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Short communication

A Parkinson's disease tele-education program for health care providers in Cameroon☆

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ABSTRACT

Background: In Sub-Saharan countries, most patients with Parkinson's disease are underdiagnosed and untreated, with a marked shortage of qualified personnel.
Objectives: To develop a tele-education Parkison's disease program for health providers in Douala (Cameroon).
Methods: Feasibility, satisfaction, pre-post course medical knowledge improvement and patients' access were analyzed.
Results: Twenty lectures over the course of a year which connected participants with movement disorder experts using live, synchronous video conferences, and teaching materials were given. Thirty-three health professionals (52.4% women) including 16 doctors, and 17 allied health professionals and 18 speakers participated. Videoconferences were successfully completed in 80%, participation ranged from 20% to 70%, and satisfaction was at least above average in 70% of the participants. Whereas medical knowledge was dramatically improved, post-course patient access was not changed.
Conclusion: Tele-education for movement disorders in low-income countries is feasible. However, better access and patient care should be ensured as the final outcome for tele-health education. A sustainability plan is crucial to continue with this important need.

1. Background

Parkinson disease (PD) is a chronic neurodegenerative condition that affects 4.1 million people worldwide, figures that are expected to increase twofold by 2030 [1]. Patients living in Brazil, China, and India will collectively account for 69% of the global burden of countries examined by 2030, but worldwide, most people with PD will have likely not been diagnosed and will never be treated [1]. In some regions of the world, none of those that have been identified as having PD have sought or received care for their condition [2]. In contrast to developed countries, evidence suggests that most patients with PD in low-income countries have markedly increased mortality, and there is a shortage of qualified personnel [3]. In this regard, Sub-Saharan African (SSA) countries are experiencing rapid transitions with increased life expectancy [4]. As a result the burden of age-related conditions such as neurodegenerative diseases might be increasing [5]. Although PD is under-studied in SSA populations, based on a few prevalence studies, the crude prevalence of PD in SSA seems to vary from 7 to 20 per 100,000 [6]. However, in SSA countries, nurses and doctors traditionally have little access to continuing training. In SSA countries, medical education continues to take place as in-person training sessions that can be costly, time consuming, and place a strain on the healthcare system by removing clinicians from their facilities for days or weeks. In the last few years, there has been renewed interest from the World Health Organization, telecommunications companies and medical associations on the use of telemedicine in Africa [7]. However, telemedicine in most of SSA countries can be particularly challenging due to inadequate communications technologies (CT). To help increase access to care and to train providers around the world using technology, the International Parkinson's Disease and Movement Disorder Society (IPMDS) have sponsored pilot projects in care and education that can lay the foundation for reaching the majority of people with PD. The principal objective

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of this IPMDS sponsored pilot program was to develop a feasible, efficient, PD web-based education which allows access to specialized education which is currently unavailable in several low-income countries for doctors and allied health professionals. In this regard, Cameroon was selected due to previous collaborative efforts in terms of research projects [8]. Cameroon is a SSA country, with 42% of the population living in rural areas, mean life expectancy at birth for both sexes is 53 years, physician density of 2 per 10,000 population, and only 15 neurologists (0.6 per 10,000 inhabitants) [9]. There are no referral centers for PD in Cameroon.

2. Methods

Design: A longitudinal (1 year), quasi-experimental (comparison of baseline and post-education program intervention), hospital-based tele-education program.

Target population: doctors including neurologists, general practitioners, and other specialties, and allied health professionals.

Procedure: This tele-education course for PD was located at the Laquintinie Hospital in Douala, Cameroon. The course was announced for 2 months before starting, by phone calls, e mails, and talking to health professionals from different settings (Hospital Laquintinie of Douala, and the University of Douala). The course consisted of 20 lectures (10 for doctors and 10 for allied health professionals), which connected participants with experts in the field of movement disorders using live, synchronous video conferences (Google hangouts), slides, and written teaching materials which were downloaded from a virtual medical learning platform (http://pdtelemedicine.hubu.es). This study was approved by the Hospital Universitario of Burgos's Institutional Review Board.

Outcome variables: feasibility (number of successfully completed web-based education lectures, and description of the technological problems), user satisfaction, adherence of participants, improvement of medical knowledge [pre–post medical written tests about PD, and post-course video case survey (1 case with PD, 1 case with progressive supranuclear palsy, 1 case with essential tremor)]; and improvement of access of patients with PD (pre–post number of patients with PD seen over the last 3 months).

Analysis: Only descriptive analyses were used, owing to the small sample size. Data were summarized as mean (standard deviation), and frequencies (percentage).

3. Results

Thirty three health professionals (52.4% women) including 16 doctors (2 neurologists and 14 other specialties), 17 allied health professionals (5 nurses, 7 psychologists, and 5 physiotherapists), and 18 speakers (neurologists, nurses, psychologists, and a lawyer) participated. Out of 20 scheduled videoconferences, 16 were successfully completed (80%), and 2 were not possible (20%) due to CT connection problems. In the group of doctors, overall participation ranged from 7/16 (44%) to 3/16 (20%), with an average participation of 4/16 (25%). In the group of allied health professionals, overall participation ranged from 12/17 (70%) to 5/17 (29%), with an average participation of 9/17 (53%). Overall satisfaction with the course was at least above average in 70% of the participants.

In terms of improvement of medical knowledge, in the group of allied health professionals, pre–post medical tests about PD, showed a significant improvement, ranging from a mean number of correct answers of 1.26 ± 3.1 (out of 10 medical questions) to 7.93 ± 1.56. In this group, at the end of this tele-education program, only 2 participants completed the 3 video-case diagnosis survey, and the mean correct answer was 1.08 ± 0.28. Unfortunately, the group of doctors changed from pre–post to post medical tests, and information was not comparable. Indirectly, in the group of doctors, out of 10 medical questions, pre-course mean number of correct answers was 1.00 ± 1.41 vs. post-course 7.75 ± 2.62. Only one doctor (neurologist) completed the 3 video-case survey, and correctly diagnosed them.

In terms of access of PD patients to health care services, pre–post course access of patients with PD was not changed. Out of 21 participants, who completed the post-course survey, only 6 (26%) participants (3 nurses, 1 neurologist, 1 neurosurgeon, and 1 physiotherapist) saw more than 5 patients with Parkinsonism in their work place over the last 3 months.

4. Discussion

In this tele-education program for PD, besides ICT problems, participants were overall satisfied with the course, long-term adherence was low–moderate, especially for allied health professionals, and improvement in medical knowledge was demonstrated. However, 1 year after starting the tele-education program, PD patients' access to the health care was similar, indicating important economical/logistic barriers for these patients.

To improve consistent attendance and then outcomes, there is no doubt that several strategies might be identified. In this regard, before starting, a feasibility questionnaire could be sent to evaluate the interest, format, length of the series as well as administrative issues like time and location, and preferences for a stored lecture series compared to live videoconferences. Secondly, in terms of patients' access to health care, a longer follow-up as well as more than one course are most likely required.

In a resource-rich setting, internet has transformed both the form and function of medical education and information. The benefits of digital medical education and information are clear, and in the United States, one prominent model is called the Extension for Community Healthcare Organization. This organization uses video conferencing technology to train local primary care providers to provide specialized chronic care management for remote populations who do not see a specialist [10]. In South Africa, the University of KwaZulu-Natal Medical School has conducted videoconference-based education in a number of medical disciplines since 2001, including pediatric surgery, and rural midwifery [11]. It seems that videoconferencing and face-to-face education are at least equivalent, and there is a grade B evidence-based recommendation of moderate support for health care tele-education [11].

There is no doubt that it is difficult to evaluate the effectiveness of health care tele-education and to compare it with face-to-face education since there is heterogeneity of outcomes, measurements, and participants (type and location). In evaluating the effectiveness of this PD web-based education program, our main limitation was the small sample size, and the lack of a control group and random selection of participants. Therefore, our results can only be potentially extrapolated to similar settings and type of participants.

The challenges in conducting this pilot study brought important lessons that are vital to adopt sustainability steps, including operational milestones such as local CT supported by local groups using open-source software, and financial milestones such as customization, local ownership, public–private partnerships and CT provider business model. Likewise, in order to overcome poor access to the internet, online digital education has been improving over the few last years by using off-line devices, using store-and-forward telemedicine, which is purely asynchronous and is a non-real-time encounter [12].

Looking ahead, tele-education for movement disorders in low-income countries is feasible, and minimizes traveling burden. Continuous progress in CT can overcome CT incidences and find solutions for low internet access. However, a sustainability plan is crucial to continue with this important need, and finally, better access and patient care should be ensured as the final outcome for tele-health education. Ongoing strong local partnerships, and healthcare system support, are needed to scale-up these projects in order to be a success.

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