

Importance of Education in the Care of Patients with Implantable Cardioverter-Defibrillators with the Possibility of Remote Monitoring



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Introduction

Remote monitoring has already become the standard of care of patients with implantable cardioverter-defibrillators (ICDs).

Objectives

To determine the current level of knowledge regarding the use of remote monitoring and determine, if an education program would be beneficial for ICD patients.

Table 1 Comparison of basic clinical characteristics between educated (EDU) and non-educated (non-EDU) cohorts of patients

| Parameter | | EDU N = 83 | non-EDU N = 80 | p |
|--------------------------------------|------------------------------------|---------------|-------------------|-------|
| Sex | Man n (%) | 64 (77.1%) | 58 (72.5%) | 0.498 |
| Type of implant | VR ICD n (%) | 16 (19.3%) | 13 (16.3%) | 0.613 |
| | DR ICD n (%) | 3 (3.6%) | 6 (7.5%) | 0.278 |
| | CRT-D n (%) | 64 (77.1%) | 61 (76.3%) | 0.897 |
| Past medical history | Hypertension n (%) | 58 (69.9%) | 61 (76.3%) | 0.360 |
| | Coronary artery disease n (%) | 47 (56.6%) | 35 (43.8%) | 0.251 |
| | Dilated CMP n (%) | 11 (13.3%) | 12 (15.0%) | 0.749 |
| | Diabetes n (%) | 28 (33.7%) | 34 (42.5%) | 0.249 |
| | Hyperlipoproteinemia n (%) | 22 (26.5%) | 26 (32.5%) | 0.401 |
| | Post CABG n (%) | 12 (14.5%) | 5 (6.3%) | 0.087 |
| | stroke n (%) | 3 (3.6%) | 2 (2.5%) | 0.680 |
| | Atrial fibrillation n (%) | 19 (22.9%) | 21 (26.3%) | 0.618 |
| | Sinus rhythm n (%) | 64 (77.1%) | 59 (73.6%) | 0.619 |
| | Primary prevention of SCD n (%) | 72 (86.7%) | 75 (93.8%) | 0.133 |
| Secondary prevention of SCD n (%) | 11 (13.3%) | 5 (6.3%) | 0.133 | |

CABG – Coronary artery bypass graft, CMP – Cardiomyopathy, CRT-D – Cardiac resynchronization therapy-defibrillator, DR ICD – Dual chamber implantable cardioverter-defibrillators, SCD – Sudden cardiac death, VR ICD – Single chamber implantable cardioverter-defibrillators

Methods

163 patients (122 men, mean age 64±77 years, **Table 1**) with ICDs were included in the trial and followed using the Home Monitoring® (HM) system. Patients were randomized either into a control group with standard education program or into a intervention group with an intensive nurse-led educational program.

A questionnaire, which investigated the general and technical knowledge as well as the patient's awareness of the clinical advantages of using an HM system was filled at baseline and after three-month follow-up. Patient satisfaction with the provided education programs was also surveyed.

Figure 1 Patients knowledge of the ICD implant type prior and 3 months post education

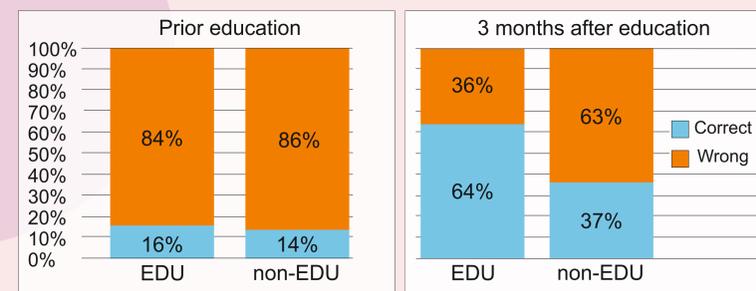
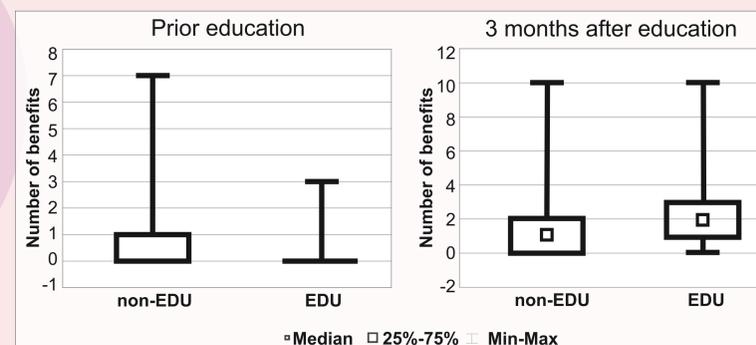


Figure 2 Number of enumerated benefits of ICD telemonitoring prior and 3 months post education



Results

The day after ICD implantation, we found that patients had little understanding of the ICD type they had received (**Figure 1**) and poorly understood the advantages of remote monitoring of their device (**Figure 2**). The nurse-educated patients were able to better define correctly the term “telemedicine” and also demonstrated a better understanding of remote monitoring ($p < 0.001$, **Figure 3**). The technical functions of patient units were also better understood by the educated group ($p < 0.001$, **Figure 4**). Educated patients were more satisfied with all types of education than patients in the control group ($p < 0.001$, **Figure 5**). The vast majority (97%) of patients reported that they would “definitely” or “most likely” welcome receiving information on remote monitoring of their ICD devices from a qualified nurse-educator.

Figure 3 Percentage of patients identifying the correct statement about telemedicine prior and 3 months post education

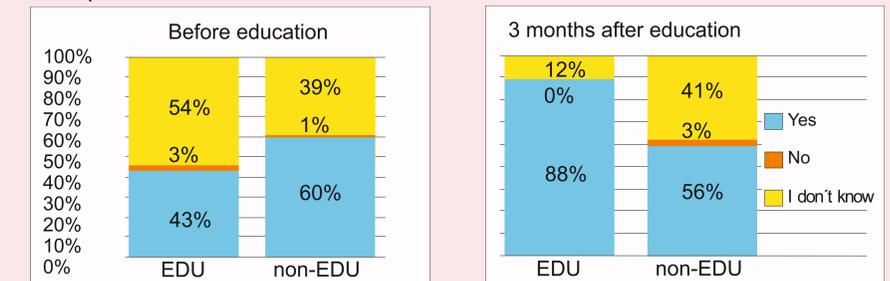


Figure 4 Technical knowledge of Cardiomesenger (CM) functions in patients with (EDU) and without nurse-led education (non-EDU)

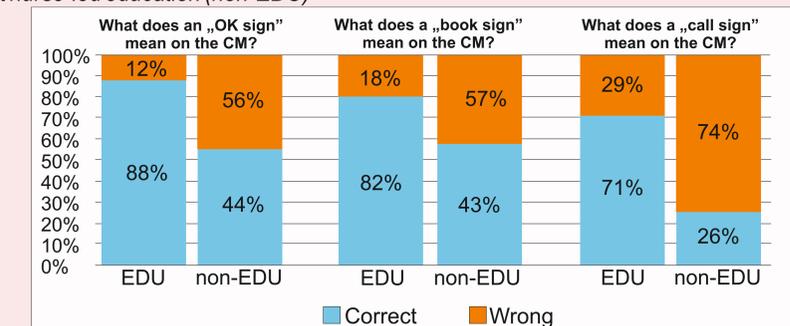
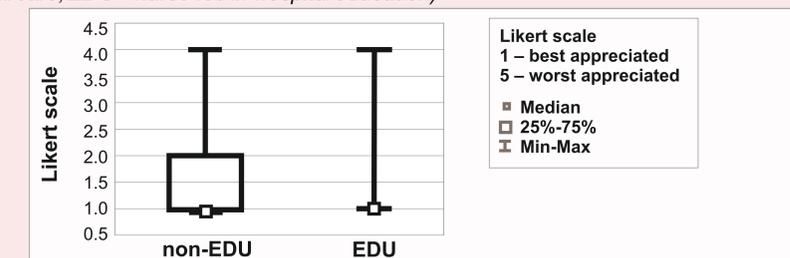


Figure 5 Overall evaluation of in-hospital received education by patients (non-EDU = standard in-hospital care, EDU = nurse-led in-hospital education)



Conclusions

Intensive education of patients regarding remote monitoring of their ICDs contributes to better overall technical knowledge of the HM system and a better understanding of telemedicine in general. Therefore, we recommend creating a nurse-led educational program in telemedicine for ICD patients. Such a program would guarantee the provision of timely and accurate information for ICD patients and their families.