



## TYPE 2 DIABETES IN NIGHT SHIFT WORKERS IN INDIAN POPULATION AND ITS PREVALENCE

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### ABSTRACT

Out of 300 people, 120 people have been already assessed with Type 2 Diabetes Mellitus which translates to 40% of the sample size. 60% of the sample size did over time work shift. 25% (75) of the population satisfied with the night shift and 35% (105) of the population had some mental problems such as stress and depression. 15% (45) of the sample space had free will to do night shift. 30% (90) of the sample space had problems regarding GIT such as Stomach/Duodenal ulcers, etc. and 30% (90) suffered from Tiredness. Our study has potential public health significance. Recognizing that rotating night shift workers are at a higher risk of type 2 diabetes should prompt additional research into preventive strategies in this group. Conclusion of our findings were a positive association for, it is better to avoid night shifts and to modify the lifestyle for a better life.

**Key words:** Type 2 Diabetes Mellitus, Public health, Night shift workers, Duodenal ulcers.

### INTRODUCTION

Rotating night shift work disrupts circadian rhythms and has been associated with obesity, metabolic syndrome, and glucose dysregulation. However, its association with type 2 diabetes remains unclear. Shift work and long working hours have been linked to a number of health issues. These include an increased risk of metabolic problems, heart disease, gastrointestinal difficulties, obesity and certain cancers<sup>1</sup>. Night shift work may also interfere with the body's ability to repair DNA damage that occurs from normal cellular process. The suppression of melatonin – which is the hormone responsible for regulating the internal body clock – may have a role<sup>2</sup>. Therefore it is very important to establish the relationship between the effects of Night shift among workers Type 2 Diabetes Mellitus.

### Materials and Methods:

After obtaining written Informed Consent and Institutional Ethical clearance, a cross-sectional questionnaire based study were conducted for 300 subjects of both sexes by convenient sampling method at Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry. Personal details from the subject along with Sleep duration and History of diabetes were collected. Pre tested structured Questionnaires were filled by them. The Exclusion Criteria is College going students, Part time workers and Day time workers. Statistical analysis done using SPSS software.

The study population includes 300 people who work as Watchman, Supervisors, Sweepers, Cab drivers and hospital night duty Technicians between 20 to 55 years of age.

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Based on Pre tested Structured questionnaire, sleep duration, medical history, family history of diabetes, complications, Smoking, Drinking, Physical exercise,

Overtime and Job satisfaction were asked for the people in the sample size includes Rotatory night shifts which includes three types of work schedules. Morning shift = 6 AM till 2 PM. Afternoon shift = 2 PM to 10 PM. Night shift = 10 PM to 6 AM. People who work as cab drivers, hospital night duty Technicians, Supervisors have all three types of work schedules. While watchmen had two shift timings, Morning shift = 6 AM to 6 PM and Night Shift from 6 PM to 6 AM. The Sample space had (Two weeks)16 days of Night shift in a month. The analysis of the data was done with SPSS software.

**Results:**

Out of 300 people , 120 people have been already assessed with Type 2 Diabetes Mellitus which translates to 40 % of the sample size. 60% of the sample size did over timeworkshift. 25% (75) of the population satisfied with the night shift and 35% (105) of the population had some mental problems such as stress and depression. 15% (45) of the sample space had free will to do night shift. 30% (90) of the sample space had problems regarding GIT such as Stomach/Duodenal ulcers, etc. and 30% (90) suffered from Tiredness. When the Health problems among the study participants they will check in Govt or Private hospitals, 40% (120)of the diabetics approached Government Hospitals whereas remaining 60% (180) approached Private Hospitals for their treatment and management.

**Table 1: Variables related to night shift among study participants:**

Particulars	Frequency	Percentage
<b>1. Age group</b>		
(i) 25 to 30 Years	75	25
(ii) 31 to 40 Years	90	30
(iii) 41 to 50 Years	75	25
(iv) 51 to 55 Years	60	20
<b>2. Individuals with smoking habit</b>	75	25
<b>3. Individuals with habitual alcohol consumption</b>	105	35
<b>4. Individuals satisfied with night shift</b>	75	25
<b>5. Tiredness</b>	90	30
<b>6. Stress</b>	105	35
<b>7. Free will to do Night shift</b>	45	15
<b>8. Duodenal Ulcer</b>	90	30
<b>9. Overtime</b>	195	65
<b>10.Sleep duration</b>		
5 Hours	30	10
6 Hours	90	30
7 Hours	60	20
8 Hours	105	35
10 Hours	15	05
<b>11. When the Health problems among the study participants they will check in Govt or Private hospitals</b>		
Government hospital	120	40
Private hospital	180	60

**Discussion:**

In the above study, there is a modest increased risk of type 2 diabetes after extended periods of Night shift works. Although, the increased risk of type 2 diabetes mellitus was not related to a particular age group<sup>3</sup>. Two prospective studies in male Japanese workers revealed that alternation/shift work was an independent risk factor for impaired glucose metabolism and diabetes<sup>1</sup>. These studies, however, did not have information on duration of rotating night shift work. However in this study we had mentioned the duration of night shift which is 8 hours for employees

of Supervisors, Sweepers, Cab drivers and hospital night duty Technicians and 12 hours for employees like Security staffs of watchmen.

Employees of Supervisors, Sweepers, Cab drivers and hospital night duty Technicians were more affected with type 2 Diabetes mellitus than the other sector staffs. This is mainly due to less physical activity when compared to the Security staffs of watchmen. And moreover, majority suffer from Gastro Intestinal problems such as Duodenal ulcers which is caused by H.pylori bacteria because of modified life style irrespective of their firm

they work<sup>4</sup>. While, private sector staffs mostly suffer from physical and mental illness such as tiredness, stress and depression.

Overtime was done by all sector staffs , but was proportionately high in Employees of Supervisors, Cab drivers and hospital night duty Technicians which leads to long, continuous shift duration. Additional studies are needed to confirm our findings in all groups of Men and women and other ethnic groups and to further investigate the underlying mechanisms for the association<sup>6</sup>.

Although doing their night shifts regularly, they all tend to have a minimum 6 hours sleep in case of 30 percent of the study except 10 percent who had just 5 hours sleep everyday. 80 percent didn't had any sleep disturbances, which is quite contradictory to this study<sup>5</sup>.

### **Conclusion:**

In conclusion, the results from this study suggests a positive association between rotating night shift work and diabetes risk. Long duration of shift work was also associated with greater weight gain. Additional studies are needed to confirm our findings in all groups of Men and women and other ethnic groups and to further investigate the underlying mechanisms for the association. Because a large proportion of the working population is involved in some kind of permanent night and rotating night shift work, our study has potential public health significance. Recognizing that rotating night shift workers are at a higher risk of type 2 diabetes should prompt additional research into preventive strategies in this group. Shift work exposure does not modify genetic risk for type 2 diabetes<sup>7</sup>. Since the study suggest a positive association for , it is better to avoid night shifts and to modify the lifestyle for a better life.

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