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Impact of Providing Working Lunch on Health: A Case Study of Stich Right Limited Firm at Tongi in Dhaka

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Abstract

This study was designed to determine the impact of working lunch on employees' with in terms of BMI and identify the employees who were at risk of developing different diseases. The vision is to assist an employer and authority to make necessary intervention for the improvement of health status and reduce risk of developing diseases among the employees. It is a cross sectional mixed method study. The study period ranged from October, 2010 to October 2011 and the intervention took place in a factory with the name 'Stich Right Limited (SRL)'which was selected purposively. All the workers (total of 742) of the factory who received the intervention were surveyed. Body Mass Index (BMI) of each worker was calculated both in the base line (October 2010) and in the end line (October 2011). The study revealed that during the baseline, 13.6 percent workers had undernutrition (as per World Health Organisation classification, workers with BMI less than 18.5) as compared to that of 8.6 percent at the end year. Hence, undernutrition statuses of the workers were corrected by 4.9 percent. Standard nutritional status (BMI is 18 to 25) is improved by 1.5 percent. Percentage of workers with overweight (BMI is 26 to 30) and obese (BMI is greater than 30) status has also proportionately increased by 3.2 and 0.3 percentage point respectively, though the increase in percentage were not statistically significant. Further, it was found that, among the male employees, under nutrition percentage is correct by 2.66 percent and among female employees, under nutrition percentage is correct by 6.26. Successful and effective implementation of any intervention through service center (work place) is possible. Employee's positive health, and well-being could be ensured in a work place by the intervention of an employer who actually takes a role for the increase in the productivity of work. Hence employees can lead a socially and economically productive life.

Key words: Working Lunch, Employee, BMI, Employer, Health

JEL Classification: I1, I12

Paper Classification: Research Paper

Introduction

Food, water, sanitation, clothing, shelter, health care, education and information are the basic needs for human beings. Bangladesh is having 150 million people with 1142/sq.km population density which makes its the world's most densely populated country. 13 percent of the total population is below the nation's poverty line earning US $ 2 per day. With limitations and

scarce resources, Bangladesh achieved a good progress in increasing literacy rate, improving life expectancy rate, increasing food production, decreasing infant mortality rate and total fertility rate. Besides all this success, the unemployment rate is still high. According to Bangladesh Bureau of Statistics, the unemployment rate is 4.3 percent in the year 2014. And about 10 to15 percent of population were at serious nutritional risk. Logically the employment, food habit and nutritional status were directly related. It is said that every $1 spent on improving nutrition can have a $30 return on investment.

Despite the problem of GSP, poor infrastructure and weak financial system in present conditions, there are approximately 7000 ready made garment factories creating 3.5 to 4 million, employment where 80 percent is female employment. Female employment has played an important role in female empowerment. According to BGMEA 2015-2016, ready made garments export 82.01 percent of total export and earn US $ 28094.16 million. In export of ready made garment products, Bangladesh is positioned next to China.

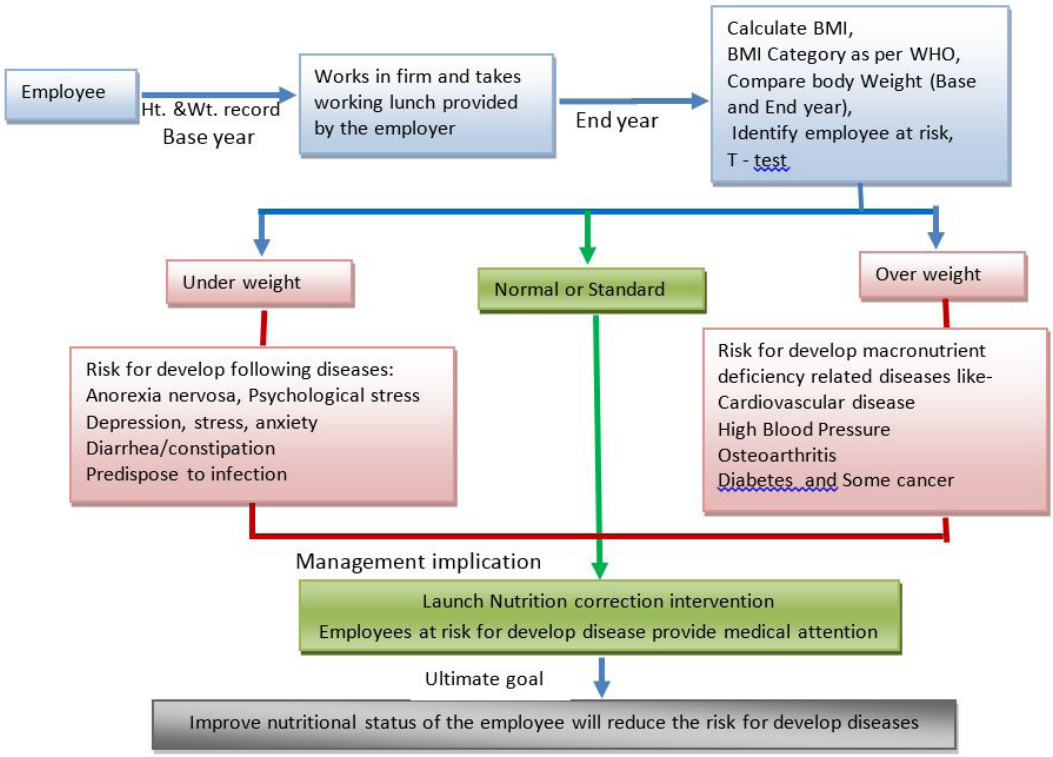
The Stich Right Limited (SRL) factory started in May 2009 and the product is exported to UK and French. In this firm, approximately thousands of people are in services. Out of this, about seven hundred and sixty five are working in different sections of the firm. The different sections are – cutting, sewing and finishing. In all sections, both male and female employees work. The working hours are from 8.00am to 5.00pm. For each factory, lunch is provided, since the factory began. The primary health care and medical advices are given by a BMDC registered MBBS Doctor and a Diploma Nurse. With highest interest of authority, the nutritional status assessment of worker is been done. This assessment determines the impact of working lunch on employee's health. The factory provides egg, fish, meat, vegetables, lentil (dal) on alternate days every week in the lunch menu.

The objective of this study is to determine the impact of working lunch on employee's health.

Hypothesis

Human beings take three main foods, in morning, afternoon and at night. This food gives energy for work and good health. From morning to evening, people stay at work place. At lunch time they stay in work place. Assume, if lunch is not taken properly, adequately and regularly, people's nutritional status will deteriorate in terms of BMI and will become a subject of risk to develop disease.

Conceptual Framework



Literature Review

The time period or duration that employees were spending at their work place may or may not include the lunch and/or rest break during working time or business hours. A long time can be taken by an employee in completing assigned task and responsibilities, working hours after hours without taking food. Basically all types of employee spend a minimum third or half of the day hours at their work place. Alongwith this working time, employees need time to reach residence from work place. In reality, employees stay a long time without food and on regular basis spending a long time without food puts oneself at risk for developing lifestyle related non communicable diseases. They work from 9 to 5 working time, the meal/ lunch time is almost none for many employees. The Human Resources Consulting Firm, Right Management explored that only one in three American workers have a lunch break and rest eat at their desks or don't eat at all.

According to the category of work, 1.8, 1.39 and 1.08 kcal per minutes is the energy requirement for sedentary office work, sitting and sleeping respectively. An eight hours of work in a day will require a total of 2050 kcal expenditure for maintaining a positive disease free health. Below this 2050 kcal mark, the worker will have under nutrition and under nutrition related diseases, likewise above the 2050 kcals mass will have over nutrition and/or will suffer from obese related diseases.

Over the century, the trend of disease has changed. Development of non-communicable diseases and newer sorts of communicable diseases took the upper hands. Globally, non communicable diseases are a burden in terms of patient suffering, family and social burden. A big segment of these were directly related to the lifestyle in terms of food taken timely(balanced diet) adequately, properly, rest taken and reduced work stress. Modern diseases, non-communicable diseases could be reduced by healthy life style practiced in terms of consuming balance diet properly and regularly, not spending half of or one third of day time without food in work place and taking rest in between working time.

Each element of food has specific function that is responsible for maintaining the positive health of human beings. The risk of consuming saturated fats develops cancer, cardiovascular disease, obesity, likewise consuming simple carbohydrate is responsible for weight gain, developing some cancer. In 1998, World Health Organization with regard to macronutrient and prevention of chronic diseases recommends diet for healthy adults be 50 to 70 percent complex carbohydrate, 15 to 30 percent unsaturated fats and 8 to 15 percent of animal proteins with the vision to prevent the development and suffering from non-communicable long term chronic diseases. Macronutrient related diseases are heart and blood vessel related, endocrine related diabetes, obesity and cancer. Likewise mental retardation, depression, dementia, low work capacity, chronic fatigue, blindness, loss of bone and muscle strength occur due to micronutrient deficiency.

Labour productivity increases 2.27 percent by increasing 1 kcal found by ILO research. World Health Organization also states that through food fortification, our national productivity could rise by 20 percent. World Bank reported India lost US$ 10 to 28 billion that is 3 to 9 percent of GDP due to illness, lost productivity and death because of malnutrition. Time for relaxation has been linked with heightened productivity.

It is very important to give attention to lunch time and/or break time, consuming balance food at work place as well. In order to get, maintain and enjoy a better physical state, socially and economically productive life, everyone needs rest and/or break time which should be included in the course of their work time. Globally the reputed organizations (public or private) have a practice of consuming food at work place. For example 'European Union Working Time Directive (93/104/EC)' have a rest of at least 11 hours between shifts and also have a break time if working hours are more than 6 hours. Likewise in Brazil, Nigeria and the Libyan Arab Jamahiriya, Japan and United Kingdom, the break time/lunchtime is 1–2 hours per 6 hours; 1 hour per 6 hours, 45 minutes per 6 hours, 20 minutes per 6 hours respectively. South Africa and the Philippines mandate a 60-minute meal break. Other countries stipulate that the break must be at least 30 minutes during shifts longer than 5 hours. The 'United Kingdom's Public and Commercial Services Union' is prosecuting for the 30-minute meal break.

PLOS ONE journal (German study),Humboldt University researchers (Berlin) published and surveyed lunch habit to make enormous difference in people's working life. Psychological consequences of meal eating exaggerates employees thinking and emotional statuses respectively. According to their study, people/employee/working people take their lunch/meal at restaurant and those who enjoyed their meal reported increased feelings of relaxation, and also reduced work stress (cognitive control), increase in potential, creativity and linking. Employee/worker who gets time for meal or lunch, gets back to work with new enthusiasm, full concentration- attention to responsibility, positive attitude, self-control, self-monitoring and are able to use their full potential. Few organizations (NGOs operated by USAID) have the practice of warming up where

contemporary colleagues take morning tea/coffee together and share their feelings, task related assistance resulting in existence of good working environment, coordination, compliance and finally achievement of goal.

Nokia Company (Manaus region of Brazil) provides full-time employees subsidized meals and Canadian Auto Workers (CAW) union, started a better meal program for Chrysler workers in 2001 and for General Motors workers in 2004. Brazil, Hungary, France and Romania have meal voucher program for their employees. Further other countries demand that the break time should be at least 30 minutes, where working or business is time more than 5 hours.

In November 19,2016 "ProthomAlo" – popular Bangladeshi Daily Newspaper published the report that globally renowned company "Google" provides free working food and rest time for their employees. The purpose is to create an environment of home like feeling, so that each and every employees feels that work place is their family. Any employee can take fresh food any time and rest as well. This assures employees good health, thus increasing the productivity of employees. The result of this initiative and intervention was that the people enjoyed using "Google" services.

In Asia, India and Bangladesh have their own Factory Act (1948, 1965) where it is mentioned that companies mandatorily ensure their workers assess to quality wholesome meals. In factories having 250 or more workers, a canteen or canteens/and mess shall be provided and maintained by the occupant and or managed by a committee with worker representation respectively. In Bangladesh, only 5 percent of garment factories maintain canteen facilities. Under the Authority Act of 1980, garment factory workers of Bangladesh were protected through Bangladesh Export Processing Zone (EPZ) which covers various aspects of health, safety and welfare, including sanitary and canteen facilities.

The population of Bangladesh mostly lives in remote area and face repeated natural disaster and loss in their wealth that push people to viscous cycle of poverty. Some of these migrant population come from very low-income classes work for garment factories, their nutritional status is often at risk (particularly vulnerable to anemia and other micronutrient deficiencies). According to the study report of Institute of Nutrition and Food Science (1998), the daily caloric intake ranges between 1,567 and 1,714 kcal and half of the study population was underweight, with BMI measurements below 16.

So companies need to identify the subject who is at risk of developing diseases and give special medical attention to them. At the same time give attention to those subjects (employees) who need BMI correction.

Research Methodology

This is a cross sectional, descriptive qualitative and quantitative study.

Population Sampling

Authorities of different firm think that the production will hamper if employee take part in a survey. Firm's permission to collect data was a challenge. A single firm was taken for the study. As a single firm was taken, where the working lunch is provided to all employees involved in production were taken as sample population. There were 763 workers involved in production and they are taken as the sample population.

Selected Variables

1. **Age:** Age of the employee was taken after looking at their birth certificate and educational certificate or National Identification card.
2. **Height of employee:** For measuring height "Tape Measure" was used to measure so that "O" is on the floor and the top of tape measurement is at 7 feet. Tape measure was used to attach the tape on the wall. Consent of each employee was taken before measuring height. The employees had to remove shoes, heavy clothing and barrettes. With flat hair style, the subject was to stand with back and feet against the wall on a flat surface, shoulders relaxed, legs straight, arms at side and bullock & shoulders touch the wall so the weight gets evenly distributed, look ahead & inhale deeply. They were without allowing heels to rise off floor, and the measuring tape run down centre of back. Record the headrest 25 inch.

Measuring the weight of employee: Weight measuring machine scale was put on a solid level floor and the scale was checked so as to be in balanced or calibrated at "O" lbs. Subject (employee) was instructed to clear all objects in pockets & remove any bulky clothing. Subject (employee) stood on the measuring machine and weight was recorded nearest 0.0516. The weight measuring scale returns to zero.

3. **BMI:** Body Mass Index (BMI) is a simple index for measuring weight-for-height, internationally apply for categorized (underweight, overweight and obesity in adults) nutritional status of an individual with very low cost. It is defined as the weight in kilograms divided by the square of the height in meters (kg/m2).

So the subjective (employee) BMI was calculated using the formula BMI = weight in kg/ height in meters2.

Method of Data Collection

A structured questionnaire was prepared for the purpose of data collection, based on which primary survey of employees was carried out. In-depth interviews of employers and top level managers were also conducted. Apart from these, employee records and employee's card was checked for authenticity of the data.

Statistical Tools Used

SPSS 17 Version and STATA was used to interpret the result. Raw data was checked, entered into computer, cleaned, compiled and analyzed.

Result and Discussion

In the factory there were about 742 workers working in different sections (cutting, sewing, finishing) which covers 100% workforce related to production. Figure 1 shows that 479 employees were female and 263 employee were male.

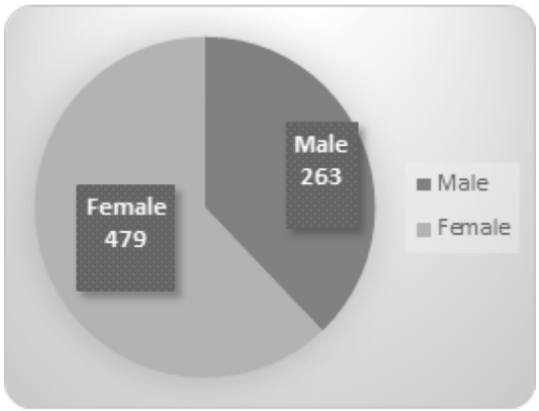


Figure 1: Proportion of male and female workers

BASE YEAR

Base year BMI Category: The first height for weight was taken in October 2011 and this was the base year. BMI of each employee was calculated and BMI was categorized as per WHO (Under weight, Standard, Over weight and Obese).

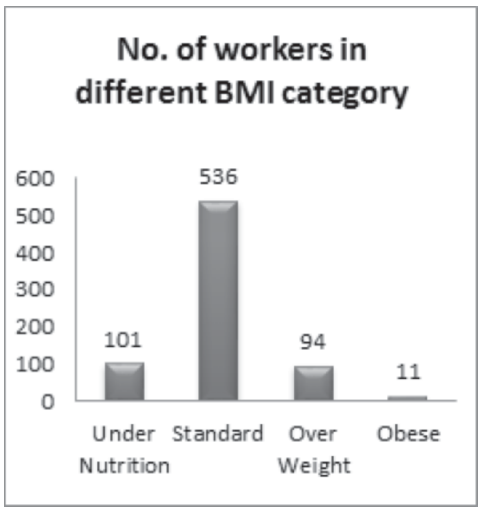


Figure 2

Figure 2 at base year showcases 536 employees having standard BMI out of the 742 total employees. 101 employees BMI category was Under Nutrition which is 14% of total employees. 94 (13%) and 11 (1%) employees and their BMI categorized Over weight and Obese respectively. Under Nutrition, Over weight and Obese were vulnerable for developing many kinds of diseases as they are at risk of developing many non-communicable diseases, so all of them were referred for the medical care attention.

BMI Category among Male employee at Base year:

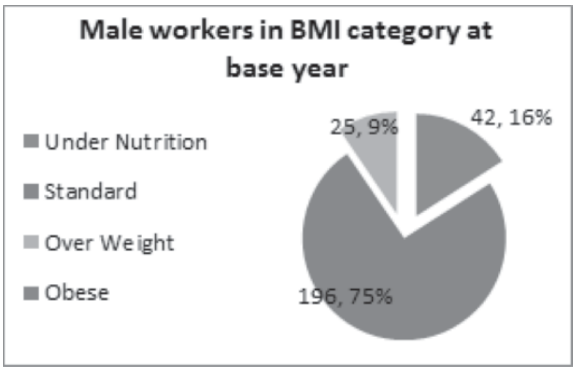


Figure 3

Base year data in Figure 3 shows that among male employees, there were 75% (196 employees) under BMI standard category. 16% shows that 42 males were Under Nutrition and 9% (25 employees) were Overweight BMI categories. There was no obese male employees at the base year.

BMI Category among Female employee at Base year:

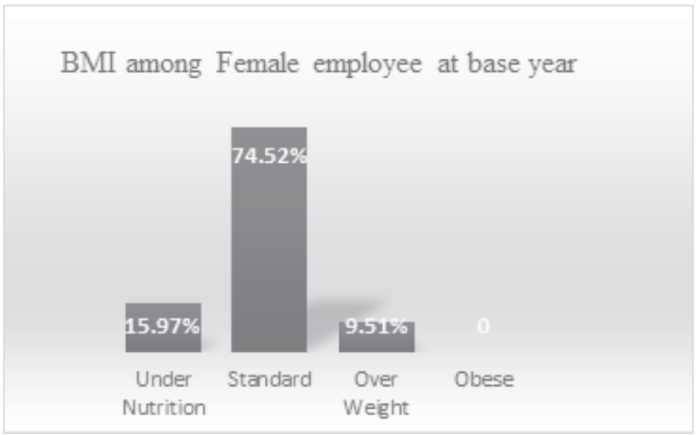


Figure 4

Figure 4 shows that among the female employees, there were 72.92 percent of female who were in BMI Standard category. There were also 12.34 percent Under Nutrition, 14.44 percent Over weight and 2.30 percent, Obese BMI category respectively. All employee having BMI category of Under nutrition, Over nutrition and Obese were the concern for the study.

End year BMI Category: After one year from the base year, the same employee was observed. For a year they got regular and adequate lunch being provided by the employer in the firm with a work break. The second height for weight was taken in October 2012 and this was the end year. BMI of each employee was calculated and BMI was categorized as per WHO (Underweight, Standard, Over weight and Obese).

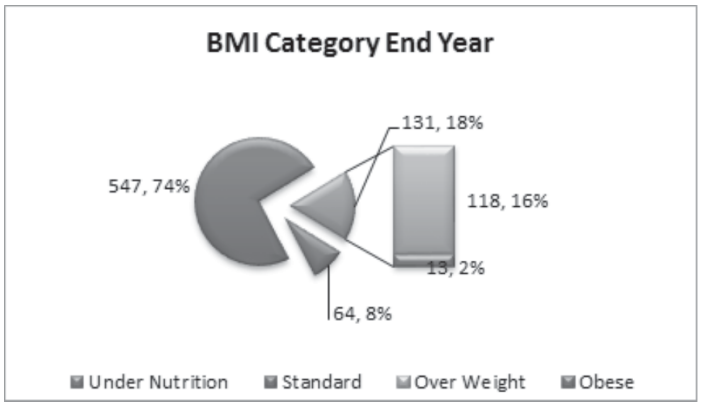


Figure 5

Figure 5 is showing the change in Nutritional improvement after one year. Under weight is reduced and number of Standard BMI employee increased. Proportionately the number of Overweight and Obese employee also increased.

BMI Category among Male employee at End year: End year data in Figure 6 shows that among male employees, there were 76% (200 employees) of total male employee in the firm having BMI standard category. 13% of that is 35 males were Under Nutrition and 11% (28 employee) having Overweight BMI categories respectively.

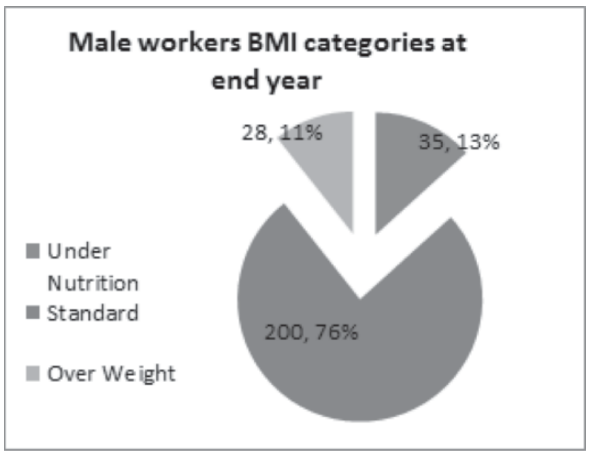


Figure 6

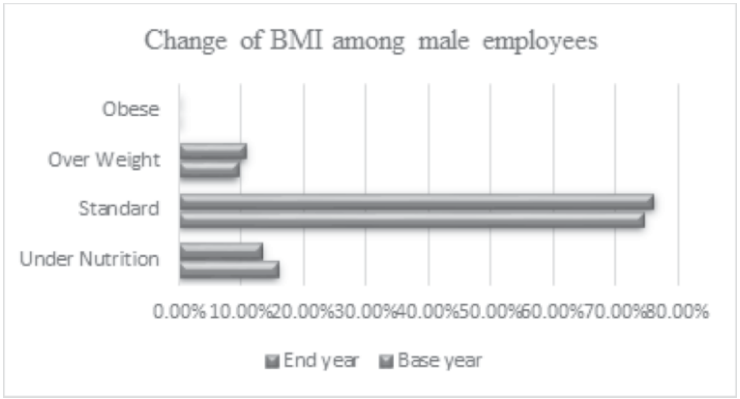


Figure 7

As can be seen from Figure 7, there was no obese male employee at the End year. But numbers of Overweight BMI category of male employee were increasing in number. Though the number of Underweight BMI category employee is declining but still Underweight BMI category employee was there. So both category. (Underweight and Overweight) need to be attended with special nutritional attention. Following diagram show the changes of BMI among male employees in the firm. The interesting thing is that there were no obese, over weight increase. Reduction of underweight mean correct of underweight which is significant.

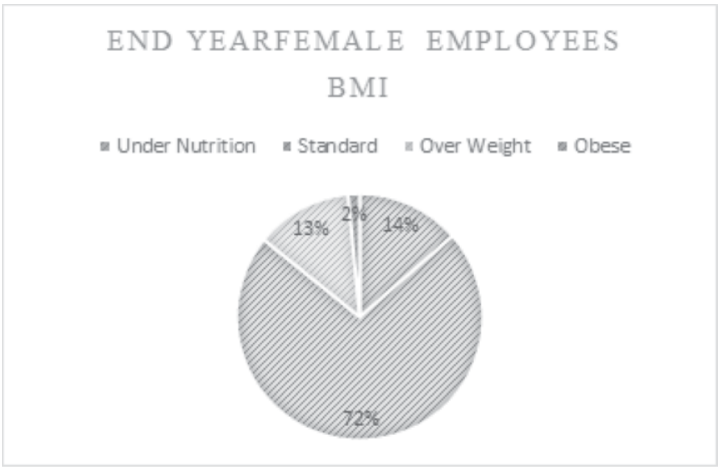


Figure 8 : BMI Category among Female employee at End year

Figure 8 shows that among the female employee BMI standard category are 72% female employee. Other three categories are also there. 14 percent of female employees are under nutrition, 13 percent are overweight and 2 percent female employees are Obese respectively.

Change of BMI among Female Employees

Figure 9 shows the changes in female employees in the firm in term of change in Body Mass Index. Under nutrition reduced and standard BMI employees number increased.

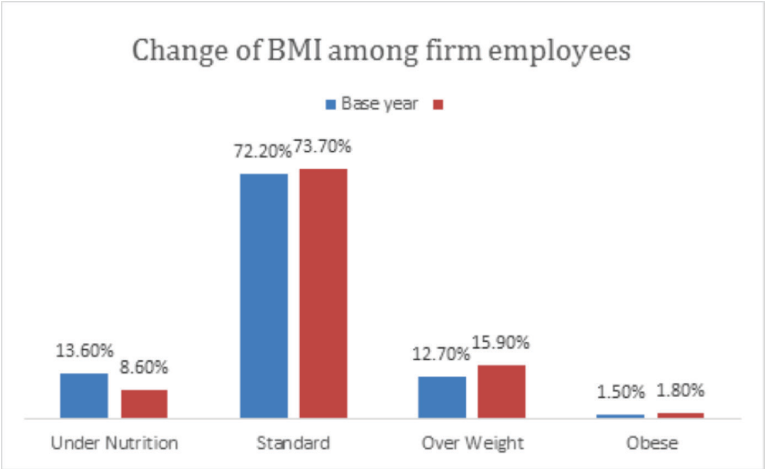


Figure 9

Comparison of BMI Categories among Base Year and End Year

Figure 10 shows the overall changes in BMI category among the employees. It shows that under nutrition is reduced, percentage of employee having standard Body Mass Index is increased. Though percentage of overweight and obese also increased but it doesn't have any statistical significance. But this insignificant number of employees are also important from public health point of view, as they need to get special medical attention like early detection of development of Non Communicable Disease (diabetes mellitus, hypertension, hyper lipidemia etc).

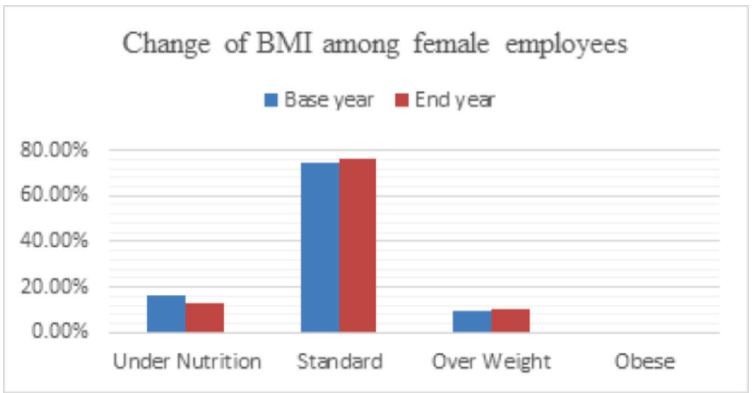


Figure 10

Table 1 shows the result of the comparison of percentage of workers in different categories of BMI between base year and end year. It is worth mentioning that BMI categories are made according to WHO definition. It can be seen that among the employees of the firm, 8.6 percent were under nutrition in the end year which used to be 13.5 percent in the base year. This implies a 4.9 percent decrease in the category of under nutrition in the end year as compared to base year and this decrease is statistically significant. Workers with BMI 18 to 25 are categorized as standard, an increase by 1.5 percent in the end year as compared to base year. Test in significance confirms

that the increase in standard BMI category is marginally significant. Similarly, the overweight also increases by 3.2 percent which is significant at 1 percent level of significance. Lastly, the category of obese is increased by 0.3 percent. However, the increase is not statistically significant.

As the firm has both male and female employees, the comparisons of different BMI categories are also made for male and female workers separately. For the male workers, the percentage of under nutrition workers has decreased by 2.66 percentage in the end year as compared to the base year which is significant at 10 percent level of significance.

Table 1 : Workers in different categories of BMI in base year and end year

	BMI Category	Base Year	End Year	Difference
Over all BMI Category	(Under Nutrition)	13.6%	8.6%	-4.9%***
	Standard	72.2%	73.7%	1.5%*
	Over Weight	12.7%	15.9%	3.2%***
	Obese	1.5%	1.8%	0.3%
BMI category among male employees	(Under Nutrition)	15.97%	13.31%	-2.66%*
	Standard	74.52%	76.05%	1.52%
	Over Weight	9.51%	10.65%	1.14%
	Obese	-	-	-
BMI Category among Female employees	(Under Nutrition)	12.34%	6.07%	-6.28%***
	Standard	70.92%	72.38%	1.46%
	Over Weight	14.44%	18.83%	4.39%***
	Obese	2.30%	2.72%	0.42%

*Note: '***' is significant at 1 % level of significance*
*'**' is significant at 5 % level of significance*
'' is significant at 1 0 % level of significance*

Interestingly, for female workers, the percentage of under nutrition decreases by 6.28 percentage point and this decrease is significant at 1 percentage level of significance. For the standard BMI category, the percentages increase by 1.52 and 1.46 point respectively for male and female employees. However, those increases are not statistically significant even at higher level significance. For the male workers, the percentage of over-weight has been increased by 1.14 percentage point which is not statistically significant. Again for the female workers, percentage of over-weight increased by 4.39 percentage point and this increase is statistically significant at 1 percent level of significance. For the remaining category of obese, there are only female workers and percentage of obese decreased by 0.42 percentage point. However, this increase is not statistically significant.

Limitations of the Study

Only one firm is selected for intervention because of resource constraint and problems in seeking firms' permission to collect the data. Authorities of different firms possess opinion that firm's production would be hampered if employees take part in survey. That is why a single firm was taken for the study and the result represents the nutritional status among the employees of the single firm. There was no control group of control firms to show comparison and difference between working food provided to workers (intervention group) and the working food not provided to workers (control group). This study also cannot explain the comparisons among

the firms providing working lunch. Other factors were not controlled that can affect BMI that is household food intake and family income which was not measured.

Scope for further Study

A comparative study can be done in future. "Food hygiene and occurence of food born disease onset pattern in the firm providing working lunch" which will be a future interest of study.

Relevance of the Study

The relevance of the current study is to conceptualize the nutritional status of the employees where employer provide lunch and lunch break regularly and manage responsibilities for the betterment of the employees.

Conclusion and Recommendation

People under nutrition, overweight and obese are prone to develop disease risks and develop non-communicable diseases and few communicable diseases also. Studies reveal overweight is one of risk factor for developing cardiovascular disease, high blood pressure, osteoarthritis, diabetes and cancer. Also underweight is responsible for developing anaemia, Anorexia nervosa, Psychological stress, Depression, stress, anxiety, Diarrhea/constipation, predisposition to infection. According to literature review, deficiency of food element reduces body activity and productivity. The current study reveals, that firm's employer intervention of providing lunch at work place adequately and regularly improve the nutritional status of the employees in general. The result found is satisfactory. However, it is also found that the this type of intervention could result in increase in the categories of the over-weight which at the same time raises the importance of a selection process for the workers to receive these type of interventions.

Lastly an important recommendation for the firm is to give special medical attention to under nutrition, overweight and obese so as to identify whether they have already developed any of the diseases or not. Employers can start new nutritional intervention with specific calorie intake. By this measure, nutritional status of the workers will improve subjectively and also the productivity as well.

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Author's Profile

Rafia Rahman works as Assistant Professor at Institute of Health Economics, University of Dhaka, Dhaka, Bangladesh. She has worked with national and international NGOs for the last nine years and also as an academician. She has worked on projects like, Training on "Norplant", conducted by Mohammadpur Fertility Services & Training Center, Training on "No-Scalpel Vasectomy (NSV)" conducted by AITEM, Dhaka, Completed "Continuous Technology Update (CTU)" workshop organized by NSDP. She has attended a training on "Integrated Management on Childhood Illness (IMCI)" at Dhaka Shishu Hospital, Attended a training on "Follow-up after IMCI Training"– at Ad din Hospital organized by NSDP. She completed "RTI/STI Management training" organized by NSDP, conducted by Radda MCH, "Quality Monitoring & Supervision of TB Program" workshop organized by URC, Supervision and performance evaluation of medical staff. She has maintained liaison between the hospital and providing training to relevant medical and Skilled Birth Attendants (SBA). She has also developed an on-going training program for nursing and clinical staff and provided Active Management of Third Stage of Labor (AMTSL) in four districts of Bangladesh.