Psychological Problems of Patients with Implantable Cardioverter Defibrillators in Baghdad City

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Summary:

Background: Patients with an Implantable Cardiovertor Defibrillation (ICD) describe psychological problems such as depression, anxiety, and stress**.** To achieve the full benefits of the device, patient must maintain their psychological status within good levels.

Objectives: The major objectives of this study were to determine the main psychological problems in adult patients with an ICD and to find out the relationship between Psychological problems in patients with ICD and some demographic characteristics of patients with ICD.

Patients and Methods: A Descriptive analytical study was carried out from January 25, 2011 to March 20, 2012 in order to determine Psychological problems of patients with ICD. The sample was selected by A purposive (non-probability) sampling of (100) patients raising ICD during routine checking or programming the device in outpatient at Ibn Abitar Hospital. Data was collected through the use of the Depression Anxiety Stress Scales (DASS) after doing some modifications and the process of the self- administrative report for each patient as a mean of data collection. The questionnaire was constructed by the researcher to achieve the objectives of the study, which consisted of two parts; the first part is concerned with the demographic characteristics of the patients; the second part consists of three domain describe the psychological problems and contain42- item measure of depression, anxiety and stress.

Results: Results of the study indicate that (80%) of the sample are male at age group (40-49) years old, (53.3%) were married, (62 %) are at Bachelor Degree, (39. %) experience with ICD since 6-12 months, (42 %) employee, (7o%) take about (1-5) discharge per last 6 months. Psychological problems (depression, anxiety, and stress) among ICD patients at high levels, and the highest one was stress at MS (3.00) and SD (0.48), and there were significant relationships between depression and gender, educational level, and since ICD implantation at p-value (0.030, 0.011, and 0.037). There were significant relationships between anxiety and age, marital status, educational level, since ICD implantation at p-value (0.008, 0.025,0 .000, 0.007). There were significant relationships between Stress and age, gender, occupations, since ICD implantation at p-value (0.001, 0.000,0 .002, 0.053).

Conclusions: An Implantable Cardioverter Defibrillator patients experience high levels of psychological problems, patients worry about the devices malfunctioning, a afraid from the ICD shocks, They should be granted psychological support from health professionals who are familiar with the specific problems of ICD recipients. As well as psychological interventions is important role of nurse for those patients with ICD.

Key words: Psychological Problems**,** Implantable Cardioverter Defibrillator

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Introduction:

Implantable Cardioverter Defibrillators (ICDs) are lifesaving devices that improve survival rates in people with serious heart arrhythmias or patients at risk for sudden cardiac arrest [1]. During implantation, the surgeon places the ICD under the skin in the upper chest beneath the patient's collarbone or abdominal muscles. Each lead is threaded through the subclavian or cephalic vein, passed into the appropriate cardiac chamber, and anchored with a soft prong or screw [2].The ICD monitors heart rhythm and provides corrective low-energy electrical pulses when necessary. Also it is able to correct more serious and life-threatening arrhythmias by applying higher-energy shocks called defibrillation shocks. The patient cannot feel low-energy pulses, but the defibrillation shocks are unpleasant. They can be painful and feel like a kick in the chest [3].During the first year after implantation, the chances of receiving at least one ICD shock can range from one third to one half ofall ICD recipients.1,2 The shock sensation has been likened to a swift kick in the chest and rated a "6" on a 0 to 10 pain scale. Sometimes the patient feels a series of shocks [4].ICD implantation may be associated with both physical and psychological complications. Physical side effects include discomfort at the ICD site and, rarely, infection. People may feel self-conscious because the ICD usually can be seen under the skin; the accompanying scar is about three inches long [5].The person may experience psychological problems including anxiety, depressive, fear, and stress. ICD-specific fears and symptoms of anxiety (for example, excessive worry, increased muscle tension, sweating, and increased heart rate and respiratory rate) are the most common psychological symptoms experienced by ICD recipients [6]. Because the experiencing event of shocks, avoidance, and hyperarousal are part of DSM-IV-TR criteria for posttraumatic stress disorder (PTSD), some clinicians equate patients' post-shock experience to PTSD [5].The full benefits of ICD can

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be achieved when patient's psychological status maintained and it's important that patients will address these psychological issues. According to the American Heart Association, research suggests a relationship between psychological stress and heart disease and stroke [7]. Therefore Identification of psychological problems in patients with ICD is crucial for management of distress, and consultation with psychiatrist should be a part of the treatment for patients with ICD and nursing psychological preparation for patients before ICD implantation and nursing interventions after implantation to reduce psychological problems, and help patients to learn to cope with ICD and monitoring the psychological impact of ICD must be a role of nurse.

Patients and Methods

A Descriptive analytical study was carried out from January 25, 2011 to March 20, 2012 in order to determine Psychological problems of patients with ICD. The sample was selected by a purposive (non-probability) sampling of (100) patients raising ICD during routine checking or programming the device in outpatient at Ibin Al-bitar Hospital. Data was collected through the use of the Depression Anxiety Stress Scales (DASS) after doing some modification and the process of the self- administrative report for each patient as a mean of data collection. The Depression Anxiety Stress Scales (DASS) is a 42-item measure of depression, anxiety and stress, when the patients attending the outpatient for routine checking or programming the device in Ibn-AL.Bitar Hospital for cardiac surgery. The questionnaire consisted of two parts; the first part is concerned with the demographic characteristics of the patients; the second part consists of three domains describe the psychological problems [8]. Such domain consist of 14-item, each item scored on a 3-point Likert scale, ranging 1-3 (no, sometime, and yes). The result was measured according to the following mean of score (< 1.5) low, (1.5-1.9) Mild, (2- 2.4) moderate, and (2.5-3) high.The validity of the questionnaire was obtained through a panel of experts and the reliability was achieved through the application of Cronbach's alpha reported at 0.71 for Stress, 0.76 for Anxiety, 0.72 for Depression, and for all 0.74 which was statistically acceptable.

Cronbach s' alpha Coefficient equation is used to estimate the reliability of the study instrument according to the following formula:

$$\mathbf{R} = \frac{\mathbf{K}}{\mathbf{K-1}}\left[1 - \frac{\sum \mathbf{Q1}^2}{\mathbf{Qy}^2}\right]$$

Data was analyzed through the application of the descriptive statistical analysis (frequency, percentage, mean, standard deviation, relative sufficiency and mean of score) and inferential statistic (Chi-square) [9].

$$\bar{\mathbf{X}} = \frac{\sum \mathbf{x_i}}{\mathbf{n}}$$

$$\mathbf{(MS)} = \frac{\mathbf{(3} \times \text{Yes}\mathbf{)} + \mathbf{(2} \times \text{sometime}\mathbf{)} + \mathbf{(1} \times \text{No}\mathbf{)}}{\text{Number of the sample}}$$

$$\mathbf{SD} = \sqrt{(\sum(\times - \times)\text{^}\mathbf{2}\ )/((\mathbf{n-1})}$$

Results:

Table (1) shows that (**80%**) of the sample are male at age group **(40-49)** years old, (**53.3%)** were married, **(62 %)** are at Bachelor Degree, **(39. %)** experience with ICD since **6-12** months, **(42 %)** employee**, (7o%)** take about (1-5) discharge per last 6 months.

Table (1) Demographic characteristics of the sample

CHARACTERISTICS	F	%
1-Gender		
• Male	80	80.0
• Female	20	20.0
2- Age		
• 20-29	5	5.0
• 30-39	9	9.0
• 40-49	31	31.0
• 50-59	29	29.0
• 60 and more	26	26.0
3-Marital status		
• Single	37	37.0
• Married	62	62.0
• Widow	1	1.0
4-Educational level		
• Illiterate	9	9.0
• Read and write	9	9.0
• Primary school	11	11.0
• Secondary school	20	20.0
• Diploma	14	14.0
• Bachelor	37	37.0
6- Since ICD implantation		
• 6-12 months	39	39.0
• 13-24 months	32	32.0
• 25-36 months	29	29.0
7-Occupation		
• Employee	42	42.0
• Earner	20	20.0
• House wife	38	38.0
8-Number of discharge per last 6 months		
•	5	5.0
>	70	70.0
•	25	25.0
-5		
•		
-10		
Total	10 0	100. 0

Table (2) shows that the highest mean of score **MS :(** 2.49**)** was Item **(No. 9) [**I feel that I had nothing well], while the lowest mean of score **MS :(** 2.02**)** was Item **(No. 6) [**I feel I wasn't worth much as a person since I got my ICD].

Table (2): Distribution of the Sample Regarding Their Level of Depression by Mean of Score and Relative sufficiency

No.of Depression Items	MS	SD	RS	Level
1	2.38	.632	79.3	Moderate
2	2.19	.748	73.00	Moderate
3	2.14	.779	71.33	Moderate
4	2.16	.838	72.00	Moderate
5	2.16	.692	72.00	Moderate
6	2.02	.791	67.33	Moderate
7	2.23	.790	74.33	Moderate
8	2.26	.579	75.33	Mild
9	2.49	.559	83.00	Moderate
10	2.40	.651	80.00	Moderate
11	2.40	.709	80.00	Moderate
12	2.27	.676	75.66	Moderate
13	2.26	.723	75.33	Moderate
14	2.23	.700	74.33	Moderate
Total	2.72	.533	90.66	High

MS = Mean of Score, SD = Standard Division, RS = Relative Sufficiency

Table (3) shows that the highest mean of score **MS :(** 2.30**)** was Item **(No. 11) [**I can't stop thinking about the ICD], while the lowest mean of score **MS :(** 1.92**)** was Item **(No. 5) [**I had a feeling of faintness]

Table (3): Distribution of the sample regarding to the Level of Anxiety by Mean of Score and Relative sufficiency

No. of Anxiety Items	MS	SD	RS	Level
1	2.25	.75	75.00	Moderate
2	2.00	.82	66.66	Mild
3	1.96	.80	65.33	Mild
4	2.21	.72	73.66	Moderate
5	1.92	.84	64.00	Mild
6	1.99	.81	66.33	Mild
7	1.94	.67	64.66	Mild
8	1.99	.64	66.33	Mild
9	2.15	.74	71.66	Moderate
10	2.07	.78	69.00	Moderate
11	2.30	.65	76.66	Moderate
12	1.97	.73	65.66	Mild
13	2.29	.64	76.33	Moderate
14	2.01	.82	67.00	Moderate
Total	2.63	.48	87.66	High

MS = Mean of Score, SD = Standard Division, RS = Relative Sufficiency

Table (4) shows that the highest mean of score **MS :(** 2.58) was Item **(No. 1) [**I found that I was very irritable], while the lowest mean of score **MS :(** 2.32) was Item **(No. 5) [**I felt confident about my ability to handle my personal problems].

Table (4): Distribution of the Sample Regarding the Level of Stress by Mean of Score and Relative sufficiency

No. 0f Stress items	MS	SD	RS	Level
1	2.58	.554	86.00	High
2	2.46	.540	82.00	Moderate
3	2.37	.485	79.00	Moderate
4	2.41	.552	80.33	Moderate
5	2.32	.548	77.33	Moderate
6	2.49	.595	83.00	Moderate
7	2.53	.540	84.33	High
8	2.38	.582	79.33	Moderate
9	2.54	.540	84.66	High
10	2.50	.522	83.33	Moderate
11	2.44	.556	81.33	Moderate
12	2.42	.554	74.66	Moderate
13	2.38	.528	79.33	Moderate
14	2.43	.624	81.00	Moderate
Total	3.00	.425	100	High

MS = Mean of Score, SD = Standard Division , RS = Relative Sufficiency

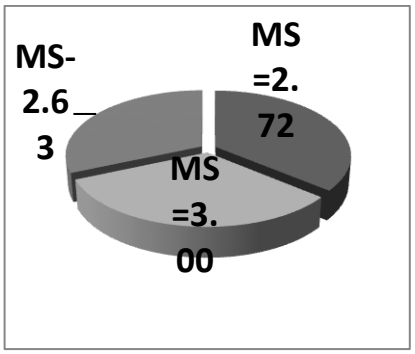

Figure (1) indicates that all domains of psychological problems are at high level, and the highest one was stress at MS (3.00) and SD (0.48).

Table (5) Distribution of the Sample According to Their Psychological Problems and Demographic Characteristics Relationships.

Demographic characteristics		Psychological Problems domains								
		Depression			Anxiety			Stress		
		x^2	df	P.V	x^2	df	P.V	x^2	df	P.V
1	Age	8.63	8	.374	13.78	4	.008**	27.52	8	.001**
2	Gender	7.03	2	.030*	.1.54	1	.214	51.06	2	.000**
3	Marital status	5.50	4	.240	7.41	2	.025*	4.00	4	.406
4	Occupations	4.89	4	.299	1.96	2	.376	17.28	4	.002* *
5	Educational level	25.84	12	.011*	31.44	6	.000**	19.81	12	.071
7	Since ICD implantation	10.2	4	.037*	9.96	2	.007**	9.34	4	.053*
8	Number of discharge	6.61	10	.761	4.92	5	.425	15.23	10	.124

x^2= chi-square, DF = Degree of Freedom, P.V = Probability Values, at P.V 0.05, *= Significant, **=highly Significant

Table (6) indicates that there were significant relationships between depression and gender, educational level, and since ICD implantation at p-value (0.030, 0.011, and 0.037). There were significant relationships between anxiety and age, marital status, educational level, since ICD implantation at p-value (0.008, 0.025,0 .000, 0.007). There were significant relationships between Stress and age, gender, occupations, since ICD implantation at p-value (0.001, 0.000,0 .002, 0.053).

Discussion:

The majority of the sample were male married at age group (40-49) years (31%), and most of them were employee and have bachelor degree of education. The average time since ICD implantation was (6-12) months (39%) and approximately seventhly of the patients (70%) had experienced ICDs shock (1-5) shock, such findings are in agree with the study done by Luyster who reported that some of female patients prefer use of antiarrhythmia drugs than ICD implantable because patient afraid from ICD dysfunction and concerned with body image because the device's silhouette may be visible under the skin, ICD may cause patients to feel a loss of personal, social, and material resources therefore the majority of the sample were male[10].In this study after implantation of an ICD, the most common psychological problems are anxiety, depression, and stress. Luderitz et al. reported that anger, anxiety, depression, and stress among 15 patients with ICDs who survived sudden cardiac arrest, and mentioned that feeling a "loss of control" are common among ICD patients [11].Psychological problems among ICD patients are at high levels, this findings are in agreement with those of (Brouke et al., 1997, Dunbar et al., 1996, Pycha 1986) who found that prevalence of psychological disorders among ICD recipients range from 15% to 60% with anxiety disorders and depression [12,13,14] . Hegel et al. reported that ICD patient experience increased levels of anxiety, depression, and fear of shocks [15]. Bilge et al. found that mean anxiety, and depression scores were 9.1 $\pm$ 5.3 and 7.2 $\pm$ 5.1, and 46% had anxiety while 41% had depression [16]. Irvin et al. assessed participants of implantable ICD and noted that between 58% and 48% may experience anxiety [17]. Kamphlis et al. found that rates of depression reported for ICD patients have wide ranges such as 22% to 66% [18].Patients with ICD experience emotional stress, as the situation of not knowing whether a ventricular tachycardia will occur and a shock to be delivered without them having any control over the situation, is fraught with anxiety [19]. Therefore, patients who have had several shocks can experience a higher level of anxiety ,worry, and feel uncertain because they fear that any activity may trigger a new shock from the ICD [20]. The findings of the present study shows high levels of depression, anxiety, and stress among the participants may be due to patients perceive ICD shocks as painful and unpleasant, which can cause fear, anger, anxiety, helplessness, and depression, and some ICD recipients become concerned with body image because the silhouette of the device may be visible under the skin.The result of the present study indicates that there were significant relationships between depression and gender, educational level, and since ICD implantation at p-value (0.030, 0.011, and 0.037). There were significant relationships between anxiety and age, marital status, educational level, since ICD implantation at p-value (0.008, 0.025,0 .000, 0.007). There were significant relationships between Stress and age, gender, occupations, since ICD implantation at p-value (0.001, 0.000,0 .002, 0.053).Johansen reported that woman more likely to experience depression than male patient [20] and that greater length of time since ICD implantation also may contribute to emotional distress as well as high level of education are suggested to be associated with depression among ICD patients [11]. Crow et al. found that at 9-19 months follow up noted that 7.4% could be classified as having major depressive disorder [21]. Anxiety also has been linked to some characteristics of patients with ICD

as shown in table (5) such as age, marital status, educational levels, and since ICD implantable were significantly associated with anxiety at P= (.008,.025,000, and .007 respectively) greater years since ICD implantation, increasing age and declining health could contribute to increases in anxiety [10],younger adults with ICD have more psychological distress than do older adults [22], While Godman et al. found that age of patients with ICD has been both negatively and positively correlation with anxiety[23]. Hamliton et al. found that anxiety levels to decrease over the 6 months after implantation with an increase in anxiety levels at 12 months[24], same results of Lewis et al. who found that anxiety at the time of implantation, it may persist up till 12 months in as 50% of patients[25]. While Heleg et al. found that 7of 21 ICD patients reported increasing levels of anxiety over 2 years at P. < o.05. Researcher point of view is that inadequate psychological preparation before an implantation of ICD and inadequate psychological intervention after an implantation of ICD.Stress also linked to some characteristics of patient with ICD such as age, gender, occupations, and since ICD implantation at P= (.001, .000, .002, and .053 respectively) adults age with ICD less than 50 years experience increased stress, patients with newly implanted ICDs face many stressors such as expensive medical bills, possible disability, driving restrictions, feel a loss of personal, social, and material resources, and loss of control [10].

After ICD implantation, patients may become more aware that they may experience life-threatening arrhythmias, also negative aspects of patient life, relationships, activities, and future. This result may be due to poor psychological preparation, poor evaluation and psychological intervention after ICD implantation,

Conclusions:

An Implantable Cardioverter Defibrillator patients experience high levels of psychological problems, patients worry about the devices malfunctioning, afraid from the ICD shocks, they should be granted psychological support from health professionals who are familiar with the specific problems of ICD recipients, as well as psychological interventions after ICD implantation is important role of nurse for those patients with ICD.

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