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RESEARCH ARTICLE

PREVALENCE AND EVALUATION OF HAIR LOSS AND IRRITABLE BOWEL SYNDROME AMONG MEDICAL STUDENTS AND ITS EFFECT ON THEIR LIFESTYLE AND EDUCATIONAL ATTAINMENT, IN TAIBAH UNIVERSITY, AL-MADINAH AL-MUNAWARAH.

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Key words:-

Abstract

Objective: - This study aimed to assess the prevalence of Hair loss & Irritable Bowel Syndrome among medical school students, and to evaluate its effect on their lifestyle and study, in Taibah University, Madinah.

Subjects and Methods: - a cross-sectional survey was conducted through a random sampling, across medical students mainly from Madinah. The final study sample size was 250 students. The questionnaires were distributed both manually and electronically, the questionnaire includes 41 questions, discussing various aspects in the student's social, medical and psychological life. Statistical analysis system used to analyze the collected data.

Results: - The majority of the studied subjects showed no statistically significant differences between male and female subjects in almost all aspects of the study. (46.1%) of subjects have hair loss (alopecia), (37.2%) have irritable bowel syndrome. both diseases were presented with extreme statistical significance (p value < 0.0001). almost all the subjects feel stressed, (94%) thought that studying in the college of medicine and having too much work are the main causes of this stress.

Conclusions: -A higher prevalence of irritable bowel syndrome among medical students and interns in Madina, Saudi Arabia, and it affects the educational attainment and the academic performance for half of these students. Hair loss affects or interferes with student's life in general. But affects the academic performance (stress) for few of students.

Objectives: -

General objective:

To Assess the prevalence of Hair loss & IBS among medical school students, and to evaluate its effect on their lifestyle and study.

Specific objectives:

1. Assess the prevalence of IBS among medical student
2. Assess the prevalence of hair loss among medical student
3. Assess the awareness of medical student about stress related complications.

4. To evaluate the degree of hair loss & IBS in socially active students & students with high grades compared to others.
5. To differentiate between hair loss & IBS due to medical school stress and other risk factors.
6. To assess medical seeking of their conditions.
7. To assess the impact of hair loss & IBS on students' lifestyle, self-image and educational attainment.

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Introduction: -

Stress is the “wear and tear” our bodies experience as we adjust to our continually changing environment; it has physical and emotional effects and can create positive or negative influence on us. As a positive influence, stress can help to compel us for action. As a negative influence, it can result in feelings of distress, rejection, anger, and depression, which in turn can lead to health problems [1]. Studies revealed that medical students experience a relatively high level of personal distress, with adverse consequences on academic performance, competency, professionalism, and may cause health problems such as Irritable bowel syndrome and hair loss. Stress in medical students has been a global issue [2].

Irritable bowel syndrome (IBS) is a functional GI disorder presented as abdominal pain and altered bowel habits with no specific organic pathology. Microscopic inflammation although has been documented in some patients [3]. IBS in the past has been considered a diagnosis of exclusion. However, although it does have a broad differential diagnosis, now is not considered a diagnosis of exclusion [4]. The cause of IBS is not clearly defined, but there is a lot of research to find it out. Around 11% of population globally is affected. And just around 30% of people who experience the symptoms consult physicians for their IBS symptoms. The people who seek for consultation does not have different abdominal symptoms to those who do not consult, but they have low quality of life and greater levels of anxiety [5].

On the other hand, hair is the second fastest growing tissue of human body. Normal hair fall is 50-100 hair per day; if hair fall exceeds this limit, it is termed as ‘balding’ or alopecia. There are many reasons why men and women lose their hair, but according to a case-control study, stress may be the primary reason for unexplained hair loss [6]. A study done in KSU in Saudi Arabia showed that high prevalence of stress among medical students is a cause of concern as it may impair behavior of students, diminish learning, and ultimately affect patient care after their graduation. The overall prevalence of stress in the study was 63.7% (Sample of 775) [7]. Another study carried out in College of Health Sciences in Ethiopia also showed a high prevalence of stress among medical students indeed needed attention the overall prevalence of stress in the study was 52.4% (Sample of 329) [8]. A cross-sectional study carried out in Sweden showed that 1st year students indicated experiencing the highest degree of pressure from studies. A gender difference regarding stress levels was also seen, where females reported higher levels of stress than males [9]. Another study done among students of a medical college in southern India of 278 students, among hair morbidities commonest was hair loss seen in 165 (59.3%) cases [10].

And for IBS, A study had conducted in California university Shows that IBS is stress sensitive disorder, explained by bodily function and behavior can be affected by a neurobiological model which postulates stress induced alteration in arousal circuits and central stress and activation of parallel motor outputs from brain regions [11]. Other study done in Texas Southern University College of Pharmacy and Health Sciences, conduct on children and adolescents shows that IBS is distressing and have a negatively impacts on patients ‘school and social life’ and therapy option have good outcomes [12]. An observational case-control study in Dow University of Health Sciences, Karachi, Pakistan shows that medical student who suffer from anxiety and mental stress are more associated with IBS [13]. Another cross-sectional study carried out in China-Japan Friendship Hospital, on medical students shows that IBS affects 33.3% (sample 683) of students, and student-life stress inventory is high in IBS patients [14]. Study carried out in King Abdulaziz University, Jeddah, Saudi Arabia on medical students and interns shows a high prevalence of IBS, and the predictors of IBS is emotional stress, female gender, morbid anxiety and high grade [15].

In our research, we are looking to estimate the prevalence of IBD and hair loss in medical students in Taibah university and the relation between them and stress due to medical school comparison to grade, gender, year of study, eating habits and family history. So, by greater recognizing of the cause of IBs and hair loss among medical student it may help to guide for more effective management of the symptoms.

Methodology: -

Study design: -

This is a cross-sectional study which was conducted through a random sampling. The population was medical students mainly from Al-Madinah Al-Munwarah region in Saudi Arabia during April and May 2016. The aim of this study is to assess the prevalence of hair loss and Irritable Bowel Syndrome (IBS) among the medical school students in Taibah University and to evaluate their effect on the student's lifestyle and educational attainment.

All recruited subjects of this study were actively involved in studying medical courses. Subjects who are not medical students or finished their medical courses for a period more than two years were excluded from the study analysis. A pre-designed structured English language questionnaire was used in this cross-sectional survey. The used questionnaire was formulated to include demographic aspects, clinical features, nutritional, medical and psycho-social history. The questionnaire includes 41 questions, discussing various aspects in the student's social, medical and psychological life. The questionnaire items were designed and written to suit the tradition and the Islamic culture of the Holly Al-Madinah Al-Munwarah City.

The questionnaires were distributed both manually and electronically on a large scale to get the effective sampling. The questionnaires with missing data more than 50% were excluded from the study analysis. The final study sample size was 250 medical students.

Approval was taken from the ethics committee at faculty of medicine, Taibah University. Ethical consideration was considered to avoid physical or emotional harm in the study questionnaire. The confidentiality and privacy of the collected data were ensured through the use of anonymous questionnaire and during data entry and analysis. People were provided with information on the study aims and methods.

Statistical analysis: -

The collected data were analyzed using statistical analysis system (SAS). Data from the questionnaire has been entered as numerical or categorical, as appropriate. Two types of statistics have been done:

1. *Descriptive statistics*; where quantitative data was shown as mean \pm S.D for the students in each group, and qualitative data was expressed as frequency and percent which plays the proportion of participants who are represented within each category.
2. *Analytical statistics*: where Chi- square test between qualitative variables. Also, unpaired Student's t-test was used as a test of significance for comparison between two arithmetic means of two different groups. The level of statistical significance was defined as $P \leq 0.05$.

Results: -

A cohort of 247 medical students at Taibah university (126 males, 51%) and 121 females, 49%) respond to the questionnaire. The study assessed the prevalence of hair loss and Irritable Bowel Syndrome (IBS) and evaluated their effect on the student's lifestyle and educational attainment through a population-based cross-sectional study.

Table 1, presented the socio-demographic characteristics of the studied cohort. Nearly equal proportion of male (51%) and female (49%) was included in the sample. About 62.3% of the study cohort subject's age was between 23-25 years and half of them have normal weight (46.6%). The majority were single and 34% were in the fifth-year medical school.

Table 1: -The socio-demographic characteristics of the studied subjects

Characteristics	No. (%)
Age in years	
19 - 22	91 (36.8%)
23 - 25	154 (62.3%) [#]
more than 25	2 (0.8%)
Sex	

Male	126 (51%)
Female	121 (49%)
Marital status	
Single	225 (91.1%) [#]
Married	20 (8.1%)
Divorced	2 (0.8%)
Medical year	
First year	22 (8.9%)
Second year	29 (11.7%)
Third year	47 (19%)
Fourth year	41 (16.6%)
Fifth year	84 (34%) [#]
Intern	24 (9.7%)
Grade Point Average (GPA)	
4.5 - 5.00	63 (25.5%)
3.75 - 4.49	118 (47.8%) [#]
2.75 - 3.74	61 (24.7%)
Less than 2.74	5 (2%)
Smoking (including shisha and others)	
Yes	42 (17%)
No	205 (83%) [#]
Body mass index (BMI)	
18.4 or less	37 (15%)
18.5 - 24.9	115 (46.6%) [#]
25.0 - 29.9	68 (27.5%)
30 or more	27 (10.9%)
Associated conditions	
Diabetes	2 (0.8)
Hypertension	6 (2.4)
Thyroid disease	5 (2)
Anemia	35 (14.2)
Scalp infection	6 (2.4)
Acne	48 (19.4)
Vitamin deficiencies	48 (19.4)
Psychiatric diseases (depression , anxiety ... etc)	24 (9.7)
None	128 (51.8) [#]
others	5 (2)

[#] The most common

By asking the students if they have hair loss (alopecia) or Irritable bowel syndrome (IBS), 114 students (46.1%) said they have hair loss (alopecia), 92 students (37.2%) have IBS. both diseases were presented with extreme statistical significance. Most of students (194, 78.5%) reported no intake of specific medications which can affect hair loss or IBS (like anticoagulants, chemotherapy, antidepressants, steroids, Vitamin A, or oral contraceptive pill for females).

Table 2, shows the characteristics of students with hair loss (alopecia). There was a statistical significance in students with alopecia suffering from hair loss in places elsewhere in the body (p value < 0.0001). Also, there were significant duration of hair loss (> 3 months), most of the students (82/114, 71.9%) are not using chemicals or coloring for their hair. Most of students suffering from hair loss (110/114, 96.5%) use shampoo, 42 students (36.8%) use blowing hair dryer, 12 students (11%) uses natural henna, and 10 students (8.7%) use hair gel.

Table 2: -Characteristics of subjects with Hair loss.

Characteristics	No. of subjects (total, %)	P value
Hair loss (alopecia)	114 (247, 46.1%) *	< 0.0001 *
Hair loss elsewhere on the body	14 (114, 12.3%)	< 0.0001 *
Duration of hair loss		
Less than 3 months	4 (114, 3.5)	< 0.0009 *

More than 3 months	110 (114, 96.5)	
+ve compulsion to pull-out hair	26 (114, 22.8)	< 0.0005 *
Hair loss affect or interfere with student's life in general	97 (114, 85)	< 0.0001 *
Hair loss affect the academic performance	17 (114, 15)	< 0.0019 *
Students sought medical advice for hair loss	34 (114, 29.8)	< 0.0053 *
Family history of hair loss	56 (114, 49)	0.8947

* Using Fisher's exact test

Table 3, shows characteristics of students with Irritable Bowel Syndrome (IBS). The cohort subjects who suffered from abdominal pain & discomfort (72, 74.2%), diarrhea (49, 50.5%), constipation (50, 51.5%), bloating of stomach (69, 71.1%), urgent need to go to the toilet (42, 43.3%), mucus in the stool (white, stringy or foamy bubbles) (31, 32 %), and only 10 students (10.3%) reported no symptoms despite they were diagnosed to have IBS.

Table 3: - Characteristics of subjects with Irritable Bowel Syndrome (IBS)

Characteristics	No. of subjects (total, %)	P value
Irritable bowel syndrome (IBS)	92 (247, 37.2%) **	< 0.0001 **
IBS diagnosed by a doctor or by licensed physician	25 (92, 27.1)	< 0.0003 **
Duration of IBS symptoms		
Less than 6 months	17 (92, 18.4)	
More than 6 months	75 (92, 81.6)	< 0.0059 **
The pain relived by defecation	75 (92, 81.6)	< 0.0001 **
IBS affect or interfere with the student's life in general	83 (92, 90.2)	< 0.0006 **
Effect of IBS on the academic performance	49 (92, 53.2)	0.461
Sought medical advice for IBS	38 (92, 41.3)	0.027*
Started any special diets recently	24 (92, 25.9)	< 0.0001 **

**Using Chi-square test

* Using Fisher's exact test

When investigating stress among the study population as an important cause of alopecia and IBS, we found that almost all the students feel stressed, and 35.2% feel stress specifically during exams periods. The majority of them (94%) thought that studying in the college of medicine and having too much work are the main causes of this stress. About 169 subject (68.4%) feels nervous when stressed, while 107 (43.3%) and 95 (38.5%) feels not well and tired during stress, respectively. Only 65 subject (26.3%) experience difficulty in sleeping during stress. The response of the cohort students to stress was surprising, 100 students (40.5%) said they did nothing, 102 students (41.3%) respond by crying and shouting, 77 students (31.2%) respond by eating. Only 40 students (16.2%) and 35 students (14.2%) do sports and recreation activities during stress, respectively.

Table 4, shows the characteristics of stress among the study population. When asking the students for the expected complications of stress, they answered: Depression & Anxiety (173, 70%), Heart Disease (100, 40.5%), Hypertension (49, 121%), Susceptibility to Infections (54, 21.9%), Irritable bowel syndrome (147, 59.5%), Peptic Ulcers (111, 44.9%), Weight Gain (122, 49.4%), Exacerbation of existing diabetes (51, 20.6%), Muscular and Joint Pain (42, 17%), Headaches (150, 60.7%), Sleep disturbances (179, 72.5), Sexual & reproductive dysfunction (60, 24.3%), Affection on memory, concentration and learning (127, 51.4%), Unexplained hair loss (103, 41.7%), Exacerbation of existing skin disease (35, 14.2%), Substance abuse (69, 27.9).

Table 4:- Characteristics of Stress among the study population.

Characteristics	No. of subjects (total, %)	P value
Stress affect student's educational attainment	141 (247, 57.1)	0.0022**
Student's membership in any social clubs	147 (247, 59.5)	< 0.0001 **
Stress during working in social club	64 (147, 43.8)	0.0358 **

**Using Chi-square test

The majority of the studied subjects showed no statistically significant differences between male and female subjects in almost all aspects of the study. When asking the females specifically, they show statistically extreme significant differences regarding having regular menstrual cycles (86/ 121, 71%); p value < 0.0001 and regarding having excess hair on chin, face, abdomen (31/121, 25.6%); p value < 0.0057. But, there were no significant difference when investigating being pregnant before (5/121, 4.1); p value= 0.032.

Discussion: -

IBS: -

Several studies have shown different prevalence rates of irritable bowel syndrome among different populations. A meta-analysis was carried out in 2012 on the epidemiology of irritable bowel syndrome and calculated roughly a global prevalence of 11.2% [15]. In Western countries, it was estimated that the prevalence of IBS varied in the range of 15% - 24% [16]. In addition, it has been reported in Asia that the prevalence was approximately 10-20% [17]. The results of this study show a higher prevalence of IBS 37.2% among medical students and interns in Madina, Saudi Arabia. The disparity between the current study and the previous studies propose that there might be a true difference between countries. It may be of interest in the future to endeavor to correlate these differences with the cultural and dietary habits in various countries [18]. Further reasons may be assigned to sample size, ethnic variations, age group, and diagnostic criteria used.

Comparing IBS prevalence among different types of students, a study conducted in China has been able to demonstrate that medical students had a higher risk of any FBD than science and engineering students. [19] Furthermore, Costanian et al. reported an overall prevalence of IBS among university students in Beirut, Lebanon which was 20%, and over 50% of those students who reported having IBS were medical students [20]. A possible explanation for this might be that medical education is considered to be among the most arduous and the most laborious education [14]. Due to their exceptional lifestyle (numerous exams and overwrought clinical practice in hospital) together with enormous stress and inadequate capability of adaptation and conformity, medical students may be an especially high-risk population for IBS [13]. A local research was conducted among medical students in Jeddah, Saudi Arabia which is in agreement with the current study reported that the rate of IBS was 31.8% [14]. High prevalence rate of IBS among medical students was also recorded in Japan which was 35.5%. [21] Similar researches with approximately similar prevalence rates were done in different countries such as Korea (29.2%) [22], China (33.3%) [13], Karachi, Pakistan (28.3%) [23] and another study was also in Karachi and Bahawalpur, Pakistan (34%) [24] are all in line with the results of the current study.

Females are more likely to suffer from IBS in Western countries, as many studies established [25]. This finding is in concordance with this research which reports modestly higher prevalence of IBS among females compared to males (22.2% vs 17% of total 247) and seems to be consistent also with data obtained from various studies around the world [16,19,23,26,27,28,29]. Nevertheless, the main cause of gender variation in IBS prevalence is still undetermined and open to question. This finding can be explained in part by the differences in social and cultural aspects such as health care seeking behavior between males and females or it may be due to actual physiological differences such as menstrual cycle alterations which by unknown mechanism exacerbate bowel symptoms during menses [25].

This research also demonstrates that 41.3% of students who have IBS have sought medical attention and diagnosed by a licensed doctor. Accordingly, Ghanaei et al. [30] illustrated in a similar study that 37.7% of student had visited physicians. These results are in accord with recent studies in Bangladesh [31] and Jeddah [14].

IBS effect on patients' lives can be considerably important. its symptoms may disarrange their daily routine forcing them to miss school, reduce social activities and interactions, skip meals or make other changes to diet and nutrition [32]. The current study reveals that 53.2% of students who have IBS affects their educational attainment and their academic performance. While 90.2% of students who have IBS believe that it affects or interferes with their lives in general. Also, 25.9% of students started special diets in order to ease their suffering. Studies have reported that IBS is a main reason for high absences and low productivity. In general, patients who have unmanaged IBS report high reductions in their overall quality-of-life [32]

Hair Loss: -

Walli H, Ghazal H, German S, Ali M and Zuberi BF said that a total of 375 female students participated in the study. The mean \pm SD age was 20.5 ± 1.4 years. Cross-tabulating the stress grades with hair loss showed that all of

the hair fall victims had moderate stress. no significant difference was seen in frequencies of hair fall on the level of stress ($p=0.221$) [33]. Moreover, Joseph N, Kumar GS, Nelliyanil M said in their study of 278 medical students that Most of the participants 171 (61.5%) were of the age group 20-21 years and majority were females 148 (53.2%). The most common hair/skin morbidities suffered in the past one year were hair loss 165 (59.3%) [34]. While Waka Ishida, Teruhiko Makino and Tadamichi Shimizu Said that The reports of hair loss in the scalp due to hair dyes containing PPD is rare, and there have been only 2 reported cases of hair loss in the scalp due to a PPD allergy associated with dermatitis in a consumer-based study (Søsted H, Agner T, Andersen KE, Menné T said that 55 cases of allergic reactions to hair dye: a descriptive, consumer complaint-based study) [35,36]. Waka Ishida, Teruhiko Makino and Tadamichi Shimizu in their case of a patient who experienced severe hair loss after the use of a hair dye containing PPD. We concluded that the explanation for the severe hair loss in our case was a concurrent sensitization and allergic reaction to PPD, as the product had been applied repeatedly over a long period of time [37]. men whose fathers had hair loss were 2.5 times as likely to have had some level of hair loss compared to men whose fathers had no hair loss (95% CI: 1.3-4.9). Likewise, men whose fathers had hair loss were twice as likely to have hair loss than men whose fathers had no hair loss [38].

In this study which is a cohort of 247 medical students at Taibah university (126 males, 51%) and 121 females, 49%) respond to the questionnaire. The study assessed the prevalence of hair loss and Irritable Bowel Syndrome (IBS) and evaluated their effect on the student's lifestyle and educational attainment through a population-based cross-sectional study. Regarding hair loss, we found that the characteristics of students with hair loss (alopecia). There was a statistical significance in students with alopecia suffering from hair loss in places elsewhere in the body (p value < 0.0001). Also, there were significant duration of hair loss (> 3 months), most of the students (82/114, 71.9%) are not using chemicals or coloring for their hair. 12 students (11%) uses natural hinna. 97 (114, 85%) hair loss affects or interfere with student's life in general and 17 (114, 15%) hair loss affects the academic performance (stress), also 56 (114, 49%) Family history of hair loss.

Stress: -

In the present study, when investigating stress among the study population as an important cause of alopecia and IBS, we found that almost all the students feel stressed, the majority of them (94%) thought that studying in the college of medicine and having too much work are the main causes of this stress, this finding is similar to the outcome of several study reports [1,7]. In the present study, number of subjects who said yes about the stress affecting their educational attainments 141 (57.1%). This finding is in agreement with results of study [7]. In our study, number of students who participate in social clubs is 147 (59.5 %). Out of 147, 46 (43.8 %) said that working in social clubs causes stress for them.

Limitations: -

It may not be accurate answers to some of the students because the study relied on self-answers to the student. The Participants enrolled in the study may not be very representative of the whole country.

Conclusion: -

The results of this study show a higher prevalence of IBS among medical students and interns in Madina, Saudi Arabia. Many studies have shown that prevalence of IBS is the highest among medical students compared to other majors, Females are more likely to suffer from IBS. About half of students who have IBS affects their educational attainment and their academic performance. Hair loss affects or interfere with student's life in general. Hair loss affects the academic performance (stress) for few of students. All the students feel stressed, the stress affecting in the educational attainments for the majority of students.

Recommendations: -

Finally, we recommend that

1. Further studies on the same subject include larger groups of students in more specialties include larger areas in Saudi Arabia.
2. Perform educating campaigns to educate the students about the complications of stress and how to avoid it.
3. Statement of the university's role in reducing stress and its complications among students, and stimulate the universities to play this role.

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