

QUALITY OF LIFE OF PATIENTS WITH IMPLANTED CARDIAC PACEMAKERS IN NORTH WEST OF IRAN

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Abstract

INTRODUCTION: Introducing a foreign body into the heart, a part of the human anatomy that symbolically represents emotions, is a major life event which may result in a change in the body image, changes in physical and emotional wellbeing and quality of life.

METHODS: In a descriptive study in Fall 2006, 78 out of 267 patients with implanted cardiac pacemakers (PPM) were randomly evaluated by using a quality of life questionnaire for patients published by Salud Co. Data entry and analysis were done by SPSS 11.5.

RESULTS: Thirty-two men and 46 women with mean ages of 67.4 and 66.7 years, respectively, were included in the study. Thirty-six patients had single chamber VVIR, 15 had dual chamber VDD and 27 had dual chamber DDDR PPM implanted. Scores of physical and emotional wellbeing were grater than 75, but those of social/family and functional wellbeing were lower than 50 in the majority of patients. Except for a few questions, there was no significant difference between patients with single or dual chamber PPM in terms of quality of life ($P=0.34$).

CONCLUSIONS: Quality of life of patients with PPM is good in respect of physical and emotional wellbeing. However, the results were not desirable in terms of family/social and functional wellbeing. Thus, family and social educational programs are recommended.

Keywords: Quality of life, pacemaker, physical/emotional wellbeing, family/functional wellbeing.

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Introduction

Introducing a foreign body into the heart, a part of the human anatomy that symbolically represents emotions, may be considered a major life event. In this respect, implantation of a permanent pacemaker (PPM) in a patient may result in a change in the body image, cause problems in psychosocial adaptation and quality of life (QOL), and contribute to the development of affective disorders.¹ Since implantation of the first pacemaker in 1950, many studies have been done to evaluate the psychosocial complications of pacemakers.²⁻⁷ Although most studies have reported good results, it is not clear what kind of PPM will result in better improvement of QOL.⁸ In an attempt to improve QOL, PPM mode was changed from single chamber (S) to dual chamber (D), but the overall results were

not good.⁹ No studies in Iran and neighboring countries have evaluated QOL of patients with different types of PPM.

The common QOL questionnaires have not been tested in Iran.¹⁰ This study was designed to evaluate the general QOL of pts with implanted PPM in North West of Iran by use of Salud integral QOL questionnaire and to compare the results between single- and dual-chamber PPMs.

Materials and methods

This descriptive cross-sectional study was conducted between 2004 and 2005 on 325 patients. Patients implanted with PPM at least 3 months before the study who gave their informed written consent and complete contact data were included in the study. They would not be admitted if they were very ill (with

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other severe disabilities like CVA and/or musculoskeletal disabilities) and/or had PPM malfunction. After initial assessment, contact data of 267 patients were assembled. Eighty-four patients were selected using the random sampling method. Seventy-eight patients were finally analyzed. Complete demographic data including age, sex, reason for implantation, comorbid disease, type and date of PPM implantation were collected. PPM function was evaluated by surface electrocardiography and appropriate PPM analyzers. Content of the original Salud QOL questionnaire, its translation and its application in PPM patients were approved by 5 psychiatrists through back translation. In a pilot study, the reliability of the questionnaire was checked in 10 patients (test and retest) and Cronbach's alpha measured 0.8. The questionnaire had four sections, section 1 included 7 questions about physical wellbeing, section 2 included 6 questions about emotional wellbeing, section 3 included 6 questions about social/family wellbeing and section 4 included 7 questions about functional wellbeing. There was also a section about the global scale of quality of life. The questionnaire (Table 1) had 5 choices in each question. Quality of life improves in more than 50% of patients with PPM.² With a significance of 5% ($P=0.05$) and $d=0.1$, we needed 78 patients for the study. Data entry and analysis were performed using SPSS 13.5. Quantitative data are shown as $\bar{X} \pm SE$. The differences between the groups were compared by t-test. P value equal to or less than 0.05 was considered as significant.

Results

Seventy-eight patients were evaluated in the study. They included 32 men and 46 women with mean ages of 67.4 ± 11.7 and 66.8 ± 13.1 years, respectively. The number of patients who had VVIR, VDD, and DDDR PPM was 36, 15, and 27, respectively. In other words, 46% and 54% of patients had single- and dual-chamber PPM, respectively. Conductive disorders leading to PPM implantation were 89.7% atrioventricular node blocks, 8.9% sick sinus syndrome, and hypertrophic cardiomyopathy in one patient. Concomitant diseases leading to conductive disease were 18% coronary artery disease and others due to degenerative disease of the heart (age >50 years). Atrial rhythm of the patients is shown in Table 2.

In sections one and two of the questionnaire, scale 5 means the worse and scale 0 is the best situation and

the reverse holds for questions in sections 3 and 4. Table 3 corresponds to patients in sections 1 and 2, and Table 4 corresponds to patients in section 3 and 4. In the majority of questions, the difference between single- and dual-chamber PPM was not significant. However, in the question concerning acceptance of disease by family, patient support by the family, and sleep disorders, the differences were significant and patients with dual chamber PPM had a more favorable condition ($P=0.024$, 0.044 and 0.016, respectively).

Mean scores of responses to the question concerning total quality of life during yesterday, last week and last month were as follows in patients with single- and dual-chamber PPM: 6.8 ± 0.35 and 6.4 ± 0.36 , 6.7 ± 0.37 and 6.4 ± 0.36 , and 6.9 ± 0.37 and 6.4 ± 0.37 , respectively.

These differences were not statistically significant with $P=0.36$, 0.51 and 0.47, respectively. Figure 1 shows global quality of life score on the basis of the last question of questionnaire.

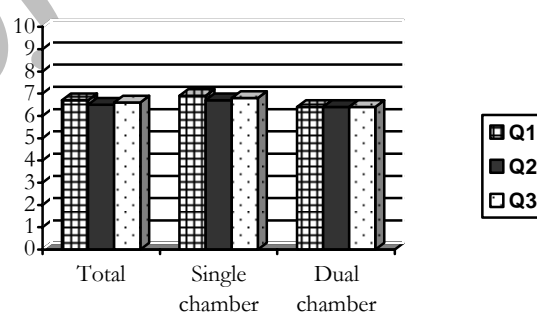


FIGURE 1. Global quality of life score on the basis of the last question of questionnaire, Q1=yesterday, Q2=last week, Q3=last month, 10=best situation, 0=worst situation

Discussion

In the majority of patients, physical and emotional wellbeing score was greater than 75 (full score calculated as 100), i.e. our patients had a good sense of physical and emotional wellbeing. This finding is consistent with findings of other studies.^{2-6,8-10}

In the field of family/social and functional wellbeing, the results were not so favorable with the score varying between 25 and 50, lower than 25 in the majority of cases. The literature contained no reports about social and family wellbeing.

Our patients had problems in their relationships with family members and friends.

TABLE 1. Salud quality of life questionnaire**Quality of Life Questionnaire**

Below is a list of statements that other people with your illness have said are important. By checking one (1) number per line, please indicate how true each statement has been for you during the past 7 days.

Date ..., Patient Name ...						
	<u>PHYSICAL WELL BEING</u>	Not at all	A little bit	Some what	Quite a bit	Very Much
GP1	I have a lack of energy	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GP2	I have nausea	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GP3	Because of my physical condition, I have trouble meeting the needs of my family	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GP4	I have pain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GP5	I am bothered by side effects of treatment	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GP6	I feel ill	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GP7	I am forced to spend time in bed	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4



	<u>EMOTIONAL WELL- BEING</u>	Not at all	A little bit	Some what	Quite a bit	Very Much
GE1	I feel sad	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GE2	I am dissatisfied with how I am coping with my illness	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GE3	I am losing hope in the fight against my illness	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GE4	I feel nervous	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GE5	I worry about dying	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GE6	I worry that my condition will get worse	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

	<u>SOCIAL/FAMILY WELL- BEING</u>	Not at all	A little bit	Some what	Quite a bit	Very Much
GS1	I feel close to my friends	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GS2	I get emotional support from my family	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GS3	I get support from my friends	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GS4	My family has accepted my illness	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GS5	I am satisfied with family communication about my illness	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GS6	I feel close to my partner (or the person who is my main support)	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4



	<u>FUNCTIONAL WELL- BEING</u>	Not at all	A little bit	Some what	Quite a bit	Very Much
GF1	I am able to work (include work at home)	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GF2	My work (include work at home) is fulfilling	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GF3	I am able to enjoy life	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GF4	I have accepted my illness	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GF5	I am sleeping well	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GF6	I am enjoying the things I usually do for fun	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
GF7	I am content with the quality of my life right now	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

Global Quality of Life Scale

On a scale of 0 to 10, with 0 being such poor quality of life that it would not be worth continuing to live, and 10 being the best quality of life you have ever had, at what number would you rate your quality of life in the past day? In the past week? In the past month?

TABLE 2. Atrial rhythm versus type of pacemaker

Atrial rhythm Pacemaker	Sinus	Atrial fibrillation	Sinus arrest	Total
VVIR	32	3	1	36
VDD	14	1	0	15
DDDR	26	0	1	27
Total	72	4	2	78

TABLE 3. Physical and emotional well being in patients with pacemakers*

Patients Questions	Total	Single chamber	Dual chamber	P Value
Physical wellbeing				
GP1	0.8 ± 0.13	0.7 ± 0.02	1 ± 0.18	0.2
GP2	0.3 ± 0.08	0.2 ± 0.08	0.4 ± 0.12	0.2
GP3	1.6 ± 0.15	1.6 ± 0.24	1.6 ± 0.2	0.9
GP4	0.7 ± 0.12	0.6 ± 0.2	0.9 ± 0.2	0.2
GP5	0.4 ± 0.08	0.3 ± 0.11	0.5 ± 0.11	0.4
GP6	1.5 ± 0.13	1.6 ± 0.2	1.4 ± 0.2	0.6
GP7	1.2 ± 0.15	1.2 ± 0.24	1.1 ± 0.2	0.8
Mean	0.9 ± 0.08	0.8 ± 0.12	1 ± 0.9	0.35
Emotional wellbeing				
GE1	1.7 ± 0.14	1.7 ± 0.2	1.6 ± 0.2	0.8
GE2	1.1 ± 0.12	1 ± 0.2	1.2 ± 0.13	0.6
GE3	1 ± 0.12	1 ± 0.2	0.9 ± 0.14	0.6
GE4	1.9 ± 0.14	1.6 ± 0.2	2.1 ± 0.2	0.08
GE5	1 ± 0.12	1.1 ± 0.2	1 ± 0.2	0.5
GE6	1 ± 0.12	1 ± 0.2	0.9 ± 0.2	0.6
Mean	1.3 ± 0.08	1.3 ± 0.15	1.3 ± 0.13	0.9

* 0 = best and 5 = worst situation

TABLE 4. Social /family and functional wellbeing of patients with pacemakers*

Patients Questions	Total	Single chamber	Dual chamber	P Value
Social / Family				
GS1	2.5 ± 0.2	2.5 ± 0.24	2.5 ± 0.21	0.9
GS2	1 ± 0.7	0.8 ± 0.08	1.1 ± 0.11	0.02
GS3	2.6 ± 0.2	2.5 ± 0.23	2.6 ± 0.21	0.7
GS4	0.9 ± 0.07	0.7 ± 0.09	1 ± 0.1	0.04
GS5	0.9 ± 0.07	0.8 ± 0.1	0.9 ± 0.09	0.4
GS6	1 ± 0.11	0.8 ± 0.1	1.2 ± 0.2	0.08
Mean	1.4 ± 0.08	1.3 ± 0.11	1.4 ± 0.11	0.2
Functional				
GF1	2.4 ± 0.15	2.4 ± 0.22	2.4 ± 0.21	0.9
GF2	2.6 ± 0.15	2.5 ± 0.22	2.6 ± 0.2	0.8
GF3	1.4 ± 0.08	1.4 ± 0.12	1.5 ± 0.12	0.5
GF4	1.1 ± 0.09	1.1 ± 0.11	1.1 ± 0.13	0.9
GF5	1.7 ± 0.12	1.4 ± 0.12	2 ± 0.2	0.01
GF6	1.4 ± 0.09	1.4 ± 0.12	1.4 ± 0.14	0.7
GF7	1.3 ± 0.09	1.3 ± 0.11	1.3 ± 0.14	0.8
Mean	1.6 ± 0.07	1.6 ± 0.11	1.6 ± 0.1	0.4

* 0 = worst and 5 = best situation

In the section related to functional wellbeing, poor results may be due to the age of patients, all of whom were old and had working limitation. This may be a limitation of Salud QOL questionnaire in old patients. Like the results of other studies, the scores of our patients were good in the field of total quality of life and the overall quality of life was reasonable.

In all sections of the questionnaire and except for a few questions, quality of life was not different between patients with single- and dual-chamber PPM. These results are consistent with other studies.^{11,12} In the subgroup of patients with sick sinus syndrome (SSS), dual-chamber PPM resulted in better quality of life.¹² In our study, the number of patients with SSS was very small so we did not include them in our analysis.

The majority of patients had sinus atrial rhythm upon admission and during follow-up; hence implanting single-chamber PPM was not justified on the basis of existing guidelines. However, even in these patients implanting single-chamber PPM did not disturb the quality of life. Iran depends on foreign supply of PPM. Dual-chamber PPM is more expensive and its implantation and follow-up are accompanied by more complications than single-chamber PPM.¹² It may be advisable to use single-chamber PPM in Iran in selected groups of patients, especially elderly patients with sedentary lifestyle.

In 1948, the World Health Organization (WHO) defined health as not merely the absence of disease but rather a state of complete physical, mental, and social wellbeing. This term evolved from its conceptual definition to the development of scales to measure the quality of life beyond physical status. Thus, quality of life assessment includes areas such as mental health, social support, and life satisfaction. More specialized QOL questionnaires used for cardiac disease usually evaluate physical and emotional wellbeing and lack in questions of social/familial and functional wellbeing.¹³ Although the Salud QOL questionnaire is not well known in Iran, it is potentially capable of evaluating all the health indicators defined by WHO.

One of the important characteristics of this questionnaire is its use in all patients with various cardiac and non-cardiac diseases for evaluation of the effects of the treatment protocol on the QOL of patients.

QOL of PPM patients is good in items of physical and emotional wellbeing but there are some problems in social/family performance and function. Family

and social educational programs are needed to support these patients.

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References

1. Duru F, Büchi S, Klaghofer R, Mattmann H, Sensky T, Buddeberg C & et al. How different from pacemaker patients are recipients of implantable cardioverter-defibrillators with respect to psychosocial adaptation, affective disorders, and quality of life? *J Heart* 2001; 85(4): 375–79.
2. Oto MA, Muderrisoglu H, Ozin MB, Korkmaz ME, Karamah metoqlu A, Oram A & et al. Quality of life in patients with rate responsive pacemakers: a randomized, cross-over study. *J Pacing Clin Electrophysiol* 1991; 14(5 pt 1): 800–6.
3. Linde-Edelstam C, Nordlander R, Uden AL, Orth-Gomer K, Ryden L. Quality of life in patients treated with atrioventricular synchronous pacing compared to rate modulated ventricular pacing: a long-term, double-blind, crossover study. *J Pacing Clin Electrophysiol* 1992; 15(10 pt-1): 1467–76.
4. Lukl J, Doupal V, Heinc P. Quality-of-life during DDD and dual sensor VVIR pacing. *J Pacing Clin Electrophysiol* 1994; 17(11 pt 2): 1844–8.
5. Lamas GA, Orav EJ, Stambler BS, Ellenboger KA, Sqarbossa EB, Huang SK & et al. Quality of life and clinical outcomes in elderly patients treated with ventricular pacing as compared with dual-chamber pacing. *Pacemaker Selection in the Elderly Investigators. J N Engl Med* 1998; 338(16): 1097–104.
6. Deharo JC, Badier M, Thirion X, Ritter P, Provenier F, Graux P & et al. A randomized, single-blind crossover comparison of the effects of chronic DDD and dual sensor VVIR pacing mode on quality-of-life and cardiopulmonary performance in complete heart block. *J Pacing Clin Electrophysiol* 1996; 19(9): 1320–6.
7. Hayes DL, Zipes DP. Cardiac pacemakers and cardioverter defibrillators: In : Zipes DP, Libby P, Bonow RO, Braunwald E, editors. *Braunwald's heart disease*. Vol 1, 7th ed. Philadelphia: Elsevier Saunders; 2005; 31: 767–802.
8. Fleischmann KE, Orav EJ, Lamas GA, Mangione CM, Schron E. Pacemaker implantation and quality of life in the Mode Selection Trial (MOST). *J Heart Rhythm*. 2006; 3(6): 653–9.
9. Prech M, Grygier M, Mitkowski P, Stanek K, Skorupski W, Moszynska B & et al. Effect of restoration of AV synchrony on stroke volume, exercise capacity, and quality-of-life: can we predict the beneficial effect of a pacemaker upgrade? *J Pacing Clin Electrophysiol*. 2001; 24(3): 302–7.
10. Natale A, Zimerman L, Tomassoni G, Newby K, Leonelli F, Fanelli R & et al. AV node ablation and pacemaker implantation after withdrawal of effective rate-control medications for chronic atrial fibrillation:

effect on quality of life and exercise performance. *J Pacing Clin Electrophysiol.* 1999; 22(11): 1634-9.

11. Stofmeel MA, Post MW, Kelder JC, Grobbee DE, van Hemel NM. Quality of life of pacemaker patients: a reappraisal of current instruments. *J Pacing Clin Electrophysiol.* 2000; 23(6): 946-52.

12. Lamas GA, Orav EJ, Stambler BS, Ellenbogen KA, Sgarbossa EB, Huang SK & et al. Quality of life and clinical outcomes in elderly patients treated with

ventricular pacing as compared with dual-chamber pacing. *Pacemaker Selection in the Elderly Investigators. J N Engl Med.* 1998; 338(16): 1097-104.

13. Velarde-Jurado E, Avila- Figueroa C, Methods for the Quality of Life Assessment, *salud pública de méxico* /, September-October 2002; 44(5): 448-63.

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