

# A Cross-Sectional Study on the Correlation Between Gender and Personality with the Prevalence and Frequency of Nightmares Experienced among Medical Students

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## ABSTRACT

This study is aimed to determine the correlation between gender and personality with the prevalence and frequency of nightmares experienced among medical students. This is a cross-sectional study done among 141 medical students of batch 32 in a span of 3 months using a self-structure questionnaire of nightmares among medical students. The data of the current study was analyzed using Epi Info software and the outcome was interpreted and presented in the form of tables and graphs. The association of gender and nightmare frequency show a positive association (4.05). Males tend to suffer more nightmares compared to females ( $p < 0.05$ ). The association between boundary personality and nightmares frequency showed to be positive as well (6.84), wherein individuals with a thin boundary personality tend to experience more frequent nightmares compared to the individuals with thick boundary personality and it is found to be significant ( $p < 0.05$ ).

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## INTRODUCTION

Nightmares are among the most commonly experienced sleep disorders [1]. Nightmares are dreams that cause awakening due to a threat to the survival or security which occurs during rapid eye movement (REM) sleep and produce vivid dreams imagery, complete awakenings, autonomic arousals and detailed recall of the event. They are different from sleep terrors, narcolepsy, sleep panic attacks and other awakenings [1]. Risk factors contributing to nightmares include mental health disorders, post-traumatic stress disorders, drugs and substance abuse [1]. It can affect psychological, social and occupational aspects and a person's well-being [1]. According to recent study found by Agargun et al in 2005, frequent nightmares is associated with increased suicidal tendency by correlation of 0.27, contributing a significant fraction to the overall mortality rate [1,2]. Besides, findings also suggest that nightmares can cause distress associated with poor psychological function, anxiety, depression, acute stress, alcohol, substance abuse and sleep disturbance [3,4,5,6,7,8]. Globally, lifetime prevalence for a nightmare experience in the general population is unknown but may well approach 100% [1]. Another survey that was conducted in 2013 in Montreal, Canada, indicated that 76% to 86% of college students report to have had at least one nightmare in a month whereas 8% to 29% of them report to have more than one nightmare in a month [5]. According to the study conducted by the Department of Social and Preventive Medicine of University Malaya on prevalence and predictors of recent illness and injury among the Malaysian population, nightmares were classified under psychiatric and nervous system disorders among others showing prevalence of 0.3% as a whole [10]. However, no study was conducted separately on the prevalence of nightmares in the Malaysian setting especially among medical students. Thus, we carried out this study.

Previous studies have shown the correlation of one's personality in terms of thick and thin boundaries as well as gender with nightmare frequency. Personality is discussed in terms of boundaries. Boundaries lie on a continuum from thick to thin [12]. Boundary thinness is described by Hartmann as a degree of connection or permeability between separate processes, function or regions. Zborowski, Hartmann, Newsom, and Banar reported that excessive boundary thinness displays insecure attachment and interpersonal dependency [13]. Boundary thickness implies a degree of separateness. They are usually detached or unaffected by their surroundings and relationships [12]. Basically, a person with a thick boundary personality can differentiate well between reality and fantasy. Studies have shown that people with thin boundary personality tend to have frequent nightmares compared to thick [12,14]. However, according to the thesis by Joshua Lambert from Eastern Illinois University, USA, it is stated that there is no relation between personality boundaries and nightmare frequency [13]. In 2011, Schredl and Reinhard carried out a clinical review to study gender differences in nightmare frequency in the general population. According to the study, women suffer more from nightmares compared to men [15].

The occurrence of nightmares among medical students is said to be more prominent. However, among them, some might experience nightmares more frequently compared to others. Does one's' gender or personality contribute to this statement? Therefore, this

study is aimed to determine the correlation between gender and personality with the prevalence and frequency of nightmares experienced among medical students.

## **METHODS**

### **Study design**

The design of this study is a cross-sectional study. It was done using a self - structured questionnaire for nightmares among medical students of different personalities and gender.

### **Subject & Settings**

This study was carried out on the students studying at Melaka Manipal Medical College, Muar Campus, Malaysia.

**Sample size:** n=141 students of Melaka Manipal Medical College Batch 32.

### **Duration of the study**

The total duration of this study was 3 months from the time of the study proposal until the submission of the study.

### **Inclusion and Exclusion Criteria**

All the MMMC Batch 32 students aged 19 - 30 years old including both local and international students. Exclusion criteria include students of other batches and faculty members.

### **Assessment tools**

The assessment tool used for this study was a Self-Structure questionnaire for nightmares among medical students of different personalities and gender. It consists of 4 sections, the first being a consent form for participation in the study and the second section consists of details of demography. The third and fourth sections consist of questions related to the relation of personalities and gender with nightmare frequencies among medical students. Both the third and fourth sections contain 18 questions each.

## RESULTS

The data of the current study was analyzed using Epi Info software and the outcome was interpreted and presented in the form of tables and graphs as in the following. The descriptive data of the current study is presented in Table 1, Table 2 and Table 3 comprising frequency and percentage of each variable. The quantitative comparison of nightmare frequency amongst selected independent variables was done where in the measure of central tendency and measure of dispersion of the data collected were determined (median and Interquartile range) and tabulated below (refer Table 4). Chi-square test was used to measure the association between nightmare frequency and selected independent variables except boundary personality and gender (Mann Whitney U-test was used). The results were tabulated in Table 5. Based on table 5, the association of gender and nightmare frequency show a positive association (4.05). Males tend to suffer more nightmares compared to females and it is significant ( $p < 0.05$ ). The association between boundary personality and nightmares frequency showed to be positive as well (6.84), where in individuals with a thin boundary personality tend to experience more frequent nightmares compared to the individuals with thick boundary personality and it is found to be significant ( $p < 0.05$ ). The relationship between boundary personality and nightmare frequency is presented in Graph 1 where thick and thin boundary personality were plotted against a number of individuals experiencing frequent and rare nightmare frequencies (refer Graph 1). The relationship between gender and nightmare frequency is presented in Graph 2 where in male and female were plotted against the number of individuals experiencing frequent and rare nightmare frequencies (refer Graph 2).

Table 1: Table of Frequency and percentage of demographic and socioeconomic variables.

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b><i>Gender</i></b>		
Female	50	65.54%
Male	91	35.46%
<b><i>Ethnicity</i></b>		
Malay	46	32.62%
Chinese	36	25.53%
Indian	53	37.59%
Others	6	4.26%
<b><i>Religion</i></b>		
Islam	50	35.46%
Buddhism	26	18.44%
Hinduism	39	27.66%
Christianity	15	10.64%
Sikhism	5	3.55%
Others	6	4.26%
<b><i>Relationship status</i></b>		
Single	104	73.76%
In a relationship	33	23.40%
Engaged	2	1.42%
Married	2	1.42%
<b><i>Monthly Allowance</i></b>		
Less than RM 500	39	27.66%
RM 500-1000	87	61.70%
More than RM 1000	15	10.64%
<b><i>Hometown</i></b>		
Rural	13	9.22%
Suburban	53	37.59%
Urban	75	53.19%
<b><i>Residence</i></b>		
Hostelites	110	78.01%
Non-hostelites	31	21.99%

Table 2: Table of Frequency and Percentage of Boundary Personality Status.

<b>BPQ Status</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Thin	84	59.57%
Thick	57	40.43%

Table 3: Table of Frequency and Percentages of Nightmare Knowledge, Risk Factors, Recall, Intensity and Frequency Variables.

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b><i>Knowledge Score</i></b>		
0	1	0.71%
1	1	0.71%
2	1	0.71%
3	2	1.43%
4	4	2.86%
5	12	8.57%
6	37	26.43%
7	44	31.43%
8	38	27.14%
<b><i>Risk Factors</i></b>		
<b>Anxious</b>		
Yes	84	59.57%
No	57	40.43%
<b>Antidepressant Medications</b>		
Yes	3	2.13%
No	138	97.87%
<b>Sleeping Disorders</b>		
Yes	28	19.86%
No	113	80.14%
<b>Dream recall</b>		
Frequent	78	55.32%
Rare	63	44.68%
<b>Intensity of dreams</b>		
Not at all intense	16	11.35%
Not that intense	51	36.17%
Somewhat intense	51	36.17%
Quite intense	21	14.89%
	2	1.42%

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Very intense		
<b>Emotional tone of dreams</b>	0	0%
Very negative	33	23.40%
Somewhat negative	94	66.67%
Neutral	11	7.80%
Somewhat positive	3	2.13%
Very positive	65	46.10%
<b>Nightmares</b>	76	53.90%
Frequent		
Rare		
	80	56.74%
<b>Recurrent nightmares</b>	61	43.26%
Yes		
No		
	59	41.84%
<b>Lucid dreams</b>	82	58.16%
Frequent		
Rare		
	139	98.58%
<b>Read something on dreams</b>	2	1.42%
Yes		
No		

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Table 4: Quantitative comparison of nightmare frequency amongst selected independent variables.

<b>Independent</b>	<b>Variable</b>	<b>Median (IQR)</b>	<b>P value</b>
Gender	Female	4.0 (2.5)	0.044**
	Male	5.0 (2.5)	
Ethnicity	Chinese	4.0 (3.5)	0.705
	Indian	4.0 (2.0)	
	Malay	4.0 (3.0)	
	Others	5.0 (2.5)	
Religion	Islam	4.0 (3.5)	0.851
	Buddhism	4.0 (1.5)	
	Christianity	4.0 (1.5)	
	Sikhism	4.0 (2.5)	
	Hinduism	4.0 (3.0)	
	Others	4.5 (3.0)	
Relationship Status	Single	4.0 (3.5)	0.110
	In Relationship	5.0 (1.5)	
	Engaged	5.5 (0.5)	
	Married	7.5 (0.5)	
Monthly Allowance	Less than RM500	4.0 (2.5)	0.410
	RM500-RM1000	4.0 (3.0)	
	More than RM1000	5.0 (4.5)	
Hometown	Rural	5.0 (1.0)	0.906
	Suburban	5.0 (2.5)	
	Urban	4.0 (2.0)	
Residence	Hostelites	4.0 (2.5)	0.822
	Non Hostelites	4.0 (3.5)	
BPQ	Thin	5.0 (2.0)	0.009**
	Thick	4.0 (2.0)	
Risk factors	Yes	6.0 (5.0)	0.349



- Drug (Anti-Depressant)	No	4.0 (2.5)	
- Anxiety	Yes	4.0 (3.0)	0.443
	No	4.0 (1.0)	
- Sleeping Disorder	Yes	5.0 (1.5)	0.118
	No	4.0 (3.5)	
Dream recall	Frequent	5.0 (1.5)	0.004**
	Rare	2.0 (1.5)	
Recurrent Nightmare	Yes	5.0 (2.5)	0.031**
	No	4.0 (2.5)	
Lucid Dream	Frequent	5.0 (2.0)	0.04**
	Rare	4.0 (2.0)	

\*\* p < 0.05 ; significant

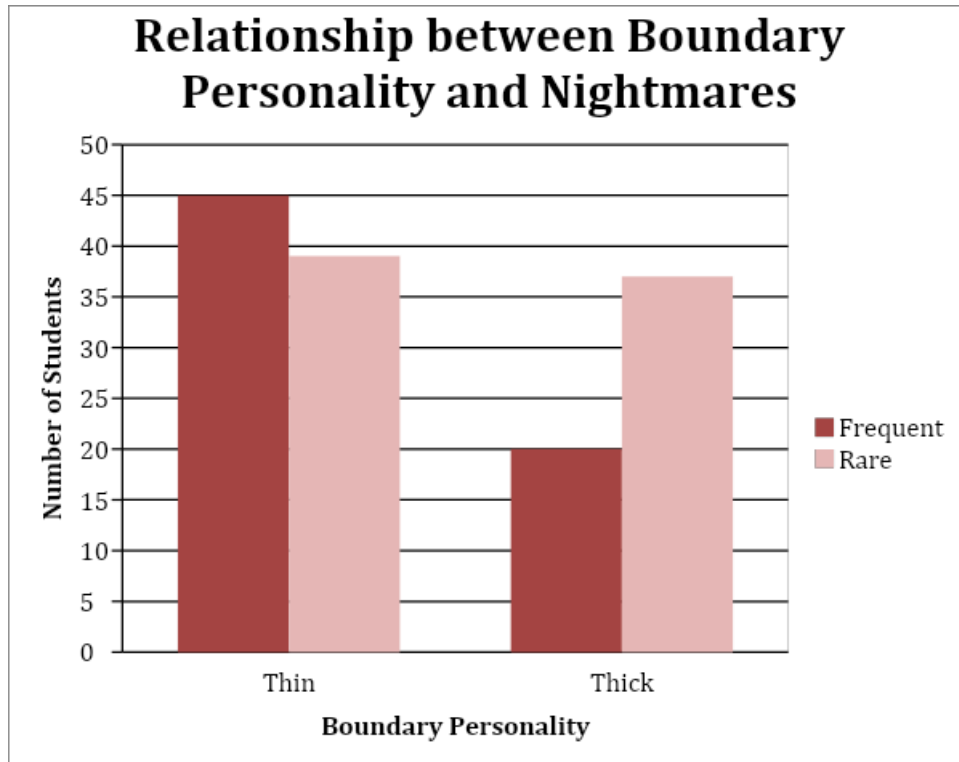
Table 5: Association of Nightmare Frequency with Independent Variables.

Characteristics	Frequent	Rare	Odd Ratio	Chi-Square Value	p-value
<b>Gender</b>			1.44 (0.72-2.89)	4.05*	0.044**
Male	26 (52.00)	24 (48.00)			
Female	39 (42.86)	52 (57.14)			
<b>Ethnicity</b>					
Indian (ref.)	23 (43.40)	30 (56.60)	1 (ref.)		
Chinese	17 (47.22)	19 (52.78)	1.17 (0.50-2.73)	0.13	0.722
Malay	21 (45.65)	25 (54.35)	1.10 (0.50-2.43)	0.05	0.822
Others ****	4 (66.67)	2 (33.33)			
<b>Religion</b>					
Christianity	5 (33.33)	10 (66.67)	1 (ref.)		
Islam	23 (46.00)	27 (54.00)	1.70 (0.51-5.71)	0.76	0.385
Buddhism	13 (50.00)	13 (50.00)	2.00 (0.53-7.49)	1.07	0.300
Hinduism	19 (48.72)	20 (51.28)	1.90 (0.55-6.59)	1.04	0.308
Sikhism**	2 (40.00)	3 (60.00)			
Others**	3 (50.00)	3 (50.00)			
<b>Relationship Status</b>					
Single	44 (42.31)	60 (57.69)	1 (ref.)		
In Relationship	17 (51.52)	16 (48.48)	1.45 (0.66-3.18)	0.86	0.354
Engaged**	2 (100.00)	0 (0.00)			
Married**	2 (100.00)	0 (0.00)			
<b>Monthly Allowances</b>					
Less than RM500	15 (38.46)	24 (61.54)	1 (ref.)		
RM500-RM1000	41 (47.13)	46 (52.87)	1.43 (0.66-3.08)	0.82	0.366
More than RM1000	9 (60.00)	6 (40.00)	2.40 (0.71-8.11)	2.04	0.154
<b>Hometown</b>					
Urban	30 (40.00)	45 (60.00)	1 (ref)		
Rural	8 (61.54)	5 (38.46)	2.40 (0.72 – 8.04)	2.09	0.148
Suburban	27 (50.94)	26 (49.06)	1.56 (0.77-3.17)	1.51	0.220
<b>Residence</b>			1.05 (0.47-2.34)	0.01	0.906
Non Hostelites	14 (45.16)	17 (54.84)			
Hostellites	51 (46.36)	59 (53.64)			
<b>BPQ2</b>			2.13 (1.07-4.27)	6.84*	0.009**
Thin	45 (53.57)	39 (46.43)			
Thick	20 (35.09)	37 (64.91)			

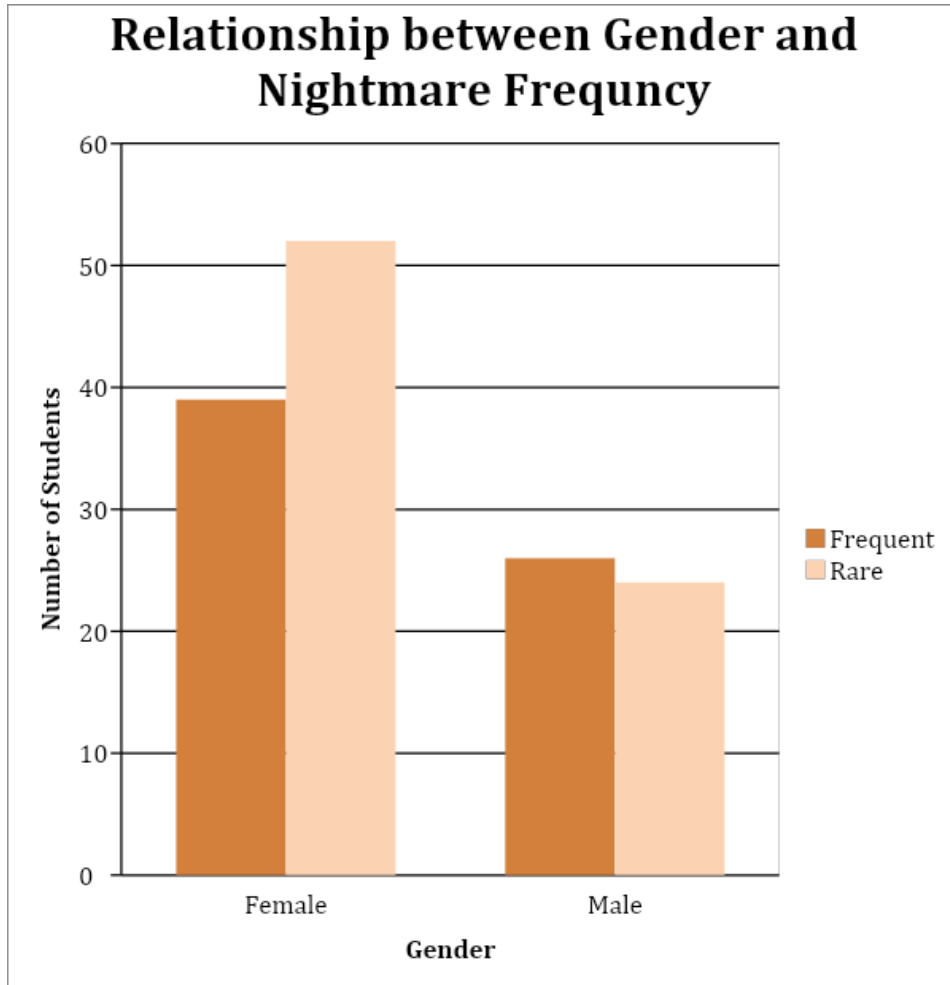
<b>Risk Group</b>					
Drug(anti-depressant)			0.42 (0.04-4.74)	0.52	0.470
Yes	2 (66.67)	1 (33.33)			
No	63 (45.65)	75 (54.35)			
Anxious			1.31 (0.67-2.58)	0.61	0.433
Yes	41 (48.81)	43 (51.19)			
No	24 (42.11)	33 (57.89)			
Sleeping Disorder			1.74 (0.75-4.02)	1.71	0.190
Yes	16 (57.14)	12 (42.86)			
No	49 (43.36)	64 (56.64)			
<b>Dream recall</b>			2.93 (1.46-5.88)	9.44	0.002**
Frequent	45 (57.69)	33 (42.31)			
Rare	20 (31.75)	43 (68.25)			
<b>Recurrent Nightmare</b>			2.06 (1.04-4.08)	4.36	0.037**
Yes	43 (53.75)	37 (46.25)			
No	22 (36.07)	39 (63.93)			
<b>Lucid Dream</b>			2.86 (1.43 – 5.71)	9.09	0.003**
Frequent	36 (61.02)	23 (38.98)			
Rare	29 (35.37)	53 (65.63)			
<b>Reading</b>					
yes	64 (46.04)	75 (53.96)			
no	1 (50.00)	1 (50.00)			

\*\* p <0.05; significant

\* Association tested using Mann Whitney U-test



Graph 1: The relationship between Boundary personality and nightmare frequency.



Graph 2: Relationship between gender and nightmare frequency.

## DISCUSSION

In this present study, we examined the association of one's boundary personality with nightmare frequency and the causal role of other physical and psychological factors in this association. To our knowledge, this is the first study conducted to find the relationship between these factors with nightmare frequency among the medical students. Altogether, our results confirmed a significant positive relationship between the male gender, those with thick boundary personality, increased dream recall frequency, recurrent nightmares and lucid dreaming to having 'frequent' nightmares, where it is defined as an experience of nightmare about once a month to as frequent as several times a week in our study. However, some factors like antidepressant drug usage, anxiety and sleeping disorders which were known to have an association with an increased nightmare frequency were found to be insignificant [19]. There was also no significant relationship

between ethnicity, religion, relationship status, monthly allowance, hometown and residence with our studied outcome.

In this study, people with thin boundary personality tend to have frequent nightmares compared to people with thick boundary personality. A person with thin boundaries may have difficulty separating his or her sense of self from the environment and consequently be very emotional and based on studies conducted previously, it is proven that people with thin boundary personality tend to have frequent nightmares compared to thick [12,14].

Furthermore, we also found that people with thin boundaries have lucid dreams more frequently compared to thick boundaries. Lucid dreaming has been defined as a dream state in which one is aware that one is dreaming during the dream [14]. This finding is explained in a previous study stating that thin boundaries overall tend to be more aware of, and be more comfortable in, the daydreaming/dreaming end of the continuum [12,14]. Moreover, people with frequent nightmares usually engage in lucid dreams to cope with their nightmares [13]. Previous research also shows that nightmare frequency is correlated with lucid dreaming frequency, which may imply that lucid dreaming occurs to halt nightmares [12, 20].

Based on the results of this study, it is also found that people with recurrent nightmares have more nightmares. According to a cognitive model of recurrent nightmares study by Max Planck Institute of Psychiatry, Germany, it is explained that the repetitive storyline of recurrent nightmares is based upon a real-life traumatic event (post-traumatic nightmares) or upon a broader theme such as being chased or losing a relative (idiopathic nightmares) [21]. The information about the storyline of a recurrent nightmare is represented in the memory as a fixed expectation pattern: a script, the nightmare script is not only an isolated but also a highly distressing memory that, unlike other dream memories, is clearly recalled after its occurrence and during the day [21].

People with frequent nightmares in this study are able to recall their dreams more compared to people with rare nightmares. In addition, based on the data obtained it shows that thin boundary personality can recall their dream better compared to thick boundary personality. According to Hartmann and Kunzendorf's literature reviews (2007), it is found that boundary structure has been consistently related to how frequently people recall dreams in several studies [12]. Another study stated that thin boundaries appear to be the only personality measure clearly related to dream recall frequency [14].

Overall, the negative findings of the present study indicate that none of the risk factors/trait measures (like sleeping disorder, anxiety and antidepressant drugs) had significant correlations with nightmare frequency among medical students.

However, based on the previous studies of Agargun, which states that nightmare sufferers have a history of sleeping disorders, anxiety and antidepressant drug consumption, which contributes to increase in nightmare frequency [1,11]. In addition, based on the role of dreaming in post-traumatic stress disorder Wittmann and Schredl have stated that the effect of waking life on nightmares can also be observed in trauma-related nightmares in patients suffering from post-traumatic stress disorder [22,23]. Furthermore, Michael Schredl has mentioned that there are several candidate variables like dream recall frequency, depression, anxiety, childhood trauma, and insomnia associated with nightmare frequency and show stable gender differences themselves [15, 22,24,25].

Regarding risk factors that contribute to frequent nightmares, the findings of the present study support previous findings that falling, being chased. The present findings, however, should be complemented by a content analytic study because, in the present study, the participants were asked for recurrent nightmare, dream recall, and lucid dream and the distribution might be different if single nightmare reports stemming from a large sample and, preferably, a long data collection period were analyzed.

From our study, we found that male students have more frequent nightmares compared to female students. This finding is not consistent with the study conducted by Tore A. Nielsen and his colleague where females were observed to have reported more frequent nightmares than males [26]. The consistency in which females reported a greater incidence of nightmares remains an interesting finding and has been reported by many other researchers as well [13, 15, 27, 28, 29].

However, there was also a study conducted in Germany, which found no association between gender and nightmare frequency if dream recall frequency was statistically controlled [30].

This difference may be due to the fact that medical students in our college have to handle high levels of stress in their studies. According to an article reviewed by Dr. Brunilda Nazario, women produce more oxytocin hormone compared to men during stress which helps them relax in those situations [19]. As stated by a few articles, stress is one of the main factors that instigate nightmares [27, 31, 32, 33]. Thus, it is only appropriate to postulate the association of reduced stress handling among males leading to higher nightmare frequency.

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