# WORK ASSOCIATED STRESS ON FEMALE MEDICAL HOUSE OFFICERS OF KARACHI, PAKISTAN

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**Abstract**

Stress is non-avoiding part of one's life. Evaluation of stress among medical professionals remains a key subject as it can improve the quality of services and outcomes of healthcare sector. Assessment of work associated stress in female medical house officers of Karachi with respect to age and marital status. Cross-sectional survey covered 106 female medical house officers, filled the standardized questionnaire with10 different questions and statistically analysed (PASW 18). Cronbach's alpha was 66.9%, age ranges of participants were 19 to 29 years with overall 44.70 ± 10.87 job stress score. Regression analysis showed that married females have 8 units more stress than unmarried females which need to address and resolve. Through correlation of factors, "high responsibility with low authority" was extremely significant ($p \leq 0.005$) in association with "lack of attention towards work, low rewards and social imbalance", while "job instability" significantly ($p \leq 0.05$) correlates with "job dissatisfaction and self-control at work". Principal factor analysis revealed some informative aspects like insecurity with work environment, disturbance within job, ownership of duties and mental disturbance. Ability to handle occupational issues and keep balance between professional and social lives is an important way to reduce stress.

## Introduction

Stress is non- evitable part of one's life. World Health Organization classifies stress as "global epidemic" (Dasgupta and Kumar, 2009), because hazard of work associated stress (WAS) not only affect employees but also to the organizations (Azmi *et al*., 2010; Azmi *et al*., 2011). Today professions are equipped with heavy workload which includes the extraordinary involvement of professionals for timely responds and accomplishments to the occupational challenges (Nasurdin *et al*., 2006). Generally stress is resulting from an imbalance between occupational need and input from resources, or exceeds pressure disables one perceives ability to deal with such types of demands (Lazarus and Folkman, 1984 & Josephine, 2008). Researches elaborate the importance of professionally linked stress and described it as a result of complexities in workplace and multiple tasking of an individual (Paridon and Kaufmann, 2010). WAS with its impact on many professions emphasized the importance of this subject which remains a key aspect for researchers especially in healthcare profession.

In medical profession many stressors are connected with the career achievements of individuals like famous statement regarding this holistic medical profession that being a doctor is more stressful and one cannot avoid stress in medical profession (McCue, 1982). Literature evident that WAS is inherent in health care profession and has negative impacts on health care professionals, leading to increased depression, decreased job satisfaction, and psychological suffering (Williams *et al*., 2007). Many factors are associated with WAS like organizational workload, job demands, less financial encouragement, imbalance between social and job lives, job insecurity, etc (Azmi *et al*., 2011; Ahmad and Riaz, 2011). The health hazards of this prolonged WAS produce range of serious problems (Azmi *et al*., 2010) like anxiety or depression (Tyssen *et al*., 2000), cardiac disorders (KivimÃ¤ki *et al*., 2002), musculoskeletal problems (Hoogendoorn *et al*., 2000; Linton, 2001), gluco-regulatory malfunctions (Batch *et al*., 2009), imbalance in blood pressure (Greiner *et al*., 2004) and other associated ailments. WAS among medical professional has received greater consideration from the occupational health point of view like stress related illness not only affects career growth but also enhances the risk of health threatening problems (Martinin *et al*., 2004), that decreases doctors' work efficiency and the quality of services (Türkçüer *et al*., 2007).

WAS holds considerable position among various studied parameters in medical and management sciences to analyses the organizational behavior as well as its impact on the efficiency of the employees from quite a long period of time. However, to investigate the WAS among the female medical house officers, needs attention as it is the one of the key elements of the community services regarding healthcare sector.

**Objective of the study:** The objective of this study was to investigate the level of WAS and its severity perceived by female medical house officers of Karachi. In addition, does WAS correlates with age and marital status of female medical house officers.

## Materials and Methods

**Study Design:** The study design of this research was cross – sectional. Female medical house officers of different tertiary care hospitals of Karachi were the participants that chosen irrespective of their age, race, work-related affiliations and marital status. Permission from the concerned official incharges of the hospitals and informed verbal consent form the participants were taken initially before handed over the questionnaire. Confidentiality and privacy were ensured to each of the participants by excluding their identification details from study instrument.

**Instrument:** The survey is based on the pre-tested, standardized questionnaire on job stress (JS). Special permission has been taken to use questionnaire as an instrument for current study from the officials of American Institute of stress (AIS). Questionnaire consists of total ten (10) questions which were labeled with the items *viz*., Q1: High responsibility with low rewards, Q2: Lack of attention towards Work, Q3: Job Instability, Q4: Low rewards, Q5: Job dissatisfaction, Q6: Professional discrimination, Q7: Workplace insecurity, Q8: Social Imbalance, Q9: Conflicts with colleagues, Q10: Self-control at work, respectively. Socio- Demographic information of study participants was also included. Responses to all items were equally scored on 10 points *Likert scale* (1 to 4 = strongly disagree, 5 to 7 = Agree somewhat and 8 to 10 = strongly agree) with the statement.

**Sample size:** The sample size was computed on the basis of the previously published study conducted on Pakistani medical students (Shah *et al*., 2010). Using the statistic of same study with 95% confidence interval and 1.5 unit margin of error, with 20% non-response rate, the sample size was augmented upto 101 subjects.

**Study participants:** The female graduated medical house officers from different tertiary care hospitals of Karachi were selected. Convenient sampling method was used to collect information. A total of 140 female medical house officers were handed over the questionnaire, only one hundred and six (106) respondents filled the complete questionnaire. Female participants with known chronic diseases like diabetes, hypertension, migraine and asthma etc were excluded. Due to difference in stressors, pregnant females were also excluded.

**Collection of data:** During the collection of data the particpiation was entire voluntary and many factors have been carefully scrutinize which may affects the responses of participants like examination pressures.

**Statistical Analysis:** Data were entered in MS Excel 2010 and analyzed in Predictive Analytics Software (PASW 18.0). Mean ± Standard Deviation (SD) were computed for job stress scores. Frequencies and Percentages were computed for marital status and stress level. Cronbach's Alpha was calculated for detecting the consistency among the responses against 10 items in job stress questionnaire. Interclass correlation was computed to see association of responses. Normality of the job stress score was checked by Shapiro-Wilk's Statistics and considered to be normally distributed as P value was more than 0.05 (P = 0.402).Two independent samples Student's t test was run to detect any differences in job stress score between marital status. Dummy Variables Regression Analysis was performed to assess amount of effect of marital status on job scores. Spearman Correlation between stress items were determined and factor analysis was performed to delineate most informative factors for the data. P value less than 0.05 was considered as portraying chances of significantly presence of above differences or associations.

## Results

The current survey was conducted during the academic year of May – November 2012. Total of 106 participants filled the questionnaire. Out of them 66 were married while 40 were unmarried. The return rate of questionnaire was 76%. 34 participants were excluded among 25 of them had regretted their availability and 09 of them did not report their response properly.

To validate the appropriateness of current survey, the reliability through Cronabch's alpha and *interclass correlation coefficient* (ICC- test- retest reliability) values were determined and found as 66.9% and 0.669 (95% CI: 0.567 – 0.756) respectively. These statistics portray good consistency among responses of study participnats. The age ranges of the participants were 19 to 29 years, with mean ± SD 23.18 ± 2.21. The total job stress score was 44.70 ± 10.87. There was a significant difference between mean scores of married and unmarried females

($P < 0.001$). Regression equation showed that married females have 7.6 units more stress than unmarried ones (Table 1).

Classifying stress scores into different categories, only 8 females could handle stress on job. Approximately 5.7% unmarried female handle stress on job well, however 1.9% of married female house officers handle stress well. 52.8% females handle stress moderately well whereas in married female half of this count (29.2%) handle stress moderately well. Only 3.8% unmarried female have stress which needs to be addressed and resolved, in contrast approximately double the percent (6.8%) married females have this stress status (Figure 1).

Jotting down correlation between different stress item scales, high responsibility with low authority had significantly associated with lack of attention towards work, low rewards and social imbalance. On the other hand, lack of attention towards work was related with job dissatisfaction, workplace insecurity and conflicts with colleagues. Job instability, low rewards, workplace insecurity and social imbalance were associated with job dissatisfaction. Similarly, professional discrimination and social imbalance were connected with workplace insecurity and self-control at work (Table 2).

Sorting which stress items were most informative for the study population, principal axis factor analysis was performed. Using statistical consideration of Eigen value more than 1.0 and factor loading more than 0.24, it extracted four factors. The first factor includes job instability, professional discrimination and workplace insecurity depicting most consistent variables. Thus, compatible to these, this factor was names as insecurity with work environment. Lack of attention towards work, low rewards, job dissatisfaction and social imbalance occurred in second factor and hence named as disturbance within job. The third factor contained only one variable high responsibility with low authority and named as ownership of duties. Factor four was named as mental disturbance that was named after observing compatibility with conflicts with colleagues and self-control at work. (Table 3)

**Table 1. Reliability of Stress Questionnaire and Comparison with Marital Status.**

| Marital Status | Mean | Standard Deviation | P Value | Cronbach's Alpha (α) | Inter Class Correlation (ICC) (95% CI) |
|---|---|---|---|---|---|
| Unmarried | 41.91 | 9.81 | <0.001 | 66.90% | 0.669 (0.567 - 0.756) |
| Married | 49.5 | 11.01 | | | |
| **Regression Equation:** | Stress = 41.909 + 7.591 Marital Status | | | | |


**Fig. 1. Graph Showing Stress Status among Female Medical House Officer.**

**Table 2. Correlation Between Stress Items.**

| | | Lack of Attention towards Work | Job Instability | Low Rewards | Job Dissatisfaction | Professional Discrimination | Workplace Insecurity | Social Imbalance | Conflicts with Colleagues | Self-Control at Work |
|---|---|---|---|---|---|---|---|---|---|---|
| High responsibility with Low Authority | Coefficient | ***0.277*** | 0.142 | ***0.287*** | 0.171 | 0.045 | 0.155 | **0.203*** | 0.095 | 0.037 |
| | P Value | ***0.004*** | 0.147 | ***0.003*** | 0.079 | 0.644 | 0.113 | **0.037** | 0.335 | 0.705 |
| Lack of Attention towards Work | Coefficient | | 0.186 | 0.099 | ***0.292*** | 0.205 | ***0.263*** | 0.037 | **0.218*** | -0.009 |
| | P Value | | 0.057 | 0.310 | ***0.002*** | 0.035 | ***0.006*** | 0.708 | **0.025** | 0.927 |
| Job Instability | Coefficient | | | 0.036 | ***0.260*** | 0.153 | 0.214 | **0.241*** | 0.099 | ***0.264**** |
| | P Value | | | 0.711 | ***0.007*** | 0.117 | 0.028 | **0.013** | 0.312 | ***0.006*** |
| Low Rewards | Coefficient | | | | **0.248*** | 0.090 | 0.092 | 0.162 | 0.102 | 0.110 |
| | P Value | | | | **0.010** | 0.357 | 0.351 | 0.097 | 0.299 | 0.261 |
| Job Dissatisfaction | Coefficient | | | | | 0.107 | ***0.294*** | ***0.260*** | 0.180 | 0.068 |
| | P Value | | | | | 0.276 | ***0.002*** | ***0.007*** | 0.065 | 0.491 |
| Professional Discrimination | Coefficient | | | | | | ***0.321*** | 0.146 | 0.026 | ***0.297**** |
| | P Value | | | | | | ***0.001*** | 0.134 | 0.791 | ***0.002*** |
| Workplace Insecurity | Coefficient | | | | | | | **0.228*** | 0.103 | 0.158 |
| | P Value | | | | | | | **0.019** | 0.294 | 0.105 |
| Social Imbalance | Coefficient | | | | | | | | 0.175 | ***0.253**** |
| | P Value | | | | | | | | 0.072 | ***0.009*** |
| Conflicts with Colleagues | Coefficient | | | | | | | | | 0.185 |
| | P Value | | | | | | | | | 0.058 |

* Significant Correlation with P Value < 0.05
** Highly Significant Correlation with P Value < 0.005

**Table 3. Stress Factors via Principal Axis Factor Analysis.**

| Stress Factors | Factor Loading | Extracted Significant Factors |
|---|---|---|
| Job Instability | .274 | Insecurity with Work Environment |
| Professional Discrimination | .461 | |
| Workplace Insecurity | .648 | |
| Lack of Attention towards Work | .405 | Disturbance within Job |
| Low Rewards | .473 | |
| Job Dissatisfaction | .524 | |
| Social Imbalance | .388 | |
| High responsibility with Low Authority | .867 | Ownership of Duties |
| Conflicts with Colleagues | .241 | Mental Disturbance |
| Self-Control at Work | .766 | |

**Discussion**

In these days of modern technologies, human being connected with important professions especially medicine for the betterment and service to nation. It is an established fact that healthcare sector is fully equipped with the inherent WAS which has negative impacts towards profession and professionals (McCue, 1982; Williams *et al*., 2007).

Researches enlighten the concept of WAS which is due to the intense workload possessing nature of this profession because it has regular dealing with various environmental challenging factors that serve as potential stressors leading to the professional dissatisfaction, ambiguity and psychosocial distress (Dhar *et al*., 2008). Studying and practicing medicine are emotionally involved professional areas which involves different levels of stress to the different positions that lead to interruption in both physical and mental well-being of concerned individual (Radcliffe and Lester, 2005). Medical students of both undergraduate and postgraduate exhibit varied frequency of stressors because not only they have high degree of pressure from studies but also they have to attend clinical wards or doing house job which is more attention-needed and energy demanded task (Dahlin *et al.,* 2005).

Probing the women's' role in medical profession, many countries now promoting females as it is one of the strongest needs of any profession, no doubt giving equal role and responsibilities to females without gender differentiation ultimately leads to the national success (Carnes *et al*., 2008). The concept of this research is moved around the assessment of female gender WAS that was completing the necessary training of medical profession. This paper is an effort to highlight and discuss the stressors experienced by female medical house officers employed at different tertiary care hospitals of Karachi.

Our findings reflect the perspectives of both married and unmarried females and in order to validate the reliability of survey results, the rate of questionnaire returned, Cronbach's α value and ICC was calculated which depicts the consistency. This is one of the potential aspect of study that reveals the effective sampling method as past studies witnessed this parameter as a reliability attributing factor for survey studies (Dasgupta and Kumar, 2009).

WAS remains a debate-able issue which tremendously affects the social linkages and stability as well persistent to this situation produced many ailments to the professionals (Azmi *et al*., 2010). Much has been written about WAS as this factor decreased the human efficiency and also work competency which prominently initiated by lack of support from the institutional authorities because clinical training of medical students is crucial transition period of one's life (Radcliffe *et al*., 2003). Similarly, past findings reports female medical individuals have much higher stress levels as compared to men (Dahlin *et al*., 2005). The average stress scores describes nearly same but moderate in some extent than pervious studies. However, an important established fact with this research is higher stress levels were found in married females which equate that nearly stress is increased by 8 units when marital status change from single to married (Table 1). Reasons and possible rationale justified this finding as married female house officers found more difficult themselves to manage the professional demands and married life or may found difficult and less coordinating working environment or have less support from the family side or due to less communication and intimacy with partner (Yandoli, 1989). Despite being solely focus on the impact of professional workloads and conflicts as major contributor towards WAS, studies proven that spouse support not only relives the professional pressure but also alter the daily interaction with stressors and make them more manageable (Katz *et al*., 2000 & RÃ˜Vik *et al*., 2007).

The frequency of stress in married participants becomes double whose stress status need to be addressed and resolved (i.e., higher means scores). An opposite mechanism was observed in unmarried females where

stress status was moderate (Figure 1). This finding illustrates consistency of professionally linked WAS more rather than only from social imbalance. This outcome reflects the work dissatisfaction or lack of decision making role or less professional autonomy or higher occupational pressure in female house officer comparing to above two discussed factors as very least percent count of both married and unmarried females handle stress on job well (McMurray *et al*., 2000).

A valuable thing in any profession is the level of authority designated to the individual who is dealing with multitasking responsibilities (Rafferty *et al*., 2001). Transferring high responsibilities with lack of authorities served as a professional stressor and it was reported earlier in study that prevalence of stress was high among those students that were engaged in academic studies as well clinical rotations (Saipanish, 2003). Dealing with patients is somewhat like an operational activity where lack of decision making capacity decreases the professional ability to deals the challenges which may ultimately becomes the cause for decrement in quality of care (Baker and Denis, 2011). Similar finding was obtained when applying correlation with question 1 and 2 scores, highly significant ($P \leq 0.004$) association was obtained between the factors of high responsibilities with low authority with lack of attention towards work (Table 2). It may an outcomes that female respondents take less involvement due to more attachments towards domestic issues hence they have least decision making capacity to handle the situation as compared to male (Swanson *et al*., 1998). Another finding obtained was the factors named as low rewards and social imbalance which showed significant ($P \leq 0.05$) correlation with high responsibilities and low authority factors. It exposed some important management based fact that may be served as the potential contributor for stress accumulation among female medical house officers. If factors are aligned to an equation format, high job responsibilities with less autonomy and low rewards, may leads to the lack of attention or decreases profession's importance ultimately leads to the social imbalance and alteration towards these factor association may attenuates the stress scores or potential stressor (Johnson *et al*., 2005).

The second obtained factor "lack of attention towards work" showed highly significant ($P \leq 0.005$) association with job dissatisfaction and workplace insecurity, while it also showed significant ($P \leq 0.05$) correlation to conflict with colleague. These factor summarizing lack of attention towards work, it may be interpreted as an important condition mostly happened when workplace insecurity i.e., sexual harassment or gender biasness (especially in female), leads to the conflicts with colleagues and as whole dissatisfaction towards job. Hence always remains a key cause regarding turnover in any profession and appears to have negative health outcome (Baillien and Witte, 2009 & Oxenstierna *et al*., 2011). Third obtained job instability was significantly ($P \leq 0.05$) correlated with job dissatisfaction, social imbalance and self control at work factors respectively, aligning these factor in an equation format to discuss these interrelated factors. It is worth mentioning to point out that when there are stressors like professional instability, the highest probability of someone to lost self control at work which not only deviate the social life balance of any individual but causing professional dissatisfaction (Sargent and Terry, 1998). The fourth factor low rewards significantly correlated ($P \leq 0.05$) with job dissatisfaction. It is wondering that low rewards for any individual from any field directly leads to job dissatisfaction (Li *et al*., 2005), prominent studies in past found low rewards factor as the direct stressor which has more hazardous impact especially to the organization side because it straightly hits the turnover rate of professionals (Zhang and Feng, 2011). Other noteworthy findings is social imbalance, significant ($P \leq 0.009$) with self controls of female house officers. Literature describes this factor as the less the social supports an individual have, the lesser the self-control at work (RÃˇVik *et al*., 2007).

In medical profession WAS and their linked health risk can never be ignored, and attention and focus are needed to address the long term impact of WAS towards health status of females (Heim, 1992). Therefore, to validate the impact of current study, the questions labeled with above mentioned ten (10) factors, principal axis factor analysis from the overall stress scores were analyzed (Table 3). Insecurity with work environment is highly extracted significant factor. It is one of the global issues that commonly females experienced as stressor and make them less attentive and vulnerable with professional obligations. Studies established facts that these type of stressor may be responsible for increasing the rate of committing suicide among females or interlinked with higher percentages of psychological ailments that of general populations (Heim, 1992). However, combined the other extract significant factors i.e., disturbance with job, ownership of duties and mental disturbance, these all factor highlight the root causes of females WAS as a female is ready to serve or give her services but unfortunately these above discussed factor may become hindrance creator.

## Conclusions

It is conclude that WAS for females are one of the burning topics which need supports from all stake holders including both academic and professional sides to reduce this stress. Management dependent preventions and strategy based interventions are the need of the day because if WAS factor is reduced to minimal extent from initial learning level it will be beneficial throughout the persons' entire acquaintance with the profession. On the contrary the one's own ability to handle occupational issues and keep balance between professional and social lives is another way to reduce WAS.

**Limitations:** Lack of generalization of present results to other medical schools in Pakistan is an important limitation. Current cross-sectional study was based on self-reported information provided by female medical house officers. There is some potential for reporting bias which may have occurred because of the respondents' interpretation of the questions or desire to report their emotions in a certain way or simply because of inaccuracies of responses.

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**Competing Interest:** The authors declare that they have no competing interests.

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