

Stress among medical students and its consequences on health: A qualitative study.

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Abstract

This study explores medical students and interns perceived causes of stress and probes their consequences on their health. A qualitative approach was used to conduct this study. Four focus group discussions were conducted with final year medical students (8 male and 10 females) and medical interns (8 male and 7 females) at a large medical school in Saudi Arabia between October and January 2017/2018. Theoretical framework was used to analyze the qualitative data with the aid of NVivo software. Analysis of the focus groups revealed the following stressors: workload, exams and change of teams, transition periods from pre-clinical to clinical phases of the curriculum, fear of being unaccepted in the preferred specialty. The competitive environment in medical schools plays a major role as a stressor among the students and interns. Additionally, high expectations from the teaching staff and families to perform well at school are adding to the stress they experience. Students' health and social life were perceived to be affected as a consequence of these stressors. Stress among medical students is caused by factors related to academia and others related to teachers and family expectations. Medical schools need to consider these stressors and reduce them. Special preparation and orientation sessions should be arranged when joining new teams (units) or transition from preclinical to clinical phases.

Keywords: Medical interns, Medical students, stress, Qualitative study, Saudi Arabia.

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Introduction

The World Health Organization defines mental health as “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to contribute towards the community” [1]. Stress is a mental or emotional state of an individual that results from an adverse and demanding environment and causes threat to a person's mental health and well-being [2-4]. The high prevalence of stress among medical students is a cause of concern. This is on the increase in the recent decades and is gaining more importance [5]. Worldwide, many studies have examined this issue; and found the rate of significant stress levels to be in Malaysia (56%), Thailand (61.4%), Saudi Arabia (63%) and India (89.64%) [2,6-9]. Built-in stress produces significant physical and emotional impairment that affects students wellbeing as well as their performance and achievements [10,11]. Medical students may face academic challenges that render them more vulnerable to mental illnesses (such as stress and anxiety) than other university students [12-19]. Furthermore, it may impair students behaviour, diminish

learning and the impact continues after graduation, towards professional life and may extend to patient care [20-22].

Medical education is challenging and demanding. Multifactorial reasons of stress have been consistently reported; reasons cited include the educational constraints in the form of competitive environment, excessive workload [23], examinations, time constraints [24], relation with the other gender [25], lack of leisure time, financial constraints and future career decisions [12,26,27]. This competitive stress can lead to apprehension, tension and inability to concentrate [10,11,21]. Early identification of modifiable stressors might result in a less stressful academic life and could enhance their academic performance as medical graduates. A study among medical students in Saudi about the transition from traditional to integrated curriculum has shown that students of student centred curriculum had better perception of the educational environment, less depressive symptoms and better wellbeing particularly among female students [28]. While many quantitative studies worldwide have estimated the rate of stressed medical students; only a few studies have tried to explore this from student's perspectives and to explore the effect of stress on medical student's health. The aim of this study was to explore and understand causes of stress among

medical students and interns and the consequences of stress on their daily life.

Methods

This is a phenomenological qualitative study inquiring about medical students and interns' experiences with perceived stressors. The study was conducted at the college of medicine, King Saud University (KSU), in Riyadh. The institutional review board's ethical approval was obtained before starting recruitment. King Saud University is one of the biggest and well-known Universities in Saudi Arabia. The first year of medical school in KSU is a common preparatory year of all medical specialities. This is followed by two years (first and second year of studying at the college of medicine) of studying theoretical subjects in blocks system. The third year is a combination of theoretical and clinical subjects while the fourth and fifth years are purely clinical. After successful completion of the fifth year, students spend a mandatory internship for one year before they get their certificate.

Sampling and recruitment

The population targeted for this study were fifth year medical students and medical interns in 2017/2018. A convenient sample of 7-10 male and female students and interns was selected. The research design was based on focus group discussions. The researcher EA contacted the group leaders of each of the four batches (fifth year students and interns from both genders) and the study was explained along with an information sheet about the study. They were requested to recruit ten of their colleagues for a 60 minutes focus group discussion. Emails were sent to potential participants inviting them to participate. Following the cultural norm in Saudi Arabia, male and female focus groups were conducted separately.

Data collection

Four focus groups were conducted. The students were informed about the aims of the study, anonymity and confidentiality. The participation was on a voluntary basis. All focus group discussions were conducted by NA and FI. Both are female researchers (NA PhD in and qualitative researcher) and (FI family physician and medical researcher) have medical backgrounds. Data saturation was met before conducting the last focus group discussion. The discussions were conducted at the school of medicine. Demographic information was collected at the start of the meeting. Each focus group discussion was audio-recorded using a digital recorder and conducted in the language of participants' choice (Arabic or English). The discussions lasted between 45 and 80 minutes. The topic guide was developed based on the current project research aim and with the guide of findings of previous similar studies [27,29]

The discussion started with a general question "How does your life look like as medical students/interns?". This was followed by a discussion involving their main concerns, social

lives, support system and their stress coping strategies. The interview approach for this study included combining structure with flexibility, taking into account the interactive nature of the focus group and picking up on things said by interviewees which were not included in the topic guide. Data from the first focus group was analyzed before conducting the second focus group to ensure covering all key areas raised from the first focus group.

Data analysis

Focus Group recordings were transcribed professionally by external transcribes. The transcripts were reviewed by the authors. To preserve meaning, transcripts were analyzed in their original language and only quotes were translated to English. As English was the participants' second language, grammatical amendments have been made to some of the original English quotes.

Two coders were involved in coding the data. Thematic analysis was used to provide a sequential structure for data analysis. Data analysis was continued throughout the study in conjunction with data collection and an iterative approach was adopted in order to cover the experience of the students. The team agreed on a coding frame and analyzing data and identifying common descriptive themes. Coding was completed using emergent and priori themes which were investigated until saturation was achieved. The research team regularly reviewed the emerging themes to inform subsequent focus group discussions. NVivo software version 11.4.2 was used to manage the data.

Findings

Four focus groups were conducted with 33 participants (16 males and 17 females); 19 students and 14 interns (Table 1). Their age ranged between 21 and 25 years and their GPA ranged between 3.3 and 4.85 out of 5. The mean GPA among males and females were 4.46 and 4.3 respectively. Two main themes emerged from the qualitative analysis: perceived causes of stress; and consequences of stress on everyday life. The factors within the themes contributed to the students' reasons for the stress and its consequences.

Table 1: Participants' demographics.

Participant gender	Number/ Year	Age	GPA/5
1/male	Fifth	23	4.72
2/male	Fifth	23	4.5
3/male	Fifth	23	4.47
4/male	Fifth	23	4.25
5/male	Fifth	22	4.85
6/male	Fifth	23	4.7
7/male	Fifth	23	4.6
8/male	Fifth	22	4.6

9/male	Intern	24	4.5
10/male	Intern	24	4.5
11/male	Intern	23	4.2
12/male	Intern	25	4.5
13/male	Intern	24	4.3
14/male	Intern	25	4.3
15/male	Intern	25	4.4
16/male	Intern	24	4
1/female	Fifth	24	3.75
2/female	Fifth	23	4.02
3/female	Fifth	23	4.71
4/female	Fifth	22	4.21
5/female	Fifth	21	3.31
6/female	Fifth	23	4.3
7/female	Fifth	23	4.44
8/female	Fifth	23	3.5
9/female	Fifth	23	4.4
10/female	fifth	23	3.4
11/female	Intern	24	4.6
12/female	Intern	23	4.3
13/female	Intern	23	4
14/female	Intern	24	4.7
15/female	Intern	25	4.2
16/female	Intern	24	4.7
17/female	Intern	24	4.6

Perceived causes of stress

Participants confirmed their exposure to stress during their study years and internship. Different terms have been used to express their feelings, such as “I feel down”, “depressed”, “unsatisfied” and “anxious and worried”

A student noted:

“I am struggling here. I really think that my struggle and hard work have affected my psyche” (P5, female)

Many sources of stress were identified; most of them related to the environment. These stressors included workload, exams and change of teams; Fear of being unaccepted in the preferred specialty; and high expectations from teacher and families.

Work load, exams and change of teams

The students acknowledged that their lives are never free from stresses since they joined medical school.

A student commented:

“Our life is never stress free since we decided to enter medical school” (P2, male)

Another student added:

“We have to engage in educational activities in summer vacation to build-up our C.V so it is always stressful” (P1, Male)

However, some participants felt that the level of stress varies during the year. It usually increases before exams.

A student noted:

“The stress may increase in the period before the exams” (P6, Male)

Almost all participants agreed that the third year at the school was the most stressful period for them and complained about the hectic schedule and struggling with large content of third year’s syllabus. The third year of medical school is when students usually transform from the basic science to the clinical part of the medical school.

A student commented:

“This is third year... you have to master the history and examination and the research projects that are demanding and everything else is demanding” (P8, Male)

Additionally, the transition period from pre-clinical to clinical training was stressful. Students explained that changing their studying and learning styles as required by the curriculum is a stressful exercise.

One student explained:

“The change itself is stressful. We used to be spoon-fed in lectures. We used to have a lecture, go home and study. In the third year, nothing was clear” (P8, Male)

From the interns’ interviews, we identified specific experiences that acted as triggers for stress. Students had also shared the same view. One intern pointed out:

“The rotations every two months. By the time a relationship is built with the team and we get familiar with each other, the rotation changes. This it is stressful” (P13, Female)

Regarding the stress level, due to their busy schedule, no perceived differences were noted between students and interns as all thought that they had heavy work load and had to meet the deadlines.

One intern explained:

“My life didn’t change before and after internship, I still have a busy schedule that I can’t manage...I’m preparing myself for the SMLE (Saudi Medical Licensing Exam), the internship requirements, family commitments, research, fulfilling the residency requirements...” (P11, Female).

Ambiguous demands and increased responsibilities made the internship years more stressful for interns. One intern explained:

"I find it difficult to control the circumstances in my life, I need to have some space. If I decided not to attend a lecture during my student life, I would not attend and it would not affect any one but me and my academic achievements. But, now I must be here from 8 to 4" (P15, Female).

Fear of being unaccepted in the preferred specialty

Worries about being unaccepted in the preferred specialty affected participants daily. They were in a state of continuous competition to get higher marks in order to get a better chance in the desired residency program.

One student indicated:

"So, you are like always anxious and worried about the residency program ... Am I going to go to ... let ' s say dermatology, or to plastic ' s? Can I do it or not? What about the CV that I have? I need to improve it. It ' s always like that..." (P3, Male)

Generally, due to the high pressure on being accepted in their preferred specialty, they thought that learning was not enough. They were more concerned with higher marks than learning and acquiring knowledge. Exams were considered an important way to increase their chances. Another reason was a greater competition due to the high number of applicants to the limited positions of the residency programs. Participants agreed that it is competition rather than academic related factors that were the actual source of stress. For example, one intern mentioned:

"Here, you ' re not defined by your own achievement but by what you achieve comparing to others and that ' s really stressful" (P14, Female).

An intern explained:

"We are studying for the exams not for knowledge. I think that ' s what make us worried about our confidence in future when we are responsible for actual patients" (P12, Female).

Being in a competitive school and profession, students try to compete and fulfil the expectations. In general, this strategy increases the stress level. Another intern said:

"I think the competition made that very stressful ...when you think of the other colleagues and what they are doing, you feel that you need to do more. Even if you do more, then you need to do more than that. So, nothing is good. You have to put more effort" (P3, Male).

Constantly, students felt they must show off their competencies. Comparing oneself to others and competition seems to cause less confidence and self-doubts among students.

One participant noted:

"Other students, they are using the technology, they are very confident doing the examination and taking history. I ' m comparing myself to others. I will never be like them" (P8, Male).

High competition and self-doubts made students feel insecure about being accepted in the specialty of their choice in the future despite the hard work. One student commented on getting accepted in the residency program:

"I ' m not sure, I ' m not satisfied and feeling insecure" (P1, Female).

Male and most female interns expected that they will be less stressed, once they work in the specialty of their choice and a better and easier life awaits them.

"I think our lives will be less stressed after getting accepted in our specialty because we will have less exams and that means more control over our schedule" (P14, Male).

However, few female interns considered that residency is not the end of the journey but there will be much more stressors because more responsibilities come with the career. One intern commented:

"It ' s not like when we are students or interns! If you do something wrong you will lose marks or get poor evaluation, there (in residency), you are dealing with patients so if you do something wrong you ' re going to hurt them" (P12, Female).

All these previously noted facts made participants continuously stressed and experienced the feeling of guilt when they were not spending their time studying.

High expectations of teachers and families

Satisfying the professors was frequently cited as a reason for stress. Most students acknowledged that they are given responsibilities above their capabilities and the faculty seemed not to appreciate their busy schedule. Coming up-to their mark and fulfilling the demands further raise the stress.

One student explained:

"We have to master the history and examination for the medicine and the surgery, and the consultants are never satisfied, this is third year. To them (professors), everything else doesn ' t matter ...the consultants are not satisfied, you feel guilty..." (P3, Male)

"I think most of the doctors expect us to be perfect and that puts a lot of pressure on us" (P1, Male)

Another intern added:

"Sometimes I regret the decision of going to medical school especially when my work is not appreciated by the team or even by the patient. They do not appreciate how much effort I put on this work!" (P12, Female)

Higher expectations and trying to live up to expectations of their families were also a driver in the stress levels of female students, more than their male counterparts. It was important for them to maintain certain image in their families. Inability to find support from parents or other family members to discuss the struggles that they are facing and how to solve them was another issue.

For example, a student explained:

"I'm the oldest daughter and grandchild in my family. I've never told them (family) my grades, or my GPA. Because it will damage me, they will never accept it from me. They will see me as a big failure" (P6, Female)

The support, the students received from their families, was described as an important factor to help them cope with the stresses. An accommodative attitude makes them feel better after discussing their fears. However, only few students admitted that they adopted hiding the academic results as a defense mechanism to please their parents and to avoid the embarrassment.

One student noted:

"I told them, and actually their reaction wasn't as bad as I imagined... I guess it's always in our head, and we overthink" (P1, Female)

A male student noted:

"Since I have joined medical school, my parents have been less demanding than they used to be. They don't ask me to go out with them or fix anything in the house" (P1, Male)

Some of the reasons for stress mentioned by students were that the family had expectations that were different from their own wishes.

The participants explained:

"I am here now because my family want me to be a doctor. If it's up to me I would have quit from the second year" (P11, Male)

"I always have to go with my mother to friends and family members, I have to, if I don't she would be mad" (P5, Female)

Consequences of Stress on Everyday Life

Social life

Almost all participants agreed that their busy schedule and stressful life have negatively affected their social life. One student explained:

"I started not enjoying the food, nor hanging out with my friends. So, I think it is because of overthinking about future opportunities" (P5, Male)

Several participants reported that they have lost their childhood friends because of their busy schedules and they are no longer interested in trying to hold onto their social life.

An intern noted:

"I lost most of my friends because I cannot meet with them regularly" (P14, Female)

"Being busy all the time definitely builds a wall (between her and her family and friends). You excuse yourself all the time but with time they think you are making this up because all of

them have exams or work just like you. With time, you give up on them because you can't do anything else" (P14, Female)

Those who considered themselves not being social before medical school thought that they were more comfortable now with their social life especially with their colleagues with whom they spend a lot of time together and share the same experiences

"I am now more social than I used to be. These are my friends and we are comfortable together" (P11, Female)

Health

Several participants reported feeling highly stressed, with negative consequences for their health, experiencing mental, psychological as well physical ailments. An intern noted:

"I feel I have to sleep four hours' maximum to find some time to study" (P11, Male)

A student explained:

"Sometimes specially around exams, I get sick easily. My bowel movement is not good. I have IBS (irritable bowel syndrome) because of that stress" (P2, Male)

Another intern noted:

"After the first year I was diagnosed with depression and anxiety and I am taking medications for that now. I even had to drop one year" (P15, Female)

Another one added,

"I started to drink coffee too much. I want to stay awake for most of the times. I have palpitation and GI (gastrointestinal) problems now" (P16, Female)

Discussion

The aim of this study was to explore and understand causes of stress among medical students in KSU and the effect of stress on their daily lives from their experiences. The findings revealed that the main sources of stress were the heavy workload, competitive environment and exams, frequent change of teams, uncertainty about being accepted in the preferred specialty (competitive environment) and the high expectations of the teaching staff. Furthermore, students disclosed that stress has a direct negative impact on their socialization with friends and on their well-being in the form of depression, anxiety and not having enough sleep. As medical students and interns are future physicians; it is important to consider their stressors which could take a toll of their physical and mental health. These stressors and their consequences may extend to their professional lives and lead to greater levels of stress if no efforts were undertaken to mitigate their effects. In line with previous research [27,28], the current study has found that a busy schedule and workload were important causes of stress. Many students described examinations and transition periods as significant sources of stress throughout the undergraduate studies. The transition to higher levels of responsibilities initially from pre-clinical to clinical and later

from being a student to intern was perceived as stressful; this indicates that stress is not a transient phenomenon and it continues to internship when they rotate frequently between teams [30,31]. Rotating in different specialities during the fourth and fifth years for students and continuously changing teams for interns within short periods of time may put them under great pressure. A former study showed that inadequate preparation for the task or incompetence are possible explanations for this phenomenon [32].

In line with Owusu and Essel (2017), the current study has found that overthinking about future career is an important factor that intensifies stress among both interns and students. Our in-depth exploration of the issue has added that intense competition among students and interns to get higher grades to increase their chances of acceptance in their preferred speciality made them feel insecure about their abilities to achieve their dreams. At the same time, it has been proven that stress has a negative effect on academic performance which may affect their chance of their career (speciality) choice [5,6]. This may put students in a vicious cycle of three components which are high competition, higher stress levels, lower academic achievement and lower chances of getting accepted in a residency programme. This study has provided a better understanding to some previously found environmental and culturally-related factors in the study community. Furthermore, while found higher levels of depressive symptoms among female students compared with their male counterparts, it offered some plausible explanations [16,29]. This study has offered explanation for medical students' stress level particularly among female students. A recent study among physicians in Saudi Arabia found that being young, female and Saudi are associated with higher levels of stress [32]. Another study among the same population found an alarmingly high (63%) proportion of stress. Whether acute or chronic, stress is a contributing factor for depression [26]. Similarly, a study in a Saudi Arabian medical school has found that 46% of the students have significant depressive symptoms and it was more so among female students [13]. Gender differences in the prevalence of stress was attributed to physical and psychological differences between both genders and to the nature of a male dominant field that renders females more prone to stress [13,16,29,32-34].

However, this study offers in-depth understanding of this phenomenon. Participants in this study highlighted some cultural-related factors that were contributing to higher levels of stress among females in the medical field. As females are expected to be an active part in their families, they may experience more pressure. Female medical students and interns found it difficult to fulfil their social obligations such as attending social events. Furthermore, it seemed that their parents do not necessarily appreciate their wishes of not wanting or not being able to participate in social activities. This adds more stress to their situation compared to their male counterparts. Furthermore, their culturally expected role in their families made them feel responsible of preserving an ideal image among them such as being a hard worker with excellent grades. This probably led the students to hide their

marks and to avoid sharing their struggles and difficulties. As students and interns were recruited from a governmental University where no fees are required, financial stressors were not raised by the participants during the discussion, in spite of probing. Nonetheless, financial stressors have been considered significant in other quantitative research in other countries where the students must pay for their university education [15,23]. A mixed method study used the low scoring areas of the Dundee Ready Educational Environment Measure (DREEM) as an input for their discussion found that the main curriculum variables contributing to poor scores were curriculum overload, stress, lack of feedback, and poor teaching skills. The possible solutions to these problems, as suggested by the students were to involve the students in the learning process, courses to help the faculty to develop their teaching skills, assessments with provision of feedback, stronger student support system and introduction of study skills courses for students [35]. Furthermore, Dutch medical schools with less number of didactic hours and higher free self-study time found robust positive effects on students learning and performance [35]. With some appropriate modifications based on the Saudi learning environment, the evidence from this research should be adopted and utilised to insure more satisfactory environment for the students in order to reduce their stress levels.

Participants described the group discussions as relaxing this goes in line with a previous study finding among medical students that they tend to avoid seeking help in regards to their mental health problems for reasons related to reputation and stigma [25]. Participants of the current study are experiencing continuous high-levels of stress at a young age which is detrimental to their health. They acknowledged that they developed some negative health habits such as less hours of sleep and excessive caffeine consumption in attempt to cope with the increased academic demands; these negative habits may further increase students' psychological and physical health [36,37]. NA and FI did not know the participants and have never taught them before the conduct of this study. Students and interns of each focus group were close to each other as friends, they are aware of the study theme and willing to participate. These factors could help in the process of probing sensitive issues experienced by the participants, in reflecting in their own feelings and promoting introvert students to speak up. Limitations and future studies: The current study is not without limitations. Including self-nominated students and interns may exclude those with no or less stress perceptions. Furthermore, the study participants were recruited from a governmental university who do not have any financial commitments to their universities; however, further studies from private university students should be conducted to assess the effect of financial commitment on the overall mental wellbeing of the students.

Conclusion

The findings of this study suggest that the students might benefit from improvements in the school educational system.

Converting to a student-centered curriculum and having less didactic hours, less summative exams and longer free self-study time are examples of such improvements. The routine use of study guides for orientation, guidance and reassurance could be useful to reduce students stress. Faculty development for the teachers is vital for mitigating the stress due to their high expectations. Furthermore, the establishment of student support system that empower them with helpful and healthy coping strategies is needed. Counselling on common concerns such being accepted in the preferred specialty is equally important.

Providing medical students with non-formal opportunities to express their feelings may help them to better deal with stress. Additionally, support during transition periods is needed to reduce their suffering. Future research may include teachers and families as possible contributors to students and interns' stress. Furthermore, more research is needed to explore current and possible coping strategies among medical students to be implemented in a non-formal yet structured program targeting students. The current study found that the cost of stress on students and interns well-being (physical and psychological health) is significant.

Ethics Approval and Consent to Participate

Written consent was obtained from all students prior to data collection. All the selected respondents were given assurance of confidentiality that the information gathered will be used exclusively for research purposes. The current study was approved by the Institutional Review Board of the College of Medicine; King Saud University.

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