

# To Study the Pattern of Meal Timings amongst Employees Related to Aviation

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## ABSTRACT

**Introduction:** Frequent variation in meal timings exist due to occupational requirement for the employees related to aviation who work in various shifts round the clock. Irregular meal timing is one of the known risk factors for lifestyle diseases such as obesity, hypertension etc. This study was carried out to study the pattern of meal timings amongst employees related to aviation.

**Material and Methods:** A cross sectional study was carried out by using a structured questionnaire which was pretested and validated. 401 individuals who were involved in various duties related to aviation were interviewed. Data was compiled and analyzed by using appropriate statistical methods.

**Results:** Considerable proportion of individuals was found to be having irregular / delayed meal timings. Working hours / shift duties was the common reason for having delayed meals. Significant association was found between working hours and irregular meal timings.

**Conclusion:** All efforts at individual, community and organization level are required to be taken to regularize the meal pattern without affecting the operational requirement of the organization for the employees involved in duties related to aviation.

**Keywords:** Meal timings, working shifts

## INTRODUCTION

Human behavior and physiology are regulated by the circadian clock. These Circadian rhythms optimize energy expenditure and regulate metabolic pathways of human body.<sup>1</sup> Thus, proper functioning of circadian clocks is essential for maintaining human metabolic health. Circadian disruption due to chronic shift work may lead to irregularities of metabolic homeostasis and is associated with increased risk of life style disorders such as obesity, hypertension, and cardiovascular diseases.<sup>2,3,4</sup> Circadian rhythms are also strongly affected by these metabolic disorders.<sup>5,6,7</sup> The patterns of meal and snacks eating behavior in Indian population have changed over the past few decades. Typical breakfast, lunch and dinner meals are difficult to distinguish because of skipping meals and snacking has become more prevalent. Such eating styles can have serious effects on cardio-metabolic health markers, namely weight, lipid profile, insulin resistance and blood pressure. Current work timings and shift duties leave the personnel involved in aviation duties skip / delay meals resorting to prolong hunger, binge eating and snacking. Intake of late lunch and no evening games contribute to obesity, irregular blood sugar levels, etc. This study was carried out to study the pattern of meal timings amongst employees who perform various

duties related to aviation.

## MATERIAL AND METHODS

A cross sectional descriptive study was carried out to estimate the proportion of individuals who follow irregular meal timings and to understand the various factors affecting their meal timings. Regular meal timing was defined as 0700-0800 hrs (Breakfast), 1200-1400 hrs (Lunch) and 1900-2100 hrs (Dinner). A total of 401 personnel were interviewed by using a structured questionnaire which was pretested and validated by using a pilot study. A sample size of 384 was calculated with prevalence (p) 0.5, (d) error of margin 0.01 and confidence interval (CI) of 95%

## RESULTS

As depicted in table 1, most of the study participants (77%) were below the age of 40 y and were following duty schedule involving various shifts duties due to either their technical nature of job or administrative support duties related to aviation. Almost all study participants were found to be taking 3 meals in a day including breakfast, lunch and dinner. Considerable study participants (58%) had delayed breakfast timings after 9 am on a working day. Very few individuals (9.5%) were found to be having lunch before 1400 Hrs during working day and for most of them lunch timings were delayed beyond 1500 Hrs. Considerable number of study participants had habit of having delayed dinner meals (after 2100 Hrs) irrespective of working hours. Though all employees used to take meals at either home or at mess, on the working days, considerable amount of employees (58%) used to take BF at office cafeterias. Occasionally (1%) people used to have food from outside during holidays. Reasons for irregular / delayed meal timings are shown in fig 1,2 and 3. Most common cause of having delayed breakfast and lunch

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| Age (Yrs)                          | 20-30 y             | 30-40 y     | Y                       | > 50 y                 |
|------------------------------------|---------------------|-------------|-------------------------|------------------------|
|                                    | 198 (49%)           | 113 (28%)   | 55 (14%)                | 35 (9%)                |
| Nature of duty related to aviation | Operational Support |             | Technical Support       | Administrative Support |
|                                    | 61 (15%)            | 251 (63%)   | 89 (22%)                |                        |
| Meal Timings                       | Working Day         |             | Holiday                 | P value                |
| Breakfast                          |                     |             |                         |                        |
| Regular (0700-0900 h)              | 169 (42%)           | 202 (50.4%) | 0.01<br>(Significant)   |                        |
| Irregular                          | 232 (58%)           | 199 (49.6%) |                         |                        |
| Lunch                              |                     |             |                         |                        |
| Regular (<1400 h)                  | 38 (9.5%)           | 207 (52%)   | < 0.05<br>(Significant) |                        |
| Irregular                          | 363 (90.5%)         | 194 (48%)   |                         |                        |
| Dinner                             |                     |             |                         |                        |
| Regular (1900-2100 h)              | 200 (49.8%)         | 177 (43%)   | 0.10                    |                        |
| Irregular                          | 201 (50.2%)         | 224 (57%)   |                         |                        |
| Venue of meal                      |                     |             |                         |                        |
|                                    | Working Day         |             | Holiday                 | P value                |
| Breakfast                          |                     |             |                         |                        |
| Home/ Mess                         | 169 (42%)           | 395 (98.5%) | <0.01<br>(Significant)  |                        |
| Office Cafeteria                   | 232 (58%)           | 6 (1.5%)    |                         |                        |
| Lunch                              |                     |             |                         |                        |
| Home/ Mess                         | 397 (99%)           | 396 (98.5%) | 0.73                    |                        |
| Other                              | 4 (1%)              | 5 (1.5%)    |                         |                        |
| Dinner                             |                     |             |                         |                        |
| Home/ Mess                         | 400 (99.8%)         | 396 (98.5%) | 0.10                    |                        |
| Other                              | 1 (0.2%)            | 5 (1.5%)    |                         |                        |
| Lifestyle Disease                  |                     |             |                         |                        |
|                                    | Present             |             | Absent                  |                        |
| Regular Meals                      | 7 (14.5%)           | 96 (27.2%)  | 0.06                    |                        |
| Irregular Meals                    | 41 (85.5%)          | 257 (72.8%) |                         |                        |
| Total                              | 48                  | 353         | 401                     |                        |

Table-1:

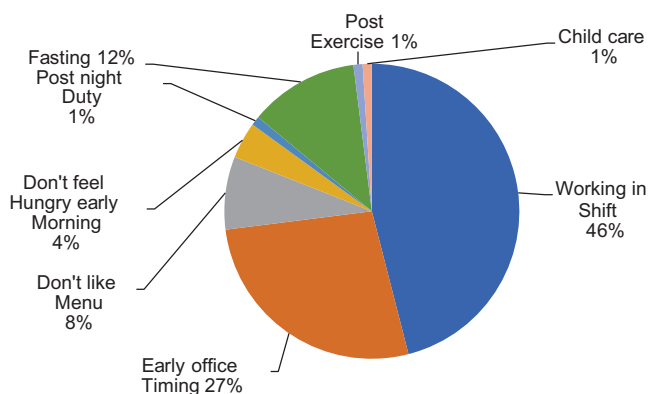


Figure-1: Reasons for delayed breakfast

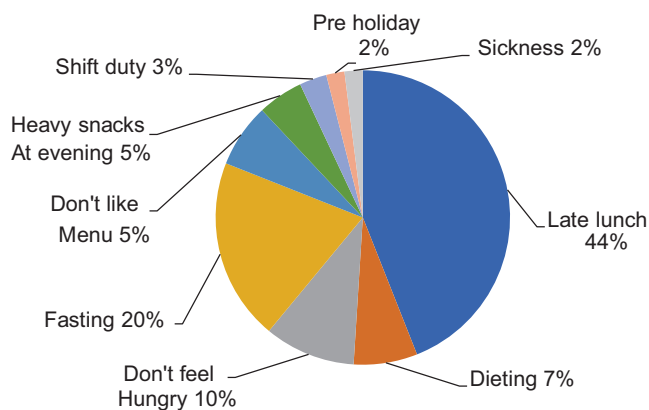


Figure-3: Reasons for delayed dinner

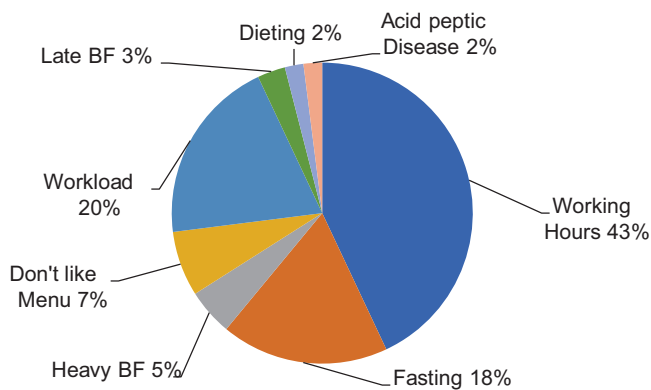


Figure-2: Reasons for delayed lunch

was working hours related to shift duties. Delayed lunch was the commonest reason for having late dinner. Significant association was found between irregular / delayed meal timings for timing of breakfast and lunch with working hours. However, no significant association was found for irregular / delayed dinner timings and working in shifts (p = 0.1). 48 out of 401 individuals were suffering from life style disease. Distribution of irregular / delayed meals among personnel suffering from NCDs was assessed and compared with remaining population. No significant association was found between irregular meal timings and the presence of any non-communicable disease.

## DISCUSSION

Circadian clocks that comprise clock genes exist throughout the body and control daily physiological events. Because the circadian system organizes whole energy homeostasis, including food intake, fat accumulation and caloric expenditure, the disruption of circadian clocks leads to metabolic disorders. Recent findings show that time-restricted feeding during the active phase amplifies circadian clocks and improves metabolic disorders induced by a high-fat diet without caloric reduction, whereas unusual / irregular food intake induces various metabolic dysfunctions. Such evidence from nutrition study that consider circadian system (Chrononutrition) has been rapidly accumulated.<sup>8,9,10</sup> In the present study, most of the study participants belonged to younger age group with average age of 34 yrs. Most of them were found to be taking 3 meals in a day including breakfast, lunch and dinner. Frequency of consumption of snacks was more during shift duties. This finding was similar to Atanu Kumar Pati, et al<sup>11</sup>, who mentioned in his study that tendency of snacking is more prevalent in population working in shift duties than having full meals. On the working days, considerable amount of employees were found to be taking breakfast at office cafeterias and had delayed lunch timings. This is because; people involved in duties related to aviation have different work timings depending upon the operational requirements and flight schedules. Delayed meal timing is described as a risk factor by various studies for obesity and other life style diseases. This study showed that considerable proportion of study participants take irregular / delayed meals mainly breakfast and lunch due to nature of shift duties. Study showed positive association between delayed lunch timings and working hours. Delayed lunch was the commonest cause of having delayed dinner. There are many aspects of meals and life style who have impact on health status of an individual and frequency with modern diseases such as obesity, hypertension, diabetes, etc. Hence, it is important to regularize meal patterns of employees related to aviation.

## CONCLUSION

Study showed considerable individuals involved in aviation duties follow irregular meal timings subject to varied flight schedules and operational commitments. All efforts at individual, community and organizational level are required to be taken to regularize the meal pattern without affecting the operational requirement of the organization.

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