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# Patients' Knowledge about Safe Measures Post Implantable Cardioverter Defibrillator

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## Abstract

Patients who have implantable cardioverter defibrillators (ICD) are challenged with multiple physical, psychological along social complications. It is important to understand ICD patients' knowledge about safe measures post-implementation. The study aims to assess patient's knowledge of the safe measures after implantable cardioverter defibrillator and to determine the relationship between the patients' knowledge and demographic and medical characteristics. A cross sectional study was carried out from June 4st, 2023, to January 16th, 2024. Non-probability (purposive) sample of 70 patients who have an ICD during routine checking and programming the device in outpatient at Ibn – Al-Bitar specialized center in Baghdad city. The study instrument was composed of three parts, socio-demographic characteristics, medical information, and patient's knowledge of the safe measures after ICD implantation. The results of the study show the maximum duration of implantation of patients who attend the cardiac center is 14 years. The majority of patients were not smokers. The knowledge of patients regarding safe measures post-ICD was fair to the level regarding safe activity 44(62.9%) and 39(55.7%) to the electrical devices. In addition, the poor level of magnetic devices 41(58.6%) and 55(78.6%) to the medical devices. There are significant association among the patients' knowledge with sex and education level variables at $P \leq 0.05$. Conclusion: The knowledge of patients regarding safe measures post-ICD was poor level as general. Post-intervention education should be especially important to patients to avoid unnecessary limitations.

**Keywords: Implantable cardioverter defibrillators, Knowledge, Safe measures.**

## Introduction

Cardiovascular disease (CVD), which encompasses arrhythmia, heart failure, and coronary heart disease, remains the primary cause of death on a global scale. (CVD) kills 17.9 million people annually, 32% of all deaths worldwide, according to the World Health Organization [(1)]. Possible treatment methods include conventional pharmacotherapy, surgical intervention, and, more recently, the utilization of medical devices [(2)]. The only way to quickly diagnose and treat life-threatening ventricular arrhythmias, manage heart failure, and prevent sudden cardiac arrest is with ICDs implantation [(3)]. Since being implanted for the first time in people in 1980, implantable cardioverter defibrillators have advanced significantly, solidifying their role in the prevention of sudden cardiac death. ICDs continue to develop, and current research is ongoing to better the constantly expanding indications for their use, despite four decades of continuous design upgrades and upgrades. It is anticipated that these devices will become safer and more cost-effective over time [(4)]. ICD patients typically have insufficient understanding of self-care during the immediate post-ICD period and are not adequately educated about the lifestyle adjustments required after receiving an ICD [(5)]. Despite clear evidence that ICD therapy greatly lowers mortality patients with an ICD suffer more from many patients have physical, psychological, and social issues. ICD installation affects many elements of the patient's life, including personal and social functioning and family relationships, physical activity, lifestyle, and diet [(6-7)]. Also patients restrict activities, including sex, driving, and socializing [(8)] and patients may face problems such as low level perception about safe and unsafe activities, regarding permissible activities, and safety of usage of electrical appliances after ICD implantation [(9)]. Near the left breast, the implantable cardioverter defibrillator (ICD) is situated. This may cause problems for patients' special women, such as restrictions on clothing, breastfeeding, or perception of oneself. Female patients also deal with a variety of gender-

specific problems that have a big effect on their day-to-day lives. To reduce the discomfort that female patients experience daily, implanters should offer sufficient counseling and consider the bra position when pre-implant marking [10]. Lack of post-intervention education may lead to implanted device-threatening behavior. Alternatively, restraint in regular activities and severe health concerns may cause partial recovery [11,12]. Electric automobiles, radiofrequency identification systems, induction hobs, and energy supply systems such as wireless charging systems are examples of innovative electrical products that emit intermediate-frequency electromagnetic fields, which can be hazardous to human health [13]. Additionally, sexual activity is low during the time following the ICD implant, and both patients and their partners' sexual worries are at their peak just after the implant. Physical health at general ICD-related anxiety predicts sexual concerns at 3 and 12 months, whereas baseline predicts subsequent sexual activity at 3 months [14]. In our lives, more than half of us will require a magnetic resonance imaging (MRI) scan. A growing list of indications, such as neurological and musculoskeletal disorders, cancer diagnosis, and treatment planning, make MRI an unrivaled diagnostic tool. Unfortunately, due to safety concerns, patients with cardiac pacemakers or defibrillators have traditionally been prohibited from having MRIs. As a consequence, diagnoses are delayed, investigations are more intrusive, and costs are raised. There have been significant advancements in this area; newer devices are made to operate safely in MRI machines under specific circumstances, and legacy devices can be scanned as long as strict guidelines are observed [15]. Although mental health and multi-morbidity can affect patients' capacity to manage and accept their devices, the quality and amount of instruction before implantation affects outcomes and quality of life [16]. Minor errors in the patient care process can hurt the daily life of patients with ICD and lead to negative outcomes because patients with ICD bear the primary responsibility for taking care of themselves and because it is practically impossible to monitor these patients continuously. Therefore, an important aspect of their treatment and care is educating patients with ICD [17]. There is an anticipated substantial increase in the implantation of electronic devices such as ICDs and cardiac resynchronisation therapy (CRT) in Middle East Arab countries (MEACs) shortly. A recent study reported alarming findings on the lack of information provided to patients about ICD implantation [18]. It was demonstrated that a constructed education interview on the safety of CIEDs and living with these devices is important for improving the awareness of patients significantly. Thus, patients might achieve a faster adaptation to daily life decrease disinformation and misperceptions, and thus promote the quality of life after the device implantation [19]. This projection is based on the distinct epidemiological and management characteristics of heart failure in these countries compared to Western nations. The data suggests that individuals in MEACs develop heart failure at a younger age, with coronary artery disease (CAD) emerging as a primary underlying factor [20]. According to the Iraqi Ministry of Health's Annual Health Reports (2020-2022) showed that the number of patients who undergone catheterizations, pacemakers and ICDs implantation were 1312 during the period 2021-2022 and 1543 during the period 2020-2021. Between 2011 and 2023, more than 1٤8٠ of ICD implantable were performed in Ibn–Al-Bitar specialized center for cardiac surgery. Insufficient knowledge can affect the level of patient adaptation to ICD and could lead to unsafe activities. Razavi et al found that patients did not engage in enough physical exercise, experienced sleep disturbances, and had a poor perception of their disease and adherence to management. Shock discharge frequency and device implantation caused patients' low self-esteem and insomnia [21]. We noticed a significant gap in Iraqi patient's knowledge about the safe measures need to minimize the patients' hazards by identifying the main problems they face and recommending resolving them [9]. The present study's goals were to find out how much ICD patients knew about how safe their daily activities were, how that knowledge affected their day-to-day activities after the intervention, and how that knowledge related to the patient's knowledge about safe measures with demographic characteristics and medical information for patients has an ICD, because, without a full awareness of ICD patients' issues, comprehensive care to address all patient and family needs is impossible.

## Patients and Methods

A cross- sectional study was conducted from June 4st, 2023, to January 16th, 2024 to determine the patient's knowledge about safe measures after ICD. The study targeted patients with ICDs in outpatient clinics. The inclusion criteria for the current study included adult patients with ICD who were attending to Ibn – Al-Bitar specialized center in Baghdad city, all patients regardless of the number of years of implantation, and willing to participate in all aspects of the study. While the exclusion criteria included patients involved with other studies at the same time as the current study, hospitalized patients, and Patients who have Down syndrome. Non-probability (purposive) sample of 70 patients who have an ICD. The sample size for this study was estimated, using the Krejcie and Morgan Formula [22].

The researcher constructed and developed the instruments for the study. The study instrument comprises three sections: the initial portion deals with the socio-demographic characteristics of

patients with ICD, the second portion deals with clinical characteristics of patients with ICD, and the third section of patient's knowledge about safe measures post ICD, concerning safe measures instrument comprises four domains; the first domain concerned with the patient's safety of daily activities: consist of 15 Items, and the second domain concerned with patients' safety of usage various household and work-related devices: consists of 8 Items, Third section ask patients about harmful equipment with strong electromagnetic fields with implantable cardioverter defibrillator devices: consist of 6 Items, and the last part which included 11 questions related to the safety of certain medical procedures. Each item scored on a 3-point Likert scale, according to the following: The knowledge scores ranged from 0 – 40. One point is given for each correct answer and 0 for unknown or incorrect one. Poor knowledge level <50% of total score (score 0 to less than 20). Fair knowledge level 50% - 75% of total scores (score 20 to less than 30). Good knowledge level is >75% of total scores (score 20 to 40) [23].

The validity of the questionnaire was determined through the use of validity content index approach (apply the questionnaire to 7 specialist cardiology experts; 5 faculty members' doctors from the Ibn Al-Bitar cardiac center and 2 academics were faculty members in the College of Nursing/ University of Baghdad) The result of the study 0.85 which mean the questionnaire is valid [24]. The questionnaire also was sent to other 16 experts were requested to review the content and structure of the questionnaire to ensure its appropriateness in measuring the concept underlying the study and achieving the main objectives. The present study tool was tested-retested for reliability. The reliability coefficient for the patient's knowledge was 0.81. The study's data was analyzed using Version 26 of the Statistical Package for the Social Sciences (SPSS). Sample characteristics were described using descriptive statistics. The independent sample t-test and ANOVA test determined whether knowledge ratings differed statistically. The ethical approval letter obtains from the Ibn Al-Bitar Cardiac Center was obtained on 14th June 2023 numbered (1489) also obtains from the College of Nursing the numbered 5 in 30/4/2023.

## Results

The findings of this research were assessed by means of statistical methodologies that were adjusted and interpreted.

**Table 1. Distribution patients who have an ICD, according to demographic characteristic: N= 70**

| Variables | Groups | Freq (%) |
|---|---|---|
| **Sex** | Male | 52 (74.3%) |
| | Female | 18 (25.7%) |
| **Age Groups** | 18- less than 30 | 10 (14.3%) |
| | 30- less than 42 | 6 (8.6%) |
| | 42- less than 54 | 22 (31.4%) |
| | 54- less than 66 | 20 (28.6%) |
| | 66 & above | 12 (17.1%) |
| | M.S ∓SD | 49.13 (14.891) |
| **Occupation** | Employed | 14 (20%) |
| | Retired | 16 (22.9%) |
| | Freelancers | 17 (24.3%) |
| | Unemployed | 23 (32.8%) |
| **Education level** | I illiterate | 7 (10%) |
| | Read and write | 7 (10%) |
| | Primary graduate | 24 (34.3%) |
| | Medium graduate | 6 (8.6%) |
| | Secondary graduate | 10 (14.2%) |
| | Institute/ College graduate | 16 (22.9%) |
| **Marital status** | Single | 6 (8.6%) |
| | Married | 59 (84.2%) |
| | Widowed | 2 (2.9%) |
| | Divorced | 3 (4.3%) |
| **Socio-economic level** | Low | 14 (20%) |
| | Mild | 45 (64.3%) |
| | High | 11 (15.7%) |

N= number, Freq = Frequency, % = Percentage, M.S= Mean of score, SD = Standard deviation.

"Table 1" displays the demographic characteristics of 70 patients who have an ICD device, indicated that (74.3%) were male, (31.4%) were (42- less than 54) years old, and (32.8%) were unemployed. The data showed that (34.3%) of those were primary graduates, and (84.2%) of the sample were married. The results also reported a high percentage (64.3%) of the patients has median income.

**Table 2. Distribution of Patients Medical Information who have an ICD device: N= 70**

| Variables | Groups | Freq (%) |
|---|---|---|
| **Duration of implantation** | less than 3 months | 15 (21.4%) |
| | 3- less 6 month | 5 (7.1%) |
| | 6- less than one year | 17 (24.3%) |
| | 1- less than 5 years | 13 (18.6%) |
| | 5 years &above | 20 (28.6%) |
| | M.S ∓SD | 38 Months ∓1.491 |
| **Chronic disease** | Non | 40 (57.1%) |
| | Diabetic mellitus | 7 (10%) |
| | Hypertension | 12 (17.1%) |
| | Others | 11 (15.8%) |
| **Take drugs to the chronic diseases** | Yes | 53 (75.7%) |
| | No | 17 (24.3%) |
| **Smoking** | Yes | 7 (10%) |
| | No | 63 (90%) |

N= number, Freq = Frequency, % = Percentage, M.S= Mean of score, SD = Standard deviation.

The medical information of 70 patients who had an ICD device indicated that 28.6% of them were 5 years and above the duration of implantation. The results revealed that 57.1% of the population did not have a chronic disease, whereas 75.7% of patients who had a chronic disease took his drugs. The results also revealed that 90% of the sample was not smoking.

**Table 3. Distribution of patients' knowledge about their own ICD devices: N= 70**

| Variables | Groups | Freq (%) |
|---|---|---|
| **Did you receive the manufacturer information booklet from your doctor** | Yes | 24 (34.3%) |
| | No | 46 (65.7%) |
| **Read it** | Yes | 17 (24.3%) |
| | No | 7 (10%) |
| | Total | 24 (34.3%) |
| **Received information from your doctor** | Yes | 61 (87.1%) |
| | No | 9 (12.9%) |
| **Was the received information enough to ensure correct safe behavior** | Yes | 53 (75.7%) |
| | No | 17 (24.3%) |
| **Have you searched for information** | Yes | 32 (45.7%) |
| | No | 38 (54.3%) |
| **Where you searched** | Internet | 20 (28.6%) |
| | Books | 2 (2.9%) |
| | Friend work as a medical staff | 10 (14.3%) |
| | Total | 32 (45.8%) |

N= number, Freq = Frequency, % = Percentage.

"Table 3" displays that most of the patients 65.7% of the study sample did not receive the information booklet, and 24.3% who received the information booklet have read it. The majority of the population received information from their doctor 87.1%. The results display that 75.7% of the patients were reported that information received from their doctor enough to ensure their correct behavior. The results also revealed that 54.3% did not search for information whereas 45.7% of the patients 28.6% searched by Internet.

**Table 4. Patient's knowledge of implantable cardioverter defibrillators (ICDs)**

| Domain | Items | Freq. | % |
|---|---|---|---|
| Safe activities | Hold ID card for device today | *53 | 75.7 |
| | How would you assess your knowledge about the device | *46 | 65.7 |
| | Do you think that implantable heart devices protect against heart attacks | *14 | 20.0 |
| | Do you need to take heart medications after receiving ICD | *66 | 94.3 |
| | Can patients drive an automobile | *51 | 72.9 |
| | Can patients use seatbelts | *34 | 48.6 |
| | Can patients climb stairs | *45 | 64.3 |
| | Can patients bend over as in prayers | *54 | 77.1 |
| | Can patients swim | *50 | 71.4 |
| | Can patients move the arm on the side of their ICD | *34 | 48.6 |
| | Can patients sleep on the side of the ICD devices | *17 | 24.3 |
| | Can patients return to work | *25 | 35.7 |
| | Can patients carry heavy shopping bags | *23 | 32.9 |
| | Can patients return to their sexual life | *41 | 58.6 |
| | Can patients do sports with high risk of injury | *19 | 27.1 |
| Electrical devices | Is it safe to use cellular phones | *56 | 80.0 |
| | Is it safe to use hairdryer or electric shaver | *47 | 67.1 |
| | Is it safe to electrical lamps, switch buttons | *46 | 65.7 |
| | Is it safe to touch TV/VCR/radios | *44 | 62.9 |
| | Is it safe to use microwave ovens | *21 | 30.0 |
| | Is it safe to use computer | *27 | 38.6 |
| | Is it safe to use magnetic/electric mattresses and pillows | *20 | 28.6 |
| | Is it safe to passing through security gates in airports and checkpoints | *34 | 48.6 |
| Magnetic devices | Is it safe to power stations, electric generators | *31 | 44.3 |
| | Is it safe to internet horoscope | *36 | 51.4 |
| | Is it safe to ignition system of automobiles | *22 | 31.4 |
| | Is it safe to ham radio stations, radiofrequency transmitters, transformers | *22 | 31.4 |
| | Is it safe to loudspeakers with magnets | *19 | 27.1 |
| | Is it safe to chainsaws, welding equipment | *29 | 41.4 |
| Medical devices | Is it safe to x-ray | *59 | 84.3 |
| | Is it safe to ultrasonography | *44 | 62.9 |
| | Is it safe to computed tomography | *27 | 38.6 |
| | Is it safe to magnetic resonance imaging | *27 | 38.6 |
| | Is it safe to electrocardiographs | *39 | 55.7 |
| | Is it safe to radiotherapy | *12 | 17.1 |
| | Is it safe to lithotripsy | *9 | 12.9 |
| | Is it safe to short wave radiofrequency (diathermy) | *17 | 24.3 |
| | Is it safe to TENS (transcutaneous electrical nerve stimulation) | *10 | 14.3 |
| | Is it safe to electrocautery | *5 | 7.1 |
| | Is it safe to electrical devices of dentist (such as dental drills) | *22 | 31.4 |

*Correct response, %= percentage.

"Table 4" This table represents patients' knowledge, according to correctly answered the most of items of the domain reflecting insufficient ICD knowledge..

**Table 5. Means of scores of patient's knowledge of safe measure scale post ICD**

| Specific knowledge of safe measure | Maximum score | Mean of score | Standard deviation | Assessment |
|---|---|---|---|---|
| **Safe activity** | 15 | 8.21 | 2.153 | Fair |
| **Electrical devices** | 8 | 4.19 | 1.988 | Fair |
| **Magnetic devices** | 6 | 2.24 | 2.150 | Poor |
| **Medical devices** | 11 | 3.94 | 2.232 | Poor |
| **Total** | 40 | 18.57 | 5.361 | Poor |

Poor (level <50% of total score), Fair (level 50% - 75% of total scores), Good (level is >75% of total scores).

"Table 5" illustrated descriptive assessment of specific patients' knowledge domains to assess the studies samples knowledge regarding safe measures after ICD, the results demonstrated that fair level for safe activity, electrical devices, and the poor level for magnetic devices and medical devices domains. The total result showed the poor level of knowledge regarding safe measures post ICD.

**Table 6. Total patients' responses levels regarding the knowledge of safe measures after ICD:**

| Levels | Intervals | Freq. | % | mean | SD |
|---|---|---|---|---|---|
| **Poor** | 0-19 | 40 | 57.1 | | |
| **Fair** | 20-30 | 30 | 42.9 | | |
| **Good** | 31-40 | 0 | 0 | | |
| **Total** | 0-40 | 70 | 100.0 | 18.59 | 5.334 |

Freq. = Frequency, %= percentage, SD = Standard deviation.

"Table 6" displayed a descriptive assessment of total patients' responses regarding the knowledge of safe measures after ICD, the results demonstrated that the poor level was 40 (57.1%), and the fair level was 30 (47.9%). While no one was getting a good rating.

**Table 7. Association between patients' knowledge and sex:**

| Sex | N | Mean | Std. Deviation | T | Sig. |
|---|---|---|---|---|---|
| **Male** | 52 | 19.67 | 4.898 | 3.099 | .003 HS |
| **Female** | 18 | 15.39 | 5.500 | | |

HS=High Significant, N= Number. Std. Deviation= standard deviation, T= t-test.

The table indicated that there is a significant difference between the sex of patients and patients' knowledge regarding the safe measures post-ICD at $p< 0.05$ level of significance.

**Table 8. Association between patients' knowledge and educational level:**

| Educational Level | N | Mean | Std. Deviation | F | Sig. |
|---|---|---|---|---|---|
| **I illiterate** | 7 | 17.14 | 2.478 | 2.609 | .033 S* |
| **Read and write** | 7 | 20.71 | 6.020 | | |
| **Primary graduate** | 24 | 18.83 | 3.830 | | |
| **Secondary graduate** | 10 | 15.50 | 5.401 | | |
| **Medium graduate** | 6 | 14.83 | 8.886 | | |
| **Institute/ College graduate** | 16 | 21.19 | 5.154 | | |
| **Total** | 70 | 18.57 | 5.361 | | |

Sig.*= Significant, N= Number., Std. Deviation= standard deviation, F= one-way ANOVA.

The table illustrates that there is a significant difference between the educational level of patients and the knowledge of patients regarding the safe measures post-ICD at $p< 0.05$ level of significance.

## Discussion

Implantable cardioverter defibrillators (ICDs) are effective at reducing death rate at among patients with heart failure and those at high risk for sudden cardiac death. the result of the current study is illustrated by the frequency and percentage in the tables. that most of the study participants were male. This finding is comparable to the Iraqi study finding that the largest percentage of samples were males [25,26]. This is likely due to what has been scientifically proven that the majority of heart disease occurs 7-10 times later in women than in men due to differences in sex hormones [27]. The findings show a higher percentage of individuals aged 54-65, which is in line with the findings of a Denmark study published in the General Hospital Psychiatry Journal in 2023 This study showed the majority of patients with the age range of 50-60 years [28]. These results are not surprising due to the fact that heart failure commonly affects the old age population and the number of patients living with heart failure has been increasing, as a result of the

aging of the population, global population growth, and improved survival after diagnosis. However, incidence remained stable or increased in patients (<55 years) and the very old (>85 years), population aging has contributed to a sustained increase in prevalence [29]. The occupational status of the patients, (32.8%) of the study, were unemployed. These results This result was supported by a cross-sectional study to investigate heart failure patients self-care behavior and knowledge that found that most of the participants were unemployed [30]. The results also show that Sixty-four percent of the samples had a median income level which can be attributed to the sample's dominant age group. Whereas most of the patients fell within the age group ≥ 54 years old or maybe a true reflection of the country's overall socioeconomic status. Poverty remains a constraint to growth and a serious challenge for many Iraqis, Iraq already has the highest poverty rate in all upper-middle-income countries [31]. Thirty-four percent of the patients were primary graduates and 22% were Institute/ College graduates. which is similar to the results of the study conducted by Haugaa et al. (2018) who studied the patients' knowledge and attitudes regarding living with implantable electronic devices whereas most of the study sample had low education and (21%) had a higher level of education [32]. It could point to potential challenges in understanding and adhering to medical recommendations and treatment plans, which could impact the effectiveness of the ICD therapy. The majority of the sample were married, and their outcomes concurred with the two Iraqi studies which reported that a high percentage of the patients were married [33, 34]. Married Medicare beneficiaries achieve better health outcomes at half the per-person cost of single beneficiaries [35]. In relation to the duration of implantation of the ICD device, the results showed a high percentage of patients were (five years and above). The aforementioned findings are completely similar study showed that the median time from first ICD implantation was 5 years [18]. It's important to consider the implications of these results, particularly concerning the longevity and potential impact of ICD devices over time. Most of the study participants did not have a chronic disease. On the other hand, (17%) of the participants were diagnosed with hypertension for the remaining of them. This result is consistent with the results of a quasi-experimental study conducted to determining home-care program for patients with permanent pacemaker which found that approximately more than one-quarter of patients reported that hypertension was the main risk of heart disease, which may explain the findings of the present study [36]. Individuals with ICD devices may have a higher prevalence of certain cardiac condition, which could impact the overall health profile of patients. The majority of the sample doesn't smoke. This finding supported by Iraqi studies which found that the largest of his sample didn't smoking [37,38,39]. This could be due to the possibility that individuals with ICD may be more health-awareness and therefore less likely to smoke.

The findings of the study regarding the overall assessment of patients' knowledge; the findings reveal that patients in the study showed a poor level of knowledge regarding safe measures post-ICD in general, a fair level regarding safe activity 44(62.9%), and 39(55.7%) to the electrical devices, in addition, the poor level of magnetic devices 41(58.6%) and 55(78.6%) to the medical devices in specific. These results are similar to a previous study which was conducted in Turkey total of 93 ICD patients participated [19], in which they assessed the effect of patient education on the knowledge of safety and awareness about living with cardiac implantable electronic devices. had insufficient knowledge of physical activities specially in the exercise, sports, utilizing the arm on the side of ICDs items, EMI of home goods, dangerous equipment, and some medical devices domains. That avoidance behaviors may be a potential controllable risk factor for patients with anxiety and depressive symptoms [40]. The present findings are consistent with another study that was conducted to evaluate knowledge of daily activities' safety among patients with Cardiac Implantable Electronic Devices (CIED), which found two-thirds of them either need more information about their device 51% or do not possess essential knowledge about performing daily activities [11]. That results could be because patients reported in the previous studies a lack of information provided to patients ICD implantation [18]. The result of present study is same line with the findings of a recent survey conducted by the European Heart Rhythm Association (EHRA) indicated that 56% of patients had a low level of knowledge and needed more support concerning their cardiovascular implantable electronic device (CIED) knowledge these results agree with the findings of the current study [32]. A major effect is that many sufferers avoid situations and locations. these result support by (Ichikura, et al., 2017) who reported the avoiding situations manifested in over 50% of patients, and avoidance of circumstances and places was more common than avoidance of things like physical exercise, sexual activity, or showering, and directly interrupted patients' daily lives post-ICD [40]. This results could be limited communication with healthcare providers: Patients may not have regular or open communication with their healthcare providers about their devices and their impact on their daily life activities. This lack of communication can lead to misunderstandings and misconceptions about the device. Of equal importance, these findings are consistent with our previous descriptive study. which had reported the perception of patients

regarding permissible activities after ICD implantation domains were moderate, and low perceptions were in the safety of usage of electrical [9]. Patients with avoidance behaviors characteristically reduce their routine behaviors such as using cell phones, taking showers, or going out because they fear electric shock from an ICDs [41]. Thus, insufficient post-intervention education may lead to dangerous behavior that compromises implantable device.

The present study shows (Table 3) that the majority of the population received information from their doctor and the information made the correct behavior for the patients. This is consistent with studies which found the level of satisfaction with information provision was high [41, 42]. Regarding to the search for information, the result agrees with results of study who suggest a few patients sought ICD education. They observed that 16.3% of study participants got their knowledge from friends [5]. The present study shows a high knowledge about the need to take heart medications after ICD. Many studies supported this result which reported that considering the frequent coexistence of hypertension, coronary heart disease, and heart failure, a 93% correct response to the need for heart medication after ICD implantation is encouraging [11, 43], Contrary to the study conducted by Khafel and Yousif who reported that low to moderate levels of knowledge about using anticoagulant medications [44].

The results of "Table 7, and 8" indicated a significant association between certain demographic and clinical variables and knowledge level, specifically with education level, and sex variables at a p-value less than 0.05 is significant. The finding disagrees with results of our previous study the results revealed that all aspects of demographic characteristic have no significant differences relative to patient perception of permissible activities and safety of usage of electrical appliances after ICD implantation [9]. Another study agrees with present study they reported there were statistically significant between the educational level, and their total knowledge score pre-program implementation but post-program implementation there were high statistical relations between the studied sample socio-demographic characteristics educational level, and their total knowledge score [35]. Also, Athbi & Hassan, 2016 reported in their study a highly significant correlation was found between the health beliefs model construct and the education level [34].

Our study had a limitation of this study is the small number of participants, which means that generalization of the results may not be possible.

## Conclusion

The knowledge of patients regarding safe measures post- ICD was poor level. There are significant association among the patients' knowledge with sex and education level. The study recommended that post-intervention education should be especially to patients to avoid unnecessary limitations, and focused on safe and unsafe activities after ICD, and a simplified and comprehensive booklet including guidelines about instructional program should be introduced to the educated patients after ICD implantation at discharge and should be clearly explained by photos for illiterate patients.

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## Conflicts of Interest

There is no conflict of interest in the manuscript.

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## Ethics Statements

The authors have used human for study, so taken approval from University of Baghdad/ College of Nursing, and Ministry of Health.

## Authors contribution

The authors confirm their contribution to the paper. all authors reviewed the results and approved the final version of the manuscript.

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# معارف المرضى حول التدابير الآمنة بعد زرع جهاز مزيل الرجفان البطيني


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## الخلاصة

يواجه المرضى الذين لديهم جهاز مزيل الرجفان البطيني تحديات متعددة تتعلق بالمضاعفات البدنية والنفسية والاجتماعية. من المهم فهم معارف هولاء المرضى بها حول التدابير الآمنة بعد زرع الجهاز. تهدف الدراسة إلى تقييم معارف المرضى بالتدابير الآمنة بعد زرع جهاز مزيل الرجفان البطيني وتحديد العلاقة بين معرفة المرضى والسمات الديموغرافية والطبي . تم إجراء دراسة مقطعية من 4 حزيران ٢٠٢٣ إلى ١٦ كانون الثاني ٢٠٢٤ .تم استخدام عينة غير احتمالية (غرضية) من ٧٠ مريضًا لديهم الجهازفي أثناء الفحص الروتيني وبرمجة الجهاز في العيادة الخارجية في مركز ابن البيطار التخصصي في مدينة بغداد. تتكون أداة الدراسة من ثلاثة أجزاء: الخصائص الاجتماعية والمعلومات الطبية، ومعرفة المريض بالتدابير الآمنة بعد زرع الجهاز. أظهرت نتائج الدراسة أن أقصى مدة للزرع هي ١٤ عامًا. وغالبية المرضى غير مدخنين. كانت معرفة المرضى بشأن التدابير الآمنة بعد الزرع مستوى مقبول بالنسبة للنشاط الآمن ٤٤(٦٢,٩٪) وكان ٣٩(٥٥,٧٪) للأجهزة الكهربائية، بالاضافة مستوى ضعيف بالنسبة للأجهزة المغناطيسية ٤١(٥٨,٦٪) وكان ٥٥(٧٨,٦٪) للأجهزة الطبية. وهناك ارتباط معنوي بين معرفة المرضى والجنس ومستوى التعليم .الاستنتاج: كانت معرفة المرضى بشأن التدابير الآمنة بعد الزرع مستوى ضعيف بشكل عام. يجب أن يكون التثقيف ما بعد التدخل بشكل مكثف للمرضى لتجنب القيود الغير الضرورية.



**الكلمات المفتاحية: مزيل الرجفان البطيني، معارف، التدابير الآمنة.**