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Research Article

Effect of Gender, Age and education on job stress in pharma industry employees

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Abstract

The present investigation was planned to determine effect of Gender, Age and education on job stress in pharma industry employees. Today, human power as the most valuable investment in the organization, presents many problems, and management experts and organizational psychologists are paying more attention to the factors influencing an increase or a reduction in human efficiency and trying to improve the influence of positive factors and reduce the role of negative ones by identifying them and taking necessary actions.
Keywords:job stress; Burnout; organizational psychology

1. Introduction

Stress at work is a relatively new phenomenon of modern lifestyles. The nature of work has gone through drastic changes over the last century and it is still changing at whirlwind speed. They have touched almost all professions, starting from an artist to a surgeon, or a commercial pilot to a sales executive. With change comes stress, inevitably. Professional stress or job stress poses a threat to physical health. Work related stress in the life of organized workers, consequently, affects the health of organizations.

One of these factors is job stress which has an unfavorable impact on each human's body and soul and also reduces their efficiency[1].

1.1 What's job stress?

According to Merriam-Webster's Collegiate Dictionary, stress, in general, is "a physical, chemical, or emotional factor that causes bodily or mental tension and may be a factor in disease causation."

1.1.1 Symptoms of job stress:

The signs of job stress vary from person to person, depending on the particular situation, how long the individual has been subjected to the stressors, and the intensity of the stress itself.

Typical symptoms of job stress can be: Insomnia, Loss of mental concentration, Anxiety, stress, Absenteeism Depression, Substance abuse, Extreme anger and irritability, Family conflict, Apathy , Negativism/cynicism, Low morale, Boredom, Frustration, Fatigue, Alienation, Physical illnesses such as heart disease, migraine, headaches, stomach problems, and back problems

1.1.2Effects of job stress on organizations:

Consider the following statistics:

- 40% of job turnover is due to stress.
- Xerox estimated that it cost them $1 to $1.5 million to replace a top executive and that was two decades ago
- Replacing an average employee today costs between $3,000 and $13,000.
- 60 to 80% of accidents on the job are stress related and some, like the Three Mile Island and Exxon Valdez disasters, can affect untold thousands many miles away.
- In California, the number of Workers' compensation claims for mental stress increased by almost 700 percent over eight years and ninety percent were successful with an average award of $15,000 compared to a national average of

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- In 1987, California shelled out almost $1,000,000,000 for medical and legal fees alone, which is more than most states spend on actual awards.
- Double digit increases in Workers' compensation premiums every year as a result of mental stress claims threaten to bankrupt the system in several states.
- A jury in New York awarded nearly $6 million in 1996 to three women for repetitive stress injury allegedly due to faulty computer keyboards.
- Repetitive musculoskeletal injuries like carpal tunnel syndrome have become the nation's leading workplace health cost and account for almost a third of all Workers' compensation awards.
- Studies show that keyboard entry operators who are under stress (because they are uncertain as to whether their activities are being monitored for performance evaluation), have a significantly higher incidence of such complaints and injuries.

1.1.3 Causes of Job Stress: There are two schools of thought on the causes of job stress.

According to one theory, differences in individual characteristics, such as personality and coping style, are best at predicting what will stress one person but not another. The focus then becomes on developing prevention strategies that help workers find ways to cope with demanding job conditions.

The other theory proposes that certain working conditions are inherently stress-inducing, such as fear of job loss, excessive workload demands, lack of control or clear direction, poor or dangerous physical working conditions, inflexible work hours, and conflicting job expectations. The focus then becomes on eliminating or reducing those work environments as the way to reducing job stress.

Job stress may be caused by a complex set of reasons. Some of the most visible causes of workplace stress are: Job Insecurity, High Demand for Performance, Technology, Workplace Culture, Personal or Family Problems, Job Stress and Women, Strategies for Managing Job Stress.

1.2 Burnout:

When under severe stress, an individual fails to take clear-cut decisions, reevaluate and reassess the priorities and lifestyles, and ultimately, tend to fall into unproductive distractions. This can be described as a classic case of 'burnout'. The 'burnouts' often engage in reckless or risk-taking behaviors. Starting from glamor and sport celebrities to common men, 'burnouts' are found everywhere.

Chronic Responsibility Syndrome is a kind of burnout where people get mentally and physically exhausted from their workload. The symptom is often described as "there's simply too much work to do, and no one else can do it but me". Typically it will occur in hard working, hard driven people, who become emotionally, psychologically or physically exhausted. You are at risk of burnout where:

Decenzo[1] reported that industries annually lose 5 billion $ in England and 77 billion $ in the U.S. for this reason. Kenneley[2] reported that job stress, especially chronic job stress, results in anxiety, fatigue and depression. Two expressions, “depressed workers and depressed employees”, were coined by Americans for the first time. They understood in 1980 that the workers of all working classes feel nervous and this causes a lot of damage[3,4]. Kelley and Gill[5] studied the relation between status variables (social support), personal variables (gender, records of service), and assessment (feeling stress and role contradiction), fatigue. There was a positive correlation between assessment variables of stress and fatigue. In another study, Davidson and Ohler[6] probed the role of a reduction in job stress and anxiety and colleagues’ support in fatigue reduction.

In the last two decades there has been an increase in job stress at various physical education organizations due to their important nature and duties so the stress has undergone study and evaluation. In this regard, Bradley[7] and Lea and Loughman[8] point to job dimensions and requirements, Physical Education heads’ duties and responsibilities particularly regarding athletes. Desensi, Kelley, Blanton, and Beitel[9] believe that considering the present situation, in the past 20 years physical education heads’ duties have become more complex in various dimensions such as financial affairs, social relations, preparation for performance of urgent, quick and important tasks, power attraction, conformity with Parliament regulations and foreign investment attraction. Greenberg[10] believes that the following items increase job stress: an increase

in heads' responsibilities, the nature of changing, advanced and new sports and the necessity of athlete's preparation programs for competitions. So he suggests a descriptive model of job stress resulting from the following cases: 1.) Stress factors of the job itself as the natural, attached ones. 2.) Personal characteristics of an individual (manager). 3.) Stress factors outside the organization like family and economic situations[11]. Vealey *et al*[10] reported that some Physical Education heads, contrary to an increase in their role and duties, face the pressure of coordination among duty amounts and variation and time. There is a meaningful correlation between job stress and an increase in duty amounts. Barry, Copeland, and Scottkirch[12] conducted research on 108 Physical Education heads (National Institute for Inter-University Sports). The result was that there is an equal amount of job stress among the heads, and one of the common stress factors is the stress of having to earn a living. Ivancevich *et al*[13] in their study tried to investigate specific stress factors playing a role in special jobs. In this research project there are 17 job stress factors in 2 collections (organizational job stress and managerial-individual job stress). In this regard, Donyl and Chuck in their research evaluated organizational and managerial-individual stress factors at Physical Education Faculties.[14]

1.3. Aim and objectives:

Instability of employment, rapid change of demands and intensification of work pressure are widely prevalent consequences of economic globalization and technological change[15]. Even in established sectors of industrial production, administration and services of advanced society's experiences of downsizing, mergers and outsourcing are increasingly shared by employees[38]. Surveys of working conditions indicate that stressful experience recently increased in the workforce although variations between countries and sectors are observed[16]. Chronic stressful experience at work can adversely affect physical and mental health. This has been documented in a large number of epidemiological studies based mainly on two complementary theoretical concepts, the demand control model[17,18,19] and the effort-reward imbalance model[20,21]. Various other researchers have also studied various models and aspects of job stress[22,23,24,25]. The demand-control model posits that jobs characterised by high quantitative demands in combination with low decision latitude adversely affect health. The focus of the effort-reward imbalance model is put on contractual non-reciprocity where high efforts at work are not met by adequate rewards in terms of money, esteem, promotion prospects and job security. The pharma industry is research based and production oriented industrial/ organizational sector. Various indigenous problems are present in pharma industry which varies with varying work description and responsibilities.

Organizational job stress includes the organizational structure of human resources development, work trends, management methods, power use, cooperation, and managerial job stress includes the high pressure of work quality and importance, time pressure, the high pressure of the amount of work, job-related technology, improvement and promotion, stress contradiction, role ambiguity and responsibility against staff performance. The evaluated factors in this research are age, gender and education leveling relation with job stress.

The present study was aimed towards assessing the effect on job stress experienced by employees of pharma industry of different genders and age variation with differences in the levels of educational qualifications

2. Hypothesis

Since the intensity of job stress is one of the determining factors in quantitative and qualitative reduction of human efficiency, this research tries, by utilizing the most recent related, scientific information, of job stress among employees of pharma industry and on determining the effect of age, sex and level of education on the stress experienced by employees of pharma industry. The gender age and education can have a marked effect on employees of pharma industry. Considering this it was hypothesized that

1. There is no significant difference between sex with regards to job stress experienced employees of pharma industry.
2. Factor of age is not a significant indicator in job stress amongst the employees of pharma industry.
3. Level of education plays a significant role in job stress experienced by employees of pharma industry.

3. Methods

3.1 Samples

The sample for the present study consisted of 200 pharma industry employees, both males and females divided equally, drawn on the basis of random sampling from different large scale pharma industries. The distribution of samples

was as given in Table No 1.

Table No. 1: Sample distribution

Samples	Males (A1)	Females (A2)
Under graduate (C1)	25	25
Post graduate (C2)	25	25
Age below 30 (B1)	25	25
Age above 30(B2)	25	25

Following Key Combinations were used for analyzing the data. The meanings of abbreviation can be found in table no 1.

1. **$A_1 B_1 C_1$ (M/a-30/UG)**
2. **$A_1 B_1 C_2$ (M/ b-30/PG)**
3. **$A_1 B_2 C_1$ (M/a-30/UG)**
4. **$A_1 B_2 C_2$ (M/b-30/PG)**
5. **$A_2 B_1 C_1$ (F/b-30/UG)**
6. **$A_2 B_1 C_2$ (F/b-30/PG)**
7. **$A_2 B_2 C_1$ (F/a-30/UG)**
8. **$A_2 B_2 C_2$ (F/a-30/PG)**

Abreviations:

A1= male; A2= Female

B1= age below 30 (b-30); B2= age above 30 (a-30)

C1= under graduate; C2= post graduate

Tools used: A.K. Srivastava and A.P. Singh's occupational stress index (O.S.I.) was used to measure the stress experienced by the employees.[26]

3.2 Procedure

The pharma industry is scattered in various parts of India. Pharma industries namely Lupin Ltd. Poona, Zydus cadila Ltd. Ahemadabad, Torrent pharma Ahemadabad, Astron Ltd. Ahemadabad, Dr Reddys Ltd. Hyderabad and Matrix Labs Hyderabad were selected for sample and data collection. Data for this investigation was collected in two steps, starting with seeking permission from the authorities in the industry in the study to take information from their employees. After getting permission for interaction with their employees, the Occupational Stress Index was given to those employees to fill in the questionnaire either on the spot or some other time. Majority of the employees were busy and gave filled questionnaire after 1-2 days filling it at their spare time. The employees were given all the necessary instructions and told to give their honest response to each question.

3.3 Research design

The design of the present study is 2x2x2 factorial design, since three different variables varied at three different levels. This is a quasi experimental design of research because

3.3.1 Variables under study

Sex, education, and age of the subject are treated as independent variable, whereas level of job stress is treated as dependent variable.

3.4 Statistical treatment

The data was initially treated by descriptive statistics i.e. mean and standard deviation (SD).

To arrive at an inference the data was further treated by 3 way ANOVA. The results obtained by three way ANOVA were subjected to Scheffe's test of multiple comparison.

4. Results

The present study was aimed towards assessing the effect on job stress experienced by eightclassified groups of employees of pharma industry of different genders and age with differences in the levels of educational qualifications.

Table No. 2 : Mean and SD of eight classified groups

Groups	$A_1 B_1 C_1$	$A_1 B_1 C_2$	$A_1 B_2 C_1$	$A_1 B_2 C_2$	$A_2 B_1 C_1$	$A_2 B_1 C_2$	$A_2 B_2 C_1$	$A_2 B_2 C_2$
N	25	25	25	25	25	25	25	25
Mean	96.48	105.92	96.96	103. 56	95.48	103. 52	97.24	102.76
SD	11.43	10.47	11. 80	13.25	12.21	13.88	14.61	17.03

Examination of mean and SD of d classified groups namly $A_1 B_1 C_1$ (M/b-30/UG), $A_1 B_1 C_2$ (M/ b-30/PG), 3. $A_1 B_2 C_1$ (M/a-30/UG), $A_1 B_2 C_2$ (M/a-30/PG), $A_2 B_1 C_1$ (F/b-30/UG), $A_2 B_1 C_2$ (F/b-30/PG), A2 $B_2 C_1$ (F/a-30/UG), $A_2 B_2 C_2$ (F/a-30/PG) reveals that all the groups differ from each other. To ensure whether the obtained eight classified groups differ significantly from each other or not, the data was treated by three way ANOVA.

Table No. 3 Summary of Three way ANOVA (Occupational Stress)

Sources of variation	SS	df	MSS	F
A	48.08	1	48.02	0.27
B	2.42	1	2.42	0.01
C	2738	1	2738	15.63**
AxB	25.92	1	25.92	0.14
AxC	19.22	1	19.22	0.10
BxC	89.78	1	89.78	0.51
AxBxC	.32	1	.32	0.0018
Within	33630.8	192	175.16	
Total	36554.48			

(** Significant at .01 Level)

Observation of mean and SD reveals differences amongst them (see table 2).from the initial observations all the eight classified groups seem to differ from each other but to arrive at concrete conclusion it is not fair to see merely the mean difference, hence the data was treated by 3 way ANOVA..

The summary of three way ANOVA indicates that main effect A (sex) could not brought out significant F ratio(F=0.27, df=18 and 192, P>0.05). these values clearly indicate that there is no gender difference as far as job stress is stress is concerned. Hence the hypothesis (There is no significant difference between sex with regards to job stress experienced employees of pharma industry.) has been retained.

The second hypothesis, i.e. Factor of age is not a significant indicator in job stress amongst the employees of pharma industry, is verified by calculating main effect B of three way ANOVA. The main effect B yielded an F value of 0.01 with df values of 1 and 192 which are insignificant clearly revealing that age is not the influential factor in the measure of the job stress experienced by employees of pharma industries and is not responsible for job stress.

Main effect C is indicated by education. In this case highly significant results were obtained (F=15.63, df= 1 and 192, p< 0.01). The results clearly suggest that there is significant difference in job stress of subjects with different educational level.

The interaction effect AxB, AxC, BxC, and AxBxC results reveals a non significant F ratio suggesting that there is no relation between all three independent variables. All independent variables are independent from each other.

Yielded values of main effect and interaction effects can give only partial idea of differences amongst eight classified groups. It does not intergroup mean difference. Hence to find the intergroup mean differences, the data was further treated by Scheffe's test of multiple comparison. The results are shown in the following table.

Table No 4. MSDi values.

Groups	$A_1 B_1 C_1$	$A_1 B_1 C_2$	$A_1 B_2 C_1$	$A_1 B_2 C_2$	$A_2 B_1 C_1$	$A_2 B_1 C_2$	$A_2 B_2 C_1$	$A_2 B_2 C_2$
$A_1 B_1 C_1$	X	1113.92	2.88	626.58	12.5	619.52	7.22	492.98
$A_1 B_1 C_2$		X	1003.52*	69.62	1362.42**	72	941.78*	124.82
$A_1 B_2 C_1$			X	544.5	27.38	537.92	0.98	420.5
$A_1 B_2 C_2$				X	816.08*	0.02	499.28	8
$A_2 B_1 C_1$					X	808.02*	38.72	622.48
A2 B1 C_2						X	492.98	7.22
$A_2 B_2 C_1$							X	380.88
$A_2 B_2 C_2$								X

It could be seen from the above table that the group

5. Discussions

5.1 Age

Whereas mean job control score increased with age, mean job demand remained stable, resulting in higher strain prevalence in the younger. Men showed higher average job control and lower job demand scores when compared to women ($P < 0.001$ for comparisons in all sub-groups). Job strain prevalences are slightly higher in women.

5.2 Education

Many specified bonuses, maximum pressure of work and time pressure as the most important job stress factors among high school managers. Schucker reported the same results on the nurses of California Hospital. Lea and Loughman [8] specified the job requirements (organizational stress) as growing ones. The results and model of this research are in conformity with that of Donyl and Chuck[14] and Greenberg[10] and it is different from Hartman's research result

5.3 Gender differences

Our study showed that, adjusting for age, education and occupational groups, men perceived less psychological job demand than women did (although marginal). This was true for the Southern and Middle European centres, the relation being reversed in the Swedish centres. Gender-based differences appeared to be larger for job control, with men perceiving higher control at work than women. The deficit of job control in females, however, increased towards less qualified occupations (univariate). Percentage of variance explained by the factor gender was also larger for control than for demand. Gender was a weak predictor of DC dimensions in our study. Heterogeneity in gender-based DC differentials seemed to exist between regions, the gender effect being larger in the Swedish as compared to the Southern centres. Job strain was less prevalent in men than in women, without apparent regional heterogeneity. However, a tighter control for occupation could reveal a Southern Europe–Swedish gradient. Other DC models also showed lower perceived job control in women[28], or that women tended to report more stress symptoms than men, both in univariate and multivariate analysis[29]. With respect to the demand dimension, no gender differences were found by either Brisson *et al*.[30] or Sorensen *et al*.[31]. Our results are thus in agreement with others. Most of the studies using the DC model showed a female disadvantage in perceived control at work: without[6] and with adjustment for occupation[7,28]. Netterstrom *et al*.[32], using the DC model, showed that women were more likely to experience strain than men, which is also in agreement with our results. Martocchio and O'Leary[33] suggested that it may be too simplistic to try to investigate gender-related differences using simply gender membership as the exposure variable. Situational factors associated with gender could explain this gender effect. Thus, Nelson and Quick[34] and Baruch *et al*.[35] quoted factors such as marriage/work interface, social isolation, discrimination and stereotyping or parental status. Davidson and Cooper[36] added the need for women to prove themselves. Goh *et al*.[37] also suggested that women were less

able to release tension and leave work problems at work. Guppy and Rick[28] suggested that the gender differential could be explained by grade inequalities, which were not accounted for in our study.

We could also hypothesise, having used a task-orientated instrument, that some work/production procedures in industry or administration have been designed by men without paying much attention to the adaptation to women with regard, for instance, to ergonomy. It could also be reasonable to think that home–work interface, discrimination (difference in upward mobility, for instance) or social support are explanatory factors that could exhibit cross-regional (cultural) variations. The original contribution of our work is to suggest the potential existence of a regional disparity in the gender differentials of the demand/control/strain model even after standardization for level of occupation. In summary, it has been claimed that the advent of the global economy has led to the homogenization of working conditions. One possible consequence of this homogenisation is an increased comparability of work stress data across countries and regions. Our study suggests that, though using a rather task-orientated instrument for measuring demand and control, gender-based inequalities appeared inconsistent between regions of Europe, but regional contrasts emerged when controlling for occupation. This of course does not preclude the existence of differences in perceived job stress associated with a truly different cultural attitude towards work at a higher than task level.

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