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The effect of follow-up care by telephone and short massage services on patient's quality of life after cardiac valve replacement surgery

Mahdi Sadeghi shermeh[1], Fatemeh Ghafouri[*], Seyed Davood Tadrisi[1], Ali Tayyebi[1]
1. Faculty of Nursing, Baqiyatallah University of Medical Sciences, Tehran, Iran.

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ABSTRACT

Aims: Humanity always think about creation of new and low cost cultures. The aim of this study is comparing the effect of follow-up care by telephone and short massage services on patient's quality of life after cardiac valve replacement surgery.
Methods: This clinical trial study was done on patients admitted for valve replacement surgery in Tehran selected hospitals in 2011. 99 samples selected with based on target method and distributed according to random allocation method to telephone follow-up, short message services follow-up and control groups. In this study patient's quality of life assessed by Nottingham quality of life questionnaire before and 3 months after surgery.
Results: The mean scores of aspects of quality of life in telephone follow-up, short message services follow-up and control groups decreased after intervention (that shows the better quality of life) but ANOVA test did not show significant difference between the mean scores of aspects of quality of life in the groups before and after intervention.
Conclusions: There was no significant difference between follow-up care by telephone and short massage services on patients' quality of life after cardiac valve replacement surgery. We hope to see more usage of easy and low cost follow up care methods in cardiac care centers.

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1. Introduction

Among cardiac diseases, valve diseases allocate an important class to themselves, because of making heart failure and related disabilities during daily life. This disease in industrial and developed countries is among controlled disease, while in developing countries tropical and subtropical, it is remained in the form of a major problem [1]. Prevalence of valve diseases in USA from 7.0% reached to 13.3% [2].

In Iran statistics and reports of Ministry of health, treatment and medical education indicate increase of prevalence percent and level of spreading valve diseases [1]. Cardiac valve diseases include: Aortic valve disease,

* Correspondence Author: Fateme Ghafouri
Tarbiat Modarres University, Faculty of Medical Sciences, Nursing Department, Tehran, Iran. Tel:+98-2122289941
Email: fatemeghafor@yahoo.com

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Mitral valve, tricuspid valve and rarely pulmonary valve that may appear in the form of stenosis, failure or both of them. The aim of surgery of heart valves is relieving symptoms and signs and returning of hemodynamic status to nature status, increasing the longevity and finally improving quality of life [3].

Annually there is more than 79000 valve replacement surgery in America and every year the number of the people who refer to do cardiac valve surgery is increasing [4].

Prosthetic valves include types of mechanical and biological valves [2]. These patients after surgery are exposed to complications such as; bleeding, blood sat around the valve, infection, thromboembolism, congestive heart failure, hypertension, dysrhythmia, Hemolysis and mechanical valve obstruction [5]. Studies show that almost 84% of heart surgery patients have at least two or three expectations of the result of surgery. These expectations include longevity, improvement of quality of life, increasing in the power of exercise and activity and easement. Although most of the patients report health improvement after surgery but many of them explain improvement period and rehabilitation as a process of long-term and short-term complications. So we can prevent appearance of these problems with forecasting appropriate need and interventions [6].

Also the results of clinical trials showed that quality of life can be counted as a sign of quality of health cares and also a part of a treatment plan and measuring that in chronic diseases makes more information about patients' health status and can be a useful guideline for promoting care quality [7]. Inadequate supports, ineffective planning of follow-up of patients, nonconformity of the treatment regimen and diet and shortage of awareness about risk factors are among the factors that can be controlled and appear complications and change in quality of life [8]. One of the factors that play a role in accreditation of the organizations that provide health services is the way of providing educational program to the patient [9].

The aim of the education is to manage the disease by the patient and to try to improve the patient's quality of life. Provision of educational program tailored to the needs, experiences and likes of the patients is still known as a big challenge for the staffs of treatment-health cares [10].

Different methods and tools have been used for teaching to the patient that include providing educational tests in the form of written , oral , picture, film, telephone, internet and other methods [11]. One of the most effective actions in improving quality of life and decreasing patients' concerns is follow-up after discharge. Teaching to the patient and his/her following-up after discharge play an important role in patient's rehabilitation [12].

There was a research with the title of patient's quality of life with cardiac valve replacement which indicates that although this surgery is effective in improvement of quality of life, these patients need to follow up after discharge [13]. Assessment showed that care follow-up causes increase of activity power, reducing pain, reducing anxiety, reducing heart failure level, increase of family and social interactions and finally improvement of quality of life in these patients [14].

Different methods of care follow-up are in the form of client's personal reference to the care center, visiting the house by the care provider or using methods of telecommunications. Follow-up in any way is effective, but in these conditions more low cost and easier methods should be chosen [15]. In many progressed prevention and treatment centers of the world, telephone counseling is used. This work causes reduce of the cost and unnecessary visits and finally leads to increase of the performance of these centers [16]. Short message is another method of follow-up. In spite of spreading short message in Iran, its position in work processes is very weak and the highest frequency (29%) is belonged to joke and ordinary messages (21%) [17].

Upward trend of using mobile phone in societies made this tool as a new tool in remote

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care in order to make communication between patients and their health care providers [18]. According to rising trend of the number of the patients in our country and insurance system problems in paying current and actual cost of treatment, quick, efficient, low cost and low risk return of these patients through several follow-up is very important [1]. So according to the importance of quality of life in the patients after valve replacement surgery and the role of education and follow-up in improving their quality of life and the importance of this issue in nursing, we decided to have a comparison study about the effect of short message and telephone care follow- up on patients' quality of life after cardiac valve surgery.

2. Methods

This study was a controlled triple clinical trial. Study population was the patients under cardiac replacement surgery who were hospitalized in heart hospital of Jamaran, Baqiatallah and Shahid Rajayee. Samples were chosen after surgery according to inclusion criteria by convenience sampling (based on target) and after written consent, they were in three groups of telephone-care follow-up, short message follow-up and control in the form of random allocation (ball bag). By using Altman nomogarm, with including α=0.05 and β-1=90% and with considering results of similar studies[19], the required sample size in every case and control group was estimated about 30 people and with considering 10% of loss of the samples, 33 people were considered. Totally in this study 99 people were assessed (33 people in telephone follow-up group, 33 people in short message follow- up group and 33 people in control group).

Inclusion criteria included; lack of suffering from progressed form of diseases of vital organs (motor disability, Rheumatoid Arthritis, brain stroke and etc…) and psychopathy (Schizophrenia, psychosis, depression and…) having literacy of reading and writing, lack of speech and hearing problems, possible access to telephone and mobile phone (ability to use short massage by the patient or the closest person to him/her, cardiac valve replacement surgery for the first time and the age of (15-75 years old).

Also exclusion criteria included; sample's unwillingness to cooperate at any stage of the research, appearance of physical and mental problems that lead to patient's disability at any stage of the research. After complete explanation about the aim of the study and method of the study, informed written consent was taken from all the samples of the study and demographic information questionnaire and quality of life questionnaire of Nottingham (Nottingham Health Profile) were collected for all the three groups before surgery.

One booklet was given to all the three groups before discharge and with the content which was derived from the booklet; education was given with the presence of the samples. In the telephone follow-up group, there was call contact in the first month 2 times, in the second and third week and month 1 time per week before noon, according to the time priorities of the cares, age, gender, type of valve and marital status of the patients. In the short message follow-up group, one message had been sent daily before noon through private SMS center according to the time priorities of cares, type of valve and marital status of the patients. It should be mentioned that coordination with the samples of short message and telephone groups had been done in order to answer their questions (mobile phone and telephone to the samples).

Also general discussion contents of telephone and short messages were similar and they were provided by deriving from the educational booklet, but according to the age, gender, marital status, type of valve, improvement process and time priorities of the cares, need of the patients were different. There was no follow-up in control group. Repeated measurement of quality of life had been done by the questionnaire of Nottingham quality of life in three groups after three months. In this study two demographic information

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Table 1: Comparing demographic features and some features related to groups of the study

Variable \ Group		Telephone follow-up Number (percent)	Short message follow-up Number (percent)	Control Number (percent)	p-value
Gender	Man	15 (31.9)	19 (40.4)	13 (27.7)	0.32
	Woman	18 (34.6)	14 (26.9)	20 (38.5)	
Marital status	Single	10 (45.5)	6 (27.3)	6 (27.3)	0.39
	Married	23 (29.9)	27 (35.1)	27 (35.1)	
Education	Illiterate and primary	13 (31.7)	12 (29.3)	16 (30.0)	0.75
	Secondary school and Diploma	14 (32.6)	15 (34.9)	14 (32.6)	
	university	6 (40.0)	6 (40.0)	3 (20.0)	
Occupation	Employed and self-employment	8 (25.8)	13 (41.9)	10 (32.3)	0.49
	Retired	8 (38.1)	8 (38.1)	5 (23.8)	
	Housewife	17 (36.2)	12 (25.5)	18 (38.3)	
Salaries	Less than 300000 tomans	2 (6.1)	4 (12.1)	0	0.26
	3000000 -500000 tomans	2 (6.1)	2(6.1)	3(9.1)	
	More than 500000 tomans	29 (87.9)	27 (81.8)	30 (90.9)	
Type of replaced valve	Mechanical Mitral	16 (36.4)	8 (18.2)	20 (45.5)	0.02
	Tissue Mitral	2 (25.0)	4 (50.0)	2 (25.0)	
	Mechanical Aortic	8 (38.1)	11 (52.4)	2 (9.5)	
	Tissue Aortic	3 (42.9)	33 (42.9)	1 (14.3)	
	Mitral and mechanical Aortic	2 (11.8)	7 (41.2)	8 (47.1)	
	Mitral and mechanical tricuspid	2 (100.0)	0	0	
Diet before surgery	Diet (heart, diabetic and …)	2 (21.1)	6 (15.8)	24 (63.2)	0.01
	Ordinary	25 (41.0)	27(44.3)	9 (14.8)	
Smoking	Yes	(54.56)	2 (18.2)	3 (27.3)	0.26
	No	27 (30.7)	31 (35.2)	30 (34.1)	
Walking program	Daily	7 (36.8)	8 (42.1)	4 (21.1)	0.15
	Sometimes	(29.420)	20 (29.4)	28 (41.2)	
	Never	6 (50.0)	5 (41.7)	1 (8.3)	
Ability to do daily activities	Yes, without problem	8 (36.4)	11 (50.0)	3 (13.6)	0.01
	Yes with problem	22 (29.7)	22 (29.07)	30 (40.5)	
	No	3 (100.0)	0	0	
Regular exercise program	Daily	6 (42.9)	5 (35.7)	3 (21.4)	0.64
	Sometimes	22 (31.9)	21 (30.4)	26 (37.7)	
	Never	5 (31.3)	7 (43.8)	4 (25.0)	
Experience of underlying disease	Diabetes	1 (33.3)	2 (66.7)	0	0.52
	Blood pressure	4 (36.4)	2 (18.2)	5 (45.5)	
	lipid	0	4 (80.0)	1 (20.0)	
	Heart attack and stroke	0	0	1 (100.0)	
	Kidney disease	2 (33.3)	2 (33.3)	2 (33.3)	
	Without any underlying disease	21 (34.4)	19 (31.1)	21 (34.4)	
	Several diseases together	5 (41.7)	4 (33.3)	3 (25.0)	
Family history	Yes	4 (30.8)	5 (38.5)	4 (30.8)	0.91
	No	29 (33.7)	28 (32.6)	29 (33.7)	

questionnaires and questionnaire of Nottingham quality of life had been used. Demographic information included: age, gender, occupation, education, marital status, kind of diet, experience of underlying diseases and etc. Questionnaire of Nottingham quality of life with 38 questions that have specific points assess people's quality of life in six dimensions of energy with 3 points, pain with 8 points, emotional reactions with 9 points, sleep with 5

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Table 2: Comparing the average of quality of life dimensions of the groups of the study before intervention

group / Dimensions of quality of life	Short message follow-up (Mean=SD)	Telephone follow-up (Mean=SD)	Control (Mean=SD)	Variance analysis
Social isolation	43.5439.66	48.8141.65	37.2932.33	0.47
Emotional reaction	44.4136.70	41.7037.09	35.7032.68	0.59
Physical activity	72.3829.45	79.7031.65	82.0223.80	0.36
Sleep	53.3533.26	50.5133.18	56.4330.89	0.76
Energy	72.3332.23	82.2334.24	86.2329.54	0.19
Pain	74.2535.02	78.8331.55	74.5330.52	0.81

Table 3: Comparing the score average of the quality of life dimensions of the groups of the study after intervention

group / Dimensions of quality of life	Short message follow-up (Mean=SD)	Telephone follow-up (Mean=SD)	Control (Mean=SD)	Variance analysis
Social isolation	8.6718.77	4.4412.68	2.508.59	0.19
Emotional reaction	7.7815.08	4.059.98	4.3613.34	0.43
Physical activity	11.9915.78	6.4611.21	7.5012.5	0.20
Sleep	15.4716.84	14.2217.0.6	15.1312.10	0.94
Energy	4.369.40	4.369.40	6.5410.85	0.58
Pain	11.2114.69	11.8312.66	15.4214.61	0.42

points, social isolation with 5 points, physical activity with 8 points. Achieving more points meant more problems of the patient and worse quality of life [20].

Content validity of demographic questionnaire was taken according to the reviews of 10 professors of nursing college. Validity of Nottingham quality of life questionnaire has been measured many times in England from 1978 to 1981and now it is still widely used in Europe. Its validity had been examined on fire personnel, miners, pregnant women, surgical and fracture patients and heart patients during different studies and it had been confirmed [20]. Also stability of this questionnaire was confirmed in the study of Dehdari et.al by doing re-test (r=0.85) [21].

After gathering information in order to analyze data, SPSS software, the 18 version and descriptive statistical tests (average and standard deviation), Chi-square and Pearson correlation coefficient and ANOVA variance analysis had been used according to the aims and assumptions of the study.

3. Results

The average and standard deviation of the age of subjects of the study in groups of short

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message follow-up, telephone follow-up and control were respectively; 51.12=15.20, 48.66=14.73, and 47.75=14.82 and the groups were equal from the age point of view (p=0.64). Average and standard deviation of time duration of suffering from valve diseases of the samples were also respectively; 22.96=20.93, 26.30=22.04, 23.45=19.05 and they were equal from this point of view (p=0.78). In this study subjects of the study in three groups, in three cases of demographic features which means type of replaced valve (p=0.02), diet before surgery (p=0.01) and ability to do daily activities (p=0.01) had significant statistical difference and they were not equal (table 1).

Results showed that score of dimension of quality of life after intervention had been decreased in all the three groups (quality of life is better) and also variance analysis test showed that there was no significant difference between the average of score of quality of life dimension in the groups before and after intervention (table 2 and 3).

4. Discussion

Studies show that about 84% of cardiac surgery patients have at least two or three expectations from the result of the surgery. These items include: prolongation of life, better quality of life, increase in the strength of exercise and activity and easement of the pain that in most of the patients health improvement and getting better after surgery have been reported and follow-up can increase this improvement by forecasting the needs and doing necessary interventions.

Alyout in 2006 in a study assessed quality of life of valve surgery patient before and after surgery and explained that educations and follow-ups and supports at the time of discharge and after surgery is more important than before that and assessment of quality of life of these patients showed that these patients need more programs and these programs should be more complete for rehabilitation and they have to be followed-up after discharge [22].

In the study of Alyout number of the samples in every group was 101 and patients were followed- up after discharge for 6 months and it is while in the present study, number of the samples and the time of follow-up were very low and we are hopeful that in the next studies these problems are solved. Zolfaghari in 2009 in a study with the title of comparing telephone and short message follow-up in type 2 diabetic patients followed up 77 diabetic patients through these two methods and explained that both of the methods were highly effective in change of A1C hemoglobin level and these methods can be used as new methods in controlling diabetic patients [23].

Also in the present study both follow-up methods had been used but regarding this that because of ethical observations in the study, control group has been considered and it has been educated while they were present and this group achieved booklet and also content of the call contact and messages were derived from the booklet, so it is possible that these observations were effective in good scores of quality of life in control group and lead to lack of significant difference between three groups and from the other side with considering increase of quality of life in the short message group like telephone and control group, it can be said that health and care administrators and planners are going to be able to use short message service in care follow-up issue effectively and with low cost.

Also it seems that due to popularity of mobile phone among all segments of society, the portability and ease of use, fast transmission, possibility of SMS text storage for the patients and cost effectiveness of sending message in compare with telephone call, short message service can be a comprehensive and active media and it can be replaced with traditional usage of telephone in many cases [24].

Since these patients had no complications after surgery, short message follow- up is going to have high economic effects (reducing drug use, required hospitalization and further surgery), social effect (returning to work and

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participating in active cycle of society) and family effect (better psychological and mental situation and making a life with high quality in personal and marital relations), we are hopeful to be able to step in this direction by using easy and low-cost methods.

5. Conclusions

with considering that in this study, scores of quality of life in three groups of short message, telephone and control had been improved and there is no significant difference between telephone care and short message follow-up in the scores of patients' quality of life after change of cardiac valve, we are hopeful that in the future researches that we can encourage health treatment system by using care follow-up methods and with the methods of easy and low cost care methods in cardiac care centers these patients' 'problems reduce every day.

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