

Worker's Health and Productivity

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Turnover and absenteeism are common in the Ready-Made Garments (RMG) factories of Bangladesh, causing reduced productivity. Illness is the main cause. This is a study of projects in this industry which raise women workers' health awareness. The objective of this study was to find out whether such projects: (1) increase the productivity of garment workers and (2) have a positive return on investment. In fact, productivity increased through reduced absenteeism, improved quality of work, reduced "throwbacks" to re-sew garments, reduced requests for early lunch out or leave, and ultimately, reduced turnover. With minimal initial investment, such projects have a significant Return on Investment (ROI).

INTRODUCTION

"Health is wealth" is an old saying, and "a healthy worker is a productive worker". As a labor-intensive industry, Ready-made Garments ("RMG") runs on low labor costs and needs high labor productivity. The RMG in Bangladesh mainly produces basic garments of low price and the strategy is to produce high volume. For high-end fashion items, the strategy is different and this is out of the scope of this paper. The only way to stay competitive in RMG is high production, high quality, and on-time delivery.

This paper only addresses the relation of worker health with labor productivity. The objective of this study was to find out whether increasing workers' health awareness through programs like Health-Enabled Returns ("HER"), studied for this article, also increases the productivity of garment workers. If so, we then asked what the Return on Investment ("ROI") on HER is. 80% of the workers being female, the target group was women workers of the factory.

To answer the question, an impact assessment of one of the HER projects was done, using questionnaires and key informant interviews. Quantitative data were analyzed through tabulation and multivariate analyses were done by SPSS 20.

The impact assessment showed that, after implementing the HER intervention, absenteeism was reduced, the quality of work improved, throwbacks for re-sewing were reduced, requests for early lunch out or leave were reduced, and ultimately the workers' turnover was reduced.

The authors tried to quantify these benefits and measure ROI. However, it seemed, from the management interviews, that the non-quantifiable benefits were equally important. Also, a causation

percentage could not be attributed to the HER intervention, since some other health variables were not included in the model.

However, it is clear that the impact of the HER intervention crossed the boundary of the factory. The benefits reached the neighborhood, and society in general, as well.

METHODOLOGY

This study was a case study of a factory which implemented an HER project. The study followed a quantitative-qualitative sequential action study approach.

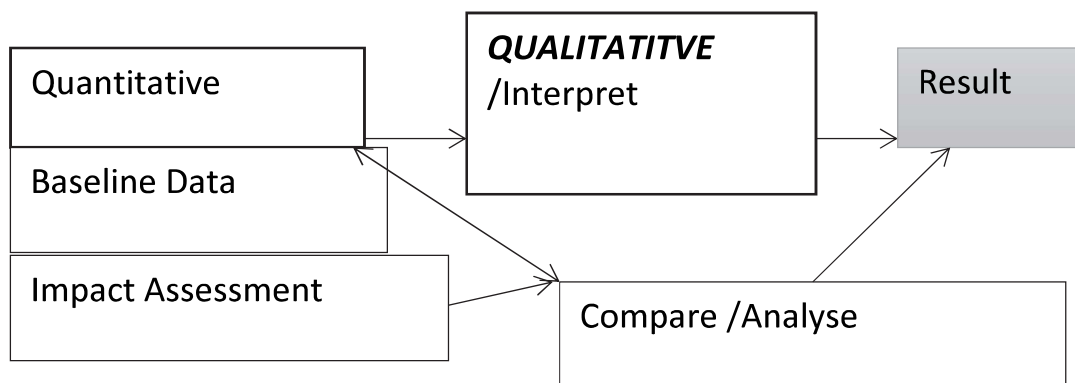
The factory studied has 2,812 workers, 70% of which are females. That means 1,968 were women workers. 7% of the female workers were selected to be trained as *Sastho Shakhi* (SS) (“Peer Educators”). 140 SSs received two weeks training, each day for 3 hours, covering 12 topics and then these SSs gradually trained another 1,500 workers.

The target sample size was 460 out of the 1,968 population, using a 95% confidence level with 4 confidence intervals. However, 540 persons were surveyed and 40 less-reliable responses were discarded. As a result, 500 responses were used as the sample.

Both the 140 SS and the 500 workers were surveyed before and after the project and the differences in awareness of health issues were analyzed. The significant factors that led to improvements were statistically analyzed to determine correlation with absenteeism and migration. Then further analysis was done to determine the ultimate effect of these factors on productivity.

Figure 1 illustrates the strategy of this research.

**FIGURE 1
RESEARCH STRATEGY**



Main Research Questions: If a health education awareness project like HER is implemented in a factory can the program increase productivity? If so, then what is the likely ROI?

Additional Questions:

What are the health factors which contribute to increased productivity?

Why on health issues, do workers migrate from one factory to another factory?

LITERATURE REVIEW

Baumol, Blackman, and Wolff (1989:227) explain: “It is obvious that total productivity (better known as multifactor productivity) is the best input efficiency index. It would thus seem that labor productivity is a

measurement that sheds light on the results of the productive process for its participants.” So we focus on labor productivity in this labor-intensive industry.

Renowned psychologist A.H. Maslow (1943) theorized that a human tries to fulfill his needs in a fixed order of preference. First, he tries to fulfill his physiological needs for food, clothing, shelter, etc. Then, those filled, he tries to fulfill his need for security. Those filled, he tries to fulfill his social needs: for love from someone and for acceptance by social groups. Those filled, he focuses on his need for esteem, for respect in his social groups and elsewhere in a society. That filled, he focuses on his need for self-actualisation, to be all that he can be, to use all his talents.

So, we can see why the workers in the garment factories might choose just to be absent if they are not well. Health and money (with the food, clothing, etc that a poor person can buy with money) are both “first-order” needs but health is more basic. A sick person is not motivated to make money: he is motivated to feel better. When he feels better, then he will try to make money and eat better, dress better, etc.

Yet classical economics considered that labor productivity came automatically from the level of production, technology, training, etc., without really considering the condition of the individual workers. For example, Verdoorn’s Law, in McCombie, Pugno and Soro (2002) expressed labor productivity as a linear function of the level of total production. In recent times, in empirical studies of the garment industry in developing countries, there is ample evidence:

1. That chronic illness is a factor in employee absenteeism
2. That widespread and chronic absenteeism is a factor in low labor productivity in the garment industry.
3. That absenteeism can be reduced, and productivity thus increased, by employee Wellness programmes at work.

Tammita and others(June 1999) did a study of absence in the Sri Lanka garment industry in 1999, and found that illness was one of the 11 causes of such absence. They also found that absenteeism was a factor in low productivity in the industry.

Nanjundeswaraswami (2016) did a similar study on the Indian garment industry. He found that curbing absenteeism improves productivity.

Edries, Jelsma and Maart (2013), studying “employee wellness programmes” in Capetown (South Africa) clothing manufacturing companies, featuring a cognitive behaviour therapy programme to improved health-related behaviors, plus daily aerobic exercise, caused improvement in the employees’ health quality of life.

A THEORY OF RMG PRODUCTIVITY

$$\text{Total working minutes in a day} \times \text{No. of operators} \times \text{line efficiency} = \%$$

(Sarker, 2016)

$$\text{Daily Line Target} = \text{Garment SAM}$$

In this study:

Standard Allocated Minutes (“SAM”) = 25 minutes = (Standard Minute Value (“SMV”) + allowances)

Number of Workers = 40 to 60

Minutes Worked = 400 - 800

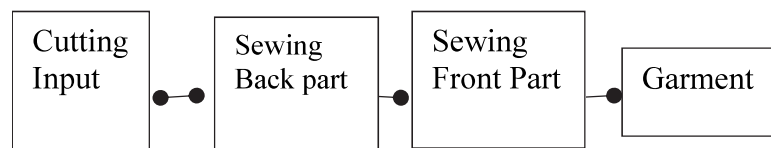
Therefore efficiency = .40 - .60

The above model shows that any changes in the number of workers, working hours and efficiency affects productivity. Also, if we simplify process and reduce SAM, that will affect productivity, too.

Some say that, if workers' numbers are less due to absenteeism, increasing hours worked should eliminate any loss of productivity. However, the answer is not that simple. To understand this, the manufacturing process of a garment has to be understood.

Figure 2 clearly describes that making a garment is a chain: any missing link in the chain breaks the whole process. For example: if fabric cutting input is 200, and back part output is 160 but front part output is 78, at last we will get only 78 or less fully-assembled garments. Although back part produced is 160, the rest will remain as Work in Progress (WIP) as they have no sewing on the front. This is how the productivity of every section, and every individual, affects the overall productivity in garment making. Therefore, the presence of all required workers is vital to achieve production targets at the end of the day.

FIGURE 2
THE PROCESS OF MAKING A READY-MADE GARMENT



Absenteeism cannot be covered by casual or temporary workers to replace the absent ones. Most factories have a pool of only 3% extra workers to meet legally-required grants of casual leave, maternity leave, earned leave, etc. of the permanent staff. Having more than a 3% pool is not cost-effective. The “fill-in” operator’s efficiency will not be the same as that of an experienced worker, who is there all the time: workers are more than infinitely interchangeable “pairs of hands”. An operator needs time, training and experience to become familiar with the style and product of a given factory.

With many inexperienced replacement workers, the line will not be balanced, so output will not be consistent and continuous. Finally, although every factory has some excess helpers and trainee operators, it is illegal to make them work in the lines, without extra wages. Permanent workers will become demoralized and tend to migrate if they know that they will be replaced by temporary workers at the same, let alone better, wages, when they are absent.

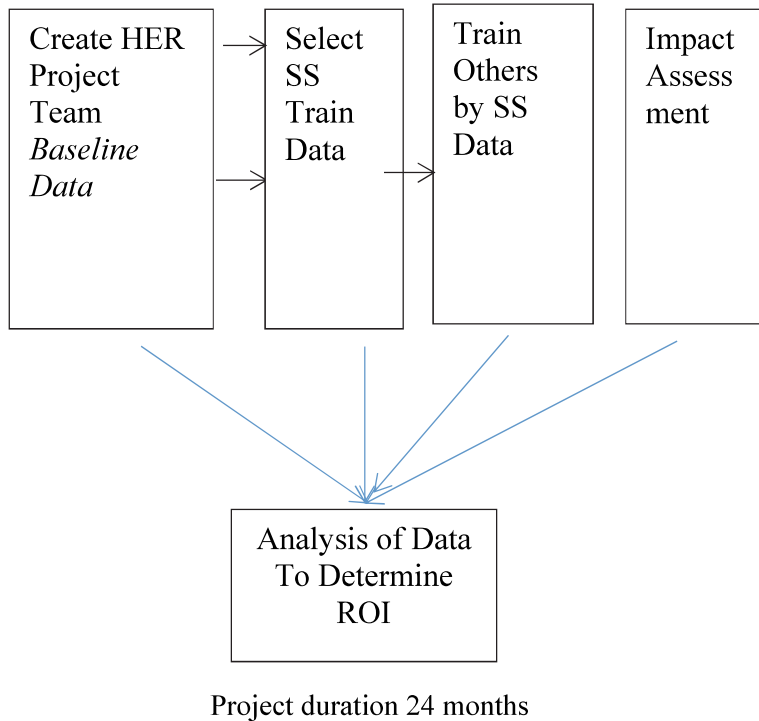
STRATEGY OF THE HER PROJECT

The HER project identified the following priority health issues, after carrying out a health needs assessment in garment factories:

- anemia;
- lack of awareness and understanding of Family Planning;
- lack of awareness of general health and disease prevention;
- shy to talk on HIV/STIs, and have no clear idea on STDs;
- menstrual hygiene; and
- reproductive health.

Figure 3 shows a diagram of the process of HER intervention. The project then created a project team involving workers, middle and top management, collected baseline data/before project, selected SS, trained them on the above topics for 2 weeks, 3 hour each day; who (SS) in turn trained in production lines. After implementation of the project, data were collected and an impact analysis was done.

**FIGURE 3
PROTOCOL FOR A HER INTERVENTION**



RESULTS

Profile of Workers

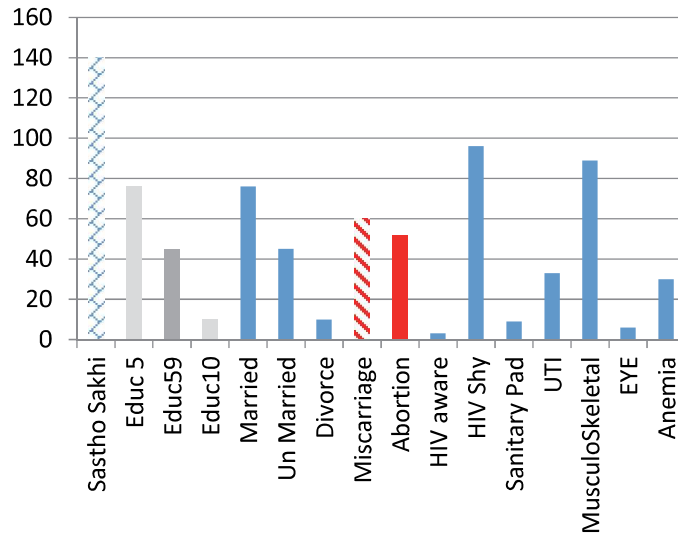
- female workers average age is 24.9 years;
- 54 % in the age group (18-25 years);
- 28 % of workers have not completed primary level education;
- 69 % are currently married;
- 66 % migrated to current residence 5 years ago or less.

Most of the participating workers have 5 years of schooling, followed by up to 9 years and a few have 10 years or 10 + of years of schooling.

Improvements in Workers' Health

Before the HER project, the complaint pattern collected from the doctor's room shows that weakness, headache, vertigo, and musculoskeletal complains were the most common complaints. After the project, there was a little improvement on vertigo and musculoskeletal issues but a marked improvement on weakness and UTI. Figures 4 and 5 show a "before" and "after" HER intervention picture of such data.

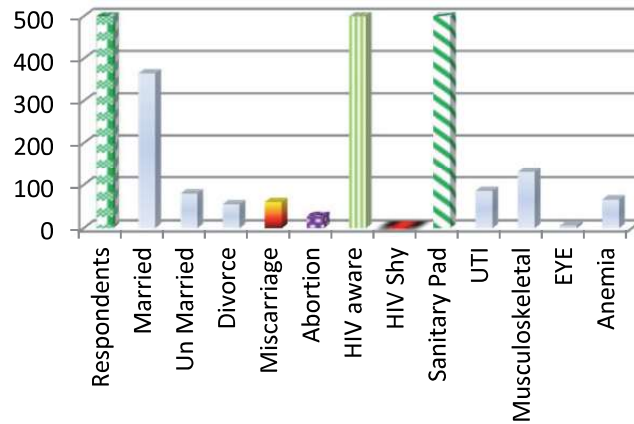
**FIGURE 4
PERSONAL AND HEALTH DATA OF WORKERS
(BEFORE INTERVENTION)**



The data in Figure 5 show significant improvement on STI, STD, family planning and menstrual hygiene, and HIV awareness. The HIV shyness dropped to -0-. In this data, the education variable is discarded, as the training materials were in Bengali, with easy-to-understand pictures that can be easily grasped by even illiterate people. The miscarriage and abortion rate also dropped by 25%, and 100% workers started using sanitary napkins during menstrual cycles, in place of unhygienic “clothes patches”. The employer also supplied sanitary napkins to the workers at a subsidized rate. One napkin cost 35 BDT and it was supplied to the workers at 17 BDT, i.e. at 50% reduced cost. This also played a role in inspiring the workers to use hygienic sanitary napkins.

Multivariate analysis shows that, before intervention, abortion or miscarriage was least in the group having 10 or 10+ years of schooling: it is likely that, being educated, they have a more-effective voice in the family on family planning matters. However, after the awareness program, regardless of education level, all participants were equally equipped with general knowledge on daily health issues: the abortion and miscarriage rates dropped by 10%. Moreover, none of them were shy anymore to talk on family planning, STDs or HIV issues. They became vocal on their health problems and the visits to the doctor’s rooms increased by 20%. Before the awareness program, when they felt sick, they just remained absent or took off after lunch. The complaints of weakness were reduced drastically, by more than 50%, because they were aware of hydrating themselves, took more water, and used the toilet instead of holding their urine for long periods: as a result the UTI also decreased by 40%, Awareness on safe sex, and using condoms, also prevented the UTI, and STIs. If someone was having any STD problem, she did not hesitate to ask for medical help anymore

**FIGURE 5
PERSONAL AND HEALTH DATA OF WORKERS
(AFTER INTERVENTION)**



Overall Results of HER

Table 1 shows that almost forty percent (39.9%) of the sample group had been absent from work for at least one day in the month before the survey. The bivariate analyses provide evidence that, in post-intervention factories where the HER project had been implemented, there was significantly less absenteeism than in the other 2 types of factories. The linear regression is not applicable due to low explanatory power of the fitted model. However, after recoding the absenteeism as a dummy variable (which takes values 1 for at least one day absent and 0 for no absent days) and fitting it into a logistic regression, the crude odds ratio tells that respondents from intervention factories are four times more likely and control factories are twice as likely to have at least one day of absence compared to the post-intervention factories' workers. While controlling for workers' age, position, educational exposure, wealth, and marital status, these odds lessen but still remain significant. In conclusion, it can be said that, in the factories where the HER project was completed and sustained for two years, absenteeism was reduced significantly.

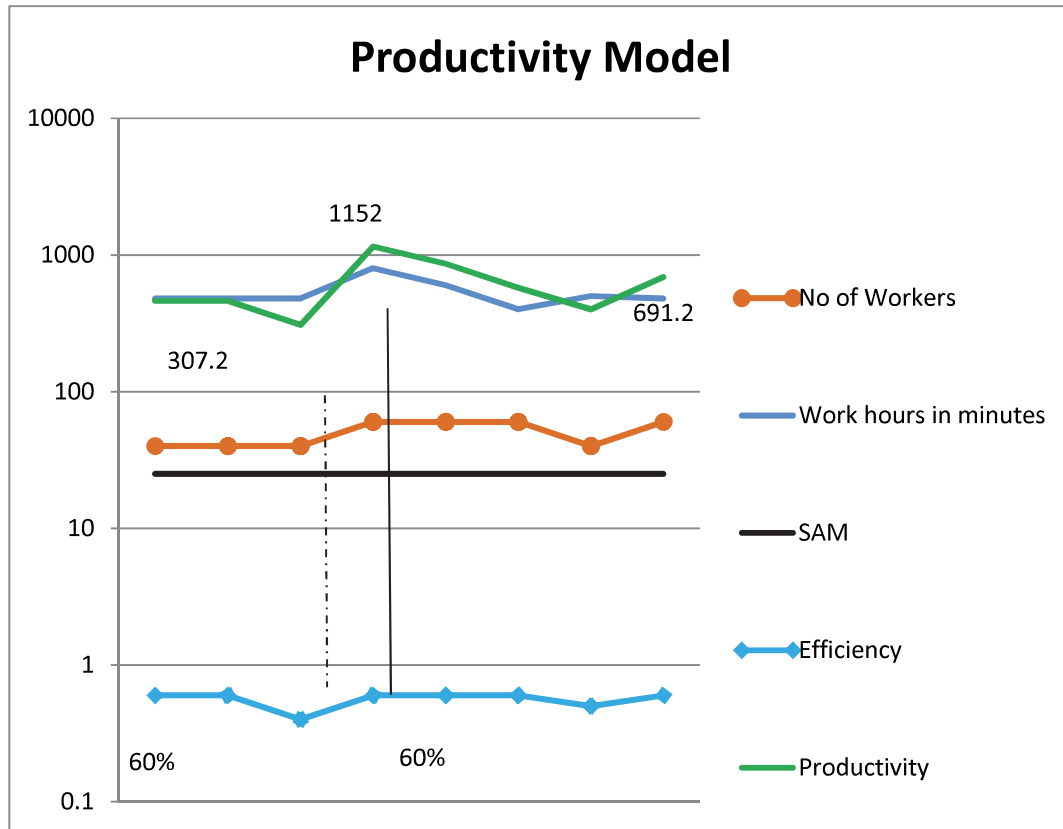
**TABLE 1
ABSENCES BEFORE AND AFTER HER INTERVENTION**

Post-intervention	Count	389
	% within Treatment	100.0%
	% absent	19.9%
Non-Intervention	Count	779
	% within Treatment status of the respondents	100.0%
	% absent	39.9%

Increased Productivity

Figure 6 shows that absenteeism had, before intervention, restricted production to 600,000. Reducing absences to 5% increased production to 650,000 and 3% absenteeism increased production to 1,000,000.

**FIGURE 2
PRODUCTIVITY MODEL**



The intangibles are what made the difference in absenteeism and productivity:

- reduced worker exhaustion, and increased happiness;
- workers were more knowledgeable and communicative regarding common health problems;
- utilization of personal hygiene products – sanitary napkins – and in-house health facilities;
- workers were conscious about common diseases and medical facilities available for them;
- improved quality of life inside the factory;
- workers shared their learning in their communities, empowering them and their communities;
- reduction in use of traditional *jhar-fook* (“quack”) doctors from 60% to almost zero;
- reduced rate of migration/turnover of workers;
- confidence building between management and workers through improved communication

ROI

Cost-saving/revenue earning due to the HER project activities is shown in Table 2. From that Table, we can see that the company saved 70,000BDT from maintenance funds alone. In production, taking into account the increase of 300,000 garments for sale means US\$300,000 in improved revenue (minimum). The cost of re-work fell to 1%, which is a very good score as per ISO 9001. Ikram and Su (2015). All of this progress is achieved with only 40,000BDT in investment, mostly for subsidizing sanitary napkins.

TABLE 2
REDUCTION IN COSTS AFTER HER INTERVENTION

Baseline Before Intervention	During Intervention	After Intervention
Cleaning Material Cost- 60,000 Taka	Cleaning Material Cost- 24,000 Taka	Cleaning Material Cost- 18,000 Taka
Medicine Cost- 45,000 Taka	Medicine Cost- 33,500 Taka	Medicine Cost- 12,000 Taka
Sewerage Line Cleaning Cost- 2000 Taka (Note: This is related to the workers' tendency to throw their used "clothes patches" into the toilet, blocking the drain.)	Sewerage Line Cleaning Cost-500 Taka	Sewerage Line Cleaning Cost- Nil (Note: Use of sanitary napkins eliminates the blockage of drains. The subsidy for such use at 40,000 Taka is greater than the cost of cleaning the drains, which is why most companies do not subsidize: but the subsidy is more than paid for by savings in other areas shown in this Table.)
Re-work =5 %	Re-work =3 %	Re-work =1 %

These were the visible ROI reflected from the awareness program. If we attribute a value to the intangibles, the ROI becomes even more significant.

LIMITATIONS OF THE STUDY AND NEED FOR FURTHER RESEARCH

The study did not consider other issues of health like stress, working under pressure, and some other psychological aspects that need to be incorporated in future research. Also, the study did not further investigate continuing the programs in future to build upon the strengths achieved. A longitudinal study of something like HER, as a permanent part of an employer policy for human resource development in a garment factory, is needed.

CONCLUSIONS

Health awareness programs benefit a manufacturing organization. They directly increase productivity by reducing absenteeism and migration. The ROI is significant and investment is minimal. In some cases, the plants do not need to invest money directly, except investment in training and health-related preventative costs (e.g. sanitary napkins). Health awareness, by benefitting the workers' families and community, when workers are happier and healthier, and teach the lessons that they have learned, also has social impact.

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