

Early Identification of Proteinuria by Using Urine Dipstick among Patients with Type II Diabetes in Selected Community Area, Kanchipuram Dist., Tamil Nadu, India

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Abstract

Early identification of Proteinuria by using urine dipstick among patients with Type II Diabetes in Selected Community Area, Kanchipuram Dist, Tamil Nadu, India. The objectives of the study to assess the Proteinuria by using urine dipstick among Patients with Type II Diabetes. To find out the association between level of Proteinuria with selected demographic variables among Patients with Type II Diabetes.. The sampling technique was non probability- purposive sample technique and the sample size was 200. The demographic variable proforma and the random urine dipstick analysis were done to identify the prevalence of proteinuria. The interpretations were nil, trace, 1+, 2+ and 3+.. Hypothesis were formulated. The level of significance selected was $p < 0.05$. The data was collected and it was analyzed by descriptive and inferential statistics. It presented through tables and figures. The study finding revealed that (47%) of patients were not having proteinuria. Then (38.5%) were having trace, (12%) of patients having 1+, (1.5%) having 2+ and (1%) patients were having 3+ of proteinuria. The study finds also revealed that there was a significant association between the demographic variables such as age $X^2=8.4120$, educational status $X^2=6.8901$, monthly income $X^2=10.9762$, occupational status $X^2=4.9031$, history of diabetes $X^2=12.14$, previous blood glucose level $X^2=0.9876$, family history $X^2=5.1056$, unhealthy habits $X^2=10.74$ were non significant to $p < 0.05$ were as, marital status $X^2=16.428$, dietary pattern $X^2=17.594$ were significant to $p > 0.05$ with the level of prevalence of proteinuria among type II diabetes patients.

Keywords: Early identification, proteinuria among type II diabetes patients, dipstick test.

Introduction

Background of the Study: Diabetes Mellitus is a metabolic syndrome that manifests with elevated blood glucose levels. The onset of diabetes heralds a drastic and permanent change in the lifestyle of the affected

child, as well as the entire family unit. Type 1 diabetes is a complex disease requiring insulin administration in conjunction with a structured meal plan that should take into consideration social, economic, cultural and logistical factors, so as to achieve optimal disease control. Microalbuminuria (defined as urinary albumin excretion of 30-300 mg/day, or 20-200 $\mu\text{g}/\text{min}$) is an earlier sign of vascular damage⁽¹⁾. It is a marker of general vascular dysfunction and nowadays is considered a predictor of worse outcomes for both kidney and heart patients.

There is a significant correlation between Diabetes and proteinuria. Even high blood glucose is associated with significant higher frequency of microalbuminuria and this way may be a biomarker of increased cardiovascular risk. Microalbuminuria could be taken

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also, as an indicator of insulin resistance and of the increased renal and cardiovascular risk associated with metabolic syndrome. Renal involvement is a pivotal development in diabetes and microalbuminuria is generally the first clinical sign of renal dysfunction in diabetics. It is demonstrated that cardiovascular and renal risk is elevated even in the high normal range of microalbuminuria (below 30 mg/day). There is no doubt that therapies that prevent or delay the development of microalbuminuria and all measures that reduce it, may help to prevent or delay end organ damage⁽⁵⁾.

In developing countries like India, the cost of doing an albumin-to-creatinine ratio in a random sample is \$5.60 U.S. (INR 250), while 100 patients can be screened for albuminuria by a dipstick at the cost of \$9.80 U.S. (INR 439). A repeat test is, however, essential in positive cases to ascertain the presence of microalbuminuria or proteinuria. The cost efficiency and the high sensitivity and specificity of the urine dipstick test will encourage its use among primary care physicians and private practitioners as a diagnostic tool for microalbuminuria and proteinuria. This would initiate the first step toward detection of incipient diabetic nephropathy in developing countries.⁽⁶⁾

Vilas U. Chavan et al (2010) were conducted A Comparative Study Of Clinical Utility of Spot Urine Samples with 24-h urine albumin excretion for screening of microalbuminuria in type 2 diabetic patients. He suggested that a higher proportion of individuals with type 2 diabetes are found to have microalbuminuria and overt nephropathy shortly after the diagnosis of their diabetes⁽³⁾.

Need for the Study: Diabetes is widely recognized as an emerging epidemic that has a cumulative impact on almost every country, age group and economy across the world. According to the International Diabetes Federation, in 2015, approximately 415 million people were suffering from diabetes worldwide and this number is expected to exceed 640 million by the year 2040. It is estimated that half of patients with diabetes are unaware of their disease and are thus more prone to developing diabetic complications. However, the cost of dealing with diabetes can be unaffordable in terms of money spent and lives lost. In 2015, approximately 5.0 million deaths were attributed to diabetes, albeit in the same year, more than 12% of the global health expenditure was dedicated to coping with the disease and its complications. Diabetes complications are common among patients with type 1

or type 2 diabetes but, at the same time, are responsible for significant morbidity and mortality⁽²⁾.

The chronic complications of diabetes are broadly divided into microvascular and macrovascular, with the former having much higher prevalence than the latter. Microvascular complications include neuropathy, nephropathy and retinopathy, while macrovascular complications consist of cardiovascular disease, stroke and peripheral artery disease (PAD)⁽⁴⁾. Diabetic foot syndrome has been defined as the presence of foot ulcer associated with neuropathy, PAD and infection and it is a major cause of lower limb amputation. Finally, there are other complications of diabetes that cannot be included in the two aforementioned categories such as dental disease, reduced resistance to infections and birth complications among women with gestational diabetes.

Statement of the Problem: Early identification of Proteinuria by using urine dipstick among patients with Type II Diabetes in Selected Community Area, Kanchipuram Dist, Tamil Nadu, India.

Objectives:

- To assess the Proteinuria by using urine dipstick among Patients with Type II Diabetes.
- To find out the association between level of Proteinuria with selected demographic variables among Patients with Type II Diabetes.

Operational Definition:

Urine Dipstick Test: A urine test strip or dipstick test is a basic diagnostic tool used to determine pathological changes in a patient's. These strips are a fast and easy means to testing one's urine sample. In this study, Micral dipstick test is used to identify the proteinuria.

Proteinuria: The presence of abnormal quantities of protein in the urine, which may indicate damage to the kidneys.

Type II Diabetic Mellitus: Diabetes mellitus type 2 (also known as type 2 diabetes) is a long-term metabolic disorder that is characterized by high blood sugar, insulin resistance and relative lack of insulin. Type 2 diabetes primarily occurs as a result of obesity and lack of exercise.

Early Identification: To recognize a problem, need, fact, etc. and to show that it exists.

Research Methodology

A quantitative approach with descriptive design was used in study. The study was conducted among type II diabetes patients in Poonjeri. A Convenient sampling technique was used to select 200 samples with the following inclusion criteria. Patient who all are having diabetes more than three years, who are all present during data collection, who are able to read and understand English and Tamil. The data was analyzed by using descriptive and inferential statistics.

Data Collection Procedure: The study was conducted in Poonjeri after the written permission from the authorities, 200 Samples were selected, using convenient sampling technique who are willing to participate to study. The objective of the study was explained and informed consent was obtained from the samples. Demographic data were obtained from each sample and random urine sample was collected to identify proteinuria by using urine dipstick test. The investigator thanked the participants for their cooperation throughout the data collection period.

Plan for Data Analysis: The data of the present study was planned to be analyzed based on specific objectives. The data obtained from 200 samples were analyzed by using descriptive and inferential statistics as follows.

Descriptive statistical method such as frequency and percentage was used for describing demographic variables.

The association between the level of prevalence of proteinuria among type II diabetes patients with the selected demographic variables was analyzed by inferential statistical method (i.e.) Chi square test.

Results and Discussion

The discussion is presented as follows:

1. Frequency and percentage distribution of demographic variables among type II diabetes patients.
2. Frequency and percentage distribution of level of proteinuria among type II diabetes patients.

3. Association between demographic variables with level of prevalence of proteinuria among type II diabetes patients

1. Frequency and percentage distribution of demographic variables among type II diabetes patients:

The study showed that most of the patients were in the age group of 51-60 years. Majority of them (93%) were belongs to married. Majority (27%) of the patients were having diabetes for about 10 years. (43%) of the patients were earning monthly income as 5,000-10,000. Majority (55.5%) of the patients are having family history of diabetic mellitus. And the table shows that most of the patients were in the group of no unhealthy habits about 47.5%. Most of the patients (37%) were non literature. Majority (39%) of the patients were sedentary workers. Majority of the patients were belongs to (44%) 250-300 mg/dl of previous blood sugar test level. (93.5%) were taking to mixed diet.

2. Frequency and percentage distribution of level of proteinuria among type II diabetes patients

S.No.	Level of Proteinuria	Frequency	Percentage
1	Nil	94	47%
2	Trace	77	38.5%
3	1+	24	12%
4	2++	3	1.5%
5	3+++	2	1%

Table 1: Shows that the majority of patients (47%) were not having proteinuria. Then (38.5%) were having trace, (12%) of patients having 1+, (1.5%) having 2+ and (1%) patients were having 3+ of proteinuria.

3. Association between demographic variables with level of prevalence of proteinuria among type II diabetes patients:

Demographic variables like age $X^2=8.4120$, educational status $X^2=6.8901$, monthly income $X^2=10.9762$, occupational status $X^2=4.9031$, history of diabetes $X^2=12.14$, previous blood glucose level $X^2=0.9876$, family history $X^2=5.1056$, unhealthy habits $X^2=10.74$ were non significant to $p<0.05$ were as, marital status $X^2=16.428$, dietary pattern $X^2=17.594$ were significant to $p>0.05$ with the level of prevalence of proteinuria among type II diabetes patients.

Conclusion

A study to assess the knowledge on maternal and child Health services among women in reproductive age group in mahabalipuram, Kanchipuram District,

Tamil Nadu, India. A total of 200 samples were selected by using convenient sampling technique. The level of proteinuria was assessed from random urine sample by using urine dipstick. The collected data were analyzed by using the descriptive statistic and inferential method. The study showed that majority of patients (47%) were not having proteinuria. Then (38.5%) were having trace, (12%) of patients having 1+, (1.5%) having 2+ and (1%) patients were having 3+ of proteinuria.

Ethical Clearance: In this study researchers have got prior permission to conduct the study and got informed consent from each participant. We ensured that no physical harm to the samples. Confidentiality maintained.

Source of Funding: Self funding.

Conflict of Interest: Nil

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