

# PREVALENCE AND CORRELATES OF ANGER AMONG UNDERGRADUATE STUDENTS IN MALAYSIA

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## Abstract

Anger is a vital emotion for human survival. Mild level of anger that occurs briefly can be beneficial, but it may cause harm if it occurs continuously with poor control. Specifically, among medical doctors, controlling emotion is important to keep check of their professional conduct. In Malaysia, there is a growing number of reports on the misconduct and aggressive behaviours of health care workers, including housemen and medical doctors, proving a need to explore the issue among current medical trainees. Hence, this study aims to investigate the association between socio-demographic characteristics with anger among medical students in the Universiti Putra Malaysia. Cross-sectional study with stratified random sampling method was conducted. Novaco Anger Inventory and the State and Trait Anger Expression Inventory-2, was used in current study. The results showed a significant association between gender ( $p=0.015$ ) and intensity of anger. Besides, results also showed a significant association between gender and trait anger levels ( $p=0.003$ ). For anger expression and control, the results showed a significant associations between year of study ( $p=0.028$ ) and gender ( $p=0.015$ ), with anger expression and control. There was a relationship between year of study and anger expression, as well as gender and intensity of anger, trait anger levels, and anger expression.

*Keywords:* anger intensity, anger expression, anger control, state anger, trait anger

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## 1. Introduction

In Webster's dictionary, anger is defined as "a strong feeling of displeasure". It is important to distinguish between anger and aggression. Anger is an acceptable and healthy emotion, while aggression on the other hand is not an acceptable method of expressing anger [1]. Anger can also evolve from empathic concern or perceptions of injustice which is related to the cognitive factors such as hostility [2] and cynicism [3]. Though anger have shown to have its useful application when it appears mildly in a short period of time, it may leave a significant negative effect to physiological and psychological when it occurs contin-

uously or in severe condition [4] Anger is an exaggerated emotional response which is not beneficial to the person's values, beliefs, or rights [5]. A person's ability to act rationally is affected when the anger cannot be controlled properly and they acted purely out of emotion [6], [7]. In addition, previous study have found that venting anger itself can increased and intensified the angry experience [8]. Albeit previous studies have demonstrated the bad sides of anger, anger eventually is part of the human normal physical doings and is a part of the important defensive type mechanism that evolved from human evolutionary path.

Anger is comprised of 3 major components, (1) physical reactions, (2) cognitive experience, and (3) behavioural responses [9]. The first compo-

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ment, physical reactions is referred to the rush of adrenaline and some responses such as an increased heart rate, increased blood pressure and also tightening muscles that is often known as the “fight or flight” response. The second component is the cognitive experience of anger, the way we perceived and comprehended the anger experience. The third component is behavioural response, that is the way we expressed the anger [9].

Anger is highly associated with mental health problems. Current focus of healthcare is now shifting towards accommodating both mental health and also physical health. The world nowadays are more aware of the negative effect that mental health problems may have on the individuals and families. The prevalent observation of mental health issues [10] and both allocation of funding in mental healthcare [11] have alerted us the necessity to pay close attention to mental health.

## 2. Materials and Method

Study Location, Study Design and Study Population

The study was conducted in the Faculty of Medicine and Health Sciences (FMHS), Universiti Putra Malaysia. This study used cross-sectional study design to determine the prevalence of anger and sociodemographic correlates among undergraduate students who major in medicine. Medical students from Year 1 to Year 4 in the faculty were included in the current study

### 2.1. Sampling Method

We applied the stratified random sampling method in our research. Respondents were selected from a name list of the medical students of each year based on the inclusion criteria. In this research, anger expression index is calculated as follow:

$$\text{Anger Expression Index} = \text{Anger Expression Out} + \text{Anger Expression In} - (\text{Anger Control Out} + \text{Anger Control In}) + 48$$

Instruments / Questionnaires

#### 2.1.1. Novaco Anger Inventory

The Novaco Anger Inventory (Short Form) was adapted from the long form (Novaco 1975). It consists of 25 items, whereas the long form consists of 90 items. This inventory is designed to measure the degree of anger when the respondent is placed in certain situations provided with a five-point scales for each item. This scale shows convergent validity with the Buss-Durke Hostility Inventory and with the Aggression subscale of the Personality Research Form (Huss, Leak and Davis, 1993) as well as test-retest reliability of between 0.78 and 0.91 (Mills, Kroner and Forth, 1998). Cronbach's  $\alpha = 0.96$  was derived for the scale with average inter-item correlation of 0.49, an item-total correlation between 0.50 and 0.77, and a split-half reliability of 0.93. After the total score is obtained from the questionnaire, we can calculate the Irritability Quotient (IQ).

#### 2.1.2. State-Trait Anger Expression Inventory 2

STAXI-2 is a questionnaire, which consists of 57 items and three major parts. This inventory measures the intensity of anger as an emotional state (State Anger) and the disposition to experience angry feelings as a personality trait (Trait Anger). Each item contains a four-point scales that assess the intensity of anger at a particular moment and the frequency of anger experience, expression and control. The Manual presents correlations of the State Anger and Trait Anger scales with other personality scales. It also provides evidence supporting validity of the anger expression scales. When interpreting the STAXI-2 scales and subscales, there are percentile ranges to be referred to for different genders and ages. If the score falls in between 25<sup>th</sup> to 75<sup>th</sup> percentile, it is considered within the normal range. However, if the score falls above 75<sup>th</sup> percentile, it means that the individual might experience and express anger to a degree that most probably will interfere their optimal functioning (Spielberger, 1988; Spielberger, 1996).

### 2.2. Data Collection Techniques

Data was collected from self-administered written questionnaires to the subjects. Two question-

naires that were distributed including State-Trait Anger Expression Inventory 2 (STAXI-2) and Novaco Anger Inventory.

### 2.3. Quality Control and Pilot Study

Although the State-Trait Anger Expression Inventory-2 (STAXI-2) and Novaco Anger Inventory (Short Form) had been validated in previous study, a pilot test was carried out. A total of 10 FMHS medical students are randomly selected to ensure the procedures run smoothly and efficiently. In our pilot study, the Cronbach's alpha ( $\alpha=0.90$ ) for State-Trait Anger Expression Inventory 2 (STAXI-2), and ( $\alpha=0.96$ ) for Novaco Anger Inventory. Concurrent validity for both measures are between ( $r=0.77$  to  $r=0.93$ ). This shows that both of these measures are reliable and valid to be used in our current study.

### 2.4. Data Analysis

All statistical analysis was obtained by using SPSS v21.0. Prevalence of anger experienced by medical students were analyzed with descriptive statistics. For normally distributed data, independent t-test and one-way ANOVA were used to compare the mean score of anger among university students of Medicine of different gender, ethnicity and years. While for skewed data, Mann-Whitney U test and Kruskal-Wallis test were used. The level of significance for all statistical analysis was set at  $\alpha=0.05$ .

### 2.5. Study Ethics

Prior to commencement of the study, ethical clearance and approval letter were obtained from Medical Ethic Committee and the Dean of FMHS, UPM. Consent form was obtained from respondents before the study is conducted. All data and information are collected in the study to ensure confidentiality.

## 3. Results

During the sample size estimation period, the minimum estimated sample size is approximately 196 respondents. During the data collection stages, the actual sample size recorded was 206 respondents. The response rate achieved is 100%.

### 3.1. Sociodemographic factors of medical students

The sociodemographic factors include year of study, gender and ethnicity. In terms of year of study, there were 56 (27.20%) students from Year 1, 57 (27.70%) students from Year 2, 48 (23.30%) students from Year 3 and 45 (21.80%) students from Year 4. We have more males in current study,  $n=104$  (50.5%) students. While in term of ethnicity there were 104 (50.50%) Malay students, 71 (34.50%) Chinese students, 27 (13.10%) Indian students and 4 (1.90%) students from other ethnicity.

### 3.2. Prevalence of Medical Students to Intensity of Anger

Among 206 medical students, it was found that Year 4 (31.1%) medical students had a greater anger intensity. Besides, female (27.5%) and Indian (25.9%) medical students are reported to have a higher intensity of anger. Refer to Table 1 for further details.

### 3.3. Prevalence of Medical Students to State and Trait Anger Level

Among 206 medical students, 16.7% of the Year 3 medical students are reported to have a high state of anger level, which means that they were experiencing relatively intense angry feelings. Apart from that, female medical students show a higher state of anger level (12.7%) as compared to the male medical students. Malay and Indian medical students show a relatively higher state of anger level than the others which are 11.5% and 11.1% respectively. Refer to Table 2 for further details.

Among 206 medical students, Year 3 medical students (29.2%) had the highest trait anger level. Female (28.4%) and Chinese (29.6%) medical students also show the highest trait anger level. Refer to Table 2 for further details.

Table 2 shows the proportion of medical students in State and Trait Anger Expression Inventory-2. Majority of the medical students were grouped in the normal range (25<sup>th</sup> to 75<sup>th</sup> percentile) with the least proportion of 55.8% to the highest proportion which is 89.3%.

Table 1: Intensity of Anger among Medical Students

NAI Score	Description	Frequency	Percentage (%)
0-45	Low Intensity of Anger	11	5.3
46-55	More Peaceful than Average People	22	10.7
56-75	Average Intensity of Anger	80	38.8
76-85	More Irritable than Average People	50	24.3
86-100	High Intensity of Anger	43	20.9

Table 2: State and Trait Anger Expression Inventory-2 Scores among Medical Students

Score	Range	Frequency	Percentage
Total State Anger Score			
25th to 75th Percentile	Normal Range	184	89.3
>75th Percentile	High Range	22	10.7
Total Trait Anger Score			
<25th Percentile	Low Range	44	21.4
25th to 75th Percentile	Normal Range	115	55.8
>75th Percentile	High Range	47	22.8
Anger Expression Index			
<25th Percentile	Low Range	40	19.4
25th to 75th Percentile	Normal Range	138	67.0
>75th Percentile	High Range	28	13.6

### 3.4. Prevalence of Medical Students to Anger Expression Index

In this study, Year 2 (15.8%) and Year 4 (15.6%), female (15.7%) and medical students with ethnicity other than Malay, Chinese and Indian showed higher Anger Expression Index.

### 3.5. Association between Socio-demographic Factors with Novaco Anger Inventory (NAI) score

There were no significant associations between year of study ( $X^2 = 2.118$ ,  $p = 0.548$ ) and ethnicity ( $X^2 = 6.346$ ,  $p = 0.096$ ) with intensity of anger.

Table 3 shows that there was a significant association between gender ( $z = -2.432$ ,  $p = 0.015$ ) and intensity of anger.

Association of Socio-demographic Factors with State & Trait Anger Expression Inventory-2 score by Major Scales (Total State Anger Score)

There were no significant associations between year of study ( $X^2 = 0.790$ ,  $p = 0.852$ ), gender ( $z = -1.088$ ,  $p = 0.276$ ) and ethnicity ( $X^2 = 2.103$ ,  $p =$

0.551) with state anger level as the p-values obtained were  $p > 0.05$ .

Association of Socio-demographic Factors with State & Trait Anger Expression Inventory-2 score by Major Scales (Total Trait Anger Score)

Table 4 shows that there was a significant association between gender ( $t = -2.962$ ,  $p = 0.003$ ) with trait anger level. Female medical students were experiencing intense angry feelings more frequently than male medical students. Year of study ( $F = 2.045$ ,  $p = 0.109$ ) and ethnicity ( $F = 0.698$ ,  $p = 0.554$ ) show no significant association with trait anger level.

Association of Socio-demographic Factors with State & Trait Anger Expression Inventory-2 score by Major Scales (Anger Expression Index)

Table 5 shows that there were significant associations between year of study ( $X^2 = 9.118$ ,  $p = 0.028$ ) and gender ( $z = -2.427$ ,  $p = 0.015$ ) with anger expression index. This shows that Year 2 and female medical students in UPM tends to express or control their anger. However, there was

Table 3: Association between Socio-demographic Factors with Novaco Anger Inventory (NAI) score

Novaco Score	n	Median (IQR)	Mean Rank	z	P
Gender		mmHg			
Male	104	72.00 (23.00)	93.50	-2.432	.015*
Female	102	77.50 (20.25)	113.70		

Table 4: Association of Socio-demographic Factors with State & Trait Anger Expression Inventory-2 score by Major Scales (Total Trait Anger Score)

Gender	Levene's Test For Equality Of Variances		t-test for Equality of Means				
	F	Sig.	T	Df	Sig.	Mean Difference	Std. Error Difference
Total							
Trait	.012	.913	-2.962	204	.003*	-2.133	.720
Anger			-2.962	203.723	.003*	-2.133	.720

no significant association between ethnicity ( $X^2=1.950$ ,  $p=0.583$ ) with anger expression and control.

#### 4. Discussion

The prevalence and sociodemographic correlates of anger were examined in current study. Aspects of anger, including intensity of anger, state anger level, trait anger level and anger expression and control were examined. For intensity of anger, Year 4 medical students, females and Indian tend to have higher intensity of anger. Besides, Year 3 medical students, females and also Malay had the highest prevalence in relation to state anger level. On the other hand, the findings of trait anger level was similar to the state anger level, except for Chinese. Instead, Malay were found to have a higher trait anger level. Apart from that, for anger expression index, it was found that Year 2 and Year 4 medical students, females and medical students from other ethnicity to have the highest score.

In terms of association between socio-demographic factors with characteristics of anger, and year of study had significant association with anger expression and control. Moreover, gender showed significant association with intensity of

anger, trait anger level and anger expression and control. In contrary, ethnicity showed no significant association with any of the characteristics of anger.

##### 4.1. Prevalence of Medical Students to Intensity of Anger

In this study, it was found that Year 4 medical students were more susceptible to intense anger which made up the 31.1% of the 206 respondents. This was probably due to the fact that Year 4 medical students had a heavier daily schedule. Apart from that, Year 4 medical students were expected to act more professionally as compared to medical students of other years according to a range of ethical principles, which including respects towards the patients and their colleagues, also knowing their responsibilities towards the patients [12], [13], [14] Greater burden in daily life and professional schedule could have caused the increase in prevalence of anger intensity among year 4 medical students.

Among our participants, 28 (27.5%) female students had high intensity of anger. However, there was a study stating that females were less common in experiencing anger [15]. Recent reviews supported the notion that gender does not affect

Table 5: Association of Socio-demographic Factors with State & Trait Anger Expression Inventory-2 score by Major Scales (Anger Expression Index)

Anger Expression Index	Mean Rank	X2	p-value		
Year of Study					
Year 1	86.04	9.118	.028*		
Year 2	109.3				
Year 3	119.81				
Year 4	100.49				
Ethnicity					
Malay	104.56	1.95	0.583		
Chinese	107.66				
Indian	89.39				
Others	97.25				
Anger Expression Index	n	Median (IQR)	Mean Rank	z	P
Gender					
Male	104	44.00 (6.00)	93.55	-2.427	.015*
Female	102	45.00 (5.00)	113.64		

the intensity of anger where males and females do not differ in the intensity of anger [16]

In addition, Indian medical students were found to be more susceptible in experiencing intense anger which made up the prevalence of 25.9%. Local study on anger was still uncommon. However, a study on mental health among different races and ethnic was conducted in America. African Americans and Chinese Americans were found to have lower rates of psychiatric disorders, while Mexican Americans and the whites were having comparable rates [17], [18], [19]

#### 4.2. Prevalence of Medical Students to State Anger Level

Among 206 respondents, 8 out of 48 year 3 medical students were having high state anger level, which means that they were experiencing relatively intense angry feelings. This may be due to the period of data collection that takes place where the Year 3 medical students were busy preparing for their professional assessment. It is proved that social stimuli is directly linked to negative emotions including anger [20], [21].

In this study, it was found that female medical students had higher state anger level, with a ratio of 13 (12.7%) female students to 9 (8.7%) male students. Female had greater anger-related

physical symptoms, which might be linked with their greater capacity to report emotion, and their greater capacity to empathize with others. Female when compared to male, tend to have higher understanding of emotion in terms of interpersonal relationships [22].

Among the whole sample, 12 (11.5%) out of 104 Malay medical students scored high in the state anger level. The score was higher when being compared to the other ethnicity group. This can be supported by a study [23] on amok reaction among the adult Malay male who behave in an uncontrollable outburst of murderous aggression. Majority of them were found to have organic, endogenous psychosis, neurosis and behaviour disorders [23].

#### 4.3. Prevalence of Medical Students to Trait Anger Level

In terms of year of study, Year 3 medical students were found to have the highest trait anger level, which made up to 29.2% of the total population. This meant that Year 3 medical students were experiencing anger more frequently than medical students of other years. This was probably influenced by the state anger level in which Year 3 medical students also scored the highest. Many studies found that state anger only

influenced individuals which were high in trait anger, hostility and/or aggression [24].

Moreover, it was found that female medical students (28.4%) had a high score in trait anger level as compared to males. However, Spielberger (1999) did not find any significant differences on the relationship between gender, state and trait anger level in their study [25].

On the other hand, Chinese medical students were found to have the highest prevalence (29.6%) in trait anger level when being compared to the other ethnics. A similar study reported that the non-Whites had significantly lower trait anger level compared to the Whites [26]. However, it can be argued on the different perception of how and what would define a high trait anger level [27].

#### 4.4. Prevalence of Medical Students to Anger Expression Index

This study recorded the highest prevalence of anger expression index among Year 2 medical students (15.8%). This may be an indication that they tend to experience intense anger, which might be suppressed or expressed, or both. Many Year 2 medical students in Universiti Putra Malaysia were observed to be actively involved in sport activities, for example, playing volleyball, badminton and jogging. This can partly explain the observation, as exercise and social activities are a good coping strategies to the negative emotions.

For gender, female medical students reported a higher prevalence of anger expression index (15.7%) as compared to males (11.5%). There was a study that found that females suppressed their anger most of the time when being compared to males [28]. However, this study was contradicting with another study in which there were no gender differences on either anger expression or suppression [29].

It was found that medical students of ethnicity other than Malay, Chinese and Indian to have the highest prevalence of anger expression index, which made up the 25% of total population. However, only one out of five medical students of other ethnicity was recorded to have a high score in anger expression index as compared to the 13 out

of 104 Malay medical students. There were limited number of local studies done on anger in relations to ethnicity. Japanese, on the other hand was found to have a tendency to avoid verbal expression of negative emotions when dealing with inter-personal conflicts [30].

#### 4.5. Association between Socio-demographic Factors with Intensity of Anger

In this study, there was a significant association between gender with intensity of anger ( $p=0.015$ ). The results shown that female medical students tend to have higher intensity of anger. According to Tavis (1989), women might have other challenges in their social role and physiological changes that men hardly experience. These including factors like stress, genetics, postmenstrual symptom, family and children [31]. There was a study reported on the gender differences among males and females college students in relation to anger, stress and blood pressure [32].

#### 4.6. Association between Socio-demographic Factors with Anger Expression and Control

This study recorded that there were significant associations between year of study ( $p=0.028$ ) and gender (0.015) with anger expression and control. However in a similar study, age was reported to have no significant association with anger expression and control. This could be due to the narrow age range among the participants. Spielberger (1999) had found significant difference on gender in relation to anger expression [25]. It was shown that males had higher anger expression than females. Males tend to act aggressively when angry while females were more likely to cry when angry [33], [34], [35].

## 5. Conclusion

There was a significant association between year of study with anger expression and control. Year two and year four medical students tend to experience intense angry feelings, in which lead them to express or suppress their anger, or both. In terms of gender, there was a significant association between intensity of anger, trait anger

level and anger expression and control. In this study, it was found that female medical students to have a higher intensity of anger and trait anger level. These means that females tend to experience angry feelings more frequently than male medical students. On the other hand, results showed insignificant association between ethnicity to all characteristics of anger being studied. It was suggested that medical students should have better control and an appropriate way to express their anger in dealing with their hectic schedules, which may bring great benefits when dealing with societies.

In conclusion, both clinical and pre-clinical medical students were experiencing intense angry feelings, in which these feelings were either expressed or suppressed. Besides, females when compared to males, were found to frequently experiencing intense angry feelings and more likely to express their anger. Despite no significant association was found between ethnicity and any characteristics of anger, it could not be simply deduced that there was no relationship between ethnicity and anger. For further studies, it is recommended to conduct the study with a larger sample size as it will provide higher statistical reliability and will lead to higher accuracy.

Based on the results of the study, it was found that most of the medical students had average to high intensity of anger. Thus, it is recommended for faculty to provide the means to help medical students in managing anger. For instance, faculty can organize some relaxing events such as family day, sports day so that they will have some time to relax and also to socialize as this will help to reduce stress and help in anger control. Besides that, workshops, talks, and exhibitions can be conducted to give more information about anger control and management among students. These information can also be spread by using mass media and it even easier to reach them through this way.

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