Stress and health in an International Organization – Identifying the stressors through a self-assessed health risk survey

Master thesis in Medicine

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Abbreviations

CT	Clinical Trial
ERI	Effort-Reward Imbalance
FAO	UN Food and Agriculture Organization
GDP	Gross domestic product
HDP/HSD	Joint World Bank Group/ Fund Health Services Department
HPQ	The World Health Organization Health and Work Performance Questionnaire
HRA	Health Risk Appraisal
JCQ	Job Content Questionnaire
JD-C	Job-Demand-Control
IAEA	International Atomic Energy Agency
ILO	International Labor Organization
IO	International Organization
RCT	Randomized Controlled Trial
UNDP	United Nations Development Program
UNHCR	United Nations High Commissioner for Refugees
WAI	Work Ability Index
WBG	The World Bank Group
WFP	World Food Programme
WHO	World Health Organization
WHP	Workplace health promotion

Abstract

Introduction: Occupational stress has been recognized in occupational health care for decades but remains partly unexplained. Although not included in job strain models like Karasek's Job Demand-Control-Support nor Effort-Reward imbalance model interpersonal conflicts have been described as one of the most common stressors and a risk factor for health outcomes.

Aim: The aim of this study was to investigate if interpersonal conflicts (with managers or colleagues) would predict the impact of stress on health, and if so, to what extent compared to other sources of stress? Also, if there were any gender differences in reporting stress and health?

Method: A cross-sectional study conducted at the Fund Health Services Department in Washington, DC. Data was collected from a health appraisal survey. Logistic regression was conducted with the question ***"During the past year, to what extent has stress (regardless of the source) affected your health?"*** as outcome. Twenty-five stressors including interpersonal conflicts from the survey was used as predictors.

Results: The sample size was n=988. Fifty percent of responders stated that stress affected self-reported health to a moderate/large extent. The following stressors showed a significantly higher likelihood of stress affecting self-reported health to a moderate/large extent: health problems (OR=2.8 95% CI 1.8, 4.2) , high demands (OR=2.2 95% CI 1.5, 3.3), insufficient support from manager (OR= 1.8 95% CI 1.2, 2.8), conflicts with colleagues (OR=1.7, 95% CI 1.1, 2.5), lack of free time (OR=1.6, 95% CI 1.1, 2.4), other personal/family problem (OR=1.5, 95% CI 1.0, 2.2), caring for ill/elderly/infirm family member(s) (OR=1.5, 95% CI 1.0, 2.3). Females tended to report that stress affects their health to a larger extent compared to males, although differences were non-significant.

Conclusion: In accordance with previous studies, data showed a positive correlation between stress affecting health and conflicts with colleagues. Results suggest conflict resolution for future prevention programs.

Introduction

Occupational stress has been well recognized in occupational health care for decades. With growing workforces, increasing productivity, shift work and employees available for work day and night, stress at the workplace is of increased concern for managers, employees and occupational health specialists. Throughout the years, its nature and causality has been widely studied, yet prevention and the full impact of the phenomenon still remain inconclusive.

Job-related stress is defined by the World Health Organization (WHO) as "the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope" [1]. Albeit a highly individual response to the work environment, occupational stress can be avoided or, at least, reduced according to the research models developed throughout the years.

If exposed to stress in the workplace, it may lead to job strain - a term consistently used in research but without medical definition. Its etymology derives from mechanics as "a force of stress which creates movement (strain) that exceeds the natural extensibility of the material which then arise a condition where the mechanical damage of an object takes place" [2]. When studying this phenomenon, models (described in the following section) have tried to define the characteristics of high job strain.

Models of measuring job-related stress or psychosocial work environment

Two models of measuring psychosocial job strain have been directing evidence-based research in this area.

“The Job Demand-Control Model” (JD-C Model)

In 1979, Karasek introduced a model on job strain assessment based on the employee’s decision latitude and job demand [3]. It states that a job with low possibility of decision-making (e.g. deficient in authority and skill) and high demands (e.g. working fast, hard, time insufficiency etc.) leads to high job strain. Introduction of the model also implied that job strain can be fairly reduced without decreasing job productivity. The model was modified by Johnson and Hall in 1988 [4] and further developed by Karasek and Theorell in 1990 which resulted in adding social support to the equation and retitling the model “Job-Demand-Control-Support Model” (JDCS). Social support was stated by the authors to have a modifying effect, inasmuch as it was claimed to reduce the impact of the combined high demands and low control. [5]

The model received criticism when Fletcher and Jones in 1993 claimed in a study that the variables demand and control play an important part, but does not entirely predict psychological distress or health problems. They also emphasized that the demand-control effect is curvilinear rather than linear, meaning the amount of control is beneficial to a certain level, but subsequently generates stress. The study also concluded that interpersonal support should guide future models, as it added substantial predictability of the outcome [6].

“The Effort-Reward Imbalance Model” (ERI Model)

The Effort-Reward Imbalance Model was presented by Siegrist et al in 1986. Effort is defined as both intrinsic, (or the individual’s motivation and drive) and extrinsic (the individual’s effort to content the demands given by the environment). Reward ranges from wages, appreciation and job security and promotion. Its principle states that

imbalance between high effort and low reward results in health risks (named “extrinsic ERI hypothesis”). Over-commitment is also put forward as a risk factor (“Over-commitment hypothesis”) and in combination with the aforementioned effort-reward imbalance it is an even larger risk of developing health-related issues (the interaction hypothesis). The extrinsic ERI hypothesis has the strongest scientific evidence while over-commitment still is inconclusive. [7].

High ERI is for example correlated to increased risk of disability pension due to depression [8].

Effects of work place stress – on a personal level and on management level

Long term effects of chronic workplace stress have been extensively studied. Depression, anxiety, fatigue, aggression, substance abuse and cognitive impairment have all been demonstrated to be stress-related but with mixed scientific evidence [9]. Furthermore, several health outcomes such as hypertension [10-16], coronary heart disease [17], back pain [18], alcohol abuse [19] and smoking [16, 20] have been found to be significantly linked with job strain. The prevalence of musculoskeletal diseases and disability pension [21] has also been proven to be higher among high strain individuals.

Measuring job strain in current studies

Job strain can be measured with different scales when examining health outcomes. Most commonly used is the standardized Job content [22] and demand-control questionnaires [23] based on the Job Demand-Control model, explained above [5]. Despite being a standardized tool, the methodological definition of high job strain according to the abovementioned model varies. In 2013, a review was published which examined 877 studies using the Job Demand-Control model. Different cut-off points, less than half of

the studies including social support at work and most of the studies being sectional were among the methodological issues [24].

Managerial perspective of workplace stress

For management, the issue of workplace stress is essential. Studies have shown that individuals exposed to perceived work stress have considerably diminished Work Ability Index (WAI), (a scale developed by the Finnish Institute of Occupational Health that evaluates work capacity) [25], productivity and higher absenteeism (absence from work) [9, 26, 27].

The correlation between presenteeism (which refers to the diminished productivity associated with attending work while feeling ill or sick) and occupational stress has been discussed, but studies are inconclusive [28, 29], much as it is difficult to record and measure.

Economic costs

Accurate estimations of the economic cost due to loss in productivity, absenteeism and presenteeism are difficult to achieve, but some studies suggest major annual economic savings by stress reducing interventions. In 2005, Bejéan and colleagues showed that 1.3-1.7 percent of France's working population of 23.5 million people were affected by illnesses attributable to occupational stress, costing society between approximately €1167-1975 million [30]. In the United States of America, costs attributable to stress (including absenteeism, legal costs, accidents, employee turnover and productivity) were estimated by the American Institute of Stress in 2006 to $300 billion USD annually for US enterprises [31].

Risk factors

Risk factors for job strain include long work hours, high workload and pressure, insufficient control over work and low participation in decision-making as well as ambiguous management, work roles and lack of social support [32]. Job dissatisfaction is also examined in some studies and has been suggested to contribute to work stress, but being satisfied on the other hand, can work as a protective factor when having high demands [33, 34]. Certain groups have a higher risk of perceived stress, such as men with lower socioeconomic status [35].

Interpersonal conflicts at work and impact on health

A common theme (and risk factor for job strain) often referred to when studying the workplace stressors is interpersonal relationships. Social support, work roles and conflicts all play a part in the stress equation [36-38] . Several studies claim interpersonal conflicts being one of the main causes of occupational stress [39-41] which also, according to some authors, predicts work disability [42].

Missing pieces in the job strain models

The current models (JDCS and ERI) have mixed scientific evidence and parts still remain unexplained. In addition, the need of applicability on a non-Western workforce has been put forward [43], an indication that further research is needed in this area. Another unaddressed question looms: Are these very same stressors equally prevalent in international organizations with a multicultural workforce? The published studies rarely or never include the diversity of multicultural workforces. In this matter, it is unclear if the current models for psychosocial stress are sufficient for capturing the most evident stressors in international workforces. In UN organizations, the incompleteness of present

models may reflect a lack of a holistic view on stress. This becomes noticeable with group and individual relationships crucial in accomplishing everyday tasks interlaced with vast cultural differences, language barriers, heavy mission travel and a hectic work environment.

This study is among the first to set out to investigate which perceived work stressors would impact general health in an international workforce, how the JDCS variables will emerge compared to other sources of stress and whether conflicts at the workplace would be amongst them.

Aim and specific objectives

The aim of this study was to investigate if interpersonal conflicts at work (with managers or colleagues) would be more strongly associated with stress and health, compared to other sources of stress. The aim was also to investigate what could be concluded about other stressors in an international organization and whether there were any differences by gender.

Material and Methods

This study is a descriptive cross-sectional statistical analysis conducted at the World Bank Group – Joint World Bank Group/Fund Health Services Department (HSD) in Washington, DC. The data was collected from a health and wellness survey (see appendix A2) with key components of 65 question including: general characteristics; health risk factors (such as use of seatbelts and helmets, tobacco, alcohol, sunscreen); life style and nutrition; mental stress and disorders; presenteeism; absenteeism; infectious

diseases including malaria; access to malaria prevention measures; vaccination status; health resources and availability; screening programs and prevention; chronic diseases; chronic pain and readiness to participate in health intervention plans. The survey was developed by Dr. Jasminka Goldoni Laestadius with the purpose of being a standardized tool for mapping health risks and the general health profile of employees in UN organizations. It is based on several validated tools: the World Health Organization Health and Work Performance Questionnaire (HPQ), Harvard Medical School- Health at Work Survey, The Health Institute – Work Limitations Questionnaire (WLQ) and the University of Michigan Health Management Research Center- Health Risk Assessment [44-47]. It is not validated as a stand-alone tool. Validation is scheduled for future studies and will be conducted by verifying staff's responses through their objective medical information (medical claims, sick leave and disability records as well as mission travel database).

The questions about stress, sources of stress and coping with stress were formulated with significant input from HSD's experienced clinical psychologists in Personal and Work Stress Counseling Unit - Dr. Guylaine Dion and Dr. Stuart Fisher. The survey was conducted in an International Organization (IO) using an online web survey tool (C-vent) [48]. Medical terms were explained using a hover box, e.g. a brief definition that appears when placing the mouse over a bolded word. Stress related parts of the IO survey were analyzed in this report.

Statistical analysis was performed in IBM's SPSS (version 22), Microsoft Excel; tables were created using Microsoft Word and Microsoft Excel.

Data collection procedures and statistical methods

Study population

The study population consisted of employees of an international organization (IO) made up of 188 member countries working with financial stability and international trade.

In 2013, the total number of staff was 3622 (including all staff and contracted staff), composed of 147 nationalities. Gender distribution was 2046 males (56,5 percent) and 1576 females (43,5 percent) in 2013. However, 28 percent of the women are in support staff compared to 4 percent of the men, 42 percent of the women are in professional staff level compared to 53 percent of the men. 5 percent of the women are in managerial or senior positions where 13% of the men are employed. [49]. The IO workforce is commonly characterized as competitive and typically attracts highly educated employees. A main occupational health characteristic is frequent mission travel – about 60 percent of the employees made at least one travel mission per year in 2013, with an average of 23 travel days per traveler annually. Staff health reports published in 1995 and 2002 have stated that employees report high stress levels overall [50]. The population is medically served by HSD's on site Clinic, Occupational Health Unit, Field Health Services and Personal and Work Stress Counseling Unit, which employs psychologists with knowledge and experience with mental health problems among international staff.

The IO survey for this study was sent out online. Surveys that were partially completed were excluded as they lacked relevant information to the study. Responders not stationed in Washington DC were also excluded due to their small number and different work environments.

The survey was open from 11/5/2013 to 12/10/2013. To raise awareness and participation of the survey, advertisements at the workplace, seminars, e-mails, incentives such as gym membership giveaways, sessions with nutritionists and food gift certificates, along with several reminders and encouragements were offered to the participants.

Statistical methods

Logistic regression was performed to demonstrate which stressors would predict stress impacting on health to a moderate or large extent. The choice of statistical method was due to the fact that it can handle qualitative data or categorical assessment scales, non-linear correlations and uneven distribution of frequencies. Odds ratio is the odds of the factor in the high stress group (moderate to large extent) divided by the odds of the factor in the low stress group (none or small extent). The Odds Ratio (OR) in the model would explain how strongly the presence of the stressor would associate with stress affecting health. If greater than one, the likelihood is said to increase and lesser than one would mean that the likelihood is decreased.

Two sets of regression were conducted. The first one was performed exclusively with the stressors, which would provide unadjusted or crude OR of the predictors with respect to each individual stressor. The second regression analysis included the stressors and several covariates (see confounders and intermediates).

Dependent variable

For selection of dependent variable, items Q33, Q34, Q37.1 and Q37.2 (see appendix A2) were explored through univariate analysis (dichotomized) with chi square testing (significance test). For this analysis, significant differences were noted (if any) in

predicting factors Q29, Q30, Q35, Q39.1, Q.39.2 and if responders answered that they had been diagnosed with PTSD, anxiety, burnout or depression (stress-related medical conditions) (Table 1). This was performed to investigate which item would fit the aim of the study and which had the highest internal validity.

Question "Q33: During the past year, to what extent has stress (regardless of the source) affected your health?" was selected from the survey as the dependent variable due to the fact that it had the highest significant differences or highest internal validity among the previously mentioned variables and in addition, the nature of the question was best suited for the purpose.

The dichotomized Q33 used later in the regression model had the following categories: "Not at all" and "To a small extent" represented the Low Impact on Health Group (=0) and "To a moderate extent" and "To a large extent" the Moderate to High Impact on Health Group (=1).

Independent variables

The selection of 25 stressors (Table 2) including interpersonal conflicts with managers and colleagues at work, was presented to responders of the survey with a four level scale to represent the appraised effect of each stressor. The items were dichotomized for analysis, resulting in two levels: "Never/Rarely" and "Sometimes/Often". The N/A responses were allocated to the first category.

A compilation of the responses to "Other" stressors was made to make sure important stressors weren't left out (Appendix - A1).

Confounders and intermediates

The multivariate logistic regression was done with consideration of age, gender, type of employment (consultant or staff), work dissatisfaction and marital status (a committed relationship or not).

Table 1. Questions from the Health and Wellness Survey used in univariate analysis, individually with Q33, Q34, Q37.1 and Q37.2. All items except Q39 were dichotomized.
Items used in univariate analysis
Q29: How would you describe your overall physical health? (0=Good 1=Poor)
Q30: How would you describe your overall psychological/mental health? (0=Good, 1=Poor)
Q35: How often do you feel tense, anxious, and/or depressed? (0= Never or Rarely 1=Sometiems to often)
Q39: How many sick days did you take due to personal health issue(s)?
Q39: How many days have you gone to work feeling ill/ sick?
Q43:Have you ever been diagnosed with PTSD? (0= No 1=Yes)
Q43:Have you ever been diagnosed with Depression? (0= No 1=Yes)
Q43:Have you ever been diagnosed with Burnout? (0= No 1=Yes)
Q43:Have you ever been diagnosed with Anxiety? (0= No 1=Yes)

Table 2. Q37 – Stressors as presented in Health and Wellness Survey tool (see Appendix A2 for the complete survey)

The sources of my stress are as follows:

Select one per row.

	Never	*Rarely*	*Sometimes*	*Often*	*N/A*
Unrealistic or shifting deadlines	○	○	○	○	○
Unclear/conflicting work priorities	○	○	○	○	○
Too few resources to complete assigned tasks	○	○	○	○	○
Conflicts with colleagues	○	○	○	○	○
Conflict with supervisor/manager	○	○	○	○	○
Lack of control over decisions at work that affect me	○	○	○	○	○
Not being able to use my skills in my job	○	○	○	○	○
Insufficient support from manager	○	○	○	○	○
Insufficient support from colleagues	○	○	○	○	○
Work hours and high workload/demands	○	○	○	○	○
Performance appraisal	○	○	○	○	○
Employment status/assignment/ extension	○	○	○	○	○
Lack of clarity of my role and/or task-definition	○	○	○	○	○
Work relationships on missions	○	○	○	○	○
Frequent or last-minute mission travel	○	○	○	○	○
Difficulty adapting to cultural diversity	○	○	○	○	○
Caring for ill, elderly, or infirm family member(s)	○	○	○	○	○
Conflict with my spouse/partner	○	○	○	○	○
Parenting-related difficulties	○	○	○	○	○
Lack of social support	○	○	○	○	○
Geographic separation from family and other supports (living far from home)	○	○	○	○	○
Lack of time for family, friends or personal pursuits	○	○	○	○	○
Other personal/family problem	○	○	○	○	○
Health problems	○	○	○	○	○
Physical work environment	○	○	○	○	○
Other (please specify below)	○	○	○	○	○

Ethics

The survey was strictly confidential. Participants could choose whether to take it anonymously or to identify themselves, as stated in the first question (see A2). The non-anonymous option stored the personal data for future assessments while anonymously taken surveys contained no identifiable information. No medical records were extracted and the terms and agreement of participation clearly stated before commencing the survey. Results from both options are presented in an aggregated format.

Results

The survey was sent out to 3513 employees of which 1102 or 31.3 percent completed it. Sixty were partially completed and excluded from the final report. Fifty-four respondents were then excluded because they were not stationed in Washington DC and therefore not comparable to the DC workforce. The final sample size was n=988 (figure 1) or 28.1 percent of the workforce.

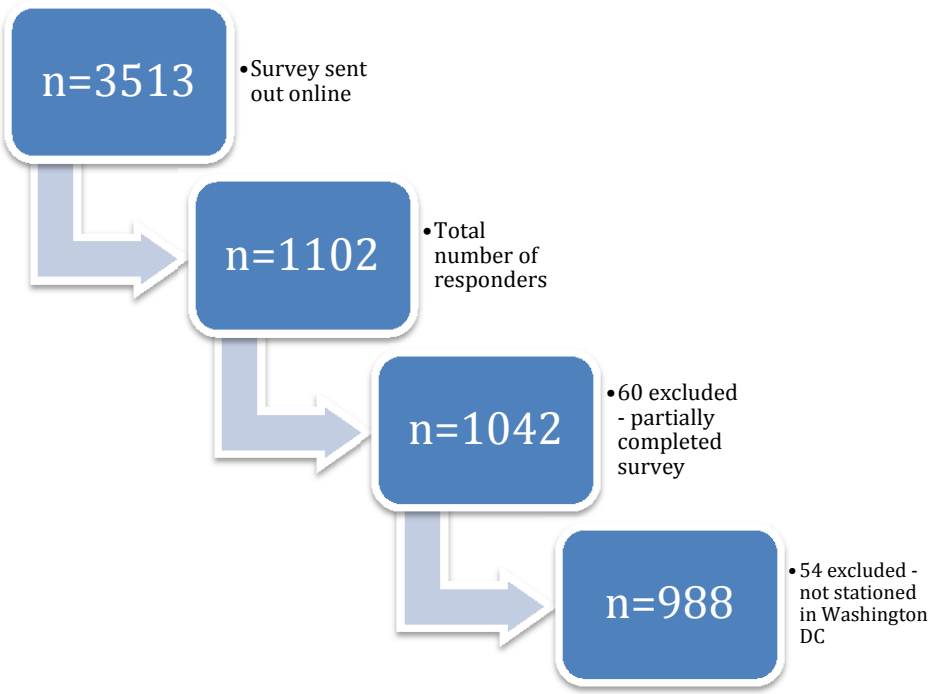

Figure 1 - Flow chart describing data collection from the IO Health and Wellness Survey

Demographics and characteristics

The final sample size consisted of 47.9 percent male responders and 52.1 percent female responders. The demographics of the sample (gender, age distribution and appointment type) are presented in table 3.

Descriptive statistics for dependent and independent variables

Out of 988 employees that participated in the survey, 281 (28.6 percent) responded that stress, regardless of the source, affected their health to a moderate extent and 210 (21.4 percent) to a large extent (a total of 50 percent in total in the High Impact Group, table 4). The total response frequencies for the 25 stressors are presented in table 5.

Table 3. Demographics		
Age distribution		
	Frequency	Percent
20-30 years	118	12
31-40 years	240	24.3
41-50 years	331	33.5
51-60 years	266	26.9
61-65 years	30	3.0
>65 years	3	0.3
Total	988	100
Gender distribution		
Male	473	47.9
Female	515	52.1
Total	988	100
Grade/appointment type?		
Staff	833	84.3
Consultant	155	15.7
Total	988	100

Table 4 – Descriptive statistics of responder frequencies to Q33.			
Q33: During the past year, to what extent has stress (regardless of the source) affected your health?			
	n	**Percent**	**Cumulative Percent**
Not at all	103	10.5	10.5
To a small extent	387	39.4	49.9
To a moderate extent	281	28.6	78.6
To a large extent	210	21.4	100.0
Total	981	100.0	
Missing	7		
Total	988	100	

Table 5. Descriptive statistics of responder frequencies to Q50-74.						
The sources of stress	**Never**	**Rarely**	**Sometimes**	**Often**	**N/A**	**Total**
Unrealistic or shifting deadlines	98	231	374	196	21	920
Unclear/conflicting work priorities	91	214	371	231	18	925
Physical work environment	402	288	146	56	30	922
Other personal/family problem	251	313	210	66	79	919
Not being able to use my skills in my job	201	275	243	177	27	923
Health problems	307	361	180	39	37	924
Conflicts with colleagues	276	383	200	45	18	922
Caring for ill, elderly, or infirm family member(s)	430	164	107	70	152	923
Work relationships on missions	344	207	83	14	276	924
Work hours and high workload/demands	79	198	296	345	10	928
Too few resources to complete assigned tasks	102	218	298	282	26	926
Performance appraisal	226	303	256	107	30	922
Parenting-related difficulties	302	215	178	68	162	925
Lack of time for family, friends or personal pursuits	113	206	371	232	7	929
Lack of social support	378	275	164	53	47	917
Lack of control over decisions at work that affect me	119	259	286	244	16	924
Lack of clarity of my role and/or task-definition	256	293	258	95	22	924
Insufficient support from manager	289	316	192	100	22	919
Insufficient support from colleagues	283	340	210	58	27	918
Geographic separation from family and other supports (living far from home)	233	213	292	144	45	927
Frequent or last-minute mission travel	383	186	54	16	281	920
Employment status/assignment/ extension	325	220	179	140	62	926
Difficulty adapting to cultural diversity	619	181	39	6	75	920
Conflict with supervisor/manager	366	332	143	57	20	918
Conflict with my spouse/partner	321	285	162	42	113	923

Multivariate Regression Analysis

Before calculating adjusted OR, health problems (OR=2.81), work hours and high workload/demands (OR=1.97), insufficient support from manager (OR=1.80), conflicts with colleagues (OR=1.67), lack of time for family, friends or personal pursuits (OR=1.51), other personal/family problem (OR=1.65) and physical work environment (OR=1.59) showed significant ($p<0.05$) likelihood of being associated with stress affecting health.

After adjusting for age, gender, appointment type, marital status and work satisfaction, the following stressors showed a significantly higher likelihood of stress affecting health to a moderate or large extent: health problems (OR=2.79 95% CI 1.85, 4.20), work hours and high workload/demands (OR=2.22 95% CI 1.51, 3.30), insufficient support from manager (OR= 1.79, 95% CI 1.16, 2.77), conflicts with colleagues (OR=1.67, 95% CI 1.12, 2.50), lack of time for family, friends or personal pursuits (OR=1.64 95% CI 1.15, 2.34), other personal/family problem (OR=1.52, 95% CI 1.04, 2.24) and caring for ill, elderly, or infirm family member(s) (OR=1.52, 95% CI 1.00, 2.32). See table 6 for full list of variables.

The results also showed that women tend to report that stress affects their health to a larger extent than men (OR=1.30 95% CI 0.97, 1.71), but the variable was non-significant.

Table 6. Results of logistic regression.								
Outcome	**Predictor variables**	**B**	**S.E.**	**Wald**	**Crude OR**	**Adjusted**		
						OR	**CI 95% Lower**	**CI 95% Upper**
Stress have affected health to a moderate or large extent (Q33)	Health problems	1.03	.21	23.9	2.81***	2.79***	1.85	4.20
	Work hours and high workload/demands	.80	.20	16.3	1.97***	2.22***	1.51	3.26
	Work dissatisfaction (0= Satisfied, 1=Dissatisfied)	.62	.25	6.10	N/A	1.86*	1.14	3.03
	Insufficient support from manager	.58	.22	6.83	1.80**	1.79**	1.16	2.77
	Frequent or last-minute mission travel	.56	.33	2.92	1.62	1.75	.92	3.31
	Conflicts with colleagues	.51	.21	6.23	1.67*	1.67*	1.12	2.50
	Lack of time for family, friends or personal pursuits	.49	.18	7.443	1.51*	1.64**	1.15	2.34
	Other personal/family problem	.42	.20	4.70	1.65*	1.52*	1.04	2.24
	Caring for ill, elderly, or infirm family member(s)	.42	.21	3.86	1.36	1.52*	1.00	2.32
	Physical Work Environment	.38	.21	3.36	1.59*	1.47	.97	2.21
	Unclear/conflicting work priorities	.32	.19	2.78	1.39	1.38	.95	2.02
	Q4: Marital Status (0=Committed relationship, 1= Not in a committed relationship)	.31	.19	2.52	N/A	1.36	.93	1.98
	Parenting-related difficulties	.29	.20	2.06	1.18	1.33	.90	1.98
	Employment status/assignment/ extension	.29	.18	2.53	1.58	1.33	.94	1.89
	Gender (0= Male, 1=Female)	.28	.16	3.12	N/A	1.33	.97	1.81
	Unrealistic or shifting deadlines	.25	.19	1.77	1.32	1.29	.89	1.86
	Lack of clarity of my role and/or task-definition	.24	.18	1.72	1.34	1.28	.89	1.82
	Grade level or Appointment Type (0= Non-consultant, 1=Consultant)	.24	.24	.97	N/A	1.27	.79	2.05

	Performance appraisal	.21	.18	1.4	1.14	1.23	.87	1.73
	Too few resources to complete assigned tasks	.18	.18	.95	1.10	1.20	.83	1.72
	Difficulty adapting to cultural diversity	.13	.46	.08	1.27	1.13	.46	2.79
	Lack of social support	.09	.21	.17	.42	1.09	.72	1.65
	Work relationships on missions	.07	.29	.05	.79	1.07	.61	1.88
	Conflict with my spouse/partner	.03	.21	.02	1.00	1.03	.69	1.54
	Lack of control over decisions at work that affect me	-.02	.18	.01	1.34	.99	.69	1.40
	Age (ordinal value, 0=<20 years, then 5-year span increase for every value up to 10=>65 years)	-.07	.04	2.6	N/A	.93	.86	1.01
	Insufficient support from colleagues	-.07	.21	.12	.94	.93	.62	1.40
	Not being able to use my skills in my job	-.09	.18	.26	1.07	.91	.64	1.30
	Geographic separation from family and other supports (living far from home)	-.21	.17	1.52	.90	.81	.58	1.13
	Conflict with supervisor/manager	-.25	.24	1.14	.78	.77	.48	1.24

*Variables sorted by adjusted OR in descending order. Dependent variable is Q33. Variables are dichotomized (0= Never or Rarely and 1= Sometimes or Often) unless stated otherwise. Adjusted OR includes Age, Gender, Grade level or Appointment Type, Marital Status and Work dissatisfaction. With respect to each independent variable, odds ratios indicate how much the likelihood of stress impacting on health is increased (when ORs>1.00) or decreased (when ORs<1.00). *p< 0.05, **p <0.01, ***p<0.001. Variables without an asterisk turned out non-significant (p>0.05)*

Discussion

This study set out to investigate how interpersonal conflicts at work would predict self-reported stress-related health outcome. Several stressors were determined to be significantly related with stress affecting health and are discussed in the following section.

Main findings

Half of the responders claimed that stress, regardless of the source, impacted on their health to a moderate or large extent. Self-reported health is a valid indicator for examining health status, even in cross-cultural workforces [51-53]. The main findings of this study suggest that health problems, work dissatisfaction, high demands, insufficient support from manager and conflicts with colleagues have the highest significant likelihood of predicting stress impacting on reported health to a moderate to larger extent as opposed to none or small extent.

For the aim of the study, conflicts with colleagues demonstrated high OR (=1.7). Interpersonal conflicts at work have previously been reported as the most common source of stress [39, 41, 54]. Our data showed that it was one of the evident predictors for stress impacting on reported health. Interpersonal conflicts have also been linked to several health outcomes such as depressive and somatic symptoms [55, 56], insomnia [57], alcohol abuse [58] as well as emotional exhaustion and depersonalization [59] which aligns well with it being a predictor of the effect of stress on health in this study. Only self-reported, not exact health outcomes, were measured in this study. Although it is limited to the extent to which responders believed stress impacted on their health, it still

implies which stressors are essential. As interpersonal conflicts at work were the fifth largest stressor in this analysis, the other four are discussed below.

First, health problems as a stressor emerged as the highest ranking coefficient. A reason for its high OR might relate to the demographics in the high stress group. When examining the response rates in univariate analysis (table 1), this group was more prone to have more health problems and had a higher prevalence of depression, PTSD, anxiety and burnout. What's more, reported physical and psychological health as well as number of sick days were significantly higher in this group. There is reason to believe they would report health problems as a primary stressor. Health problems are a broad term, of which causality is not distinguishable in this cross-sectional study.

Secondly, high demand remained a stable predictor even when adjusting for possible confounders. The high OR of the "High Workload or Demand" stressor aligns well with Karasek's well-established model [3].

Thirdly, our data suggest that insufficient support from manager would create stress that would affect health. Both supervisor support and coworker support are included in the JCQ [22], but the term support is ambiguous in this survey.

One of the adjusting factors included in the regression analysis was work dissatisfaction. Studies have shown that dissatisfaction might contribute to stress-related mental health problems while job satisfaction might be a protective factor against burnout in some job categories [33, 34]. It should also be noted that studies have claimed that job dissatisfaction could increase the intention of quitting one's job [60, 61]. Our results suggest a higher probability (OR= 1.86) of reporting that stress impacts one's health

when being dissatisfied with one's job. Though a problem with international workforces is that the option to quit or change jobs are limited due to visa status: If leaving the work while on a visa status, it is often mandatory for the employee to vacate the country of residence, along with his/her family, within a month of the termination date.

HSD staff was consulted for clinical impressions to comment on, and to broaden the view of our results. "Eighty-six of the IO staff were seen for consultations in the past year, some of whom entered into a series of counseling sessions, some of whom were referred to local providers, and some of whom were seen only once. Two percent utilization (86/3622) of an EAP (European Association for Psychotherapy)-like service is consistent with the industry. While the actual number of staff seen for consultations that focused on interpersonal conflicts with, or lack of support from, managers is unavailable, the HSD psychologists indicated that at preponderance of the consultations involved this as a primary issue or concern.", according to psychologist Stuart Fisher, PhD at the HSD.

Study limitations

Response rate and non-response bias

This study has several limitations to be considered. The response rate was approximately 30 percent of the total workforce, which may not be generalizable in terms of the perceived stressors of the whole working population. It was sent out to 3513 employees (both staff and consultants) and was narrowed down to 988 people stationed in Washington DC, leaving 2525 individuals whose characteristics are unknown.

A non-responder analysis was therefore performed by comparing the attributes of our sample with aggregated personnel data of the IO. Age and gender distribution (grade

level and appointment type) were available for comparison and were found to be representative to the IO as whole, with the exception of our studied sample showing an overrepresentation of males in senior positions. Other attributes such as ethnicity (that may show cultural differences in reporting stress) were not available for analysis at the time of the study but are nevertheless essential when interpreting results and before making any general conclusions. As always with self-reported surveys, there is both a risk of under- or overestimating the studied topic. Response rate still remains essential when studying organizational surveys and there can be numerous reasons for not responding to the survey [62].

Downstream causality

Another factor that must be taken into account is the downstream effects and causality, which cannot be derived in this study. For example, stressors such as high demand and job insecurity have been shown by Da Raeve L et al in 2008 to be predictors of interpersonal conflicts [63] and the possibility of down stream effects or overlapping stressors here cannot be out ruled [64].

Bivariate cut-off

The bivariate cut-offs utilized in this study on the dependent and independent variables may have resulted in loss of statistical power. However, one could argue that a four-level variable would dilute the results in a similar manner due to the relatively small sample size.

Gender distribution in the IO

One of the study objectives was to investigate if men and women would appraise that

stress affected their health to the same extent. Gender differences in job strain have been described in multiple studies [65-69], but this study failed to show any significant differences (OR=1.3 for females, $p>0.05$). Previous work on this area has shown that female workers are exposed to higher demands in work-family balance, especially since many women often have to combine work at home and childcare with their career. Studies also imply that women are more sensitive to interpersonal conflicts, and that men tend to react differently to time consuming tasks [70]. In this study, the gender distribution was somewhat reflective of the IO as a whole when comparing the distribution to a personnel report from 2013 [49], but we still cannot conclude that there was any difference since the outcome was insignificant.

Another issue here is that there is a lack of literature on similar type of workforces – in international organizations, some people bring in nannies from their home countries or pay for child care, or have unemployed spouses at home. Some are single and committed to their careers only and is definitively not the same situation as typically described in published studies.

Other confounders

One confounder not taken into account in the regression is the number of travel duty days, as approximately 60 percent of the population as whole goes on at least one mission per year [50]. Travel has been associated with stress-related conditions [71]. Ethnic group and cultural differences have not been adjusted for in the final results; different cultures may appraise their general health differently, a factor which could not be studied due to a limited sample size [72].

Standardization of the measurement tool and validity

As stress is strictly subjective for the individual, self-assessed health surveys are the only method to detect and measure it. The Health Assessment Survey is based on several highly validated tools [44-47], but it can be argued that despite including items from standardized survey tools, it is not validated as a stand-alone tool. The majority of the stressors are, for example, extracted from Karasek's Job Content Questionnaire (JCQ, described in the Introduction) widely used in measuring perceived work stress with high internal and external validity [3, 73, 74] but this survey does not utilize its scoring system. What's more, the JDC model does not include interpersonal conflicts which would not allow exploration of the aim of this study.

Internal validation of the survey was performed (described in Materials and Methods section) when selecting the dependent variable. Before further analysis, it was internally validated with several items such as psychiatric health outcomes.

Despite the fact that the survey is not a validated and standardized tool, it was developed by health care professionals at the World Bank HSD with many years of experience on this with assisting global, international populations, giving the study an advantage in being customized while still conserving an evidence-based point of view. Further studies are ongoing with the aim to validate the survey and replicate this study's data findings. Their ultimate goal is to provide an evidence base foundation for preventive strategies and improving health and wellness of international workforces.

What can be done in terms of prevention?

Empirical studies have shown that increasing job control for employees is efficient for reducing stress [75]. Absenteeism and lateness can be prevented by well-defined roles in the workplace [76]. Prevention programs addressing burnout in workplaces have been proved to be beneficial, but only a limited number have been conducted and evaluated partly due to implementation issues [77].

In managing stress in the workplace, more comprehensive reviews of stress management programs (SMIs) are indicated. Relaxation techniques and cognitive-behavioural intervention have been shown to be the most efficient, yet only a moderate positive effect on psychosocial and organizational outcomes [78, 79].

A very limited amount of literature is available on conflict resolution and its effect on employee stress. One study suggested that teaching managers or supervisors concrete conflict-management showed a significant positive impact on job roles and strain (both psychological and relational) [80].

Conclusions and Implications

In conclusion, the aim of this cross-sectional study was to investigate how interpersonal conflicts would predict the impact of stress on health. Our data showed a positive correlation between stress affecting health and interpersonal conflicts at work, indicating that they may be more important in global workforce and may be a complement to current job strain models.

For future prevention programs in stress management there is an undeniable need for custom tailoring and defining the stressors in the individual workplace – as one of the

most evident obstacles in prevention programs is implementation. Similar further studies are being conducted to identify the individual workplace's stressors in the international workforce and provide an evidence base foundation for preventive strategies.

Populärvetenskaplig sammanfattning på svenska

Stress på arbetsplatsen är ett växande problem och en stor risk för ohälsa. WHOs definition av stress lyder ”människor upplever stress när de märker att det finns en obalans mellan de krav som ställs på dem och de resurser de har tillgång till för att klara av dessa krav”. Med större arbetsstyrkor, skiftarbeten, anställda som är tillgängliga dag och natt har jobbstress blivit ett nationellt problem. Men de flesta studier om stress negligerar konflikter och mellanmänskliga relationer samt att undersöka en multikulturell arbetsstyrka, vilket denna studie utmanar. Denna studie ämnade kartlägga hur stressfaktorer påverkar den upplevda hälsan hos anställda, närmare sagt om konflikter på arbetet kunde vara en betydelsefull källa till stress samt om det fanns någon könsskillnad i uppskattningen av att stress påverkar ens hälsa. Den mest välstuderade teorin om hur stress utvecklas hävdar att arbeten med höga krav och låg kontroll ökar risken för ohälsa, men konflikter och interpersonella relationer är inte inkluderade. Denna studie fann att konflikter mellan kollegor och otillräckligt stöd från chefer kan vara en av de mest uttalade källorna till stress som påverkar hälsan, förutom höga krav. Detta pekar på att konfliktlösning kan vara en viktig del i stresshantering. Resultaten pekade också på att kvinnor tenderar att rapportera att stressen påverkar hälsan till en större grad, men resultatet var inte statistiskt säkerställt. Studien utfördes genom att skicka ut en enkät till ungefär 1000 anställda i en internationell organisation. Statistisk analys utfördes med frågan ”Hur mycket har stress påverkat din hälsa under det senaste året?” och 25 stressfaktorer. Med statistisk analys kunde vi ta hänsyn till kön, ålder, civilstånd, arbetstrivsel och om man arbetade som konsult eller inte. En icke-standardiserad enkät och relativt låg svarsfrekvens gör att resultatet behöver fastställas i andra populationer.

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Nima Peyravi Latif

Gothenburg, Sweden, May 2014

Appendix

A1. Compilation of responses to Q37: Other Stressors

A1 - Compilation of similar responses to "Q37: Other stressors: Please specify". Total number of responses was 80. Answer such as "None" or stressors already stated in Q37 were excluded, yielding 45 responses.	
Response	**Number of similar responses**
"Working in negative office environment"	1
"Studying and working"	3
"Nobody except spouse to confide in"	1
"Lack of job progression or career advancement"	2
"Health problems related to HQ1 renovation"	4
"Financial insecurity or constraint"	4
"Commuting (between 1,5-2 h one way)"	3
"Asbestos removal related to renovation dust"	3
"Aging parents and geopgraphic separation from them"	1
"Employment status, progression or insecurity"	4
"Conflicting job demands, missions and no support"	5
"Personal issues (divorces, family tragedies etc)"	7
"Underperforming colleagues"	2
"Dealing with Health Insurance Company"	1
"Eye and back strain"	2
"Travel policies"	1
"Life balance"	1
Total	45

A2. The Health and Wellness Survey 2013

Identity Confirmation

*1.

You have two options for taking this survey:

Confidential and Anonymous – your responses will contribute to the aggregate report only and cannot be traced back to you. No personally identifiable information is captured. If you would like to continue with Option 1, leave the name field below blank and click the Save/Continue button.

Confidential – your personal data will be stored confidentially and will be accessible to the Health Services Department (HSD) and serve as a baseline for you to reference during future assessments. If you would like to continue with Option 2, enter your name below and click the Save/Continue button.

Please indicate how you would like to take the survey.

(*Required)

Select one.

○	Confidential and Anonymous	
○	Confidential	(Answer question number 1.1, 1.2.)

1.1 Please enter your full name (optional)

1.2 Please enter your email address (optional)

How long will it take to complete?
Approximately 12- 15 minutes total. To ensure timely and accurate survey completion you may find it useful to have your latest medical laboratory test results available for reference.

Can I save, re-enter, revise or skip questions within the survey?
Yes, the survey may be completed in sections and you can re-enter, skip and revise all questions up until you submit. No edits can be made following submission.

Doesn't our insurance carrier already have this information?
Our insurance carriers retain information on the types of tests, treatments we have and physicians we visit but not the outcomes of these tests and visits. It is the outcomes (results) that we are seeking from staff on a confidential basis to allow HSD to analyze and suggest refinements.

What if I don't understand the medical terminology used?
Many medical terms are defined throughout the survey using a hoverbox. Simply place the mouse over a word that is bolded, for a short period of time, to reveal a brief definition.

Who do I contact if I have problems with the survey?
The first step is to close the browser and attempt to re-access the survey using the link provided in the email. If you continue to experience technical problems, please contact the Survey Administrator.

How can I qualify for a drawing if this is a confidential/anonymous survey?
After submitting the survey (either confidentially or anonymously), you will be redirected to a separate entry form to enter the drawing. Contact information provided for the drawing is handled completely independently of the survey and cannot be linked back.

Who else has taken this survey?
Four thousand (4000) World Food Programme (WFP) staff recently completed this survey, it has been launched by UNHCR and is planned for use by others within the UN system shortly. Recognizing the sensitive information being gathered, the Health Services Department (HSD) has taken the lead in managing this confidential survey through a third party survey provider, approved by the Internet Security Group (ISG).

General Information

*2. How old are you?(*Required)

Select one.

○	<20 years
○	20-25 years
○	26-30 years
○	31-35 years
○	36-40 years
○	41-45 years
○	46-50 years
○	51-55 years
○	56-60 years
○	61-65 years
○	>65 years

*3. What is your gender?(*Required)

Select one.

○	Female
○	Male

4. What is your marital status?

Select one.

○	Committed relationship/married
○	Separated/divorced
○	Widowed
○	Single/never married
○	Other (please specify):

5. What is your ethnic group

Select one.

○	Hispanic (Mexican, Central American, South American)
○	South Asian (Indian, Pakistani, Bangladeshi, Sri Lankan, etc.)
○	Black (African, Afro-Caribbean, Afro-American)
○	Southeast/Northeast Asian (Chinese, Japanese, Vietnamese, Cambodian, Laotian, Pilipino, Korean, etc.)
○	White/Caucasian
○	Other (please specify):

Employment

*6. For how many years have you been working for the IO?(*Required)

Select one.

○	<1
○	1-5
○	6-15
○	16-25
○	>25

7. Choose your primary work location over the past 12 months

Select one.

○	Headquarters 1 in Washington, D.C.	
○	Headquarters 2 in Washington, D.C.	
○	Resident Representative Office	(Answer question number 7.1.)
○	Regional Office	(Answer question number 7.2.)
○	Regional Technical Assistance Center	(Answer question number 7.3.)
○	Other (please specify):	

7.1 Choose all the specific countries where your Resident Representative Office is located in or services: Note: to select multiple countries, press the Ctrl button while making your selection(s).

Select all that apply.

☐	Afghanistan
☐	Albania
☐	Angola
☐	Anguilla
☐	Antigua
☐	Argentina
☐	Armenia
☐	Australia
☐	Austria
☐	Azerbaijan
☐	Bahrain
☐	Bangladesh
☐	Barbados
☐	Belarus
☐	Belgium
☐	Belize
☐	Benin
☐	Bosnia and Herzegovina
☐	Botswana
☐	Brazil
☐	Bulgaria
☐	Burkina Faso
☐	Burundi
☐	Cambodia
☐	Cameroon
☐	Canada
☐	Central African Republic
☐	Chad
☐	China
☐	Colombia
☐	Comoros
☐	Congo
☐	Costa Rica

☐	Cote d'Ivoire
☐	Cyprus
☐	Democratic Republic of the Congo
☐	Djibouti
☐	Dominica
☐	Dominican Republic
☐	Egypt
☐	El Salvador
☐	Ethiopia
☐	Fiji
☐	France
☐	FYR Macedonia
☐	Gabon
☐	Gambia
☐	Georgia
☐	Germany
☐	Ghana
☐	Greece
☐	Grenada
☐	Guatemala
☐	Guinea
☐	Guinea-Bissau
☐	Haiti
☐	Honduras
☐	Hong Kong
☐	Hungary
☐	Iceland
☐	India
☐	Indonesia
☐	Iraq
☐	Ireland
☐	Islamic Republic of Mauritania
☐	Jamaica
☐	Jordan
☐	Kazakhstan
☐	Kenya
☐	Kosovo

☐	Kyrgyz Republic
☐	Lao People's Democratic Republic
☐	Latvia
☐	Lebanon
☐	Lesotho
☐	Liberia
☐	Libya
☐	Macedonia
☐	Madagascar
☐	Malawi
☐	Malaysia
☐	Maldives
☐	Mali
☐	Mauritania
☐	Mauritius
☐	Micronesia
☐	Moldova
☐	Mongolia
☐	Morocco
☐	Mozambique
☐	Myanmar
☐	Namibia
☐	Nepal
☐	Netherlands
☐	New Zealand
☐	Nicaragua
☐	Niger
☐	Nigeria
☐	Other (please specify below)
☐	Pakistan
☐	Paraguay
☐	Peru
☐	Philippines
☐	Poland
☐	Portugal
☐	Republic of the Congo
☐	Romania

☐	Russian Federation
☐	Rwanda
☐	Samoa
☐	Senegal
☐	Serbia
☐	Seychelles
☐	Sierra Leone
☐	Slovenia
☐	Soa Tome
☐	South Africa
☐	Spain
☐	Sri Lanka
☐	St. Kitts
☐	St. Lucia
☐	Sudan
☐	Suriname
☐	Sweden
☐	Switzerland
☐	Tajikistan
☐	Tanzania
☐	Thailand
☐	The Gambia
☐	Timor-Leste
☐	Togo
☐	Trin-Tobago
☐	Tunisia
☐	Turkey
☐	Turkmenistan
☐	Uganda
☐	UK
☐	Ukraine
☐	Uruguay
☐	US
☐	Uzbekistan
☐	Vietnam
☐	West Bank and Gaza
☐	Zambia

☐	Zimbabwe

7.2 Choose the specific Regional Office

Select one.

○	Regional Office for Central America, Panama, and the Dominican Republic
○	Regional Office for Central Europe and Baltics
○	Regional Office for Pacific Islands
○	Regional Office for Eastern Caribbean Currency Union

7.3 Choose the specific Regional Technical Assistance Center

Select one.

○	Austria (JVI)
○	Brazil (BTC)
○	China (CTP)
○	India (ITP)
○	Kuwait (CEF)
○	Mauritius (ATI)
○	Singapore (STI)
○	Tunisia (JPA)

8. How many mission travels do you undertake in a typical year?

Select one.

○	0	
○	1-3	(Answer question number 8.1.)
○	4-6	(Answer question number 8.1.)
○	7-9	(Answer question number 8.1.)
○	10 and more	(Answer question number 8.1.)

8.1 On average, how many days do you spend on missions in a typical year?	
Select one.	
○	1-9
○	10-29
○	30-59
○	60-89
○	90-119
○	120 or more

9. What is your grade level/appointment type?	
Select one.	
○	A1-A8
○	A9-A15
○	B1-B5
○	Contractual (Professional)
○	Contractual (Support)
○	T- OED

10. How often do you use a blackberry or other device to track business in off hours?	
Select one.	
○	Often
○	Sometimes
○	Seldom
○	Never

11. Do you currently use the Compressed Work Schedule?		
Select one.		
○	Often	
○	Sometimes	(Answer question number 11.1.)
○	Seldom	(Answer question number 11.1.)
○	Never	(Answer question number 11.1.)

11.1 Why do you not use CWS regularly?	
Select one.	
○	My department does not support CWS
○	I am too busy to use CWS
○	I do not think CWS is useful
○	Other (please specify):

Health Parameters

12. Please enter your height in centimeters. (convert inches to cm: multiply inches by 2.54 cm)

_____ cm

13. Please enter your weight in kilograms. (convert pounds to kilograms: multiply pounds x 0.45 kg)

_____ kg

14. Please enter your BMI

For an online BMI calculator, click here.

_____

15. What is your most recent **systolic blood pressure**?

Select one.

○	Normal (lower than 120)
○	Borderline high (120-139)
○	High (140 and higher)
○	I don't know

16. What is your most recent **diastolic blood pressure**?

Select one.

○	Normal (lower than 80)
○	Borderline high (80-89)
○	High (90 and higher)
○	I don't know

17. What is your current health insurance plan?

Select one.

○	Aetna
○	VanBreda
○	None
○	I don't know
○	Other (please specify):

Lifestyle

18. Please describe your level of typical physical activity.

2. **Sedentary**: A sedentary activity level describes someone who gets little to no exercise. If you spend a lot of time sitting at a desk or watching television, without working out regularly, you're considered sedentary. The activity you do perform during your daily routine is low-intensity. When you exercise at a low-intensity level, you are able to breathe normally, and are able to sing while you perform an activity. Under normal conditions, low-intensity exercise will not make you sweat. Examples might include taking an easy walk, stretching, shopping and light gardening. At this level, health care professionals will likely recommend that you start a regular exercise regimen to strengthen your heart and improve overall health.

3. **Moderately active**: If you do exercise but get less than the 2 1/2 hours per week of the moderate aerobic activity that the Centers for Disease Control and Prevention recommends, you're at a moderate activity level. With aerobic exercise at a moderate intensity level, you breathe harder and deeper than at a sedentary level. You can't sing any tunes, but you can hold a conversation as you take a brisk walk, which is a good example of a moderate level exercise. After around 10 minutes of exercise, you should break into a sweat. Mowing your lawn, riding a bike on level surfaces and playing doubles tennis are examples of moderate exercises.

4. **Active**: If you work out vigorously for at least one hour and 15 minutes every week, you're at a high activity level. At a vigorous level of exercise your heart is working at maximum efficiency. Talking will be difficult at this level and you will breathe rapidly. You will break into a sweat after just a few minutes doing exercises like biking or hiking on hills, jogging, swimming laps, playing basketball or high-intensity aerobics.

Select one.

○	Sedentary
○	Moderately active
○	Active

19. Overall, how many hours do you spend sitting on a typical working day (in the office, car/transportation, at home)?

Select one.

○	4 or less
○	5-7
○	8-10
○	11-13
○	14 or more

20. How many hours of on average do you sleep at night?

Select one.

○	4 or less
○	5-6
○	7-8
○	9 or more

21. How many times per month do you participate in conference/video calls outside your usual business hours?

Select one.

○	0
○	1
○	2
○	3
○	4 and more

22. When in the sun, do you protect your skin by using a sunscreen at SPF 15 or above?

Select one.

○	Very Frequently
○	Frequently
○	Occasionally
○	Rarely
○	Very Rarely/Never

23. How would you describe your smoking (tobacco cigarette, pipe, or cigar) habits?

Select one.

○	Currently smoke	(Answer question number 23.1, 23.2, 23.3.)
○	Previously smoked	(Answer question number 23.1, 23.2, 23.3.)
○	Never smoked	
○	Other (please specify):	

23.1 How many cigarettes daily do you currently smoke or have smoked in the past?
Enter a number (Minimum 1, Maximum 99).
_____ Per Day

23.2 For how many years have you been smoking/did you smoke?
_____ Years

23.3 On the days that you smoke, how soon after you wake up do you have your first cigarette?	
Select one.	
○	Within 5 minutes
○	6- 30 minutes
○	31-60 minutes
○	After 60 minutes
○	NA – not a smoker any more

24. In a typical week, how many alcohol beverages do you consume? (one drink=one beer, glass of wine, shot of liquor or mixed drink)	
Select one.	
○	0
○	1-4
○	5-8
○	9-13
○	14 or more

25. When seat belt is functional and available, how often do you usually fasten it when driving a car or riding as a passenger?	
Select one.	
○	Always
○	Often
○	Sometimes
○	Never

26. If you drive or ride a bike, motorcycle, or scooter, how often do you wear a helmet?

Select one.

○	Always
○	Often
○	Sometimes
○	Never
○	N/A (I don't drive or ride bikes, motorcycles, or scooters)
○	Other (please specify):

Nutrition

27. How many servings of fruit/vegetables do you consume daily? (one serving=half cup of sliced fruit/vegetable, or one medium size single piece of fruit such as apple, peach, banana, etc.)

Select one.

○	0
○	1-2
○	3-4
○	5 or more

28. How many times a week do you consume what would be considered "**junk food**"?

Select one.

○	Never
○	1-2 times/week
○	3-5 times/week
○	6-10 times/week
○	>10 times/week

Perception of Health

29. How would you describe your overall physical health?

Select one.

○	Very good
○	Good
○	Fair
○	Poor
○	Very poor

30. How would you describe your overall **psychological/mental health**?

Select one.

○	Very good
○	Good
○	Fair
○	Poor
○	Very poor

31. In general, how satisfied are you with your non-work related life?

Select one.

○	Very satisfied
○	Moderately satisfied
○	Slightly satisfied
○	Slightly dissatisfied
○	Moderately dissatisfied
○	Very dissatisfied

32. In general, how satisfied are you with your job?

Select one.

○	Very satisfied
○	Moderately satisfied
○	Slightly satisfied
○	Slightly dissatisfied
○	Moderately dissatisfied
○	Very dissatisfied

Stress and Mood

33. During the past year, to what extent has stress (regardless of the source) affected your health?

Select one.

○	Not at all
○	To a small extent
○	To a moderate extent
○	To a large extent
○	Other (please specify):

34. During the past year, to what extent has your stress affected your family?

Select one.

○	Not at all
○	To a small extent
○	To a moderate extent
○	To a large extent
○	NA (no family)
○	Other (please specify):

35. How often do you feel tense, anxious, and/or depressed?

Select one.

○	Often
○	Sometimes
○	Rarely
○	Never

36. How often do you use drugs or medication (including prescription drugs) which affect your mood or help you to relax?

Select one.

○	Often
○	Sometimes
○	Rarely
○	Never

37. How stressful is your...

Select one per row.

	Not at all	*Slightly*	*Moderately*	*Extremely*
...life overall?	○	○	○	○
...work?	○	○	○	○

37.1 The sources of my stress are as follows:

Select one per row.

	Never	*Rarely*	*Sometimes*	*Often*	*N/A*
Unrealistic or shifting deadlines	○	○	○	○	○
Unclear/conflicting work priorities	○	○	○	○	○
Too few resources to complete assigned tasks	○	○	○	○	○
Conflicts with colleagues	○	○	○	○	○
Conflict with supervisor/manager	○	○	○	○	○
Lack of control over decisions at work that affect me	○	○	○	○	○
Not being able to use my skills in my job	○	○	○	○	○
Insufficient support from manager	○	○	○	○	○
Insufficient support from colleagues	○	○	○	○	○
Work hours and high workload/demands	○	○	○	○	○
Performance appraisal	○	○	○	○	○
Employment status/assignment/ extension	○	○	○	○	○
Lack of clarity of my role and/or task-definition	○	○	○	○	○
Work relationships on missions	○	○	○	○	○
Frequent or last-minute mission travel	○	○	○	○	○
Difficulty adapting to cultural diversity	○	○	○	○	○
Caring for ill, elderly, or infirm family member(s)	○	○	○	○	○
Conflict with my spouse/partner	○	○	○	○	○
Parenting-related difficulties	○	○	○	○	○
Lack of social support	○	○	○	○	○
Geographic separation from family and other supports (living far from home)	○	○	○	○	○
Lack of time for family, friends or personal pursuits	○	○	○	○	○
Other personal/family problem	○	○	○	○	○

Health problems	○	○	○	○	○
Physical work environment	○	○	○	○	○
Other (please specify below)	○	○	○	○	○

37.2 Please use the space below to specify "Other" from above.

37.3 I usually cope with pressure or stress by:

Select one per row.

	Never	*Rarely*	*Sometimes*	*Often*	*N/A*
Utilizing time management, prioritizing, delegating	○	○	○	○	○
Setting personal limits/learning to say no	○	○	○	○	○
Taking regular breaks	○	○	○	○	○
Having lunch with colleagues	○	○	○	○	○
Meeting challenges with humor	○	○	○	○	○
Practicing relaxation, yoga, meditation, breathing exercises	○	○	○	○	○
Engaging in regular physical exercise	○	○	○	○	○
Taking time for leisure/pleasurable activities	○	○	○	○	○
Spending time with family/friends	○	○	○	○	○
Nourishing my creative side	○	○	○	○	○
Taking personal time and caring for myself	○	○	○	○	○
Talking to someone I trust	○	○	○	○	○
Talking positively to myself	○	○	○	○	○
Attending religious or spiritual activity	○	○	○	○	○
Being realistic about what I can and cannot change	○	○	○	○	○
Knowing and accepting myself	○	○	○	○	○
Attending training to improve my personal or professional skills	○	○	○	○	○
Taking time away (R&R, family leave)	○	○	○	○	○
Using medication, alcohol and/or drugs	○	○	○	○	○
Getting enough sleep	○	○	○	○	○
Getting professional support from HSD counselor	○	○	○	○	○
Getting professional support from health professionals outside HSD	○	○	○	○	○

Other (please specify below)	○	○	○	○	○

37.4 Please use the space below to specify "Other" from above.

37.5 To help me cope with pressure or stress at work, I need MORE support from: (select all that apply)

Select all that apply.

☐	Colleagues at work
☐	My manager/supervisor
☐	Fund resources/services
☐	Friends/family
☐	Relying on myself
☐	Other (please specify):

38. How effective are you at dealing with stress in your life?

Select one.

○	Very good
○	Good
○	Fair
○	Poor
○	Very poor

Sick Leave and Workers' Compensation

39. In the PAST 12 MONTHS:

Select one per row.

	0	*1-5*	*6-10*	*>10*	*I don't know*
How many sick days did you take due to personal health issue(s)?	○	○	○	○	○
How many days have you gone to work feeling ill/ sick?	○	○	○	○	○
How many times have you been injured at work?	○	○	○	○	○
How many times did you have food/water poisoning at work (including while on travel)?	○	○	○	○	○
How many times have you visited a HSD counselor and/or other professional for work-related stress issues?	○	○	○	○	○

39.1 Did you file a workers' compensation claim (after being injured at work) with HRD?

Select one.

○	Yes
○	No

39.2 Did you file a workers' compensation claim (after having food/water poisoning at work) with HRD?

Select one.

○	Yes
○	No

Ergonomics

40. Indicate the part of your body where you have (or had) any muscular pain/discomfort and its intensity in the last six months

Select one per row.

	No pain	*Mild Pain (nagging, annoying, interfering little with work)*	*Moderate Pain (interferes significantly with work)*	*Severe Pain (disabling, unable to perform work)*
Neck/Shoulder/Upper back	○	○	○	○
Hand/Wrist/Arm	○	○	○	○
Lower back	○	○	○	○

41. Please indicate which of the following activities may aggravate your pain/discomfort

Select one per row.

	Yes	*No*	*I don't know*	*Not applicable*
Computer work	○	○	○	○
Lifting and carrying weights	○	○	○	○
Driving	○	○	○	○

42. Have you sought ergonomic assistance for improving your computer workstation?

Select one.

○	Yes	(Answer question number 42.1, 42.2.)
○	No	(Answer question number 42.3.)

42.1 Which resource(s) did you use? (select all that apply)

Select all that apply.

☐	Internal company resource
☐	Web/Internet
☐	Other (please specify):

42.2 Do you feel that ergonomic assistance was effective?

Select one.

○	Not at all
○	Slightly
○	Moderately
○	Very effective

42.3 Why have you not sought ergonomic assistance to improve your workstation? (select all that apply)

Select all that apply.

☐	Do not know where to get help
☐	There are no resource in my organizations
☐	Lack of time in my schedule
☐	Other (please specify):

Medical Information

43. Have you been diagnosed with any of the following disease/conditions?

Click here for a list of defined medical terms.

Select one per row.

	Yes	*No*	*I don't know*
Back pain	○	○	○
Arthritis	○	○	○
Asthma	○	○	○
Diabetes	○	○	○
High blood pressure	○	○	○
High cholesterol	○	○	○
Heart disease	○	○	○
Lung cancer	○	○	○
Colon/rectal cancer	○	○	○
Skin cancer, including melanoma	○	○	○
HIV/AIDS	○	○	○
Malaria	○	○	○
Hepatitis A	○	○	○
Hepatitis B	○	○	○
Hepatitis C	○	○	○
Depression	○	○	○
Anxiety	○	○	○
Post-traumatic stress disorder/Acute stress disorder	○	○	○
Burnout	○	○	○

44. Use the space below to specify any other disease/conditions you have been diagnosed with that are not listed above.

45. Have you ever been diagnosed with any of the following diseases/conditions?

Select one per row.

	Yes	*No*	*I don't know*
Breast cancer	○	○	○
Cervical/ovarian cancer	○	○	○

46. Have you ever been diagnosed with Prostate cancer?

Select one.

○	Yes
○	No
○	I don't know

47. During the past 4 weeks, how much have health problems affected your productivity at work?

Select one.

○	None
○	Some
○	Most of the time
○	All of the time
○	N/A (no health problems)
○	Other (please specify):

Doctor's Visits

48. Do you have a primary care provider (family doctor, general medicine practitioner)?

Select one.

○	Yes	
○	No	(Answer question number 48.1.)
○	I am not sure	(Answer question number 48.1.)

48.1 Do you need assistance in obtaining a primary care physician?

Select one.

○	Yes
○	No

49. When was the last time you had these preventive services or health screenings

Click here for a list of defined medical terms.

Select one per row.

	Less than 1 year	*1-2 years ago*	*3-5 years ago*	*>5 years ago*	*Never*	*I don't know*
Blood pressure	○	○	○	○	○	○
Blood sugar	○	○	○	○	○	○
Total cholesterol	○	○	○	○	○	○
Colonoscopy	○	○	○	○	○	○
Skin exam	○	○	○	○	○	○
Eye exam	○	○	○	○	○	○
Dental exam	○	○	○	○	○	○

50. When was the last time you had these preventive services or health screenings?

Select one per row.

	Less than 1 year	*1-2 years ago*	*3-5 years ago*	*>5 years ago*	*Never*	*I don't know*
Mammogram	○	○	○	○	○	○
Pap test	○	○	○	○	○	○

51. When was the last time you had Prostate exam?

Select one.

○	Less than 1 year
○	1-2 years ago
○	3-5 years ago
○	>5 years ago
○	Never
○	I don't know

Vaccines

52. During the past 12 months, how many times have you:

Select one per row.

	0	*1-2*	*3-5*	*6 or more*
Visited a primary care physician's office for routine exams	○	○	○	○
Visited a specialist's office for medical treatment	○	○	○	○
Stayed overnight in a hospital	○	○	○	○
Gone to the emergency room	○	○	○	○

53. Please indicate your current status of the following vaccines.

Select one per row.

	Current	*Out of date*	*Naturally immune*	*Never vaccinated*	*I don't know*
Yellow Fever	○	○	○	○	○
Meningitis	○	○	○	○	○
Typhoid	○	○	○	○	○
Hepatitis A	○	○	○	○	○
Hepatitis B	○	○	○	○	○
Tetanus	○	○	○	○	○
Polio	○	○	○	○	○
Rabies	○	○	○	○	○

54. Do you travel to areas with malaria? Click here, to see the World Malarial Risk Chart.

Select one.

○	Yes	(Answer question number 54.1.)
○	No	
○	Not sure	

54.1 When travel to an area with malaria, do you use the following precaution measures?

Select one per row.

	Yes	*No, because it is not available*	*No, because I don't need it*
Anti-Malaria medication	○	○	○
Repellent	○	○	○
Mosquito nets	○	○	○
Insect sprays to rooms	○	○	○
Other (please specify below)	○	○	○

Plans Regarding Your Health

55. In the next six months, are you planning to make any changes to keep yourself healthy or maintain/improve your health?

Select one per row.

	Yes	*No*	*I don't know*	*Not needed*
Increase physical activity	○	○	○	○
Lose weight	○	○	○	○
Reduce alcohol use	○	○	○	○
Quit or cut down on smoking	○	○	○	○
Reduce fat/cholesterol intake	○	○	○	○
Lower blood pressure	○	○	○	○
Lower cholesterol level	○	○	○	○
Cope better with stress situations	○	○	○	○
Other (please specify below)	○	○	○	○

56. Please use the space below to specify "Other" from above.

57. Would you be willing to participate in the preventive programs at your workplace and/or online created to improve your health and reduce your risk factors?

Select one.

○	Yes
○	No
○	I am not sure

58. Please provide any comments or suggestions for future preventive programs which would improve your health and well-being at work.

Lab Results

59. What is your most recent **fasting blood sugar** test?

Select one.

○	Good (lower than 100 mg/dl or <5.6 mmol/L)
○	Borderline high (between 100-126 mg/dl or 5.6-7.0 mmol/L)
○	High (higher than 126 mg/dl or >7.0 mmol/L)
○	I don't know

60. What is your most recent **total cholesterol test**?

Select one.

○	Good (lower than 200 mg/dl or <5.18 mmol/L)
○	Borderline high (200-240 mg/dl or 5.18-6.19 mmol/L)
○	High (higher than 240 mg/dl or >6.19 mmol/L)
○	I don't know

61. What is your most recent **LDL ("bad") cholesterol** test?

Select one.

○	Good (lower than 130 mg/dl or <3.34 mmol/L)
○	Borderline high (between 130-160 mg/dl or 3.34-4.12 mmol/L)
○	High (higher than 160 mg/dl or >4.12 mmol/L)
○	I don't know

62. What is your most recent **HDL ('good") cholesterol** test?

Select one.

○	Good (higher or equal 60 mg/dl or >1.55 mmol/L)
○	Borderline low (between 40-60 mg/dl or 1.03-1.54 mmol/L)
○	Low (lower than 40 mg/dl or <1.03 mmol/l)
○	I don't know

63. What is your most recent **triglycerides** test?

Select one.

○	Good (lower than 150 mg/dl or<1.69 mmol/L)
○	Borderline high (between 150-200 mg/dl or 1.70-2.26 mmol/L)
○	High (higher than 200mg/dl or 2.26 mmol/L)
○	I don't know

Final Question

64. Do you think it would be useful that your partner complete the next HRA survey?

Select one.

○	Yes
○	No

References

1. WHO. *Stress at the Workplace*. 2014 [cited 2014 jan 29th]; Available from: http://www.who.int/occupational_health/topics/stressatwp/en/.
2. *Strain*. 2014 [cited 2014 5/5]; Available from: http://physics.tutorvista.com/fluid-dynamics/strain.html.
3. Karasek, R.A., Jr., *Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign.* Administrative Science Quarterly, 1979. **24**(2): p. 285-308.
4. Johnson, J.V. and E.M. Hall, *Job strain, work place social support, and cardiovascular disease: a cross-sectional study of a random sample of the Swedish working population.* Am J Public Health, 1988. **78**(10): p. 1336-42.
5. Karasek, R. and T. Theorell, *Healthy Work: Stress, Productivity, and the Reconstruction of Working Life*. 1992: Basic Books.
6. Fletcher, B. and F. Jones, *A refutation of Karasek's demand – discretion model of occupational stress with a range of dependent measures.* Journal of Organizational Behavior, 1993. **14**(4): p. 319-330.
7. van Vegchel, N., et al., *Reviewing the effort-reward imbalance model: drawing up the balance of 45 empirical studies.* Soc Sci Med, 2005. **60**(5): p. 1117-31.
8. Juvani, A., et al., *Effort-reward imbalance as a risk factor for disability pension: the Finnish Public Sector Study.* Scand J Work Environ Health, 2013.
9. Colligan, T.W. and E.M. Higgins, *Workplace Stress.* Journal of Workplace Behavioral Health, 2006. **21**(2): p. 89-97.
10. Netterstrom, B., *Job strain and hypertension.* Occup Environ Med, 2013.
11. Rosenthal, T. and A. Alter, *Occupational stress and hypertension.* J Am Soc Hypertens, 2012. **6**(1): p. 2-22.
12. Yu, S.F., et al., *[Effect of occupational stress on hypertension].* Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi, 2009. **27**(12): p. 706-10.
13. Jovanovic, J. and M. Jovanovic, *[Occupational stress and arterial hypertension].* Med Pregl, 2004. **57**(3-4): p. 153-8.
14. Ciocoiu, M., et al., *[Occupational stress--risk factor in essential arterial hypertension].* Rev Med Chir Soc Med Nat Iasi, 2000. **104**(2): p. 113-7.
15. Landsbergis, P.A., et al., *Job strain and ambulatory blood pressure: a meta-analysis and systematic review.* Am J Public Health, 2013. **103**(3): p. e61-71.
16. Poorabdian, S., et al., *Association between job strain (high demand-low control) and cardiovascular disease risk factors among petrochemical industry workers.* Int J Occup Med Environ Health, 2013.
17. Kivimaki, M., et al., *Job strain as a risk factor for coronary heart disease: a collaborative meta-analysis of individual participant data.* Lancet, 2012. **380**(9852): p. 1491-7.
18. Schneider, S., et al., *Workplace stress, lifestyle and social factors as correlates of back pain: a representative study of the German working population.* Int Arch Occup Environ Health, 2005. **78**(4): p. 253-69.

19. Lima, C.T., M. Farrell, and M. Prince, *Job strain, hazardous drinking, and alcohol-related disorders among Brazilian bank workers.* J Stud Alcohol Drugs, 2013. **74**(2): p. 212-22.
20. Heikkila, K., et al., *Job strain and tobacco smoking: an individual-participant data meta-analysis of 166,130 adults in 15 European studies.* PLoS One, 2012. **7**(7): p. e35463.
21. Mantyniemi, A., et al., *Job strain and the risk of disability pension due to musculoskeletal disorders, depression or coronary heart disease: a prospective cohort study of 69,842 employees.* Occup Environ Med, 2012. **69**(8): p. 574-81.
22. *Job Content Questionnaire, Recommended format*. [cited 2014 5/14-14]; Available from: http://www.jcqcenter.org.
23. Theorell, T., et al., *Changes in job strain in relation to changes in physiological state. A longitudinal study.* Scand J Work Environ Health, 1988. **14**(3): p. 189-96.
24. Alves, M.G., Y.H. Hokerberg, and E. Faerstein, *[Trends and diversity in the empirical use of Karasek's demand-control model (job strain): a systematic review].* Rev Bras Epidemiol, 2013. **16**(1): p. 125-36.
25. Tuomi K, I.J., Jahkola A, Katajarinne L, Tulkki A., *Work Ability Index. 2nd revised edn. .* Helsinki: Finnish Institute of Occupational Health, 1998.
26. Yong, M., et al., *Occupational stress perception and its potential impact on work ability.* Work, 2013. **46**(3): p. 347-54.
27. VanWormer, J.J., et al., *Stress and workplace productivity loss in the Heart of New Ulm project.* J Occup Environ Med, 2011. **53**(10): p. 1106-9.
28. Schultz, A.B. and D.W. Edington, *Employee health and presenteeism: a systematic review.* J Occup Rehabil, 2007. **17**(3): p. 547-79.
29. Cocker, F., et al., *Factors associated with presenteeism among employed Australian adults reporting lifetime major depression with 12-month symptoms.* J Affect Disord, 2011. **135**(1-3): p. 231-40.
30. Bejean, S. and H. Sultan-Taieb, *Modeling the economic burden of diseases imputable to stress at work.* Eur J Health Econ, 2005. **6**(1): p. 16-23.
31. *Workplace Stress*. 2014 [cited 2014 5/5-14]; Available from: http://www.stress.org/workplace-stress/.
32. Michie, S. and S. Williams, *Reducing work related psychological ill health and sickness absence: a systematic literature review.* Occup Environ Med, 2003. **60**(1): p. 3-9.
33. Tatsuse, T. and M. Sekine, *Job Dissatisfaction as a Contributor to Stress-related Mental Health Problems among Japanese Civil Servants.* Industrial Health, 2013. **51**(3): p. 307-318.
34. Ramirez, A.J., et al., *Mental health of hospital consultants: the effects of stress and satisfaction at work.* The Lancet, 1996. **347**(9003): p. 724-728.
35. Landsbergis, P.A., et al., *Lower socioeconomic status among men in relation to the association between job strain and blood pressure.* Scand J Work Environ Health, 2003. **29**(3): p. 206-15.
36. Cohen, S. and T.A. Wills, *Stress, social support, and the buffering hypothesis.* Psychol Bull, 1985. **98**(2): p. 310-57.

37. Browner, C.H., *Job stress and health: the role of social support at work.* Res Nurs Health, 1987. **10**(2): p. 93-100.
38. Appelberg, K., et al., *Interpersonal conflicts at work and psychosocial characteristics of employees.* Soc Sci Med, 1991. **32**(9): p. 1051-6.
39. Narayanan, L., S. Menon, and P. Spector, *A Cross-Cultural Comparison of Job Stressors and Reactions Among Employees Holding Comparable Jobs in Two Countries.* International Journal of Stress Management, 1999. **6**(3): p. 197-212.
40. Spector, P.E. and S.M. Jex, *Development of four self-report measures of job stressors and strain: Interpersonal Conflict at Work Scale, Organizational Constraints Scale, Quantitative Workload Inventory, and Physical Symptoms Inventory.* J Occup Health Psychol, 1998. **3**(4): p. 356-67.
41. Keenan, A. and T.J. Newton, *Stressful events, stressors and psychological strains in young professional engineers.* Journal of Organizational Behavior, 1985. **6**(2): p. 151-156.
42. Appelberg, K., et al., *Interpersonal conflict as a predictor of work disability: a follow-up study of 15,348 Finnish employees.* J Psychosom Res, 1996. **40**(2): p. 157-67.
43. Burke, R.J., *Workplace stress and well-being across cultures: Research and practice.* Cross Cultural Management: An International Journal, 2010. **17**(1): p. 5-9.
44. Munir, F., *The Work Limitation Questionnaire.* Oxford Journals: Medicine Occupational Medicine, 2008: p. 310-311.
45. Kessler, R.C., et al., *Using the World Health Organization Health and Work Performance Questionnaire (HPQ) to evaluate the indirect workplace costs of illness.* J Occup Environ Med, 2004. **46**(6 Suppl): p. S23-37.
46. Kessler, R.C., et al., *The World Health Organization Health and Work Performance Questionnaire (HPQ).* J Occup Environ Med, 2003. **45**(2): p. 156-74.
47. Center, T.U.o.M.H.M.R., *Health Risk Assessment*. 2009.
48. *Cvent Home page*. Available from: http://www.cvent.com.
49. Goldoni Laestadius, J., Klekner M., Zhang L., MacLeod A., *Report on Employee Health in the IMF*. 2014.
50. Goldoni Laestadius, J., Dimberg, L., Striker, J., Nagy, L., Ross, S., Ali, D., Robins, V. (The World Bank Health Services Department), *Report on employee health in the IMF* 2002.
51. Miilunpalo, S., et al., *Self-rated health status as a health measure: The predictive value of self-reported health status on the use of physician services and on mortality in the working-age population.* Journal of Clinical Epidemiology, 1997. **50**(5): p. 517-528.
52. McGee, D.L., et al., *Self-reported Health Status and Mortality in a Multiethnic US Cohort.* American Journal of Epidemiology, 1999. **149**(1): p. 41-46.
53. Idler, E.L. and R.J. Angel, *Self-rated health and mortality in the NHANES-I Epidemiologic Follow-up Study.* American Journal of Public Health, 1990. **80**(4): p. 446-452.

54. Tsuno, K., et al., *Intragroup and intergroup conflict at work, psychological distress, and work engagement in a sample of employees in Japan.* Ind Health, 2009. **47**(6): p. 640-8.
55. Ikeda, T., et al., *Correlates of depressive symptoms among workers in small- and medium-scale manufacturing enterprises in Japan.* J Occup Health, 2009. **51**(1): p. 26-37.
56. Frone, M.R., *Interpersonal conflict at work and psychological outcomes: testing a model among young workers.* J Occup Health Psychol, 2000. **5**(2): p. 246-55.
57. Nakata, A., et al., *Job stress, social support, and prevalence of insomnia in a population of Japanese daytime workers.* Soc Sci Med, 2004. **59**(8): p. 1719-30.
58. Hiro, H., et al., *Association between job stressors and heavy drinking: age differences in male Japanese workers.* Ind Health, 2007. **45**(3): p. 415-25.
59. Fujiwara, K., et al., *Interpersonal conflict, social support, and burnout among home care workers in Japan.* J Occup Health, 2003. **45**(5): p. 313-20.
60. Yildiz, Z., S. Ayhan, and S. Erdogmus, *The impact of nurses' motivation to work, job satisfaction, and sociodemographic characteristics on intention to quit their current job: an empirical study in Turkey.* Appl Nurs Res, 2009. **22**(2): p. 113-8.
61. Tzeng, H.M., *The influence of nurses' working motivation and job satisfaction on intention to quit: an empirical investigation in Taiwan.* Int J Nurs Stud, 2002. **39**(8): p. 867-78.
62. Baruch, Y. and B.C. Holtom, *Survey response rate levels and trends in organizational research.* Human Relations, 2008. **61**(8): p. 1139-1160.
63. De Raeve, L., et al., *Risk factors for interpersonal conflicts at work.* Scand J Work Environ Health, 2008. **34**(2): p. 96-106.
64. Hurrell Jr, J.J., D.L. Nelson, and B.L. Simmons, *Measuring job stressors and strains: Where we have been, where we are, and where we need to go.* Journal of Occupational Health Psychology, 1998. **3**(4): p. 368-389.
65. Li, J., W. Yang, and S.I. Cho, *Gender differences in job strain, effort-reward imbalance, and health functioning among Chinese physicians.* Soc Sci Med, 2006. **62**(5): p. 1066-77.
66. Vanagas, G., S. Bihari-Axelsson, and V. Vanagiene, *Do age, gender and marital status influence job strain development for general practitioner?* Medicina (Kaunas), 2004. **40**(10): p. 1014-8.
67. Beehr, T.A., et al., *The enigma of social support and occupational stress: source congruence and gender role effects.* J Occup Health Psychol, 2003. **8**(3): p. 220-31.
68. Vermeulen, M. and C. Mustard, *Gender differences in job strain, social support at work, and psychological distress.* J Occup Health Psychol, 2000. **5**(4): p. 428-40.
69. Herrero, S.G., et al., *Influence of task demands on occupational stress: gender differences.* J Safety Res, 2012. **43**(5-6): p. 365-74.
70. Desmarais, S.A., C., *Handbook of work stress - Gender issues*, ed. E.K.K. J. Barling, & M. R. Frone (Eds). Vol. Gender issues. 2005.
71. Striker, J., et al., *Risk factors for psychological stress among international business travellers.* Occup Environ Med, 1999. **56**(4): p. 245-52.

72. Gage, L.W. and Y.J. Takeshita, *Coping with stress in a cross cultural setting: the case of Japanese and American employees of a Japanese plant in the United States.* AAOHN J, 1996. **44**(6): p. 278-87.
73. Karasek, R., et al., *Testing two methods to create comparable scale scores between the Job Content Questionnaire (JCQ) and JCQ-like questionnaires in the European JACE Study.* Int J Behav Med, 2007. **14**(4): p. 189-201.
74. Ferrario, M.M. and G. Cesana, *[Methodological aspects of risk assessment of work related stress. Italian experience of R Karasek JCQ application, a multiphase approach].* G Ital Med Lav Ergon, 2009. **31**(2): p. 203-6.
75. Bond, F.W. and D. Bunce, *Job control mediates change in a work reorganization intervention for stress reduction.* Journal of Occupational Health Psychology, 2001. **6**(4): p. 290-302.
76. Kammeyer-Mueller, J.D. and C.R. Wanberg, *Unwrapping the organizational entry process: Disentangling multiple antecedents and their pathways to adjustment.* Journal of Applied Psychology, 2003. **88**(5): p. 779-794.
77. Awa, W.L., M. Plaumann, and U. Walter, *Burnout prevention: a review of intervention programs.* Patient Educ Couns, 2010. **78**(2): p. 184-90.
78. van der Klink, J.J., et al., *The benefits of interventions for work-related stress.* Am J Public Health, 2001. **91**(2): p. 270-6.
79. Kim, J.H., *[A meta-analysis of effects of job stress management interventions (SMIs)].* Taehan Kanho Hakhoe Chi, 2007. **37**(4): p. 529-39.
80. Haraway, D.L. and W.M. Haraway, *Analysis of the Effect of Conflict-Management and Resolution Training on Employee Stress at a Healthcare Organization.* Hospital Topics, 2005. **83**(4): p. 11-17.