Airway Pressure ventilation therapy can be easily administered in the general respiratory ward setting. Since 80% of our study subjects in ST group, and 64% in BiPAP group had a pH of more than 7.35, noninvasive ventilation can be a useful adjunct to standard therapy for early recovery from acute episodes in this group of patients as well.

*Received 31st October 2004. Accepted for publication in final form 26th February 2005.*

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# Stressors and coping strategies of medical students. *Gender differences*

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Medical education is known to be a stressful process. Students are faced with demanding academic standards, deadlines, career aspirations, and the need to compete for residency positions.[1] The sources of stressors in medical students can be grouped into 3 general categories. Academic stressors include the condensed curriculum, exam conditions, peer competition, interactions with senior staff on ward rounds, and fear of incompetence. Social and personal stressors are caused by lack of free time for recreation, family, and intimate friends. Financial stressors derive from the need for continued financial dependence on family. Coping strategies and stress management have been studied. Some are considered "maladaptive" or harmful to health such as alcohol/drug abuse, smoking, binge eating, and interpersonal withdrawal. Whereas others are "adaptive" and conduct to better physical and psychosocial health, for example, exercising, seeking external social support, relaxing, or organizing work time better.[2] Gender differences in anxiety levels is well known. There is a consistent finding that female medical students score higher on "general anxiety", "test anxiety" and "neuroticism" scales than their male counterparts. Multiplicity of demands, the relative lack of women role models in academic medical centers and more difficulty in resolving issues of intimacy and career have been reported as contributing factors.[3] The purpose of the present study is to investigate stressors in male and female Kuwaiti medical students and compare differences in the coping strategies they employ when confronted by a variety of stressors.

This cross-sectional survey is part of a study among medical students in 3 countries in the Middle East [conducted and supervised by the World Health Organization (WHO-EMRO) and the International Federation of Medical Students' Associations (IFMSA)]. All the 443 students who attended the medical school on a permanent basis during the academic year 2002-2003 represented the target population. Those who returned completed questionnaires were 333, with a response rate of 75.2%. The target population anonymously completed a self-administered and structured questionnaire. Sociodemographic data were covered. Twelve stressors that usually face the medical students were involved; each assessed by a 3 point Likert scoring system. The reliability coefficient analysis revealed high internal consistency between the different stressors ($\alpha$ = 0.8). The total stressor scale was used to divide participants into 2 groups. A "low-stress" group with the total stressor scale $\leq$ the median, and a "high-stress" group with total stressor scale > than the median. Another set of questions referred to 7 different coping strategies reported by the students.

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 12. Chi square test ($x^2$), odds ratio, Student-t test, and ANOVA were used. Factor analysis using Principal Component Analysis (PCA) and the Varimax rotation method was performed to the 12 stressors. Reliability Coefficient was performed to estimate the internal consistency between the studied stressors. The level of significance was $p \leq 0.05$ and confidence interval (CI) = 95%.

The mean age and standard deviation of the students were 21.5 ± 1.95 and the median was 21. More than one half of the sample was females (58.2%). Approximately half of the students considered their background as religious (48.9%) or moderately religious (43.1%) with the majority being females (65% and 55.3%). Gender difference was statistically significant ($x^2$=11.801, $p$=0.008).

The majority of the students lived with their parents (88.5%) and only 0.6% lived alone. The total stressor scores ranged from 12-34 with a mean and standard deviation of 19.9 ± 4.5; the median was 20. There was no significant association between the total stressor scores and any of the sociodemographic features of the sample. Over 75% of the students were sometimes or always worried about the future. Likewise, over 67% were sometimes or always worried about family expectations. Only 12% of the students reported that they were always worried about their personal emotional problems. Females scored significantly higher than males ($p$<0.05) with respect to all 3 types of stressors. Alternatively, the study revealed that among those who always had worries about political and national problems (10.5%), and public interest (7.2%), males rated significantly higher than females (52.9% versus 47.1%, $p$<0.05) for former stressor and 73.9% versus 26.1%, $p$<0.005 for the latter one. No significant gender differences in the other types of stressors were found. Dividing the students into high and low stress levels; the students were almost divided equally in the 2 groups (49.8% and 50.2%). Female students scored higher than male students on both stress levels (56% and 60.4%) but with no significant difference. As shown in **Table 1**, the PCA with Varimax rotation of the 12 stressors generated 3 factors with Eigen values greater than unity. The 3 components explained approximately 55% of the total variances. The first factor is related to "public and national stressors".

The second component represented "personal stressors". The third component related to "future stressors". **Table 2** shows that eating when stressed was the most common coping strategy employed by more than 75% of the students with no significant gender differences. Driving at high speed when worried was the second most commonly used coping strategy reported by 61%. Females endorsed this strategy more often than males ($p$=0.05). Approximately 14% smoked to cope with their stressors. This strategy was more common in males than in females ($p$<0.0001). Although drinking alcohol received the lowest number of endorsements, there was a significant sex difference since male users were more than double female users ($p$=0.02). The study revealed that younger students used some coping strategies more than older students; the difference was statistically significant for eating strategy ($F$=2.7, $p$<0.05), using prescription drugs ($F$=4.2, $p$=0.007), and drinking alcohol ($F$=3.6, $p$=0.01). Approximately 60% of the students who often drove at high speed or smoked

Table 1 - Factor analysis using principal component analysis of the different types of stressors reported by the Kuwaiti medical students.

| Original stressors | Component matrix coefficients | | |
|---|---|---|---|
| | 1 | II | III |
| 1. About the future | - | - | 0.82* |
| 2. Family expectations | - | - | 0.68* |
| 3. Health problems | 0.29 | 0.35 | 0.39 |
| 4. Academic worries | - | 0.25 | 0.67* |
| 5. Family problems | 0.11 | 0.75* | 0.18 |
| 6. Personal emotional problems | - | 0.64* | 0.23 |
| 7. Personal financial problems | 0.19 | 0.74* | - |
| 8. Social connections | 0.48* | 0.56* | 0.2 |
| 9. Political and National worries | 0.79* | - | 0.14 |
| 10. Public interest | 0.82* | 0.19 | - |
| 11. Religious expectations | 0.7* | 0.25 | 0.1 |
| 12. Aspects of everyday life | 0.44 | 0.34 | - |
| **Total variances (%)** | **19.9** | **18.8** | **15.8** |

Rotation method: Varimax with Kaiser Normalization
* - Loadings equal to almost 0.5 or more

Table 2 - Number and percentage of utilization of different coping strategies by the Kuwaiti medical students.

| Coping Strategies | Not used | | | Used | | | *P*-value |
|---|---|---|---|---|---|---|---|
| | Male (%)* | Female (%)* | Total N (%)† | Male (%)* | Female (%)* | Total N (%)† | |
| 1. Eating | 45.2 | 54.8 | 87 (26.1) | 40.7 | 59.3 | 246 (73.9) | 0.275 |
| 2. Using illicit drugs | 40.9 | 59.1 | 311 (93.4) | 55 | 45 | 22 (6.6) | 0.158 |
| 3. Using on the counter drugs | 42.1 | 57.9 | 249 (74.8) | 40.7 | 59.3 | 84 (25.2) | 0.467 |
| 4. Using prescription drugs | 43.1 | 56.9 | 198 (59.5) | 39.4 | 60.6 | 135 (40.5) | 0.292 |
| 5. Smoking | 35.8 | 64.2 | 285 (85.6) | 81.8 | 18.2 | 48 (14.4) | 0.000 |
| 6. Driving at high speed | 35.9 | 64.1 | 130 (39) | 45.5 | 54.5 | 203 (61) | 0.05 |
| 7. Use of alcohol | 40.1 | 59.9 | 312 (93.7) | 68.4 | 31.6 | 21 (6.3) | 0.015 |

* Percentage from the total number of this group
† Percentage from the total sample (N=333)

when worried described their religious background as "a little bit" religious compared to only approximately 5% and none who described themselves as "very" religious; ($x^2$=24.1, $p$=0.004 and $x^2$=18.2, $p$=0.03). The results revealed that students who reported high stress levels were more than twice as likely to use illicit drugs to cope with their stressors (OR=2.5, CI: 1.01 – 6.6, $p$=0.05) than those with low stress levels. The former group of students were also at higher risk to use over the counter drugs (OR=1.8, CI: 1.06-2.95, $p$=0.02) and drive at high speed (OR=1.7, CI: 1.08-2.65, $p$=0.01) as different methods to deal with their stressors than their school peers with low stress levels. However, the other reported coping strategies were not considered as correlates of the effect of stressors.

The results revealed that male and female medical students differ in response to various stressors and in terms of the coping strategies they employ. Female medical students were more worried about personal issues related to their future, family expectations and emotional problems than males. Similar stressors were found associated with anxiety among females in general and medical students in particular in other studies.[4,5] In contrast, males worried more about public and national domains than females. This might be due to societal pressure in the Kuwait community that enhances male medical students despite having a career as future doctors, to aspire to being leaders and having political positions. "Public and national stressors" was the most important stressor although not related to the medical nature of study, adds a different interest of the medical students in Kuwait. Many studies tried to relate gender difference in response to stressful situations to genetic origin. Some studies suggested that an inherited difference in catecholamine metabolism is important in the pathogenesis of anxiety sensitivity in women.[6] Also, the female socialization process should not be ignored as crucial factor in raising their stressor exposure. Male students were found to smoke and drink alcohol more than females. This is an expected finding due to more accessibility of these substances to males that help them to practice such diverse health behaviors especially during this age of adolescence. Moreover, the conservative cultural customs in Kuwait prevent females from practicing these habits, as they are socially unacceptable. This is correspondent with the finding that maladaptive or unhealthy coping behaviors were more clearly demonstrated in men compared to women particularly with respect to excessive consumption behavior as cigarette smoking and alcohol.[2] Religion was another finding that affects the better way of using coping styles. This finding is in agreement with the study that established that dependent on the amount of stress, religious orientation influences the use of coping strategies.[7] Young age was an important determinant for using some harmful coping strategies. This may reflect their immaturity and the spirit of adventure and curiosity that exists in the young. This finding is concordant with the study that found that adolescents and younger adults used strategies that were outwardly aggressive indicating a lower level of impulse control and self-awareness.[8] This emphasizes the vital and crucial need for education and guidance of these young people to increase their awareness of the dangerous effects of harmful coping strategies.

Nevertheless, we presume that the findings of this study should be of worth to those involved in the education of medical students. Consideration should be given to program developers and health policy planners to focus on significant actions to reduce the academic stress experienced by the medical students. Psychological consultations have to be available in each medical school trying to help the students to face their individual stressors in a healthy way.

*Received 8th November 2004. Accepted for publication in final form 22nd February 2005.*

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