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A COMPARATIVE STUDY ON VISUAL ABILITY OF DIABETIC AND NON-DIABETIC TEACHERS

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ABSTRACT:

Diabetes continues to be a significant cause of visual impairment and blindness in individuals who are of working age. Given the increasing prevalence of diabetes, vision problems among educators represent a growing global health concern. This study aimed to assess the visual acuity of both diabetic and non-diabetic teachers in Nagpur city. The research involved 100 diabetic and 100 non-diabetic teachers. We measured their refractive status using a self-constructed visual ability test and recorded the visual ability scores for analysis. Among the diabetic teachers, there were 50 males and 50 females. In the non-diabetic group, there were also 50 males and 50 females. The results indicated that the majority of diabetic teachers (82.00%) had moderate to low levels of visual ability, while non-diabetic teachers (89.00%) had high to moderate levels of visual ability. It's worth noting that most non-diabetic teachers exhibited a moderate level of visual ability compared to diabetic teachers, who predominantly had a low level of visual ability in comparison to their non-diabetic counterparts.

Keywords: ***Diabetes Mellitus, Visual Ability.***

INTRODUCTION

Diabetes has the potential to lead to a condition known as diabetic macular edema, which results in swelling in the macula. Over time, this condition can progressively damage the sharp vision in this specific area of the eye, eventually causing partial vision loss or even blindness. Typically, macular edema tends to develop in individuals who already exhibit other signs of diabetic retinopathy. One common indicator of poorly controlled diabetes is blurred vision. Prolonged periods of high blood sugar levels can cause the lens in the eye to swell, as it attracts more fluid. It may take approximately six weeks, after achieving better blood sugar control, for this swelling to completely subside. It's important to note that low blood sugar levels can also lead to blurred vision and even double vision. While most people are aware that diabetes increases the risk of heart disease and stroke, it's less known that diabetes can also have an adverse impact on one's vision. Therefore, regular comprehensive eye examinations are essential to detect these issues early on and maintain healthy eyes. Diabetes is the most common

cause affecting visual ability, and it can result in various eye-related complications such as retinopathy, blindness, maculopathy, cataracts, among others.

Diabetes continues to be a significant cause of visual impairment and blindness among individuals in their working years. With the increasing prevalence of diabetes, vision problems among teachers represent a growing global health concern. Vision loss, often due to retinopathy, is more likely to be associated with macular edema in type II diabetes mellitus and proliferative retinopathy in type I diabetes. Numerous studies have demonstrated that early detection and treatment of diabetes can reduce the risk of diabetic complications, including visual impairment. Additionally, it is well-known that populations where regular screening for diabetic eye disease is conducted tend to have lower incidence and prevalence of diabetic visual impairment compared to populations without screening.

The most commonly used measure of visual function is visual acuity, primarily because it can be easily assessed using simple equipment. Visual acuity is defined as the eye's ability to resolve fine details, or in simpler terms, the size of an object that can be distinguished by the eye. It is quantified by determining the angle formed at the eye by the smallest visible optotype. Theoretically, this reflects macular function, but in reality, it represents the state of the entire visual system, including the visual pathways. In clinical practice, visual acuity is typically assessed using specialized eye charts. These charts typically consist of uppercase letters arranged in rows, with the largest letters at the top and progressively smaller ones as you move down the chart. Visual acuity testing serves as the gold standard for primary outcomes in clinical trials. As a result, we designed this study to evaluate the visual acuity of both diabetic and non-diabetic teachers, including both males and females.

OBJECTIVE OF THE STUDY:

1. To study the effect of type II diabetes on visual ability of teachers.
2. To compare the visual ability of diabetic and non-diabetic teachers.

HYPOTHESIS OF THE STUDY:

There will be significant effect of type II Diabetes on visual ability of teachers.

SCOPE AND DE-LIMITATION OF THE STUDY:

This study is limited to Nagpur city in the state of Maharashtra only. This study evaluate the effect of Diabetes mellitus only on teacher’s visual ability only.

RESEARCH METHODOLOGY:

The present study is in the area of interdisciplinary research based on survey method. The purposive sampling technique, a type of non probability sample was used. In present research study two groups of teachers is taken i.e. teachers suffering from diabetes and normal groups (non diabetic teachers) and compared on basis of visual ability. Self constructed Visual ability was applied to compare the visual ability of both the groups teachers. The

visual ability Scores achieved by the teachers on Standardized visual ability Tests are considered. Mean and SD were calculated for both the groups and t-test was applied to test the hypothesis.

DATA ANALYSIS AND INTERPRETATION:

In this study analysis of data was done by using various statistical technique i.e. Frequency Distribution, Percentage, Mean, SD., SE.dm., 't' test and graphical presentation etc.

Table no. 4.1.4
Level of Frequency distribution of Visual Ability of Diabetic and Non-diabetic teachers

Level	N & %	Diabetic Teachers			Non-Diabetic Teachers		
		Male	Female	Total	Male	Female	Total
High	N	7	11	18	11	12	23
	%	14.00%	22.00%	18.00%	22.00%	24.00%	23.00%
Moderate	N	33	30	63	36	33	69
	%	66.00%	60.00%	63.00%	72.00%	66.00%	69.00%
Low	N	10	9	19	3	5	8
	%	20.00%	18.00%	19.00%	06.00%	10.00%	08.00%
Total	N	50	50	100	50	50	100
	%	100%	100%	100%	100%	100%	100%

From the Above table shown that, level of frequency distribution of Visual Ability for Diabetic and non-Diabetic teacher, 14.00% Diabetic male Teachers, 22.00% Diabetic Female teachers & 18.00% total Diabetic teachers are belongs to high level of Visual Ability. On the other hand 22.00% Non-Diabetic male teachers, 24.00% non-Diabetic female teachers and 23.00% total non-Diabetic teachers are belongs to high level of Visual Ability.

The moderate level of Visual Ability of Diabetic teachers indicated that, the 66.00% male Diabetic teachers, 60.00% female Diabetic teachers and 63.00% all Diabetic teachers are belongs to moderate level of Visual Ability. On the other hand 72.00% non-Diabetic male teachers, 66.00% non-Diabetic female teachers and 69.00% non-Diabetic all teachers are belongs to moderate level of Visual Ability.

The low level of Visual Ability of Diabetic teachers indicated that, the 20.00% male Diabetic teachers, 18.00% female Diabetic teachers and 19.00% all Diabetic teachers are belongs to moderate level of Visual Ability. On the other hand 6.00% non-Diabetic male teachers, 10.00% non-Diabetic female teachers and 8.00% non-Diabetic all teachers having low level of Visual Ability.

The majority of Diabetic teachers (82.00%) having Moderate and Low level of Visual Ability where as Non-Diabetic teachers (89.00%) having High and Moderate level of Visual Ability.

Most of the non-Diabetic teachers are belonging in Moderate level of Visual Ability compared to diabetic teacher level of Visual Ability. On the other hand most of the diabetic teachers belongs to low level of Visual Ability compared to non-diabetic teachers level of Visual Ability.

Table no. 1.2
Visual Ability of diabetic and non-diabetic teachers

Teachers	N	M	SD	Df	't' Value
Diabetic Teachers	100	25.141	7.726	198	2.38**
Non-Diabetic Teacher	100	27.276	7.683		
Diabetic male Teachers	50	24.604	7.183	98	2.50**
Non-Diabetic male Teacher	50	27.521	7.611		
Diabetic Female Teachers	50	26.182	8.308	98	0.602
Non-Diabetic Female Teacher	50	26.831	7.782		

* 0.01 Level of Significance ** 0.05 Level of Significance

From the above table shown that, the significant mean difference between the Visual Ability for the component of cognitive performance of Diabetic and Non-Diabetic Teachers. The all Diabetic male and female Teachers mean score of Visual Ability is 25.141, 24.604, 26.182 & SD is 7.726, 7.183,8.308 and Non-Diabetic all Teachers, male and female teachers mean score of Visual Ability is 27.276, 27.521, 26.831 & SD is 7.683, 7.611, 7.782 respectively. Compare the mean score of Visual Ability for Diabetic and Non-Diabetic male and female Teacher and calculated 't' value is 2.38, 2.50 and 0.602 on 198, 98, 98 df table value is 1.96 on 0.05 level of significance and 2.58 for 0.01 level of significance. Hence the calculated 't' value of all diabetic and non-diabetic teachers and male diabetic and non-diabetic teachers is greater than the table value on 0.05 level of significance. But the diabetic and non-diabetic female teachers related calculated 't' value is not significant at 0.05 level of significant.
It is concluded that the mean score of Visual Ability for Non-Diabetic Teachers is effective compared to Diabetic Teachers. It means that, Non-Diabetic Teacher Visual Ability is better as compared to Diabetic Teacher's Visual Ability.

CONCLUSION:

The majority of Diabetic teachers (82.00%) having Moderate and Low level of Visual Ability where as Non-Diabetic teachers (89.00%) having High and Moderate level of Visual Ability. Most of the non-Diabetic teachers are belonging in Moderate level of Visual Ability compared to diabetic teacher level of Visual Ability. On the other hand most of the diabetic teachers belongs to low level of Visual Ability compared to non-diabetic teachers level of Visual Ability.

Diabetes Mellitus has significant effect on the Diabetic Teacher's Visual Ability. The non-Diabetic Teacher's Visual ability is better as compared to Diabetic teacher's visual ability.

Diabetes Mellitus has significant effect on Diabetic Male Teacher Visual Ability status. The non-Diabetic Male Teacher Visual Ability is better as compared to Diabetic Male Teacher for the component of cognitive behavior. Diabetes Mellitus has not significant effect on Diabetic Female Teacher Visual Ability status. The non-Diabetic and Diabetic Female Teacher Visual Ability for the component of cognitive behavior are nearby similar.

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