Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi, 2017;20:1

ARAŞTIRMA

PSYCHOSOCIAL ADJUSTMENT IN HEART FAILURE PATIENTS WITH CARDIOVERTER DEFIBRILLATOR IMPLANTATION

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Alınış Tarihi: 29.09.2016
Kabul Tarihi: 11.10.2017

ABSTRACT

Aim: *The aims of this study were to evaluate the psychosocial adjustment among heart failure patients after implantable cardioverter defibrillator implantation and to examine the correlation between psychosocial adjustment, and sociodemographic and cardiac characteristics.*

Method: *Descriptive and correlational study. The study sample consisted of 74 heart failure patients with implantable cardioverter defibrillator implants in Ankara, Turkey. The data were collected by using a Patient Information Form and the Psychosocial Adjustment to Illness Scale–Self-Report.*

Results*: Among the patients studied, 52.7% experienced fear after implantable cardioverter defibrillator implantation, the most common of which was fear of being shocked by the device (21.6%). The mean total psychosocial adjustment scores of the patients was at the level of maladjustment (53.28±18.89). As the heart failure class and number of drugs used increased, the psychosocial adjustment level declined (p<0.05). Patients who experienced fear after implantation had a lower psychosocial adjustment level, and the number of implantable cardioverter defibrillator shocks received had a negative impact on psychosocial adjustment (p<0.05).*

Conclusion: *Implantable cardioverter defibrillator implantation has a negative impact on the adjustment of heart failure patient recipients. For this reason, the psychosocial adjustment status of heart failure patients with implantable cardioverter defibrillator implants should be evaluated.*

Keywords: *Implantable cardioverter defibrillator; psychosocial adjustment; nursing; heart failure.*

ÖZET

Kardiyoverter Defibrilatör İmplantasyonu Yapılan Kalp Yetmezliği Hastalarında Psikososyal Uyumun Değerlendirilmesi

Amaç: *Bu çalışmanın amacı implante edilebilir kardiyoverter defibrilatör implantasyonu yapılan kalp yetmezliği hastalarında psikososyal uyumun değerlendirilmesi ve psikososyal uyum ile sosyodemografik ve kardiyak özellikler arasındaki ilişkinin incelenmesidir.*

Yöntem: *Tanımlayıcı ve ilişkilendirici bir çalışmadır. Araştırmanın örneklemini Ankara'da kalp yetmezliği olup implante edilebilir kardiyoverter defibrilatör takılan 74 hasta oluşturmuştur. Çalışmanın verileri "Hasta Bilgi Formu" ve "Hastalığa Psikososyal Uyum Öz Bildirim Ölçeği ile toplanmıştır.*

Bulgular: *Çalışmada hastaların %52.7'si İKD sonrası korku yaşamakta ve en çok yaşanan korku cihazın şok vermesidir (%21.6). Hastalarının psikososyal uyum toplam puan ortalaması kötü uyum düzeyindedir (53.28±18.89). Kalp yetmezliği fonksiyonel sınıfı ve kullanılan ilaç sayısı arttıkça, psikososyal uyum bozulmaktadır (p<0.05). İKD sonrası korku yaşayan hastaların psikososyal uyum düzeyleri düşüktür. Ve alınan İKD şok sayısı psikososyal uyumu olumsuz etkilemektedir (p<0.05).*

Sonuç:*, İmplante edilebilir kardiyoverter defibrilatör implantasyonu kalp yetmezliği hastalarının uyumunu olumsuz etkilemektedir. Bu nedenle İKD implantasyonu yapılan kalp yetmezliği hastalarının psikososyal uyum durumu değerlendirilmelidir.*

Anahtar kelimeler: *İmplante edilebilir kardiyoverter defibrilatör; psikososyal uyum; hemşirelik; kalp yetmezliği.*

INTRODUCTION

According to the New York Heart Association (NYHA), the leading cause of death among patients with heart failure functional classes II and III is sudden cardiac death, and more than 95% of these patients die before their arrival at the hospital (Thomas, Friedmann, Gottlieb, Liu, Patricia, Chapa et al. 2009). Therefore, implantable cardioverter defibrillator (ICD) isused extensively throughout the world to prevent sudden cardiac death and treat life-threatening ventricular arrhythmias (Burke,

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Hallas, Clark-Carter, White and Connely 2003). ICD is surgically implanted device that return the heart to its actual rhythm and terminate fatal ventricular arrhythmias by delivering low-energy shocks to the heart (Burke, Hallas, Clark-Carter, White and Connely 2003;Mauro 2008).Randomized clinical trials have indicated the superiority of ICD to antiarrhythmic therapy, and ICD implantation has been reported to decrease mortality by 30-50% (Buxton, Leek, Fisher, Josephson, Prystowsky and Hafley 1999; Lindenfeld, Feldman, Saxon, Boehmer, Carson, Ghaliet al. 2007; Moss, Hall, Cannom, Daubert, Higgins, Klein et al.1996). On the other hand, ICD implantation can cause psychological, social, and physical changes in patients and can also lead to psychosocial adjustment (PSA) problems in some recipients (Beery, Baas and Henthorn 2007; Bilge, Özben, Demircan, Cinar, Yilmaz and Adalet 2006;Carroll and Hamilton, 2005;Dunbar, Dougherty, Sears, Carroll, Goldstein, Mark et al. 2012;Dunbar, Langberg, Reilly, Viswanathan, McCarty and Culler et al.2009;Mauro 2010;Thylén, Dekker, Jaarsma, Strömberg and Moser2014; White 2002;Zayac and Finch 2009).

After ICD implantation, the recipients may experience fear of ICD shocks and of car driving. The patients may also fear that the ICD would not work or that physical and sexual activity would lead to ICD shocks. Furthermore, some patients have concerns regarding any change in their body image, work lives, and personal and family roles (Dunbar 2005; Sola and Bostwick 2005; Zayac and Finch 2009). All these fears and concerns cause PSA problems among patients (Conti and Sears2001). In addition to medical treatment, the evaluation of patients with ICD implants from the physical, social, psychological, and behavioral aspects is recommended to prevent potential problems (Carroll and Hamilton 2005; Mauro 2010; Smeulders, van Haastregt, Dijkman-Domanska, van Hoef, van Eijk, Kempen G 2007; White 2002).

A few studies have evaluated the PSA levels of patients with ICD and the factors affecting PSA (Kohn, Petrucci, Baessler, Soto and Movsowitz 2000; Mauro2008;Mauro 2010). The present study evaluated the PSA of heart failure patients with ICD implants and examined the correlation between PSA, and sociodemographic and cardiac characteristics.

The objectives of the study were as follows:

1. To determine the PSA levels of heart failure patients with ICD implants,
2. To examine the correlation between the PSA and the sociodemographic characteristics of heart failure patients with ICD implants,
3. To examine the correlation between the PSA and the cardiac characteristics of heart failure patients with ICD implants.

METHODS

Study Design

A descriptive and correlational design was used in this study.

Population

The universe of the study was composed of 500 implantable cardioverter defibrillator patients who attended the pacemaker control unit of a cardiology clinic for routine controls in 2011.

Sample and Setting

This study was conducted in the pacemaker control unit of a cardiology clinic in a training and research hospital in Ankara, Turkey. The unit does checking procedures on cardiac pacemakers but does not provide training, consultancy, or nursing care for patients. The study included 74 heart failure patients, who attended the unit for routine controls, met the study inclusion criteria, and consented to participate in the study. The study inclusion criteria were: having a time period of at least 6 months since ICD implantation, experience of heart failure, and ages 18-65 years old.

The number of patients to be included in the study was calculated by using the Number Cruncher Statistical System (NCSS) software package, while yielded a sample size of 74 at 0.90 power and with 0.05 margin of error.

Data Collection

The data were collected by using a Patient Information Form and the Psychosocial Adjustment to Illness Scale–Self-Report (PAIS-SR). Face-to-face interviews were done by the researchers in separate rooms at the cardiology clinic.

Patient Information Form

The Patient Information Form was developed according to previous studies in the literature (Akın and Durna 2006; Beery, Baas and Henthorn 2007; Carroll and Hamilton, 2005; Dunbar 2005; Mauro 2010; Sears, Matchett and Conti 2009; Sola and Bostwick 2005; Zayac and Finch 2009). This form contained questions on: sociodemographic characteristics (age, gender, marital status, economic status, employment status, and social support), cardiac history (NYHA functional classification, ejection fraction (EF), heart failure duration, drugs used, and concomitant illnesses), ICD-related information (number of shocks received since implantation), problems experienced after ICD, and status of receiving information about ICD. The data on cardiac history and number of shocks received since implantation were obtained from medical records.

Psychosocial Adjustment to Illness Scale–Self-Report

The PAIS-SR, which measures the PSA to illness, was developed by Derogatis and Lopez in 1983 (Derogatis 1986). The instrument consists of 46 items and 7 domains. These domains are: health care orientation, vocational environment, domestic environment, sexual relationships, extended family relationships, social environment, and psychological distress. The Turkish validity-reliability study of the scale was done by Adaylar (Adaylar 1995). The reliability coefficients were found to be between 0.71- 0.89 for the domains and 0.90 for the whole scale in heart failure patients (Akın and Durna 2006).

The scale contains four descriptive statements, including varying levels of adjustment for each domain. Patients are asked to choose the statements that best describe their personal experiences. Each item corresponds to a score of 0, 1, 2,or 3. A high level of negative changes since illness is rated as 3, whereas positive changes or no change is rated as 0. The minimum and maximum scores range between 0 and 138. An increasing total PAIS-SR score indicates worsening PSA. Scores below 35 indicate good PSA, scores between 35 and 51 indicate moderate PSA, and scores above 51 indicate maladjustment (Adaylar 1995; Akın and Durna 2006).

Data Analysis

Data analysis was done by using the Statistical Package for Social Sciences (SPSS) software version 16.0. Descriptive statistics were used, including means, standard deviations, numbers, and percentages. Because the data indicated a normal distribution according to the Kolmogorov–Smirnov test (Kolmogorov–Smirnov Z = 0.626, p = 0.828), the ttest, one-way ANOVA, and Pearson's correlation coefficient were used for independent groups. Statistical significance was set at $p<0.05$ for all tests.

Ethical Considerations

Oral and written consent was obtained from the participants before the study. Written approval was received from the hospital in which the study was done, as well as from the ethics committee of Hacettepe University.

RESULTS AND DISCUSSION

The mean age of the patients was 51.5 years; 63.5% were 51 years old and above and 85.1% were male. Among the patients, 63.5% had an educational level of primary school or less, 52.7% had a moderate economic status, 93.2% were married, and 95.9% had children. In addition, 43.2% of the patients rated their medical condition as moderate. The mean EF of the patients was 24.6% (min:15%, max: 40%). Half of the patients had suffered from heart failure for five years or less, and 55.4% had NYHA class II heart failure. The mean number of drugs used by the patients was 6.3±1.8 (min:1, max:11); the drugs included anticoagulants (94.6%), diuretics (85.1%), ACE inhibitors (71.6%), adrenergic receptor blockers (55.4%), beta-blockers (50.0%), statins (45.9%), and digital treatments (44.6%).

The ICD implant characteristics of the patients indicated that the mean time since implantation was 25.1 months (min:6 months, max: 91 months);81.1% of the patients received an ICD for primary prevention, 86.5% had no complications due to ICD, and 81.1% had no ICD replacement. Among the patients, 52.7% experienced fear after ICD implantation, the most common of which were: fear of being shocked by the device (21.6%), fear of death (16.8%), uncertainty about the future (12.0%), fear of being alone (12.0%), and fear of losing individual control (9.6%).The results showed that 58.1% of the patients received ICD shocks, and 23% did so 2-4 times. Also, 64.9% could not anticipate that the device would activate, and half of the patients had social support after ICD implantation. In the present study, the patients mostly feared ICD shocks. Because they had no idea about when and where ICD shocks would occur, the patients experienced fear and concern, which negatively affected their PSA (Carroll and Hamilton 2005; Conti and Sears 2001; Dunbar 2005). Such fear had a negative impact on the patients' family, work and sex lives, and psychological state, as well as on their total PSA. In a previous study, Chair, Lee, Choi and Sears (2011) found a negative correlation between the anxiety levels experienced by patients due to ICD shocks and the adjustment to device and return to normal functions.

The mean total PSA scores of the patients were at the level of maladjustment (53.28±18.89); the negative impact was most often experienced in the domains of vocational environment, health care orientation, and sexual relationships (Table 1). The PSA was at the level of maladjustment for more than half of the patients (56.8%); 21.6% had moderate adjustment, and21.6% had good adjustment. This study found that heart failure patients with ICD implants had a poor level of PSA (53.28±18.89). ICD implantation can cause PSA problems in some patients (Beery 2007; Thomas, Friedmann, Gottlieb, Liu, Patricia, Chapa et al. 2009; White 2002). However, Mauro (2008) reported that ICD recipients had a good level of PSA at 1 week (PAIS-SR score: 31.00±16.07) and 8 weeks (PAIS-SR score: 29.06± 17.70) after hospital discharge. The low PSA level found in the present study might result from the characteristics of the sample, which consisted of young heart failure patients with a low EF, indicating illness severity.

Table 1. Distribution of PAIS-SR Scores (n=74)

PAIS-SR Domains[a]	**Scale Min-Max Scores**	**Sample Group Min-Max Scores**	**Mean± SD**
Health care orientation	0-24	1-17	9.32 ±3.76
Vocational environment	0-18	1-15	9.48 ±3.65
Domestic environment	0-24	1-19	7.74±4.95
Sexual relationships	0-18	0-16	8.40±4.27
Extended family relationships	0-15	0-11	3.68±2.76
Social environment	0-18	0-16	7.90 ± 4.19
Psychological distress	0-21	0-16	6.72±4.17
PAIS-SR total	0-138	19-86	53.28±18.89

[a] Higher scores indicate more adjustment problems.
Abbreviation: PAIS-SR, Psychosocial Adjustment to Illness Scale–Self-Report.

ICD patients with severe medical conditions are at risk of PSA, and those patients who do not understand their medical condition and the reason for the implantation have difficulty in accepting the ICD (Sears and Conti 2002). In our study, the lack of training, consultancy, or nursing care regarding the problems experienced by patients after ICD implantation was considered to be an important factor affecting the PSA of patients.

The total PAIS-SR scores of the patients did not vary with age or gender (r=0.117, p= 0.320; t=1.071, p=0.288). However, as the economic status of the patients increased, the mean total PAIS-SR scores showed a statistically significant decrease (F= 5.891, p= 0.004) (PAIS-SR economic status: good, 41.88±20.31; moderate, 49.92±18.70; poor, 62.26±15.16). The posthoc analysis revealed that the difference existed between patients with good and poor economic status and those with moderate and poor economic status. Additionally, the PSA of patients without social support was significantly higher compared with those with social support (t=2.325, p=0.023) (total PAIS-SR score: with social support, 48.32±18.21; without social support, 58.24±18.47).

There was a moderately positive correlation between the number of drugs used (r=0.344, p= 0.003) and NYHA class (r=0.428, p= 0.000) and the total scale score. In agreement with the literature, this study found a positive correlation between the number of drugs used and NYHA heart failure class and the PSA scores (Akın and Durna 2006; Mauro 2008). The mean total PSA scores of patients within EF of 24% and below were significantly higher than those of patients with an EF above 25% (t=2.433, p=0.017) (total PAIS-SR score: EF <24%, 58.74±17.95; EF >25%, 48.39±18.57). The change in the total PAIS-SR score of the patients according to their perception of their medical condition and in the domains of health care orientation, domestic environment, vocational environment, sexual relationships, and social environment was statistically significant (p<0.05). Accordingly, as the patients' perception of their medical condition deteriorated, the total and domain scores increased (Table 2).

Table 2. PAIS-SR Scores According to Patients' Perception of Their Medical Condition (n=74)

PAIS-SR Domains	Perception of Medical Condition Good (n=23) Mean± SD	Moderate (n=32) Mean± SD	Poor (n=19) Mean ±SD	F and p
Health care orientation	7.95±3.83	8.84±3.52	11.78±2.99	F= 6.782 p=0.002*
Vocational environment	8.86±3.92	8.87±3.79	11.26±2.46	F= 3.198 p= 0.047*
Domestic environment	5.91±5.00	6.96±4.09	11.26±4.65	F= 8.061 p= 0.001*
Sexual relationships	7.08±4.54	7.96±4.25	10.73±3.08	F= 4.469 p= 0.015*
Extended family relationships	2.86±3.07	3.59±2.53	4.84±2.45	F= 2.816 p= 0.067
Social environment	6.21±4.97	7.65±3.35	10.36±3.41	F= 5.880 p= 0.004*
Psychological distress	5.43±4.13	6.78±4.45	8.21±3.35	F= 2.387 p= 0.099
PAIS-SR total	44.34±19.37	50.68±16.50	68.47±12.72	F= 11.647 p= 0.000*

Abbreviation: PAIS-SR, Psychosocial Adjustment to Illness Scale–Self-Report, *p<0.05

Along with severe medical condition, the patients' perception of their medical condition can also influence the PSA. Because the severity of their illness prevented the patients from going about their activities of daily living, their domestic, vocational, sexual, and social lives and their health care orientation were negatively affected by their bad perception of their medical condition. The PSA of patients who experienced fear after implantation was at the level of maladjustment, and they reported having problems in the domains of vocational environment, domestic environment, sexual relationships, and psychological distress (p<0.05) (Table 3).

Table 3. PAIS-SR Scores According to Fear Experience After ICD Implantation (n=74)

PAIS-SR Domains	Fear Yes (n= 39) Mean ±SD	No (n=35) Mean± SD	t and p value
Health care orientation	9.17±4.07	9.48±3.43	t= -0.347 p= 0.729
Vocational environment	10.33±3.54	8.54±3.59	t= 2.154 p= 0.035*
Domestic environment	9.02±5.14	6.31±4.37	t= 2.428 p= 0.018*
Sexual relationships	9.79±3.67	6.85±4.41	t= 3.121 p= 0.003*
Extended family relationships	4.25±2.86	3.05±2.54	t= 1.896 p= 0.062
Social environment	8.51±4.21	7.22±4.13	t= 1.321 p= 0.191
Psychological distress	8.41±3.95	4.85±3.63	t=4.012 p=0.000*
PAIS-SR total	59.51±19.71	46.34±15.41	t= 3.175 p= 0.002*

Abbreviation: PAIS-SR, Psychosocial Adjustment to Illness Scale–Self-Report. * p<0.0

Furthermore, there was a weak positive correlation between the number of ICD shocks received and the total PAIS-SR score (r=0.267, p= 0.022). The occurrence of ICD shocks affects the patients' ICD-related adjustment and doubles the risk of cardiac mortality(Carroll and Hamilton 2008; Dougherty and Hunziker 2009). Therefore, coping strategies related to shocks should be discussed during discharge planning (Sears, Shea and Conti 2005). Previous studies found that patients who hadexperienced ICD shocks had higher levels of anxiety and socialized less (Bilge, Özben, Demircan, Cinar, Yilmaz and Adalet 2006; Carroll and Hamilton 2005). Similarly, in this study, as the number of shocks increased, the patients' PSA deteriorated. Also, the lack of information on shocks during the discharge training was considered to have negatively affected the PSA.

CONCLUSION

In the current study, half of the participants had suffered from heart failure for 5 years and less, and about half of them (55.4%) had class II heart failure. The patients had a mean EF of 24.6% and used 6.3 drugs on average. More than half of the patients (52.7%) experienced fear after ICD implantation due to various reasons, with being shocked by the device as their main fear (21.6%). The study results indicated that the mean PSA was at the level of maladjustment. As the economic status of the patients increased, the level of PSA improved. As the number of drugs used and heart failure functional class increased, the PSA deteriorated. Patients with a low EF had poor levels of PSA. In addition, as the patients' perception of their medical condition deteriorated, their total PSA and the domains of health care orientation, vocational environment, domestic environment, sexual relationships, and social environment were negatively affected. The fear experienced after implantation caused problems in PSA and in the domains of vocational environment, domestic environment, sexual relationships, and psychological distress. Also, as the number of ICD shocks received increased, the PSA deteriorated.

An assessment of the psychosocial state of patients is suggested in the early post-implant phase to identify those at risk of PSA. Psychosocial care practice to ensure patients' adjustment to their new lives and therapy conditions should start at the time when the decision for ICD implantation is made and should continue throughout the patient's lifetime.

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