Review Article

Variations in prevalence of diabetes in various occupations: a quantitative and qualitative review

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ABSTRACT

Diabetes is one of the most dangerous diseases associated with many comorbidities and mortalities in world. This is associated with different risk factors and its occurrence cannot be predicted. The several risk factors include family history, overweight, unhealthy diet, sedentary lifestyle, increasing age, high blood pressure, stress. Prediction of occurrence and worsening of diabetes cannot be made but our duty is to reduce the risk factors to prevent ourselves landing up in such a long-lasting life burdening disease. Occupation determines many of the risk factors like lifestyle and stress factors as they are more or less similar to everyone belonging to a particular occupation. Study on occupational prevalence of diabetes helps us to identify our risk of diabetes and to prevent it. But presently unfortunately there are only 6 articles available on the occupational prevalence of diabetes. They report that there is increased prevalence of diabetes in police personnel and decreased prevalence of diabetes in farmers and construction workers. Though there is an article available on occupational prevalence of diabetes in teachers, conclusions cannot be drawn as the controls were not included in the study. So there is an immediate requirement to conduct research on prevalence of diabetes in various occupations by including controls.

Keywords: Diabetes, Occupation, WHO

INTRODUCTION

Diabetes is one of the major challenges that whole world is facing today. According to a recent World Health Organization (WHO) report, India, with 32 million diabetic individuals in 2000, currently has the highest incidence of diabetes worldwide; these numbers are predicted to increase to 80 million by the year 2030.¹ The prevalence of diabetes is increasing, and the World Health Organization estimates suggest that by 2025 there will be 300 million affected individuals worldwide.²

According to International Diabetes Federation, several risk factors like family history, overweight, unhealthy diet, sedentary lifestyle, increasing age, high blood pressure, stress etc., have been associated with type 2 diabetes.⁴ Occupation determines one's lifestyle and

stress rate which are the risk factors associated with type 2 diabetes and the rest all risk factor depend upon oneself.

There are many different occupations which differ in many aspects in this world thus resulting in uniformity in stress factors and lifestyle especially physical activity in a particular occupation. Farmers who work hard in the field for earning their living are physically active and are exposed to different types of economic stress factors, health stressors, occupational stress factors which include bad weather, increased work load at peak times, dealing with workers' compensation, poor nutrition.^{5,6} Construction workers who are physically active, deprived and belonging to lower socioeconomic status have different stress factors like work overload unsafe environment, poor health factors, poor nutrition, unfair

reward treatment, inappropriate safety equipment and heat stressors.⁷ Behavioral disengagement and suppression of competing activities are maladaptive responses in a teaching environment and actually contribute to job stress in teachers which is a moderately sedentary occupation and better settled lifestyle.^{8,9} General Physicians who live sedentary lifestyle and are well settled with higher socioeconomic status are exposed to job stress (work load, time pressure, sleep deprivation, irregular meals), organizational stress (career stress, lack of senior support), work life stress etc.^{10,11} Police who are moderately sedentary and moderate socioeconomic status have different categories of stress which includes intra-interpersonal stressors, occupational stressors, organizational stressors, health stressors.^{12,13}

The present review article presents the prevalence of diabetes in Farmers, Construction Workers, Teachers, Doctors and Policemen and the factors associated with prevalence.

REVIEW OF LITERATURE

Many online search engines were utilized for extraction of relevant electronic data from internet like PUBMED, Google Scholar, Medline, and Central on the Cochrane

Library etc. Well used and well related key terms were included in the search. Many articles were searched to find out the articles which explain the prevalence of diabetes in different occupations. The main inclusion criteria of articles were that the primary objective of their study should include the prevalence of diabetes in at least any one occupation. No geographical and language barriers were taken into consideration. Case control studies were mainly given preference but even cross sectional studies were taken into consideration. Six articles were selected from hundreds of articles on diabetes. Among which 3 were case control studies and 3 were cross sectional studies. Prevalence of diabetes in farmers was assessed in 1 research article, Construction workers in one, teachers in one article, Physicians in one article and finally policeman in 2 research articles.

Prevalence of diabetes in farmers was significantly less than the general population in study in Saskatchewan.¹⁴ Prevalence of diabetes in Physicians when compared with general population was not found to be significant though there was slight increase in prevalence.¹⁸ The increased prevalence of diabetes was detected in Police Personnel compared to general population in India.¹⁷ The occupational prevalence of diabetes in different occupations was mentioned (Table 1).

Table 1: Prevalence of diabetes in different occupations in comparison to general population.

Profession	N (no of cases)	Type of study	Prevalence of cases	N (no. of controls)	Prevalence of controls	p-value	Prevalence of diabetes in general population during that year in that country
Farmers in rural Saskatchewan ¹⁴	3296	Case control study	6.89%	4412	10.69%	<0.001	
Construction workers in Ireland ¹⁵	983	Cross sectional study	1.2%	-	-	<0.001	6.5% in 2013 ^[3]
Teachers in Nagpur In India ¹⁶	726	Cross sectional study	14.60%	-	-	-	
Police personnel in India ¹⁷	318	Case control study	32.1%	401	20.2%	<0.05	
Physicians in India ¹⁸	2499	Case control study	13.3%	3278	14.8%	not significant	
Police personnel in Bankura district in India ¹⁹	1817	Cross sectional study	15%	-	-	-	

DISCUSSION

The main aim of the study is to integrate variations in prevalence of diabetes in different occupations and to

summarize the reasons for it. Many articles were searched in different websites available. But only 6 articles were identified which deals with the prevalence of diabetes in different occupations. It is astonishing to

detect very few articles on occupational prevalence of diabetes.

The decreased prevalence of diabetes in farmers was found to be statistically significant when compared to the general population.¹⁴ This is noted as the farmers physically work hard in fields performing most of their tasks manually. Though many environmental stressors like bad weather, economic stressors and health factors are present, these are mostly seasonal and not present universally in all the farmers.^{5,6} Increased physical activity which leads to decreased prevalence of obesity and less amounts of stress has resulted in decreased prevalence of diabetes in farmers.

The prevalence of diabetes in construction workers was 1.2% in a study in Ireland in 2013.¹⁵ The prevalence of diabetes in general population in Ireland was 6.5% in 2013 according to International Federation of Diabetes.³ Comparing the above two results would not be statistically true as the area where the study of construction workers was conducted may have a slight difference in the prevalence of diabetes in general population though belonging to Ireland. But For now if the above two prevalences are compared the construction workers have a lower prevalence of diabetes than the general population. This is because construction workers like the farmers are physically active, lifting heavy weights, working hard in sun and dust. Though they are exposed to heat stressors, health stressors due to injury, these stressors have least effect on their health.⁷

The prevalence of diabetes in School teachers was found to be 14.60% in a study organized in Nagpur in 2011.¹⁶ But here no controls were considered in the study. There is no evidence of prevalence of diabetes in Nagpur in general population in 2011. So a conclusion cannot be drawn from the available information.

The increased prevalence of diabetes in Police Personnel in India was identified to be statistically significant in a case controlled study in India when compared to general population.¹⁷ The police personnel are moderately sedentary with few exercising to the expected level. They have lots of stress factors including intra-interpersonal stressors, occupational stressors, organizational stressors, health stressors.^{12,13} The moderately sedentary activity and the stress factors justify the increased prevalence of diabetes.

The prevalence of diabetes in Young Physicians in India was almost same when compared to general population.¹⁸ The reason for this is the above mentioned study was conducted in Young physicians aged from 25 – 55 years of age excluding the old age. Being physicians they are very well aware of the pros and cons of diabetes and the preventive measures. They may spend minimum required time in physical activity being aware of importance of physical activity in health. They were also highly stressed due to job stress (work load, time pressure, sleep

deprivation, irregular meals), organizational stress (career stress, lack of senior support), work life stress etc.,^{10, 11}

This shows that there is higher association with sedentary lifestyle and diabetes and inverse relationship with physical activity and diabetes with very little influence of stressors. These studies have proven that risk and incidence of diabetes is associated with occupation in most circumstances.

Though there are 6 different studies conducted on occupational prevalence of diabetes in different occupations, 3 of them being cross sectional studies were not that helpful in finding association of diabetes with a particular occupation. So whenever such studies are conducted it is advised to conduct a case controlled study rather than a cross sectional study without drawing any conclusions.

CONCLUSION

The present study affirms that there is a requirement to conduct research on occupational prevalence of diabetes as this may aid in treatment and create awareness among the people belonging to occupations with high risk of diabetes. So that they can make some lifestyle changes and cope up with this dangerous life threatening never ending disease, diabetes.

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