A Needs Assessment of Factory Workers in India for Health Promotion Programs

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Abstract

Background: India has a very high burden of communicable and non-communicable diseases. This burden can be reduced more cost effectively over the long term by focusing on preventative measures and lifestyle modifications initiated from the worksite. The Employee State Insurance Corporation (ESIC) is government operated and the largest health insurance company in India and covers medical costs for lower income factory workers who make less than Rs.10,000/month (about $200 per month). The purpose of this study was to conduct a need assessment related to health and worksite health promotion opportunities for workers in India covered by ESIC.

Methods: One worksite in India covered by the ESIC was visited and 25 male workers were evaluated. Workers completed a quantitative survey and were interviewed via 15-20 minute semi-structured, one-on-one sessions.

Results: On average, men were middle aged (mean: 39.6 years), and mostly married (88%) with children. Workers missed on average 5.3 (median: 9.8) workdays in the past year due to health issues. Regarding lifestyle habits, 48% used tobacco, 56% ate fried foods at least 3 times/week and 32% engaged in physical activities less or equal to 1-2 times per week. Most were satisfied with worksite conditions, although there was concern regarding tobacco use inside the worksite even though it was banned. There was significant interest in participating in health promotion programs. About 50% were interested in biometric measurements for heart disease, but significantly more were interested in educational seminars (80%; χ²=25.79, p=0.05). Significant logistical challenges were identified to facilitate participation of their wives and children in health promotion activities.

Discussion: Family health and costs were a major concern for this middle aged, low income working population. Their high level of interest in participating in health promotion activities showed recognition of health risks and an opportunity for health promotion.

Keywords: Worksite wellness; Health education

Introduction

India is the largest country in South Asia with the second largest population in the world, with about 1.19 billion residents as of 2011 [1]. The median age of the population is 26.2 years with 64.9% of the population between the ages of 15-64 and a life expectancy of 66.8 years. Only 61% of the population is literate. It is currently estimated that 52% of the labor force is in agriculture, 14% is in industry and 34% is in services. In 2010, the per capita GDP with purchasing power parity was estimated at $3,500. Unlike the United States, where a majority of deaths are attributable to chronic diseases such as heart disease and cancer, a majority of deaths in India can be attributable to both infectious and chronic diseases. Infectious diseases that are most common come from food or waterborne sources and include bacterial diarrhea, hepatitis A and E, and typhoid fever, and vector borne sources that include Chikungunya, dengue fever, Japanese encephalitis, and malaria. A common animal contact disease is rabies, and a common water contact disease is leptospirosis [1]. India also has the highest burden of cardiovascular diseases (CVD), including heart disease, in the world [2]. It is estimated that the annual cost of treating CVD can vary from Rs.800 billion (~$16 billion) to as high as Rs.3832 billion (~$118 billion), and the cost of preventing CVD has been estimated to be about a fifth of the cost of treatment [3,4]. Initiatives need to be undertaken to reduce the human and financial toll infectious and chronic diseases have on the Indian population, such as public health education and promotion opportunities. One strategy public health workers can utilize to facilitate these opportunities is working with large companies and insurance providers to educate the beneficiaries to prevent communicable and non-communicable diseases.

Employee State Insurance Corporation (ESIC) in India is the largest health insurance scheme that has over 40 million beneficiaries or about 3.5% of the national population. It directly provides medical services through its chain of hospitals/clinics and it covers the medical cost of the insured workers making less than Rs.10,000/month (~$200/month) as well as their families. Today for this insurance scheme, 1.75% of the employee’s salary is automatically withdrawn from the paycheck and is then complemented by the employer paying an additional 4.75% of the salary towards the insurance scheme. Based on the most conservative estimate of Rs.800 billion (~$16 billion) for treating CVD, the cost of adequate treatment for the ESIC population would be approximately Rs.28 billion (~$550 million). It is important to note that this cost is equivalent to the total annual contribution income of the ESIC scheme itself in 2006-2007 i.e. Rs. 24.5 billion (~$500 million). Although some data on the present disease prevalence exists (Table 1); data on cost of treatment in the ESIC population is not available. As indicated in Table 1, there is significant incidence of asthma, anemia, bronchitis, tooth decay, diabetes, hypertensive disease, as well as respiratory illnesses. One key strategy to help reduce this cost significantly is to educate...
Materials and Methods

This needs assessment used a mixed methods design, whereby both qualitative and quantitative measures were collected from ESIC workers. Both surveys were developed by the first author of this article and validated by the additional authors of this report in a two round review process.

In the fall of 2010, one of the authors (RM) visited an ESIC covered worksite in Delhi, India and evaluated 25 workers. During the evaluation, workers completed a survey containing questions about demographics, their current health status, working conditions and interest in using various health services. The researcher also interviewed the workers via 15-20 minute semi-structured, one-on-one interviews to gain a deeper insight into health and wellness issues that affect their lives. All workers were given a small gift as an incentive to participate in this program.

Multiple regression was also used for this study, with days absent from work regressed by smoking use, alcohol use, hours of sleep, and the consumption of fried foods and sweets. All data were analyzed by Predictive Analytics Software.

Results

Table 2 presents the descriptive results of the survey ESIC workers completed. The workers were mostly middle aged, and married with at least two children. Table 3 presents findings from the semi-structured, one-on-one surveys. A discussion of the findings will follow.

There was significant interest in participating in various health promotion programs that could be provided at the worksite. About 50% were interested in biometric measurements for heart disease. Significantly more (80%; \( \chi^2 = 25.79, \ p = 0.05 \)) were interested in educational seminars relating to prevention of infectious diseases, impact of lifestyle on chronic diseases and environmental health.

On average the health workers had missed 5.3 workdays in the past year due to health issues. Using multiple regressions, it was found that no health related behavior significantly predicted the amount of absent days workers reported.

Discussion

Overall, the results from this survey help determine the opportunities and challenges for health promotion and educational initiatives at the worksite. There were several key findings from this report. First, about half of the workers were well educated, while close to 38% had less than a high school education. This will provide challenges for future public health programs that rely on information dissemination, especially if many of the workers are illiterate. Before programs are put into place, it is recommended that materials are pilot tested to assure all workers benefit from the program. Materials will need to be developed for both the literate and illiterate. Secondly, this population is middle aged with young children and about half were living with their elderly parents. Some of them lived with extended families. This provides a unique opportunity for the adults and children to observe the impact of various diseases in very close proximity. The goal would be to educate them on the possible link between these diseases and lifestyle habits and environmental factors. Although the average number of days of missed work due to health issues was 5.3 days in this population; this is significant given their low salaries. The median of lost workdays was about 10 days indicating that some individuals are missing significantly more days and may be the group that is at higher risk needs to be targeted early. The typical health related issues reported by the participants included diabetes, headaches, broken bones, back pain, ear operations, TB, tooth pain, Dengu fever, typhoid, heart disease and high stress. Among their parents, the issues were typically heart disease (some had bypass surgery), high blood pressure, arthritis, cancer, liver disease and gastro-intestinal problems. Among their children they were the typical health related issues reported by the participants included diabetes, headaches, broken bones, back pain, ear operations, TB, tooth pain, Dengu fever, typhoid, heart disease and high stress.

Almost all of the workers were married. It is most likely that their wives cook the meals, and could benefit from programs focused on healthy diet and cooking. Accessing this group will likely be a challenge. The initial plan for this study was to interview both workers and their wives; however only few of the male employees volunteered.
to have their wives interviewed. However, none were conducted in this study. Most workers reported they were in overall, good health but quite concerned about their family’s health regarding communicable and non-communicable diseases as well as costs in the future. The latter is not surprising because inspite of ESIC healthcare services being provided almost free for them and their family, the quality of care is poor and many do not use these services and pay out of pocket for private healthcare. The response to questions regarding the quality of care at ESIC elicited strong negative responses from some of the participants. Certain ESIC facilities were better than others indicating a non-homogeneous quality of care. Although some participants were satisfied with the services, many perceive the ESIC clinics as being staffed with low quality personnel, inadequate infrastructure, unclean, bureaucratic, corrupt and time inefficient. They frequently had to take a full day off to go to the clinic which resulted in additional loss of income. If they went to a private clinic, the loss in wages was less and partially compensated for the additional fee at the private clinic. Sometimes the ESIC staff would refer the patient to a private clinic due to lack of services available at ESIC and pay for the cost of treatment. Some employees went to alternative medicine clinics e.g. homeopathy or Ayurvedic for treatment. However when the cost of treatment is high and out of pocket, they utilize the ESIC facilities as they have little

| Education | • 46% had College Degree or Some College education  
• 17% had a High School Diploma  
• 38% had an Elementary School Education or Less |
| Marital Status | • 88% were Married |
| Living Conditions | • 44% had a Parent living with them  
• 20% had at least one of their wives parents living with them  
• 40% had another family member living with them (e.g., Brother)  
• Average number of children (2.2 children (1.2)) |
| Age | • 39.6 years (6.7) |
| Years Employed | • 13 years (8) |
| Years with ESI | • 10.9 years (7.8) |
| Beliefs about current health | • Answered Strongly Agree or Agree to the following:  
• At present health care is a major issue for me: 96%  
• I am concerned about my health for the future: 92%  
• I am concerned about my present healthcare costs for myself: 80%  
• How many days have you been absent from work in the past year because of a health problem?  
Average: 0.59 days (1.8) |
| Current Health Practices | • How often do you use medical services outside the ESIC system?  
28% reported Always or Almost Always  
44% reported Sometimes  
24% reported Never/Hardly Ever  
• How interested are you in the following?  
Blood checkup for heart disease? 48% reported Interested/Very interested  
Blood checkup for diabetes? 52% reported Interested/Very interested  
Blood Pressure checkup? 48% reported Interested/Very interested  
Educational seminars by health professionals? 80% reported Interested/Very interested  
Health educational self-study materials? 80% reported Interested/Very interested  
Health education videos and films? 72% reported Interested/Very interested |
| Questions about self | • Do you smoke or use tobacco products? 48% reported using tobacco at least once per week  
• Do you drink alcohol? 32% reported at least 1-2 times a week  
• Do you get 7 or 8 hours of sleep at night? 84% reported at least 4-6 days/week  
• Do you eat fried foods? 56% reported at least 3 times/week  
• Do you eat sweets? 60% reported at least 3 days/week  
• How many times do you wash your hands each day?  Average: 7.9 times (4.2)  
• How many times do you brush your teeth each day?  Average: 1.5 times (0.5) |
| Questions about Wife | • Does she smoke or use tobacco products? 84% reported Never  
• Does she drink alcohol? 84% reported Never  
• Does she get 7 or 8 hours of sleep at night? 72% reported at least 4-6 days/week  
• Does she engage in any kind of physical activity? 24% reported at least 4-6 days/week  
• Does she eat fried foods? 44% reported at least 3 days/week  
• Does she eat sweets? 36% reported at least 3 days/week  
• How many times does she wash hands each day?  Average: 3.6 times (5.3)  
• How many times does she brush teeth each day?  Average: 1.7 times (0.5) |
| Working Conditions (5 options) | • The bathrooms are clean? 80% reported Strongly Agree or Agree  
• The air quality is good? 72% reported Strongly Agree or Agree  
• People use tobacco around you at work? 32% reported Strongly Agree or Agree  
• The drinking water is clean and available to you as you need it? 88% reported Strongly Agree or Agree  
• There is enough water for hand washing? 92% reported Strongly Agree or Agree  
| Use of medical services and health programs (5 options) | • 44% had another family member living with them (e.g., Brother) |

Table 2: Results from surveys of ESIC workers in India (n=25). Numbers in bracket are median values.
**Topic** | **Theme** | **Supporting Quote**
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"So would you think that you and your family are in good health now?" | Overwhelmingly the group said they were in fair health, but not excellent health. They are also aware that they are vulnerable to situations that might decrease their health status. | "I am OK and so are the kids. It is not excellent...but pretty good. "No special problems. Everyone is healthy."
| | | "I have high blood sugar but not high BP"  
| | | "There is lot of stress in my life and then sometimes my stomach gets upset."  
| | | "I am just concerned about Dengue fever"  
| | | "There are no problems in the household apart from TB."  

"What do you think about the ESIC medical services that are currently being provided to you and your family?" | Five people have never used the ESIC services for various reasons. They either had bad experiences and do not want to go back or they are new to the company and has not had a chance to use them. | "I don’t use ESIC now after that experience. I use private clinics."  
| | | "I have not been to ESIC. I go to homeopathic doctor when needed."  

| | Many workers have problems with the clinics sponsored by ESIC. | "I go there because I have to. They make it so difficult that I would not like to go back again."  

Many reported specific problems when they were at the clinic. | Long wait times: "You have to stand in line, it takes a lot of time. One has to take a day off."  
| | | Clinics provide poor quality of care, delayed treatments and lack of facilities: "Here the dispensary is quite useless." & "My wife had an operation in her ears. I didn’t get the treatment. Then they gave a date for the operation only after six months."
| | | Corruption: "(In response to the ESIC clinic worker being ineffective) When I gave him a Rs.50 note, all the work got done." & "The problem is the money has to be given."  

Workers generally prefer private clinics, because they are more efficient (time-saving) and tend to treat right away. The drawback is that they have to pay out of pocket. | Normally I prefer to pay to private clinics as the treatment is done in time."  
| | | "If there is a major issue, I go to a nice private doctor first before ESIC."  
| | | "For small diseases I go to a private clinic. It is less waste of time and more efficient."  

When price is prohibitive, then they must fall back on ESIC | "The private clinics are very expensive for major health issues. I go to ESIC then."  

Overwhelmingly workers were interested in participating in all types of programs, including avoidance of infectious and non-infectious diseases. | "This would be definitely beneficial as my knowledge about these issues is limited. Yes, I would. If the opportunity arises, then we can both attend (including wife), otherwise just myself."  

Preferred Frequency/Timing | "Weekly would be nice. At least once a month."  
| | | Many insisted that work comes first, so they cannot cut into those hours but they would be willing to stay after work: "I will attend after work if needed. I don’t want company to suffer." & "Best time is after work."

Some preferred to come alone and some wanted to bring their families (almost split) | Will come: "Yes, I would like my wife to attend if she can come." & "I will attend but if convenient then my wife will attend as well." & "My wife will come if needed.

Will not come: "I will attend. I would like them (wife/son) to attend but it is not possible as they do not live here." & "My family will not be able to come as it is very far for her. I will come alone." & "She works in the school and it will be difficult for her to attend."  

Overwhelmingly, they reported that they do not eat from the canteen | Mostly because they bring food from home: "Normally I get it from home" & "I bring food from home. Don’t eat in the canteen."  
| | | Possible reason is that the food is not good quality: "I have eaten in the canteen for that."  

Eating in the cafeteria/canteen | "Here the dispensary is quite useless." & "My wife had an operation in her ears. I did a lot of treatment within ESIC and then they gave a date for the operation after one year." & "Both kids were born with c section. Had to be done in private clinic as ESIC has no facility for that."  

Workers reported that she encourages them to eat to healthy diet. | "She tells me on the phone not to eat too many fried foods and eat healthy food."
| | | "She makes sure we don’t eat stale food." & "She is responsible and keeps doing things. Not too much sugar, light meals etc."  

She also provides healthy foods. | "My wife is careful in controlling my diet. She is strict." & "She does not use too much oil and spices. Even if I say I want it, she restricts it."  

Fried Foods | "My wife now limits the amount of fried foods and sweets at home."  

Other behaviors less frequently reported. | "She does the exercises with me. I can’t do them without her."  
| | | "She is aware of the insect bites and uses nets for the kids and us."  

"Is there anything you can do for your wife or your kids that they be healthy?" | Many reported that they are currently doing the best they can, given their situation. It also appeared that the women were in control of many of the household responsibilities and decisions. | "I am doing for the family what I can." & "I do the best I can."
option. Based on this feedback, it is unlikely that the ESIC is presently set up to deliver quality services for preventative healthcare. There would need to be a strong partnership between those that deliver health promotion programs (NGOs or private companies), the industrial sites and the ESIC.

Regarding health behavior, it was not surprising that about 50% of the interviewed employees used tobacco (cigarettes, bidis or gudka). This is consistent with other studies conducted in India and can lead to increased risk of respiratory and cardiovascular diseases [9]. The use of cigarettes and chewing tobacco is a major health risk and is responsible for 700,000 annual deaths in India [11]. It clearly needs urgent intervention. Also, consistent with other studies is the significantly lower use of tobacco among women, which was 16% in this study. The participants ate Fried foods fairly often with 56% reporting at least 3 times/week. These foods are frequently refried in the same oils which results in formation of harmful transfats. The use of fried foods has been associated with higher rates of CVD [12]. Indian sweets were eaten at least 3 times/week by 60% of the employees. They are often prepared with substantial amount of saturated fat and are associated with abdominal adiposity [13]. Their responses indicated that many employees were aware that fresh fruits and vegetables were desirable to eat. Although conducting physical activity daily or 4-6 times a week was reported by 40%, it is not clear if this excluded daily walking for work or going to the market. Most of these employees cannot afford to buy cars or motorcycles and may be travelling by bicycles or partly by foot to work. This data was not collected. The results indicated that most participants and their wives received adequate rest at night, had good oral hygiene and washed their hands frequently.

Regarding working conditions, the response was quite positive as it related to work safety and air quality. One possible bias in the study is the type of work these employees did. They were picked by a supervisor and may have excluded individuals working in a higher risk term vision. In the long term, the ESIC has a lot to gain by keeping this workforce healthy; financial payback as there would be lower payments in health education materials and less interested in clinical check-ups such as blood pressure and blood tests for diabetes. It is unclear why this is the case. Perhaps the workers are already aware of their clinical measures based on the tests they have received in the clinics. Even when the metrics are out of range, the clinic medical staff may have spent little time explaining the consequences, their importance and possible ways to correct the metrics. Also, culturally, Indians value education. This should be investigated more clearly in the future. When asked about the logistical issues relating to the frequency and time when these educational seminars should be held and whether their families would attend, there was significant amount of variability in their responses. Some felt it be done during work-time and others said that it be done after work. This would need to be reviewed with the company management. Most were eager to attend but indicated that it would be very difficult for their wives or children to be there due to logistical issues. Some live far from the factory and others felt that their spouses had other pressing family or work commitments. It seems that time for the employees could be carved out but getting the spouses to participate would be more difficult. This presents a unique challenge as the responsibility of cooking meals in an Indian household rests with the wife. Since diet plays a key role in health promotion, creative methods may be needed. One option would be to have cooking and dietary programs from a van where part of the health promotion is done in the community and not at worksite. Alternatively, one may be able to utilize the physical location of the ESIC dispensaries to conduct some of the health promotion activities to facilitate attendance of the family members. The participants also expressed the need for educating their children on health promotion as they are strongly influenced by peer pressure and the media towards unhealthy habits.

Overall, based on this survey, there is a high need for health promotion and coupled with a high interest among employees, an opportunity for intervention. However, the first challenge would be a buy-in from the corporate management and preferably ESIC as well. Based on preliminary conversations by one of the authors with the senior management of ESIC, there was little interest due to lack of long-term vision. In the long term, the ESIC has a lot to gain by keeping this workforce healthy; financial payback as there would be lower payments in health education materials and less interested in clinical check-ups such as blood pressure and blood tests for diabetes.
for treatment of diseases as well as improving the image of ESIC among the beneficiaries, which is significantly lacking today. The individual corporations can also implement these interventions without the assistance of the ESIC. The corporations can expect the absenteeism rate to decline, morale to improve with increased productivity and better retention of their employees. These are significant factors which can provide long-term financial returns to the company. The corporate management needs to be convinced there is significant long term return on this investment even though it may be hard to quantify. Reduction in absenteeism can be determined but presenteeism and retention are more difficult to measure. While employees appear to be very interested in health promotion programs, more work needs to be done designing these efforts. Efforts should also be based in theoretical underpinnings as they have a greater probability of providing desired outcomes.

There are several limitations in this study. First, the quantitative survey and the semi-structured interview were validated by two of the authors of this study. Ideally a panel of experts should have been used for face and content validation. Second, no form of reliability testing was done with the quantitative survey. In the future, internal consistency and test retest reliability can be done. Thirdly, the participating employees were selected by a supervisor and there may have been selection bias. In the future, the employees should be randomly selected. This supervisor was also present but remained silent during the qualitative interviews which may have prevented the employees to be completely transparent and introduced social desirability bias in the responses. Also, the responses regarding the lifestyle habits of the wives were from the perspective of the husband as the wives were not interviewed. Finally, the sample size of 25 was arbitrarily determined and only workers at one industrial site were interviewed.

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References