

ORIGINAL RESEARCH ARTICLE

ADHERENCE TO ANTICOAGULANT THERAPY AND ITS AWARENESS AMONG CARDIAC PATIENTS ATTENDING CARDIAC OPD OF CHITWAN MEDICAL COLLEGE TEACHING HOSPITAL, CHITWAN

Dina Khanal<sup>1\*</sup>, Shakuntala Chapagain<sup>2</sup>, Sony KC<sup>1</sup>, Sadikshya Neupanae<sup>1</sup>

<sup>1</sup>School of Nursing, Chitwan Medical College, Chitwan, Nepal

<sup>2</sup>School of Public Health, Chitwan Medical College, Chitwan, Nepal

Received: 1 Nov, 2022

Accepted: 25 Dec, 2022

Published: 31 Dec, 2022

**Key words:** Adherence; Anticoagulant; Awareness; Cardiac patients.

\*Correspondence to: Dina Khanal, Department of Adult Health Nursing, School of Nursing, Chitwan Medical College, Chitwan, Nepal.

Email: [khanaldina9@gmail.com](mailto:khanaldina9@gmail.com)

DOI: <https://doi.org/10.54530/jcmc.1193>

Citation

Khanal D, Chapagain S, KC S, Neupanae S. Adherence to anticoagulant therapy and its awareness among cardiac patients attending cardiac OPD of Chitwan Medical College Teaching Hospital, Chitwan. Journal of Chitwan Medical College. 2022;12(42):25-9.



Peer Reviewed

ABSTRACT

**Background:** Oral Anti-coagulant is widely used for the prevention and treatment of cardiac and thromboembolic diseases. As oral anticoagulant is a narrow therapeutic index medicine, it requires close monitoring to achieve effectiveness of anticoagulants therapy. Therefore, this study was conducted to assess adherence to anticoagulant therapy and its awareness among cardiac patients attending cardiac OPD of Chitwan Medical College Teaching Hospital, Chitwan.

**Methods:** A descriptive cross-sectional study design was carried out among 91 cardiac patients attending cardiac OPD of Chitwan Medical College Teaching Hospital sample was selected by using Consecutive sampling technique. Data was collected using structured interview schedule. General medication adherence scale and self-prepared structured questionnaire of awareness of anticoagulant therapy was used. Data was analyzed in SPSS version 20 by using descriptive and inferential statistics.

**Results:** Out of 91 respondents 42.9% of the respondents had partial adherence while 33.0% had good adherence. Only 6% of the respondents had high adherence, 7.7% and 9.9% of the respondents had poor and low respectively. Regarding awareness of anticoagulant therapy 63.7% of the respondents had inadequate level of awareness. There was statistically significant relationship between level of awareness with educational status (0.02), having insurance (0.05) and drug duration (0.05).

**Conclusions:** Based on this finding respondent's awareness was found to be low on the risk effects of alcohol intake, drugs and food interaction and self-limiting of injurious activities and most identified reason for non-adherence is discontinue due to feeling well, adverse effect and progression of disease. So, clinician and nurse should design an effective instructional program about anticoagulant therapy by highlighting those limited area thus to enhance adherence and prevent life threatening complications.

INTRODUCTION

Oral anticoagulant medication is one of the most widely prescribed drugs all over the world.<sup>1</sup> As it is lifelong therapy, it requires high adherence and awareness to avoid fatal complications. Patient medication adherence may be defined as adherence to medications for an illness as prescribed. Patient adherence to medications is a challenging issue faced by the healthcare providers around the globe.<sup>2</sup>

Warfarin is a commonly used oral anticoagulant drug about 20 million Americans are on warfarin, with over 2 million prescriptions written annually in the US, which are widely prescribed in patients of cardiac disease such as prosthetic heart valves and rheumatic mitral stenosis.<sup>3</sup> oral anticoagulant related complications are blamed for an estimated 34,000 fatal or life-threatening events annually and the majority of those serious events are preventable.<sup>4,5</sup>

Lifelong use of anticoagulants is challenging as it leads to potentially serious complications due to which patients have chance to discontinue their medications. The most

feared hemorrhagic complications of warfarin is intracranial hemorrhage which accounts for 90% death and majority had disability among survivors.<sup>6</sup> The yearly incidence of bleeding during the treatment therapy accounts 2%-5% and fatal bleeding occur in 0.5%-1% of the cardiac patients.<sup>7</sup>

Warfarin has been most commonly used and recorded as highly interacting to drug; food and other medication, therefore inappropriate adherence over anticoagulation therapy result into expand risk of bleeding. Awareness on warfarin activity, its latent capacity symptoms, interaction with drugs and food alerts to be taken helps to play important role to prevent adverse side effects.<sup>8</sup> So, adherence to anticoagulant therapy and its awareness is important to achieve effectiveness of anticoagulants therapy.

Thus, this study was conducted to assess adherence to anticoagulant therapy and its awareness among cardiac patients attending cardiac OPD of among cardiac patients attending cardiac OPD of Chitwan Medical College Teaching Hospital, Chitwan.

## METHODS

A descriptive cross-sectional research design was conducted. Population of the study was those clinically diagnosed with cardiac disease by cardiologist under oral anticoagulation therapy of at least 6 months duration (warfarin) attending cardiac OPD of Chitwan Medical College Teaching Hospital, Chitwan. Sample was selected by using consecutive sampling method. Data was collected from the date January 12, 2022 to March 12, 2022 by using face to face interview schedule. The total sample size was 91.

Research instruments consisted of four parts. Part I which consisted of socio-demographic information, Part II disease related variables. Part III was questionnaire related to adherence to anticoagulant therapy, General medication adherence scale (GMAS)<sup>9</sup> Nepalese Version was used which consists of 11 items divided into three categories. Patient Behavior related Non-Adherence (PBNA) contains five questions, Additional Disease and Pill Burden related non-adherence (ADPB) contains four questions and Cost Related Non-Adherence (CRNA) contains two questions. Likert scale labeled as “Always (0)”, “Mostly” (1), “Sometimes (2)”, and “Never (3)” was used to measure the response to the questionnaires. The total score that could be achieved is 33 which was categorized into five levels of adherence; high (30–33), good (27–29), partial (17–26), low (11–16), and poor ( $\leq 10$ ). GMAS is a valid tool used in various chronic patients. Validity of GMAS Nepalese version (Cronbach’s alpha) is 0.82.<sup>10</sup>

Part IV consists of 23 items related to awareness regarding anti-coagulant therapy (meaning, purpose, common side effect, emergency condition, drug-food interaction, effect of alcohol, drug to herbal interaction, drug to drug interaction, doctors’ prescription, management of missed dose, appropriate time of taking drug, information before undergoing surgery and dental procedure, limitation of injurious activities and regular follow-up visit). Each item contains 0 for incorrect response and 1 score for correct response, and total score is calculated by summing all item score and then divided into two categories as (with cutoff point 12 calculated from mean score) adequate ( $\geq 12$ ) and inadequate ( $12 <$ ). Content validity was maintained by consulting with subject experts and prepared by extensive literature review.<sup>8,11,12,13</sup> Pretesting of the Nepali version instrument was done among 10 cardiac patients under anticoagulation therapy on medical OPD of Chitwan Medical College Teaching Hospital, Chitwan and they were excluded from the final study.

Ethical clearance was obtained from Institutional Ethical Review, Chitwan Medical College- Institutional Review Committee with reference number CMC\_IRC/ 078/079-081. Informed consent was obtained from each participant. Privacy, confidentiality and anonymity of the respondents were maintained. All the collected data were checked, reviewed and organized for accuracy, consistency and completeness. After that collected data were coded and entered in Statistical Package for Social Science (SPSS) version 20 for analysis and data were analyzed

by using descriptive statistics and inferential statistics.

## RESULTS

Table 1, shows that out of 91 respondents, 57.1.6% were  $\geq 44$  years where 72.5% respondent were female. Regarding educational status most of the respondents (78%) were literate. Regarding place of residence, most of the respondents (76.9%) were from Terai. Majority of the respondent (80.2%) were Hindu whereas only 2.2% of the respondents were Christian. Concerning marital status 70.9% of the respondents were married. Regarding occupation 38.5% respondents were home maker and on others includes daily wedges worker and students. Regarding family income more than half of the respondents have sufficient income for year and more than year.

**Table 1: Sociodemographic characteristics of the respondents n=91**

Variables	Frequency (%)
<b>Age</b>	
$\leq 44$	52 (57.1)
$> 44$	39 (42.9)
Mean (SD): 43.37 ( $\pm 14.95$ ) Maximum: 73 Minimum: 19	
<b>Sex</b>	
Male	25 (27.5)
Female	66 (72.5)
<b>Educational Status</b>	
Illiterate	20 (22)
Literate	71 (78)
<b>If literate, Educational level (n=78)</b>	
Can read and write	8 (8.8)
<b>Educational Level</b>	
Basic Level	51 (56.0)
Secondary and above	12 (13.2)
<b>Marital Status</b>	
Married	64 (70.3)
Unmarried	15 (16.5)
Widow	12 (13.2)
<b>Residence</b>	
Hilly Region	21 (23.1)
Terai Region	70 (76.9)
<b>Religion</b>	
Hindu	73 (80.2)
Buddhism	16 (17.6)
Christianity	2 (2.2)
<b>Occupation</b>	
Business	18 (19.8)
Service	10 (11.0)
Agriculture	22 (24.2)
Home Maker	35 (38.5)
Other	6 (6.6)
<b>Family income</b>	
Sufficient for year and more than year	50 (52.6%)
Sufficient for less than 1 year	41 (43.2%)

Table 2 shows that 69.2% of the respondent had Mechanical heart valve Replacement and 30.8% of the respondents had Rheumatic Heart Disease among them 40.7% of the respondents had more than 5 years duration of disease and 59.3% of the respondents have been using anticoagulant drugs for less than or equal to 3 years, whereas 69.2% of the respondents had utilizing health insurance services. Majority (73.6%) of the respondents had received educational material whereas 30.8% of the respondents didn't received educational counseling. Majority 78.0% of the respondents used to have regular follow up visit.

**Table 2: Disease condition and treatment related variables of respondents n=91**

Variables	Frequency (%)
<b>Disease Condition</b>	
Mechanical Heart valve Replacement	63 (69.2)
Rheumatic Heart Disease	28(30.8)
<b>Disease Duration</b>	
≤5	54(59.3)
>5 years	37 (40.7)
mean (SD): 5.29years Minimum: 1 years Maximum: 18 years	
<b>Drug duration</b>	
≤ 3 years	54(59.3)
>3 year	37 (40.7)
Mean (SD): 2.78 (0.68) Minimum 1 Maximum 6	
<b>Health Insurance</b>	
Yes	63(69.2)
No	28(30.8)
<b>Educational Material Received</b>	
Yes	67(73.6)
No	24(26.4)
<b>Educational Counseling Received</b>	
Yes	63(69.2)
No	28 (30.8)
<b>Regular Follow up</b>	
Yes	71(78.0)
No	20(22.0)

Table 3 shows, that 42.9% of the respondents had partial adherence while 33.0% had good adherence. Only 6% of the respondent had high adherence and 7.7% and 9.9% of the respondents had poor and low adherence respectively.

**Table 3: Level of GMAS to anticoagulant therapy n=91**

Level of GMAS	Frequency (%)
Poor adherence (≤10)	7(7.7)
Low adherence (11–16),	9(9.9)
Partial adherence (17–26)	39(42.8)
Good adherence (27–29)	30(33.0)
High adherence (30–33)	6(6.6)

Mean score: 22.62 (SD: ± 6.7) (minimum score: 8, maximum score: 31) Possible maximum score 33 and minimum 0

Table 4, shows that 63.7% of the respondents had inadequate

level of knowledge regarding oral anticoagulant therapy while 36.3% of the respondent had adequate level of knowledge.

**Table 4: Respondents level of awareness of oral anticoagulant therapy n=91**

Awareness level	Frequency (%)
Inadequate (≤12)	58 (63.7)
Adequate (>12)	33(36.3)

Mean score 11.6 (SD: ±3.26) (minimum 5 maximum 20). Possible maximum score 23 and minimum 0)

Table 5, shows there was statistically significant relationship between level of awareness and educational status (0.025), having insurance (0.05) and drug duration (0.05).

**Table 5: Association between respondents' level of awareness regarding anticoagulant therapy and selected variables n=91**

Variables	Inadequate	Adequate	P-value
<b>Age</b>			
≤44	31	21	0.34
> 44	27	12	
<b>Sex</b>			
Male	14	11	0.34
Female	44	22	
<b>Educational Status</b>			
Literate	41	30	<b>0.02£</b>
Illiterate	17	3	
<b>Family Income</b>			
Sufficient for year and more than year	32	18	0.95
Sufficient for less than one year	26	15	
<b>Having Insurance</b>			
Yes	36	27	0.05
No	22	6	
<b>Side Effect</b>			
Yes	33	19	0.95
No	25	14	
<b>Disease condition</b>			
Mechanical Heart valve Replacement	39	24	0.586
Rheumatic Heart Disease	19	9	
<b>Drug duration</b>			
≤ 3 years	30	24	0.05
>3 year	28	9	
<b>Educational counseling</b>			
Yes	38	25	0.30
No	20	8	
<b>Educational material</b>			
Yes	42	28	0.17
No	16	5	
<b>Regular Follow up visit</b>			
Yes	44	27	0.59
No	14	6	

Significance (<0.05), Fishers' exact test= £

## DISCUSSION

In the present study out of 91 respondents 42.8% of the respondents had partial adherence while 33.0% had good adherence. Only 6% of the respondents had high adherence and 7.7% and 9.9% of the respondents had poor and low adherence whereas in the study conducted in Pakistan, most respondents (45.3%) had high adherence while (31.9%) had good adherence, (22.5%) had partial adherence, and one respondent (0.3%) had low adherence.<sup>9</sup> Among 11 item of GMAS most identified reason for nonadherence were discontinued due to feeling well, adverse effect and progression of disease.

Regarding awareness of oral anticoagulant therapy only 36.3% of the respondent had adequate level of awareness. This finding is consistent with the study conducted in Malaysia<sup>14</sup> where 41.4% of the patients had adequate knowledge about it. Whereas study conducted by Hamdan et al,<sup>15</sup> revealed that 67.2% cardiac patient had adequate knowledge on oral anticoagulant therapy. These differences might be due to different settings of the study.

Almost all (92.2%), of the respondents know it is exactly important to take warfarin as prescribed by doctor. Majority of the respondents (85.7%), (89%) and (87.9%) know about need to refill for that day if you ran out of your prescription, going emergency when suffered from nose bleeding and shouldn't stop taking warfarin once you feel better respectively.

Majority (78%) of the respondents didn't know about the alcohol risk effect with anticoagulant therapy whereas in the study conducted by Li et al<sup>16</sup> 46.2% of respondents knew about the alcohol increase the risk of effect likely experienced while taking anticoagulant. Similarly, awareness was poor on (44%) taking certain food that interfere with warfarin, (48.4%) taking vitamin supplement without consulting doctor. As it is very important aspect still 23.1 % didn't know taking double dose is not necessary when missing last night. 65.9% of the respondent didn't know about routine test of PT/INR. Whereas, in the study conducted in Ethiopia<sup>17</sup> almost all respondents

knew the routine blood test for anticoagulant monitoring. This might be differences in educational counseling provided and educational status of the respondents. Similarly, 71.4% of the respondent didn't know about limiting injurious activities while on warfarin therapy.

There was statistically significant relationship between level of awareness and educational status (0.025), having insurance (0.05) and drug duration (0.05). Similarly, a study conducted in Nepal<sup>8</sup> revealed that level of awareness was significantly associated with duration of anticoagulant therapy ( $p < 0.05$ ). Likewise, Li et al<sup>16</sup> found the significance association between level of knowledge regarding anticoagulant therapy and educational level ( $p = 0.006$ ). This could be interpreted by the fact that education improves patients' understanding which may help patient's awareness to treatment

This study is single centered study and was conducted among small sample size.

## CONCLUSION

On the basis of this study, only one third of the respondents had good level of adherence and majority of the respondents had inadequate level of awareness of oral anticoagulant therapy and only one third of the respondents had good level of adherence. Respondent's awareness is low on the risk effects of alcohol intake, other drugs and food interaction and self-limiting of injurious activities and most identified reason for non-adherence are discontinued due to feeling well, adverse effect of anticoagulants and progression of disease. So, an instructional program about anticoagulant therapy should be developed by highlighting those limited area to improve respondent's adherence of anticoagulant therapy and its awareness thus to prevent life threatening complications.

**CONFLICT OF INTEREST:** None

**FINANCIAL DISCLOSURE:** None

## REFERENCES:

1. Roche Nagle G, Chambers F, Nanra J, Bouchier Hayes D, Young S. Evaluation of patient knowledge regarding oral anticoagulants. *Ir Med J* 2003;96(7): 211-213.
2. Sabaté E, Sabaté E, editors. Adherence to long-term therapies: evidence for action. World Health Organization; 2003.
3. Al-Omair SF, Musallam NA, Al-Deghaither NY, Al-Sadoun NA, Bayoumy NM. Compliance with and awareness about long-term oral anticoagulant therapy among Saudi patients in a University Hospital, Riyadh, Saudi Arabia. *Journal of Applied Hematology*. 2016 Jan 1;7(1): 10-16. [DOI]
4. Field TS, Tjia J, Mazor KM, Donovan JL, Kanaan AO, Harrold LR, Reed G, Doherty P, Spenard A, Gurwitz JH. Randomized trial of a warfarin communication protocol for nursing homes: an SBAR-based approach. *The American journal of medicine*. 2011;124(2): 179.e1- 179.e7. [DOI]
5. Vahanian, A., et al. Guidelines on the management of valvular heart disease: The Task Force on the Management of Valvular Heart Disease of the European Society of Cardiology, *European Heart Journal*, 2007;28 (2): 230-268. [DOI]
6. References Fang MC, Go AS, Chang Y, Hylek EM, Henault LE, Jensvold NG, et al. Death and disability from warfarin-associated intracranial and extracranial haemorrhages. *American Journal of Medicine*. 2007;120(8):700-705. [DOI]
7. Rubboli, A., Becattini, C., & Verheugt, F. A. Incidence, Clinical Impact and Risk of bleeding during Oral Anticoagulant Therapy. *World Journal of Cardiology*. 2011;3(11):351-358. [DOI]
8. Shrestha S, Sapkota B, Kumpakha A, Acharya U, Sharma R. Evaluation of patients' knowledge on warfarin in outpatient pharmacy of a tertiary care cardiac center. *BMC research notes*. 2015 ;8(1):1-5. [DOI]
9. Naqvi AA, Hassali MA, Rizvi M, Zehra A, Iffat W, Haseeb A, Jamshed S. Development and validation of a novel General Medication Adherence Scale (GMAS) for chronic illness patients in Pakistan. *Frontiers in pharmacology*. 2018; 9: 1124. [DOI]

10. Shrestha R, Sapkota B, Khatiwada AP, Shrestha S, Khanal S, Bhuvan KC, Paudyal V. Translation, cultural adaptation and validation of General Medication Adherence Scale (GMAS) into the Nepalese Language. Patient preference and adherence. 2021;15: 1873–85. [\[DOI\]](#)
11. Nadar S, Begum N, Kaur B, Sandhu S, Lip GY. Patients' understanding of anticoagulant therapy in a multiethnic population. Journal of the royal society of medicine. 2003;96(4):175-179. [\[DOI\]](#)
12. Amara W, Larsen TB, Sciaraffia E, Hernández Madrid A, Chen J, Estner H, Todd D, Bongiorno MG, Potpara TS, Dagues N, Sagnol P. Patients' attitude and knowledge about oral anticoagulation therapy: results of a self-assessment survey in patients with atrial fibrillation conducted by the European Heart Rhythm Association. Ep Europace. 2016;18(1):151-155. [\[DOI\]](#)
13. Zeolla MM, Brodeur MR, Dominelli A, Haines ST, Allie ND. Development and validation of an instrument to determine patient knowledge: the oral anticoagulation knowledge test. Annals of Pharmacotherapy. 2006;40(4):633-8. [\[DOI\]](#)
14. Ching TB, Sulaiman SA, Suleiman AK, Gillani SW, Abubakar U. Knowledge of warfarin therapy among patients attending warfarin clinic at a public hospital in northern part of Malaysian peninsular. Archives of Pharmacy Practice. 2016;7(1): 14-17. [\[DOI\]](#)
15. Alajami HN, Alshammari SA, Al-Dossari DS, Alajmi AN, Alsaikhan AS, Ales-sa MS, et al. Knowledge of Anticoagulation Among Saudi Patients with Atrial Fibrillation: A Cross-Sectional Study. Cureus. 2021;13(11). [\[DOI\]](#)
16. Li X, Sun S, Wang Q, Chen B, Zhao Z, Xu X. Assessment of patients' warfarin knowledge and anticoagulation control at a joint physician-and pharmacist-managed clinic in China. Patient preference and adherence. 2018;12:783-91. [\[DOI\]](#)
17. Assefa T, Gedif T, Alemayehu B. Evaluation of patients' knowledge on warfarin therapy among outpatients receiving warfarin at tikur anbessa specialized hospital, Addis Ababa, Ethiopia. Ethiop Pharm J. 2014;30:133-8. [\[DOI\]](#)