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RESEARCH ARTICLE

Assessment of Knowledge on Oral Anticoagulation Therapy among Valve Replacement Patients

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Abstract

Oral anticoagulants are used to treat and prevent blood clots in blood vessels. Rheumatic heart disease is a chronic heart condition caused by Rheumatic fever that is caused by scaring and deformity of heart valves. Surgical interventions for valve disorders include valve repair or valve replacement with Mechanical prosthesis, Biological or Homograft valves. Valve replacement patients should know the important of anticoagulants therapy and prevention of complications.So, the study was conducted on assessment of knowledge on oral anticoagulation therapy among valve replacement patients in JIPMER, Puducherry. The study objective was to assess the knowledge on oral anticoagulant therapy among patients with valve replacement surgery and to identify the association between the knowledge and demographic & clinical variables among patient with value replacement surgery. A cross sectional descriptive research study was conducted among 299 patients who underwent valve replacement surgery. The samples were selected on the basis of convenience sampling technique. The knowledge regarding anticoagulation therapy was assessed through validated questionnaire after informed consent. The study result showed that 51.1% of patients had moderately adequate knowledge, 25.4% of patients had inadequate knowledge and only 23.4% of patients had adequate knowledge on oral anticoagulation therapy.The study findings concluded that one fourth of the patients only had adequate knowledge on oral anti-coagulation therapy and preventive measures of its complications.

INTRODUCTION

Valve replacement surgery is the replacement of one or more of the heart valve with either artificial heart valve or a bio-prosthesis. After valve replacement surgery, there is a risk for blood clot formation. The clots may dislodge and can travel any ever in the circulatory system results sever complication such arrhythmias, infarctions, stroke, pulmonary embolism, ischemia, cerebral ischemia, etc. To prevent all these complication anticoagulation therapy is important.Permanent anticoagulation therapy is justified by an increased risk of thromboembolic complications after replacement of any valve. Anticoagulants are medicines that prevent the blood from clotting. The major side effects of anticoagulant medication is bleeding. If patients discontinue anti-coagulations therapy, it leads to major complications such as stroke, thromboembolism, cardiovascular complications and sudden cardiac death. At the same time regular anticoagulation therapy will cause bleeding also.So, the patients should have knowledge on anticoagulation therapy and preventive measures of complications. The study demonstrated that

discontinuing oral anticoagulant therapy within the first 3 months after surgery is associated with a significant increase in the risk of stroke, thromboembolic complications and cardiovascular death. After data collection, the patients were educated on oral anticoagulant therapy and precautions to be followed during the therapy to prevent complications. These things will help to the patients to gain adequate knowledge about oral anticoagulant therapy and prevent complications. The patients with valve replacement were not having adequate knowledge about importance of oral anticoagulants, diet to be followed during anti-coagulation therapy and how to prevent complications by following simple measures. Health education may improve knowledge on anti-coagulation therapy and its helps to prevent complications.

Statement of the problem

Assessment of Knowledge on Oral Anticoagulation Therapy among Valve Replacement Patients in Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry.

Objectives of the study

- To assess the knowledge on oral anti-coagulation therapy among patients with valve replacement surgery.
- To identify the association between the knowledge and selected demographic & clinical variables among patient with value replacement surgery.

METHODOLOGY

Cross sectional descriptive research design was used to assess the knowledge on oral anticoagulant therapy among valve replacement patients who attended cardiothoracic vascular surgery outpatient department (CTVS OPD), JIPMER, Puducherry. Nearly 200 patients attended the OPD, among them 130 patients had valvular diseases.

The patients who had undergone valve replacement surgery in the age group of above 18 years in both genders, who could understand Tamil or English were selected for the study.

A convenient sampling technique was used to select the 299 samples. Patients who were undergone other cardiac surgery and patients who were differently able (deaf and dumb) were excluded from the study.A structured questionnaire has been developed. It consists of 29 multiple choice questions regarding the knowledge about the oral anticoagulant therapy. Each correct answer was given a score of one and the wrong answer zero score. The score between 0-49% stated as inadequate knowledge, 50 – 75% mentioned as moderately adequate knowledge and above 75%reported as adequate knowledge on anticoagulation therapy. The tool is validated by experts in Department of cardio thoracic surgery and Medical surgical nursing specialty faculty. Valuable suggestions were incorporated and the tool was finalized. Permission was obtained from undergraduate research monitoring committee and Institute ethical committee. The reliability of the tool was established by conducting a pilot study. The data collection was conducted for six months in the CTVS OPD, JIPMER.The investigators maintained a good rapport with the patients and provided information regarding management of oral anticoagulation therapy. Privacy was given to every participant during the course of interview. The investigators first introduced themselves to the patients and developed a good rapport with them. The investigators explained the purpose of the study and then gained their confidence by obtaining a written consent from the patients. The data collection was done by interview method in Tamil and a separate questionnaire was used for each patient. Approximately 30 minutes were spent for each patient; similarly the same data procedure was followed for the other entire 299 participants.

Major findings and Discussion of the study

Table 1: Socio demographic variables of valve replacement patients

(N= 299)

Variables		Frequency(No.)	Percentage(%)
Age (in years)	18 – 25	44	14.7
	26 – 40	151	50.5
	41 – 60	102	34.1
	>60	2	0.6
Sex	Male	129	43.1
	Female	170	56.9
Educational status	Illiterate	63	21.1
	Primary school	52	17.4

	Middle school	79	26.4
	High school	51	17.1
	Higher secondary school	35	11.7
	Graduate	19	6.4
Occupation	Farmer	53	17.7
	Labourer	101	33.8
	Government employee	2	0.7
	Office worker	14	4.7
	Unemployed	129	43.1
Religion	Hindu	280	93.6
	Christian	9	3.0
	Muslim	10	3.3
Monthly income(Rs.)	2000 – 2500	215	71.9
	2501 – 5000	53	17.7
	5001 – 10000	28	9.4
	>10000	3	1.0

The table 1 depicts the frequency and percentage distribution of socio-demographic variables of valve replacement patients. Its revealed that 151 (50.5%) of the patients were in the age group of 26 – 40 years, 170 (56.9%) of patients were females, 79 (26.4%) were educated up to middle school, 129 (43.1%) were unemployed, majority of the patients that is 280 (93.6%) belonged to Hindu religion and 215 (71.7%)patients monthly income was Rs. 2000 to 2500 per month.

Table 2: Clinical variables of valve replacement patients
N=299

Clinical Variables		**Frequency (No.)**	**Percentage (%)**
Source of health information	Health care provider	133	44.5
	Mass media	59	19.7
	Relatives	82	27.4
	Friends	25	8.4
Habit of smoking	Yes	16	5.4
	No	283	94.6
Habit of alcohol	Yes	13	4.3
	No	286	95.7
Family history of heart disease	Yes	24	8.0
	No	275	92.0
Duration of illness	< 1 year	27	9.0
	1 – 5 years	66	22.1
	>5 – 10 years	49	16.4
	> 10 years	157	52.5
Duration of anticoagulation therapy before surgery	< 1 years	0	0
	1 – 5 years	0	0
	>5 – 10 years	0	0
	None	299	299
Duration of anticoagulation therapy after surgery	< 1 years	83	27.8
	1 – 5 years	105	35.1
	>5 – 10 years	31	10.4
	> 10 years	80	26.8
Number of valves replaced	Single	201	67.2
	Double	94	31.4
	Triple	4	1.3
	Four valves	0	0

Regular investigation	Yes	283	94.6
	No	16	5.4
Regular treatment	Yes	288	96.3
	No	11	3.7

The table 2 shows the distribution of clinical variables of patients who had undergone valve replacement surgery, which revealed that 133 (44.5%) patients received health information from health care provider, majority that is 283 (94.6%) the patients were nonsmokers, 286 (95.7%) were not alcoholic, 275 (92%) of the patients had no family history of heart disease, 157 (55.2%) patients had the illness more than 10 years, none had anticoagulation therapy before surgery,105 (35.1%) of the patients had anticoagulants therapy for 1 to 5 years after surgery, 201 (67.2%) of patients undergone single valve replacement, 283 (94.6%) of patients were on regular investigations and 288 (96.3%) of patients were on regular treatment.

Table 3: Answered Questionnaire on Oral Anti-Coagulation therapy By Valve Replacement Patients
N=299

Contents	Answered correctly	Percentage (%)
Anticoagulant therapy is used to prevent blood clots formation.	258	86.2
Anticoagulant therapy is very important for valve replacement treatment to prevent failure of valve by thrombosis	246	82.2
When patients are in oral anticoagulant therapy, they should test PT, INR.	276	92.3
Normal INR value is one.	31	10.3
INR test need to do atregular intervals as decided by doctor.	65	21.7
Therapeutic level of INR in valve replaced patient is 2.5-3.5.	118	39.4
Vitamin K is interfering with anticoagulant therapy.	83	27.7
Green leafy vegetables food is rich in vitamin K should be restricted during anticoagulant therapy.	260	86.9
Alcohol consumption interferes with INR value.	179	59.8
Grape juice may increase action of warfarin	45	15.0
Ginger may increase the risk of bleeding when patients are in anticoagulant therapy.	81	27.0
Hemorrhages the adverse effect of anticoagulant therapy.	173	57.8
Bleeding from the gums & nose should be reported immediately to the doctor.	241	80.6
Patients should inform about Anticoagulant therapy when going for tooth extraction.	279	93.3
Patients must carry Medical alert ID when going out.	266	88.9
Using soft tooth brush to avoid risk of bleeding.	201	67.2
Oral anticoagulant should take evening at the same time.	102	34.1
The drug dosage should to be changed as per doctor's advice.	277	92.6
Acitrom& Warfarin is oral anticoagulant drug.	280	93.6
If patients forgot to take oral anticoagulant drug, they may continue following dose.	198	66.2
Even patients are going for long traveling, they should do INR test as per doctor order.	157	52.5
Patients should do if they want really enjoy eating spinach and other green leafy vegetables are content with small quantities.	110	36.7
Pregnant women must avoid taking anti-coagulant after consulting the Doctor.	147	49.1
Consult the doctor when patients need new medication.	280	93.6
Playing with cards not increase the risk of bleeding.	159	53.1

Habit of tobacco chewing may cause bleeding.	116	38.7
Taking any herbal medicine with anticoagulant can cause bleeding.	113	37.7
Tattooing leads to bleeding.	213	71.2

Table 3 shows the answers to questionnaire on oral anti-coagulation therapy among the valve replacement patients. Out of 299 participants, 31 (10.3%) patients only knew the normal value of INR, 65 (21.7%) patients only were aware about importance of regular INR test, 118 (39.4%) of the patients said therapeutic level of INR value, 83 (27.7%) answered correctly that vitamin K interfere anti-coagulation therapy, 45 (15%) patients had understood that grape juice will increase the action of Warfarin, 81 (27%) had knowledge that ginger may increase risk of bleeding when patients on anti-coagulation therapy,173 (57.8%) were aware that hemorrhage is adverse effect of anti-coagulation therapy, 102 (34.1%) patients understood that oral anti-coagulation drugs should take evening at the same time, 110 (36.7%) patients had knowledge that green leafy vegetables should be taken in small amount, 116 (38.7%) patients knew that habit of tobacco chewing may cause bleeding and 113 (37.7%) patients were aware that herbal medicine cause bleeding during anti-coagulation therapy. The study findings showed that patients had no adequate knowledge on diet, drug interaction and risk factors of bleeding when the patients on anti-coagulation therapy.

Table 4: Knowledge on oral anticoagulation therapy among valve replacement patients (N=299)

Level of knowledge	Number	Percentage
Inadequate knowledge(0 – 40%)	76	25.4%
Moderately adequate knowledge (40% - 75%)	153	51.1%
Adequate knowledge (>75%)	70	23.4%

Table 4 depicts the level of knowledge on oral anticoagulation therapy among valve replacement patients. Out of 299 valve replacement patients, 153 (51.1%) of them had moderately adequate knowledge, 76 (25.4%) patients had inadequate knowledge and only 70 (23.4%) of them had adequate level of knowledge on oral anticoagulation therapy. The study findings show that overall level of knowledge of participants' was half of them had moderately adequate knowledge, one fourth had inadequate knowledge and one fourth had adequate knowledge on oral anticoagulation therapy.

Table 5: Mean and standard deviation of knowledge of valve replacement patients on oral anti coagulation therapy N=299

Number of patients	Mean	Standard deviation
299	17.2	4.3

The table 5 depicts mean score of knowledge on anticoagulation therapy was 17.2 with 4.3 standard deviation among valve replacement patients.

The above study findings is supported by a study conducted by Nasser S, Mullan et al (2011) on Challenges of older patients' knowledge about warfarin therapy at Sydney. The results show that 50% to 80% of older patients have inadequate knowledge about basic aspect of warfarin therapy. This article also acknowledges the need to identify target and develop educational strategies and resources to further improve older patients' knowledge about warfarin therapy.

Chenot et al (2014) did a baseline survey on safety relevant knowledge of orally anti-coagulated patients without self-monitoring in Germany. The study findings revealed that participants rated their knowledge about oral anti-coagulation therapy (OAT) as excellent to good (56%), moderate (36%) and poor (8%). However, there was a discrepancy between self-rated knowledge and evaluated actual knowledge and they observed serious knowledge gaps. Half of the participants (49%) were unaware of dietary recommendations. The majority (80%) did not know which non-prescription analgesic is the safest and 73% indicated they would not inform pharmacists about OAT. Many participants (35-75%) would not recognize important emergency situations. After adjustment in a multivariate analysis, older age and less than 10 years education remained significantly associated with lower overall score, but not with self-rated knowledge.

Table 6: Association between demographic variables and knowledge of valve replacement patients (N= 299)

Demographic variables	Numbers	Mean	SD	t/f value	p value
Age :18-25 years	44	18.14	3.849	F= 1.948	0.122
26-40 years	151	17.35	4.352		
41-60 years	102	16.65	4.447		
>60 years	2	13.00	1.414		
Sex : Male	129	16.73	4.192	T=-1.635	0.10
Female	17	17.55	4.410		
Education : Illiterate	63	16.06	4.885	F= 1.901	0.094
Primary school	52	16.77	4.651		
Middle school	79	17.33	4.314		
High school	51	18.39	3.731		
Higher secondary school	35	17.49	4.017		
Graduate	19	17.84	2.693		
Occupation : Farmer	53	16.21	4.663	F= 2.116	0.064
Labourer	101	16.56	4.380		
Government employee	2	16.50	0.707		
Office worker	14	17.93	4.565		
Unemployed	129	18.05	4.037		
Income : Rs. 2000 – 2500/-	215	17.34	4.468	F= 1.3337	0.262
2501 – 5000/-	53	16.49	4.539		
5001 – 10000/-	28	17.04	2.442		
>10000/-	3	21.00	1.732		

The table 6 shows that there was no significant difference between the knowledge score and the demographic variables (P > 0.05).

Table 7: Association between clinical variables and knowledge of valve replacement patients on anticoagulation therapy(N=299)

Clinical variables	Numbers	Mean	SD	t/f value	P value
Source of health information: Health care provider	133	17.74	4.470	F= 1.288	0.279
Mass media	59	16.75	3.555		
Relatives	82	16.80	4.699		
Friends	25	16.64	3.839		
Habit of smoking: Yes	16	16.69	5.522	T= -0.484	0.629
No	283	17.23	4.262		
Habit of alcoholism: Yes	13	14.69	5.633	T= -2.146	0.033
No	286	17.31	4.238		
Family history of heart disease: Yes	24	17.96	4.038	F= 0.806	0.370
No	275	17.13	4.354		
Duration of illness: < 1 year	27	18.26	5.005	F= 0.739	0.529
1 – 5 years	66	16.95	3.837		
>5 – 10 years	49	16.82	4.667		
> 10 years	157	17.24	4.304		
Duration of anticoagulation therapy after surgery: < 1 year	83	17.45	4.315	F= 1.271	0.285
1 – 5 years	105	16.69	4.166		
>5 – 10 years	31	16.68	4.935		
> 10 years	80	17.81	4.287		
No. of valve replacement: Single	201	17.26	4.349	F= 0.428	0.733
Double	94	16.95	4.324		

Triple	4	19.25	5.500		
Regular investigation: yes	283	17.27	4.289		
No	16	15.88	4.951	T= 1.257	0.210
Regular treatment: Yes	288	17.28	4.300		
No	11	15.09	4.784	T= 1.649	0.100

The table 7 shows there was no significant difference between the knowledge score and the clinical variables (P> 0.05).

The current study findings reveals that there was no significant association between knowledge scores and socio demographic variables like age, sex, educational status, occupation, religion, monthly income and clinical variables like source of health information, habit of smoking and alcohol, family history of heart disease, duration of illness, duration of anticoagulation therapy after surgery, number of valves replaced, regular investigation and treatment (P> 0.05).

A study was conducted by Jennifer W. Baker (2010) on the purpose to evaluate INR goal attainment and oral anticoagulation knowledge at Valley health care system (USA). The result shows that there was no significant relationship between patient demographic variable and warfarin knowledge and INR control.

Implications

After data collection, structured health education was given to all valve replacement patients individually about diet, importance of regular drug compliance, warning signs of complications and preventive measures of complications with appropriate audio visual aids by the investigators.

Conclusion

The study findings conclude that majority of the valve replacement patients had moderately adequate knowledge on anti-coagulation therapy at the same time they had inadequate knowledge on anticoagulation therapy in selected aspects of diet, therapeutic level and preventive measures of complications. Since the patients had less knowledge on **e**ffective dietary management and drug compliance will reduce the complication. Therefore, effort must be made by nurses in both outpatients department and ward setting to educate the patients about the prevention of complications. Health education must be given to patients with valve surgery to increase their knowledge regarding risk and prevention of complications in outpatient department and ward settings.

Conflict of Interest: Nil

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Ethical clearance:

Ethical clearance has been obtained from JIPMER Institute ethical committee before conducting the study. Anonymity and confidentiality of the participants has maintained for the study.

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