Sociodemographic Determinants of Therapy Adherence among Warfarin Patients

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Objective: This study aimed to explore sociodemographic determinants of therapy adherence in warfarin patients.
Methods: A cross-sectional study using a newly developed and validated research tool was conducted in warfarin patients. Data was collected by convenience sampling method. Descriptive, comparative, and inferential statistics were used by Statistical Package for the Social Sciences (SPSS) ver. 24 to determine the sociodemographic determinants of warfarin knowledge in warfarin patients.
Results: Out of the total 319 warfarin patients, the majority of the studied warfarin patients were females than males (n=221, 69.3%, and n=98, 30.7% respectively). In univariate analysis, statistically non-significant differences (p >0.05) in age, work, comorbidities and warfarin usage in different diseases. In multivariate analysis, significant differences (p <0.05) were observed in gender and marital status of the studied warfarin patients.
Conclusion: These results indicated that education, warfarin usage, and warfarin therapy duration were the pure determinants of HRQoL among the studied cohort of the warfarin patients.

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1. INTRODUCTION

Warfarin is only effective if its therapeutic range is maintained and if its blood levels are above or below its therapeutic window, it exhibits greater risks of bleeding and thrombosis respectively [1,2]. Warfarin is a most frequently used oral anticoagulant, that is often prescribed to control and prevent various thromboembolic diseases like venous thromboembolism, stroke, atrial fibrillation, and valvular heart disease [3-5]. Due to its narrow therapeutic window, warfarin always requires frequent and careful laboratory monitoring to minimize or avoid bleeding complications and to obtain optimum therapy outcomes [5,6]. Due to high inter and intra-patient variability, warfarin usually causes adverse drug reactions (ADRs) that sometimes require hospital admission and if the length of hospitalization is increased it may lead to morbidity and mortality among patients on warfarin [7-9].

Medication adherence is an important factor in attaining optimum therapy outcomes and improved and maintained health status in patients suffering from different chronic diseases. In warfarin patients, it becomes a significant contributor and a crucial parameter to achieve maximum therapeutic benefits. Poor medication adherence is amongst the greatest challenges that directly affect patients' daily routine activities and overall health status. Poor medication adherence of prescribed medications is common in developing countries because patients don't receive proper medication counseling and the prevalence of life-threatening diseases is quite high as compared to the developed world. Non-adherence to warfarin therapy may result in extended hospital stay, expensive therapies, and fear of death that can negatively affect patients' daily life activities and decreased health status [9,10]. Moreover, poor medication adherence may result in less efficacy, low treatment outcomes, and emotional problems which could affect patients' quality of life [11,12].

In literature fewer studied are evident regarding warfarin usage, knowledge and adherence. This study aimed to determine possible sociodemographic determinants of therapy adherence in warfarin patients.

2. MATERIALS AND METHODS

This was a cross-sectional study done and a self-administered questionnaire was employed. There was a total of 319 participants chosen by convenient sampling technique. At first, information sheet was handed to patients and informed consent was taken. The questionnaire was delivered personally to the patients by the researcher who also collected them back after they completed. The sampling method employed was convenient sampling. The study subjects were screened for inclusion and exclusion criteria. For inclusion criteria, participants above 18 years, non-pregnant women and those who gave consent were included in the study. For exclusion criteria, those who did not meet the inclusion criteria were excluded from the study. Content validity of the questionnaire was checked before start of the study. Reliability of the questionnaire was assessed using Cronbach's alpha which is the most common tool to be used to measure internal consistency.

2.1 Statistical Analyses

Percentages and frequencies were used for the categorical variables, while means and standard deviations were calculated for the continuous variables. Chi square, Spearman's correlation coefficient and multiple logistic regression were used to evaluate correlations and impact of various demographic variables on overall HRQoL of the studied warfarin patients. Data from the research questionnaire were analyzed using Statistical Package for the Social Sciences (SPSS) version 24.0.

3. RESULTS AND DISCUSSION

The demographic data of the patients are presented in Fig. 1. There was a total of 319 participants with more females than males (n=221, 69.3%, and n=98, 30.7% respectively). Around 106 (33.2%) of the studied patients were less than 30-years of age whereas 213 (66.8%) were equal to or above than 30-years of age. A total of 4 (1.3%) warfarin patients had a primary level of education and 315 (98.7%) had a higher level of education. A total of 85 (26.6%) warfarin patients had comorbidities and 234 didn't suffer from any comorbidity.

Fig. 2 presents the key responses of warfarin patients about warfarin knowledge. A total of 57 (17.9%) patients skipped their daily warfarin dose while 106 (33.2%) had doubled their warfarin dose. Around 277 (86.8%) of the patients were taking their daily warfarin dose as prescribed

while 41 (12.9%) of the patients got disruptions in their daily activities due to their daily warfarin intake. A total of 51 (16%) of the patients felt side effects of warfarin while 121 (37.9%) of the patients were tired of their warfarin therapy. Fig. 2 denotes the detailed demographic parameters used in this study.
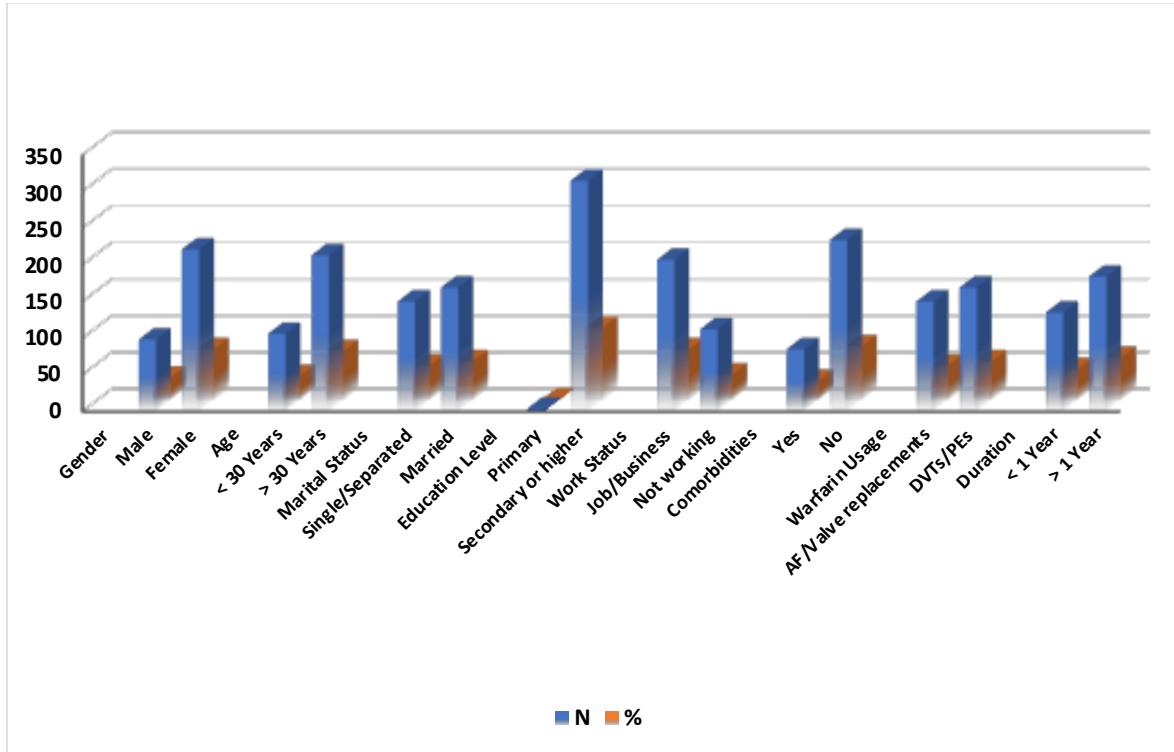

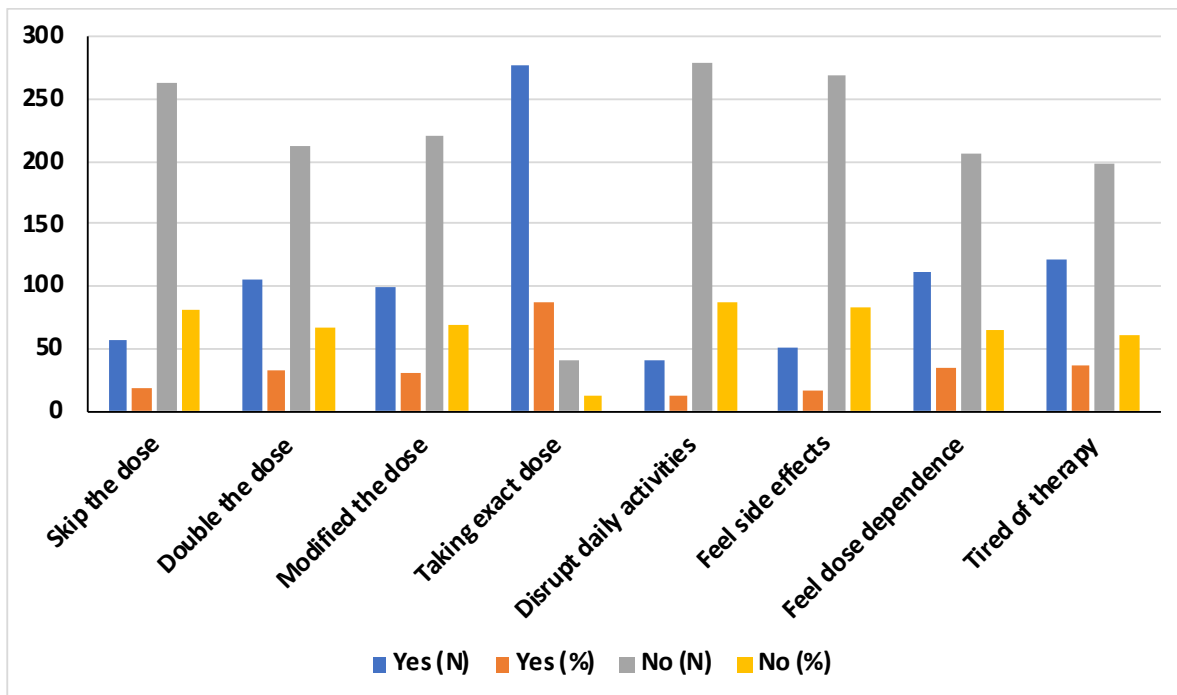**Fig. 1. Demographic characteristics of the warfarin patients**

Fig. 2. Warfarin adherence scores

Table 1. Determinants of warfarin therapy adherence

Determinants	Univariate analysis		Multivariate analysis	
	COR (95% CI)	*p*-value	AOR (95% CI)	*p*-value
Gender				
Male	R			
Female	0.572 (2.09–0.11)	0.012*	0.990 (1.29–0.77)	0.041*
Age (Years)				
< 30	R			
≥ 30	0.897 (1.45–0.44)	0.221		
Marital Status				
Single/Separated	R			
Married	0.572 (2.09–0.11)	0.017*	1.567 (1.99–0.91)	0.009*
Education				
Primary	R			
Secondary or higher	0.990 (1.29–0.77)	0.045*	1.332 (1.69-1.09)	0.434
Work				
Job/Business	R			
Not working	0.768 (1.23–0.52)	0.658		
Comorbidities				
Yes	R			
No	0.998 (1.65–0.53)	0.658		
Warfarin Usage				
AF/Valve replacements	R			
DVTs/PEs	2.231 (2.89–0.87)	0.733		
Duration				
< 1 Year	R			
≥ 1 Year	1.346 (1.98–0.68)	0.049*	0.768(0.87–0.52)	0.141

R=Referent; SD=Standard Deviation; UOD=Unadjusted Odds Ratio; AOD=Adjusted Odds Ratio; CI=Confidence Interval; * Statistically Significance (< 0.05)

The patients' warfarin therapy adherence is important in optimizing warfarin therapy outcomes, minimizing drug interactions and reducing adverse drug reactions. The current study determined the sociodemographic determinants of warfarin adherence in warfarin patients. Several factors were explored and their relationships with overall warfarin therapy adherence was determined using a newly developed and validated warfarin adherence research tool in warfarin patients. Our study results showed statistically significant differences (*p*<0.05) in various sociodemographic attributes of the research tool regarding warfarin therapy adherence in warfarin patients. Hence, our study confirmed that sociodemographic correlates could affect warfarin patients' overall drug and disease state if patients are not adhered with their specified warfarin therapy. In univariate analysis, our study did not observe any statistically significant differences (*p* >0.05) in age, work, comorbidities and warfarin usage in different diseases.

Education often advances self-learning and self-improvement in general health status among patients especially among chronic diseases patients. Education could often enhance self-satisfaction and result in improved medication adherence in warfarin patients. Actually, highly educated patients have better understanding of their disease states, drug doses, treatment regimens, and their disease understandings in general [13-16]. Moreover, to have optimum pharmacotherapy, highly educated patients are more likely to accustom their routine lifestyle and adopt preventive measures, resulting in improved therapy outcomes [17-19].

In our study, according to the univariate analysis findings, the female patients had better warfarin therapy adherence (*p* <0.05) as compared to the male patients. These results were further analyzed in multivariate analysis, when confounders were removed, and statistically significant difference (*p*=0.041) was observed. The apparent reason could be that females are more concerned about their general health and disease states than males and they may have a better disease-related knowledge which could make them better aware of their drug usage pattern, dietary controls, and life-style modifications. In univariate analysis, our study also observed statistically significant differences (*p* <0.05) in gender, marital status, education and duration of warfarin therapy in warfarin patients. However, in multivariate analysis, statistically non-significant differences (*p* >0.05) were

observed in education and duration of warfarin therapy. In marital status attribute, in univariate analysis, statistically a significant difference (p=0.017) was observed. Furthermore, in multiple logistic regression analysis, statistically significance (p=0.009) was also observed in marital status when the confounders were adjusted. The probable reason could be that married patients had their partners to remind them and take well care of them which ultimately help them in better adherence to the treatment and to manage their overall warfarin therapy. In the literature, only a few studies have determined the association between treatment satisfaction, warfarin adherence, and INR control whereas several studies on chronic diseases are reported regarding medication adherence, disease knowledge and their effects (positive/negative) on HRQoL among patients [1,16,17] but none reported regarding the sociodemographic correlates of knowledge in warfarin patients.

4. CONCLUSION

In conclusion, our study confirmed that gender and marital status were the sociodemographic correlates of warfarin knowledge in warfarin patients. This study was novel among its types as there was no study evident so far which evaluated the sociodemographic correlates of knowledge in warfarin patients.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by any producing company for any commercial purposes.

CONSENT

At first, information sheet was handed to patients and informed consent was taken.

ETHICAL APPROVAL

It's not applicable.

ACKNOWLEDGEMENT

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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