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A systematic evaluation of teledermatology in medical student, postgraduate trainee and international dermatology education

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INTRODUCTION

Medical students and trainees have become more familiar with teledermatology as a result of the COVID-19 pandemic, both for the purposes of clinical practice and education. Core rotations and preclinical years rarely provide medical students with sufficient dermatology experience. Given that >35% of patients reporting to primary care providers have dermatologic complaints, there is a need for new modalities for dermatologic education. In the case of residents, teledermatology was a means to sustain education during the COVID-19 pandemic. Given that 0.3% of medical schools' curricula are dedicated to dermatology, it follows that many students report being unfamiliar with managing basic dermatologic conditions. Surveys show that residents are generally interested in teledermatology education, but are typically limited by a lack of resources or experience. The literature indicates mixed reviews on the effectiveness of online curricula in comparison to live, in-person teaching.

DESCRIPTION

Additionally, several programs have introduced resident-led teledermatology clinics and multi-provider visits, in which both residents and attending interact with patients from remote areas to formulate assessments and treatment plans. The need for teledermatology in education is perhaps most acute in the context of global health, where surveys indicate that research efforts and funding are severely lacking in comparison to the burden of skin disease [1].

Residency programs have expressed interest and indicated that telemedicine would be helpful in evaluating residents. In this systematic review, we evaluate outcomes from teledermatology interventions for dermatology trainees worldwide and in the United States. Designing scalable teledermatological interventions could be rewarding in addressing the need to provide dermatological care to underserved regions in a cost-effective manner. The number of patients seen, diagnostic accuracy in comparison to control groups, resident-provider concordance rates, and self-reported satisfaction and improvement were all common outcomes for interventions aimed at resident education [2].

Three studies report that evaluating residents by measuring resident-provider concordance rates is a common

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educational outcome metric. Seven dermatology residents participated in 280 consults in one study, which were evaluated by the Miller School of Medicine dermatology faculty at the University of Miami. In another study involving nine residents at the University of Pennsylvania, the resident-investigator concordance rate was 53% for diagnosis and 65% for management plans. Faculty overall and partial agreement with resident responses increased over time for the resident treatment plan (P =02). However, the investigators' diagnosis and treatment plans were consistent in 92% and 89% of cases, respectively.

In another study of concordance, trainees at an NYC urgent care clinic used teledermatology to consult with and review cases with off-site attending physicians. Unknown was the number of residents; However, overall concordance was found to be high at 96%. Residents' self-reported levels of satisfaction after participating in teledermatology were also found to be high in this and other studies. Occupants detailed low fulfillment levels (4/10) in spite of demonstrating convenience (4/10, with 10 being truly challenging to use). Prominently, the goings to fulfilment rates was high. 50 consultations were provided by another teledermatology consultation service with 44 trainees [3].

Although the survey data did not differentiate between residents and medical students, trainees overall reported significant improvement in competency and high levels of satisfaction [86%-88% of trainees were very satisfied and expressed intent to apply teledermatology in future practice (5 on a 7-point scale)]. Another study grouped results by resident *vs.* medical student. 79% of residents (n=14) strongly agreed or agreed with the high levels of satisfaction reported by both groups. Teledermatology's improvement in diagnostic accuracy was evaluated in some studies using a variety of metrics. Residents (n=31) in the mixed group scored significantly higher on management accuracy when they were randomized to receive teledermatology cases with still images only or still images + video (mixed).

The most recent study examined the incorporation of teledermatology into the residency program at the University of California, San Francisco School of Medicine. These findings are consistent with those of another uncontrolled study, in which 91% of residents (n=11) stated that consult-based training enhanced their education and should be a permanent fixture in the curriculum. Post-participation surveys gathered narrative feedback from 15 residents. As a result, teledermatology allowed residents to evaluate more patient cases than in-person clinics, according to 9 out of 15 narratives [4].

Teledermatology in medical student education for interventions targeting medical student education, outcomes ranged widely, including self-reported satisfaction rates, self-improvement rates, and the capacity for clinics to provide greater access to skin care for underrepresented populations. In addition, 8 of the 15 narratives mentioned that teledermatology provided a low-stress learning environment. Teledermatology in medical student education Although this outcome did not distinguish medical students from residents, trainees reported high levels of improvement (88%) and satisfaction (86%) in the aforementioned article by Shaikh et al., which evaluated a teledermatology consultation service involving 44 trainees.

In the context of resident education, the study by Boyer et al. examined the perceptions of medical students independently and reported on a similar intervention. 88% of medical students strongly agreed or agreed that both groups were satisfied. A virtual pediatric dermatology student-run clinic in Boston, Massachusetts, is an example of how the COVID-19 pandemic enabled medical students to engage with teledermatology in novel ways. Patients were scheduled for virtual appointments and histories were taken by five medical students, while residents and attending made assessments and care plans for patients during virtual visits. With the introduction of virtual reality (VR) in dermatology education, 14 individuals were invited to participate in a VR memory palace for dermatology education [5].

CONCLUSION

The patient no-show rates at the virtual student-run clinic, which had 37 patients, were 9.8%, most of whom had skin of colour. There were five medical students, in addition to dermatology residents and fellows. Teledermatology in global dermatology education Due to the heterogeneity and relative paucity of data on the use of teledermatology for global health education, developing a generalized list of outcomes is extremely challenging and ultimately impractical. However, self-reported satisfaction (86%) and ease of access (79%) and use (93%) were generally high. However; the outcomes of each study were evaluated independently.

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CONFLICT OF INTEREST

None.

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