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Perceived Occupational Stressors and the Health Software Professionals in Bengaluru, India

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Abstract

There is limited research on occupational stress and its relation to health from developing countries such as India. This study was done to evaluate work conditions of professionals in two highly productive sectors: the information technology (IT) sector, also known as software development, and Information Technology Enabled Services (ITES), also known as call centers. The study employed thirty-two in-depth interviews. The results indicate the presence of nine stress domains: job control, autonomy, time pressure, length of experience in industry, night shifts, income, appreciation of work, physical environment, work-environment and affective or emotional factors. Global drivers of demand, and local supply of a skilled workforce and the work force regulatory environment in India determine the work culture in Indian IT companies. Apart from affecting health of the professionals, these determinants influence workforce policies, priorities, goals and management practices.

Keywords

Work Culture, Job Stress, Information Technology (IT), Information Technology Enabled Services (ITES), Qualitative Research

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There is limited research on occupational stress and its relation to health from developing countries such as India. This study was done to evaluate work conditions of professionals in two highly productive sectors: the information technology (IT) sector, also known as software development, and Information Technology Enabled Services (ITES), also known as call centers. The study employed thirty-two in-depth interviews. The results indicate the presence of nine stress domains: job control, autonomy, time pressure, length of experience in industry, night shifts, income, appreciation of work, physical environment, work-environment and affective or emotional factors. Global drivers of demand, and local supply of a skilled workforce and the work force regulatory environment in India determine the work culture in Indian IT companies. Apart from affecting health of the professionals, these determinants influence workforce policies, priorities, goals and management practices. Keywords: Work Culture, Job Stress, Information Technology (IT), Information Technology Enabled Services (ITES), Qualitative Research

Information Technology (IT) is a broad discipline, which uses computer technology in managing and processing information, especially in large organizations. In particular, IT deals with the use of computers and computer software to convert, store, protect, process, transmit, and retrieve information (Rohith et al., 2005). Information technology enabled services is a form of outsourced service, which has emerged due to involvement of IT in various fields such as banking and finance, telecommunications, insurance, and others. Some of the examples of ITES are medical transcription, back-office accounting, insurance claims, credit card processing, and others.

Several factors at the workplace have been found to elicit negative somatic and emotional reactions, including poor balance between occupational load and the competencies, resources, and/or necessities of the worker (U.S. National Institute for Occupational Safety and Health, 1999). These imbalances in individual traits and working environment determine the presence and levels of occupational stressors among workers (Kirmeyer & Diamond, 1985; Koeske et al., 1993; Latack, 1986; Latack & Havlovic, 1992; Schuler, 1982). Hitherto, several models and constructs have attempted to explain the interrelation between job stress and ill health. These are the theory of allostatic load on illness by Caplan (Caplan, Cobb, French, Van Harrison, & Pinneau, 1980), Hockey's construct of "resources," or total burden upon the human operator as an integrative model (1997), the "Effort-Distress Model" of

Folkow (1997), Job Content paradigms (JCQ; Hans et al., 1997; Karasek et al., 1998), Demand-Control constructs (DCQ; Theorell et al., 1998), the Work Organization Matrix (WOM) for imputing job title averages of job characteristics to study subjects (Alfredsson et al., 1985; Hammar et al., 1998; Johnson et al., 1996; Johnson & Stewart, 1993) and the effort-reward imbalance (ERI) model of work stress (Siegrist et al., 1990).

Based on the literature review, it is well documented that job-stress influences health in several ways (Alfredsson et al., 1985; Babu et al., 2013; Caplan et. al., 1980; Folkow, 1997; Hales et al., 1994; Hammar et al., 1998; Hockey, 1997; Johnson et al., 1996; Johnson & Stewart, 1993; Karasek et al., 1998; Siegrist et al., 1990; Theorell et al., 1998). These studies and the relevant theoretical models were employed in occupations involving workforce's mostly in-developed countries. However, there is scarce evidence available from such theoretical models originating from research in developing countries in any occupational workforce. Moreover, there is hardly any evidence available from the contextual nature of job stressors in the IT/ITES industries. It is important to understand locally applicable, culturally relevant and contextually specific work related stressors in low and middle-income countries (LMICs) such as India. Furthermore, there is a need to explore the relevant stressors at the workplace in India and to consider the appropriateness of including them in interventions. Thus, we conducted a qualitative study to explore the presence of contextual work stressors and health-related factors in IT/ITES professionals.

Role of Researchers

The first author (GRB) was involved in the conception and design of this study, supervision of the interviews, data extraction, data tabulation, data analysis, maintenance of all the drafts, interpretation of data, drafting the article and revising it critically for important intellectual content and final approval of the version to be published. The interviews were conducted by the primary author of this article and a research assistant under the supervision of primary author. The research assistant was paid from the research grant and had no contribution towards working on this paper. The second author (STN) was involved in the conceptualization and development of framework, reviewing the article and revising it critically for important intellectual content and final approval of the version to be published. The third author (AK) was involved in the conduct of FGDs, revising the manuscript critically for important intellectual content and final approval of the version to be published. The fourth author (SBK) was involved in revising the manuscript critically for important intellectual content and final approval of the version to be published. Roger Detels (RD) was consulted when there were divergent opinions, and also participated in revising the content each time for critical and important intellectual content and final approval of the version to be published. RD provided the overall supervision for the conduct of this qualitative research.

Methods

Study Site and Participants

From July 2010 to March 2011, a qualitative study was conducted among IT/ITES professionals in Bengaluru, which included individual in-depth interviews and focus groups discussions (FGD). The source population for the study was comprised of IT/ITES professionals aged 20-59 years old working in "technical functions" in the IT/ITES sector. Technical functions are characterized by involvement in human-computer interfaces within the IT and ITES industries. The inclusion criteria for participants in the study were: aged between 20-59 years, should have worked for at least 1 year in either IT or ITES industry and

should fit the designation of "Technical worker" according to the Revised Indian National Classification of Occupations (Ministry of Communications and Information Technology, 2007-2008).

We conducted 32 in-depth interviews with IT/ITES workers, recruited with the assistance of supervisors and Human Resources (HR) Managers in IT and ITES organizations. Participants were recruited from workers holding different job titles, team leaders, and administrative staff of informal groups. Recruitment of volunteers was done through personal communication as well as with the help of HR managers.

Ethical Considerations

The study was reviewed and approved by the UCLA Institutional Review Board (IRB, # G09-12-002-01, IRB#10-001348) and the ethics committee of The Public Health Foundation of India. (TRC-IEC 40/10) At the outset, the interviewers emphasized the confidentiality and importance of the responses. Potential participants were informed that the study was designed to understand their work environment and how it affects them, and that this information was not available anywhere else. We administered "informed consent", and specifically requested permission to record the interview. Informed consent was obtained from all participants before conducting focus group discussions and in-depth interviews. All the interviews were conducted at a convenient time for professionals in a private room arranged by the investigators.

Data Collection

The objective of the qualitative interview was to explore information on socio-demographic factors, individual experience as IT/ITES professionals, quality of work environment, individual's experience with stress, individual's working and non-working environments, awareness about health and hypertension and perceptions and knowledge on "risks to health." The interview guide listed the questions, which were to be used to ensure that the same basic lines of inquiry were pursued with each person interviewed.

The FGDs comprised of people with minimum of five to a maximum of eight members in each group. Two FGDs were conducted comprising of ITES sector while four were of IT professionals. The interview guide for FGDs included a limited number of questions, encouraging active discussion and contribution from the professionals. The questions were neutral and open-ended in nature. The FGDs started with general questions, which everyone responded followed by discussion on specific issues. The moderator encouraged everyone to participate in the discussion by stimulating discussion between participants and guiding the group from one discussion topic to another. The FGDs were done in neutral venues.

The in-depth interviews started with greeting the participant and introducing the research staff and research objectives. The interview guide explored information on socio-demographic factors, individual experience as IT/ITES professional, quality of work environment, individual's experience with stress, individual's working and non-working environments, awareness about health and hypertension and perceptions, knowledge on "risks to health." The interview guide listed the questions or issues to be explored in the interview and was used to ensure that the same basic lines of inquiry were pursued with each person interviewed.

For both types of data collection, the interviews were semi-structured, open-ended and were conducted using an interview guide. The interviews were conducted in a flexible manner by allowing as much time as required by the participants to seek insights into each

domain of the interview guide covering all the questions in the protocol systematically. All interviews were conducted in English. The whole conversation was audio-recorded. The interviewers also took notes on the contents of the interview, focusing on key phrases and main points made by the respondent. The interviews started with greeting the participant and introducing the research staff and research objectives. The open-ended and anonymous nature of the questions and the research setting enabled the participants to freely describe their experiences without any pressure as the privacy and confidentiality were not only assured but were acknowledged from the participants.

Data Analysis

The digital voice records were transcribed and transcriptions were checked for mistakes to improve by the interviewer. The transcripts were read and re-read several times to discover and label variables as categories. The analysis of the data transcripts done using coding procedure and constant comparative approach adopted based on grounded theory. The method has been chosen, as it is bottom up and inductive approach for analyzing qualitative data. The process of coding began with application of series of codes to each transcript, later the codes have been grouped into concepts of similar one for easy comparability.

We used the codes as short words or phrases that explained a descriptive sentence, which had been obtained in an interview, or part of the field memo or notes. Further, from these concepts, major themes have been generated through an iterative process and used for description of the results. By coding the different expressions of the individual subjects, we organized and sorted the data to develop the framework by integrating the different themes that are patterned by way of sorting. For example, we had the preset code of how time might be an important factor and thereby refined the code of time pressure through the notes collected in the fieldwork. In addition time management emerged as the critical factor in the routine functioning as part of the ongoing interviews. Once the interviews were completed, we starts going through the transcripts, grouping the various contents with the help of the "time", "deadlines", "pressures faced" as a series of codes and organized the data. The codes were refined including the cutting and pasting of the various quotes and utilizing the expressions according to the transcripts. Hence, we used the codes around deadlines and pressures created by time, which eventually led to sorting out complexities of information around several aspects and resulted in emergence of theme of "time pressure."

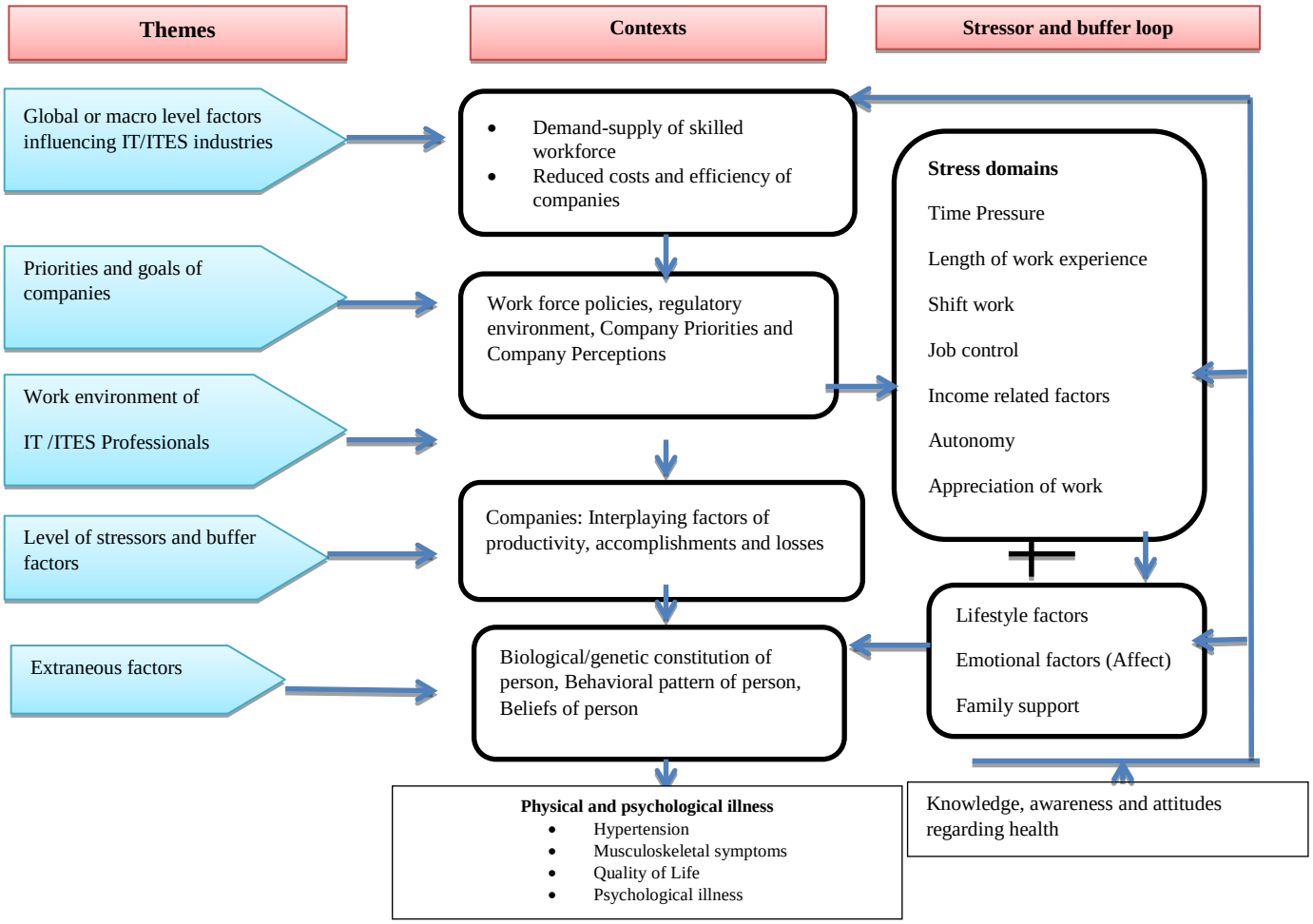
The data collected were entered into an excel sheet and a set of codes were developed to classify the words by categories by using specific software tools *deDoose* (Dedoose, 2011) and *ATLAS ti*. (Muhr, 1998). After summarizing all the data, the shared information and opinions of the respondents that emerged from various cross sections of the people were summarized to make the conclusions. Following a series of revisions, the conceptual framework for understanding the factors influencing stressors in IT/ITES professionals was finalized. (See Figure 1)

Quality Control

In order to reduce researcher bias, the study did not capture identifiable information of the participants such as name, email id, phone number or even name of company. The participants were randomly invited and were self-selected and hence there is bias in selecting the participants. Also, the lead researcher and research assistant administered the data collection instruments. Open-ended questions were asked in keeping with the qualitative framework. Specific attention was paid not to influence or provide any pointers as possible answers to questions of researchers. The initial data collected were transcribed, given unique

codes and coded. The lead researcher and research assistant crosschecked the coded data. The discrepancies in coding have been discussed by researcher and research assistant. Any major issues were resolved by contacting the research supervisor (RD) through electronic communication.

Figure 1. Conceptual Framework: Job stressors in IT/ITES sectors, health outcomes and evidence feedback loop to address issues at different levels



The credibility and rigor were established by the details as follows. We captured prolonged and varied field experiences of the IT professionals using a field journal, which was designed for the purpose. The triangulation of the qualitative data was done as the information regarding stressors and health perspectives was captured by several sources including from most recent employees to experienced workers of several different positions. Further, we followed the peer examination criteria to hasten credibility. Sharing the draft and discussion by the researcher was done with independent and senior colleagues at UCLA, who have rich experience with qualitative methods.

Results

The results have been organized as follows: Demographic profile of the participants has been explained in the first section followed by themes. Under theme one, the role of stressful domains, findings have been presented such as time pressure, length of experience in industry, shift work, job control, income, autonomy, appreciation of work, physical factors

and affect. Under theme two, the roles of buffer domains, findings have been presented such as work environment, family. Theme three displays findings related to lifestyle factors. Theme four presents the results related knowledge and awareness about health. Finally, theme five portrays the findings related to work culture and its determinants.

Demographic Information

A total of 32 subjects were interviewed. (Table 1) The majority of the sample (50%) was 26-30 years of age, followed by 22% in 19-25 year age group. Around 60% of the sample was single, half were females, around half had professional or higher education and another 38% had a general degree. Employees from ITES comprised around 60% of the sample and the remaining 40% were IT employees. Around half the people in the sample had worked for at least two years in the settings (but less than seven years) while one fourth respectively were junior or senior to them in number of years of experience.

Theme One: Role of Stressful Domains

As IT/ITES professionals, respondents had to spend most of their time either in the office or attending work related calls or preparation at home in order to complete the stressful work schedule. There were several stress domains that were described by the professionals. Nine important domains emerged as common stressful factors across IT/ITES professionals. The stress was perceived in a different manner based on the number of years spent in the same type of work. Hence, experience in industry was an important factor. Professionals in the ITES sector had to spend the maximum number of working hours in shiftwork. This was stressful as night shifts disturbed diurnal rhythm and affected other activities. Other stressful domains identified were poor job control, income related stress, autonomy, appreciation of work, physical environment, work-environment and affect (emotional factors). The list of stressful domains is presented in table 2.

Time pressure. The quantity of work IT/ITES professionals perform necessitates lengthier stretches of time in focused work in front of computers. From the results of qualitative studies, we found that there are several factors that are concerned with working time of IT/ITES professionals. We term them as “Time Pressure” and they include: duration of work on a daily basis, number of days worked per week, stress due to time taken to travel to office, whether they continue to work at home beyond office hours and whether one takes sufficient number of breaks during work. Nearly two thirds of the sample (64%) worked for more than eight hours a day on average and a nearly equal proportion (66%) worked for more than 40 hours per week. More than half (53%) worked on weekends.

During the interview, one of the responded mentioned that

> “Somehow” is the key word in IT. Product timeline is fixed. Then everything is based on “somehow” to get it done. If you ask for the moon, the managers will just take it. If 31st July is the deadline given, we have to get it by 31st July. In US, where I worked, the timelines were realistic. In India, it is not the same. - (32 years, IT professional, male, single)

Table 1. Descriptive statistics of qualitative sample of IT/ITES professionals, Bengaluru, 2011-12

Age Group (in years)	**Number**	**Percentage**
19 to 25	7	21.88
26 to 30	16	50.00
31 to 35	6	18.75
36 to 55	3	9.38
Total	32	100.00
Marital Status		
Married	13	40.63
Single	19	59.38
Total	32	100.00
Children		
No	23	71.88
Yes	9	28.13
Total	32	100.00
Education		
Pre-Degree	1	3.13
General Degree	12	37.50
Professional Degree	4	12.50
4) Post Graduate	11	34.38
Not mentioned	4	12.50
Total	32	100.00
Sector		
BPO	19	59.38
IT	13	40.63
Grand Total	32	100.00
Total		
Total Work Experience		
1) 0.0 - 2.0 Years	7	21.88
2) 2.1 - 7.0 Years	17	53.13
3) 7.1 - 12.0 Years	7	21.88
4) 13.1 - 28.0 Years	1	3.13
Total	32	100.00
Smoking		
No	6	18.75
No Idea	3	9.38
Yes	23	71.88
Total	32	100.00

The unreasonable work pressure is indicative of constant stress factor mounting on IT professionals. The word ‘somehow’ can be construed to depict the plight of the professionals, even beyond normal working hours. Based on the experiences and explanations of the study participants, it reflects that work related issues constantly haunt them beyond the working hours. This cumulative stress for an extended period of time may lead to health related consequences. Few respondents also mentioned that some IT projects demands to work several hours at home during weekends as well. These imply that there are very minimal breaks from the work they do irrespective of place they work such as office or home. Deadlines or any work come with lot of intensity and most of the times the professionals have to complete the job quickly and therefore are under lot of pressure. This is also complicated by stiff competition and as a result, Time is a big driving factor determining the work life of the professionals in this sector.

Length of experience in industry. The duration of time spent in the working position and capacity for work influences whether one is stressed or not. We found that title of working designation, number of years in the current occupation and the total number of years at work play an important role in the way IT/ITES professionals feel and respond to stress.

> Life before 4 years it was excellent. It is not so good now. It (the work) is indirectly affecting your social life also. Initially I used to socialize but now we don't get some time to do this…, I don't know whether I would look like an old lady if the same thing continues.
> - (25 years, female IT professional, single)

The above expression clearly implies the fact that the individual's social life has been affected. The individual expressed loss of social life is a consequence of the work demands. The central expression here is that while she can manage this for now, she cannot carry it for long time. There is a clear anticipation that the length of service is going to make things worse with respect to social life and ageing.

Shift work. Professionals mainly in ITES sector and to a much less extent in IT sector will have to perform shift work as part of their routine work. Our interviews found that there are several factors in shift work that influence one being stressed or not. They are whether there is shift work required as part of the work or not, number of night shifts one has to do and whether they get free days off as a result of shift work. In our study sample, nearly half (50%) of the sample wanted that free day as compensatory off be given after the night shifts. 16% of the professionals didn't like working in night shifts.

> Because of the job, I am not able to do things what I want to do. My routine life is totally different because of the night shift. I don't find life so interesting as it was when earlier.
> - (23 years analyst in ITES Company, female, single)

The expressions imply a feeling of being enslaved by the job, frustration build up and dissatisfaction in life. Night shifts change the circadian rhythm of the professionals and results in fewer interactions with friends, family and miss on important aspects of social life.

Job control. Our study found that there are particular issues identified by respondents, where job control had played an important role. Working from home is not generally allowed in Indian companies and workers feel that lack of permission for this causes a lot of other stressors such as traffic, not being able to balance between work and family etc. Correspondingly, workers who could decide whether they can work from home were found to be very happy and lack the stress caused due to several other factors. Correspondingly, executing work under strict deadlines, enforcing scrupulous speed of work, lack of clear instructions for accomplishing specific task/s and the repetitive nature of work caused professional to think that they do not have the control on the job. Nearly 10% workers inferred that they were being pushed against unrealistic expectations (11%) while an equal proportion complained of the monotonous work (11%).

> There was a new assignment, I was worried. Manager said, "It's like swimming. Take them, throw them into water. They will learn it eventually.
> - (29 years old, IT professional, male)

Table 2. Description of themes of stress domains, qualitative study of IT/ITES professionals, Bengaluru

Theme of stress domains	Explanation
Length of experience in industry	The job title of professionals would reflect the amount of stress each person would have to bear with.
	Position and experience in the industry would determine the amount of time each one has to contribute per day towards work.
	Total number of years worked in current occupation determines how professionals perceive stress and how they cope with it
Time pressure	The total number of hours worked per day would determine how much time is left for individuals to spare for exercises, time to family and recreation activities.
	The number of working days per week should ideally be five. More often than not, this exceeds beyond 5 and takes time from weekends too.
	Many professionals feel stressful to travel to office and travel back due to traffic congestion, bad roads or poor vehicle
	Answering calls while at home regarding work and/or working from Home even after working at work-place determines amount of extra stress people will have to bear without any time for relaxation
	Taking breaks during workday are important for transient relief of work pressure, to be able to discuss problems with friends/colleagues and rebound back.
	Even when people take breaks, it will be stressful if professionals are under constant pressure to return to work or complete some assignment. The duration of breaks will be an important determinant of relaxation.
Night shifts	Working in night shifts has emerged as one of the key stressors for professionals working in ITES sector. Very few IT professionals were working in night shifts.
	For some workers, the schedule of night shifts was fixed extending for a fortnight to entire month while few others had rotating night shifts. Both kinds of night shifts affect the stress status of individuals.
	Even when night shifts had to be done, the frequency of night shifts was the most important determinant
	It is very important to catch up with sleep and rest after night shifts. Hence number of free days after working in night shifts is an important factor.
Job Control	Workers regarded that they lack the control of speed at which they work. Managers determined speed without consulting workers. Unrealistic expectations was common problem amongst workers
	Permission to work from home was given only in few sites. Such permissions were not given due to lack of trust on employees.
	Pushing workers for strict deadlines for completing a given job or task was another problem found in IT/ ITES sector.
	A flexible job allows people to take time off from work when wanted. Strict control by supervisors and managers puts pressure on workers.
	Receiving clear instructions or information regarding work is an important aspect. However, on assigning a new task many professionals are not even asked whether they are able to perform the work
Income	When pay was decided based upon how much an individual works was found to be least stressful while pay dependent on how much group works and hence was result of collective effort caused stress to better performing individuals.
	The emerged theme suggests least stress when salary can cover substantially more than basic needs and those of my family. At the other end of spectrum was high stress due to inability of salary to cover basic needs of self and family.
	Availability of options upgrading job title and advancing the career emerged as an important factor about genesis of stress.
Autonomy	Whenever people were in charge of deciding their own work schedule, they were least stressful and felt happy about it. However, a constant theme that emerged was lack of such autonomy being the cause of stress at work.
	Job stress depended on the person/s evaluating one's work. Good managers were able to positively reinforce the workers while some managers induced as cascade of stress within

	the system.
	The feeling of being constantly monitored due to visits by managers, emails, video monitoring and phone calls made workers stressful.
Appreciation of work	Not being appreciated for good work done emerged as constant problem at workplace while the presence of which showed positive atmosphere.
	Giving the credit for work by supervisors/managers was regarded as a virtue and was infrequent at worksite.
Physical environment	Having special seating arrangements, ventilation and lighting was regarded as an important factor for carrying out work.
Work-environment	Functioning of systems of handling several issues at work place are important factors. Some of them are system of identifying dilemmas at work and obtaining help from colleagues or supervisors. Also, in the presence of an established system for resolution of conflicts at workplace, people would easily resolve them. In the absence of this, there will be more stress. Transparency of working procedures and absence of discrimination are other important factors.
Affect or Emotional factors	Abuse of power or violations of norms of behavior at work, blaming for someone else's mistakes at workplace, bearing abusive communication at work place were important determinants of emotional responses in IT/ITES professionals.

As part of their curriculum in graduate courses, the IT/ITES professionals can only be trained in few disciplines and would have gained experience in only one or few domains. However, the management on the other hand would push them to work in unfamiliar domains. The expression implies a feeling of not knowing the demand of the new assignment, feeling inferior about the competency required for the new task and there is a clear expression of how it causes undue stress.

Income. Many of the interviewed professionals felt that income is a very important factor in sticking onto the current job and it is this that has given them an edge over other professions. Hence the lack of adequate salary operated as a worry for any given job. The adequacy of pay, the extent to which professionals can afford luxuries and necessities and presence of positive prospects were important factors affecting the stress status of individuals.

> We are here because Money; it is liked the mostly for economic security.
> - (36 years, 11 years in IT, married and a daughter of 8 years)

The professionals hired by the software companies are paid well compared to most of the other available jobs for the graduates. Hence, this quote explains that the preference for IT sector might be because of the higher salaries in the sector. This also means the professionals are ignoring negative consequences of the work involved in the IT sector.

Autonomy. Our results indicate that autonomy serves as an important factor in determining the stress propensity of professionals. In particular, the freedom to decide on schedules of work on their own, which was absent for most of the workers interviewed, is an important factor for job-stress. In addition, the way individuals endure evaluations, appraisals within their company and how they are supervised turn out to be important factors.

> I can take my own decision and individuality by managing things. All other things got transformed. If I am not able to do this, then I am not the capable guy to do this and that is not the exact fact. Overall, continuously monitoring and no proper system of mentoring of whatever you do is the main drawback.
> - (36 years, 11 years in IT, male, married)

Too much supervision threatens one's freedom to work and questions their autonomy at work. The individuals feel the pressure of constant stressful situations when autonomy at work is threatened.

Appreciation of work. Some small acts of gratitude shown by supervisors ensured very good performance even when financial incentives were not given during the period of recession. Hence, dearth of appreciation can be an important deterrent in such pressure filled atmosphere. Additionally, some professionals articulated that some managers take away credit for work that truly belongs to them. This was felt as a very tough adverse element in enduring that job or with such supervisors in future.

> The clients appreciate our work and again it depends on the relationship between the clients and us besides, very difficult to get the management's appreciation.
> - (24 years, 1 year in IT and single)

When good work is acknowledged, there is self-satisfaction and motivation to sustain the work or to perform better. However, the quote denotes that appreciation of work is provided only by the client and not from the management. This creates a void and the workers feel that there is no recognition of their work, thereby leading to demotivation, dissatisfaction and stress.

Physical factors. Many workers expressed that physical infrastructure provided to them was very good and it was one of the positive reasons for going into IT sector. Some people complained about air conditioning of the place in that the regulation is done centrally and they cannot change the temperature that suits them. Overall, seating arrangements, amount of workspace available, ventilation and amount of light at work place were important.

> I feel like I am put in a cage. There was basically no exposure to the outside world. As if I am put in a box, with no hole to breathe. I requested and got released from the environment.
> - (25 years, female, systems engineer in IT industry)

The working conditions are capsuled very well in the above statement. The respondent expresses suffocation of being constrained in a small space. Restriction of physical space has impact on the stress levels, mental status and work performance. As clearly depicted in the quote above, suffocation results in moving away from the work place; going away the current circumstances.

Affect. There are several emotional factors that have importance in determining how IT/ITES professionals cope with stress. There are instances when mistreatments have occurred or senior managers have resorted to using abusive communication at work. In these instances, the cause of stress and coping mechanism are dependent on the way individual responds. Other factors that fall in this domain are professionals getting unnecessary blame for failures or impending failure, escalations involved in work and discrimination at work. Discrimination at work is an important factor to study in India. In a setting that is predominately occupied by upper castes, the reason for discrimination was found often on a regional basis.

> He (Human Resources (HR) officer) humiliated me in front of many of my colleagues. He told me that the market is good and why don't you quit if you don't like the job given to you.
> -(25 years, female IT professional, female, single)

Criticism, rude language and unruly behavior from the senior staff create negativity and causes stress in the IT/ITES professionals. Instead of communicating with younger professionals in dignified manner, the HR professionals or seniors insult in the presence of other colleagues. These acts of comparison, discrimination and humiliation will lead to stress.

Theme Two: Role of Buffer Domains

Work environment. Dilemmas at work can be caused due to several factors such as lack of information, unrealistic expectations from senior managers. In such instances, the system of dilemma resolution and providing help to solve the dilemmas play as an important role towards relieving stress. Transparency of work is an additional factor influencing the stress propensity of professionals. Further, comparing with others about work expectations and how each person performed are as negative influences. A good work atmosphere has better work environment and hence can be thought of a good buffer mechanism in relieving the job stress. A good system will also ensure transparent and fair practices without undue comparisons of individuals.

> Setting targets themselves should be directly proportional to the ability of the person and introspection of the person. Lack of knowledge from various parts of the world; have to introspect what can I achieve and what is my target if they can put that as a target and try look at it as an achieving note, they can excel.
> - (40 years, IT professional, male, married with two children)

Unrealistic expectations from the senior management professionals can frustrate the junior cadre. Higher expectation from seniors often raises hopes for junior professionals but also leaves them prone for greater frustration, in the event of failures. One cannot stretch beyond their limitations and competence for too long.

Family. Apart from the work environment, the other most important buffer factor is the support received from family members. The respondents felt that it was very difficult to balance work and family life. Thus, IT/ITES professionals would feel less stressed if there were good support from the family members and vice versa.

> We are not their slaves because they are paying us. There was an instance when I came out of my first assignment. They were forcing us to go to different location. I requested them that my parents are staying with me and I can't go to Chennai. Initially they asked me to attend some interviews but later the HR manager did not consider my request.
> - (25 years, female IT professional, female, single)

Due to preoccupation with the work all the time, family life takes a beating.. The employees face lot of challenges in fulfilling family duties. The above quote stresses that it is difficult to take care of parents, which is expected as a normal task in most of the Indian

families. Here, the job poses hurdles in doing basic familial duties. Hence, the otherwise buffering effect of the family is affected due to job stress.

Theme Three: Role of Lifestyle factors

Some people admitted that smoking helps them to relieve their stress. In the same way, alcohol also seemed to act as a buffer factor. Both of these habits also were reported to help people to group together and discuss their work related problems. However, habits such as tobacco use puts people at higher risk for chronic diseases. Hence, the concentric group of smokers might feel that they are getting relieved of stress while putting themselves at higher risk for disease. In the current study, 72% of the professionals agreed that they were current smokers while 6 % didn't. On inquiring the proportion of smokers in IT/ITES industry, more than one third of participants approximated it around to be 25-50%, while one fifth of people thought it should be around 50-75%. Three individuals (9%) gave information voluntarily on smoking proportion in women professionals and approximated around 25-50%.

> I sneak out sometime for every 2-3 hours because I smoke and chat with colleagues.
> - (27 years old IT professional, male, single)

It is distressing to note that smoking is seen as a tool of having open discussion with colleagues and provides relief for sometime and from their stressful work. Surprisingly, the habit of smoking is seen as an attribute of getting to be friends with colleagues and seniors. Irrespective of the reasons for initiation of smoking, the risk behavior once started will result in higher stress levels in addition to causing poor health in the long run.

Theme Four: Knowledge and Awareness Regarding Health

Around 60% rated quality of life to be moderate (4-7 out of 10) and approximately identical proportion (63%) regarded quality of health of IT/ITES professionals to be moderate as well. (4-7 out of 10)

> Whenever pulse rate goes up, it is high BP.
> - (26 years, ITES professional, single, male)

Poorer understanding of blood pressure by IT/ITES professionals displays their ignorance regarding health despite being highly educated.

> No way that anyone can get BP. In this industry, the crowd is very young.
> - (26 years, single, male, IT professional)

The IT/ITES professionals are unaware that young population can also be affected with high blood pressure. Therefore, this statement displays the misconception about the hypertension (high blood pressure).

Theme Five: Work Culture and its Determinants

Other major factors causing discomfort among employees were lack of transparency and lack of adequate salaries. Around 4% of professionals complained that job stress itself is one of the antipathies workers have to face. Other dislikes of professionals were the distance

and time to travel to office from home, prejudice demonstrated by managers, inefficiency of other workers which affects team work and lack of interaction. The factors that professionals don't like are meetings, lack of creativity, no scope for developing personal relationships, relying on outdated systems functioning, lack of adequate training required for performing work, lack of support from supervisors, using sarcastic sentences in daily communication and not providing free days after night shifts.

> It is a very common saying, 'to get something good, you have to loose something.' I am getting good experience and I am loosing my health, spending with my family and friends. I need to compromise on such things but health we need to take care of very much.
> - (28 years old IT professional, female, single)

The expressions display the helplessness of the individuals, who think that in order to gain experience, they are willing to concede on some the healthy behaviors. A the prime age of their youth, the individulas feel threatened about their health. The IT/ITEs professionals acknowledge the adverse effect on their health explicitly, as a consequence of working conditions.

> I want to be on top. I don't care about others. I will suppress others progress and I come on top. I saw such kind of people in my current team, which irks me. I feel really bad and because I have not faced it personally. They shared their experiences with me. Once that impression comes, it is very difficult to change it. I tried to avoid them as far as possible.
> - (25 years, female IT professional, single)

Competitiveness can contribute to improve productivity. This can be distressing when it leads to distrust and suppression of other people. The above quote is expressed as a summary of the negative work culture, often threatening the several individuals in the IT/ITES sector. Exposed over longer periods, these stressors can lead to ill health.

> 11 – 12 hours we will be in office. No moving work only sitting and doing work. Mostly obesity is the problem faced and back pain, glasses used for headache, etc. Other than lunch we will not be moving away from the computers. If we involve more to work, we may not be taking lunch in proper times.
> - (23-year-old IT professional, single, male)

The impact of posture problems and long working hours in this industry is expressed in this statement. The long hours of sitting in any one posture is detrimental to the health of the individuals. Thus it can be seen that the work life has had a great impact on their physical and psychological health. Generally, young people should not suffer from any of the symptoms mentioned in the quote. The very presence of these symptoms in younger professionals is an alarming feature of ill health.

Priorities and goals of companies.

> Sometimes, I have to manage my team members in their absence. Sometimes the stress is from the management's side, the deadlines and the projects to be finished.

- (27 year ITES professional, married with 1 child)

Conflicts – manager gets pressurized and the same will be carried on to us that kind of conflicts are witnessed.
- (23-year-old IT professional, single)

Dependency which builds up where your performance is not only Your's but its collective responsibility.
- (30 years IT professional)

The priorities and goals of the senior management not necessarily reflect the competence and expertise of the workers. Hence, a lot of pressure is transferred from the higher levels of hierarchy downwards. The above statement reflects that the IT professionals have to display collective responsibility and be prepared for conflicting nature of the work. This is a constant challenge to the faced by the workers, and is accepted as sort of a norm.

Workforce policies within companies.

Handling manager is more tougher than handling project. I solved most difficult tasks but get 8% hike, whereas others who are pally with manager get 14% hike in salary.
- (23 years, male, IT sector)

The above expression describes how the interpersonal relationship with the manager matters more than the work performance. This is very challenging for the individuals who work harder but do not know how to handle managers. On the other hand, manipulative people can work their way through even without particularly being industrious.

Apart from the above, there were several reasons that professionals informed that they like in IT industry. These attributes included mostly about the quantum of money as they get salary and incentives (17%), and next commonest was their interaction with People (10%). The other likely reasons were liking the challenges in work (8%) and flexible type of work (8%), ambience (6%), innovation at work (6%) while other listed high profile in society, application of logic, prospect of having long term career, like people in team, like timings, work culture, creativity at work, facilities, fun, independence, learning new things, like everything, travel and sharing knowledge.

Discussion

Several theories (Alfredsson et al., 1985; Folkow, 1997; Hammar et al., 1998; Hans et al., 1997; Hockey, 1997; Johnson et al., 1996; Johnson & Stewart, 1993; Karasek et al., 1998; Siegrist et al., 1990; Theorell et al., 1998) have attempted to establish the causal link between stress and ill health. The perception and adaptive changes in response to stressors are mostly transient and contextually specific in nature. However, not much work has been done in describing the contextual stressors and their role in developing countries such as India. Our paper sheds light on this important aspect of exploring contextual specific stressors at the individual and organizational levels including adaptive responses to these factors. Our results indicate that there is constant interplay between stressors; buffers and positive attributes associated with the working conditions in IT/ITES professionals.

Among the positive attributes, most of the IT/ITES professionals were satisfied and expressed happiness with the infrastructure provided to them for work, salary they get, better

quality of life and recognition they get from society. Among the stressors, the study identified contextual stressor domains at the individual level and some stressors at organization level. Support from family was an important and constant buffer factor to alleviate stress while the buffer role of lifestyle factors and emotional factors was varied among workers. These results are in conformity with model of allostatic load by Caplan. (Caplan et al., 1980) The state of equilibrium within an internal and external environment is referred to as "Homeostasis" (McEwen, 2000). Bruce McEwen introduced the term Allostatic load in 2000, which refers to the effect of chronic exposure to the neural and/or neuroendocrine stress response on chronic diseases in general and for cardiovascular diseases in specific. (Caplan et al., 1980) In this model, job stressors refer to working conditions that may lead to acute reactions, or strains in the worker. These short-term strains, in turn, are presumed to have an impact on longer-term indicators of mental and physical health. The model comprises three components namely, individual factors, non-work factors, and buffer factors. This model guides us to measure allostatic load at the macro level. The inclusion of these three categories covers an array of personal and contextual factors that might be responsible for differences in the way individuals exposed to the same job stressors perceive and \ or react to the situation. (Cooper & Marshall, 1976; Greenberger et al., 2002)

There are specific global level stimuli affecting demand and supply of skilled workforce in IT/ITES industries of India. The key factor among them is reduced costs and better efficiency of the tasks. The global factors influence priorities and goals of the local companies. However, the local companies will have to design their own work force policies based on their priorities and perceptions of their own companies. The decisions made in the process of setting priorities of companies have a great impact on working condition of IT/ITES professionals. For example, in our study, it was found that companies who were based out of United States had standard policies regarding fair practices and incorporated the goals of welfare of their employees. This resulted in better productivity and better quality of life among their workers.

Notwithstanding the positive attributes expressed, the results from this study indicated presence of significant stressors based on the contextual information sought from the IT/ITES professionals. First, at individual level, this qualitative study identified nine stress domains namely job control, autonomy, time pressure, length of experience in industry, night shifts, income, appreciation of work, physical environment, work-environment and affect or emotional factors. The identification of these contextual stress domains has some important features.

First, Job control is an important factor in determining stress perception and coping. Job control is defined as "the extent to which employees control the scheduling, pacing, order, and so forth of monitored job activities" (Carayon, 1993). Earlier studies examining job control as a stressor support our results (Aiello & Kolb, 1995; Cohen, 1979; Hales et al., 1994; Pearson, 1991; US Congress, 1987; Westin, 1992). As found in the study, the degree to which workers can control the onset or timing of monitoring is an important factor in alleviating the stress at work place (Stanton & Barnes-Farrell, 1996). According to literature review, frequency of control exercised by managers, (Lund, 1992; Niehoff & Moorman, 1993) extent of control factors, the person who makes the decision of allowing flexibility to workers (Critchfield & Vargas, 1991; Dickinson, 1997; McCurdy & Shapiro, 1992) and characteristics of the individual who is the target in the "stress cascade" (Brewer & Ridgway, 1998; Komaki, 1978; Larson & Callahan, 1990; Wilton, 1971) are important determinants of job control related stress. In a study done to examine applicability of the Job Demands-Resources Model of burnout among rural development workers (N=194), job demands and rewards were equally important in accounting for levels of psychological stress (Duraisingam, 2005). A study on veterinary assistant surgeons by Triveni et al. (2006)

reported that the major sources of job stress were numerous meetings, work load, lack of personal growth and monotonous nature of work. Their study also identified lack of facilities and clear-cut policies, untimely supply of inputs and lack of conveyance to field visits as sources of organizational stress. In a study done to assess job stress in railway engine pilots, Sumit Prakash et al. (Saran et al., 2011) reported statistically significant correlates with fatigue, ergonomics of work place, management pressure, high job demand, low control and low support at work and biological functions. In an ethnographic study of the low-income construction workers, Dhar describes emergence of two themes of work demand and stress leisure experiences (Dhar, 2011). In an another study, on the prevalence of occupational stress amongst nurses, "Time Pressure" was found to be the most stressful in everyday life (Bhatia, 2010). Our results suggest that "Time pressure" is an inherent attribute of the work environment of the IT/ITES industry in India.

Second, we found that workers differentially perceive and report stress factors. One of the driving factors of this differential nature is the type of immediate supervisor/manager. If the manager mistrusts the worker or if the workers thought so, the propensity of trigger points was more and provoked feelings of unfair treatment, prejudice and causes stress. This construct has been referred to as "attributed trust," defined as the extent to which workers believe that their supervisor trusts them to perform their work tasks without coercion (Strickland, 1958). According to the experiences of professionals, there were several overt and subtle methods of monitoring often construed as coercion assimilated in the regular execution of tasks. These can act as trigger events and might reinforce generalized positive or negative feelings about self and workplace (Kidwell, 1994). These personal experiences modify the behaviour of workers over a period of time and thereby determine the priorities for work related aspects and overall performance. Based on the results from our study, we infer that perception of stressors by IT/ITES professionals is an important determinant of their behaviors in their workplace or in other places. This might include whether or not they choose to smoke, to follow relaxation techniques including exercises, and how professionals treat each other at work place. The constructs involved in support from supervisors and colleagues whilst monitoring have been discussed in literature.

Third, from the public health perspective, the level of knowledge and awareness among IT/ITES professionals about health in general and hypertension in specific was very poor. In a qualitative study, hypertension has been perceived as a common and serious problem in the community of migrant workers and the theme of city life as major predisposing factor for developing hypertension (Kusuma, 2009).

Fourth and most importantly, at the organization level, workplace culture emerged as a very important source of perceived stress. Earlier evidence points to the importance of organizational culture in determining the health of professionals (Peterson & Wilson, 2002; Thompson et al., 1996). Peterson and Wilson states in their paper that "Simply stated, culture matters" (2002, p. 85). They further state, "it matters because the consequences of ignoring an organization's culture can lead to undesirable outcomes for both the company and the workers" (p. 85). Perception of work culture can mediate stress factors and ill health in several ways. IT/ITES professionals will have to confront the potential stressors routinely and this occurs repetitively over a period of time. The extent to which poor job control and unrealistic work expectations are widespread in the organization determines the level of negative emotional reactions such as frustration and aversive interpersonal relationships such as hostility or defensiveness (Peterson & Wilson, 2002).

There is ample evidence to suggest that work culture is determined by assumptions and beliefs, which subsequently prescribe the way supervisors, managers, communicate and interact with IT/ITES professionals (DiMaggio, 1997; Griffiths et al., 1994; Schein, 2009). Peterson et al in their model, describe that health of both organization and employees are very

important (2002). The model describes organizational health as the well being of the corporate whole, which can be measured in terms such as productivity, performance, quality, competitiveness, and profit. In comparison, employee health involves traditional measures such as physical and mental sickness, absenteeism, and fatigue of the workers (Peterson & Wilson, 2002). The study also identified the work culture as an important source of perceived stress. This study also found perceived positive attributes such as higher income, better physical environment and recognition from society.

The earlier evidence with reference to job stressors has pointed to several matrices exploring composite measures of job-stress (Alfredsson et al., 1985; Babu et al., 2013; Caplan et. al., 1980; Folkow, 1997; Hales et al., 1994; Hammar et al., 1998; Hockey, 1997; Johnson et al., 1996; Johnson and Stewart, 1993; Karasek et al., 1998; Siegrist et al., 1990; Theorell et al., 1998). The most well known models for measuring job stress are Occupational Stress Index (OSI; Belkic, 1995; Belkic, 2000) and Job content Questionnaire (JCQ; Karasek R, 1990; Karasek et al., 1998). Both these matrixes aim at objectively assessing the job stressors. The OSI is a step ahead of the JCQ in having specific questionnaires for different occupations such as drivers, nurses and doctors (Belkic & Nedic, 2007; Emdad et al., 1998). However, both these questionnaires could capture the specific experiences of workers in IT/ITES settings in India. Hence, ours is the first attempt in exploring the contextual stressors in IT/ITES workforce in India. Further, our qualitative study explores knowledge of health and other socio-demographic characteristics, as they are important ingredients in understanding buffer mechanism for combatting job stressors and their effect on health.

Generalizability of the Findings

Globally, there is an increased effort to shift jobs including the IT/ITES industry to low cost areas in developing countries such as India, which have a huge pool of lower paid, technically competent and English speaking workers. Our study finds that most of the time, workers perceived that their Indian companies overemphasize their skillset and talent pool to the global clients in order to successfully bid and win IT/ITES projects. This results in creating unnecessary and heightened atmosphere of work pressure with unrealistic demands, often exploiting the professionals. As a result, we identified nine contextual stressor domains in these industries and based on the composition of the IT/ITES workforce, we infer that the results will be applicable for such worksite settings in India and as well for similar settings in low and middle-income countries. The work conditions and stress domains in low and middle-income countries are comparable especially in IT and ITES sector. These finding shall significantly play critical role in devising quality interventions to improve work atmosphere, which shall indirectly have positive implications on health of employee in IT and ITES sector. We are cautious that the work-culture and other contextual buffer mechanisms might vary in countries other than India and therefore the applicability to their settings might differ. Nevertheless, these findings have to be re-tested in other industries other than IT and ITES sector in order to understand the specific stress domains and to devise cost effective interventions.

Conclusion

In conclusion, this study identified a number of stressors perceived by workers in the IT/ITES industries in India. Many of these perceived stressors can be reduced by improved management policies and work environment. These changes may have a positive impact on productivity and quality of work. Further evaluations of positive and negative impacts of

occupational conditions through qualitative studies can help in understanding the comprehensive profile of workforces.

References

Aiello, J. R., & Kolb, K. J. (1995). Electronic performance monitoring and social context: Impact on productivity and stress. *Journal of Applied Psychology, 80*, 339-353.

Alfredsson, L., Spetz, C.-L., & Theorell, Tñ. (1985). Type of occupation and near-future hospitalization for myocardial infarction and some other diagnoses. *International Journal of Epidemiology, 14*, 378-388.

Babu, G. R., Jotheeswaran, A. T., Mahapatra, T., Mahapatra, S., Kumar, A. Sr., Detels, R., & Pearce, N. (2013). Is hypertension associated with job strain? A meta-analysis of observational studies. *Occupational and Environmental Medicine, 71*, 304-314. Retrieved from http://oem.bmj.com/content/early/2013/09/24/oemed-2013-101396.full.pdf+html

Belkic, K. (2000). The central nervous system: Bridge between the external milieu and the cardiovascular system - The forebrain: Central stress mechanisms and cardiovascular. *Occupational Medicine-State of the Art Reviews, 15*, 107-116.

Belkic, K., & Nedic, O. (2007). Workplace stressors and lifestyle-related cancer risk factors among female physicians: Assessment using the occupational stress index. *Journal of Occupational Health, 49*, 61-71.

Belkic, K., Savic, C., Theorell, T., & Cizinsky, S. (1995). *Work stressors and cardiovascular risk assessment for clinical practice. Part I.* Stockholm: National Institute for Psychosocial Factors and Health, Section for Stress Research.

Bhatia, N., Kishore, J., Anand, T., & Jiloha, R. C. (2010). Occupational stress amongst nurses of two tertiary care hospitals in Delhi. *Australasian Medical Journal, 3*(11), *731*-738.

Brewer, N., & Ridgway, T. (1998). Effects of supervisory monitoring on productivity and quality of performance. *Journal of Experimental Psychology: Applied, 4*, 211-227.

Caplan, R. D., Cobb, S., French, J. R. P. Jr., Van Harrison, R., & Pinneau, S. R. Jr. (1980). *Job demands and worker health: Main effects and occupational differences.* Ann Arbor, MI: Survey Research Center, Institute for Social Research, University of Michigan.

Carayon, P. (1993). Effect of electronic performance monitoring on job design and worker stress: Review of the literature and conceptual model. *Human Factors: The Journal of the Human Factors and Ergonomics Society, 35*, 385-395.

Cohen, J. L. (1979). Social facilitation. *Motivation and Emotion, 3*, 19-33.

Cooper, C. L., & Marshall, J. (1976). Occupational sources of stress: A review of the literature relating to coronary heart disease and mental ill health. *Journal of Occupational Psychology, 49*, 11-28.

Critchfield, T. S., & Vargas, E. A. (1991). Self-recording, instructions, and public self-graphing. *Behavior Modification, 15*, 95-112.

Dedoose. (2011). *Version 3.1*. Retrieved from http://www.dedoose.com

Dhar, R. L. (2011). Leisure as a way of coping with stress: An ethnographic study of the low-income construction workers. *Leisure/Loisir, 35*, 339-360.

Dickinson, T. L., McIntyre, R. M. (1997). A conceptual framework for teamwork measurement. In C. Prince, M. T. Brannick, & E. Salas (Eds.), *Team performance and measurement: Theory, methods, and applications* (pp. 19-43). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

DiMaggio, P. (1997). Culture and cognition. *Annual Review of Sociology, 23*, 263-287.

Duraisingam, V., & Dollard, M. F. (2005). The management of psychosocial risk factors amongst rural development workers in India. *International Journal of Rural Management, 1*, 97-123.

Emdad, R., Belkic, K., Theorell, T., Ouml, R., & Cizinsky, S. (1998). What prevents professional drivers from following physicians, Äô cardiologic advice? *Psychotherapy and Psychosomatics, 67*, 226-240.

Folkow, B. S. T., & Uvnas-Moberg, K. (1997). Stress, health, and the social environment. James P. Henry's ethological approach to medicine. *Acta Physiologica Scandinavica*, 161(Supplement 640), 1-179.

Greenberger, D. B., Cummings, L. L., & Dunham, R. B. (1981). *Personal control at work: Its conceptualization and measurement* (No. TR-1-1-4). Madison, WI: Wisconsin University-Madison Graduate School of Business.

Griffiths, A., Cox, T., & La Ferla, F. (1994). *A healthier work environment.* London, UK: Taylor & Francis.

Hales, T. R., Sauter, S. L., Peterson, M. R., Fine, L. J., Putz-Anderson, V., Schleifer, L. R.,…Bernard, B. P. (1994). Musculoskeletal disorders among visual display terminal users in a telecommunications company. *Ergonomics, 37*, 1603-1621.

Hammar, N., Alfredsson, L., & Johnson, J. V. (1998). Job strain, social support at work, and incidence of myocardial infarction. *Occupational and Environmental Medicine, 55*, 548-553.

Hans, B., Marmot, M. G, Hemingway, H., Nicholson, A. C., Brunner, E., & Stansfeld, S. A. (1997). Low job control and risk of coronary heart disease in whitehall ii (prospective cohort) study. *BMJ, 314*, 558.

Hockey, G. R. J. (1997). Compensatory control in the regulation of human performance under stress and high workload: A cognitive-energetical framework. *Biology Psychology, 45*, 73-93.

Johnson, J. V., & Stewart, W. (1993). Measuring work organization exposure over the life course with a job-exposure matrix. *Scandinavian Journal of Work, Environment & Health, 19*, 21-28.

Johnson, J. V., Stewart, W., Hall, E. M., Fredlund, P., & Theorell, T. (1996). Long-term psychosocial work environment and cardiovascular mortality among Swedish men. *American Journal of Public Health, 8*6, 324-331.

Karasek, R., Brisson, C., Kawakami, N., Houtman, I., Bongers, P., & Amick, B. (1998). The job content questionnaire (JCQ): An instrument for internationally comparative assessments of psychosocial job characteristics. *Journal of Occupational Health Psychology, 3*, 322-355.

Karasek, R. T. T. (1990). *Healthy work.* New York, NY: Basic Books.

Kidwell, R. E., & Bennett, N. (1994). Employee reactions to electronic control systems. *Group and Organization Management, 19*, 203–218.

Kirmeyer, S. L., & Diamond, A. (1985). Coping by police officers: A study of role stress and type A and type B behavior patterns. *Journal of Organizational Behavior, 6*, 183-195.

Koeske, G. F., Kirk, S. A., & Koeske, R. D. (1993). Coping with job stress: Which strategies work best? *Journal of Occupational and Organizational Psychology, 66*, 319-335.

Komaki, J. L., Barwick, K. D., & Scott, L. R. (1978). A behavioral approach to operational safety: Pinpointing and reinforcing safety performance in a food manufacturing plant. *Journal of Applied Psychology, 63*, 434–445.

Kusuma, Y. S. (2009). Perceptions on hypertension among migrants in Delhi, India: A qualitative study. *BMC Public Health, 9*, 267.

Larson, J. R., & Callahan, C. (1990). Performance monitoring: How it affects work productivity. *Journal of Applied Psychology, 75*, 530-538.

Latack, J. C. (1986). Coping with job stress: Measures and future directions for scale development. *Journal of Applied Psychology, 71,* 377-385.

Latack, J. C., & Havlovic, S. J. (1992). Coping with job stress: A conceptual evaluation framework for coping measures. *Journal of Organizational Behavior, 13,* 479-508.

Lund J. (1992). Electronic performance monitoring: A review of research issues. *Applied Ergonomics, 23,* 54-58.

McCurdy, B. L., & Shapiro, E. S. (1992). A comparison of teacher-, peer-, and self-monitoring with curriculum-based measurement in reading among students with learning disabilities. *The Journal of Special Education, 26,* 162-180.

McEwen, B. S. (2000). Allostasis and allostatic load: Implications for neuropsychopharmacology. *Neuropsychopharmacology, 22,* 108-124.

Ministry of Communications and Information Technology GoI. (2007-08). Annual report, Information Technology.

Muhr, T. (1998). *ATLAS. ti*: Scientific Software Development.

Niehoff, B. P., & Moorman, R. H. (1993). Justice as a mediator of the relationship between methods of monitoring and organizational citizenship behavior. *The Academy of Management Journal, 36,* 527-556.

Pearson, C. A. L. (1991). An assessment of extrinsic feedback on participation, role perceptions, motivation, and job satisfaction in a self-managed system for monitoring group achievement. *Human Relations, 44,* 517-537.

Peterson, M., & Wilson, J. F. (2002). The culture-work-health model and work stress. *American Journal of Health Behavior, 26,* 16-24.

Rohith, K., Shrinivas, K., & Sudhashree, V. (2005). Issues and concerns of health among call center employees. *Indian Journal of Occupational and Environmental Medicine, 9,* 129-132.

Saran, N., Khapre, P., Laha, S., & Prakash, S. (2011). Study to assess the level of stress and identification of significant stressors among the railway engine pilots. *Indian Journal of Occupational and Environmental Medicine, 15,* 113-119.

Schein, E. H. (2009). *The corporate culture survival guide.* San Francisco, CA: Jossey-Bass.

Schuler, R. S. (1982). An integrative transactional process model of stress in organizations. *Journal of Organizational Behavior, 3,* 5-19.

Siegrist, J., Peter, R., Junge, A., Cremer, P., & Seidel, D. (1990). Low status control, high effort at work and ischemic heart disease: Prospective evidence from blue-collar men. *Social Science & Medicine, 31,* 1127-1134.

Stanton, J. M., & Barnes-Farrell, J. L. (1996). Effects of electronic performance monitoring on personal control, task satisfaction, and task performance. *Journal of Applied Psychology, 81,* 738-745.

Strickland, L. H. (1958). Surveillance and trust. *Journal of Personality, 26,* 200-215.

Theorell, T., Tsutsumi, A., Hallquist, J., Reuterwall, C., Hogstedt, C., Fredlund, P.,…Johnson, J. V. (1998). Decision latitude, job strain, and myocardial infarction: A study of working men in Stockholm. *American Journal of Public Health, 88,* 382-388.

Thompson, N., Stradling, S., Murphy, M., & O'Neill, P. (1996). Stress and organizational culture. *British Journal of Social Work* 26: 647-665.

Triveni, G., Rao, B. S., & Prasad, A. (2006). Sources of personal, familial, job and organizational stress among veterinary assistant surgeons - A diagnostic study. *Journal of Research ANGRAU, 34,* 68-72.

Wilton, C. (1971). Feedback systems. *System Performance Division.* Emery Air Freight Corp.

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