Mobile technology-based real-time teleotolaryngology care facilitated by a nonotolaryngologist physician in an adult population. <i>Ann Otol Rhinol Laryngol</i> 2018; 127 (1): 46-50.	48	Prospective Study	To evaluate the use of mobile teleotolaryngology facilitated by a nonotolaryngologist physician	Synchronous telehealth consultations, facilitated by a general physician, can be an alternative to visiting a general otolaryngology clinic.
13	Gur M, Nir V, Teleshov A, et al. The use of telehealth (text messaging and video communications) in patients with cystic fibrosis: A pilot study. <i>J Telemed Telecare</i> 2017; 23 (4): 489-93.	18	Pilot Study	To assess the feasibility of using WhatsApp and Skype to improve communications	A telehealth-based approach was feasible and acceptable in this pilot study
14	Kizony R, Weiss PL, Harel S, et al. Tele-rehabilitation service delivery journey from prototype to robust in-home use. <i>Disabil Rehabil</i> 2017; 39 (15): 1532-40.	82	Retrospective Study	Clients with acquired brain injury enrolled in a tele-motion-rehabilitation service program .	The service appears to be feasible clinical outcomes related to improvements in upper extremity function
15	Leshem-Rubinow E, Assa EB, Shacham Y, et al. Expediting time from symptoms to medical contact utilizing a telemedicine call center. <i>Telemed J E Health</i> 2015; 21 (10): 801-7.	46556 calls	Retrospective observational study	Telemedicine and characterization of its utilizers for its efficacy in reducing this possibly life-threatening time lag	A telemedicine system could be a promising strategy for shortening the time between symptom onset and a call

**CONCLUSIONS**

The greater management acceptance of telemedicine by decision makers and greater willingness to fund its deployment may lead to accelerated dissemination of the technology to cope with the ever-growing needs of the Israeli health-care system, and allow quick response in times where face-to-face visits are not accessible.

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