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ORIGINAL ARTICLE / *Remote Monitoring*

# Telemedicine in France: A review of registered clinical trials from 2000 to 2015



*Télé-médecine en France : revue des essais cliniques enregistrés entre 2000 et 2015*

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## KEYWORDS

Telemedicine;  
Telehealth;  
Telemedicine policy;  
Clinical trial registry;  
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## Summary

**Introduction.** – Telemedicine activity is increasing in France. The assessment of telemedicine research, however, including registered clinical trials, has yet to be published. Using an international open access database (ClinicalTrials.gov), a study was conducted to identify registered telemedicine clinical trials in France from 2000 to 2015.

**Materials and methods.** – The data extracted on 6th August 2015 led to the retrieval of a total of 41 studies, of which 39 were included.

**Results.** – The first registered telemedicine clinical trial was received in 2006 and the latest in 2015. The studies were primarily conducted by public hospitals (66.7%), followed by private companies (20.5%). The objectives of the studies were primarily treatment based with all having efficacy and/or safety endpoints. Sixteen trials were in the recruiting phase, 12 were completed and four were terminated before the date of completion. The main telemedicine activities in the studies involved telemonitoring ( $n=28$ ), teleconsultation ( $n=7$ ) and tele-expertise ( $n=3$ ). Ten medical specialties were represented in the trials with a key focus on cardiology, endocrinology and pulmonology.

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**MOTS CLÉS**

Télémédecine ;  
Télesanté ;  
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Politique de santé ;  
Revue de  
télémédecine

*Discussion and conclusions.* — Telemedicine clinical trials have increased in France most evidently since 2011. The use of an open clinical trials database enabled characteristics to be described. A telemedicine registry may be necessary to improve future research as well as to enhance evidence-informed health policies regarding telemedicine activities in France.

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**Résumé**

*Introduction.* — Les activités de télémédecine augmentent en France. L'évaluation de la recherche en télémédecine, cependant, y compris les essais cliniques enregistrés, n'a pas encore été publiée. En utilisant une base de données internationale ouverte (ClinicalTrials.gov), une étude a été menée afin d'identifier les essais cliniques en télémédecine enregistrés en France entre 2000 et 2015.

*Matériels et méthodes.* — Les données extraites le 6 août 2015 ont permis d'identifier un total de 41 études, dont 39 ont été incluses.

*Résultats.* — Le premier essai clinique en télémédecine enregistré a été reçu en 2006 et le plus récent l'a été en 2015. Les études ont été menées principalement par des hôpitaux publics (66,7 %), et par des entreprises privées (20,5 %). L'objectif de ces études était principalement l'évaluation du traitement avec comme critère de jugement l'efficacité et/ou la sécurité des interventions de télémédecine. Seize essais étaient en phase de recrutement, 12 étaient achevés et quatre étaient terminés avant la date d'achèvement. Les principales activités de télémédecine dans les études étaient la télésurveillance ( $n=28$ ), la téléconsultation ( $n=7$ ) et la télé-expertise ( $n=3$ ). Dix spécialités médicales étaient représentées dans les essais avec une part importante en cardiologie, endocrinologie et pneumologie.

*Discussion et conclusions.* — Cette étude a permis de décrire les caractéristiques et les tendances des essais cliniques réalisés en France au cours des 15 dernières années en matière de télémédecine, montrant une augmentation depuis 2011. Un registre de télémédecine pourrait être ainsi nécessaire pour améliorer la recherche future en télémédecine, ainsi que pour améliorer les politiques de santé basées sur les données probantes concernant les activités de télémédecine en France.

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**Introduction**

Telemedicine activity is increasing in France. A survey conducted by the French Ministry of Health estimated a total of 331 telemedicine projects and activities in 2013 [1]. With the revision of the health legislation in 2009 and the launch of the National Telemedicine Deployment Strategy in 2011, this number has increased by almost 30% compared to the previous year's total of 256 projects and activities [2–4].

Regarding research in telemedicine, however, information such as characteristics and trends have not been assessed nor published in France, to date. Access to evidence in research and an understanding of current research trends, particularly in developing fields such as telemedicine, is of importance to enhance the quality and pertinence of evidence-informed national health policies [5].

Characteristics of clinical trials may be accessed from several clinical trial registry databases available online. Since 2005, registration of clinical trials has been required by the International Committee of Medical Journal Editors (ICMJE) as a requisite for the publication of results

generated by a clinical trial. The main international clinical trial registry, ClinicalTrials.gov, is run by the National Institute of Health in the United States of America [6]. One of the registry objectives is to allow and promote an efficient allocation of research funds through the access of current and past trials.

The aim of this study was to provide a review of registered clinical trials in telemedicine in France from 2000 to 2015. The review aimed to provide a description of the characteristics and trends of these trials for the improvement of evidence-informed health policies in the future.

**Method**

There are currently no registries existing in France concerning telemedicine to date. An open access database, ClinicalTrials.gov, run by the US National Institute of Health was explored as a proxy for data collection on registered telemedicine clinical trials conducted in France. A research query was performed on the 6th of August, 2015 and data

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