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# Patients' Satisfaction With Telemedicine Support at Their Self-Management of Long-Term Conditions

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## Opinion

General Hospital of Slovenj Gradec, Slovenia, EU, goes digital! That is a decision of the management of the General Hospital of Slovenj Gradec, one of 25 regional hospitals in Slovenia (EU). Several national e-services have already been adopted in the hospital like e-prescriptions, e-Appointments, e-??? Also, medical robots and home telemedicine service have been introduced. The whole Slovenian healthcare system and the hospital are challenged by the lack of healthcare professionals. Consequently, we have long waiting-lists for treatment of patients with acute problems. They compete on the medical specialists' timetables with the regularly scheduled patients with long-term conditions. To reduce waiting-list the hospital introduced in 2014 telemedicine service to support patients with heart failure (HF patients) and/or diabetes type 2 (DM2 patients) at their self-management in their home environment. So far over 650 patients have received the telemedicine support provided by the Centre for Telehealth CEZAR.

The patients using the TM service at home perform daily measurements of their blood pressure, heart rate, body weight, and oxygenation (HF patients) or blood sugar (DM2 patients) following the recommendation of their specialist regarding the time and frequency of measurements. The adequate mobile set of measuring devices is provided by the CEZAR centre. This also includes a tablet computer serving as a gateway for data transfer of the measured values. After the measurement is taken, the patient's data are immediately sent from the measuring device to the gateway and then further over the mobile phone network to the TM server in the hospital.

That happens automatically, without any action on the part of the patient. The TM service platform processes the received data and informs the CEZAR centre operator on any deteriorated condition. When it happens, the operator contacts the patient by a phone and if there are indication for an intervention, the operator consults the specialist on duty and informs him/her on the findings. The specialist decides on the action to be taken by the patient and advises the patient to change medication/treatment, to visit their general practitioner, a hospital clinic during regular working hours, or an emergency department in the hospital. The given information is conveyed to the patient by the coordinator by phone, and later as a written report by a surface e-mail. Every phone call, advice, change in therapy, home visit or other action is registered the patient's record on a clinical portal. The patients' acceptance of telemedicine services is one of the fundamental conditions for achieving the expected benefits of the TM services. The CEZAR centre management has been therefore focusing on the professional guidance of the patients at home and their acceptance of the telemedicine services.

A survey on the perception of the TM service was conducted among patients within a larger European project UNITED4HEALTH. The patients involved were the service users for

at least 9 months. An adapted standardized SUTAQ protocol was used covering both, the service and the TM equipment used in the service. In total, 363 users completed the questionnaire which was composed of 18 questions. The interviews were conducted by the CEZAR centre coordinator during the patients' regular visits to their specialist. The data were analysed using descriptive statistics. The patients - TM service users, were generally satisfied with the form of home TM service.

They rated it at 4.6 scores on a five-point scale (1-not at all to 5-very high). The average score of satisfaction with affirmative statements was  $4.25 \pm 0.51$  and the negative ones at  $1.69 \pm 0.11$ . Their experience with the use of TM equipment was estimated high ( $4.49 \pm 0.96$ ). When comparing the usefulness of personal contact with a doctor versus TM monitoring, the patients' opinions differed, but were still in favour of TM monitoring ( $2.76 \pm 1.31$ ). The users did not perceive the service as a disturbance of their everyday activities ( $1.92 \pm 1.11$ ) or privacy ( $1.59 \pm 0.95$ ), nor did they experience it as a physical or psychological inconvenience ( $1.59 \pm 0.95$ ). An expected lack of knowledge of the patient's disease(s) at the medical staff performing remote monitoring was scored low ( $1.75 \pm 1.02$ ). Similar results were obtained for potential breaching of personal data confidentiality while using TM ( $1.69 \pm 1.12$ ). The interviewed patients would also recommend TM services to other patients with the same type of disease ( $4.56 \pm 0.78$ ).

Although the used SUTAQ questionnaire was not fully adequate for assessment of the TM service, the survey results show a high level of acceptance of the TM service as a new form of supporting patients with HF and/or DM2 at home. The results confirmed that the TM service model used was adequate, the technological solution was acceptable for the patients, and the organization of the TM service was effective. The high level of acceptance of the TM service was also due to its careful planning and measures taken before the inclusion of the candidates into the TM service as well as during the service provision. Measures to support the patients' acceptance of the TM service during the service provision were:

- A. All patients have received an adequate training before enrolment in the service.
- B. Adequate organizational and technical support to the TM service users (the first level support).
- C. Adequate and responsive technical support to the service provider-the CEZAR TM centre (the second) and the service infrastructure (the third level) was available throughout the service provision period.
- D. The healthcare workers at the CEZAR centre maintained a friendly relationship with the patient.
- E. The TM staff regularly responded to the system warning messages and timely reacted to the detected health deterioration.
- F. Adequate communication of the results of the remote monitoring with the patient (telephone, SMS, written reports) or at the patients' regular examinations aiming to adapt the patients' self-management care programme.
- G. When needed the patients received an additional support at their self-management from their carers (usually relatives).

At the current stage of the TM service provision, the results of telemonitoring are managed separately from the patient electronic health record. Soon they will become a part of it, enabling us to share the data within the National Central Register of Patient Data. The hospital plans to scale up the TM service for patients with heart failure and the COVID-19 patients. Additionally, we have already piloted new TM services for managing hypertension, telerehabilitation after stroke and acute myocardial infarction and support to bariatric patients. One of the obstacles in broader availability of the TM services in the region is lack of finances as the services (except for the COVID-19) have not been reimbursed by the health insurance companies but the service is delivered free of charge to the patients.