

HEALTH PROMOTION PROGRAM: A RESIDENT WELL-BEING STUDY

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ABSTRACT

Background

Surgical training places unique stresses on residents that can lead to decreased levels of presenteeism. We hypothesized that presenteeism levels could be positively influenced by improving workplace hygiene.

Methods

A cohort of surgical residents was asked to complete the Stanford Presenteeism Scale: Health Status and Employee Productivity (SPS-6) questionnaire before, and one year after the implementation of a workplace health promotion program.

Results

Twenty-six of thirty-three residents responded to the initial survey and reported a mean SPS-6 score of 17.3 +/- 4.5, well below population normative value of 24 +/- 3 ($p < 0.0001$). At one-year post intervention 25 of 32 residents responded, reporting a mean SPS-6 score of 18.3 +/- 4.6. The mean SPS-6 score improved by 1.2 +/- 3.8 ($p = 0.35$). Subgroup analysis showed a trend toward improved SPS-6 in those who participated in the health promotion program ($p = 0.15$) and a significant

difference when junior residents were compared to seniors ($p = 0.034$). Overall, results were limited by our small sample size.

Conclusions

Presenteeism scores for surgical residents at our institution are well below population values. Use of validated tools such as the SPS-6 may allow for more objective analysis and decision making when planning for resident education and workload.

PRESENTEEISM*: the ability while on the job to produce quality work at maximum productivity

DECREASED PRESENTEEISM*: a state of decreased productivity and below-normal work quality related to health/workplace distracters

BACKGROUND

The decision to enter a surgical training program is one that fewer senior medical students are choosing to make.¹ The single most significant factor being cited is controllable lifestyle—a concept implying rigid control of time spent on professional pursuits, thus allowing personal time free of practice commitments.^{1,2}

The surgical discipline hardest hit has been General Surgery though decreasing numbers of applicants are anticipated in other specialties. In the U.S. the number of unfilled general surgery programs increased from 5 in 1997 to 41 in 2001, with a corresponding decrease in the number of medical students ranking surgery as first choice from 12.1% in 1981 to 6.1% in the 2001 match.³ Over this same period the percentage of senior medical students who perceived that surgeons have inadequate control over their time increased from 67% to 92%.¹ As senior medical student perceptions are likely influenced by exposure to the hectic schedule of a surgical resident, these attitudes may be difficult to reverse without addressing workplace and lifestyle issues in residency.

Concurrent with declining interest by medical students is the recognition for need of change in the surgical training paradigm, driven mainly by patient safety concerns. Concern regarding sleep deprivation and

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* as defined by the Stanford Presenteeism Scale: Health Status And Employee Productivity Questionnaire

resultant mental acuity has culminated in the mandated regulation of work hours by the Accreditation Council for Graduate Medical Education as of July 2003.⁴ Residency programs in New York have been under work hour restriction since 1989 and review of this experience has yielded mixed results; although generally accepted by residents, there is concern that work hour limitation may adversely affect both patient care and resident education.⁵ Surveys of faculty in major teaching centers have also raised concern over the implications of work hour limitation. Specifically 87% of faculty predicted that limiting work hours would be detrimental to resident education and 70.4% felt it would increase attending staff work hours.⁶ The unproven efficacy and significant concerns have led some to suggest that we must look beyond the counting of hours to truly improve surgical education, ensure patient safety and attract first rate students to surgical fields.^{7,8}

Many studies from the industrial sector have explored methods to improve workplace productivity and job satisfaction. The intervention that has repeatedly led to decreased absenteeism and increased productivity is the initiation of a "Work Place Health Promotion Program."⁹ However in studies of "professional workers" absenteeism has not been found to be a problem. Rather professional workers tend to appear for work but are inefficient and unproductive necessitating a different outcome measure. One such measure, Presenteeism, can be defined as: "a worker's ability to concentrate and produce quality work at maximal productivity while on the job." Decreased presenteeism occurs when a worker, though still present, produces poorer quality work at a reduced rate of productivity. Presenteeism levels can be measured using the Stanford Presenteeism Scale: Health Status and Employee Productivity Questionnaire (SPS-6).¹⁰ The SPS-6 (Figure 1) is a questionnaire composed of six questions, producing a maximal score of 30 (ideal presenteeism), designed to measure a worker's perception of his or her ability to overcome the distraction of current physical and or psychological problems in order to handle job stress, complete tasks, achieve goals and maintain sufficient focus and energy levels. This scale has been validated and is currently being used in the assessment of health promotion and disease management interventions at many levels including the automotive industry, Procter & Gamble and IBM.^{10,11}

By nature of surgical training and call commitments, residents have an obligate amount of time spent in hospital with a bi-product being significant periods of "down time"; spent waiting for test results, operating room availability and other unavoidable delays. This down time is frustrating, often wasted and we believe, a contributor to negative workplace hygiene. We hypothesized that resi-

dents are at high risk for decreased presenteeism and that an intervention aimed at improving work hygiene could help alleviate this problem.

MATERIALS AND METHODS

In January of 2003 the Stanford Presenteeism Scale: Health Status and Employee Productivity questionnaire was distributed to all orthopedic and general surgery residents at a University affiliated Tertiary Care Level 1 trauma center to obtain a baseline measure of Presenteeism. In accordance with the design of the SPS-6, we substituted "insufficient time for exercise" as the physical/ psychological distracter. Additional questions regarding exercise and absenteeism over the past year were collected. A health promotion facility was installed which comprised a 24 hour, in hospital access to a room equipped with a high quality Treadmill, Spin Bike, Power Cage total weight training system, floor mats and a 27" flat screen TV with full cable programming. Surgical residents were provided with free access to this facility provided they documented their usage (name, date, and time) in a specific study logbook.

After one year residents were reevaluated using the Stanford Presenteeism Scale-6.

RESULTS

In 2003, thirty-three eligible residents were identified and asked to complete the SPS-6 questionnaire. Twenty-six (79%) responded and reported a mean SPS-6 score of 17.3 +/-4.5. In 2004, thirty-two eligible residents were identified and 25 (78%) responded reporting a mean SPS-6 score of 18.3 +/- 4.6. The 2003 and 2004 resident responders do not represent a continuous cohort. Two graduating residents who completed the initial survey were lost to follow-up in 2004. Four PGY 1 residents not surveyed in 2003 responded in 2004. One resident left the surgical training program after completing the initial survey, three 2003 responders did not complete the 2004 survey and two non-responders in 2003 responded in 2004.

When compared to a population normative sample (SPS-6 24+/-3),¹³ surgical residents (SPS-6 17.3 +/- 4.5) have a statistically significant level of decreased presenteeism ($p < 0.0001$).

Twenty-six of thirty-three residents responded to the initial questionnaire and reported a mean SPS-6 score of 17.3 +/- 4.5. At one year, twenty-five of thirty-two responded with a reported mean SPS-6 score of 18.3 +/- 4.6. Mean improvement in SPS-6 over the study period was 1.2 +/- 3.8 ($p = 0.35$). A power analysis revealed that 200 participants would be required to show this degree of change to be significant.

During the study period there were 320-recorded usages, which is probably an underestimate as compliance with the logbook was not uniform. Two subgroups could be identified; those who were frequent users (>20 recorded usages) and those who did not take advantage of the facility. Eighteen different residents, who had completed the initial and one year SPS-6 were recorded in the logbook, nine of which had >20 visits. Using a paired *t* test the mean change in users SPS-6 (2.7 +/- 4.8) compared to non- users (0.4 +/-3.3) showed a strong trend toward improvement (*p* = 0.15).

There are no significant differences between specific years in training, however when average SPS-6 score (16.6) for junior residents (PGY 1-3) is compared to the average of SPS-6 score (20.5) of senior residents (PGY 4-5), the later have a statistically significant improvement in presenteeism level (*p* = 0.034).

In 2003, 25 of 26 respondents reported that work commitments precluded desired exercise time with

an average of 2.4 exercise episodes per week. In 2004, only 19 of 25 respondents reported work commitments interfering with exercise, averaging 2.9 episodes per week for an increase of 0.5 times.

DISCUSSION

The surgical training paradigm is shifting, driven in part by “progressive” legislation and also the changing values of trainees. The challenge faced by training programs is to accommodate for this shift without eroding patient care, resident education or research productivity intrinsic to the academic setting.

Given the new reality of restrictive work hours, real efforts must be made to maximize the efficiency of time spent on the job. Industry has a long history of exploiting this concept: the recent economic upturn in North America has been described as a “jobless recovery.” Industrial output has increased without an associated creation of new jobs. This is attributed to maximizing

<p style="text-align: center;">Stanford Presenteeism Scale: Health Status and Employee Productivity</p> <p>Describe your work experiences in the last month. Please use the following scale.</p> <ol style="list-style-type: none">1. strongly disagree2. somewhat disagree3. uncertain about your agreement4. somewhat agree5. strongly agree <p>Statement:</p> <ol style="list-style-type: none">1. Because of my long hours and inability to get exercise the stresses of my job were much harder to handle [1 2 3 4 5]2. Despite long hours and difficulty to get exercise I was able to finish hard tasks in my work [1 2 3 4 5]3. My long hours and inability to get sufficient exercise distracted me from taking pleasure in my work [1 2 3 4 5]4. I felt hopeless finishing certain work tasks due to my inability to get sufficient exercise [1 2 3 4 5]5. At work I was able to focus on achieving my goals despite limitations on my ability to get sufficient exercise [1 2 3 4 5]6. Despite having limited time to get sufficient exercise I felt energetic enough to complete all my work [1 2 3 4 5] <p>I would rank my job satisfaction as _____ out of ten.</p> <p>Last year I was absent from work _____ days for health related reasons.</p> <p>Do the time commitments of your job prevent you from exercising? Yes / No</p> <p>At present I exercise _____ times per week on average.</p>

Figure 1. The Stanford Presenteeism Survey as presented to residents

the output of a company's existing workforce with an emphasis on a healthy human capital.¹²

The eventual impact of work hour restriction is uncertain. A number of studies have found that a majority of residents support the concept of duty hour limitation.^{4,13} In New York where this policy has been in place since 1989, a survey of residents reported that these regulations have resulted in residents being better rested (64%) and having improved quality of life outside the hospital (66%) while only 42% reported an improvement of life in hospital. Of note, only fifteen percent of respondents "somewhat agreed" or "strongly agreed" that they would be willing to add an extra year of training to accommodate shorter working hours and yet in the same survey 35% of residents felt duty restriction had a negative impact on patient care and resident education.⁵ A recent American Academy of Orthopedic Surgeons survey of 148 training programs regarding duty hour restriction found that 48% of programs report a negative impact on patient care and 84% report a negative impact on resident education since implementation of work hour restrictions.¹⁴ A study conducted prior to work hour limitations, found that residents reporting the least number of weekly work hours were more likely to moonlight and that a 6.8 weekly work-hour difference between PGY1 and PGY 2 residents correlated with only 1.6 hrs of increased sleep per week (13.8 minutes nightly).⁸ These studies suggest that duty hour restriction may not have the anticipated benefit while potentially compromising patient care and resident education. Given these concerns alternatives to duty hour restriction must be evaluated to provide avenues for effective and balanced reform.

The concept of presenteeism arose from industry's attempt to qualify employee productivity. Presenteeism can be defined as a worker's ability to concentrate and produce quality work at maximal productivity while on the job. Decreased presenteeism occurs when a worker, though still present, produces poorer quality work at a reduced rate of productivity and is somewhat analogous to the lay term "burnout." Improving presenteeism levels then, may really be at the core of effective surgical training reform. Presenteeism levels may be quantified as previously described by The Stanford Presenteeism Scale: Health Status and Employee Productivity Questionnaire.

The significantly low values of presenteeism that we demonstrated among surgical residents highlights common perception about the demands of a surgical resident's lifestyle and the need to devise and assess the potential benefit of various interventions. Though significant research has been aimed at residency training, much of it is based on non-validated questionnaires

and logbooks tracking duty hours which are then used to make subjective inferences regarding work satisfaction and safety of performance. To our knowledge, this is the first study to apply a validated tool to this area.

Initiation of a work place health promotion program (a simple method to improve workplace hygiene) has been shown to decrease absenteeism rates and improve productivity¹⁵ thus providing the rationale for our intervention. The results of our study are intuitive; the improvement in workplace hygiene improves presenteeism rates only for those affected by the change. The institution of a free hospital based fitness center affected the workplace hygiene of only those residents interested in pursuing physical fitness and who found the time commitment of work and in hospital call limiting their life. Although fewer residents reported work interfering with desired exercise the mean number of exercise episodes increased by only 0.5 per week suggesting that the exercise completed in hospital may free up out of hospital time for other pursuits such as family or study. Though statistically we were only able to show a trend in this area, as results were limited by the small sample size. The importance of our study is not to advocate specifically for a hospital based exercise facility, but in the finding that improved workplace hygiene can increase presenteeism levels possibly independent of work hours. Duty limitation is not mandated in Canadian training programs and after the time frame of this study residents retrospectively reported working in excess of 90 hours per week (informal survey).

Our subgroup analysis showed that senior residents reported significantly higher levels of presenteeism than junior residents though reported number of hours worked was not different. This probably reflects the increasing knowledge and associated independence/responsibility as well as less time spent on non-educational, non-specialty specific tasks, which have been reported to occupy up to 35 % of resident's time.⁷ This apparent benefit to senior residents may be placed at risk by duty hour limitation. There has been a reported uploading of these tasks to senior residents with the decreased availability of junior trainees.⁵ This trend has affected faculty members as well with a recent AAOS survey finding 48% of programs report increased staff surgeon hours despite 51% of programs using more physician extenders.¹⁴

There are a number of weaknesses in our study. Our sample size was small and limited by the number of surgical residents at our center. A power analysis was not performed prior to beginning the study as we were unaware what level of change in presenteeism scores to expect. A retrospective power analysis showed that for a 2 point difference to be significant 40 residents would be required in each group (i.e., user vs. non-user) thus the

p-values achieved can be viewed as strong trends though not statistically significant. Though matched pairs were used for subgroup analysis this was not possible for the initial SPS-6 and final SPS-6 comparison due to resident turnover and inconsistent compliance with completing questionnaires. This may be a perceived weakness but as our aim was to study resident presenteeism levels as a group, before and after the intervention we do not feel that this introduces a significant bias.

Though restricted work hours may prove to be a positive step in the evolution of surgical education, it truly is an intervention thrust upon us without real validation. We believe that further work toward improving the conditions of resident training is needed if we are to optimize presenteeism in current residents as well as encourage the next generation of trainees to view surgery as a viable career option.

CONCLUSIONS

Surgical residents exhibit significantly decreased levels of presenteeism compared to the published population norms. Although our study was limited by size, we have shown the benefit of implementing a no fee hospital based fitness center on surgical resident presenteeism levels and submit this as a model for change aimed at improving workplace hygiene and lifestyle of surgical residency. After reviewing the literature related to early experience with work hour limitation we strongly suggest that further reform be focused on improving the way residents work rather than simply analyzing how much they work.

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