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The Quality of Life of Patients Using the Pacemaker in Zagazig University Hospitals

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Abstract

Background: Pacemakers significantly improve the quality of life for patients with arrhythmias by regulating heart rhythm, reducing symptoms like fatigue and dizziness, and enabling a more active lifestyle. **Aim**: This study aimed to assess the quality of life of patients using the pacemaker in Zagazig University Hospitals. **Research design:** A descriptive design was used in this study. **Setting**: This study conducted at Out Patients Cardiac Clinics at Zagazig University Hospital, in Zagazig Governate, Egypt. **Sample:** purposive sample 120 patients with using pacemaker who aged 40 to 70 years, high risk for arrhythmia and sudden cardiac death and patients who visit the cardiac clinic to follow pacemaker. **Tools of data collection:** Two tools, **1st tool:** included four parts, **1st part:** Demographic characteristic, **2nd part:** Past and present medical history, **3rd part:** Knowledge of patients, and **4th part:** Reported practices of patients regarding pacemaker, and **2nd tool:** Quality of life assessment questionnaire for patients using pacemaker. **Results:** 61.7% of the studied patients had unsatisfactory total knowledge level, and 68.3% of them had inadequate reported practices level regarding pacemaker. While, 42.5% of them had low quality of life level and there is statistically relation between patients' knowledge, reported practice, quality of life for using pacemaker and their demographic characteristics. **Conclusion:** Less two thirds of the studied patients had unsatisfactory total knowledge level, and more two thirds of them had inadequate total reported practices level regarding pacemaker. While, less than half of them had low total quality of life level. There is statistically relation between patients' total knowledge, total reported practices, total quality of life for using pacemaker and their demographic characteristics. **Recommendations:** Provide health education program for patients about using the pacemaker.

Keywords: *Pacemaker, Patients, Quality of Life and Zagazig University Hospitals.*

Introduction

Sudden Cardiac Death (SCD) is a rapid and unexpected cessation of heart function, often resulting from severe arrhythmias that disrupt the heart's ability to pump blood. These life-threatening arrhythmias, such as ventricular fibrillation (rapid, chaotic heartbeat) or ventricular tachycardia (excessively fast heartbeat), prevent the heart from contracting properly, leading to a sudden drop in blood pressure and, if untreated, loss of consciousness and death. Certain patients, especially those with heart disease, previous heart attacks, or genetic predispositions, are at higher risk for these dangerous rhythms ***(Ibrahim et al., 2024).*** While pacemakers are primarily used to correct bradycardia (slow heart rhythms), can play a preventive role for patients at risk of SCD by providing stable pacing, preventing heart rate drops that could trigger arrhythmias. For patients at high risk of SCD due to severe arrhythmias, an Implantable Cardioverter-Defibrillator (ICD) often combined with a pacemaker can deliver life-saving shocks to restore normal rhythm if an arrhythmia occurs ***(Vijapurapu et al., 2023).***

Pacemaker is an electronic device that placed under the skin of the chest or abdominal to help control abnormal heart rhythms by conducts electrical stimuli to heart muscle, Pacemakers are commonly used when a cardiac patient has a permanent, temporary slower than normal impulse formation or Asymptomatic Ventricular (AV) conduction problems and used to manipulate tacky dysrhythmias that don't respond to drugs. Pacemaker technology may be used in coronary artery disease patients ***(Banchs & Scher, 2019).***

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A pacemaker consists of a battery, a computerized generator, and wires with sensors called electrodes on one end. The electrodes detect heart's electrical activity and send data through the wires to the computer in the generator ***(Hosseini et al., 2023).*** All over the world about 3 million people worldwide have a pacemaker and about 600 thousand pacemakers are implanted annually. In Egypt, the survey yielded an estimate of 456,482 noninstitutionalized adults with pacemakers (prevalence, 2.6 per 1,000). Prevalence rose significantly with age, from 0.4 per 1,000 among persons ages 18-64 to 26 per 1,000 among those ages 75 or older ***(Bruno et al., 2023).***

Pacemakers are primarily indicated for patients with certain heart rhythm disorders, such as bradycardia (an abnormally slow heart rate) and various forms of heart block, where the heart's electrical signaling is delayed or disrupted. Patients with these conditions often experience symptoms like dizziness, fatigue, fainting, and shortness of breath due to insufficient blood flow. In cases where the heart's natural pacing fails to maintain an adequate rhythm, a pacemaker is implanted to help restore and regulate the heartbeat ***(Cuvadar et al., 2024).*** A pacemaker consists of a pulse generator and one or more leads (wires) that connect the device to the heart. The pulse generator detects the heart's natural electrical activity and, if it senses that the heart rate is too slow or irregular, sends small electrical impulses through the leads to stimulate the heart muscle to beat at a steady rhythm ***(Yu et al., 2023).***

Benefits of pacemakers offer substantial to patients with heart rhythm disorders by restoring a steady heartbeat, relieving symptoms as fatigue, dizziness, and fainting, and allowing for a more active lifestyle. This reliable pacing can reduce the risk of life-threatening events, as sudden cardiac arrest, by preventing severe slowdowns or pauses in the heart rate. Although pacemakers are generally safe, there are some risks and potential complications associated with their implantation and function. Surgical risks include infection at the implantation site, bleeding, and rare instances of lead displacement, where the wires connecting the pacemaker to the heart shift out of place ***(Nicmanis et al., 2024).***

Quality of life for patients with heart rhythm disorders by enabling the heart to maintain a regular, adequate heartbeat, which alleviates symptoms such as fatigue, dizziness, shortness of breath, and fainting. For many patients, this means can return to daily activities with a new level of energy, allowing them to exercise, work, and enjoy social interactions without the constant fear of cardiac episodes ***(Alshoaibi et al., 2024).*** The modern pacemaker's ability to adjust the heart rate according to the body's needs faster during physical activity and slower at rest enhances its natural functionality and makes a significant difference in how patients feel. Additionally, pacemakers can reduce the need for repeated hospital visits, which fosters a sense of independence and control ***(McIntosh et al., 2020).***

Community Health Nurses (CHN) are vital in supporting and caring for patients with pacemakers by providing ongoing education, monitoring, and emotional support. Nurses help patients and families understand pacemaker functionality, safety precautions, and signs of complications, empowering them to take charge of their health. Through home visits and community-based services, nurses can monitor patients for any issues, assess their adaptation to the device, and ensure patients follow lifestyle modifications recommended by healthcare providers. CHN facilitate communication between patients and cardiologists, ensuring timely follow-up appointments and addressing any concerns. In addition, these nurses play a crucial role in teaching patients about remote monitoring devices, if available, which allow for continuous pacemaker function checks ***(Muhammed & Aki_Yalcin, 2019).***

Significance of the study:

According to statistical records of cardiac outpatient clinics at Zagazig University Hospital in (2019). The incidence of hospital patients' admission with pacemaker 214 case. The pacemaker can be lifesaving and preventing death. Optimal outcome after pacemaker insertion can only be obtained if patients received adequate nursing care and supported in compliance to a lifelong with permanent pacemaker, nursing care for patients with pacemakers involves the monitoring and prevention of common complications, preventing dislodgement, and educating the patient on the proper use and maintenance of the pacemaker ***(Infeld et al., 2023).***

Community health nurse plays a significant role in improving the quality of life for patients with pacemakers by offering accessible, ongoing support and resources tailored to their unique needs. Through home-based services, community health programs provide patients with regular monitoring, early detection of complications, and guidance on managing daily life with a pacemaker. These services ensure that patients have

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consistent access to education on safe practices, as avoiding certain electronic devices and maintaining a healthy lifestyle ***(Rossanese et al., 2024).*** So that the current study carried out to assess quality of life for patients with using pacemaker.

Aim of the study:

This study aimed to assess quality of life for patients using pacemaker through the following objectives:

1- Identify patients' knowledge about using pacemaker.
2- Appraising the patient reported practice about using pacemaker.
3- Evaluating quality of life for patient with using pacemaker.

Research questions:

1- What are patients Knowledge about using pacemaker?
2- What are patient reported practice about using pacemaker?
3- What are Quality of life for patient with using pacemaker?
4- Is the relation between Knowledge-reported practice-and quality of life and Demographic characteristic?

Subjects& Methods

Research design:

A purposive research design was used to carry out this study

Setting:

The current study was carried out at out-patients' cardiac clinics at Zagazig University Hospital in Zagazig Government. This clinic provided treatment and follow up services for patients who use pacemaker. The outpatient clinic includes two rooms for the checkup, reception for the clients and room for oxygen pressure. All clinics were opened in the same direction and fulfilled with personnel protective equipment. One room for lab investigation beside the clinics. Two bathrooms are available for all clinics. Clinics are located in the first floor. It includes two physicians and two nurses. The working collected one day / weakly (Monday) from 9 Am- 2 Pm.

Type of the sample:

Convenience sample of patients with using pacemaker in Cardiac Clinics at Zagazig University Hospital.

Sample size:

The sample size was calculated by following equation:

$$n = N [1 + N (e^2)]$$

n = sample size
N = population size is 300
e = 0.05 is the level of perception. ***(Krejcie and Morgan, 2018)***
n = 300 [1+300 (.0025)] = 120
The actual size of sample was 120 patients' with using pacemaker through academic year 2022-2023.

Inclusion criteria:

- Patients who used pacemaker.
- Patients who accepted to participate in the study.
- Patients aged 40: 70 years (as they are at high risk for arrhythmia and sudden cardiac death).
- Patients who visited the cardiac clinic to follow pacemaker.

Exclusion criteria:

- Patients with any psychotic disorders.
- Patients with altered level of consciousness.

Tools for data collection:

Data was collected using the following two tools:

Tool (1): A structured interviewing sheet: was used in the study, it's developed by investigator after reviewing the national and international related literature and contained four parts:

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Part 1: Demographic characteristics of patients using pacemaker consisted of 9 items as: Age, sex, place of residence, marital status, educational level, with whom you live, source of income, monthly income and training program after installing a pacemaker.

Part 2: Past and present medical history for patients using pacemakers consisted of 12 closed ended questions as: Suffer from any chronic disease, if the answer is yes, what is it, presence any complications from chronic disease, have any kind of surgery, if yes, what is it, how long, number of previous hospitalizations, family member using pacemaker, complaint made consult a physician, how did the complaint begin, there any symptoms associated with the main complaint, symptoms associated with the main complaint, site of the complaint and complications from chronic disease.

Part 3: Patients' knowledge about pacemakers consisted of 14 closed ended questions: Meaning of pacemaker, types of pacemakers, symptoms of arrhythmia, high risk group most used to pacemaker, the main function of the heart, normal range of heart rate, factors that may affect heart rate, causes of arrhythmia are, signs of arrhythmias include all the following of except, complication of arrhythmia, diagnostic study that performed to determine the cause of arrhythmia, precaution that the patient must with using pacemaker from the opacity site, devices that can interfere with a pacemaker and function of pacemaker.

Scoring system for knowledge:

Each statement was assigned score according to patient's knowledge were: correct answer was scored 1 grade and incorrect answer was scored 0. Total score were 28 grades from 14 questions. The total score each item summed up and then converted into percent score **as the following:**

- Satisfactory knowledge (≥ 60) = ≥ 17 grades.
- Unsatisfactory knowledge (> 60) = > 17 grades.

Part (4): Patients reported practice about using pacemaker consisted of 13 closed ended questions: Measuring blood pressure regularly, watching tv for a long time, exposing radio waves without protective, sleeping on the pacemaker, eating a whole diet based on foods rich in colorful fruits and vegetables, practice regular exercise, doing chest exercises to improve breathing and reduce stress, measuring the heart rate regularly, performing regular lipid profile examination, being nervous or very sad, recording age of battery, making daily care to the pacemaker device, and removing the pacemaker device by him/herself.

Scoring system for reported practices:

The reported practice questions were 13 questions each step was scored by 0 for never answer and 1 for some time answer and 2 for always answer. Total score were 26 grades from 13 questions. The total score each item summed up and then converted into percent score **as the following:**

- Adequate reported practices (≥ 60) = ≥ 16 grades.
- Inadequate reported practices (> 60) = > 16 grades.

2nd tool: Quality of life assessment questionnaire for patients with using pacemaker. This tool was developed by Mohamed et al. (2018), which consisted of 5 sub items:

A- Quality of life assessment questionnaire for patients with using pacemaker regarding personal care (physical well-being) consisted of 4 closed ended questions: Have problem in showering without assistance, eat without help, have problem in wearing clothes without assistance, and go to the bathroom without help.

B- Quality of life assessment questionnaire for patients with using pacemaker regarding mobility (environmental well-being) consisted of 3 closed ended questions: Go to the neighbors without help, shop without help and do the usual housework without help.

C- Quality of life assessment questionnaire for patients with using pacemaker regarding social activity (social well-being) consisted of 4 closed ended questions: Feel that are unprepared to participate in wedding, conduct attaining course on using permanent pacemaker, feel that are interested to participate in the festivals and feel that are interested to meet friends and relatives.

D- Quality of life assessment questionnaire for patients with using pacemaker regarding mental status (psychological well-being) consisted of 3 closed ended questions: Feel that are a burden on others because of use pacemaker, feel depressed because of use pacemaker, and feel a loss of confidence in doing usual activities because of use pacemaker.

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E- Quality of life assessment questionnaire for patients with using pacemaker regarding behavior training consisted of 3 closed ended questions: Conduct a training course on care of patient with permanent pacemaker, know any abnormality may be happened, and know battery life of the pacemaker.

Scoring system for quality of life:

The reported practice questions were 17 questions each step was scored by 0 for never answer and 1 for some time answer and 2 for always answer. Total score were 34 grades from 17 questions. The total score each item summed up and then converted into percent score **as the following:**

-High quality of life (≥ 75%) = ≥ 26 grades.
-Moderate quality of life (50 - < 75%) = 17-< 26 grades.
-Low quality of life (< 50 %) = < 17 grades.

II. Operational item:

It was included preparatory phase, content validity and reliability, pilot study and field work.

A. Preparatory phase:

Prepare the study tool based on related literature review and develop the study tool and test its content validity and reliability.

Pilot study:

A pilot study conducted on 10 % of the patient equal 12 patients under study to assess the feasibility, practicability, clarity and objectivity of the tools. Based on the results, no modification was done. Patients in the pilot study were included in the main study sample because no modifications were done.

Ethical Considerations:

The research approval was obtained from the Scientific Research Ethical Committee in the Faculty of Nursing, Helwan University before starting the study, The investigator was clarified the objective and aim of the study to adolescent students included in the study, The investigator assured anonymity and confidentiality of subjects' data. Patients' formal consent that they are allowed to choose to participate or not in the study and that they have the right to withdraw from the study at any time.

Content validity:

The revision of the tools for clarity, relevance, comprehensiveness, understanding and applicability was done by a panel of 3 experts in Community Health Nursing and Medical Surgical Nursing to measure the content validity of the tools and the necessary modification was done accordingly.

Tool Reliability:

Reliability was tested statistically using the appropriate statistical tests to assure that the tools are reliable before data collection. Answers from the repeated testing were compared Test- re- test reliability was 0.82 for knowledge, Cronbach's Alpha reliability was 0.890 for reported practices and 0.838 for quality of life.

Field work:

-An official letter issued from the dean of Faculty of Nursing Helwan University, and patients in Out Patients Cardiac Clinics at Zagazig University Hospital, in Zagazig Governate, Egypt including the aim of the study to obtain permission after establishing a trustful relationship, each subject interviewed individually by the investigator to explain the study purpose.

-Data collected within 6 months from first of October 2022 until end of March 2023 one day /week (Monday), from 9am - 2pm, till the needed sample completed, interview of patients, informed consent obtained from patients after the investigator introduce himself for each patient, then explain the purpose of the study to assess knowledge, reported practice and quality of life of patients about quality of life for patients with using pacemaker. Study collected through structure face to face interview and the entire tools filled by the investigator. The investigator utilizes two tools, was need 20 -30 minutes.

-The investigator taken about 20 patients per month, total number of patients = 120 patients.

III- Administrative item:

Approval to carry out this study was obtained from Dean of Faculty of nursing, Helwan University and official permission was obtained from the director of Zagazig University Hospitals in Zagazig Governate, Egypt for conducting the study.

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IV- Statistical item

The collected data from the studied sample was revised, coded and entered using Personal Computer (PC). Computerized data entry and statistically analyzed using SPSS program (Statistical Package for Social Science) version 24. Data were presented using descriptive statistics in the form of frequencies and relative percentages. Chi square test (X^2) was used to calculate difference between qualitative variables.

Degrees of Significance of the results were:

- Non-Significant (NS) if $p > 0.05$.
- Significant (S) if $p < 0.05$.
- High Significant (HS) if $p < 0.01$.

Result:

Table (1): Frequency Distribution of the Studied Patients regarding their Demographic Characteristics (n=120)

Demographic characteristics	No	%
Age		
40-50 years	20	16.67
50-60 years	50	41.6
60-70 years	35	29.16
≥ 70 years	15	12.5
Mean ± SD	**53.4 ± 1.7 years**	
Marital status		
Single	30	25
Married	65	54.61
Divorced	12	10
Widow	13	10.8
Educational level		
Don't read and write	26	21.67
Read and write	3	2.5
Basic education	58	48.33
Secondary education	4	3.33
University education and more	29	24.17
With whom live		
Wife or husband	60	50
Your sons	24	20
Alone	30	25
Geriatric home	6	5
Source of income		
The Ministry of Social Solidarity	23	19.16
Pension	62	51.66
Other mention	35	29.16
Do a training program after installing a pacemaker		
Yes	44	36.7
No	76	63.3

Table (1): Revealed that, 41.6% of the studied patients were in the age group 50-60 years old. Concerning the marital status, 54.61% of them were married, 48.33% of them had basic education and 50% of them live with wife or husband. Regarding the source of income, 51.66% of them receive their income from pension and 63.3% of them hadn't a training program after installing a pacemaker

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Table (2): Frequency Distribution of Studied Patients' Past and Present Medical History (n=120)

Medical history	No	%
Present Medical History		
Suffer from any chronic disease		
Yes	104	**86.7**
No	16	13.3
If the answer is yes, what is it		
Diabetes mellitus	56	**53.8**
Hypertension	73	**70.2**
Visual diseases	29	27.9
Respiratory system disease	33	31.7
Digestive system diseases	57	47.5
Presence any complications from chronic disease		
Yes	120	100.0
Have any kind of surgery: -		
Yes	77	64.2
NO	43	35.8
If yes, what is it: - (n=43)		
Exploratory surgery	12	46.1
Curative surgery	0	0.0
Plastic surgery	5	19.2
Eye surgery	3	11.5
Endoscopic surgery	10	38.5
Laser surgery	9	34.6
Microsurgery	4	15.4
How long	**10.64 ± 3.52**	
Past Medical History		
Number of previous hospitalizations		
1-3 times	10	8.3
b- 4-6 times	3	2.5
7-8 times	8	7
9 and more	0	0.0
Family member using pacemaker		
The father	6	5
The mother	4	3
Brother or sister	110	91.7
Complaint made consult a physician		
Tachycardia	15	13
Chest pain	35	29
Shortness of the breathing	65	54.2
Cardiac arrest	5	4
How did the complaint begin		
Sudden	52	43.3
Gradual	68	**56.7**
Are there any symptoms associated with the main complaint		
Yes	120	100.0
Symptoms associated with the main complaint		
Shortness of breath	43	35.8

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Chest pain	39	**45.3**
Headache	13	15.1
Vomiting	14	16.3
Indigestion	9	7.5
Arthritis	2	1.7
Site of the complaint		
Right side	43	35.3
Left side	49	40.8
Right & left side	28	23.3

Table (2): Demonstrates that, 86.7% of the studied patients suffer from chronic disease, of them, 53.8% patients had diabetes mellitus and 70.2% patients had hypertension. Also, 35.6% of them had complications from the chronic disease. Among the studied patients, 46.1% patients had exploratory surgery. The mean duration was 10.64 ± 3.52 years. Regarding hospitalization, 8.3% of them were hospitalized 1-3 times, 91.7% of them their brother or sister had using pacemaker, 54.2% of them had Shortness of the breathing made patients consult physician, 56.7% of them had gradual complain, 45.3% had chest pain and 40.8% of them had complains in the left side

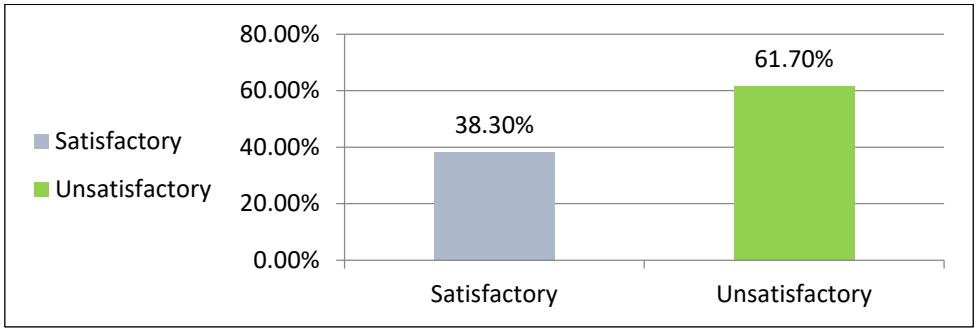

Figure (1): Percentage Distribution of the Studied Patients' Total Knowledge Regarding Pacemaker (n=120)

Figure (1); Shows that, 61.7% of the studied patients had unsatisfactory total knowledge level regarding pacemaker, while 38.3% of them had satisfactory total knowledge level regarding pacemaker

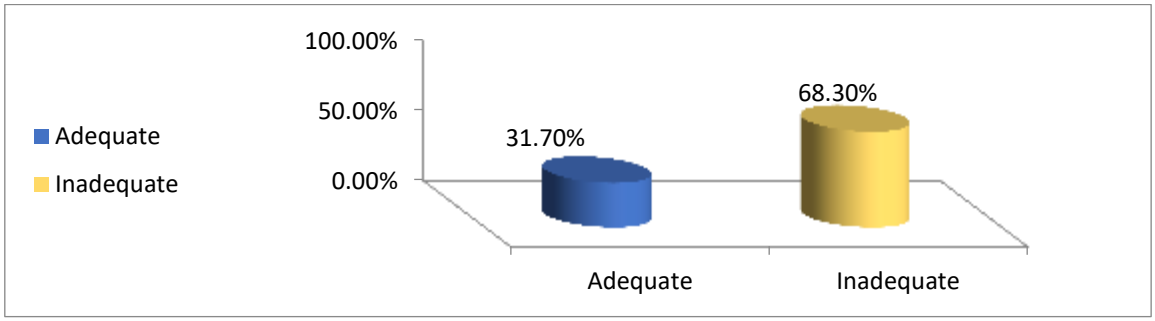

Figure (2): Percentage Distribution of Total Reported Practices among Studied Patients regarding Using of Pacemaker (n=120)

Figure (2): Shows that, 68.3% of the studied patients had inadequate reported practices level regarding pacemaker, while 31.7% of them had adequate level of reported practices level regarding pacemaker

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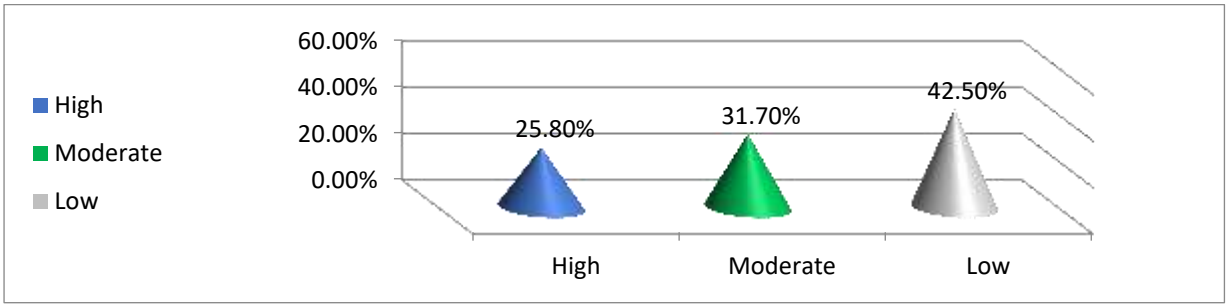

Figure (3): Percentage Distribution of Total Quality of Life among Studied Patients regarding Using Pacemaker (n=120)

Figure (3): Reveals that, 42.5% of the studied patients had low quality of life level, and 31.7% of them had moderate level, while 25.8% of them had high quality of life level.

Table (3): Relation between Demographic Characteristics of The Studied Patients and Total Knowledge Regarding Pacemaker (n=120)

Demographic characteristics	Total Knowledge				X^2	P value
	Unsatisfactory		Satisfactory			
	No	%	No	%		
Age						
40-50 years	20	16.7	0	0.0	.514	.421
50-60 years	35	29.2	15	12.5		
60-70 years	15	12.5	20	16.7		
≥ 70 years	4	3.3	11	9.2		
Sex						
Male	59	49.2	16	13.3	1.533	.247
Female	15	12.5	30	25.0		
Place of residence						
Urban	48	40.0	15	12.5	3.871	.002
Rural	26	21.7	31	25.8		
Marital status						
Single	29	24.2	1	0.8	8.142	.518
Married	41	34.2	24	20.0		
Divorced	0	0.0	12	10.0		
Widow	4	3.3	9	7.5		
Educational level						
Don't read and write	26	21.7	0	0.0	2.55	.0001
Read and write	3	2.5	0	0.0		
Basic education	36	30.0	22	18.3		
Secondary education	4	3.3	0	0.0		
University education and more	5	4.2				
Monthly income						
Save and enough	15	12.5	0	0.0	.498	.951
Enough	55	45.8	34	28.3		
Not enough	4	3.3	12	10.0		

Table (3): Reveals that, there was statistically significant relation between studied patients' total knowledge regarding pacemaker and their place of residence and educational level at (P<0.05).

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Table (4): Relation between Demographic Characteristics of the Studied Patients and Total Reported Practices Regarding Pacemaker (n=120)

Demographic characteristics	Total Practices				X^2	P value
	Inadequate		Adequate			
	No	%	No	%		
Age						
40-50 years	9	7.5	11	9.2	.442	.925
50-60 years	48	40.0	2	1.7		
60-70 years	19	15.8	16	13.3		
≥ 70 years	6	5.0	9	7.5		
Sex						
Male	58	48.3	17	14.2	1.32	.335
Female	24	20.0	21	17.5		
Place of residence						
Urban	52	43.3	11	9.2	.396	.018
Rural	30	25.0	27	22.5		
Marital status						
Single	19	15.8	11	9.2	1.539	.381
Married	47	39.2	18	15.0		
Divorced	10	8.3	2	1.7		
Widow	6	5.0	7	5.8		
Educational level						
Don't read and write	15	12.5	11	9.2	3.165	.046
Read and write	3	2.5	0	0.0		
Basic education	48	40.0	10	8.3		
Secondary education	0	0.0	4	3.3		
University education and more	16	13.3	13	10.8		
Monthly income						
Save and enough	8	6.7	7	5.8	2.445	.003
Enough	67	55.8	22	18.3		
Not enough	7	5.8	9	7.5		

Table (4): Clarifies that, there was statistically significant relation between studied patients total reported practices regarding pacemaker and their place of residence, educational level and monthly income at ($P<0.05$)

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Table (5): Relation between Demographic Characteristics of the Studied Patients and Total Quality of Life Level Regarding Pacemaker (n=120)

Demographic characteristics	Total Quality of life						X^2	P value
	Low		Moderate		High			
	No	%	No	%	No	%		
Age								
40-50 years	13	10.8	0	0.0	7	5.8	2.857	.073
50-60 years	21	17.5	19	15.8	10	8.3		
60-70 years	7	5.8	19	15.8	9	7.5		
≥ 70 years	10	8.3	0	0.0	5	4.2		
Sex								
Male	34	28.3	24	20.0	17	14.2	5.88	.413
Female	17	14.2	14	11.7	14	11.7		
Place of residence								
Urban	34	28.3	12	10.0	17	14.2	.814	.677
Rural	17	14.2	26	21.7	14	11.7		
Marital status								
Single	22	18.3	0	0.0	8	6.7	2.541	.152
Married	12	10.0	38	31.7	15	12.5		
Divorced	8	6.7	0	0.0	4	3.3		
Widow	9	7.5	0	0.0	4	3.3		
Educational level								
Don't read and write	19	15.8	0	0.0	7	5.8	.935	.002
Read and write	3	2.5	0	0.0	0	0.0		
Basic education	12	10.0	36	30.0	10	8.3		
Secondary education	0	0.0	2	1.7	2	1.7		
University education and more	17	14.2	0	0.0	12	10.0		
Monthly income								
Save and enough	8	6.7	0	0.0	7	5.8	1.845	.035
Enough	33	27.5	38	31.7	18	15.0		
Not enough	10	8.3	0	0.0	6	5.0		

Table (5): Shows that, there was statistically significant relation between studied patients' total quality of life regarding pacemaker and their educational level and monthly income at (P<0.05).

Table (6): Correlations between Studied Patients Knowledge, Reported Practices and Quality of Life (n=120)

Variables	Total knowledge		Total reported practices		Total quality of life	
	r	P	r	P	r	P
Total knowledge	-	-	.429	.002	.134	.02*
Total reported practices	.429	.002	-	-	.203	.013*
Total quality of life	.134	.02*	.203	.013*	-	-

(*) Statistically significant at p<0.05.

Table (6): Illustrates that, there was high statistically significant correlation between studied patients' total knowledge, total reported practices and total quality of life at (P<0.05)

Discussion

Pacemaker implantation is one of the most important operations for regulating and treating arrhythmias and cardiac conductive disorders. However, this treatment may cause physical and psychological issues for patients,

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affecting their quality of life. Nurses as members of the treatment team, have the ability to improve patients' quality of life through nursing interventions. In order to develop treatments aimed at improving the patients' Quality of Life (QoL), the nurse must be aware of the patients' present QoL ***(Weheida et al., 2021).***

Part I: Demographic characteristics of studied patients.

Regarding the studied patients' demographic characteristics, the current study revealed that more than two fifth of the studied patients were in the age group 50-60 years old, nearly two thirds of them were males and more than half of them were from urban area. Concerning marital status, more than half of them were married, less than half of them had basic education and one half of patients live with wife or husband. Regarding the source of income, more than half of patients receive their income from pension, nearly three quarters of them had enough income and nearly two thirds of them hadn't a training program after installing a pacemaker. This may be due to the increased prevalence of heart diseases with older age men more than women and the pension age in Egypt is 60 years therefore, their source of income from pension.

These results were in the same line with the study carried out by **Weheida et al., (2021),** which entitled "Quality of Life of Patients pre/post Pacemaker Implantation" and revealed that nearly half (45%) of the patients were in the age group 50 to less than or equal 60 years old. Concerning area of residence, more than half (55%) of the studied patients were living in urban area. In addition, the table shows that the majority of patients (68.3%) were married. Regarding the level of education, this table clarifies that, more than half of the studied patients (51.7%) had basic education. **From investigator opinion,** patient in 50 to less than or equal 60 years old make pacemaker some patients may need a pacemaker after open-heart surgery due to temporary or permanent damage to the heart's conduction system.

Additionally, these results were supported by the study performed by **Chapagai et al., (2017),** who studied "A Study to Assess the Knowledge and Quality of Life of Pacemaker Patients with a view to Develop an Information Booklet" and revealed that more than three quarters of patients (76%) were males, nearly two thirds of them (60%) live in urban areas, and most of them (90%) were married. **From investigator opinion,** men in this age group often have a higher prevalence of risk factors like hypertension, smoking, high cholesterol, and diabetes, which increase the likelihood of heart rhythm problems.

Part II: Past and present medical history of studied patients.

As regard to distribution the studied patients' medical history the current study demonstrated that the majority of the studied patients suffer from chronic disease, more than half of patients had diabetes mellitus and more than two thirds' patients had hypertension. Also, more than one third of them had complications from the chronic disease, less than half had complications in kidney. Among the studied patients, more than one fifth had a previous surgery, less than half of patients had exploratory surgery. The mean duration was 10.64 ± 3.52 years. Regarding hospitalization, less than one tenth of them were hospitalized 1-3 times, most of them their brother or sister had using pacemaker, more than half of them had shortness of the breathing made patients consult physician, less than half of them had sudden complain, less than three quarters of them had symptoms associated with the main complaint, less than half of them had chest pain and more than two fifth of them had complain in the left side. **From investigator points view,** this may be due to the effect of diabetes on the blood vessels elasticity and contraction which may affect the heart nutrition besides, the effect of hypertension that increases the workload on the heart inducing structural and functional changes in the myocardium and causes heart disease.

These results were incompatible with **Nkya, (2020),** who studied "Quality of Life and its Associated Factors among Patients with Cardiac Implantable Electronic Devices Implanted At Jakaya Kikwete Cardiac Institute" and found that nearly two thirds of patients (62%) had hypertension. Also, these results were congruent with the study performed by **Yossif & Abd El-Aal, (2017),** which entitled "Home care for patients with permanent pacemaker insertion" and revealed that the majority of studied participants had more than one health problems as cardiac diseases, hypertension, and diabetes. Additionally, these results were in agreement with **Elsaka et al., (2024),** who studied "Effect of Self-Care Management Program on Permanent Pacemaker Patients' Adherence to Care Practices and Daily Activities" and found that more than half 56.4% of the studied patients had the chief complaint on admission of chest pain. While, the majority 88.3% of the studied patients suffered from chronic disease. **From investigator points view,** men in this age group often have a higher

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prevalence of risk factors like hypertension, smoking, high cholesterol, and diabetes, which increase the likelihood of heart rhythm problems.

Part III: Studied patients' knowledge regarding pacemaker (Answer research question Q1: What is patients' knowledge about pacemaker?)

Regarding distribution the studied patient total knowledge level regarding pacemaker the current study showed that less than two thirds of the studied patients had unsatisfactory total knowledge level regarding pacemaker, while more than one third of them had satisfactory level of knowledge level regarding pacemaker. **From investigator points view,** this may be due to unsatisfactory instructions provided by healthcare providers and low educational levels of majority of patients.

These results were compatible with **Tripathi et al., (2021),** who studied "Efficacy of information booklet regarding home care management on knowledge among patients with permanent pacemaker" and reported that more than half of patients (52.6%) had total poor level of knowledge. These results disagreed with the study performed by **Snegalatha et al., (2019),** who revealed that more than half of the participants had moderately adequate knowledge.

Part IV: Studied patients' reported practices regarding pacemaker. (Answer research question Q2: What are patients reported practice about using pacemaker?)

Concerning distribution, the studied patient total reported practices level regarding pacemaker the current study showed that more than two thirds of the studied patients had inadequate total reported practices level regarding pacemaker, while less than one third of them had adequate total level of reported practices level regarding pacemaker. **From investigator points view,** this may be due to lack of conducted training programs regarding pacemaker self-care practices.

These results were similar with the study conducted by **Elsaka et al., (2024),** which entitled "Adherence to self-care management for patients with permanent pacemaker and their efficacy in daily living activities" and showed that 89.4% of the studied patients had an unsatisfactory level of pacemaker self-management behavior. These results were consistent with **El-Aziz et al., (2023),** who studied "Home-Care Program for Patients with Permanent Pacemaker" and found that the majority of patients (86.3%) had unsatisfactory total practices score regarding pacemaker.

Part V: Studied patients' quality of life regarding pacemaker (Answer research question Q3. What are levels of quality of life for patients with pacemaker?).

Regarding distribution the studied patient total quality of life level regarding patients using pacemaker the current study revealed that more than two fifth of the studied patients had low total quality of life level, and less than one third of them had moderate level, while more than one quarter of them had high total quality of life level. **From investigator points view,** this may be due to the burden and effect of the disease on patients' health status.

These results were supported by the study performed by **Ibrahim et al., (2024),** which entitled "Effectiveness of an educational program on coping, self-efficacy and health-related quality of life of patients with permanent pacemaker implantation" and revealed that all patients (100%) had low quality of life score. These results were different with **Parveen et al., (2022),** who studied "Assessment of quality of life post cardiac device implantation" and revealed that less than two thirds (60.7%) of the patients rated their overall quality of life as good post implantation. Additionally, these results were congruent with **Nkya, (2020),** who revealed that the overall QOL in patients with cardiac implantable electronic devices was good.

Part VI: Relation between the studied variables. **(Answer research question Q4. Is there relation between patients' knowledge, reported practice, quality of life for using pacemaker and their demographic characteristics?).**

As regard to relation between demographic characteristics of the studied patients and total knowledge regarding pacemaker the current study revealed that, there was statistically significant relation between total studied patients' knowledge regarding pacemaker and their place of residence and education. **From investigator**

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points view, this may be attributed to highly educated patients desire to learn and seeking more information regarding their device and how it affects their life.

These results were compatible with the study carried out by **Rayamajhi et al., (2021),** which entitled "Knowledge and practice regarding self-care management among patients with permanent pacemaker at cardiac center" and revealed that there was significant association between levels of knowledge with education status. But, these results were different with **Tripathi et al., (2021)**, who revealed that educational status area of living had no association with the knowledge scores of patients regarding home care management of permanent pacemaker.

Concerning relation between demographic characteristics of the studied patients and total reported practices regarding pacemaker the current study clarified that, there was statistical significant relation between total studied patients reported practices regarding pacemaker and their place of residence, education and monthly income. **From investigator points view,** this may be due to availability of health education centers in urban areas than rural ones, beside the highly educated patients' high cognitive and perception skills which reflects positively on their practice.

These results were in harmony with **Rayamajhi et al., (2021),** who reported that level of practice was significantly associated with education status. But these results were incompatible with the study conducted by **Soliman et al., (2022),** which entitled "Self-care of Adult Client with Permanent Pacemaker at Home" and demonstrated that there was no statistically significant relation between client's level of education and their total pacemaker self–care.

According to relation between demographic characteristics of the studied patients and total quality of life level regarding pacemaker the current study showed that, there was statistically significant relation between total studied patients' quality of life regarding pacemaker and their education and monthly income. **From investigator points view,** increased knowledge and readiness to learn among highly educated patients which improves self-care efficacy.

These results were supported by **Ibrahim et al., (2024),** who revealed that there was a statistically significant relationship between income and patient pacemaker quality of life. Additionally, these results were in the same line with **Polikandrioti, (2022),** who studied "Quality of life of patients with cardiac pacemaker: Levels, associated characteristics, and the impact of anxiety and depression" and revealed that there was a statistically significant relationship between patients' income and their quality of life. Moreover, this result was in harmony with **Tarekegn et al., (2021),** who studied "Health-related quality of life among heart failure patients attending an outpatient clinic in the University of Gondar Comprehensive Specialized Hospital Northwest, Ethiopia, 2020: using structural equation modeling approach" and revealed that income was significantly associated factor for quality of life among HF patients.

Regarding correlations between studied patients' knowledge, reported practices and quality of life the current study illustrated that there is high statistically significant correlation between total studied patients' knowledge, reported practices and quality of life. **From investigator points view,** this may be attributed to improved cognitive skills and perception with high knowledge levels in addition to valuing self-care practices.

These results were similar with **Snegalatha et al., (2019),** who revealed that there was a positive correlation between the knowledge of participants and their QOL. Additionally, these results were congruent with **Chapagai et al., (2017),** who revealed that there was weak positive correlation of knowledge with quality of life. Moreover, these results agreed with **Rayamajhi et al., (2021),** who revealed that the knowledge score and practice score were moderately positively correlated. Moreover, these results were congruent with **Khalil et al., (2020),** who showed a statistically significant positive correlation between the studied patients' total knowledge and total practice scores. **From investigator points view,** result is typically observed in studies where education, awareness, and self-management skills are critical to health outcomes.

Conclusion

On the light of results of the current study and answers of the research questions it could be concluded that:

Less two thirds of the studied patients had unsatisfactory total knowledge level, and more two thirds of them had inadequate total reported practices level regarding pacemaker. While, less than half of them had low total quality of life

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level. There is statistically relation between patients' total knowledge, total reported practices, total quality of life for using pacemaker and their demographic characteristics.

Recommendations

In the light of the result of this study the following recommendations were suggested:

1. Provide health education program for patients about quality of life for patients with using pacemaker.
2. Design booklets about quality of life with using pacemaker used which include all information for patients.
3. Design posters and put in out about quality of life for patients with using pacemaker that would help patients to improve' knowledge, and practices of pacemaker.
4. Encourage patients to make group discussion regarding quality of life for patients with using pacemaker to exchange knowledge, and practices under observation from community health nurse.
5. Apply further research in large sample and other setting for generalization.

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