Kurdish Studies
September 2024
Volume: 12, No: 5, pp 1638 - 1646
ISSN: 2051-4883 (Print) | ISSN 2051-4891 (Online)
www.KurdishStudies.net

DOI: 10.53555/ks.v12i5.3528

Imposter Syndrome And Its Relation To The Mental Health Among Undergraduate Medical Students.

Dr Kirtesh Mathrani[1*], Dr Kashaf Rajar[2], Dr Mahelaqa Aijaz Memon[3], Fiza Aijaz Memon[4], Tarkesh Mathrani[5], Hassam Hammad Kazi[6]

[1*]House Officer, Civil Hospital Hyderabad, Sindh, Email:mathranikirtesh@gmail.com (Corresponding Author)
[2]House Officer, Civil Hospital Hyderabad, Sindh, Email: rajarkashaf6@gmail.com
[3]House Officer, Civil Hospital Hyderabad, Sindh, Email: mahelaqaaijazmemon@gmail.com
[4]Fourth Year MBBS Student LUMHS, Jamshoro, Email:Fizamemon150@gmail.com
[5]Final Year MBBS Student Isra University Hyderabad, Sindh, Email:mathranitarkesh@gmail.com
[6]Fourth Year MBBS Student LUMHS, Jamshoro, Email:Hassam001@hotmail.com

ABSTRACT:
Background: Mental wellness is very crucial, and it covers our spiritual, physiological, and social welfare. By factors are hypothesized to be responsible for the prevalence of mental health problems among medical students, of which imposter syndrome is one of the causes of burnout. Impostor syndrome is a psychological occurrence in which an individual doubts their skills, talents, and achievements. There is a very strong relationship between imposter syndrome and depression, anxiety, stress, and mental well-being. This study was designed to determine the burden of imposter syndrome and its relation to the mental health of medical students of LUMHS, Jamshoro.
Material and methods: This study was cross-sectional, conducted in a government medical university of Pakistan, LUMHS Jamshoro, and completed in the time duration of three months among students in 3rd Year and 4th Year MBBS. It was simple, random sampling. Our Inclusion criteria were 3rd and 4th-year MBBS students of LUMHS, Jamshoro. We used the Google form questionnaire, CIP Scale, and DASS SCALE-21 as Data collection instruments. Our statistical data is shown in standardized Variables.
Results: Out of 291 students' responses; 170 (58.4%) were males and 121(41.6%) were females, most of the participants were found to have moderate imposter characteristics. Participants with imposter characteristics were found to be having mild levels of depression and stress and moderate anxiety levels. A higher frequency of imposter syndrome is observed in males compared to their counterparts. There was a statistically significant (p-value)
Conclusion: Imposter Syndrome is present in high frequencies among male students of 3rd Year MBBS in the age group of 18 to 23 years. It has detrimental effects on the mental health of students

Keywords: Imposter Syndrome, Depression, Anxiety, Stress, Clance Imposter scale, DASS-21 scale.

INTRODUCTION:

The current epoch is one of exponential knowledge growth. Medical knowledge is also expanding at an exponential rate. In this regard, the pressure to keep up with this rate of knowledge expansion is great for both today's medical graduates and medical students. Increasing competition, heightened expectations, distractions, and stresses are all problems that today's students must deal with. They invest more time, effort, resources, attention, and motivation into coping with these. These scenarios could result in different mental health problems like stress, anxiety, or even depression. Mental health influences the way we believe, perceive, and behave.(1) It helps to determine how to make sound decisions while handling stress in connection to others. According to global studies, depression represents approximately 3.2% of the total affecting mostly students. About 33% of students have depressive symptoms and most of them are medical students who represent 25 to 50% of the total.(2)According to the studies carried out in Pakistan, anxiety is very common among the country's medical students, with rates ranging from 44% to 60%.(3) While another Pakistani study reported the prevalence of anxiety and depression among the medical undergraduate students in Pakistan was 49%, 47%, 73%, 66% in fourth, third, second, and first years, respectively.(4)

Amongst the several factors including educational pressure, elevated workload, and not getting enough sleep are hypothesized to be responsible for higher frequencies of mental health problems among medical students. Imposter syndrome (IP syndrome) is also known as the main cause of burnout among medical graduates, current students, and professionals, etc. that is threatening their mental health and general well-being. It has been described among successful professionals and students who feel they are deceiving others about their intelligence, are unsure of their intellectual abilities, and feel like imposters in their accomplishments. In other words, it is a psychological occurrence in which individual doubts their skills, talents, and achievements. It describes high-achieving individuals who, despite their intended successes, flop to internalize their accomplishments and have persistent insecurity and panic about being revealed as fraud or impostor. (5)Different studies done worldwide have shown the frequency of imposter syndrome varying from 10% up to80%,

depending mostly on the recruitment plan selected for analysis (e.g., research on students), scale utilized (e.g., CIP Scale) and symptoms assessment using cuts off. (5)

IP syndrome is a growing but under-recognized issue among medical students that hasthe potential to distort the mental health and quality of life of medical students. Limited studies have been conducted globally as well as in Pakistan to address this ice-berg issue. Keeping in view this study was designed to determine the burden of imposter syndrome and its relationship with the mental health of medical (MBBS) students of Liaquat University of medical and health sciences, Jamshoro.

METHODOLOGY:
This cross-sectional study was conducted amongst the second and third professional MBBS students of Liaquat University of Medical and Health Sciences, Jamshoro from August to October 2022. All (male and female) students presently enrolled in second and third professional MBBS (3rd and 4th year) at LUMHS, Jamshoro aged between 18-25 years, and who gave consent of participation were invited and included in the study. Participants registered in other academic years of MBBS as well as those registered in programs other than MBBS were excluded from the study. The sample size was calculated using Rao soft online sample size calculator while participants were selected through a simple random sampling technique.

DATA COLLECTION PROCESS:
Data was collected using structured survey questionnaires that areClance Imposter Scale (CIPS) and DAS Scale-21 while participants' demographic characteristics were recorded in a pre-designed checklist. Informed consent was obtained from all the selected participants after briefly explaining to them the purpose of the study. Participants were also informed that their information would be kept confidential while their participation was voluntary, and they could refuse or leave the study whenever they wanted. After getting informed consent, the questionnaire was sent to all the participants via email as well as on their personal WhatsApp numbers and they were asked to respond to all the questions. Incomplete and inappropriately filled questionnaires were rejected.

STUDY TOOL:
CLANCE IMPOSTER SCALE (CIPS, clance ,1985):
It is a 20-item psychometric self-administered measure that assesses the key affective and cognitive traits linked to the imposter phenomenon, such as fear of evaluation, worry of not being able to replicate one owns accomplishment and anxiety of being less competent than others. The questionnaire is one dimensional and uses a five-pointLikert scale ranging from 1 to 5, with larger scores signifying higher levels of imposter experiences. Clinical and non-clinical samples have both been used to validate CIPS. The tool demonstrated strong construct and convergent validity on American samples (6)

DASS-21:(Lovibond, S.H AND LOVIBAND, P.F 1995)
It is a 21-itemself-report measure that is broken down into three sub scales with 7 items each. The depression scale, the anxiety scale and stress scale are among these sub scales. The depression scale rates the following symptoms dysphoria, hopelessness, life value reduction, self-deprecation, lack of interest/engagement, anhedonia and lethargy. The autonomic arousal, skeletal muscle effects, situational anxiety and subjective perceptions of anxious effect are all measured by anxiety scale. The stress scale measures difficulty unwinding, nervous alertness and a tendency to get easily upset/agitated, irritable/ over-reactive and impatient (3). The Likert scale used for assessment ranging from 0 (did not apply to me at all) to 3(applied to me very much or most of the time).(7)
The collected information was then entered and analyzed using SPSS ver. 23. All the quantitative variables were expressed using mean and standard deviation while qualitative variables were expressed frequency and percentages. Data was analyzed using chi-square test while the level significance was set at p-value <0.05.

RESULTS:
Two hundred ninety students have given the response on 41 item questionnaires (20 of clance imposter syndrome scoring scale and 21 of DAS scale). Out of 291 students 170 (58.4%) were males and 121(41.6%) were females. The mean age of majority of study participants were 22.

After taking the responses on clance imposter syndrome scoring scale, we have added the number of responses to each statement. If the total score is 40 or less the respondents have few IP characteristics, if the total score is between 41 and 60 the respondents have moderate IP experience, if the total score is between 60 and 80 the respondents have frequent IP experience while if the total score is above 80 then respondents have intense IP experience. Table no 2 is showing the imposter syndrome findings among study participants.

By adding the responses of each statement of stress questions, if the total score is14 or less the respondents have normal stress level, if total score is between 15-18, respondents have mild stress-level, if the total score is between 19-25 then respondents have moderate stress level. After adding the responses of each statement of anxiety questions, if the total score is 7 or less then respondents have normal anxiety level, if total score is between 8-9 then respondents have mild anxiety level, if total score is between 10-14 then respondents have moderate anxiety level, if the total score is between 15 -19 then respondents have severe anxiety level. Again, by adding responses of each statement of depression questions, if total score is 9 or less then respondents have normal depression level, if score is between 10-13 then respondents have mild depression

level and if the total score is between 14 -20 then respondents have moderate depression level. Table 3 is showing the stress anxiety and depression levels among study participants.

Table I: Socio-demographic details of study participants (n=291)

	n	%
Age Group (years)		
• 18-20	58	19.9
• 21-23	215	73.9
• 24 and above	18	6.2
Sex		
• Female	121	41.6
• Male	170	58.4
Year of Study (MBBS)		
• 3rd Year	131	41.6
• 4th Year	160	58.4

Table no 1 is showingsocio-demographic details of study participants. Total number of study participants were 291. Majority of themcomes under the age group of 21-23. Most of them weremale and majority of students were studying in 4th year of MBBS.

Table II: Imposter syndrome findings among study participants (n=291)

Imposter syndrome characteristics		
	n	%
Few imposter characteristics	39	13.4
Moderate IP experience	133	45.7
Frequent IP feelings	95	32.6
Intense IP experiences	24	8.2

Table 2 is showing the imposter syndrome finding among study participants. Majority of the participants have moderate imposter characteristics.

Table III: Stress, Anxiety and Depression levels among study participants based on the DASS scale

	n	%
Stress level		
• Normal	250	85.9
• Mild	35	12.0
• Moderate	6	2.1
Anxiety level		
• Normal	160	55.0
• Mild	38	13.1
• Moderate	65	22.3
• Severe	28	9.6
Depression level		
• Normal	195	67.0
• Mild	60	20.6
• Moderate	36	12.4

Table 3 is showing stress, anxiety and depression among study participants. Majority of participants were found normal.

Age group of participants * Stress level among participants Cross tabulation

Count

		Stress level among participants				
		Normal	Mild	Moderate	Total	P value
Age group of participants	18-20 years	50	7	1	58	
	21-23 years	187	23	5	215	<0.05
	24 and above	13	5	0	18	
Total		250	35	6	291	

Table 4 is showing the relationship between the levels of stress in different age group of study participants. Majority of participants were found normal. There is a statistically significant difference ($p<0.05$) of stress level in different age groups of participants.

Age group of participants * Anxiety level among study participants Cross tabulation

Count

		Anxiety level among study participants						
		Normal	Mild	Moderate	Severe	Extremely Severe	Total	P value
Age group of participants	18-20 years	25	9	19	5	0	58	
	21-23 years	124	26	45	17	3	215	
	24 and above	11	3	1	3	0	18	<0.05
Total		160	38	65	25	3	291	

Table 5 is showing the relationship between the levels of anxiety among different age group of study participants. Majority of participants were found normal. There is a statistically significant difference ($p<0.05$) of anxiety level in different age groups of participants.

Age group of participants * Depression level in participants Cross tabulation

Count

		Depression level in participants					
		Normal	Mild	Moderate	Severe	Total	P value
Age group of participants	18-20 years	33	17	8	0	58	
	21-23 years	152	40	20	3	215	<0.05
	24 and above	10	3	4	1	18	
Total		195	60	32	4	291	

Table 6 is showing the relationship between the levels of depression among different age group of study participants. Majority of participants were found normal. There is a statistically significant difference ($p<0.05$) of depression level in different age groups of participants.

Age group of participants * Imposter syndrome characteristic Cross tabulation

Count

		Imposter syndrome characteristic					
		Few imposter characteristics	Moderate IP experience	Frequent IP feelings	Intense IP experiences	Total	P value
Age group of participants	18-20 years	9	28	17	4	58	<0.05
	21-23 years	29	94	73	19	215	
	24 and above	1	11	5	1	18	
Total		39	133	95	24	291	

Table 7 is showing the relationship between the imposter syndrome characteristics among different age group of study participants. Majority of participants have moderate imposter characteristics. There is a statistically significant difference ($p<0.05$) of imposter characteristics in different age groups of participants.

Sex of study participants * Stress level among participants Cross tabulation

Count

		Stress level among participants				
		Normal	Mild	Moderate	Total	P value
Sex of study participants	Female	104	13	4	121	<0.05
	Male	146	22	2	170	
Total		250	35	6	291	

Table 8 is showing the relationship between the levels of stress among different sex group of study participants. Majority of participants were found normal. There is a statistically significant difference ($p<0.05$) of stresslevel in different sex groups of participants.

Sex of study participants * Anxiety level among study participants Cross tabulation

Count

		Anxiety level among study participants						
		Normal	Mild	Moderate	Severe	Extremely Severe	Total	P value
Sex of study participants	Female	67	12	30	10	2	121	<0.05
	Male	93	26	35	15	1	170	
Total		160	38	65	25	3	291	

Table 9 is showing the relationship between the levels of anxiety among different sex group of study participants. Majority of participants were found normal. There is a statistically significant difference ($p<0.05$) of anxiety level in different sex groups of participants

Sex of study participants * Depression level in participants Cross tabulation

Count

		Depression level in participants					
		Normal	Mild	Moderate	Severe	Total	P value
Sex of study participants	Female	82	23	14	2	121	<0.05
	Male	113	37	18	2	170	
Total		195	60	32	4	291	

Table 10 is showing the relationship between the levels of depression among different sex group of study participants. Majority of participants were found normal. There is a statistically significant difference ($p<0.05$) of depression level in different sex groups of participants.

Sex of study participants * Imposter syndrome characteristic Cross tabulation

Count

		Imposter syndrome characteristic				Total	
		Fewimposter characteristics	Moderate IP experience	Frequent IP feelings	Intense IP experiences		P value
Sex of study participants	Female	17	57	35	12	121	
	Male	22	76	60	12	170	<0.05
Total		39	133	95	24	291	

Table 11 is showing the relationship between the imposter characteristics among different sex group of study participants. Majority of participants have moderate imposter characteristics. There is a statistically significant difference ($p<0.05$) of imposter characteristics in different sex groups of participants.

Year of study * Stress level among participants Cross tabulation

Count

		Stress level among participants				
		Normal	Mild	Moderate	Total	P value
Year of study	3rd year	113	17	1	131	
	4th year	137	18	5	160	<0.05
Total		250	35	6	291	

Table 12 is showing the relationship between the stress level among differentyear of study groups participants. Majority of participants were found normal. There is a statistically significant difference ($p<0.05$) of stress level in different year of study group participants.

Year of study * Anxiety level among study participants Cross tabulation

Count

		Anxiety level among study participants						
		Normal	Mild	Moderate	Severe	Extremely Severe	Total	P value
Year of study	3rd year	62	19	36	13	1	131	
	4th year	98	19	29	12	2	160	<0.05
Total		160	38	65	25	3	291	

Table 13 is showing the relationship between the anxiety level among differentyear of study groups participants. Majority of participants were found normal. There is a statistically significant difference ($p<0.05$) of anxiety level in different year of study group participants.

Year of study * Depression level in participants Cross tabulation

Count

		Depression level in participants					
		Normal	Mild	Moderate	Severe	Total	P value
Year of study	3rd year	80	35	15	1	131	
	4th year	115	25	17	3	160	<0.05
Total		195	60	32	4	291	

Table 14 is showing the relationship between the depression level among different year of study groups participants. Majority of participants were found normal. There is a statistically significant difference ($p<0.05$) of depression level in different year of study group participants.

Year of study * Imposter syndrome characteristic Cross tabulation

Count

		Imposter syndrome characteristic					
		Few imposter characteristics	Moderate IP experience	Frequent IP feelings	Intense IP experiences	Total	P value
Year of study	3rd year	13	67	44	7	131	
	4th year	26	66	51	17	160	< 0.05
Total		39	133	95	24	291	

Table 15 is showing the relationship between the imposter characteristics among differentyear of study groups participants. Majority of participants have moderate imposter characteristics. There is a statistically significant difference ($p<0.05$) ofimposter characteristics in different year of study group participants.

Imposter syndrome characteristic * Stress level among participants Cross tabulation

Count

		Stress level among participants				
		Normal	Mild	Moderate	Total	P value
Imposter syndrome characteristic	Few imposter characteristics	37	2	0	39	
	Moderate IP experience	124	9	0	133	
	Frequent IP feelings	78	14	3	95	<0.05
	Intense IP experiences	11	10	3	24	
Total		250	35	6	291	

Table 16 is showing the relationship between the imposter characteristics and stress level among different group of study participants. Majority of participants were found normal. There is a statistically significant difference ($p<0.05$) of imposter characteristics and stress level in different group of study participants.

Imposter syndrome characteristic * Anxiety level among study participants Cross tabulation

Count

		Anxiety level among study participants						
		Normal	Mild	Moderate	Severe	Extremely Severe	Total	P value
Imposter syndrome characteristic	Few imposter characteristics	34	0	2	3	0	39	
	Moderate IP experience	79	17	31	6	0	133	
	Frequent IP feelings	40	18	27	9	1	95	< 0.05
	Intense IP experiences	7	3	5	7	2	24	
Total		160	38	65	25	3	291	

Table 17 is showing the relationship between the imposter characteristics and anxiety level among different group of study participants. Majority of participants were found normal. There is a statistically significant difference ($p<0.05$) of imposter characteristics anxiety level in different group of study participants.

Imposter syndrome characteristic * Depression level in participants Cross tabulation

Count

		Depression level in participants					
		Normal	Mild	Moderate	Severe	Total	P value
Imposter syndrome characteristic	Few imposter characteristics	36	1	2	0	39	
	Moderate IP experience	92	31	10	0	133	<0.05
	Frequent IP feelings	59	22	12	2	95	
	Intense IP experiences	8	6	8	2	24	
Total		195	60	32	4	291	

Table 18 is showing the relationship between the imposter characteristics and depression level among different group of study participants. Majority of participants were found normal. There is a statistically significant difference ($p<0.05$) of imposter characteristics and depression level in different group of study participants.

DISCUSSION:

Imposter syndrome is not something new and now it has gained more significance in the research field because of its prolonged and pernicious effects on individuals and society. In this study total 291 participants were recruited, among them there was male preponderance i.e.: 58.4% males against 41.6% female. 58.4% of our total participants were from 4th year MBBS and 41.6% were from 3rd year MBBS. Results of our study showed a significant association of imposter syndrome with mental health problems like stress, anxiety and depression. Previous studies have also shown that people suffering from imposter have an increased level of anxiety, stress, depression and other psychosomatic symptoms. There is positive correlation between imposter syndrome and all aspects of mental health i.e.: somatic symptoms, anxiety, insomnia, social dysfunction and depression (8)

In another study in 2007 Muhammad Atif and his colleagues (9) found that 47.5% of their total study participants, who were also medical students like our study participants, were suffering from imposter syndrome. But in their study, there was female preponderance among total study participants i.e.: 58.7% females against 41.3% males. Whereas in our study 13. 4% participants were found to have few imposter characteristics, 45.7% students had moderate imposter experience, 32.6% students had frequent imposter feelings and 8.2% students were suffering from intense imposter experience. The reason for this high prevalence may be since 41.6% of our total participants were from 3rd year MBBS in which students in PAKISTAN are first time introduced to clinical ward postings where they are supposed to use their basic medical knowledge to develop practical skills like examination and history taking. Also, interaction with patients for the first time on academic and professional ground challenges the social skills of students which make them more prone to imposter. In two previous studies (10, 11) it was found that increased age is associated with decrease imposter feelings but other three studies (12-14) in past showed no effect of age on imposter feelings. In present study students were divided in three age groups and results showed that in students of age group 18-20 years, 9/58 had few imposter characteristics ,28/58 had moderate IP experience ,17/58 had frequent IP feelings and 4/58 had intense imposter experience. In students of age group21-23 years, 29/215 had few imposter characteristics, 94/215 had moderate IP experience, 73/215 had frequent IP feelings and 19/215 had intense imposter experience. In students of age group 24 years and above, 19/215 only one student had few imposter characteristics, 11/215 had moderate IP experience, 5/215 had frequent IP feelings and 1/215 had intense imposter experience.

Previous studies have shown mixed results regarding gender distribution of imposter syndrome. In many studies it was found that imposter syndrome is more prevalent in females (15, 16) While other studies (10, 17, 18) showed no significant variation in frequencies of imposter syndrome among males and females. In present study 17/121 females had few imposter characteristics,57/121 females had moderate IP experiences, 35/121 females had frequent IP feelings and 12/121 females had intense IP experience. In males 22/170 had few IP characteristics, 76/170 had moderate IP experience, 60/170 had frequent IP feelings and 12/170 had intense IP experience.

In a study conducted in Egypt (19) high frequency of stress(59.9%) , anxiety(73%) and depression(65%) was found among medical students. Stress scores were significantly higher than depression and anxiety($P=0.001$). Another study conducted in Pakistan (20) showed the prevalence of depression, anxiety and stress among medical students as 40.90%, 74.2% and 50% respectively. In the present study 12% participants had mild stress, 2.1% participants had moderate stress, 13.1% participants had mild anxiety, 22.3% participants had moderate anxiety, 9.6% participants had severe anxiety, 20.6% participants had mild depression and 12.4% participants had moderate depression.

CONCLUSION:

Imposter syndrome is prevalent in significant frequencies among medical students of 3rd year and 4th year of MBBS in moderate levels. It has significant effects on mental health of students, and it is associated with moderate level of anxiety and mild level of stress and depression among medical students. Imposter syndrome is highly prevalent among the students of age group 18-23 years. It is more prevalent among male students than femalestudents. It is more frequently present among students of 3rd year MBBS than 4th year MBBS.

SUGGESTIONS:

We should train teachers and students regarding imposter syndrome and spread awareness among them by organizing mental health awareness sessions. Every collage/university should have psycho-social wellbeing centres where students can freely discuss their mental health related issues. We should tell studentsto talk to trusted peers or mentors about their fears which can help them to realize that imposter syndrome is both normal and irrational.

LIMITATIONS:

This was the cross-sectional study due to limited time and limited resources. We just included 3rd. year and 4th year MBBS students of LUMHS, Jamshoro and did not include other private and public medical universities. We used online Google form for data collection. We just collected data from 291 students due to limited time.

REFERENCES:

1. prevention. Cfdca. About mental health 2022 [Available from: **https://www.cdc.gov/mentalhealth/learn/index.htm#:~:text=Mental%20health%20includes%20our%20emotional,others%2C%20and%20make%20healthy%20choices.&text=Mental%20health%20is%20important%20at,childhood%20and%20adolescence%20through%20adulthood.**
2. muhammad fazil hussain qureshi D. A comparative cross sectional analysis on prevalence of depression and associated risk factors among medical students and doctors of karachi,Pakistan. 2020.
3. Noman rehmani quak. stress anxiety and depression in students of a private medical school in karachi,pakistan. 2018.
4. S N B INAM AS EA. Prevalance of anxiety and depression among medical students of private university. 2003.
5. Bravata DM, Watts SA, Keefer AL, Madhusudhan DK, Taylor KT, Clark DM, et al. Prevalence, Predictors, and Treatment of Impostor Syndrome: a Systematic Review. J Gen Intern Med. 2020;35(4):1252-75.
6. Chrisman SM, Pieper WA, Clance PR, Holland CL, Glickauf-Hughes C. Validation of the Clance Imposter Phenomenon Scale. Journal of Personality Assessment. 1995;65(3):456-67.
7. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories [press release]. Netherlands: Elsevier Science1995.
8. Kananifar N, Seghatoleslam T, Atashpour S, Hoseini M, Habil M, Danaee M. The Relationships between Imposter Phenomenon and Mental Health in Isfahan Universities Students. International Medical Journal (1994). 2015;Vol. 22:pp. 144-6.
9. Latif M. Impostor Syndrome among Pakistani Medical Students. Annals of King Edward Medical University Lahore Pakistan. 2017;23.
10. Chae J-H, Piedmont R, Estadt B, Wicks R. Personological Evaluation of Clance's Imposter Phenomenon Scale in a Korean Sample. Journal of personality assessment. 1996;65:468-85.
11. Thompson T, Davis H, Davidson J. Attributional and affective responses of impostors to academic success and failure outcomes. Personality and Individual Differences. 1998;25(2):381-96.
12. Oriel K, Plane MB, Mundt M. Family medicine residents and the impostor phenomenon. Fam Med. 2004;36(4):248-52.
13. Lester D, Moderski T. The Impostor Phenomenon in Adolescents. Psychological Reports. 1995;76:466.
14. Want J, Kleitman S. Imposter phenomenon and self-handicapping: Links with parenting styles and self-confidence. Personality and Individual Differences. 2006;40(5):961-71.
15. Cokley K, Awad G, Smith L, Jackson S, Awosogba O, Hurst A, et al. The Roles of Gender Stigma Consciousness, Impostor Phenomenon and Academic Self-Concept in the Academic Outcomes of Women and Men. Sex Roles. 2015;73.
16. Cusack C, Hughes J, Nuhu N. Connecting Gender and Mental Health to Imposter Phenomenon Feelings. Psi Chi Journal of Psychological Research. 2013;18:74-81.
17. Ghorbanshirodi S, editor The Relationship between Self-Esteem and Emotional Intelligence with Imposter Syndrome among Medical Students of Guilan and Heratsi Universities2012.
18. Jöstl G, Steinberg E, Lüftenegger M, Schober B, Spiel C. When Will They Blow My Cover?: The Impostor Phenomenon Among Austrian Doctoral Students. Zeitschrift für Psychologie/Journal of Psychology. 2012;220:109-20.
19. Fawzy M HS. Prevalence of pychological stress,depression and anxiety among medical students in Egypt 2017 [Available from: **https://pubmed.ncbi.nlm.nih.gov/28575777/**.
20. Rizvi F, Qureshi A, Rajput A, Afzal M. Prevalence of Depression, Anxiety and Stress (by DASS Scoring System) among Medical Students in Islamabad, Pakistan. British Journal of Medicine and Medical Research. 2015;8:69-75.