

Dietary Pattern and Meal Skipping Habits of Diabetic Work Force: A Comparative Study

V. Bhavani¹, Dr S. Sivabalamurugan²

¹Dietician, ESIC Medical College and Hospital, KK Nagar, Chennai

²Diabetologist, ESIC Medical College and Hospital, KK Nagar, Chennai

Corresponding Author: V. Bhavani

ABSTRACT

Background: Workers are the pillars of the nation. Hence, the health of the workers must be maintained in terms of Nutrition. But our workers do not concentrate in dietary aspects and skips meal regularly. Improper dietary habits affect the health and the well-being of the workers. Taking this into consideration the present study taken its shape

Aim: To study the dietary pattern and meal skipping habits of dietary work force

Methodology: Adopting random stratified sampling technique, 100 diabetic general shift workers and 100 diabetic rotation shift workers were selected. Interview schedule was used to obtain the dietary pattern and meal skipping pattern of the subjects. After obtaining the details, raw data was coded and subjected to statistical analysis.

Results: About 84.5% and 15.5 were mixed vegetarian and vegetarian respectively. About 86% consumed all three meals a day. 79% brings food from home to work place. About 37% of diabetic workers skip meal, among them, majority of workers skips breakfast (52.7%)

Conclusion: Considering the dietary habits of the diabetic workers, it is essential to educate the workers regarding the good nutritional habits to maintain the blood glucose levels and also to prevent micro and macro vascular complication. Employees must provide "health friendly" foods at canteen for the subsidized rates to maintain the wellness of the diabetic workers.

Keyword: Meal skipping, brain food, packed lunch, insulin resistance, mixed diet, home cooked food

INTRODUCTION

Increased shift work has many economic advantages, including higher employment, increased services to customers, and improved trade opportunities. On the other hand, shift work is a risk factor for chronic diseases such as Type 2 diabetes.

Shift work that includes overnight shifts disrupts the circadian biological clock governing the body's internal regulation of sleep and wake times, which in turn affects energy metabolism and may promote weight gain. During night time sleep, the body is in a fasting state promoting release of stored glucose and relative insulin resistance (compared with day) to permit preferential usage of glucose by the central nervous system rather than for muscle energy. Eating during nocturnal hours, when the body is programmed to be asleep, disrupts the metabolic milieu. Acute experimental studies have found that a meal eaten at night generates an exaggerated glucose and lipid response compared with the same meal eaten during the day. Long-term excursions in glucose and lipids are risk factors for cardiovascular disease. ^[1]

Nocturnal eating causes disturbances of intestinal motility, affecting the digestion, absorption, and utilization of pharmacological drugs and nutrients. From a chronobiological point of view, the human species is diurnal (i.e., active during the day), which explains why night workers tend to have a decreased appetite during the night when the organism is programmed for

restitution, fasting, and endogenous mobilization of blood glucose. [2]

Food choice may play a role, however simply eating at night when the body is primed for sleep may have implications for health. [3] Shift workers may express higher consumption rates of fast foods, indulgence in high-fat breakfast meals, or resort to smoking and drinking alcohol. [4]

MATERIALS AND METHODS

A cross sectional study was conducted among 200 Diabetic workers who were ESI beneficiaries. Purposive random sampling technique was used for selecting the subjects. The subjects were equally categorized in to General shift and Rotation shift duty. After obtaining permission from hospital authority to perform the study, selected individuals were briefed about the research purpose and obtained written consent from all the subjects. Individuals with micro and macro vascular complication, subjects with cancer, pulmonary tuberculosis, pregnant and lactation women were excluded from the study. The ESI beneficiaries between the age group of 20 to 60 years with diabetes and were either in General or Rotation shift duty were selected for the present study. The food intake pattern of the diabetic workers is the aim of the study. A Pre-tested, standardized interview schedule was used to collect information about the food intake pattern of the diabetic workforce.

This includes the meal skipping pattern and food to work place. To check the reliability and validity of the interview schedule, Pilot study was conducted among one – tenth of the study participants. After collecting the required information using the interview schedule, the obtained information was coded in excel and were subjected to statistical analysis and the results were interpreted.

RESULTS AND DISCUSSION

Table-1: Type of Diet

Type of Diet	General shift N=100	Rotation shift N=100	Total (%) N=200 (100%)
Vegetarian	23	8	31 (15.5%)
Mixed vegetarian	77	92	169 (84.5)

In the current study, more than one third (84.5%) of the subjects consumed mixed diet and only 15.5 % were vegetarians. It is interesting to note that more number of General shift workers consumed vegetarian diet and whereas majority of rotation shift workers consumed mixed diet. Since nowadays non vegetarian foods are easily available round the clock in the metropolitan city like Chennai made rotation shift workers to prefer consuming mixed diet

A similar study revealed that majority of the subjects was vegetarian involving a comparatively higher percentage of night shift subjects (82.66%). Among non-vegetarian food, egg and chicken were preferred more by day shift subjects. [1]

Table-2: Number of meals consumed and food to work place

Number of meals consumed and food to work place		General shift N=100	Rotation shift N=100	Total (%) N=200
Number of meals consumed per day	Two	9	16	25 (12.5)
	Three	90	83	173 (86.5)
	Four	1	1	2 (1)
Food to work place	Canteen food	12	28	40 (20)
	Packed lunch from home	88	72	158 (79.5)
	No food	-	1	1 (0.5)

It is clear from our study that majority of our study participants consumed three meals per day followed by two meals by 12.5% of the participants and only 1% consumed four meals per day. It is also noted that more number of rotation shift workers consumed only two meals and at

the same time more number of three meals were consumed by General shift works. The duty schedule and meal timings of the work place were mentioned as the reasons for poor eating habits among rotational shift workers.

A study conducted by Bonham (2016) among the shift workers showed that the meal consumed during a day shift differed from the meal consumed on night shift, but there were no differences in overall energy intake. Around 63.33 percent subjects avoided meals to prevent stomach upsets whereas 67.27 percent subjects took alcohol to sleep. [5]

It is very well reported that majority (79%) of workers consumed packed lunch brought from home, about 20% consumed canteen foods and it is heartening to know that only 0.1 % does not bring food to work place. It is also reported that canteen food are consumed more by rotation shift workers than General shift workers and on the other hand, packed lunch is brought more by General shift workers than rotation shift workers.

The foods chosen at lunch were bread-based products, whereas the meals consumed at night were hot “home-cooked” style meals with a higher energy density. Following this type of meal structure appeared important to the participants, and the opportunity to prepare a cooked meal and share with colleagues was associated with emotions of pride. Even when shifts occurred at the weekend, this brought about different food choices than during the week, consistent with the usual variation displayed by those who work a standard working week pattern. [6]

Table-3: Meal skipping pattern

Meal skipping pattern	General shift N=100	Rotation shift N=100	Total N=200 (%)
Yes	33	41	74 (37%)
No	67	59	126 (63)

Our present research reported that more than one third (37%) of the study participants skipped meals. Among the meal skippers, 55% were Rotation worker and 45% were General shift workers. Work timing is the major cause for the skipping meal by rotation shift workers.

People who skipped a meal were more likely to consume foods containing high level of cholesterol and carbohydrates and to have lower intakes of fruits,

vegetables, vitamins, and minerals than those who never skipped a meal. Further, those who skipped a meal faced increased risks to their cardio-metabolic health, notably of obesity and diabetes [7]

Table-4: Type of meal skipping

Type of meal skipping	General shift N=33	Rotation shift N=41	Total N=74 (%)
Breakfast alone	18	21	39 (52.7)
Lunch alone	10	17	27 (36.4)
Dinner alone	4	2	6 (8.1)
Breakfast, lunch	-	1	1 (1.3)
Breakfast , Dinner	1	-	1 (1.3)

According to the above table, meal skipping is found to be more among rotation shift workers than General shift workers. Breakfast is the most common meal skipped by both the group (52.7%), followed by lunch (36.4%) and dinner is skipped by 8.1% participants. Breakfast is considered as the “brain food”, but it is skipped by the majority of the participants. Being diabetics, it has to be emphasized to consume all the three meals especially breakfast to maintain the blood sugar levels.

Table -5: Frequency of Meal skipping

Frequency of Meal skipping	General Shift N=33	Rotation shift N=41	Total N=74 (%)
Daily	3	2	5 (6.7)
Once a week	5	2	7 (9.4)
Two to three times a week	12	20	32 (43.2)
More than three times a week	13	17	30 (40.5)

When the frequency of meal skipping pattern was analysed, about 6.7% skipped meals daily. Among them 1.5% from General shift and 1% for rotation shift. About 9.4% skipped meals once a week (2.5% General shift workers and 1% rotation shift workers). 43.2% (6% general shift workers and 10% rotation shift workers) and 40.5% (6.5% general shift workers and 8.5% rotation shift workers) skipped two to three times a week and more than three times a week respectively.

CONCLUSION

Breakfast is considered to be “brain food” but our workers seem to skip meal

especially breakfast. It is strongly recommended that employers should take steps to develop a nutrition management strategy at the work-place. It is essential for the night shift workers to eat breakfast before the sleep to avoid wakening due to hunger. Shift workers must stick as closely as possible to a normal “day and night pattern” of food intake. Avoiding sugar-rich products such as soft drinks, bakery items, sweets, and non-fiber carbohydrate foods (high glycemic load) like white bread. Work place canteen must provide a variety of food choices with complete meals and high-quality snacks in subsidized rates. Canteen must also Provide appropriate dining facilities which must allow a meal to be eaten away from the work-place, with colleagues, in as pleasant a surrounding as possible. In order to prevent the micro vascular and macro vascular complications of diabetic workers, it is essential to main a normal blood glucose levels by consuming balanced diet with sufficient sleep and regular exercises. It is the responsibility of the employer to provide a “health friendly” canteen to their employees in a subsidized rate. Proper nutritional habits would help to improve the health status of the individual which in turn improves productivity of the workers. This benefits both employer and employees and as well the nation. Nutrition education in terms of inclusion of right foods for diabetics and avoidance of unhealthy junk foods must be reinforced. Nutritional screening in terms of ruling out deficiency diseases also must be done regularly.

REFERENCES

1. Emily K, Bonnell., Catherine E, Huggins., Chris T. Huggins. (2017). Influences on Dietary choices during day verses night shift in shift workers: A mixed methods study. *Nutrients*, vol 9 no 3 pp 193.
2. Arne Lowden., Claudia Roberta de Castro Moreno., Ulf Holmback., Maria Lennernas. (2010). Eating and shift work - Effects on habits, metabolism, and performance., *Scandinavian Journal of work, Environmental and Health*, vol 36 No 2 pp 150-62
3. Stephanie Centofanti., Jillian Dorrian., Cassie Hilditch. (2018). Eating on nightshift: A big vs small snack impairs glucose response to breakfast. *Neurobiology of sleep and Circadian Rhythms*, Vol 4, pp 44-48
4. Nwakile I Ojike. (2015). Shift Work and Diabetes: A Cause for Concern. *Journal of Sleep Disorders & Therapy*, vol 4, No 3.
5. Bonham M.P., Bonnell E.K., Huggins C.E. (2016). Energy intake of shift workers compared to fixed day workers: A systematic review and meta-analysis. *Chronobiol. Int.*, vol 33 pp 1086–1100.
6. An R. Weekend-weekday differences in diet among, U.S. adults, 2003–2012. (2016). *Ann. Epidemiol.*, vol 26 pp 57–65.
7. Ji- Sook Kong., Kyoung-Bok Min., Jin-Young Min. (2019). Temporary Workers’ Skipping of Meals and Eating Alone in South Korea: The Korean National Health and Nutrition Examination Survey for 2013–2016. *International journal of Environmental Research and Public Health*, vol 16, no 13 pp 2319.

How to cite this article: Bhavani V, Sivabalamurugan S. Dietary pattern and meal skipping habits of diabetic work force: a comparative study. *International Journal of Science & Healthcare Research*. 2019; 4(3): 209-212.
