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EFFECTIVENESS OF FENUGREEK ON BLOOD SUGAR EVEL AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS

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ABSTRACT

To enjoy all the five senses given by God is a privilege and we experience it in a unique pleasurable manner. Increase in the blood sugar levels can be harmful to various organs of our body like kidneys, brain, our nervous system, etc. Hence it is essential that our body's blood sugar levels should be controlled. The objective of this study was to evaluate the effectiveness of fenugreek on the blood sugar levels of Type 2 diabetic patients. Using convenient sampling 60 samples were selected (30 in the experimental and 30 in the control group). Structured interview was used to collect the demographic data of the patients. Fasting blood sugar level was checked by glucometry. The fasting blood sugar level was tested on the first day. The subjects in the experimental group were given 10 grams of fenugreek soaked in hot water overnight on empty stomach for 14 days while the subjects in the control group were continuing their routine treatment. The post test fasting blood sugar level was assessed on the fifteenth day. The average fasting blood sugar level decreased from mg/dl in the pre-test to 172 mg/dl in the post-test with a mean difference of 30.5 in the experimental group. The paired t value was 4.9 which were significant at 0.01 levels. Comparison of the experimental and control group showed there was a significant decrease in the blood sugar levels of the experimental group (p<0.01) Thus the study concluded that fenugreek was effective in reducing the blood sugar levels of type 2 diabetic patients.

Key words: Effectiveness; Fenugreek; Blood sugar level; Diabetes mellitus.

INTRODUCTION

Sweetness is one of the five basic tastes and is regarded as a pleasurable experience. Foods rich in simple carbohydrates such as sugar are those most commonly associated with sweetness, although there are other natural and artificial compounds that are sweet at much lower concentrations, allowing their use as non-caloric sugar substitutes. Other compounds may alter perception of sweetness itself. A Greek physician Arateus coined the term 'diabetes' means 'siphon' to explain "the liquefaction of the flesh and bones into urine" in the Roman era.

Kerala has a prevalence of diabetes as high as 20%- double the national average of 8%. The prevalence was 17% in urban, 10% in midland, 7% in the highland, and 4% in the coastal regions [1-3].

NEED AND SIGNIFICANCE OF THE STUDY

Diabetes is an epidemic which is nearly four times as common as all types of cancer combined. It is fast becoming the 21st century's major public-health concern. Every 10 seconds one person is dying with diabetes. Two new diabetic cases are being identified in every 10 seconds in the world. It is estimated that 7 million new diabetic cases will be identified by 2025. 80% of the diabetics in the world will be present in developing countries like India. India is being considered as the diabetic capital of the world with Hyderabad as diabetic capital of India [4,5].

Fenugreek (*Trigonella foenum graecum*) is an annual plant in the family Fabaceae. Fenugreek seeds are thought to be a galactogogue that is often used to increase milk supply in lactating women. Fenugreek seeds are used as a natural herbal medicine in the treatment of diabetes. There are other several uses of fenugreek, for having

beautiful shining hair, for skin ailments, treatment for indigestion, and to aid in labour and delivery.

STATEMENT OF THE PROBLEM

A study to evaluate the effectiveness of fenugreek on blood sugar levels among patients with Type 2 diabetes in selected community areas of Kollam district.

OBJECTIVES:

1. To assess the fasting blood sugar level of the diabetic patient's before and after administering fenugreek among patients with Type 2 diabetes in selected community areas of Kollam district.
2. To evaluate the effect of fenugreek on blood sugar levels among patients with Type 2 diabetes in selected community areas of Kollam district.
3. To associate the fasting blood sugar levels with selected demographic variables such as age, sex, occupation, education and religion in both the groups.

HYPOTHESIS:

➤ H_1 : There is a significant difference in the fasting blood sugar level before and after administering fenugreek in the experimental group.

➤ H_2 : There is a significant difference in the post-test fasting blood sugar levels between the experimental and control group.

➤ H_3 : There is a significant association between fasting blood sugar levels and selected demographic variables in both the groups.

OPERATIONAL DEFINITIONS:

Effectiveness: In this study, it is the capability of producing a change in the blood sugar level with administration of fenugreek.

Fenugreek: Herb having off-white flowers and aromatic seeds used medicinally and in curry. In this study, 10 grams of fenugreek seeds will be soaked overnight in a glass of hot water for 10 hours. The water along with the fenugreek seeds will be given by the investigator to the client on empty stomach for 14 days.

Type 2 Diabetes patients: In this study it refers to the patients who are diagnosed to have Type 2 diabetes mellitus and are on treatment for the same.

Blood sugar level: In this study it refers to fasting blood sugar level 120 and above. It is measured by glucometry on the first and fifteenth day [6].

DELIMITATIONS

The study was delimited to:
  i. Patients having Type 2 diabetes mellitus.
 ii. Patients on any one oral hypoglycemic agents.
iii. Patients not having any bleeding disorder.
 iv. Patients not on warfarin, aspirin, or any other Coumadin derivatives.

CONCEPTUAL FRAMEWORK

The conceptual framework of the present study is based on Kenny's Open System model.

Literature Review

The literature in this study was divided under the following headings;
Literature related to diabetes mellitus.
Literature related to fenugreek
Literature related to effectiveness of fenugreek on diabetes mellitus.

METHODOLOGY
RESEARCH APPROACH

An evaluative approach was chosen in order to meet the objectives of the study.

RESEARCH DESIGN

The research design used for this study was quasi experimental design

VARIABLES UNDER STUDY

Independent variable: Fenugreek soaked in hot water.
Dependent variable: Fasting blood sugar level.
SETTING OF THE STUDY

The study was conducted in Chengamanadu areas under Primary Health Centre, Melila.
POPULATION:
Target population

In this study, all patients with Type 2 Diabetes were the target population.
Accessible population

In this study, patients with Type 2 diabetes in Chengamanadu areas, under Primary Health Centre, Melila.

SAMPLE AND SAMPLING TECHNIQUE

➤ 60 patients with type 2 diabetes and those who met the inclusion criteria were selected. 30 patients in the experimental group and 30 patients in the control group.

➤ Non-probability convenient sampling technique was used to select 60 patients with type 2 diabetes from Chengamanadu village [7].

Inclusion criteria**:**

● Patients between the age group of 30to 70 years.

● Patients whose blood sugar levels were above 120mg/dl.

Exclusion criteria

● Patients with bleeding disorders.

● Patients with arthritis.

TOOL/INSTRUMENT

The tool consisted of structured interview and biophysiological measurement (glucometer)

DESCRIPTION OF THE TOOL

Part I consisted of 16 items regarding age, gender, religion, educational status, type of work, income, food habits, personal habits, duration of illness, duration of treatment, history of medical illness, family history of diabetes mellitus, height, weight and body mass index.

Part II consisted of fasting blood sugar level assessment with glucometer. The level of hyperglycemia was classified as

70-120 mg/dl : Normal Blood sugar level
121-150mg/dl : Mild hyperglycemia
151 – 250 mg/dl : Moderate hyperglycemia
>250mg/dl : Severe hyperglycemia

Part III consisted of a Modified Diabetes Symptom Checklist originally developed by Snoek. J Frank. The checklist consisted of 21 items based on the symptoms of the patients. It had a score range of 1 to 5 for each item, the range of possible scores for the symptoms ranged from a minimum of 0 to a maximum of 105 [8].

1   -Not at all
2   -A little
3   -Moderately
4   -Very
5   - Extremely

The gradings of the symptoms were under the following headings:
 0-30:Mild hyperglycemia
31-70:Moderate hyperglycemia
 71-105:Severe hyperglycemia

CONTENT VALIDITY

The content validity of the tool was obtained from 7 experts in the field of Medical-Surgical Nursing, and Endocrinologist.

RELIABILITY OF THE TOOL

Test –retest method was used to assess the reliability of the instrument. Karl Pearson's Co-efficient of Correlation (r=0.90) which was reliable.

PILOT STUDY

A pilot study was conducted under the community areas of Primary Health Centre, Melila among 10 subjects, five in the experimental group and five in the control group. The mean pre-test fasting blood sugar level was 227.6 mg/dl and the post-test fasting blood sugar level was 198mg/dl (t=10.177, table value=2.766). The results showed a significant reduction in the blood sugar levels. Hence the findings suggested that the study was feasible and practicable.

DATA COLLECTION PROCESS

Permission was obtained from the District Medical Officer, Kollam for the study. The researcher collected the data in Chengamanadu area under PHC Melila. 60 subjects were taken for the study. Prior written consent was taken from the study subjects before commencing the study. On the first day pre-test fasting blood sugar level was taken after which fenugreek soaked in hot water was administered for 14 days. On the fifteenth day post-test fasting blood sugar was assessed.

PLAN FOR DATA ANALYSIS

➤ The demographic data was presented by using frequency distribution, tables and graphs.
➤ The level of hyperglycemia was presented by means of descriptive statistics, mean and standard deviation.
➤ Effectiveness of fenugreek was established by means of 'paired t test'.
➤ Association between various demographic variables and blood sugar levels was established by Chi Square analysis [9].

DISTRIBUTION OF SUBJECTS ACCORDING TO THE LEVEL OF HYPERGLYCEMIA
MAJOR FINDINGS OF THE STUDY

➤ Before administering fenugreek to the experimental group fasting blood sugar levels were assessed. It was found that 26 (43.3%) subjects had mild hyperglycemia, 23 (38.3%) of the subjects had moderate hyperglycemia and 11 (18.3%) of the subjects had severe hyperglycemia.
➤ After the administration of fenugreek. It was found that 11 (18.3%) of the subjects had normal fasting blood sugar levels 16 (26.7%) had mild hyperglycemia, 23 (38.3%) had moderate hyperglycemia and 10 (16.7%) of the subjects had severe hyperglycemia.
➤ The average pre-test fasting blood sugar level was 202.5 (SD 66.7) and post-test fasting blood sugar level was 172.0 (SD 65.8). The mean difference in the blood sugar level was 30.5.
➤ 'Paired t' test was done to know the effectiveness of fenugreek on blood sugar level (4.9, p=0.0), which was significant at 0.01 level. It was evident that fenugreek was effective on blood sugar level.
➤ The post-test fasting blood sugar levels between the experimental and control groups. In the experimental group the average post-test fasting blood sugar level was 172 (SD 65.8) with a mean difference of 30.5mg/dl decrease in the blood sugar level (4.9, p=0.0), whereas in the control group, the average post-test fasting blood sugar level 182.8 (SD 55.8) with a mean difference of 14.0mg/dl increase in the blood sugar level (3.74, p=0.01).
➤ There was no significant association between blood sugar level and age (4.24, p=0,120), gender (0.00, p=0.944), educational status (1.30, p=0.255), type of work

(1.56, p=0.211), family income (0.27, p=0.602), personal habits (0.70, p=0.402), body mass index (1.19, p=0.276).

➢ There was a significant association between Blood sugar level and duration of illness (6.00, p=0.050), duration of treatment (3.04, p=0.219), medical illnesses hypertension (5.89, p=0.015), family history in relation to father (6.81, p=0.009) [10].

➢ whereas it is rejected for variables like age, gender, education, type of work, monthly income, type of food, personal habits, duration of treatment, and body mass index.

Graphical representation of subjects according to level of hyperglycemia
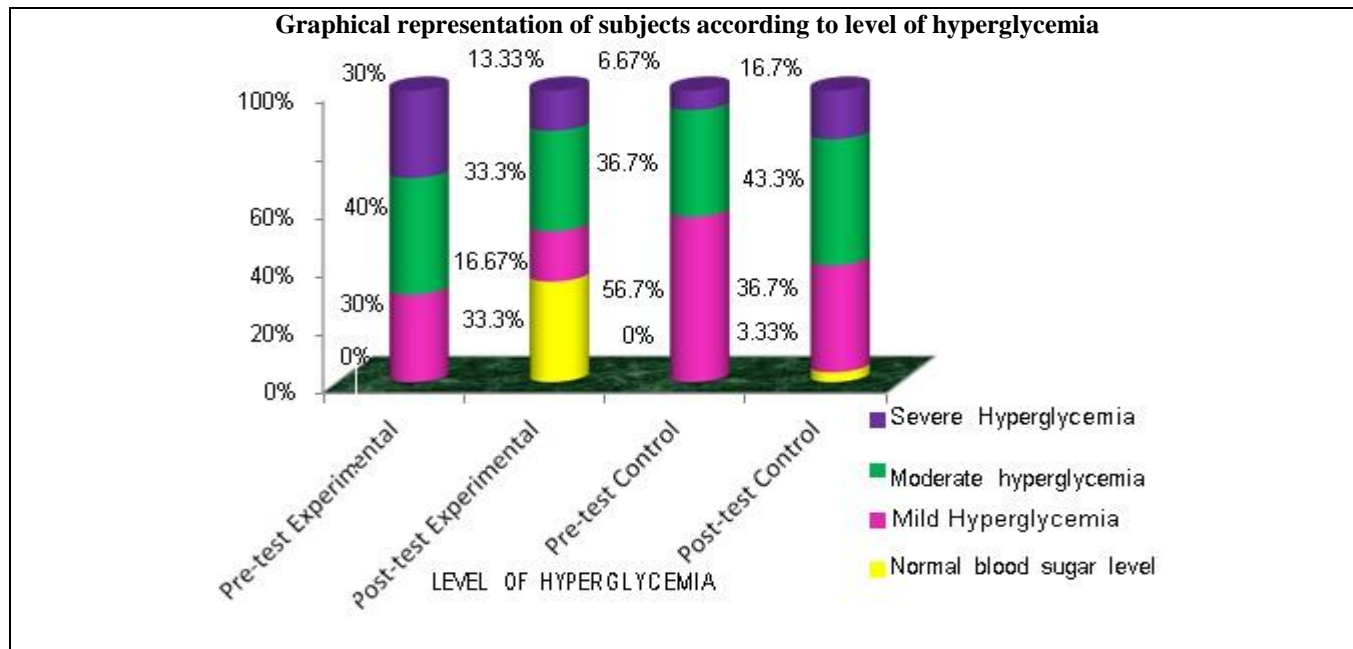
CONCLUSION

➢ Fenugreek is effective in reducing the blood sugar levels in type 2 diabetic patients as the average fasting glucose levels in the experimental group fell significantly. There was association between duration of illness, hypertension and the relation of father and blood sugar level.

➢ Hence the study concluded that fenugreek is a cheap herb which can be used to keep the blood sugar under control among type 2 diabetic patients. Nurses can educate patients regarding its use in their daily routine in order to keep their blood sugar under check.

NURSING IMPLICATIONS

Nursing Practice

➢ Nurses act as a source of information for patients regarding various modalities available to keep a healthy mind and body.

➢ Nurses can educate regarding the use of fenugreek in their diet to reduce blood sugar levels along with the medical management and modification of lifestyle of the patients.

Nursing Education

➢ The modern era of nursing education should include the practical training for the complementary and alternative therapies available for treatment of various disorders.

➢ It should be included in the curriculum of the students and separate practical hours could be allotted for the same.

Nursing Administration

➢ The staff nurses should be educated through various in-service education programs regarding the newer therapies available.

➢ Nurse administrators should prepare policies and protocols regarding care and treatment of patients with type 2 diabetes mellitus.

Nursing Research

➢ Evidence –based nursing practice has enhanced the practices of nurses in the hospitals and has given them more professionalism.

➢ More researches can be done on various types of herbs and blood sugar levels in diabetic patients.

RECOMMENDATIONS

➢ A similar study can be undertaken with a larger sample size, longer duration of time and in different settings to generalize the findings.

➢ A longitudinal study can be done at various intervals at 6 months, 1 year, etc to evaluate the extent of the effect of fenugreek.

➢ A similar study can be done with different method of administration of fenugreek.(eg. Roasted fenugreek

powder, fenugreek taken during meals)   like bitter

➢ A similar study can be done with various other agents   gourd, cinnamon, etc.

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