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Published in:
Forum for Nordic Dermato-Venereology

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Publication date:
2019

Document Version
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):

Mikkelsen, C. S., Arvesen, K. B., Penninga, L., & Bjerring, P. (2019). Teledermatology in the Nordic Countries – Can we practice high-quality, easy-accessible patient care in a safe and responsible way if we serve digitally? *Forum for Nordic Dermato-Venereology*, 24(3), 90-91. <https://www.medicaljournals.se/forum/articles/24/3/90-91.pdf>

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Teledermatology in the Nordic Countries – Can We Practice High-quality, Easy-accessible Patient Care in a Safe and Responsible Way if We Serve Digitally?

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BACKGROUND

Teledermatology is a subspecialty in the medical field of dermatology and one of the most common applications of telemedicine and e-health (1). In teledermatology, telecommunication technologies are used to exchange medical information over a distance using audio, visual and data communication without face-to-face patient contact. Applications comprise health care management such as diagnosis, consultation and treatment as well as education (2).

The preferred modalities of teledermatology are: “Live-Interactive” and “Store-and-Forward”. In “Live-Interactive” applications, providers and patients interact via live-video-transmissions. A variety of peripheral hardware attachments may be utilized to enhance the consultation. In “Store-and-Forward” applications, digital images and associated patient data are stored and sent to the dermatologist for consultation.

Teledermatological programs already exist in all the Nordic countries and teledermatology is used for many different purposes. It is expected to see further development of teledermatological applications in the future.

One of the foundations of the Nordic healthcare systems is equal access to best possible high-quality health care, regardless of social status and geographical location. That is the reason why the Nordic countries make large investments in the health care systems focusing on educating high quality specialists and offering the best treatment options and shortest possible waiting time. The implementation of telemedicine and tele-dermatology is in-line with the goals of the Nordic healthcare systems.

The most important function of telemedicine is to increase access to health care and improve health outcomes. In addition, it should provide cost effective delivery, address shortages and

misdistribution of healthcare providers, support clinical education programs and improve support for patients and families.

BENEFITS

Teledermatology can be a proper tool to ensure better health care access for our citizens. Transport costs and long transport time to the nearest dermatologist, including loss of earnings for the patient, is a well-known health care issue in the Nordic countries, especially in remote areas in Sweden, Norway, Finland and Greenland. Teledermatology may have major benefits, especially for our patients living in remote areas where we can minimize the waiting time where it is longest. Furthermore, teledermatology may also increase access for vulnerable groups, e.g. patients in prison, people with dementia, nursing home residents, psychiatric patients, etc. Teledermatology may also be applied for emergency cases. Many hospitals in the Nordic countries do not have a dermatologist on-call. Hence, emergency rooms and urgent care facilities manage most dermatological cases without any input from dermatologists. This lack of dermatology access outside office hours may lead to patients being managed in a less efficient and cost-effective manner. Dermatological specialist intervention may have a significant impact on care in emergency rooms and inpatients settings. Tele-dermatology in these settings can probably reduce unnecessary admissions and clinical costs.

When changing healthcare practices special attention should be given to patient satisfaction. Qualitative studies should be performed to assess patient’s experiences with teledermatology. Younger generations who have grown up with the electronic media may be very confident with this type of communication. Younger patients may even prefer consultations via smartphones and other electronic devices instead of personal face-to-face communication. Teledermatological applications may also have a role in increasing compliance: Maybe patients with severe acne can obtain better adherence

with a teledermatological program and we can ensure proper follow-up and better empowerment.

Health care expenses are under constant economical surveillance and control. Special attention should be paid that teledermatological applications are time- and cost-effective. Teledermatology can be a cheaper and quicker access to health care, but this requires high-quality IT-systems to allow for very high-quality images and transmissions, proper technical support, and effective systems. Following the fast development within IT this need ought to be solved successfully.

Time- and cost-effective solutions are a necessity as we expect a significant increase in the number of patients with chronic inflammatory diseases and a higher number of older patients. At the same time – dermatologists are expected to meet stricter requirements for quality, service and improvement with wider selection of new treatment options.

The potential for teledermatological consultations in the Nordic countries, as well as worldwide is enormous. The global market for teledermatology is growing rapidly. The income in the US was 2,3 billion US\$ in 2015 expecting to rise in 2021 by over 6 billion US\$ (3). In the United States, teledermatology is already an accepted and recommended form for consultation by the American Academy of Dermatology.

SAFETY

The electronic platforms used for teledermatology need to be 100% safe. All types of correspondence between the dermatologist and the patient has to be in a closed and secure environment and encrypted with minimal risk for hacking and other electronic criminality.

Legal issues regarding the use of teledermatology need to be resolved. Specifically, the legal aspects of using digital communication need to be clarified, both concerning the exchange of personal sensitive data between the dermatologist and the patient, as well as regarding diagnosis and treatment without face-to-face personal contact.

Telediagnosis in the absence of personal contact with health care workers to the individual patient is complex. It requires active participation of the individual patient and without appropriate guidance this may lead to improper management of the condition. It is important to avoid potential fatal diagnostic teledermatological decisions. Experienced dermatologists express that some dermatological diseases currently cannot be evaluated properly via a teledermatological platform alone. More research is needed to properly assess for which patients teledermatology can be used. It should always be remembered that the teledermatological consultation is used

as a supplement and not necessarily as a replacement for the normal consultation.

FUTURE APPLICATIONS

Already in the near future, teledermatology may be implemented at hospitals and private practices to a much higher extent than expected. For example, in Denmark at least 5–8% of the consultations in General Practice have dermatological relevance. Teledermatology can be used to interact with general practitioners and dermatologists.

According to the Danish national strategy for digitalisation the primary endpoint for teledermatology is to ensure that the general practitioner receive proper and fast diagnostic guidance and correct visitation for further dermatological consultation at private practices and hospitals. The university hospitals are expected to provide this service for both general practitioners and dermatologists in private practices. The Danish healthcare sector is expected to be among the best in the world to use digital technology and ensure easy access, user-friendly solution with the highest possible quality and productivity (5).

CONCLUSION

Teledermatology may become of great importance for dermatological care within our healthcare system. Teledermatology can change the current paradigm of dermatological specialist care and allow for improved health care access and improved health outcomes. It is of utmost importance that teledermatological solutions ensure patient safety, quality of care, and privacy of patient data information, and it is necessary with a set of safeguards and standards to support the use of this technology.

Special attention should be paid that teledermatological applications are time- and cost-effective. Also, it should be properly assessed for which patients teledermatology can be used and it is important to realize that teledermatology not just can replace traditional face-to-face consultations, but can be a valuable supplement to them.

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