

# Evaluation of attitudes of the community pharmacists toward warfarin interactions

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## Abstract

**Objective:** The major objectives of this study was to evaluate the attitudes of community pharmacists drug nutrient (warfarin-food containing vitamin K) and drug –drug interactions (warfarin-vitamin K). **Methods:** The data were collected through three scenarios by the researcher as a co-patient from a total of 90 practicing pharmacists in community pharmacies in Khartoum State during February to April 2011. **Results:** Only 7% in Omdurman city, 10% in Bahry and Khartoum cities had knowledge about food containing vitamin K. The ratios ranged from 7%-13%. The discussion showed that since the majority of pharmacists surveyed demonstrated lack of knowledge about drug-nutrient interaction, inadequate knowledge may lead to inappropriate patient counseling and adverse medical consequences. **Conclusion:** Additional training and integration of knowledge and expertise about drug-nutrient interactions among healthcare professionals is essential to provide appropriate patient counseling and optimal therapeutic outcomes.

**Key words:** Community pharmacists, drug-foot interactions, Khartoum, Sudan

## INTRODUCTION

Physicians and pharmacist recognize that some foods and drugs, when taken during the same period, can alter the body's ability to utilize a particular food or drug, or cause serious side effects. Drug-food interactions can happen with both prescriptions and over the counter medicines, including antacids, vitamins and iron pills.<sup>[1]</sup>

Drug-nutrient interactions are responsible for a variety of adverse medical consequences. For example, generous or poor intake of Vitamin K can interact with the oral anticoagulant warfarin to yield nontherapeutic anticoagulation or life-threatening hemorrhagic complications.<sup>[2]</sup>

Standards regarding drug-nutrient interactions have been developed by the Joint Commission on Accreditation of Healthcare Organizations. They mandate the need for healthcare professionals to counsel their patients on these relationships. Thus, clinicians who prescribe and/or monitor patients receiving warfarin should routinely counsel these patients about warfarin-Vitamin K interactions and on the Vitamin K content of foods. This recommendation presumes an expertise of relevant drug-nutrient interactions among healthcare providers.<sup>[3]</sup>

Oral anticoagulants are administered to create a partial deficiency of the active form of Vitamin K, thereby reducing risks of abnormal blood coagulation. Since its introduction almost 60 years ago, warfarin, a coumarin-based anticoagulant, has become the principal oral anticoagulant for the treatment of thromboembolic disease.<sup>[4]</sup>

Some of the contemporary issues pharmacists should keep in mind when counseling patients receiving warfarin therapy. Screening patients for consumption of certain foods, such as grapefruit, cranberry, and Vitamin K-containing green leafy vegetables, may help reduce the risk of a food-drug interaction. Furthermore, screening for lifestyle habits

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such as alcohol and tobacco use may help optimize care in patients taking warfarin.<sup>[2]</sup>

Myocardial infarctions due to warfarin resistance in patients following weight loss diets, including large amounts of green leafy vegetables rich in Vitamin K. In contrast, decreases in Vitamin K intake are associated with warfarin potentiating and a tendency for abnormal bleeding.<sup>[5]</sup>

Lasswell *et al.* has reported gaps in the knowledge of physicians and pharmacists about drug-nutrient interactions. However, such deficiencies among any member of the healthcare team about warfarin-Vitamin K interactions could lead to inappropriate patient counseling, disruption in anticoagulant outcomes and adverse medical consequences.<sup>[6]</sup>

The aim of this study is to evaluate the attitudes of the community pharmacists towards drug-nutrient (warfarin- food containing Vitamin K) and drug-drug interactions (warfarin-Vitamin K).

## METHODS

The data in this research was collected through three scenarios by the researcher as a co-patient, a total of 90 practicing pharmacists in community pharmacies of Khartoum state during February and April 2011.

### Scenario 1

A prescription containing both warfarin and Vitamin K was taken to the community pharmacy and given to the pharmacist, without giving the pharmacist any information about that this is for research purpose, after that the reaction of the pharmacist was recorded.

### Scenario 2

If the reaction was negative, the pharmacist was asked about his opinion on the previous advice from another pharmacist on that the warfarin and Vitamin K cannot be taken at the same time.

### Scenario 3

Pharmacist was asked about food containing Vitamin K.

Data entry and analysis will be done by SPSS Inc, 233s. Wacker Drive, Chicago, IL, 60606- 6412, USA version 16.

## RESULTS

### Reaction of pharmacists towards warfarin-Vitamin K interaction

In Khartoum state as a whole, the negative response (pharmacists who dispensed the prescription without

counseling or noticing the interaction of warfarin and Vitamin K) was 79%. Only 21% of the pharmacists have had a positive reaction either by direct counseling which was 12%, and 9% of the pharmacists referred the prescription back to the doctor.

### About knowledge about warfarin-Vitamin K interaction

10% of the pharmacists in Khartoum city have had the information about warfarin-Vitamin K interaction. While only 7% in Omdurman city and 10% in Bahry city. Nine percent of the pharmacists were not having any information about warfarin-Vitamin K interactions after being asked.

### Knowledge of pharmacists about food containing Vitamin K

10% of the pharmacists in Khartoum city have had the knowledge about food containing Vitamin K. While 13% in Omdurman city and 7% in Bahry city.

Almost all pharmacists in Khartoum state pharmacies reacted negatively about the interaction between warfarin – Vitamin K (almost 80%).

## DISCUSSION

Since the influence of Vitamin K on oral warfarin was demonstrated in humans, many reports have implicated dietary Vitamin K as a factor contributing to unwanted disturbances in anticoagulation, sometimes with life-threatening consequences. Increases in Vitamin K intake can precipitate abnormal clotting or warfarin-resistance.

In Khartoum city 80% of the pharmacists have dispensed the prescription, 13% has reacted positively by advising the patient about warfarin-Vitamin K interaction and only 7% have referred the prescription back to the doctor.

In Omdurman city, 80% of the pharmacists have dispensed the prescription; only 17% has reacted positively by advising the patient about warfarin-Vitamin K interaction and while 3% have referred the prescription back to the doctor.

In Bahry city 77% of the pharmacists have dispensed the prescription, only 7% has reacted positively by advising the patient about warfarin-Vitamin K interaction and 17% have referred the prescription back to the doctor.

In Khartoum state as whole, the negative response (pharmacists who dispensed the prescription without counseling or noticing the interaction of warfarin and Vitamin K) was 79%. Only 21% of the pharmacists have had a positive reaction either by direct counseling

which was 12%, and 9% of the pharmacists referred the prescription back to the doctor.

The basic knowledge of pharmacists about warfarin-Vitamin K interactions in the three Cities 10% of the pharmacists in Khartoum city has had the information about warfarin-Vitamin K interaction. While only 7% in Omdurman city and 10% in Bahry city.

The basic knowledge of pharmacists about warfarin-Vitamin K interactions in Khartoum state 9% of the pharmacists was not having any information about warfarin-Vitamin K interactions after being asked.

The basic knowledge of pharmacists about food containing Vitamin K in the three cities 10% of the pharmacists in Khartoum city have had the knowledge about food containing Vitamin K. While 13% in Omdurman city and 7% in Bahry city. Walker in 1984 stated that myocardial infarctions due to warfarin resistance in patients following weight loss diets, including large amounts of green leafy vegetables rich in Vitamin K. In contrast, decreases in Vitamin K intake are associated with warfarin potentiating and a tendency for abnormal bleeding.

A comparison between the different reactions of the pharmacists in the three capital towns towards warfarin-Vitamin K interactions almost all pharmacists in Khartoum state pharmacies reacted negatively about the interaction between warfarin – Vitamin K (almost 80%).

All these results parallel to that found by Lasswell (1995) that has reported that there are gaps in the knowledge of physicians and pharmacists about drug-nutrient interactions. However, such deficiencies among any member of the healthcare team with regard to warfarin-Vitamin K interactions could lead to inappropriate patient counseling, disruption in anticoagulant outcomes and adverse medical consequences.

The results of this research are extremely thrilling because the percent of pharmacists having the knowledge about warfarin-Vitamin K interaction is a very little. Noticed that faulty information given by the pharmacists could be fatal, as the pharmacist who gave information to the patient stating that: (Warfarin and Vitamin K are similar in their action).

A poor knowledge about types of food containing Vitamin K could be due to the absence of the course of nutrition from their curriculum or even poor information's in the course basic pharmacology.

Deficiencies in the knowledge of Vitamin K-warfarin interactions could result in inappropriate patient counseling, disruptions in warfarin anticoagulant outcomes that may result in bleeds or clots and adverse medical consequences.

## CONCLUSION

Although the pharmacists surveyed in this study demonstrated a lack of knowledge about drug-nutrient interaction, some exhibited a good knowledge. Inadequate knowledge of drug-nutrient interactions may lead to inappropriate patient counseling and result in adverse medical consequences. Deficiencies in knowledge of warfarin-Vitamin K interactions may result in insufficient anticoagulation or hemorrhagic complications. Therefore, additional training and integration of knowledge and expertise about drug-nutrient interactions among healthcare professionals is essential to provide appropriate patient counseling and optimal therapeutic outcomes. Further study is required to document the extent and nature of gaps in knowledge, attitudes and practices of healthcare professionals and the best ways to provide basic academic and continuing education about clinically significant drug-nutrient interactions such as those between warfarin and Vitamin K.

## Recommendations

- Orient the pharmacist's role from dispensing to counseling
- Patient oriented resources should be developed to enhance drug-nutrient interaction counseling
- Commit all colleges and schools of pharmacy to introduce the nutrition as a part of their curriculum
- Establish a continuing education program
- Introduce a computerized database like that ones used in UK. To avoid contraindications and interactions
- Increasing the preregistration period, within which increasing the number of lectures on how to counsel the patient
- Periodical assessment of the knowledge of the pharmacists
- Commit the pharmacies to put a written guide lines and cautions about counseling and dispensing on the walls of the pharmacy to remind the pharmacist and the patient as well.

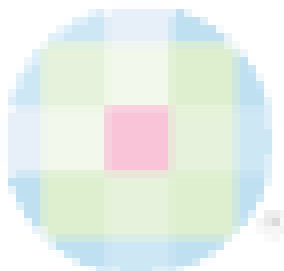
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