CASE REPORT

Challenges in educating a patient with severe anxiety and depression

Geraldine A. Lee[1], Mary S Boyde[2]

1. Dept. of Clinical Electrophysiology, Baker IDI Heart & Diabetes Institute, Melbourne, Australia. 2. Dept. of Cardiology, Princess Alexandra Hospital, Brisbane, Australia.

Correspondence: Geraldine A. Lee. Address: Baker IDI, 75 Commercial Road, Melbourne, Australia. Telephone: 006-13 9-076-3352. Email: Geraldine.lee@bakeridi.edu.au

Received: December 30, 2011 **Accepted:** April 17, 2012 **Published:** November 1, 2012
DOI: 10.5430/jnep.v2n4p160 **URL:** http://dx.doi.org/10.5430/jnep.v2n4p160

Abstract

This case report aims to outline the psychological effect an arrhythmia can have on a patient and their spouse and how anxiety has a profoundly negative effect on how a patient learns. This case report also highlights the difficulties nurses perceive in attempting to educate and engage the patient and spouse, and the problems in balancing nursing care between technology (in this case the need for constant cardiac monitoring) and more focused on patient concerns (fear of dying and defibrillator discharging). As nursing care incorporates the use of more advanced technology, it is important to ensure care remains patient-focused not technology-focused. The impact of anxiety on cognition and patient learning cannot be underestimated.

Key words

Anxiety, Depression, Arrhythmia, Education

1 Introduction

Cardiac arrhythmias such as ventricular tachycardia (VT) can be fatal if not treated efficiently. VT usually occurs primarily in those with cardiovascular disease, in particular heart attacks, coronary artery disease, and heart failure or other chronic conditions such as cardiomyopathies. The treatment options for VT currently in use are anti-arrhythmic drugs, the insertion of an internal cardioverter defibrillator (ICD) and more recently radio-frequency ablation. Previous research on arrhythmias reported the negative effect on physical and mental quality of life, especially following implantation of internal defibrillators [1-3]. Psychological interventions have been investigated extensively in oncology patients but focus on cognitive therapy [4, 5]. No studies were identified examining the effects of arrhythmias on educating patients. Given the prevalence of anxiety and depression in those with cardiovascular disease and other chronic conditions, there is a need for nurses to be aware of the negative effects of anxiety disorders and depression on learning and to adjust patient education methods in order to optimise patient outcomes.

This case report aims to outline the psychological effect an arrhythmia can have on a patient and their spouse and how anxiety can have a profoundly negative effect on patient learning. It will highlight how learning is affected by the presence of anxiety and the difficulties nurses face in educating and engaging the patient and spouse. The importance of balancing nursing care between technology (in this case the need for constant cardiac monitoring) and more focused on patient

concerns (fear of dying and defibrillator discharging) will also be discussed. As nursing becomes more advanced using technology, it is important to ensure care is patient-focused not device-focused and the need for nurses to be aware of the impact of anxiety and depression on learning and cognition.

2 Case presentation

JC is a 42 year old Caucasian male who presented with infection requiring hospitalisation for intravenous antibiotics. He is married with three children aged between 3 and 12 years and usually worked as an Information Technologist. He has a twenty-year history of sarcoidosis that resulted in developing end-stage renal failure and requires regular haemodialysis. Sarcoidosis is an auto-immune condition that is characterised by granulomas forming as nodules in organs in the body and in particular the lungs. Sarcoidosis can be a selflimiting condition requiring no treatment but in some individuals, especially with cardiac involvement, the prognosis is poor with 10% developing serious disability and death from respiratory failure [6]. In those with cardiac sarcoidosis, patients can have asymptomatic conduction abnormalities that require no treatment while others may have fatal ventricular arrhythmias [7, 8]. As JC had previously experienced arrhythmias, an internal cardio defibrillator (ICD) was inserted prophylactically. During his hospitalisation, the ICD began to discharge several times a day in response to bursts of VT and firing inappropriately resulting in JC receiving multiple shocks which he found very unpleasant and painful.

JC became very anxious as a result of the ICD firing and he was unable to cope. Over a few days, he became very despondent, unable to sleep or to eat. His withdrawal also had a profound effect on his wife and both became fixated on watching the heart monitor and expecting the worst outcome (i.e. death).

A decision was made to turn the ICD off to avoid further discharges as the cardiologists felt that the device firing was exacerbating JC's anxiety levels and potentially increasing sympathetic activity and thus increasing his heart rate. JC's heart rate during bouts of VT were approximately 110 to 115 beats per minute but JC did not lose consciousness and maintained a good blood pressure throughout. His longest run of VT was 14 hours. An intravenous anti-arrhythmic was commenced (Lignocaine) which reduced the rate of VT to less than 100 beats per minute. Due to JC's insomnia, loss of appetite and withdrawal, a psychiatric assessment was performed and the psychiatrist diagnosed acute reactive depression with anxiety and prescribed valium 5mg three times a day. JC's wife was very upset and fearful for her husband's health and also found it difficult to cope. She had to travel to the hospital every day travelling for one hour each way and continued to care for their three children.

The nurses on the ward were finding it very difficult to care for JC's psychological health as they felt ill-equipped to answer his questions or give him any positive feedback given the ongoing VT and the risk of complications from the arrhythmia (i.e. potentially deterioration to a cardiac arrest). They also felt unable to support his wife, given the high care demands of the patient in terms of cardiac and haemodynamic monitoring, administration of lignocaine, liaising with the renal team to organise haemodialysis and the cardiac technicians regarding the ICD settings as well as basic nursing care. As the arrhythmia nurse, I was asked to see the patient and speak to his wife. I spent time building up a rapport with JC and his wife and changing the focus from the arrhythmia to managing their anxiety and reviewing progress on a daily basis. The couple needed time to discuss their fears and try to understand what was happening. They expressed frustration that "nothing seems to be happening" as the VT was ongoing. They had attempted to gain answers from the ward nurses and the doctors but didn't feel that their concerns were heard. No formal education was planned as JC and his wife's needs changed from day-to-day. This scenario is typical of a highly anxious patient who does not feel in control of the situation. Excessive patient anxiety is not conducive to learning with evidence that cardiac patients hospitalised for an acute event have difficulty remembering information and instructions [9]. It has been recognised that anxiety levels of the individual learner may have detrimental effects on learning [10]. It was felt that attempting to apply a formal education plan would not be beneficial or practical in this scenario given the acuity of JC's condition impacting on his readiness to learn. The andragogical model highlights that adults are learner-centered and that readiness to learn impacts on learning outcomes [10].

Adults become ready to learn when they need to know the information to cope effectively with their situation [11]. In this case JC was not feeling in control of the situation and his motivation to learn was blocked by his acute, unstable condition and his anxiety. One paper reported the significance of depression and cognitive impairment in those with arrhythmias and concluded that an individual's ability to comply to treatment was compromised in the presence of negative emotions and impaired thinking [12]. The combination of a potentially fatal arrhythmia and severe anxiety and depression make communication with patients difficult especially as they lack the ability to retain information and think logically. Indeed, faulty thinking has been observed in those with anxiety as well as irrationality and negative self-statements [13].

Although the lignocaine infusion reduced the heart rate, JC remained in VT. The cardiologists took a decision to perform a VT ablation. Two attempts of the procedure were required before VT was no longer inducible and in the following 72 hours, no further episodes of VT were observed. Plans were made for JC to be discharged home. At this stage JC became anxious about going home and no longer having 24-hour cardiac nursing care. The ICD was turned on and reprogrammed and the ICD parameters were changed to only fire with rates above 150 beats per minute.

Given JC and his wife's highly anxious state, extensive patient education was undertaken and focused on JC regaining control, organising ongoing counselling, reassurance about the successful VT ablation and giving JC and his wife confidence about returning home. These patient-centered strategies recognised the importance of focusing on JC's individual situation to address his motivation and readiness to learn by applying the principles of andragogy. Some of the techniques used in educating JC and his wife included: using simple language to explain clinical aspects, using simple analogies about the arrhythmia and ablation procedure, repeating the same simple messages frequently, allowing spouse to play a role, allowing patient and spouse to articulate their concerns and answering questions as honestly as possible, not giving false hope about treatment or outcomes and keeping all team members informed (i.e. cardiologist, nurses, cardiac technicians, etc). The negative thinking expressed by JC was still evident and it was hoped that counselling would address this issue using cognitive behavioural therapy as well as the use of anti-depressants (a selective serotonin reuptake inhibitor). JC and his wife were given a contact number of the arrhythmia nurse to call at any time (which they availed of on four occasions following discharge). On these occasions they had some basic questions (was the ICD programmed correctly, what heart rate was the ICD set at when it would fire and what to do if JC felt his heart rate was beating fast). Basic reassurance was given each time. This strategy recognises that adult learners are self-directed in their approach and prefer to be responsible for their own decisions by identifying when they need more information.

Three months after discharge from hospital, JC no longer required daily valium, had gained weight and was organising a return to work. He was no longer clinically anxious or depressed and was still regularly attending counselling. He was optimistic about the future and pleased that no further VT episodes had occurred, (although he had to return to hospital twice after two episodes of experiencing a fast heart rate) and this was confirmed with no ICD firing was recorded at his clinic visits. He still remained concerned about possible future ICD firing but was able to concentrate on his family.

In summary, JC experienced profound reactive depression and anxiety as a result of his long bouts of VT. Educating JC and his wife was difficult due to his psychological status (namely anxiety and depression), the seriousness of his arrhythmia, the chronic nature of his illness and the ongoing fear of the ICD firing. Although the VT was successfully ablated, the impact of his hospitalisation on JC and his family was overwhelming and caused much distress. Educating patients in this type of clinical scenario is challenging and requires considerable time, clinical expertise and repetition of information.

3 Discussion

Arrhythmias affect patients physically, psychologically and socially with symptoms such as a racing heart rate, chest pain, shortness of breath, dizziness and nausea as well as psychological symptoms including anxiety, depression, stress, being scared, loss of self-control, premorbid thoughts and anhedonia. The social effects include loss of income, loss of

independence and reliance on ICD, cardiac monitoring and clinical/healthcare professionals. Often the vulnerability of a patient in acute care is overlooked and the transition from a high dependency environment back to the patient's home doesn't form part of the nurses' discharge plan [14].

ICDs are implanted for actual or potential malignant heart rhythm disturbances such as ventricular fibrillation that if left untreated, can be fatal and have significantly reduced mortality rates from sudden cardiac events [15]. They are a feasible treatment option to those who do not respond to, or are unsuitable for, pharmacological management or surgery. These highly technical devices are implanted in an approach similar to pacemaker insertion and consist of a small computerized metal box with atrial and ventricular leads along with defibrillator pads. The pacemaker mode is set with minimum and maximum heart rates and the ICD detects abnormal heart rhythms and releases a shock or shocks accordingly until the normal rhythm is restored. Recipients are only aware of its functioning if a shock is discharged and have no control over the discharges. Shocks have been described painful, unpredictable and can occur without warning leading to a lack of self-control [16].

From the healthcare professional's viewpoint, implantation of an ICD is a medical procedure (i.e. to prevent death from an otherwise fatal heart rhythm disturbance), whereas the recipient is more aware of the psychological, sociological and cultural perspectives (put simply: there is a device in their body which monitors and controls their heart rhythm). One of the key problems with ICD implantation is the vacuum between the self-embodiment of the recipient and the doctor's priority to treat the arrhythmia and restore sinus rhythm. The main issue for those with an ICD is the recipient's lack of control and how control is taken from the recipient and given to the ICD. This was a primary concern for JC and his wife with both of them perceiving the ICD to significantly negatively affect their lives. So whilst healthcare professionals may be concerned about preventing or managing an arrhythmia, the recipient may be more concerned about the ICD and its potentially firing to treat any rhythm disturbances. Nurses can be the mediators between the patient and the doctor. The nurse can speak to the recipient to gain insight into their perceived problems and help the patient to cope with their concerns as opposed to the medical priorities. Empathy from the nurse is essential to assist the patient to adjust to the ICD and in their potential experiences life threatening arrhythmias. Healthcare professionals and in particular nurses should be aware of the arising problems and help the patient and their family to cope with the ICD. Nurses are in a position to address the socio/cultural/biological divisions to assist the recipient and their family to cope successfully. One recent paper outlines the importance of ethical consent and effective communication in decisions relating to ICDs and advocates the use of psychosocial interventions by multidisciplinary teams but does not outline any practical advice on how to educate this vulnerable cohort [17].

The literature examining the experience of recipients and their families highlights fear, nervousness, dizziness and isolation felt by patients [18, 19]. Using quality of life questionnaires, the majority of studies found problems/concerns in more psycho-social concerns amongst recipients [20] although a similar level of quality of life to those with pacemakers is reported. The perception of ICD discharge is viewed as some as a close call with death and the powerlessness of the recipients and the family was also reported [21]. A poorer quality of life is also evident in those who have experienced shocks one year after insertion compared to those who have not been shocked [16, 22]. Although ICDs are frequently implanted in patients with arrhythmias and those deemed at risk of arrhythmias, previous research has focused on anxiety and depression [20, 23] and quality of life [1, 3] and more recently coping mechanisms [2]. No studies were found on how anxiety and depression affect education in the sphere of arrhythmias or on how nurses and other healthcare professionals should undertake educational sessions with patients and their families. The focus of many intervention studies concentrated on issues on implantation and patients adapting to the ICD. A recent study reported coping strategies being useful but did not report the number of ICD discharges in the follow-up period [2]. Radio-frequency ablation is an effective treatment for VT and improvements one year post ablation in quality of life have been favourably compared with a normal population [24].

The presence of anxiety and depression undoubtedly make any educational sessions more difficult and have previously been reported as powerful predictors of quality of life in cardiac surgery patients [25]. With the significant prevalence of

depression in cardiovascular disease, a recent guideline suggests routine screening for anxiety and depression in cardiac patients [26] but in this case report, the psychological distress of JC was visibly evident and formal screening was not required. A recent review acknowledged the patients' experience of ICDs and shocks (especially inappropriate shocks) is a barrier to informed consent and inhibits decision-making [17]. Patients with ICDs report a number of emotional changes after receiving an ICD with frequent shocks having a negative effect on emotions including an increase in psychological stress and depressive symptoms [27].

4 Anxiety and learning

From an educational perspective, anxiety has a negative effect on learning in those who are disease-free as one study of college students observed [28]. Anxiety affects an individual's learning and reduces their retention of information [29]. There is a paucity of literature on the effect of anxiety on learning in patients although one article was found on psycho-social barriers being a barrier to education in hemodialysis patients [30]. Anxiety has been reported to be more prevalent in those who have a history of uncontrollable and unpredictable life stress [31] such as JC. With respect to learning theories, the same authors hypothesize that emotional and physiological responses to aversive imagery are suppressed in anxious individuals and this leads to increased levels of worry/anxiety which in turn causes problems processing information and a cognitive avoidance response occurs [31]. Other responses observed in anxious individuals include negative intrusive thoughts and attempts to control thoughts as well as increased anxiety which leads to a vicious cycle. These responses confirm the complexity of anxiety and Mineka and Zinbarg concede that anxiety disorders have an effect on learning theories but do not outline how learning principles can be applied other than by developing a sense of mastery and focus on prevention of development of anxiety- however this approach is not relevant in this case report.

In terms of interventions for those with ICDs, some interventions report little or no significant improvement in measured psychological domains [16, 17, 32, 33] or following the use of intervention groups [34, 35]. Many emotions have been reported in ICD recipients: anxiety, depression, anger, denial and high stress levels and these increased in those who received shocks from their ICDs compared to those who had not received any shocks [1, 16, 17, 19, 23, 32]. The studies demonstrate that if the ICD fires, there are greater emotional issues for those recipients than those who had not experienced shocks. Indeed one study demonstrated florid psychiatric symptoms in those who experienced shocks although no premorbid psychiatric history was identified [36]. This highlights the severe psychological distress that can occur in ICD patients. Unfortunately many of these studies do not offer advice on how to undertake education in this group of patients nor hypothesize the neuropsychiatric effects of anxiety on learning, however Clark et al. advocate cognitive behavioural therapy and psycho-education but no educational theory is presented [17].

Another important consideration for nurses is whether the patient and the spouse's educational needs are the same and whether separate sessions are required. The consequences of hospitalisation and arrhythmias on the patient's spouse should not be underestimated. A recent systematic review reported a shift in roles and responsibilities when heart disease is diagnosed but importantly most couples reported adjustments in their relationship and the cardiac event bringing them closer together [37]. This highlights the importance of spouse inclusion in any education sessions. Another important aspect is the considerable differences in perceived health between patients and their spouses. This was observed in a five year follow-up study after cardiac surgery with patients scoring higher (i.e. better) than their spouses in quality of life questionnaires [38]. Supportive relationships and education programs are well established in heart failure and these programs improve self-care and patient confidence [39] but may not be suitable for patients with acute psychological distress. As well as social support, the patient's financial situation and whether they are able to work is also an important consideration in those with chronic diseases including cardiovascular conditions [40].

In summary, an arrhythmia can have a profound psychological effect on a patient and their spouse making undertaking any education challenging. Nurses need to be aware of the effects anxiety has on learning and attempt to adapt their patient education, engage the patient and spouse and attempt to balance their care between technology (in this case the need for

constant cardiac monitoring) and more focused on patient concerns (fear of dying and defibrillator discharging). This case report highlights that although there were many difficulties, the outcome was favourable for both patient and spouse. Given the ageing population, the number of patients with comorbid conditions and the high burden of chronic diseases, further information and guidance is needed for nurses in caring for these individuals.

References

[1] Bilge AK, Ozben B, Demircan S, Cinar M, Yilmaz E, Adalet K. Depression and anxiety status of patients with implantable cardioverter defibrillator and precipitating factors. Pacing Clin Electrophysiol. 2006; 29: 619-26. PMid:16784428 http://dx.doi.org/10.1111/j.1540-8159.2006.00409.x

[2] Flemme I, Johansson I, Stromberg A. Living with life-saving technology - coping strategies in implantable cardioverter defibrillators recipients. J Clin Nurs. 2011.

[3] Friedmann E, Thomas SA, Inguito P, et al. Quality of life and psychological status of patients with implantable cardioverter defibrillators. J Interv Card Electrophysiol. 2006; 17: 65-72. PMid:17235681 http://dx.doi.org/10.1007/s10840-006-9053-1

[4] Cuijpers P, van Straten A, Warmerdam L, Andersson G. Psychological treatment of depression: a meta-analytic database of randomized studies. BMC Psychiatry. 2008; 8: 36. PMid:18485191 http://dx.doi.org/10.1186/1471-244X-8-36

[5] Sheard T, Maguire P. The effect of psychological interventions on anxiety and depression in cancer patients: results of two meta-analyses. Br J Cancer. 1999; 80: 1770-80. PMid:10468295 http://dx.doi.org/10.1038/sj.bjc.6690596

[6] Syed J, Myers R. Sarcoid heart disease. Can J Cardiol. 2004; 20: 89-93. PMid:14968147

[7] Rajasenan V, Cooper ES. Myocardial sarcoidosis, bouts of ventricular tachycardia, psychiatric manifestations and sudden death. A case report. J Natl Med Assoc. 1969; 61: 306-9. PMid:5796402

[8] Doughan AR, Williams BR. Cardiac sarcoidosis. Heart. 2006; 92: 282-8. PMid:16415205 http://dx.doi.org/10.1136/hrt.2005.080481

[9] Tooth L, McKenna K. Cardiac patient teaching: application to patients undergoing coronary angioplasty and their partners. Patient Educ Couns. 1995; 25: 1-8. http://dx.doi.org/10.1016/0738-3991(94)00659-A

[10] Knowles MS, Holton, E., Swanson, R. The Adult Leaner: the definitive classic in adult education and human resource development. San Diego, California. Elsevier; 2005.

[11] McKenna K, Tooth L. Client education: a partnership approach for health practitioners. Sydney, Australia: University of NSW Press Ltd; 2006.

[12] Kennedy GJ, Hofer MA, Cohen D, Shindledecker R, Fisher JD. Significance of depression and cognitive impairment in patients undergoing programed stimulation of cardiac arrhythmias. Psychosom Med. 1987; 49: 410-21. PMid:3615769

[13] Sutton-Simon K, Goldfried, M. Faulty thinking patterns in two types of anxiety Cognitive Therapy and Research 1979; 3: 193-203. http://dx.doi.org/10.1007/BF01172605

[14] Scanlon A, Lee GA. The use of the term vulnerability in acute care: why does it differ and what does it mean? Aust J Adv Nurs. 2007; 24: 54-9. PMid:17518167

[15] Crespo EM, Kim J, Selzman KA. The use of implantable cardioverter defibrillators for the prevention of sudden cardiac death: a review of the evidence and implications. Am J Med Sci. 2005; 329: 238-46. PMid:15894866 http://dx.doi.org/10.1097/00000441-200505000-00005

[16] Carroll DL, Hamilton GA. Quality of life in implanted cardioverter defibrillator recipients: the impact of a device shock. Heart Lung. 2005; 34: 169-78. http://dx.doi.org/10.1016/j.hrtlng.2004.10.002

[17] Clark AM, Jaarsma T, Strachan P, et al. Effective communication and ethical consent in decisions related to ICDs. Nat Rev Cardiol. 2011; 8: 694-705. PMid:21788961 http://dx.doi.org/10.1038/nrcardio.2011.101

[18] Dunbar SB, Warner CD, Purcell JA. Internal cardioverter defibrillator device discharge: experiences of patients and family members. Heart Lung. 1993; 22: 494-501. PMid:8288452

[19] Bainger EM, Fernsler JI. Perceived quality of life before and after implantation of an internal cardioverter defibrillator. Am J Crit Care. 1995; 4: 36-43. PMid:7894553

[20] Leosdottir M, Sigurdsson E, Reimarsdottir G, et al. Health-related quality of life of patients with implantable cardioverter defibrillators compared with that of pacemaker recipients. Europace. 2006; 8: 168-74. PMid:16627433 http://dx.doi.org/10.1093/europace/euj052

[21] Dougherty CM. Longitudinal recovery following sudden cardiac arrest and internal cardioverter defibrillator implantation: survivors and their families. Am J Crit Care. 1994; 3: 145-54. PMid:8167775

[22] Pelletier D, Gallagher R, Mitten-Lewis S, McKinley S, Squire J. Australian implantable cardiac defibrillator recipients: quality-of-life issues. Int J Nurs Pract. 2002; 8: 68-74. http://dx.doi.org/10.1046/j.1440-172x.2002.00345.x

[23] Pedersen SS, van Domburg RT, Theuns DA, Jordaens L, Erdman RA. Concerns about the implantable cardioverter defibrillator: a determinant of anxiety and depressive symptoms independent of experienced shocks. Am Heart J. 2005; 149: 664-9. PMid:15990750 http://dx.doi.org/10.1016/j.ahj.2004.06.031

[24] Walfridsson U, Walfridsson H, Arestedt K, Stromberg A. Impact of radiofrequency ablation on health-related quality of life in patients with paroxysmal supraventricular tachycardia compared with a norm population one year after treatment. Heart Lung. 2011; 40: 405-11. http://dx.doi.org/10.1016/j.hrtlng.2010.09.004

[25] Lee GA. Determinants of quality of life five years after coronary artery bypass graft surgery. Heart Lung. 2009; 38: 91-9. http://dx.doi.org/10.1016/j.hrtlng.2008.04.003

[26] Luttik ML, Jaarsma T, Sanderman R, Fleer J. The advisory brought to practice Routine screening on depression (and anxiety) in coronary heart disease; consequences and implications. Eur J Cardiovasc Nurs. 2011; 10: 228-33. PMid:20875772 http://dx.doi.org/10.1016/j.ejcnurse.2010.08.005

[27] Palacios-Cena D, Losa-Iglesias ME, Alvarez-Lopez C, et al. Patients, intimate partners and family experiences of implantable cardioverter defibrillators: qualitative systematic review. J Adv Nurs. 2011; 67: 2537-50. PMid:21615459 http://dx.doi.org/10.1111/j.1365-2648.2011.05694.x

[28] Rosenfeld R. Anxiety and learning. Teaching Sociology. 1978; 5: 151-66. http://dx.doi.org/10.2307/1317061

[29] Szafran R. Question-pool study guide. Teaching Sociology. 1981; 9: 31-43. http://dx.doi.org/10.2307/1317010

[30] Wong J. An exploration of patient experiences in training for nocturnal home hemodialysis. Masters Abstracts International. 2007; 87.

[31] Mineka S, Zinbarg R. A contemporary learning theory perspective on the etiology of anxiety disorders: it's not what you thought it was. Am Psychol. 2006; 61: 10-26. PMid:16435973 http://dx.doi.org/10.1037/0003-066X.61.1.10

[32] Duru F, Candinas R. Long-term experience with the electrogram (EGM) width criterion for differential of supraventricular tachycardia (SVT) and ventricular tachycardia (VT) in patients with implantable cardioverter defibrillators (ICDs). Pacing Clin Electrophysiol. 2001; 24: 1171-3.

[33] Edelman S, Lemon J, Kirkness A. Educational intervention for patients with automatic implantable cardioverter defibrillators. Aust J Adv Nurs. 2007; 24: 26-32. PMid:17518162

[34] Molchany CA, Peterson KA. The psychosocial effects of support group intervention on AICD recipients and their significant others. Prog Cardiovasc Nurs. 1994; 9: 23-9. PMid:7937686

[35] Dougherty CM, Pyper GP, Frasz HA. Description of a nursing intervention program after an implantable cardioverter defibrillator. Heart Lung. 2004; 33: 183-90. http://dx.doi.org/10.1016/j.hrtlng.2004.01.003

[36] Bourke JP, Turkington D, Thomas G, McComb JM, Tynan M. Florid psychopathology in patients receiving shocks from implanted cardioverter-defibrillators. Heart. 1997; 78: 581-3. PMid:9470875

[37] Dalteg T, Benzein E, Fridlund B, Malm D. Cardiac disease and its consequences on the partner relationship: a systematic review. Eur J Cardiovasc Nurs. 2011; 10: 140-9. PMid:21345737 http://dx.doi.org/10.1016/j.ejcnurse.2011.01.006

[38] Lee GA. Patient and spouse perceived quality of life five years after coronary artery bypass graft surgery. Open Nurs J. 2008; 2: 63-7. PMid:19319222 http://dx.doi.org/10.2174/1874434600802010063

[39] Sebern M, Riegel B. Contributions of supportive relationships to heart failure self-care. Eur J Cardiovasc Nurs. 2009; 8: 97-104. PMid:18706865 http://dx.doi.org/10.1016/j.ejcnurse.2008.07.004

[40] Lee G, Carrington M. Tackling heart disease and poverty. Nurs Health Sci. 2007; 9: 290-4. http://dx.doi.org/10.1111/j.1442-2018.2007.00363.x