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Patients Habit of Taking Medicines with Food: Does it Cause Poor Absorption and Poor Efficacy of the Medicines

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ABSTRACT
It is a common habit of patients to take the prescribed medicines with food. The present study was undertaken to observe the effect of food on absorption of one commonly prescribed drug and to study further whether introduction of a 2 hour gap between food intake and intake of the drug would bring about any change in the drug efficacy. A prospective inter ventional study was conducted and a total of 103 diabetic patients were recruited into the study. The study group was subjected to a standard questionnaire and it was studied whether they were taking medicines with food and if yes, the reasons involved. Those who were found to be taking medicines with food were counselled to take the medicine 2 hours after food and any change in diabetic control was analyzed. The study showed that the habit of taking medicines with food is widely prevalent in the Indianmisinformation being the common reasons. Further, introduction of a 2-hour gap between food and drug-intake led to significant improvement in drug efficacy and diabetic control.

INTRODUCTION

It is a common habit of patients to take the prescribed medicines with food. Patients commonly eat their meals and only then take the medicines. The common myth is that intake of medicines with food reduces the side-effects especially the common gastric side-effects of nausea. It is well-known that food has myriad effect on the absorption of drugs. Food retards absorption for some drugs, enhances in some, and does not affect the absorption for some drugs. A food-drug interaction is the consequence of a physical, chemical, or physiologic relationship between a drug and a product consumed as food or a nutrient present in a food or dietary supplement[1]. The influence of dietary substances on drug effects depends on numerous variables ranging from physicochemical properties of the drug to host factors such as enzymes and transporters in the gastrointestinal (GI) tract[2] as well as in the entire body. The interactions may affect not only blood levels of drugs through pharmacokinetic change (absorption, distribution, metabolism and excretion, pharmacokinetic interactions), but also the actual effects of drugs (pharmacodynamic interactions).

A major food-drug interaction is the alteration in absorption by fatty, high protein and fiber diets[3]. Bioavailability is an important pharmacokinetic parameter which is correlated with the clinical effect of most drugs.

The present study was undertaken to observe the effect of food on absorption of one commonly prescribed drug and to study further whether introduction of a 2 hour gap between food intake and intake of the drug would bring about any change in the drug efficacy.

MATERIALS AND METHODS

The study was a prospective interventional study. This study was conducted on patients of Diabetes Mellitus Type 2 on a single drug, Metformin.

Inclusion Criteria: Diabetic patients on single drug therapy were included in the study. The study was conducted on patients who had already completed at least 3 months of therapy. This prevented the confounding effects of initial insulin resistance and drug hesitancy on the results. All the patients were taking Tablet Metformin as initial therapy for Diabetes Mellitus.

Exclusion Criteria: Patients on more than one drug were excluded from the study to avoid the confounding effect of multiple drug levels and drug interactions. Patients with advanced complications and end-organ damage were also excluded.

Study Every patient who met the inclusion criteria and included in the study was interviewed and counselled. Informed consent was taken for the study. Detailed history about drug intake was taken. A standard multiple-choice questionnaire was given to the patients to fill up. The questionnaire asked questions whether they were taking medicines with food. If yes, the reason for the said intake was asked. Then, the patients' HbA1c was tested. HbA1c was used as a surrogate marker of diabetic control and efficacy of the drug.

In the second phase, patients were then counselled to take the drug 2 hours after meals for a period of 30 days. Weekly telephone calls were made on the patients' mobiles to ensure adherance to instructions. Patients were called back after 30 days. They were interviewed again and were asked about adherance to the 2 hr food-gap. They were also asked to report if there were any new symptom or side-effects. Their HbA1c was tested again and results tabulated.

Statistical and Data Analysis: Database was created in MS Excel (Version 2007) and analyzed using IBM SPSS (Statistical Package for Social Sciences) statistics software version 22. Data was presented in numbers, percentages and mean+SD. Other statistical methods used in the data analysis were Standard Error of difference between Two Means as per the nature of data. For statistical significance p value was considered at 5% level ($p<0.05$).

RESULTS AND DISCUSSIONS

A total of 103 patients were enrolled in the study. 4 patients dropped out of the study or did not report back after the 1 month observation period. The mean

Fig. 1:Break-up of patients enrolled in the study and drug-intake pattern

Fig. 2: Pre and Post-intervention HbA1c levels

Table 1: Reasons for taking medicines with food

Reason for taking medicine with food	Number
Common perception., they always take medicines with food	44
They were told by relatives	16
They were told by their doctor	12
Information from media, TV, internet, social media	27

age of the patients in the study was 43±4.5 yr. There were 50 Males and 49 female patients in the study.

Out of the total of 103 patients, 4 dropped out and were not included in the study. 95 patients reported that they were taking medicines with food. These patients then were counselled to take the medicine 2 hours after food for a month and report back. 2 patients were already taking medicines 2 hr after food. 2 patients reported variable drug intake timings. (Fig.1)

When patients were interviewed about the reason for taking the medicines with food, 44 reported that they thought this was the correct action and that they always take their medicines with food. 16 reported that they were told by their relatives and visitors. 12 reported that they had been so instructed by their doctor. 27 reported that they had researched internet and social media and had learned so. (Table 1 and Fig. 2).

The mean HbA1c of the patients in the initial phase was 7.56±0.55. The mean HbA1c in the second phase had fallen to 6.14±0.49. This was a significant fall with $p \leq 0.05$. (Fig. 3). Out of the 99 patients who had participated in the second phase, 22 reported increase in Gastro-Intestinal symptoms after taking the drug.

Interaction of drugs with food has always been known. The habit of taking drugs with food is a common one, especially in Indian patients. This study was conducted to observe this effect in relation to commonly prescribed drug.

This study showed that there was definitely such a habit in the subjects of the study. The reasons for this was also interesting as a large number of patients had pre-conceived ideas about drug-intake. This is an important finding because doctors will need to educate the patients while prescribing drugs. Otherwise, this universal habit may cause significant loss of bioavailability. Another significant finding was the role of relatives and social media in influencing drug-intake patterns. While it may be impossible to stop the spread of misinformation, education of the patient should remain our focus.

The most important finding of the study as that there was a significant improvement in drug efficacy when a 2 hour gap was introduced between food and drug-intake. This highlights the role of the doctor in telling the patients when to take the drugs in the prescription.

The strengths of the study included elucidation of a common mistake committed by patients in drug-intake. The limitations of the study were a relatively smaller number of subjects. Further research with a larger population would be required in future to confirm the findings.

CONCLUSION

This study evaluated the habit of patients taking drugs with food. This study found that this was prevalent with the foremost reason being patient misinformation and pre-conceived ideas. Further, this study also shows that there was a definite improvement in drug-efficacy when 2-hour gap was introduced between food and drug-intake.

REFERENCES

1. Genser, D., 2008. Food and drug interaction: Consequences for the nutrition/health status. Ann. Nutr. Metab., 52: 29-32.
2. Custodio, J.M., C.Y. Wu and L.Z. Benet, 2008. Predicting drug disposition, absorption/elimination/transporter interplay and the role of food on drug absorption. Adv. Drug Delivery Rev., 60: 717-733.
3. Ayo, J.A., H. Agu and I. Madaki, 2005. Food and drug interactions: Its side effects. Nutr. Food Sci., 35: 243-252.