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IS TELEREHABILITATION AN ADEQUATE ECONOMIC ALTERNATIVE TO CONVENTIONAL REHABILITATION?

M. Tousignant¹, H. Moffet^{2,3}, S. Nadeau⁴,
C. Mérette^{2,5}, P. Boissy¹, H. Corriveau¹,
F. Marquis^{2,6}, F. Cabana^{1,7}, P. Ranger^{4,8},
É.L. Belzile^{2,6}, R. Dimentberg^{9,10}

¹ Université de Sherbrooke and Research Centre on Aging, Sherbrooke, Canada; ² Université Laval, Québec, Canada; ³ Centre for Interdisciplinary Research and Social Integration, Québec, Canada; ⁴ Université de Montréal and Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal, Montréal, Canada; ⁵ Centre de Recherche, Institut Universitaire en Santé Mentale, Québec, Canada; ⁶ CHU de Québec, Québec, Canada; ⁷ CHUS, Sherbrooke, Canada; ⁸ Hôpital Jean-Talon, Montréal, Canada; ⁹ McGill University, Montréal, Canada; ¹⁰ St. Mary's Hospital, Montréal, Canada

Background: As demands for rehabilitation services are growing, new alternatives such as telerehabilitation are emerging. In particular, today's reality of an aging population, the lack of health care professionals and the distance (sometimes great!) between the patient's home and the health care center, in-home telerehabilitation is becoming a targeted rehabilitation delivery method. However, no robust data yet exist concerning both its efficacy and use related costs.

Purpose: As part of a multicentre RCT on the effectiveness of in-home telerehabilitation, this economic analysis aims to analyse and compare the costs related to in-home telerehabilitation (TELE) with conventional home visits (VISIT) following knee replacement surgery (total knee arthroplasty [TKA]).

Methods: Patients were recruited from eight hospitals in the province of Québec, Canada. The cost analysis was performed with 197 participants randomly assigned to either the TELE (97 participants) and the VISIT group (100 participants). Both groups received the same rehabilitation intervention consisting of 16 supervised exercise sessions, twice a week, over the two first months after hospital

discharge. The only difference is the service delivery method. The TELE group intervention was delivered by videoconferencing over high-speed Internet and the VISIT group received the same intervention, but face-to-face at home. Costs related to the delivery of the two services (TELE and VISIT) were calculated. Student's *t*-tests were used to compare costs per treatment between the two groups. The distance was accounted for by comparing the two treatment groups within distance strata using two-way analyses of variance (ANOVA).

Results: The mean cost (in Canadian dollars) of a single session was \$93.08 for the VISIT group (SD = \$35.70) and \$80.99 for the TELE group (SD = \$26.60). When comparing both groups, real total cost analysis showed a cost differential in favor of the TELE group (TELE-VISIT: -\$263; 95% CI: (-\$382, -\$143)). However, when the patient's home was located less than 30 km round-trip from the health care center, the difference in costs between TELE and VISIT treatments was not significant (*P* values of .25, .26 and .11 for the <10, 10–19 and 20–29 km strata, respectively). The cost of TELE treatments was lower than VISIT treatments when the distance was 30 km or more (30–49 km: \$81 < \$103, *P* value = .002; ≥ 50 km: \$90 < \$152, *P* value < .0001).

Conclusion(s): To our knowledge, this is the first study that analyses real costs of in-home telerehabilitation covering all sub-costs related to telerehabilitation (equipment amortization, installation/uninstallation, technical problems related to teletreatment) and distance between the health care centre and the patient's home. The cost for a single session of TELE compared to VISIT was lower or about the same, depending on the distance between the patient's home and the health care centre.

Implications: In addition to the main conclusion of the RCT (non-inferiority of telerehabilitation vs conventional in-home rehabilitation), these economic data fill a void in the telerehabilitation field. Henceforth, managers will be better informed in their decision-making process regarding the introduction of telerehabilitation as a new service in their clinic.

Keywords: Telerehabilitation; Cost analysis; Total knee arthroplasty

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Ethics approval: The project was approved by ethics committees of each hospital and written consent of every participant was obtained.

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