



Nutritional Impact on the Productivity of Ready-Made Garment Workers

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Abstract

This study shows the gradual increment in apparel productivity after feeding some nutrients to selected sewing operators who work in a factory named Daarkak, in the urban area of Dhaka, Bangladesh. The specific objective was to identify the consequences of nutritious food in boosting workers' energy levels to aid in increased productivity. A better result compared to the previous data was found, where the productivity increased substantially after providing selected nutritious food- soya and milk. The overall result was impressive. Since most of the workers belong to the low-middle class or poor families, they do not afford nutritious food in daily life for the lack of knowledge that nutritious food can be availed at cheaper prices. Soya and milk contain adequate proteins and they are available at relatively cheaper costs. These foods enabled them mentally and physically to give higher efficiency during their regular work. This paper explores the possibility of improved productivity after providing workers with nutritious food. When productivity increases, profit also increases.

Keywords: Nutrition, Productivity, Ready-Made Garment, Soya, Milk, etc.

Introduction

Malnutrition, Chronic diseases, lost productivity, and other social and economic issues can all be mitigated with a healthy lifestyle (Aikaterini Grimani, 2019). Intake of food to the heart's content keeps the body and mind cheerful and stimulates for more work. Poverty accompanies malnutrition due to "Vicious circle of poverty". It means when someone doesn't have enough money, he consumes less food. As a result, the individual becomes weak and it affects his health and overall productivity. When he is not productive enough, he gets low wages (Christopher BLISS, 1978). This circle goes on again. That's what happens to the garment workers of Bangladesh also. Their wages are not good enough to maintain an extended family that most of the workers possess. This RMG sector directly employs 4.5 million people, 80 percent of whom are women, and indirectly supports up to 40 million Bangladeshis about 25 percent of the population (International Labor Organization, 2022). They are to support their families, pay rent, send money to their hometown, cover medical expenses, and save money from these minimum earnings. As a result, their budget for food reduces, and they are less aware of the importance of eating a healthy diet. They eat rice, wheat, cereal, fish, meat, vegetables, pulses, and other foods on a daily basis. However, it does not meet their daily dietary requirements. Their meat, fish, and fruit consumption is particularly low (Chowdhury, 2019). The goal of this research was to include something in their daily food intake during a period, when they are normally in a break for meals, and evaluate the data to see if any changes occur in their productivity. So, we supplemented their diet with textured soya protein and milk. The nutritional content of textured soya and milk inspired us to select them.

Textured soya protein is prepared from defatted soya flour that has had the soluble carbohydrate removed and then textured by spinning or pressing. It is then dehydrated, resulting in a spongy texture. It can be served in chunks or granules. Soya with a textured surface can be flavored to taste like meat, and it comes in a variety of shapes and sizes and can be used as meat alternative (Sadler, 2004).

Table 1. The amount of fat, protein, energy and fiber in textured soya

Composition	Textured Soya
Fat (g/100g)	1.5
Protein (g/100g)	52
Energy (Kcal/100g)	340
Fiber (g/100g)	3.5

Milk is also a nutritive food containing nine vital nutrients including calcium, potassium, and vitamin D, among others. It is thought to be the ideal food. It is a mammal's initial food providing all of the necessary energy and nutrients for appropriate growth and development as well as being essential for bone mass creation. The combination of soya and milk can provide the vitamin and mineral requirements of humans.

Table 2. The amount of fat, lactose, protein, energy, calcium, phosphorus, vitamin A, and vitamin D in milk (Pereira, 2014)

Composition	Cow Milk
Fat %	3.6
Lactose %	4.7
Protein %	3.2
Energy (Kcal/100ml)	69
Calcium (mg/100g)	122
Phosphorus (mg/100g)	119
Vitamin A (IU)	126
Vitamin D (IU)	2

Overview

There are 5000 garment factories in Bangladesh and around 4.5 million people rely on this industry for their livelihood. About 83 percent of overall export earnings are brought through this industry (BGMEA, 2020). It is therefore essential for Bangladesh to work in this area. Most of those who are employed in this industry are not much educated. The majority of them did not even finish secondary school. As a result, they are unaware of the nutrient intake or the food they consume. Rice is their primary source of starch, whereas wheat is consumed by 16% of the workers. Sixty percent of the workers eat potatoes. Fish is the most popular protein source, followed by eggs and chicken. Vegetables are an important part of their daily diet. Fruit is also consumed on a regular basis by 41% of workers (Haque, 2020).

There is a strong link between nutrition and productivity. The more energy a person has, the greater output he or she can produce. However, food ignorance and indifference are limiting the potential yield. The data analysis of nutrition and productivity is the focus of our research. By including an extra meal (Milk and textured soya protein) in the daily routine of the workers, we worked for 21 days and analyzed the data collected before, during, and after the eating period. A change in production occurred, demonstrating the link between nutrition and productivity. There were some constraints, such as changing weather, which limited the data. However, thanks to the owners of "Daarkak" and the workers' collaboration for which the project went off without a hitch.

Objectives

The aims of the project are ---

- ❖ To find out the nutritional impact on the productivity of RMG workers.
- ❖ To know about the daily intake of food by the workers.
- ❖ To get an idea about workers' health.
- ❖ To inspire the manufacturer to work on workers' nutrition.

Limitations

- ❖ Seasonal change while conducting the project.
- ❖ Unawareness of these kinds of food values made them think negatively.
- ❖ Wasting some work hours during the consumption of foods.

Literature Review

Various authors have researched various areas of Bangladesh's garment industry. Evaluating some of the existing works that have attempted to address the RMG sector and identify the relationship between nutritional intake and health, productivity, physical activity, and probability is the focus of their article. Bruno Lemke said that the excessive global temperature, the worker's productivity depends on it (Tord, 2009). By applying lean and increasing occupational health and safety (OHS) the productivity of garments will increase by reducing the cost and lead time (Hamja, 2019).

If the workers' wages increase, they can intake nutritious food (Uddin, 2015). The productivity of that factory will increase then. But here he didn't mention what kind of nutritional food they could intake at a low cost (Uddin, 2015). J Public Health 2021 from this Journal said that they gave counseling about health and nutrition and also provided an amount of Kcal of energy, carbohydrate, protein, fat, and fiber. This reduces their BMI (Rachmah, 2021). Productivity can be enhanced by changing workers' attitudes toward their work either (Islam & Adnan, 2016).

Guidelines for healthy eating describe maintaining a healthy weight by balancing the number of calories that one person eats with the activity he/she does every day. And also describe that healthy eating provides the sustained energy that one person needs to be physically active (Delaware.gov, 2022). So, workers should take the proper amount of nutritional food that he/she exhausts from her/his body. By doing so, if he/she gets a good amount of energy in his/her body, then productivity will increase. And ultimately that can be possible to reduce the production lead time and also the cost.

As Bangladesh belongs to a developing country, the poverty level of garment workers is too high. So, they need nutritive food at a cheaper rate. Soya chunks and milk can be the best choices to fulfill their nutritional needs. And if the factory provides this kind of food to them, that will be the best for

them. In our study, we provide a practical review and data so that readers can have a clear understanding of the effect of providing nutritious food on RMG workers' productivity. Ultimately, that can help to reduce the production lead time.

Methodology

This analytical research was conducted for three weeks in a garment factory. Daarkak, a Bangladeshi garment manufacturing factory was chosen for the research. In a single sewing line, there were 12 machines that were required to prepare a complete garment. During the project, they produced t-shirts. Primary data were collected for a period of 21 days. We fed the 12 workers with nutritious food (Milk and soya chunks). Food was provided and data were collected in three steps - before, during, and after providing the food. We were able to determine the effect of food on their health and production. Data were taken on an hourly basis. Apparel-related journals, recent websites, relevant books, and articles were taken as a source of secondary data for this research.

Result and Discussion

Table 3. Productivity before providing the selected food

Day	Daily Production (Pcs)	Hourly Production (Pcs)
1	650	81
2	699	87
3	688	86
4	597	75
5	554	69
6	572	72
7	658	82

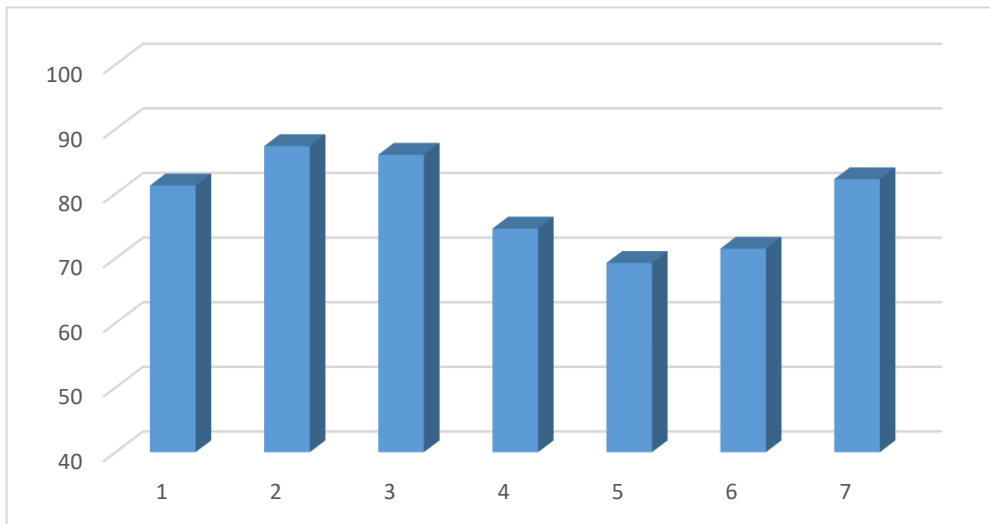


Figure 1. Productivity before providing the selected food

Table three (3) shows the production for an entire week before providing the workers with the selected food. On the 1st day hourly production was 81 pieces, which raised to 87 pieces on the 2nd day. From the third day to the fifth day, the value gradually reduces to 86, 75 & 69 pieces respectively. On the 6th and 7th day, it again started increasing and reaches 72 and 82 pieces.

Table 4. Productivity during providing the selected food

Day	Daily Production (Pcs)	Hourly Production (Pcs)
1	683	85
2	680	85
3	587	73
4	606	76
5	696	87
6	593	74
7	637	80

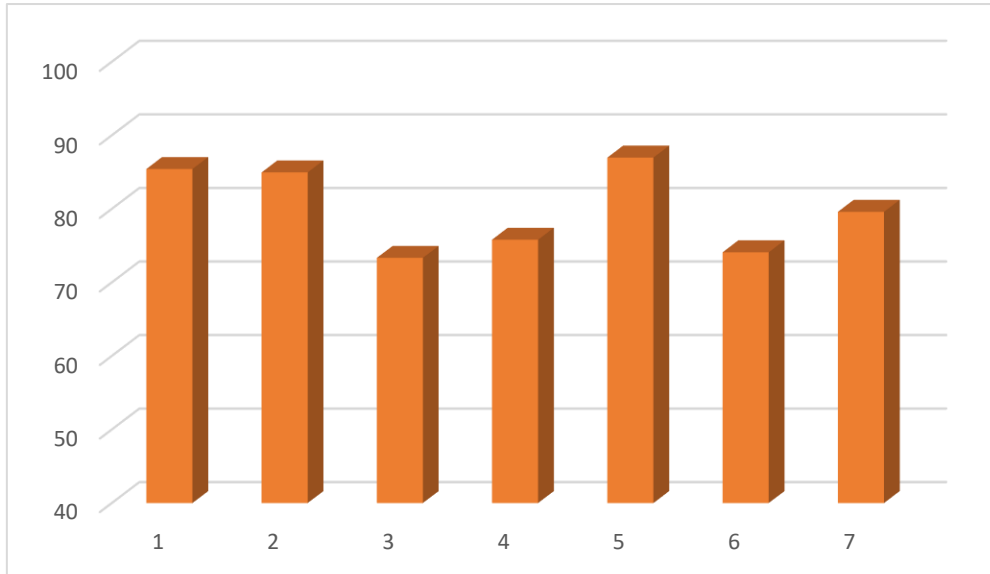


Figure 2. Productivity during providing with the selected food

Table four (4) shows the production for an entire week during providing the workers with the selected food. On the 1st day hourly production was 85 pieces, which remained the same on the 2nd day. On the third and fourth days, the production gradually reduces to 73 and 76 pieces. On the fifth day, the production increased to 87 pieces. On the 6th and 7th day, it again started falling and reached 74 and 80 pieces.

Table 5. Productivity after providing the selected food

Day	Production/Day (Pcs)	Hourly Production (Pcs)
1	625	78
2	607	76
3	651	81
4	698	87
5	611	76
6	706	88
7	690	86

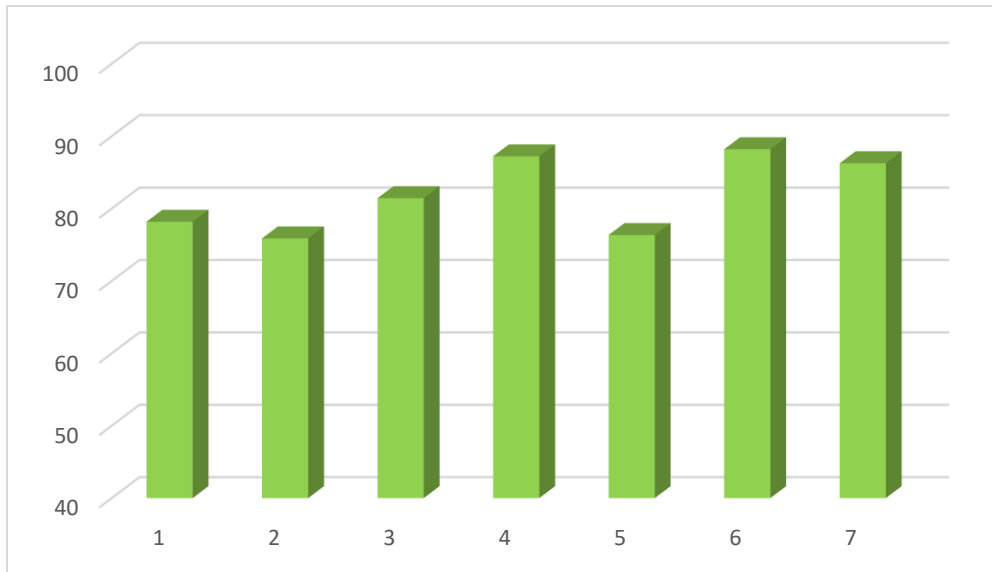


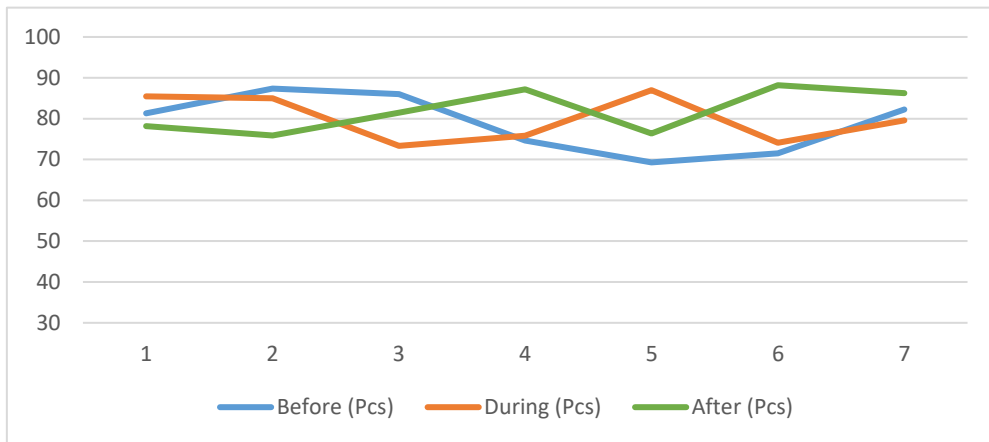
Figure 3. Productivity after providing the selected food

Table four (5) shows the production for an entire week after providing the workers with the selected food. On the 1st day, hourly production was 78 pieces, which was a bit lower hitting 76 pieces on the 2nd day. On the third and the fourth day, the value gradually increases to 81 and 87 pieces. The production falls to 76 pieces on the next day. On the 6th and 7th day, it again started increasing and reaches 88 and 86 pieces respectively.

Table 6. Total productivity comparison (Before, during and after providing with food)

Day	Before (Pcs)	During (Pcs)	After (Pcs)
1	81	85	78
2	87	85	76
3	86	73	81
4	75	76	87
5	69	87	76
6	72	74	88
7	82	80	86
Average	79	80	82

Figure 4. Total productivity comparison (Before, during and after providing with food)



The figure 4 shows that before providing the workers with the selected food, production increased on the second and third day. This is because they became cautious about increasing production assuming that this supervision may affect their performance evaluation. When they understood, this is the only research that has no value on their performance appraisal, they became slack again to bring back to their regular workflow.

When the workers were given the food during the second week, they became motivated to give extra effort. Hence, the production was raised in the first two days. Then the production falls again. Some of the workers complain they do not get much taste of the food. Their gossiping increased a bit as a result of production hampers for the subsequent days. Production started rising for the last two days of this interim period.

In the last week, the workers were not given any nutritious food. Rather, they were observed for any changes in productivity for the previous week's efforts. A slight and quite gradual increment in productivity was observed. The lowest productivity was 76 pcs per hour and the highest was 87 pcs per hour.

In a nutshell, the average production before, during, and after providing the selected food were 79, 80 and 82 pcs/hr. So, overall three more pieces of garments per hour were produced. This might seem mere three pieces, but management had to spend no additional money to get these extra pieces.

Table 7. The Relationship between savings and the food budget of workers

Worker	Savings (Taka)	Food Budget (Taka)	Savings to Food Budget Ratio
1	4500	9000	0.50
2	2000	3500	0.57
3	4500	6500	0.69
4	2000	5500	0.36
5	3000	5500	0.55
6	3500	8000	0.44
7	3200	18000	0.18
8	3000	17500	0.17
9	2500	20000	0.13
10	3000	10000	0.30
11	4000	6000	0.67
12	3100	4000	0.78

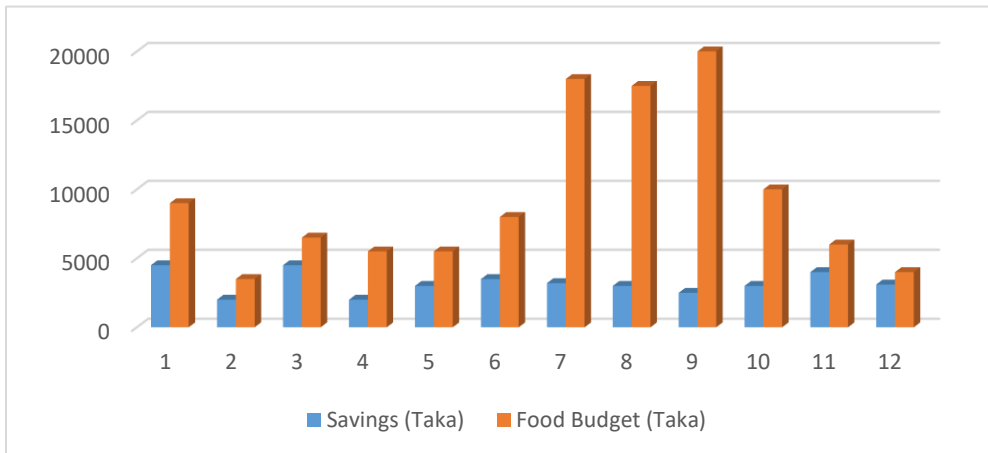


Figure 5. Savings and food budget of workers

From above data, no strong relationship is observed between the savings amount and the food budget of the workers. Because the lowest value is 0.13 and the highest one is 0.78.

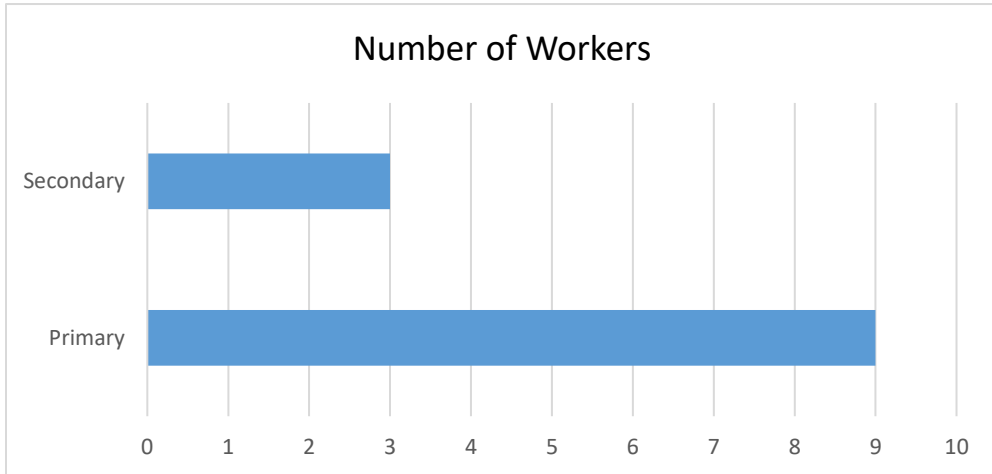


Figure 6. Educational background of workers

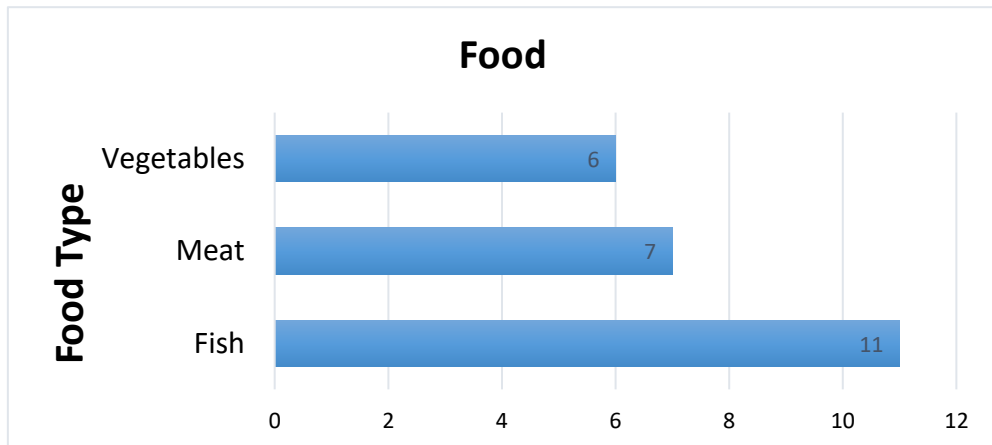


Figure 7. Food loved by workers.

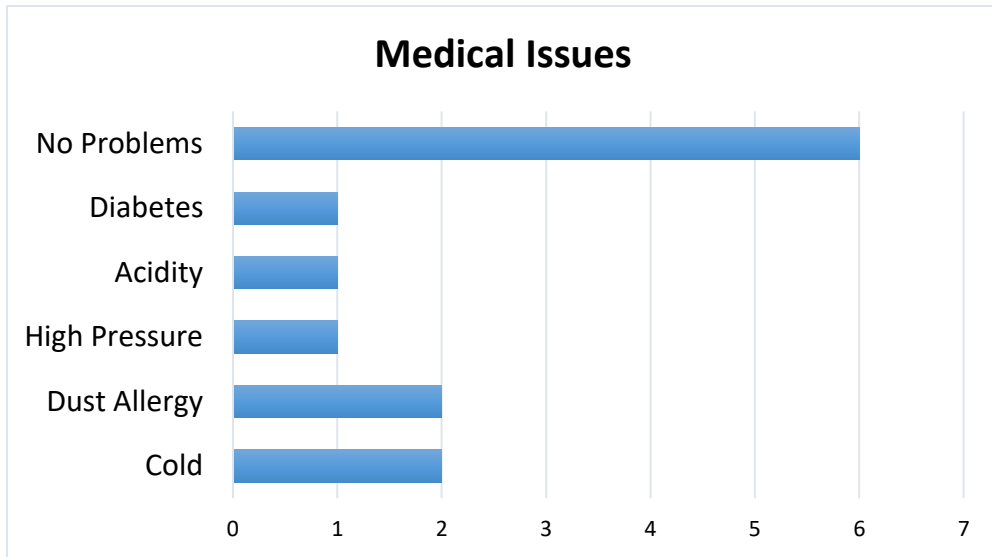


Figure 8. Medical issues of workers

In terms of education, most of the workers completed primary level while a few have completed secondary school. They prefer fish to meat and meat to vegetables. In the case of medical conditions, a considerable number ensured they have no medical issues. Some have colds and dust allergies. Food budgets and savings are intertwined; those who save more money, spend less on food. Some workers' food budgets exceed 15 thousand per month, because they are not the sole earner in their families. Most workers' food budget range is from 3500 to 9000. Because they are the only earning member of her/his family.

Conclusion

Bangladesh is a developing country that holds the 2nd position in global RMG export. This clothing industry is gradually propelling the country to a higher economic position in the global marketplace. In a country like Bangladesh, where the majority of employees have not completed their higher secondary level, expecting that they would be food conscious is not realistic. This is a matter of concern for the industry. Enabling them to take a healthy diet can boost their productivity considerably as suggested by the study. This can significantly contribute to increasing productivity by utilizing the designated working period.

Future Scope

This project focuses on the impact of nutritious food on the productivity of RMG workers by providing them with milk and textured soya protein. This research work lasted for 21 days and involved 12 workers

working in a production line with t-shirts. Due to time constraints, budgetary limitations, seasonal issues, and workers' motivational problems, this had to finish in less than a month.

If this research is allowed to continue for a few months or more period and adequate funds are available, the research can bring about more precise results. Alongside, regular counseling and motivating the workers to eat nutritious food can experience the potential to achieve a significantly improved outcome.

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