

## Assessment of Knowledge of Selected Sudanese Dietitians on Food and Drug Herbs Interactions

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### Abstract

This study assessed the knowledge of 46 dietitians on the food and herb drug interactions in two main governmental hospitals in Khartoum State- Sudan (Soba Teaching Hospital and National Ribat Hospital). It included two types of drugs and five types of herbs, used traditionally for treatment of diabetic and hypertensive patients. The study was conducted during (May 2015 - December 2015). Data was adopted using questionnaire consisting of 26 questions and statistically analyzed by using SPSS Version 16.0 by using chi-square test.

Questions included the type and level of education and knowledge about food and drug interaction, counseling to patients about food drug interaction and importance of nutritional education.

This sample of Sudanese dietitians concluded in the study, were found to be moderately aware of their role in helping both the in-patients and out-patients to lower the risk of the food and herb drug interactions and wide range of these participants knew their role as nutritional practitioners in the education of food drug interaction to help their patients.

**Keywords:** Diet; Herbal; Nutrition; Interaction

### Introduction

The management of many diseases requires drug therapy and frequently involving the use of multiple drugs. Food-drug interactions can change the effects of drugs, and the therapeutic effects or side effects of medications can affect the nutritional status of an individual [1]. Drug interactions have been recognized for over 100 years. Today, with the increasing availability of complex therapeutic agents and widespread polypharmacy, the potential for drug interactions is enormous and they have become an increasingly important cause of adverse drug reactions [2]. Drug interactions can alter the pharmacokinetics and/or pharmacodynamics of a drug. The pharmacodynamics interaction may be additive, synergistic, or antagonistic effects of a drug [3].

Food-drug interactions have been gathering more attention, and researchers are asking and answering more questions about the roles that foods play in drug metabolism [4]. Dietitians, physicians, and pharmacists have long known that some drugs are absorbed well on an empty stomach and others with food. They also know that the calcium in dairy products can interfere with the availability of some antibiotics [4]. Food can cause clinically important changes in drug absorption through the effect on gastro-intestinal tract, absorption or intestines motility, hence the advice that certain drugs should not be taken with food, for example, iron tablets and antibiotics. Two other common examples such as the interaction between grapefruit juice and the calcium channel blocker Felodipine [2].

It is well known that, substances in the diet may alter the effectiveness of drugs, and drugs may affect food intake, digestion, absorption, metabolism, or excretion of nutrients [5]. Drug-nutrient interactions include specific changes to the pharmacokinetics of a drug

caused by a nutrient or changes to the kinetics of a nutrient caused by a drug [1]. The potential for unexpected effects as a result of interactions between a drug and other drugs or foods has been well established. The risk of having drug interactions will be increased as the number of medications taken by an individual increases. This also implies a greater risk for the elderly and the chronically ill, as they will be using more medications than the general population [6].

Recently, there has been a marked increase in the availability and use of herbal products all over the past decade, which includes Chinese herbal medicines and Ayurvedic medicines [2]. The Herb Trade Association in 1976 defined herbs as “a Plant, plant part, or extract thereof used for flavor, fragrance, or medicinal purposes [6].

Research in drug-drug, food-drug, and herb-drug interactions and of genetic factors affecting pharmacokinetics and pharmacodynamics is expected to improve drug safety and will enable individualized drug therapy. Worse effects may occur due to accidental misuse or due to lack of knowledge about the active ingredients involved in the relevant substances [3].

Physicians who prescribe medications, pharmacists who fill these prescriptions or nurses who administer them may not be fully aware of the impact of a particular drug in an individual patient’s nutritional status.

A clinical nutritionist or dietitian may provide a diet description and food plan and not be fully aware of the client’s medication program and its implication for sound nutritional care [7]. Hence, concerned physicians, nutritionists, pharmacists, and nurses are increasingly working together as a team to provide drug and nutritional education and therapy on a sounder basis [7].

Thus, a need emerged for the conduction of this study to assess the knowledge in this important topic among dietitians employed in local hospitals in Sudan.

## Material and Methods

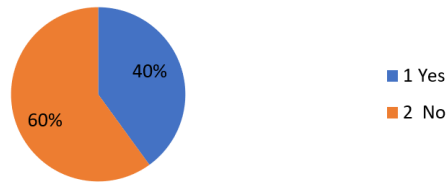
This study is descriptive a cross sectional survey to assess knowledge of selected 46 dietitians of different functional grades and scientific qualification employed in two major hospitals in Khartoum state- Sudan (Soba University Hospital and National Ribat hospital) on food and herb drug interactions (May - December 2015). It included two types of drugs and five types of herbs, used for treatment of diabetic and hypertensive patients, during the period between for duration of approximately seven months.

The study variables were demographic data, knowledge of food drug interaction, practice of dietitians, and attitude of dietitians. The data was adopted using questionnaire consisting of 26 questions (which included multiple choices and two open ended question) and was statistically analyzed by using SPSS Version 16.0 using chi-square ( $\chi^2$ ) test. Results were considered significant at  $p \leq 0.05$  [8].

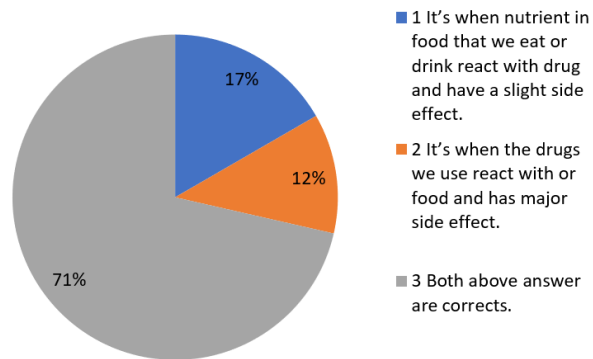
## Results

Results of this study revealed that, classification of the respondents according to their specialties shows that (50%) of them were found to be dietitians whereas (26.1%) of them were nutrition technologists and (21.7%) graduates of family science schools. While (71.7%) of them did not study food drug interaction course during university studies. (78.3%) said that they will communicate with their in- patients to explain and convince them the wisdom of avoiding the risk of food drug interaction as the best way to help them lower the risk of the interaction. However, when participants were asked whether they actually give counseling of food drug interaction in the hospital for the patients, (58.7%) do not do that, while (39.1%) of them does and (2.2%) of them only distribute brochures and books about nutritional education. (63%) of dietitians did not know that metformin may cause mal absorption of some vitamins while (17.4%) knew the right answer that vitamin B12 does. (47.8%) of dietitians believed that the effect of taking hypertensive drug with grapefruit decreases metabolism of drug in the body, while (30%) “Didn’t know” the right answer. (80.4%) expected that *Hibiscus sabdariffa* (Roselle) decreases blood pressure, (8.7%) claimed that it increases blood sugar and control heart rate however, only (54.3%) of dietitians knew that Cinnamon controls blood sugar. The dietitians were also asked about their knowledge about Cinnamon constitutes a danger to the pregnant women (39.1%) of respondents said that intake in the allowed rate does not pose a threat, (26.1%) mentioned yes, but it can be taken in cases of abdominal pain, whereas (17.4%) “Didn’t know” the right answer.

**Giving the patient counseling of food drug interaction in the hospital for the patient:-  
Frequency**



**Knowledge about the term (drug –nutrient, beverage interaction) Frequency**



### Discussion

This study revealed that high level of education for dieticians may enable them for a better understanding of their role concerning drug food interactions in the future especially if they tried to update their information in this field so as to give better counseling and guidance to their patients in this important issue. However, it is good enough that more than (87.0%) of the dietitians knew that nutrition education concerning food drug interaction is part of their role. Thus, it obvious that populations that may be at a higher risk to suffer from food drug interaction are those elderly patients who are defined as taking three or more medications for chronic conditions [9] like diabetes, hypertension, depression or congestive heart failure and older patients who are more likely to be taking multiple drugs, both prescription and over-the-counter (OTC) [1]. Also, attention must be directed towards patients who are at highest risk of experiencing adverse effects from medications like pregnant and nursing women and children as defined by Roles., *et al* [5].

Roles., *et al*. [5] showed that some drugs can make food intake difficult or unpleasant because they may suppress the appetite, alter taste sensations, induce nausea or vomiting, cause mouth dryness, or lead to inflammation or lesions in the mouth or gastrointestinal tract. Certain side effects, including abdominal discomfort, constipation, and diarrhea, may be worsened by food consumption. Medications that cause drowsiness, such as sedatives and some painkillers, can make a person too tired to eat. Thus, education must be directed to monitor the patient and the caregiver as well. There is no time, and no need, for teaching about pharmacology, pathology, or physiology; however, education must include instructions about significant signs that drugs or diet is not working or that the patient's condition is significantly worsening. The patient and caregiver must know the signs and understand the seriousness of any interactions if their presence or likelihood were not discussed during the process of planning [6,10,11].

## Conclusion

Sudanese dietitians must be quite aware about knowledge on food-drug interaction and herb drug interactions and they must give special attention, be aware and update their information in this increasing issue of interest. It is beneficial that academic courses about food drug interaction are to be included in the curriculum of under graduate studies in Sudanese universities.

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## Bibliography

1. Mahan L., *et al.* Assessment food-drug interaction, part (3), Chapter (16), Krause's food and Nutrition Therapy Care Process, 13<sup>th</sup> edition, Services Manager: Lohn Rogers in Canada (2012).
2. Roger W and Kate W. Drug Interaction, part (1), Chapter (4). Clinical Pharmacy and Therapeutics. Edition fifth. Elsevier Ltd (2012).
3. Bushra R., *et al.* "Food-Drug Interaction". *Oman Medical Journal* 26.2 (2011): 77-83.
4. Denise W. "When foods and drug collide -studies expose interactions between certain foods and medications". *Today's Dietitian Magazine* 12.1 (2010): 2-26.
5. Roles SR., *et al.* "Medications, herbal product, and diet-drug interactions, Understand normal and clinical nutrition, Edition 8". Cengage Learning products are represented in Canada by Nelson Education, Ltd (2009).
6. Beverly J., *et al.* "Drug Interactions: Basic Concepts". Chapter 3, Handbook of Food Drug Interactions. CRC Press London (2003).
7. Williams SR. "Food Drug Interaction, Nutrition and Diet Therapy". 7<sup>th</sup> edition. Mosby-year book, Inc. USA (1993).
8. Morgan GA., *et al.* "Spss for Intermediate Statistics". Use and Interpretations (2005): 1-24.
9. Benni JM., *et al.* "Knowledge and awareness of food and drug interaction (FDI) a survey among health care professional". *International Journal of Pharmacology and Clinical Science* 1.4 (2012): 97-105.
10. Bailey DG., *et al.* "Grapefruit-Medication Interactions: Forbidden Fruit or Avoidable Consequences". *Canadian Medical Association Journal* 185.4 (2013): 309-316.
11. DeFronzo RA and Goodman AM. "Efficacy of metformin in patients with NIDDM". *New England Journal of Medicines* 333.9 (1995): 541-549.

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