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Research Paper

LONG TERM HEALTH PROBLEMS AND AWARENESS REGARDING ITS MANAGEMENT AMONG PATIENTS AFTER VALVE REPLACEMENT SURGERY

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A descriptive study to assess the long term health problems and awareness regarding its management among 110 patients after valve replacement surgery was conducted in Amrita Institute of Medical Sciences, Kochi. The Objectives of the study were to (1) find out the long term health problems of patients after valve replacement surgeries; (2) determine the level of awareness on management of long term health problems among patients after valve replacement surgeries; Results: The major long term health problems identified were physical problems 87 (79%), valve related problems 72 (65%) and psychological problems 67 (61%). Awareness regarding management of long term health problems was average among majority of the subjects 72 (65%). Association was found between type of prosthetic valve and certain valve related problems like hearing unusual sounds from the valve (χ^2 = 12.303, p<0.001), disturbance due to the noise from the valve (χ^2 = 5.065, p<0.05) and thromboembolic problems (χ^2 = 4.611, p<0.05) - common among patients with mechanical valve. There was a significant association between PT-INR value and bleeding problems (χ^2 = 6.164, p<0.05), i.e., patients with an elevated PT-INR value experienced more bleeding problems. Patients' level of awareness regarding management of long term health problems had significant association with valve related problems (χ^2 = 5.877, p<0.05), dental problems (χ^2 = 4.982, p<0.05) and compliance problems (χ^2 = 4.195, p<0.05). Conclusion: Need for ongoing follow up and patient teaching on management of long term health problems after valve replacement surgery.

Keywords: Long term health problems, Awareness, Valve replacement surgery

INTRODUCTION

Valve replacement surgeries have revolutionized the management of valvular heart disease and improved the quality of life of millions of patients around the globe. In India, more than 1,50,000 patients undergo heart valve operations every year involving both repair and replacement (Express Health Care 2012). A patient who survives a valve operation is at risk of developing specific valve-related and non-valve related events during his or her remaining lifetime. The valve-related events include structural valvular

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deterioration, nonstructural dysfunction, valve thrombosis, embolism, bleeding events and valvular endocarditis and the non valve related events may be contributed due to factors like older age, male sex, black race and presence of co-morbidities. Therefore long-term outcome of a patient who survives a valve operation depends on these valve related and non-valve-related events (Puvimanasinghe *et al.,* 2004).

As per statistics taken from AIMS, Kochi from July 2012- July 2013, a total of 150 valve replacement surgeries have been done. If no complications persisted, most patients were discharged after a week and advised for a follow up two weeks later. Immediate health problems after a valve replacement surgery are often taken care of by the health care facility but long term health problems and awareness on its management are seldom known to the patient as they will be more concerned with their emotional status, pain and other symptoms after surgery. Early assessment of long term health problems will help both the patient and the health care provider to take up a better approach towards effective management after a valve replacement surgery.

Moreover, developing an educational module or an informational booklet for these patients will help them to refer to it with a stable mind and body once their immediate concerns after surgery are taken care of. It will also serve as a reference for nurses to plan and provide better guidelines to patients at the time of discharge

Linde and Janz (1979) studied the effect of comprehensive teaching program on knowledge and compliance of 48 cardiac patients. Among these patients 25 were taught by masters-prepared clinical specialists and 23 by nurses with less than masters preparation. Results revealed that there were significant changes in knowledge scores from the preoperative test to the discharge test and stability in most scores from discharge to both postoperative visits. Compliance percentages were significantly higher in patients taught by masters-prepared nurses than the patients taught by nurses with less than masters' preparation.

OBJECTIVES OF THE STUDY

The objectives of the study are to

1. Find out the long term health problems of patients after valve replacement surgeries.
2. Determine the level of awareness regarding management of long term health problems among patients after valve replacement surgeries.
3. Find association between long term health problems and selected variables among patients after valve replacement surgeries.
4. Find association between long term health problems and awareness on its management among patients after valve replacement surgeries.

MATERIALS AND METHODS

Research Approach

In this study, the researcher adopted a quantitative research approach to assess the long term health problems and awareness regarding its management among patients after valve replacement surgery.

Research Design

The research design selected for the study was a non experimental descriptive design as it helps to gain more information about characteristics

within a field of inquiry and it does not involve the manipulation of variables as they are studied as they exist. It even prevents bias through operational definitions of variables, large sample size, valid and reliable tools and formal data collection methods (Sharma S K, 2010).

Research Setting

The study was conducted in the Cardiology Units of Amrita Institute of Medical Science (AIMS), Kochi.

Target Population

- In this study, the target population are the patients after heart valve replacement surgery in Kerala.

Accessible Population

- In this study, the accessible population refers to patients who are attending Cardiology OPD's and readmitted in AIMS, Kochi three months after a heart valve replacement surgery.

SAMPLE AND SAMPLING TECHNIQUE

Non probability convenience sampling technique was used in the study. Subjects were selected based on the sample selection criteria. Patients attending Cardiology OPD's and readmitted in AIMS, Kochi three months after a valve replacement surgery were selected as the sample.

Sample Size

The researcher found that on an average, 150 valve replacement surgeries are being conducted in AIMS, Kochi every year. The researcher used this prevalence to calculate the sample size for the study based on a formula designed by Krejice and Morgan (1960)

$$S = \frac{\chi^2 NP(1-P)}{d^2(N-1) + \chi^2 NP(1-P)}$$

The sample size estimated was 108 and the researcher adopted a sample size of 110 in the study.

DATA COLLECTION INSTRUMENTS

The researcher developed three tools for the study on the basis of review of literature and consulted with cardiologists and patients in the OPD who come for routine follow up after a valve replacement surgery.

Tool I is a structured interview schedule which comprises of two sections section A (for socio demographic data) and section B (for clinical data).

Tool II is a structured interview schedule to find out the long term health problems after a valve replacement surgery. It is a checklist comprising of 30 questions classified under seven major headings like physical problems, bleeding problems, thromboembolic problems, dental problems, psychological problems and compliance related problems.

Tool III is a self administered structured questionnaire to assess the level of awareness regarding management of long term health problems after valve replacement surgery consisting of 22 questions and was scored at equal intervals by categorizing into three:

Good	-	15-22 (above 64%)
Average	-	7-14 (32 – 64%)
Poor	-	0-6 (below 32%)

MAJOR FINDINGS OF THE STUDY

Among 110 subjects, majority 97 (88%) underwent valve replacement surgery prior to one or more than one year. 72 (65%) subjects had undergone a mitral valve replacement, 21 (19%) an aortic valve replacement, 15 (14%) a double valve replacement, 1 (1%) a tricuspid valve replacement and 1 (1%) a pulmonic valve replacement. While 95 (86%) subjects had a mechanical prosthetic valve, the rest 15 (14%) subjects had a bioprosthetic valve.

There was a history of hospitalization after valve replacement surgery among 68 (62%) subjects and among them the major reasons for hospitalization were stroke 18 (26%) followed by bleeding 16 (24%) and valve failure 15 (22%).

1. The long term health problems were categorized under seven areas namely physical, valve related, dental, bleeding, thromboembolic, psychological and compliance related problems. Among 110 subjects, the major long term health problems found were physical problems in 87 (79%) subjects, valve related problems in 72 (61%) subjects and psychological problems in 67 (61%) subjects On the whole nearly 55 (50%) subjects had problems in six out of seven areas and compliance related problems were found to be comparatively less 45 (41%).

Each long term health problem was individually analyzed and the findings are as follows:

- In physical problems, experiencing palpitations was found to be the major physical health problem among 63 (72%) patients followed by presence of edema on the hands and feet among 62 (71%) patients.
- Under valve related problems, 64 (89%) patients reported that they used to hear unusual sounds from the valve
- For patients with bleeding problems, 51 (84%) experienced bleeding from the gums
- On the basis of thromboembolic problems, 34 (63%) reported that they have experienced weakness on one side of the body.
- Under dental problems, 60 (95%) subjects have experienced dental infections after valve replacement surgery
- For patients with psychological problems, 57 (85%) subjects often felt they are always dependent on others
- In compliance related problems, 28 (62%) patients reported that they still continue to take a high fat diet.

2. Majority of the subjects 72 (65%) had an average level of awareness, 35 (32%) had good awareness and 3 (3%) had poor awareness regarding management of long term health problems.
3. Type of prosthetic valve had association with certain valve related problems {hearing unusual sounds from the valve (χ^2 = 12.303, p<0.05), experiencing disturbance due to the noise from the valve (χ^2 = 5.065, p<0.05)} and thromboembolic problems (χ^2 = 4.611, p<0.05) all of which was more among patients with a mechanical valve.
4. A significant association existed between PT INR value and presence of bleeding problems (χ^2 = 6.164, p<0.05). Patients with an elevated INR value experienced more bleeding problems
5. Association was also found between awareness on management of long term health problems and valve related problems

(χ^2 = 5.877, p<0.05), dental problems (χ^2 = 4.982, p<0.05) and compliance problems (χ^2 = 4.195, p<0.05).

OTHER RELEVANT FINDINGS

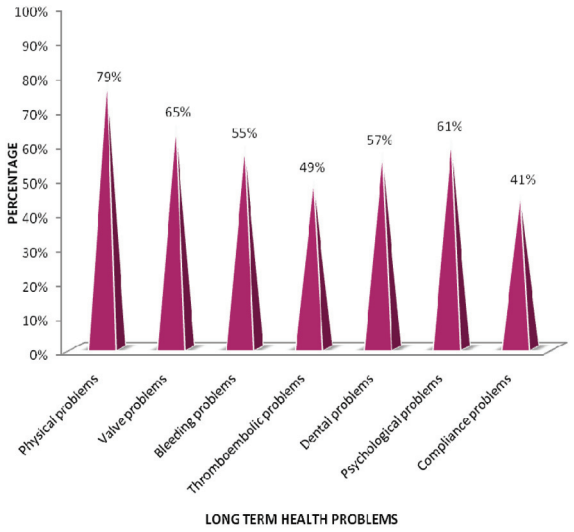
1. Majority of the subjects, 97 (88%) were above the age group of 40 years. Gender wise, women subjects 58 (53%) were slightly more than men 52 (47%). Majority of the subjects 96 (87%) were married. One fourth of the subjects 26(24%) were graduates and above. Nearly half of the subjects 54 (49%) were unemployed
2. More than half of the patients did not have the habit of smoking and drinking alcohol, 95 (86%) and 103 (94%) respectively. Among 110 subjects while around half of the subjects 51 (46%) could maintain a normal PT-INR, 44 (40%) subjects were below the normal value and 15 (14%) had an elevated PT-INR.

DIAGRAMS AND TABLES

Description of long term health problems among patients after Valve Replacement Surgery.

Figure 1 shows that among 110 subjects, the major long term health problems identified were Physical problems 87 (79%), Valve related problems 72 (65%) and Psychological problems 67 (61%). Figure 1 clearly depicts that on the whole nearly 55 (50%) subjects had problems in six out of seven areas. The compliance related problems were comparatively less 45 (41%).

Figure 1: Cone Diagram showing Distribution of Subjects Based on Long Term Health Problems



From Table 1 it is evident that among the 87 subjects with physical problems, the major physical health problems experienced were found

Table 1: Distribution of Subjects Based on Physical Problems after Valve Replacement Surgery

Physical Problems	Frequency	Percentage
a. Chest pain	30	34
b. Palpitations	63	72
c. Edema	62	71
d. Breathlessness	55	63
e. Tiredness	60	69
f. Sleep disturbance	45	52
g. Dozing	40	46
n = 87		

to be palpitations among 63 (72%) subjects, followed by edema over hands and feet among 62 (71%), tiredness during household chores 60 (69%) and breathlessness 55 (63%).

Table 2 depicts that out of 72 subjects who suffered from valve related problems, hearing unusual sounds from the valves was the major valve related problem 64 (89%). Nearly half of the subjects 37 (51%) felt disturbed by the noise from the valve.

From Figure 2 it is clear that out of 110 subjects, 61 subjects suffered from bleeding problems after valve replacement surgery, of which more than half of them 51 (84%) experienced bleeding mainly from the gums.

Figure 3 shows that among 54 subjects who suffered from thromboembolic problems after valve replacement surgery, 34 (63%) subjects had experienced one side weakness.

Table 3 depicts that out of 63 subjects who suffered from dental problems, 60 (95%) subjects experienced dental infections after valve replacement surgery and 46 (73%) currently experience dental problems.

From Table 4, it is clear that only 45 subjects had compliance related problems, the major

Table 2: Distribution of Subjects Based on Valve Related Problems after Valve Replacement Surgery

Valve Problems	Frequency	Percentage
a. Unusual sounds	64	89
b. Disturbance due to noise	37	51
c. Hospitalized for valve infections	18	25
d. Secondary valve repair or replacement	16	22
n = 72		

Figure 2: Bar Diagram showing Distribution of Subjects Based on Bleeding Problems after valve replacement surgery

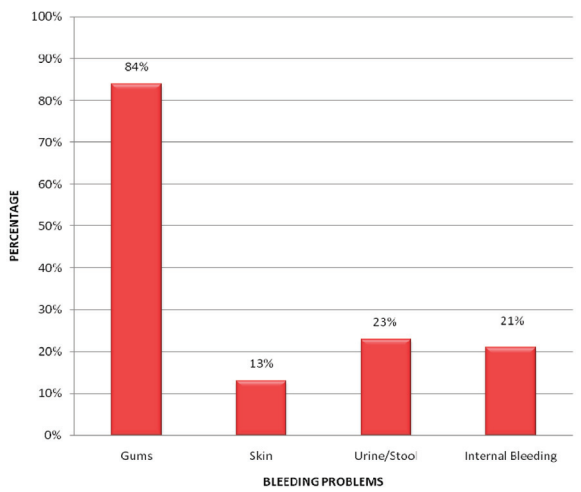


Figure 3: Diagram Showing Distribution of Subjects Based on Thromboembolic Problems After Valve Replacement Surgery

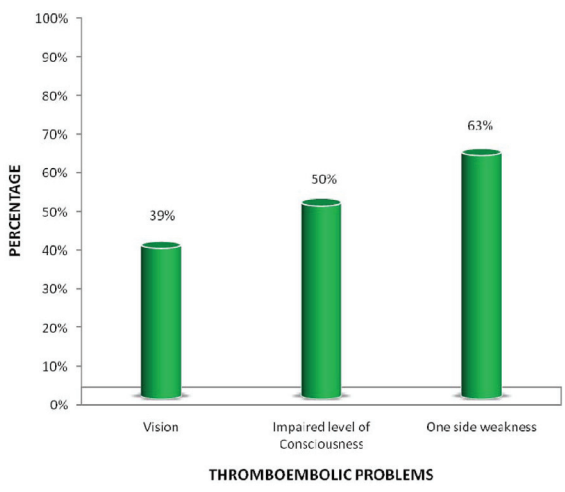


Table 3: Distribution of Subjects Based on Dental Problems After Valve Replacement Surgery

Dental Problems	Frequency	Percentage
a. History of Infections	60	95
b. Current Problems	46	73
n = 63		

Table 4: Distribution of Subjects Based on Compliance Related Problems after valve replacement surgery

Compliance Problems	Frequency	Percentage
a. Still take high salt diet	22	49
b. Still take high fat diet	28	62
c. Irregular medication	16	36
d. Irregular follow up	15	33
n = 45		

compliance related problems was that 28 (62%) subjects still continued taking a high fat diet and 22 (49%) subjects still continued taking a high salt diet. It is significant to be noted that 16 (36%) subjects were not compliant with their regular medications and 15 (33%) were not on regular follow up as prescribed by their doctor.

Figure 4 explains that feeling dependent on others 57 (85%) was the most significant problem among 67 subjects who experienced psychological problems after valve replacement surgery.

DISTRIBUTION OF SUBJECTS BASED ON AWARENESS REGARDING MANAGEMENT OF LONG TERM HEALTH PROBLEMS

Figure 5 shows that among the 110 patients, more than half of the subjects 72 (65%) had an average level of awareness and only 3 (3%) had a poor level of awareness. The level of awareness of 107 (97%) patients ranged from average to good.

Association between Type of Prosthetic valve and Valve related problems

Table 5 clearly explains that on the whole there is a significant association between valve problems and type of prosthetic valve used (χ^2 = 6.366, p<0.05). A statistically significant association was also found between unusual sounds from the valve (χ^2 = 12.208, p<0.001) and disturbance due to noise from the valve (χ^2 = 5.065, p<0.05) with the type of prosthetic valve. From Table 5 it is clearly evident that 64 (67%) patients with a mechanical valve hear unusual sounds from the valve and 34 (36%) patients find the noise from the mechanical valve disturbing.

Table 6 clearly shows that there is an association between type of prosthetic valve and thromboembolic problems (χ^2 = 4.611, p<0.05) but there was no association between type of prosthetic valve and bleeding problems. From the table, it can be interpreted that 51 (54%) patients with a mechanical valve experienced more thromboembolic problems than patients with bioprosthetic valves.

Figure 4: Bar Diagram Showing Distribution of Subjects Based on Psychological Problems after valve replacement surgery

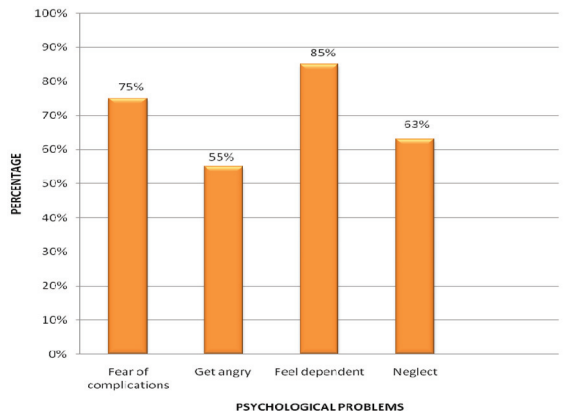


Figure 5: Pie diagram Showing Distribution of Subjects Based on Level of Awareness Regarding Management of Long Term Health Problems

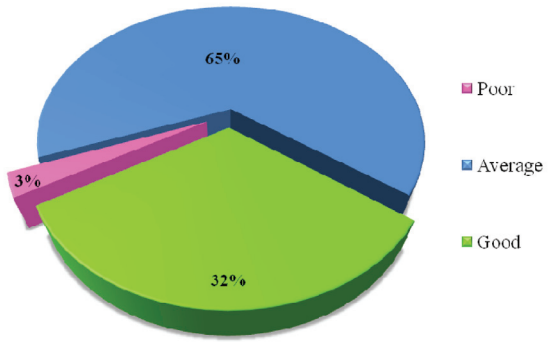


Table 5: Association between Type of Prosthetic Valve and Valve Related Problems

Health Problems	Type of prosthetic valve				
	Mechanical		Bioprosthetic		$\chi^2_{(1)}$
	f	(%)	f	(%)	
1. Valve Problems					
a. Present	67	71	5	33	6.366*
b. Absent	28	29	10	67	
2. Unusual sounds					
a. Present	62	65	2	13	12.303**
b. Absent	33	35	13	87	
3. Disturbance					
a. Present	36	38	1	7	5.065*
b. Absent	59	62	14	93	
4. Hospitalized for valve infections					
a. Present	14	15	4	27	3.135ns
b. Absent	81	85	11	73	
5. Secondary valve operation					
a. Present	13	14	3	20	0.416ns
b. Absent	82	86	12	80	
n=110					

Note: Table value of χ^2 = 3.84, p = 0.05, ns= not significant, *= significant association.

Table 6: Association between Type of Prosthetic valve with Bleeding and Thromboembolic Problems

Health Problems	Type of prosthetic valve				
	Mechanical		Bioprosthetic		$\chi^2_{(1)}$
	f	(%)	f	(%)	
1. Thromboembolic problems					
a. Present	51	54	3	20	4.611*
b. Absent	44	46	12	80	
2. Bleeding problems					
a. Present	54	57	7	47	0.543^{ns}
b. Absent	41	43	8	53	
n=110					

Note: Table value of χ^2 = 3.84, p = 0.05, ns= not significant, *= significant.

Data presented in Table 7 shows that there is a significant association between PT INR value with bleeding problems (χ^2 = 6.164, p<0.05). Hence, it can be interpreted that patients with an elevated PT- INR experienced more bleeding problems.

Table 8 shows that level of awareness regarding management of long term health problems is significantly associated with three out of seven long term health problems namely valve problems, dental problems and compliance related problems, p<0.05.

DISCUSSION

The First Objective was to Assess the Long Term Health Problems of Patients After Valve Replacement Surgeries

Immediate problems after a surgery are often managed by a health care facility but long term health problems are over looked into and often neglected. Long term health problems are a broad concept that may involve a disturbance in physical, mental, social or psychological functioning. In the present study long term health

Table 7: Association Between PT-INR and Bleeding Problems

Health Problems	PT-INR						
	Below Normal(1.5-2.4)		Normal(2.5-3.5)		Elevated(> 3 .6)		$\chi^2_{(1)}$
	f	(%)	f	(%)	f	(%)	
Bleeding Problems							
a. Present	30	63	20	43	11	73	6.164*
b. Absent	18	37	27	57	4	27	
n=110							

Note: Table value of χ^2 = 5.9915, p= 0.05, *= significant association

Table 8: Association Between Long Term Health Problems and Awareness Regarding Management of Long Term Health Problems

Health Problems	Awareness				
	Inadequate 0-14		Adequate 15-22		$\chi^2_{(1)}$
	f	(%)	f	(%)	
1. Physical Problems					
a. Present	49	56	38	44	2.157^{ns}
b. Absent	9	39	14	61	
2. Valve problems					
a. Present	44	61	28	39	5.877*
b. Absent	14	37	24	63	
3. Bleeding problems					
a. Present	34	56	27	44	0.498^{ns}
b. Absent	24	49	25	41	
4. Thromboembolic Problems					
a. Present	30	56	24	44	0.340^{ns}
b. Absent	28	49	28	51	
5. Dental problems					
a. Present	39	62	24	38	4.982*
b. Absent	19	40	28	60	
6. Psychological problems					
a. Present	39	58	28	42	2.024^{ns}
b. Absent	19	44	24	56	
7. Compliance Problems					
a. Present	29	64	16	36	4.195*
b. Absent	29	45	36	55	
n=110					

Note: Table value of χ^2 = 3.84, p = 0.05, ns= not significant, *= significant.

problems were assessed in the seven major areas and among them the major problems identified were physical problems in 87 (79%) patients, valve related problems in 72 (65%) patients and psychological problems in 67 (61%) patients. Other long term health problems like dental problems were prevalent among 63 (57%) patients, 61 (55%) patients had suffered from bleeding related problems and 54 (49%) subjects were found to have experienced thromboembolic

problems. Less than half of the patients 45 (41%) had faced compliance related problems.

Long term health problems were individually analyzed and their findings are discussed in detail. Among 87 (79%) subjects with physical problems, the major physical problems experienced were palpitations among 63 (72%) subjects, followed by edema over hands and feet among 62 (71%) and tiredness during household chores among 60 (69%). Palpitations may occur as a result of fear and anxiety over the presence of an artificial valve. Strenuous activity and inadequate rest results in decreased venous return which may be manifested as tiredness and edema over hands and feet.

As a result of these physical problems patients can experience limitations in their functional capacity and ability to perform activities of daily living. Immer *et al.* (2006) studied the Quality of life (QoL) and specific problems after cardiac surgery in adolescents and adults with congenital heart diseases. Results revealed that quality of life was excellent and similar to an age- and gender-matched standard population but the main restrictions among the groups were found in the emotional aspect (62.5+/-29.9) and physical role function (60.5+/-25.0) which reflected in limitations of daily activity.

Psychological problems were found among 67 (61%) subjects. In the individual problem analysis it was found that feeling dependent on others 57 (85%) was the major psychological problem. Other problems identified were that 75% feared of complications regarding the future, 63% felt they were neglected and 55% accepted that they get angry at themselves. These problems might be because patients' tend to think that they can no longer be independent as they have an artificial valve in the place of a normal one. They tend to become more anxious and worried about their health which can be manifested in the form of anger. The feeling of anger and hatred towards themselves may be as a result of sorrow or worry over their health condition.

The very own thought that the person has an artificial valve inculcates fear and uncertainty regarding his future which can lead to more stress. A descriptive co relational study was conducted by Jo-Ann EF (1989) in USA to determine the perceived level of uncertainty among 121 subjects who had a biological cardiac valve implanted. Results showed that overall the biological valve patients perceived moderately low levels of uncertainty but the nature of uncertainty was primarily generated by the patient's unpredictability of the future. In the study there was also a positive relationship between uncertainty and stress where patients with the highest level of uncertainty had highest level of stress.

Another relevant finding was the incidence of bleeding problems and thromboembolic problems. Out of 110 subjects, 61 (55%) experienced bleeding problems and 55 (49%) patients experienced thromboembolic problems. In the individual problems analysis it was found that among the 61 patients with bleeding problems majority of them 51 (84%) experienced bleeding mainly from the gums and some even experienced bleeding from more than one site. Among those patients with thromboembolic problems, the major problem was experiencing one side weakness.

Bleeding and thromboembolic complications are often more common with mechanical prosthetic valves than bioprosthetic valves as patients are on lifelong anticoagulation therapy.

In the present study since majority of the patients 95 (86%) had a mechanical prosthesis, it could be one among the reasons why these problems prevailed. In a meta analysis study conducted by Edmunds (1987) on thrombotic and bleeding complications of prosthetic heart valves, he identified that thrombotic and bleeding complications account for about 50% of valve-related complications in patients with bioprosthetic aortic and mitral valves and 75% of the complications in patients with mechanical valves. Study concluded that linearized rates for fatal thrombotic and bleeding events are two to four times higher in patients with mechanical prostheses and so adequacy of warfarin anticoagulation is the most important factor affecting thrombotic and bleeding complications in patients with mechanical valves.

The Second Objective was to Determine the Awareness on Management of Long Term Health Problems Among Patients After Valve Replacement Surgeries

In the present study among 110 patients attending cardiology units of AIMS, Kochi after valve replacement surgery, more than half of the subjects 72 (65%) had an average level of awareness, 35 (31.8%) had a good level of awareness and only 3 (3%) had a poor level of awareness. Despite the prevalence of these long term health problems, the level of awareness of 107 (97.3%) patients ranged from average to good.

The investigator could not get any studies related to awareness regarding management of long term health problems as a whole but a few studies were available in the individual areas of management of these problems and one such area is anticoagulation therapy.

Jenifer W Baker (2011) conducted a study among A C Y Veterans Affairs patients attending anticoagulation clinic in order to assess the knowledge level of 185 patients receiving warfarin therapy and examine the relationship between patient anticoagulation knowledge and anticoagulation control. Results showed that 137 (74.1%) patients achieved a passing score of 21 out of 29 but there were 8 questions that were answered correctly by less than 70% of patients and were identified as potential deficiencies in patient education. For 167 patients who had been on warfarin therapy for at least 6 months, they had previous INR values up to 10 and there was no significant correlation between total number of correct INR questionnaire responses and INR control. Study concluded that no significant relationship existed between patient warfarin knowledge and INR control. These findings are congruent with the present study because among 110 subjects although nearly 50% suffered from long term health problems in six out of seven areas, majority of them 72 (65%) had an average level of awareness on management of long term health problems which shows that there are areas that need to be identified for improving patients' awareness on management of long term health problems after valve replacement surgery.

The Third Objective was to Find Association Between Long Term Health Problems and Selected Variables

In the present study, association between long term health problems and selected variables (type of prosthetic valve, PT-INR value) was tested using chi square test. There was a significant association between PT-INR and bleeding problems ($\chi^2 = 6.072$, $p<0.05$) and patients with an elevated PT-INR experienced more bleeding

problems. It was also found that type of prosthetic valve had a significant association with thromboembolic problems (χ^2= 3.782, p<0.05) and valve related problems like unusual sounds (χ^2 = 12.208, p<0.05) and disturbance due to noise (χ^2 = 5.065, p<0.05). Patients with mechanical valve prosthesis experienced more thromboembolic problems, heard unusual sounds from their valve and had greater disturbance due to the noise from the prosthetic valve.

Similar findings based on association between PT-INR and bleeding problems were found in a study conducted by Casais *et al.* (2000), among 811 patients in the year 2000 in Argentina to evaluate the bleeding risk factors in chronic oral anticoagulation with acenocoumarol. Study findings revealed that hemorrhagic complications was more frequently observed in patients with a more intense intended range (8.2% in the INR 3.5-4.5 group vs. 1.5% in the 2.0-3.0 INR group). The risk of major bleeding increased in patients with an achieved INR higher than 6 and in those with higher INR variability during follow-up. Study concluded that regular monitoring of the variability of PT-INR helps to identify patients predisposed to bleeding.

Another finding in the present study was the presence of association between type of prosthetic valve and thromboembolic problems where the patients with a mechanical valve experienced more thromboembolic problems than patients with a bioprosthetic valve. Robyn *et al.* (1999), in National Women's Hospital, Auckland to evaluate valve-related complications in young women with cardiac valve replacements. Ten-year survival of women with mechanical (n=178), bioprosthetic (n=73) was 70%, and 84%, *P*=0.002. Thromboembolic events occurred in 45% of women with mechanical valves within 5 years, compared with 13% with bioprosthetic valves, *P*=0.0001. Study concluded that although 10 year valve survival was greater with mechanical than bioprosthetic valves, mechanical valves may be associated with reduced patient survival in young women and thromboembolic complications, often with mechanical valves were common.

Findings in the present study on association of mechanical valve with disturbance due to noise from the valve were similar to a study conducted by Koertke *et al.* (2003), among 556 patients with a mechanical prosthetic valve to evaluate the quality of life affected by noise of the mechanical heart valve. Results revealed that quality of life improved as usual after surgery but patients who were disturbed seriously by valve noise showed significantly lower mean quality of life values on each SF-36 scale.

The Fourth Objective was to Find Association Between Long Term Health Problems and Awareness on its Management Among Patients After Valve Replacement Surgeries

In the present study, a significant association was found between level of awareness regarding management of long term health problems and three out of seven long term health problems like valve related problems, dental problems and compliance problems among patients after valve replacement surgery. It was found that 46 (59%) patients with valve related problems, 39 (62%) patients with dental problems and 29 (64%) patients with compliance related problems had an inadequate level of awareness regarding management of long term health problems.

The researcher could not get studies related to lack of awareness and compliance problems after valve replacement surgery, but one area related to compliance is anticoagulation therapy

after a prosthetic valve replacement. Alajmo *et al.* (1988), among 220 patients with valve prosthesis in Italy conducted a study to evaluate compliance problems with oral anticoagulant treatment. Results revealed that more than 95% of them exactly knew the optimal prothrombin range, few patients (2.27%) thought oral anticoagulation as a "difficult" treatment and one fourth of the patients do not consult a physician. 18.6% of patients reported that they face difficulties in maintaining anticoagulation in the desired range at least once every month. Study concluded that complete information regarding the aim, modality, and the potential hazard of oral anticoagulation should be given to patients to get a better understanding of the treatment. Moreover, good cooperation between the physician and patient can also result in safety and efficacy of life-long antithrombotic therapy. The reason for compliance problems in the above study was due to lack of awareness regarding anticoagulant therapy which is congruent with the present study

IMPLICATIONS OF THE STUDY

Nursing Service

1. The study throws light into the burden of patients suffering with long term health problems after valve replacement surgery. It helps healthcare providers to develop an insight into the importance of early assessment of long term health problems of patients after valve replacement surgery.
2. Hospitals should tie up with community services regarding awareness on long term health problems and its management among patients after valve replacement surgery.
3. Study also emphasizes on the nurses' role to plan and provide better teaching to patients after valve replacement surgery at the time of discharge.

CONCLUSION

Patients after valve replacement surgery experienced long term health problems and their awareness on its management was only average. Specific areas regarding awareness on management of long term health problems need to be identified and ongoing teaching needs to emphasized so as to prevent and manage long term health problems

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