A Study to Develop a Self-Administered Tool to Assess the Diabetes Mellitus Risk Status of Normal Adults

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Abstract: *Diabetes is a serious and costly disease, which is increasing, especially in the developing countries and disadvantaged minorities. However, there are ways of preventing it and controlling its progress. Public and professional awareness of the risk factors for and symptoms of diabetes are an important step towards its prevention and control. The objectives of the study was to identify risk factors for non-insulin dependent type two diabetes mellitus, establish content validity of the self-administered tool, estimate reliability co-efficient of the tool, 4.Determine construct validity of the tool. 5.Establish criterion validity of the tool, determine predictability of the tool and, determine the acceptability of the tool.*

Keywords: Self-Administered Tool, Diabetes Mellitus Risk Status, Diabetes Mellitus

1. Introduction

"Prevention is better than cure

Diabetes is no longer the disease of the rich or the aged (Luke, 2004). Diabetes" Is a Greek Word meaning "a passer through a siphon "Mellitus Comes from the Greek Word Sweet". Apparently, the Greeks named it thus because the excessive amounts of urine diabetics produce attracted flies and bees. Because of the glucose content (World Health Organization, 2003).

According to WHO, (1998) type two diabetes constitutes about 85% to 95% of all diabetes cases in developed countries and account for an even higher percentage in developing countries. According to WHO (2004) more than I50 million people worldwide suffered from diabetes. Its incidence is increasing rapidly, and it is estimated that by the year 2025 t, its number will double. The greatest increase in prevalence is, however, expected to occur in Asia and Africa, where most diabetic patients will be seen by 2025.

2. Objectives

1) Identify risk factors for non-insulin dependent type two diabetes mellitus.
2) Establish content validity of the self-administered tool.
3) Estimate reliability co-efficient of the tool.
4) Determine construct validity of the tool.
5) Establish criterion validity of the tool.
6) Determine predictability of the tool and
7) Determine the acceptability of the tool

The conceptual frame work of the study was based upon Fishbone diagram("Cause-effect" diagram, 1992) and the Health belief model (Rosenstoch, 1988)

3. Research Methodology

A methodological research design was adopted for this study. A sample of 50 normal adults, 25 males, and 25 females, and 50 diabetic patients, 25 males, and 25 females were selected for this study.

The tool used for data collection was self-administered tool to assess Diabetes Mellitus risk status including demographic profile and opinionnaire regarding self-administered tool.

The content validity of the tool was established by submitting to five experts in the field of medicine and nursing. The overall agreement was 95%. So the tool was retained in its original form.

The reliability of the self-administered tool was tested by Pearson's product-moment co-efficient correlation and it was found to be 'r'=0.99 for males and 'r'=0.9 for females. Reliability of the

Mercurial sphygmomanometer, glucometer, and weighing machine was established by inter-rater reliability and found to be 0.99 at 0.01 Level of significance.

Pilot study was conducted to find out the feasibility of the study and to plan for data analysis. Then the final study was conducted.

The questionnaire was administered to the subjects and list of risk scores was prepared. Their weight was also set and informed to them. The opinionnaire was also administered. Both descriptive and inferential statistics were used for the analysis of the data.

FIGURE : 1. RISK FACTORS OF DIABETES MELLITUS AND RISK REDUCTION THROUGH RISK ASSESMENT

Distribution of Sample Frequency Percentage Risk Score (N=50)

S. No	Risk category	Normal Adults		Diabetic Adults	
		f	%	f	%
1.	Male				
	Low risk (1-33.5)	7	28	11	44
	Moderate risk (34-67.5)	18	72	14	56
	High risk (68-101)	-	-	-	-
2.	Female	25	100	25	100
	Low risk (1 - 35)	10	40	14	56
	Moderate risk (37-71))	15	60	11	44
	High risk (72-107)	-	-	-	-
		25	100	25	100

4. Result and Discussion

1) The risk factors found in the study were age, obesity, dietary pattern, hypertension, sedentary work, lack of exercise, habits of consuming alcohol, stress, environment, lack of medical check-up and gestational diabetes mellitus.
2) 72% normal male and 60% female are falling into moderate risk categories.
3) Majority of the male subject (68%) and 60% of female subjects had random blood sugar between 100 -190 mg/bl. 32% of male and 40% of female samples had random blood sugar between 80-99 mg/dl.
4) The content validity of the tool got 95% agreement.
5) The toll is highly reliable ('r'=0.99 for males and 'r'=0.99 for females).
6) The mean risk score of male and female diabetes mellitus (45.71, 40.28] was significantly higher than the mean risk score of male and female normal adults (43.50, 39.33]. These findings support the construct validity of the tool.
7) The 'r-value is less than 0.05 for all the groups. The ' r-value is 0.10 and 0.23 between the random blood sugar values of the moderate risk group of male and female sample subjects respectively. The 'r-value is -0.22 and -0.02 between random blood sugar values of low-risk score group of mean and females respectively. Hence there is an indifferent or negligible relationship seen between blood sugar values and risk scores in either of the groups. Hence the finding does not support criterion validity.
8) The self-administered tool predicts that the individuals in the moderate-risk groups have two times more chance of getting diabetes mellitus as compared to individuals in the low-risk group category.
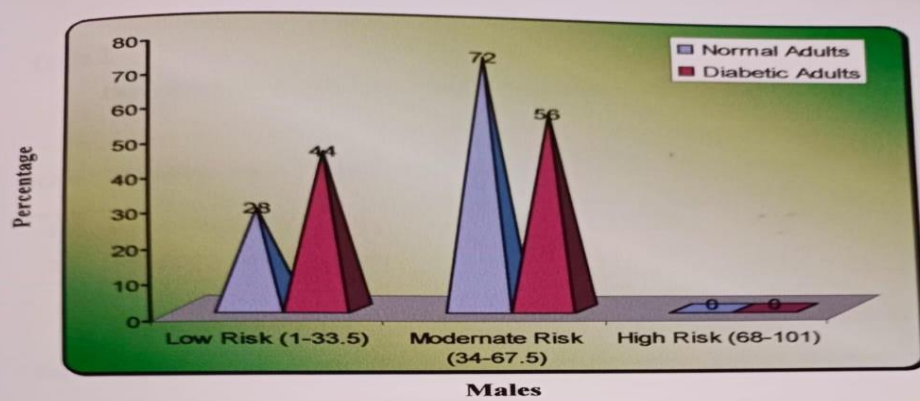9) The diabetes mellitus risk assessment tool questionnaire got 97% acceptability.

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Figure 10 : Distribution of Males According to Their Risk Score
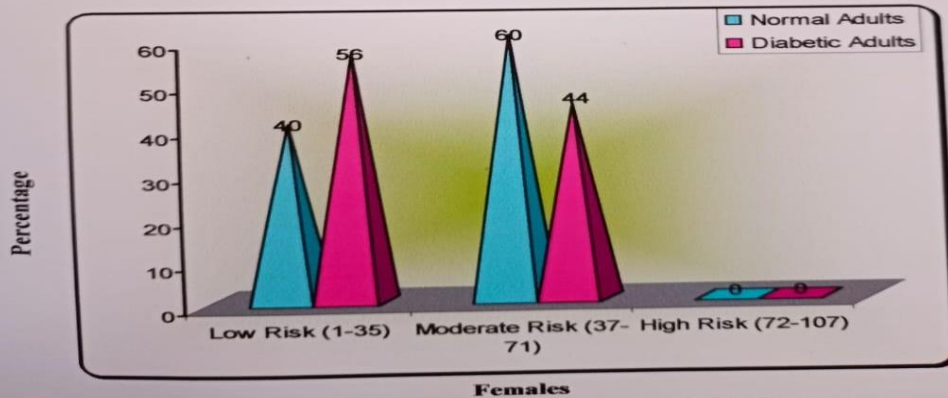

Figure 11 : Distribution of Males According to Their Risk Score

5. Nursing Implications

1) The self-administered tool can be used by members other than patients and health personnel like significant others who accompany patients to identify their risk status.
2) The self-administered tool motivates individuals to identify their risk factors and clarify their blood sugar status.
3) The self-administered tool can be used as a routine investigation at the Outpatient department of the hospital

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