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Impact on employee productivity from presenteeism and absenteeism: evidence from a multinational firm in Sri Lanka

Mario Fernando

University of Wollongong, mariof@uow.edu.au

Peter Caputi

University of Wollongong, pcaputi@uow.edu.au

Fred D. Ashbury

University of Wollongong

Publication Details

Fernando, M., Caputi, P. & Ashbury, F. (2017). Impact on employee productivity from presenteeism and absenteeism: evidence from a multinational firm in Sri Lanka. *Journal of Occupational and Environmental Medicine*, Online First 1-6.

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Methods: One hundred fifty-two staff at the headquarters of a Sri Lankan multinational firm completed a questionnaire asking whether they experienced 13 health conditions common in workplaces, and about absenteeism and presenteeism that they attributed to these conditions.

Results: Most respondents (85.5%) reported absenteeism, presenteeism or both. Among those reporting symptoms of a health condition, 57.6% reported losing days due to absenteeism, and 69.5% reported losing additional days due to presenteeism. Among those caring for a sick adult or child, 57.3% reported losing days due to absenteeism, and 36.5% reported losing additional days due to presenteeism. Overall productivity loss was about 10.43 days each year, 3.95% of employee capacity, equating to about SLR 8 million (US\$54,421) for all headquarters employees.

Conclusions: The health conditions' effects on productivity significantly increased employee costs.

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Evidence from a Multinational Firm in Sri Lanka**

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Conclusions: The health conditions' effects on productivity significantly increased employee costs.

Introduction

A study conducted between 2004 and 2006 by Henke et al. (1) of the Pepsi Bottling Group, with 11,217 employees, found that reducing the incidence of health risks by one percentage point each year would yield annual savings of US\$83.02 to US\$103.39 per employee. In a study of the people employed headquarters of a multinational company manufacturing consumer goods based in Germany, Iverson et al. (2) found a 12.3% annual loss in productivity – equating to 7.8 million euros – due to presenteeism, which is defined as performing at a lower level than usual while present at work because of a health condition, health risk factor (e.g., smoking) or a personal situation (e.g., concern about a sick child or parent) (3, 4). In their study of 24 companies in the Netherlands, Alavinia, Molenaar and Burdorf (5) found a 45% productivity loss on the day previous to their survey due to presenteeism and absenteeism (not being present at work due to injury or illness). Even considering the disparity in contextual factors between companies in Europe and in the Asian region, the lack of studies examining the impact of presenteeism and absenteeism on productivity is surprising.

This study assessed the impact that health and non-health factors have on presenteeism and absenteeism in the Sri Lankan context. It investigated 13 health conditions demonstrated to affect presenteeism and the extent to which these conditions adversely affected productivity. Furthermore, we calculated the costs associated with productivity loss at the Sri Lankan bottling plant of the global firm. In recent years these issues have concerned businesses because of their impact on productivity. Studies have shown that both variables relating to the individual, including both existing health conditions and health risk factors, and variables relating to the organization, including managerial leadership style, available resources and the presence and degree of corporate restructuring, are related to the level of presenteeism (6, 7, 8). Failing to

address presenteeism may lead to increased absenteeism, with a negative effect on company profits (9, 10).

Research Context

The current Sri Lankan context has been shaped by several key economic and socio-political factors. In 1977, Sri Lanka liberalized its economy, including allowing foreign investment; it was the first country in the region to do so. Since the end of the separatist war in 2009, Sri Lanka has become a fertile investment ground for large investors, and its economy has expanded rapidly (11). Between 2003 and 2012 (with the exception of 2009), its governments have achieved a growth in GDP of above 5% (12). In 2012, Sri Lanka reached a per capita income of US\$2,923; this is estimated to have grown by 2016 to US\$4,000, and the economy to have grown to US\$100 billion (13). At \$3170 in 2013, Sri Lanka's per capita gross national income exceeded that of all other developing countries in the South Asian region, which had an average per capita income that year of \$1473 (11). The poverty rate in Sri Lanka fell from 28.8% in 1996 to 6.7% in 2013. Annual GDP growth was 7.3% in 2013 and is likely to remain the same in 2014, in contrast to the rest of developing South Asia, with an average annual GDP growth of 4.8%.

Sri Lanka has been encouraging foreign direct investment to accelerate its economic growth. For example, successive governments have reduced the length of time it takes to register and initiate a new foreign-financed business from 58 days in 2004 to eight in 2014 (11). The government has also removed onerous controls and procedures that had previously hindered foreign investors from their profits out of the country. These actions resulted in the country attracting US\$1.3 billion in foreign direct investment in 2013; by the end of 2014, it will have nearly doubled that amount to US\$2.4 billion (11).

Procedure

The study was conducted at the headquarters of a multinational manufacturing firm that has been operating in Sri Lanka for over 50 years, and its products are household names in Sri Lanka and globally. It has over 700 employees. Most of its employees originate from a region of the country well-known for substance abuse. The company has had to deal with chronic absenteeism and mental illness issues and it has been well-known for pioneering an effective mental health development program that includes meditation for its workforce. The management of the company was keen to embark on this study to have access to information that would be useful to reveal presenteeism-related health conditions.

The survey questionnaire, survey procedure and data-confidentiality issues were reviewed and approved by the University of Wollongong's Human Research Ethics Committee and by the senior management team of the participating company. Participants completed an anonymous paper-based survey in English and Sinhalese that included three sections: (a) demographics, (b) a self-reported impact of 13 health conditions and carer responsibilities on presenteeism and absenteeism and (c) self-reported work-related attitudes and perceptions. This survey has been developed and validated over 10 years, and has been applied in large, private companies with mixed job types, including professional, semi-professional, administrative and blue-collar work (give reference to Don's 2010 JOEM article).

The English survey was translated into Sinhalese by a sworn translator from the Ministry of Health in Sri Lanka. In Sri Lanka, sworn translators are officially recognised to translate documents and are used by the law courts and Parliament. They are appointed by a district judge on the recommendation of the Ministry of Justice. The Sinhalese questionnaire was then read by three competent Sinhalese residents of Sri Lanka who were of similar educational and work level

to the actual respondents to the Sinhalese questionnaire. Some minor points were raised in the wording of the translation, and the study's principal investigator incorporated these comments into the final version.

Two types of information were collected: demographic information, which included gender, age, height and weight, job type and length of time with the company; and health-related risk information, which included smoking status, usual weekly physical activity, whether or not the individual was being treated for elevated cholesterol, number of prescribed daily medications, effect of stress on health or quality of life, general health, general life satisfaction and level of vitality. Following Iverson et al. (2), the conditions assessed were: allergies (hay fever, pollen, dust, etc.), stress, colds, influenza, sleep problems or insomnia, high blood pressure, headaches, neck and/or back pain, arthritis or rheumatism, depressed mood, diabetes, asthma and digestive problems. An open-ended question also asked them to specify any health conditions they were experiencing not listed in the questionnaire. For each health condition, participants were asked whether they had experienced the condition in the previous three months, how many days' work they'd lost in the previous three months as a result of the condition, how many days they'd been affected while at work in the previous four weeks and how much the condition had lowered their usual productivity (from 0 to 100%) when they most recently experienced it. In addition, employees were asked to indicate the extent to which they cared for adults or children, and the extent to which these activities affected their work participation, using the same questions as for the health conditions. Importantly, the three-month time frame for examining absenteeism and the four-week time frame for examining presenteeism were consistent with those of other instruments measuring work productivity (14, 15).

Data for absenteeism and presenteeism were annualized for each employee. The total number of days absent, presenteeism days lost and the combined total of absenteeism and presenteeism were calculated. This figure was used to calculate annualized absenteeism by multiplying the percentage of workdays an employee reported he or she was absent in the three-month timeframe by annual eligible available workdays (considered at 264). Annualized presenteeism was calculated somewhat differently: annualized absenteeism days were subtracted from the eligible annualized days. A sum of annual lost days per condition was created by adding the absenteeism and presenteeism annualized days. We also produced an overall lost-days value per employee by adding the values for each health condition. Based on the Annual Survey of Industries, annualized presenteeism, absenteeism and combined scores were converted to a monetary value by using the figure of SLR 124,080 (US\$844) for annual 2011 salaries paid to skilled operative employees in the industry (16), on the basis of 1893 employees in the industry.

The data were collected over a week in August, 2013, mainly at the manufacturing plant premises during work hours. Data were also collected from the company's sales staff at two other company sites in Colombo.

The participants were full-time (i.e. 45 hours per week or a minimum of 28 hours per week), permanent employees of the company. The company operated three eight-hour shifts, with 80 plant employees per shift.

Participation in the study was promoted through emails by the relevant heads of divisions, and by posting leaflets in key employee information-sharing points such as staff notice boards. Participants who chose to withdraw from the survey were free to do so at any time

without penalty. The survey was completely voluntary and took approximately 15-20 minutes to complete.

With the approval of the company, the lead author was present at the site to administer the survey and respond to any participant questions. At all three sites, the survey was administered in a designated room. The employees were invited to take part in groups during working hours. Each division was allocated a particular time slot. The lead author welcomed each group and requested the participants to read the participant information sheet before administering the survey. They were told of the option to complete the survey either in English or Sinhalese. To optimize the likelihood that shift workers could access the survey, it was conducted over three days. After the participants completed the surveys, the lead author collected them.

Participants who completed the survey were eligible for entry into a draw to win one of ten AUS\$100 vouchers from a large retail chain in Sri Lanka. Each participant was given a draw slip to enter their name and contact details. After completing the survey, the participant dropped the slip into a box. At the end of the survey, the draw was held and winners announced in the presence of the company's senior management team.

Data Analysis

Data were analyzed at the organizational level as well as for each employee with a given health condition. For organizational-level analysis we considered the prevalence and impact of each health condition within the employee population. While this study presents the results for all health conditions studied, only the top three health problems are highlighted in the results section to keep the article a reasonable length. We adjusted the data for potential co-morbidities

(e.g., situations wherein a person reports days lost for one condition and the same days lost for another condition). In prior work, co-morbidity adjustments were made based on linear regression (2). Due to the smaller sample of employees responding to the survey in this company, we invoked a conservative adjustment of 0.75. In prior analyses of employee data, estimates for co-morbidity adjustment were based on a series of regression analyses to compute these adjustments (2); however, the authors found that, given the smaller sample size, it was possible to use a conservative estimate of adjustment (0.75 of the reported value of the illness condition's productivity loss) to calculate the co-morbidity adjustment. The conservative estimate of 0.75 was lower than the adjustments produced in larger samples reported elsewhere. The authors recognize this under-reports productivity loss. Following the co-morbidity adjustment, we adjusted for possible self-report bias. The adjustment was calculated to be 0.94 for absenteeism and 0.6218 for presenteeism, based on other studies that have compared self-report data to objective data. The Statistical Package for the Social Sciences (SPSS), version 15, was used for all analyses.

Results

A total of 152 surveys were received: 74 in English and 78 in Sinhalese. Two outliers were deleted from the data set due to incomplete answers, leaving 150 completed usable surveys, a response rate of 21.4%. Among the respondents, 22.5% were female and 77.5% were male. In terms of age, the highest proportion (31.5%) were in the 30-39 age category and the lowest (16.1%) were under 30 years of age. In terms of work level, the participants included senior management (11.5%), middle management (31.1%), professional staff (21.6%), general staff (27.7%) and other (8.1%). In terms of tenure with the company, the highest number of

participants (28.7%) had been employed for under five years. The demographic characteristics (i.e., gender, age, work category and years worked for the company) of the sample did not significantly differ from those of all employees at the site.

Table 1. Prevalence of health conditions and provision of care (%) among all respondents (N=150) and by gender (N=140), age (N=147) and work level (N=147)

Condition	Overall	Gender			Age				Work level				
		N	%	Female	Male	<30	30-39	40-49	50+	Senior	Middle	Professional	General
Stress	71	47.3	48.4	49.5	75	57.8	41.9	22.9	70.6	53.3	43.8	29.3	66.7
Cold	64	42.7	32.3	46.8	62.5	48.9	37.2	25.7	47.1	53.3	43.8	24.4	58.3
Allergies	62	41.3	41.9	41.3	58.3	51.1	32.6	25.7	35.3	55.6	46.9	26.8	41.7
Depressed mood	58	38.7	41.9	39.4	54.2	62.2	27.9	14.3	58.8	35.6	43.8	29.3	41.7
Flu	49	32.7	25.8	36.7	50	37.8	25.6	20	23.5	33.3	37.5	34.1	33.3
Headache	39	26	35.5	22.9	37.5	33.3	25.6	11.4	35.3	35.6	21.9	9.8	41.7
Neck and/or back pain	33	22	32.3	19.3	20.8	33.3	18.6	11.4	35.3	20	15.6	22	16.7
Insomnia	30	20	29	17.4	33.3	26.7	14	8.6	29.4	15.6	21.9	17.1	25
Digestive conditions	21	14	19.4	12.8	20.8	20	9.3	8.6	17.6	11.1	21.9	9.8	16.7
Arthritis	16	10.7	9.7	11.9	8.3	11.1	11.6	8.6	11.8	11.1	6.3	9.8	25
Asthma	14	9.3	12.9	9.2	12.5	8.9	9.3	8.6	11.8	15.6	9.4	4.9	0
Diabetes	12	8	9.7	7.3	0	6.7	11.6	8.6	5.9	8.9	12.5	4.9	8.3
High blood pressure	11	7.3	6.5	6.4	0	4.4	9.3	14.3	11.8	6.7	6.3	7.3	8.3
Provision of care													
Sick adult	60	40	48.4	41.3	45.8	46.7	34.9	37.1	35.3	44.4	28.1	41.5	66.7
Sick child	35	23.3	19.4	24.8	8.3	44.4	23.3	5.7	23.5	26.7	25	19.5	25

Respondents were asked about whether they experienced any of the 13 health conditions examined in this study. Table 1 shows differences in the incidence of each health condition and provision of care by gender, age, tenure and work-level type. The incidence of allergies is consistent across all the variables. Overall, the top three health issues reported were stress (47.3%), colds (42.7%) and allergies (41.3%). The top three health issues reported by females in

the prior three months were stress (48.4%), allergies (41.9%) and depressed mood (41.9%), and by males were stress (49.5%), colds (46.8%) and allergies (41.3%). For respondents aged under 30 years, the top three health issues were stress (75%), colds (62.5%) and allergies (58.3%); for those aged between 30-39 years, the top three were depressed mood (62.2%), stress (57.8%) and allergies (51.1%); for those aged between 40-49 years, the top three were stress (41.9%), colds (37.2%) and allergies (32.6%); and for over 50, the top issues were colds and allergies (both 25.7%), stress (22.9%) and flu (20%). At the senior management level, stress (70.6%) was the health issue most frequently reported during the prior three months; allergies were most frequently reported by middle management (55.6%) were reported most frequently and professional staff (46.9%); flu (34.1%) was most frequently reported by general staff; and stress (66.7%) was most frequently reported by other staff.

Table 2. Mean number of days lost for each health condition and provision of care due to absenteeism and presenteeism, and total productivity loss for the company (N= 150, outliers removed)

Health Ailment	N	Absenteeism		Presenteeism		Overall	
		M	SD	M	SD	M	SD
Stress	71	1.73	3.64	7.63	17.36	9.16	17.27
Flu	49	4.46	9.57	2.38	8.89	6.95	13.55
Depressed mood	58	0.39	1.57	5.76	14.54	6.27	14.72
Insomnia/poor sleep	30	0.67	1.71	5.68	8.68	6.16	8.8
Headache	39	2.45	4.9	4.02	7.39	6.15	9.19
High blood pressure	11	2.48	4.34	4.71	7.82	6.09	10.41
Allergies	62	3.57	5.17	1.31	2.38	4.78	6.22
Asthma	14	4	6.93	0.68	1.49	4.66	7.35
Cold	64	2.76	3.52	1.83	3.48	4.52	5.63
Digestive conditions	21	2.4	3.85	1.82	2.78	4.28	4.87
Neck and/or back pain	33	0.63	1.76	2.98	7.33	3.5	7.65
Arthritis	16	1.36	3.39	1.15	2.19	2.51	5.27
Diabetes	12	1.03	1.91	0	0	0.89	1.9
Provision of care							

Caring for adults	60	4.92	8.07	3.27	8.57	8.19	13.14
Caring for children	35	4.68	6.97	1.21	6.28	4.74	9.19

Table 2 shows the mean number of days lost as absenteeism and presenteeism for each health condition and the associated care provided, and total productivity loss for the company. Overall, for both absenteeism and presenteeism, the highest number of days lost for a health condition was due to stress (9.16 days), followed by flu (6.95 days) and depressed mood (6.27 days). Flu (4.46 days), asthma (4.0 days) and allergies (3.57 days) were the most frequently reported health issues resulting in absence from work during the prior three-month period. Depressed mood produced the lowest amount of absenteeism, with 0.39 days in the prior three-month period.

In relation to presenteeism, stress (7.63 days), depressed mood (5.76 days) and insomnia (5.68 days) were the most frequently reported health issues adversely affecting employees' participation while at work during the prior three-month period. Diabetes produced the lowest presenteeism, with 0 days in the prior three-month period.

Table 3. Projected workdays lost* and estimated cost for the 700 company employees

Health condition	Proportion of employees with condition	Number of workdays lost	Estimated cost	% of company costs accounted for by condition
Stress	.47	3013.64	1 416 410.80 SLR (9635 US\$)	18.96
Cold	.43	1360.52	639 444.40 SLR (4349 US\$)	8.56
Allergies	.41	1371.86	644 774.20 SLR (4386 US\$)	8.63
Depressed mood	.39	1711.71	804 503.70 SLR (5472 US\$)	10.77

Flu	.33	1605.45	754 561.50 SLR (5133 US\$)	10.10
Headache	.26	1119.30	526 071.00 SLR (3578 US\$)	7.04
Neck and/or back pain	.22	539.00	253 330.00 SLR (1723 US\$)	3.39
Insomnia/poor sleep	.20	862.40	405 328.00 SLR (2757 US\$)	5.43
Digestive conditions	.14	419.44	197 136.80 SLR (1341 US\$)	2.64
Arthritis	.11	193.27	90 836.90 SLR (617 US\$)	1.22
Asthma	.09	293.58	137 982.60 SLR (938 US\$)	1.85
Diabetes	.08	49.84	23 424.80 SLR (159 US\$)	.31
High blood pressure	.07	298.41	140 252.70 SLR (954 US\$)	1.88
Provision of care				
Caring for adults	.40	2293.20	1 077 804.00 SLR (7332 US\$)	14.43
Caring for children	.23	763.14	358 675.80 SLR (2439 US\$)	4.80

**a: n/N (i.e., 62/150 for allergies); b: proportion of employees with condition x total number of employees at plant x overall mean days lost (i.e. .41x700x4.78 for allergies); c: number of days lost x estimated cost per day (i.e. 124,080 SLR divided by 264 days in one year = 470 SLR per day, therefore, 1371.86 x 470 = 644,774.20 SLR for allergies); d: total estimated costs (i.e. 7,470,537.20SLR) divided by the individual cost for each condition x 100 (i.e. 644,774.20/ 7,470,537.20 x 100 = 8.63 for allergies)*

As shown in Table 3, the health condition estimated to have affected the highest number of employees was stress (47%), which produced 3013.64 cumulative working days lost, followed by colds (43%), with 1360.52 workdays lost, and allergies (41%), with 1371.86 workdays lost. The lowest was for high blood pressure (7%), with 298.41 workdays lost. Stress was thus also calculated to result in the highest estimated cost to the company, SLR 1.42 million (US\$9659) annually. Although only 39% of the employees were estimated to be affected by depressed mood, it was estimated to pose the second-highest annual cost to the company: SLR 804,503.70

(US\$5472). Similarly, although only 33% of the employees were estimated to be affected by flu, it was estimated to cost the company SLR 754 561.50 (US\$5133), the third highest cost of the 13 health conditions examined. The second most frequently reported health condition was colds, with 43% of respondents reporting suffering from a cold in the previous three-month period. Since employees who are affected by this condition can often still come to work, the associated cost (SLR 639 444.40, US\$4349) from the number of days lost was not within the top three costliest health conditions for the company. The most costly health condition was stress (reported by 19% of respondents), followed by depressed mood (11% of respondents) and flu (10% of respondents). Furthermore, an estimated 40% of the company employees reported being affected by the provision of care for adults, which accounted for 14% of all health condition costs (SLR1 077 804, US\$7332).

Most respondents (85.5%) reported having experienced absenteeism, presenteeism or both. Of those respondents reporting symptoms of health conditions, 57.6% reported lost days due to absenteeism, and 69.5% reported that their work participation had been adversely affected by health problems while at work (presenteeism). Among those who cared for a sick adult or child, 57.3% reported absenteeism and 36.5% presenteeism.

Discussion

Our results show that employee health problems can significantly affect productivity. We estimated annualized productivity loss at 3.95% of employee capacity, which equates to 8 SLR million (US\$54421). A significantly higher proportion of respondents experienced presenteeism (62%) than absenteeism (38%) during the three-month period before the survey. The annualized loss in productivity was 10.43 days with 6.57 days related to presenteeism and 4.04 to absenteeism, a ratio of 1.43:1. When compared with the findings of Iverson et al. (2), the

economic and socio-political contextual differences between Germany and Sri Lanka could explain some of the variation in findings between the current study and that of Iverson et al. (2) in Germany. The overall loss in work productivity found in this study (3.95%) is significantly lower than the 12.4% loss estimated by Iverson et al.'s (2) study, although their study also examined a sample drawn from a large employer. The ratio of presenteeism to absenteeism found by Iverson et al. (2) was 4.38:1 or more than 3 times that which we found. With no government assistance programs to help the unemployed, people in Sri Lanka would perceive a greater need for a job to survive, and hence be more likely show up at work when ill. Another reason for the difference between the calculated percentages lost productivity between Germany and Sri Lanka studies is due to the difference in eligible available workdays per year: 220 in the Germany study vs. 264 for the Sri Lanka study which accounts for a 2% difference.

The other differences in lost work productivity between this study and that found by Iverson et al. (2) could be due to measurement or sampling differences, differences in health status of the general population from which the samples were drawn, economic conditions affecting the respective companies and differences in their workplace policies.

Both studies reveal estimated losses in work productivity that could have a significant effect on the economic health of the respective companies. Previous studies have shown increased productivity loss when mental health conditions and physical conditions and diseases occur together (17, 18). The importance of this issue becomes clearer in light of estimates that about 43% of employees in the current study reported being affected by a mental health condition (stress and depressed mood) at any point in time. Indeed, one can argue that some of the other health conditions (neck/back problems, headache and problems with sleeping/insomnia) may reflect physiological responses to psychological health issues.

Moreover, Muni [Munir?] et al. (19) found that regardless of whether the type of work poses physical, cognitive or social demands, work limitations are the most strongly affected by depressed mood and anxiety. The impact of a mental condition presenting along with a physical condition varies with the physical condition; for example, Kessler et al. (18) estimated the work-limitation impact at 21.9% for hypertension, 34.0% for asthma and 44.9% for arthritis. Among those who cared for a sick adult or child, 57.3% reported absenteeism and 36.5% presenteeism. This is somewhat similar to Iverson et al.'s (2) study of a German workplace, where 82% of respondents reported absenteeism, presenteeism or both; 38.7% reporting symptoms of health conditions had lost days because of absenteeism, and 63% reported lost productivity due to presenteeism.

This study demonstrates the value of examining presenteeism and absenteeism patterns within the context of the company. For example, while participants most frequently reported stress, cold and allergies in the three-month period prior to the survey, the most lost productivity days and the greatest costs on an annualized basis actually resulted from stress, depressed mood and flu; stress, neck pain/back pain and headache accounted for the highest number of average lost productivity days among respondents reporting a health condition. The ratio of presenteeism to absenteeism varied widely among the conditions studied: for example, 8.48:1 for insomnia/sleep problems, 14.78:1 for depressed mood, 0.85:1 for arthritis and 0.76:1 for digestive problems.

The issue of respondents' self-reported stress is somewhat complex. About half of the survey respondents (51%) reported that they had experienced stress in the prior three-month period, for an annualized productivity loss of 1.73 days due to absenteeism and 7.63 days due to presenteeism. However, only 11.3% indicated that stress had adversely affected their health or

quality of life in the past three months. This discrepancy may be due to these employees initially coping adequately with chronic stress, but less well as the stress escalates, producing increased presenteeism.

The impact of the Sri Lankan cultural and socio-economic context can play a major role in influencing the mental health-related results reported here. Sri Lanka has the world's fourth highest suicide rate, with 28.8 suicides for every 100,000 people, compared to a global average of 11 per 100,000 persons (20). Men are almost twice as likely to commit suicide compared to women. According to Kelagama and Epaarachchi (21), in the Sri Lankan manufacturing industry, working longer hours to achieve production targets is common. Under these conditions, some workers can be working continuous shifts, which is not only stressful in itself, but imposes other stress on workers. For example, travelling to and from night shifts on Sri Lanka's unreliable public transport system might cause workers stress about arriving on time. Compounding this situation may be the ways in which workers cope with such stressors. Individuals react by reducing their activity, which in turn could lead to feelings of low achievement, further increasing absenteeism and presenteeism. In the Sri Lankan context, studies such as that of Chathurani and Sangarandena (22) have determined a significant positive relationship between job stress and employees' turnover intention. However, other studies, such as that of Liyanage, Madhumini and Galhena (23), have found a positive, but not necessarily significant, relationship between the two.

Research has shown a relationship between high levels of stress and many physical health conditions, such as headaches, insomnia or poor sleep and neck and back pain (24, 25). Although we tested for such a relationship, we were unable to detect one, given the high frequency with

which respondents reported stress (i.e., 51%). As noted above, psychological conditions significantly influence productivity. For example, the Sainsbury Centre for Mental Health (26) has estimated that about 40% of presenteeism in the UK – equating to an estimated 70 million days of lost productivity – can be attributed to psychological conditions such as stress, depressed mood and anxiety. Similarly, the National Institute of Clinical Excellence has estimated an annual loss of more than 6 million days due to presenteeism, with a financial cost of over €1billion (US\$1085,650,000) (27).

This study found only limited impact of diabetes, arthritis and asthma on lost productivity; similarly, Iverson et al. (2) found 3.4% of respondents reported having diabetes, and that those with diabetes averaged 1.15 absenteeism days and 0.69 presenteeism days per year. A US study of almost 375,000 employees from a number of companies found diabetes to be prevalent in between 2.7% to 5.3% of respondents, resulting in productivity losses ranging between 1.9% and 21.8% per year (28). Another US study based on data from the National Health Interview Survey found that people with diabetes experienced an additional 6.3 lost workdays per year. Persons who had both depressed mood and diabetes were found to lose 13.1 workdays per year (29). In contrast, Stewart et al. (30) found no difference in lost productive time for persons with diabetes (1.91 hours) and those without (1.92 hours) over a two-week period, although diabetics with neuropathic pain lost 4.21 hours of productive time. These results suggest determining the presence of a condition, as well as its problematic symptoms and any comorbid conditions known to exacerbate the condition (such as depressed mood) are necessary for an accurate estimate of how a condition affects productivity. It is also possible that corporate policies related to sick days could affect an employee's likelihood of being absent when sick.

We consider the estimate of SLR 5.2 million (US\$35374) in lost productivity to be conservative. For work that is time-sensitive or relies heavily on the productivity of all members of a team, the cost of presenteeism is likely to escalate, as the presenteeism episode will affect not only the productivity of the “presentee worker”, but also the coworkers who must compensate for the lost productivity, which may prevent them from meeting their own productivity goals and thereby constituting a multiplier effect. Pauly et al. (31) estimated a median multiplier for acute presenteeism/absenteeism of 1.61, and for chronic presenteeism/absenteeism of 1.75. Based on this, the studied company’s real cost of lost productivity could be as much as SLR 13.57 (US\$92312) to SLR 14.3 million (US\$97278).

Limitations

Any examination of this study’s results should take into account its limitations. First, although the results suggest that health conditions and work productivity are related, the fact that no panel data were used in the study prevents drawing conclusions about causality. Second, participants self-reported the presenteeism and absenteeism data, which could not be verified objectively. However, the findings were shared with the senior management of the company and no corrections were requested. Third, the sample size is relatively smaller than the Iverson et al. (2) study. However, given the Sri Lankan context and smaller number of employees in the company under investigation, the findings are useful.

Conclusion

This study set out to examine the relative effects of 13 physical and psychological health conditions on work productivity. The results suggest that a large proportion of employee costs can be explained by the effects of health conditions on productivity, both individually and in

combination. We estimated annualized productivity loss at 3.95% of employee capacity, which equates to SLR 8 million (US\$54421). A significantly higher proportion of respondents experienced presenteeism (62%) than absenteeism (38%) during the three-month time period under examination. When firms are unaware of the level presenteeism among their employees and how to manage – and ultimately reduce – it, this often-covert productivity loss can severely challenge profitability. Evidence-driven interventions could help reduce this productivity loss, particularly for companies in which mental health issues contribute to lost productivity.

Acknowledgment

The authors wish to thank Health Development Partners (Germany) for permission to use its VitalWorks Presenteeism Survey instrument for this study, and the leadership team and employees at the multinational firm in Sri Lanka for participating in the study.

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