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Factors Affecting Anger and Its Effects on Mental Wellbeing Among Undergraduate Medical Students: A Cross-Sectional Study

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Abstract

One of the most common emotions associated with the younger generation is anger which is also said to be an adaptive mechanism in facing with frustration and threats. It can come wrapped with many physical and mental consequences if not managed properly. The objective is to study the factors affecting anger and the effects of anger on the mental wellbeing of undergraduate medical students in Melaka-Manipal Medical College. A pre-validated questionnaire based analytical cross sectional design was used in conducting this study. The questionnaires were distributed in printed and digital format to students of MBBS programme from Batch 34, 35, 36 and 37. A total number of 223 participants responded to the survey. There were no significant association between age (P-value = 0.304), gender (P-value = 0.197), ethnicity (P-value = 0.119), academic year (P-value = 0.472), relationship status (P- value = 0.658), religion (P-value = 0.336), financial aid (P-value = 0.171), mental exercise (P- value = 0.280) including alcohol and substance use (P-value = 0.795) with anger as the P-value for each factor was more than 0.05. The main source of anger for participants was 'self' (36.8%) and most claimed an episode of anger lasts a minute or an hour (66%). Most participants also claimed anger rarely affects their academic performance (52%) and relationships (61%). Besides that, most were found to rarely express their anger (44.5%), often suppress their anger (34%) and rarely have anger outbursts (72.2%). The mean mental wellbeing score was 46.1 ± 8.5 with range of 14.0 to 100.0. There was also negative and weak association between anger and mental wellbeing (r = -0.2, P-value = 0.002) with P-value that was less than 0.05 signifying that the weak association is significant. In conclusion, there were no association between age, gender, ethnicity, academic year, relationship status, religion, financial aid, mental exercise including alcohol and substance use with anger. A majority was found to have self as the primary cause of anger, anger episodes last a minute or an hour and anger rarely affects studies and relationships. Most often suppress their anger and rarely express anger and have outbursts. There was weak association between anger and mental wellbeing.

Keywords

Medical Students, Anger, Questionnaire

1. Introduction

Anger is defined, within the frame of emotion speculation, as the cognitive, behavioral, physiological, experiential, and social expositions of a central nervous system process [1]. An individual encountering anger experiences physical stipulation such as an increase in heart rate, upraise of blood pressure, and elevated levels of adrenaline and noradrenaline. Some reckon anger as an emotion, which prompts part of the fight or flight brain response [2]. Anger becomes the cardinal feeling behaviorally, cognitively, and physiologically when one makes a reactive choice to seize action to directly stop the cautionary behavior of another outside force. Anger can

come wrapped with many physical and mental consequences [3].

One of the most prevailing behavioral problems among the juvenescence is anger. There are some theories that claim that anger is a faulty adaptation of the youth in coping with a stressful environment, where the consequences are personal discomfort and greater dispute [4]. Nonetheless, present day approach has centered anger as an adaptive mechanism in facing with halted goals and to apprehend threats, with healthy anger compared to unhealthy anger concerning how strongly the emotion serves the rudimentary needs of the person [5]. Behavior patterns, thinking processes and relationships may be affected. All these may lead to undesirable repercussion as it causes crucial impediment in rational thinking in the society. Anger provocation can be associated to issues such as alcohol and substance misuse, emotional and physical abuse, lack of concentration, crime, poor sleeping pattern, insecurities and self-inflicted harm [6].

A previous research study was performed to elicit the behavioral and emotional effects of anger expression and anger management among adolescents. A majority of the subjects said that they resort to expressing their anger out to calm themselves when they felt angry [7]. When anger is concealed and not expressed, it can be a masked aspect of depression and anxiety [8].

A previously done study regarding anger broadcast, violent conduct, and indication of depression amidst male college students in Ethiopia displayed that moderate and high anger-out expression scores were analogous with an elevated risk of having depressive symptoms respectively [9]. From a common health aspect, these data suggest that outward anger broadcast, perhaps more than violent behavior, may be useful as a means to identify students at increased risk of depression and depressive symptoms. [10-12].

Another study on anger was done previously to analyze the anger extent of residents: medical compared with surgical disciplines. However, medical and surgical residents were not found to vary notably in aspects of trait anger-in, anger-out and anger control. Only anger-in measure was found to outstand between the sexes ($p=0.019$), as it was found to be higher in male residents than in their female colleagues [13]. Women are reportedly more competent in both interpreting verbal and non-verbal expressions of emotions and in conveying feelings to express themselves compared with men [14].

One other research was conducted to survey the assertion of anger in depressed adolescents and the role of the family surroundings. The results of the research propose that in depressed adolescents, anger is much less adaptively adjusted to the environment, consistent with studies that predict dysfunction in the adjustment of anger that intercepts depressed people from responding adaptively to their social surroundings [11-12, 15].

Another research was carried out on medical undergraduates. The study was done to analyze how psychological profile of an individual on a daily basis can affect their skills in managing anger. It was found that medical students with higher tendencies towards getting angry have much poor mental health compared to the ones with lower tendencies towards getting angry. Noticeably, friends were indicated as the primary source of anger among medical students. Interestingly, most students have anger episodes that last about a day on average, and a greater part stated that they found it “somewhat difficult” concentrating on their work, relationships and studies [16].

In relation to all the above, a study on how anger affects the mental wellbeing is proposed. Medical students are chosen as the population in this study, as it is believed that medical students undergo a more stressful lifestyle in comparison to other college students. This study was chosen as not many research have been done on Malaysian medical undergraduate students based solely on their anger and mental wellbeing. Moreover, the questionnaire used in the previous study mentioned above was the modified Patient Health Questionnaire–9 (PHQ-9) to assess the mental wellbeing of the participants [16]. The questionnaire consisted of nine questions and was mainly focused on depression, which is only one of the many mental disorders. In this study, the Warwick-Edinburgh Mental Wellbeing Scale that consists of 14 questions and covers a wider range of mental disorders to better reflect the mental wellbeing of the participants will be used. Also, the previous study was done among Malaysian students in Manipal India campus, in the first and second year of MBBS degree, as in their theoretical year. In this study, it will be conducted among Malaysian students in Melaka and Muar campuses, in their third, fourth and fifth year, as in their clinical phase of studies. This is because students of clinical years are involved with patients compared to pre-clinical students who do not engage directly with patients, so their levels of anger and mental wellbeing scores may differ significantly. Besides, information and studies on anger among medical students of their clinical phases in Malaysia is limited.

Therefore, by conducting this study, the effects of mental wellbeing and anger on the psychological profile and daily lifestyle of the medical students will be studied. Besides that, how medical students manage their anger and the outcomes it has on their mental wellbeing, along with the sources and precipitating factors of their anger and how significantly anger affects their mental wellbeing will be studied.

2. Methodology

2.1. Study Design, Setting and Population

A study of cross sectional design, titled ‘Factors Affecting Anger and Its Effects on Mental Wellbeing among Undergraduate Medical Students’, done with validated questionnaire, was used in this research. This study was held in Melaka-Manipal Medical College (MMMC) both in the Melaka and Muar campuses, Malaysia. The duration of this study was dated from September 2018 to October 2018.

The study subjects were students based on one programme offered in the institute which was Bachelor of Medicine and Bachelor of Surgery (MBBS). There are approximately 800

students from MBBS course in MMMC. The students that participated in this study were MBBS students from batch 34, 35, 36 and 37 which are from semester 7 to semester 10.

2.2. Sample Size

Based on a study conducted in Melaka-Manipal Medical College (MMMC), Manipal, India the prevalence of anger in medical students is 58.1% (p = 0.581). Allowing a margin of error to be 7% (d = 0.07), the sample size was calculated using the following formula:

$$n = \frac{Z^2\left(1-\frac{\alpha}{2}\right)p(1-p)}{e^2} \quad (1)$$

Whereby,
Population size (N) = 800
Proportion (p) = 0.581
Error (d) = 0.07
Alpha = 0.05
$Z^2 = 1.962$
Sample Size = n

Hence the calculated sample size was 165. Allowing for 20% non-response, final sample size was calculated to be 207 by using the following formula:

$$n_{final} = \frac{n_{calculated}}{1-Proportion\ of\ non-response} \quad (2)$$

Calculations:

$$n_{final} = \frac{165}{1-0.2} \quad (3)$$

$$= 207$$

2.3. Sampling

The study used purposive sampling which is a form non-probability sampling method as the participants of this study were volunteers. Questionnaires were distributed to students of MBBS Batch 34, 35, 36 and 37 of MMMC in printed and digital format. An informed consent was attached as the front page of the printed questionnaires for participants to sign as proof that they were willing to participate in this study voluntarily while participants who answered the questionnaire online needed to check off the appropriate option in the online informed consent. The inclusion criteria are students present on the day of distribution of the printed questionnaire and those who signed the informed consent or agreed to participate in the study by checking off the appropriate option on the online informed consent. The exclusion criteria are students who were absent on the day of the printed questionnaire distribution, those failed to sign the informed consent or did not checked off the appropriate option for the online informed consent, failed to finish answering the questionnaire (incomplete questionnaire) and left the printed questionnaires blank despite signing the informed consent.

2.4. Data Collection

The validated questionnaire mainly consists of three parts. Part One consists of Demographic Profile, Mental Exercise, and Alcohol and Substance Abuse. Part Two covers anger and anger management while Part Three covers mental wellbeing. Demographic Profile consists of questions on independent variables that are age, gender, ethnicity, academic year, relationship status, religion and financial aid. Mental Exercise consists of one question pertaining to mental exercises such as yoga, meditation, martial arts, Pilates and deep breathing exercises. The Alcohol and Substance Abuse part is composed of a validated questionnaire, which is the CRAFFT Screening Questionnaire. This questionnaire consists of two parts, which are Part A, and Part B of which each composed of three and six items respectively. Each "Yes" answer in Part B will score 1 point. If the CRAFFT score is 2 and more, there is potential of a significant problem related to alcohol or other substance abuse [17-18].

Part Two, as mentioned, covers anger and anger management. Anger is assessed using the simplified Novaco Anger Scale [19] that consists of 25 items in the form of scenarios and each is to be answered using a number guide: 0 for "if you would feel little or no annoyance", 1 for "if you would feel a little irritated", 2 for "if you would feel moderately upset", 3 for "if you feel quite angry" and 4 for "if you would feel very angry". The number guide also serves as the scoring for the questionnaire. Score of 0 to 45 depicts that the amount of anger and frustration one generally experiences is remarkably low. Only a small percentage of the population will score this low on a test. When the score is of 46 to 55, one is substantially more peaceful than the average person. When the score is 56 to 75, one responds to life's annoyances with an average amount of anger. When the score is 76 to 85, one frequently reacts in an angry way to life's many frustrations. When the score is of 86 to 100, one is plagued by frequent intense furious reactions that do not quickly disappear. This person probably harbors negative feelings long after the initial insult has passed. A high score indicates a high anger scale [20].

Part Three consists of the Warwick-Edinburgh Mental Well-being Scale (WEMWBS) which is composed of 14 questions. Each of the 14 items in WEMWBS are answered based on a 1 to 5 Likert scale and the total scale score is calculated by summing the 14 individual item scores. The minimum score is 14 and the maximum is 70. Higher scores indicate better mental wellbeing [21].

2.5. Data Processing and Analysis

The data collected in this study was tabulated using Microsoft Excel and was analyzed using Epi Info of the 7th version from Centers for Disease Control and Prevention (CDC) website. Frequency and percentage were used to represent qualitative variables, which are the socio-demographic data such as age, gender, ethnicity, academic year, relationship status and religion. For data of other qualitative variables such as financial aid, mental exercise, alcohol and substance abuse, Novaco Anger Scale, anger duration, anger source, anger affecting study and relationship, anger expression, anger suppression, anger

outburst, anger management and mental wellbeing score too, frequency and percentage were calculated and compiled. Measure of central tendency (mean) and dispersion (standard deviation) were applied for continuous variables like age, Novaco Anger Scale and mental wellbeing score. Unpaired t-test was calculated to find the association between age, gender, mental exercise, and alcohol and substance abuse with anger. ANOVA was used to find the association between ethnicity, academic year, relationship status, religion and financial aid with anger. Multiple linear regression was used to find the association and adjust the confounding factor of age, gender, ethnicity, academic year, relationship status, religion, financial aid, mental exercise, and alcohol and substance abuse with anger. Lastly, correlation is used to find the association between anger and mental wellbeing. The level of statistical significance (P-value) was set as 0.050 and any value more than this was considered as not significant. Visual tools such as mean plot and scatter plot were also included to depict the results.

2.6. Ethical Consideration

Participants of the study were briefed on the objectives of the study prior to their participation. The study was approved by the Research Ethics Committee, Faculty of Medicine, Melaka-Manipal Medical College (Malaysia Campus). Participation of the study is purely voluntary. They were given an informed consent along with important details of the study before they began answering the questionnaires. Participants were given the liberty to withdraw themselves from the study at any moment without giving any reasons. They were assured that all data collected will be kept anonymous and confidential throughout the study.

3. Results

There were a total of 223 participants in this study.

Table 1. *Socio-demographic Characteristics of Undergraduate Medical Students (n = 223).*

Variables	n (%)
Age	
≤22	107 (48.0)
≥23	116 (52.0)
Mean (SD)	22.7 (1.2)
Range	19.0 - 27.0
Gender	
Male	105 (47.1)
Female	118 (52.9)
Ethnicity	
Malay	25 (11.2)
Chinese	84 (37.7)
Indian	90 (40.4)
Others	24 (10.8)
Academic Year	
Year 3	150 (67.3)
Year 4	58 (26.0)
Year 5	15 (6.7)
Relationship Status	
Single	134 (60.1)
Married	2 (0.9)
In A Relationship	87 (39.0)
Religion	
Buddhism	78 (35.0)
Christianity	32 (14.4)
Hinduism	68 (30.5)
Islam	32 (14.4)
Others	13 (5.8)
Financial Aid	
Parents	133 (54.6)
PTPTN	76 (34.1)
Scholarship	14 (6.3)

Table 1 demonstrates the socio-demographic characteristics of the participants. The age of the participants was divided into two categories, which is below or equal to 22 years old (≤22) and above or equal to 23 years old (≥23). The sample comprised of 107 (48%) and 116 (52%) from each category respectively. The mean age was 22.7 ± 1.2, with a range of 19.0 to 27.0. 118 (52.9%) of the participants were female and 105 (47.1%) were male.

For ethnicity, there were 90 (40.4%) of "Indian" participants, 84 (37.7%) "Chinese" participants, 25 (11.2%) "Malay" participants and 24 (10.8%) participants of "Other" ethnicities. The questionnaires were distributed among Year 3, 4, and 5 medical students of MMMC through printed and digital format. 150 (67.3%) responses were collected from "Year 3" students, 58 (26.0%) responses from "Year 4" students, and 15 (6.7%) responses from "Year 5" students. Pertaining to relationship status, 134 (60.1%) of the participants were "Single", 87 (39%) participants claimed to be "In A Relationship", and 2 (0.9%) participants reported to be "Married".

Other than that, 78 (35.0%) of the participants were Buddhists, 68 (30.5%) were Hindus, 32 (14.4%) were Muslims, another 32 (14.4%) were Christians, and 13 (5.8%) of the participants were of other religion, atheist or agnostic. Among the participants, 133 (54.6%) of them are financially supported by their "Parents", 76 (34.1%) are under "PTPTN" aid, and 14 (6.3%) are supported by "Scholarships".

Table 2. *Mental Exercise, and Alcohol and Substance Abuse among Undergraduate Medical Students (n = 223).*

Variables	n (%)
Mental Exercise	
None	144 (64.6)
Deep Breathing	41 (18.4)
Meditation	26 (11.7)
Martial Arts	12 (5.4)
Yoga	10 (4.5)
Pilates	4 (1.8)
Others	1 (0.5)
**Multiple Answers Question*	
CRAFFT Scale For Alcohol And Substance Abuse	
No Problems Reported	170 (76.2)
Potential of a Significant Problem	53 (23.8)

Table 2 shows mental exercises practised by participants and the CRAFFT scale. For mental exercise, participants were given the choice to choose more than one answer if they practised more than one mental exercise. A majority, 144

(64.6%), of the participants reported to not practise any form of mental exercise while 41 (18.4%) of the participants practise "Deep Breathing" techniques, 26 (11.7%) do "Meditation", 12 (5.4%) of them practise "Martial Arts",

10 (4.5%) practice "Yoga", 4 (1.8%) practise "Pilates", and 1 (0.5%) practices other form of mental exercise.

The CRAFFT Screening Questionnaire is a short clinical assessment tool devised to screen for substance-related risks and problems in adolescents. Based on the CRAFFT Scale for alcohol and substance abuse, 170 (76.2%) of the participants scored 0 to 1, which puts them in the "No Problems Reported" category, while 53 (23.8%) of the participants scored ≥2, which puts them in the "Potential of a Significant Problem" category.

Table 3. *Anger Scale, Anger Management and Mental Wellbeing of Undergraduate Medical Students (n = 223).*

Variables	n (%)
Novaco Anger Scale	
Remarkably Low	91 (40.8)
Substantially More Peaceful	55 (24.7)
Average Amount Of Anger	63 (28.3)
Substantially More Irritable	10 (4.5)
Intense Furious Reaction	4 (1.8)
Mean (SD)	48.5 (16.8)
Range	0.0 - 100.0
Anger Management	
Avoid The Matter/ Triggers That Make Me Angry	130 (58.3)
Talk It Out With Someone	123 (55.2)
Do Other Things That Distract Me From My Anger	107 (48.0)
Walk Away For A Minute Until I've Calmed Down	99 (44.4)
Listen To Music	92 (41.3)
Do Something I Consider Fun	77 (34.5)
Exercise Or Play Sports	71 (31.8)
Justify The Reason For My Anger And Reason Myself Out Of It	71 (31.8)
Confront The People That Caused My Anger	67 (30.0)
Think Of Calming And Happy Thoughts	55 (24.7)
Deep Breathing Exercises	34 (15.3)
Binge Eat	34 (15.3)
Be Creative (Painting, Drawing, Singing, Etc.)	30 (13.5)
Meditate	26 (11.7)
Yell Or Scream	24 (10.8)
Others	23 (10.3)
Blame Others	14 (6.3)
Break Things	9 (4.0)
**Multiple Answers Question*	
Mental Wellbeing Score	
Mean (SD)	46.1 (8.5)
Range	14.0 - 64.0

Table 3 represents the Novaco Anger Scale and measures in which students take to manage their anger including their mental wellbeing score. It was seen that in a grand total of 223 students that participated, it was revealed that 91 (40.8%) of the participants had "Remarkably Low" anger score, 63 (28.3%) had an "Average Amount of Anger", 55 (24.7%) were "Substantially More Peaceful", 10 (4.5%) were "Substantially More Irritable" and 4 (1.8%) had "Intense Furious Reactions". The mean score for Novaco Anger Scale in this study was 48.5 ± 16.8 with a range of 0.0 which is the lowest possible score that was be obtained to 100.0 being the highest score obtained in this study.

In terms of measures taken to manage their anger or anger management, 130 (58.3%) of the participants "Avoid The Matter/Triggers That Make Me Angry", 123 (55.2%) of participants "Talk It Out With Someone", 107 (48%) claimed to "Do Other Things That Distract Me From My Anger", 99 (44.4%) would "Walk Away For A Minute Until I've Calmed Down", 92 (41.3%) would "Listen To Music", 77 (34.5%) would "Do Something I Consider Fun", 71 (31.8%) of the participants would "Exercise Or Play Sports", 71 (31.8%) claimed that they would "Justify The Reason For My Anger And Reason Myself Out Of It", 67 (30.0%) "Confront The People That Caused My Anger", 55 (24.7%) participants would "Think Of Calming And Happy Thoughts", 34 (15.3%) participants would perform "Deep Breathing Exercises", 34 (15.3%) "Binge Eat" when they are angry, 30 (13.5%) of the participants would "Be Creative (Painting, Drawing, Singing, Etc.)", 26 (11.7%) "Meditate" to manage their anger, 24 (10.8%) would "Yell Or Scream", 23 (10.3%) answered "Others" which meant they had other methods of managing their anger, 14 (6.3%) "Blame Others" and 9 (4.0%) claimed that they would "Break Things". As for mental wellbeing, the mean score was 46.1 ± 8.5 with the range of 14.0

Table 4. *Anger Source, Duration, Affecting Study, Affecting Relationship, Expression, Suppression, Outburst.*

Anger	n (%)
Source	
Self	82 (36.8)
Friends	66 (29.6)
Spouse/ Partner	15 (6.7)
Family	13 (5.8)
Others	47 (21.1)
Duration	
A Minute/Hour	147 (66.0)
A Day	58 (26.0)
Less Than A Week	11 (4.9)
More Than A Week/Months	7 (3.1)
Affecting Study	
All The Time	7 (3.1)
Most Of The Time	13 (5.9)
Often	36 (16.1)
Rarely	116 (52.0)
Never	51 (22.9)
Affecting Relationship	
All The Time	3 (1.4)
Most Of The Time	9 (4.0)
Often	42 (18.8)
Rarely	136 (61.0)
Never	33 (14.8)
Expression	
All The Time	9 (4.0)
Most Of The Time	38 (17.0)
Often	67 (30.0)
Rarely	99 (44.5)
Never	10 (4.5)
Suppression	
All The Time	26 (11.7)
Most Of The Time	61 (27.4)
Often	76 (34.0)
Rarely	51 (22.9)
Never	9 (4.0)
Outburst	

Anger	n (%)
All The Time	2 (0.9)
Most Of The Time	7 (3.1)
Often	35 (15.7)
Rarely	161 (72.2)
Never	18 (8.1)

Table 4 depicts the association of anger source, anger duration, how anger affects medical students' study and academic life, how anger affects medical students' relationship, anger expression, anger suppression and anger outburst. For the category of "Anger Source", majority of the participants, 82 of them (36.8%) revealed that their main source of anger was their own "Self", while the second most rated source was "Friends" which was from 66 participants (29.6%). This was followed by results from 15 of the participants (6.7%) that stated that their "Spouse/Partner" were their main cause of anger. "Family" had a minimal number of rates, that is from 13 of them (5.8%) and the remaining of the study group, 47 of the participants (21.1%) chose "Other" sources to which aggravated their anger.

Under the column of "Duration of Anger', most of the medical students of this survey, 147 individuals (66%) noted that their anger lasted "A Minute/Hour', while 58 of them (26%) said that their anger lasted for about 'A Day' and 11 (4.9%) revealed that their anger duration is for 'Less Than A Week'. A small minority of the study participants, 7 of them (3.1%) mentioned that their anger lasted for "More Than A Week/Month".

Following that, the percentage of "Anger Affecting the Studies" of medical students were tabulated and a large majority, 116 individuals (52%) stated that they are "Rarely" affected by their anger while 51 of them (22.9%) said that they "Never" have had anger affecting their studies. On the other hand, 36 of the participants (16.1%) noted that anger "Often" hampers with their studies. The least numbers fell under the category of "Most Of The Time" and "All The Time" which were from 13 participants (5.9%) and 7 participants (3.1%) respectively.

Besides the ones mentioned above, how "Anger Affected Relationships" of medical students were also surveyed. The results obtained were as follows, a large number of individuals, 136 of them in total (61%) revealed that anger "Rarely" affects their relationship, meanwhile 42 (18.8%) on the other hand stated that anger "Often" had an effect on their relationship. Students admitting that anger affected their relationship "Most Of The Time" were of 9 individuals (4%) and a very small number of the students, 3 in total (1.4%) agreed that being angry affects their rapport with their partner "All Of The Time".

Results for "Expression of Anger" by the participants were also tabulated. Majority of them which comprises of 99 participants (44.5%) stated that they "Rarely" expressed their anger. 67 students (30%), revealed that they "Often" expressed their anger and 38 of them (17%) stated that they express their anger "Most Of The Time'. The least of the results came from 10 of the study group participants (4.5%) of the study group stating they "Never" and the remaining 9 (4.0%), claiming that they express their anger "All The Time".

Other than that, "Suppression of Anger" was also calculated and tabulated. A number of 76 students (34%) said they "Often" suppress their anger and 61 (27.4%) do it "Most Of The Time". Besides that, 51 students (22.9%) revealed they "Rarely" suppress their emotion when they were angered or in a heated mood. Students who supressed their anger "All Of The Time" were of 26 individuals (11.7%) and the least number stated they "Never" supress their anger, which were 9 students (4%).

The last category is of "Anger Outburst". In this study, 161 of the study group participants (72%) which was the large majority said they have anger outbursts "Rarely". Students who had outbursts "Often" were 35 in number (15.7%) and 18 in number (8.1%) stated they "Never" had any outbursts. The students saying that they had outbursts "Most Of The Time" and "All Of The Time" were a small number that were 7 (3.1%) and 2 (0.9%) respectively.

Table 5. *Association between Age, Gender, Ethnicity, Academic Year, Relationship Status, Religion, Financial Aid, Mental Exercise, Alcohol and Substance Abuse; and Novaco Anger Scale.*

Variables	Novaco Anger Scale Mean (SD)	t (df) / F (df_1, df_2)	P-Value
Age			
≤22	49.7 (17.1)	1.03 (221)	0.304
≥23	47.4 (16.6)		
Gender			
Male	47.0 (18.4)	1.29 (221)	0.197
Female	49.9 (15.2)		
Ethnicity			
Malay	51.6 (19.2)		
Chinese	45.5 (17.1)	1.97 (3, 219)	0.119
Indian	51.0 (15.5)		
Others	46.3 (17.0)		
Academic Year			
Year 3	48.5 (16.3)	0.75 (2, 220)	0.472
Year 4	49.8 (18.9)		
Year 5	43.8 (13.5)		
Relationship Status			
Single	47.7 (17.9)	0.42 (2, 220)	0.658
Married	51.0 (5.7)		
In A Relationship	49.7 (15.1)		
Religion			
Buddhism	46.1 (16.2)		
Christianity	46.3 (18.0)	1.14 (4, 218)	0.336
Hinduism	51.5 (16.0)		
Islam	50.2 (19.7)		
Others	48.0 (13.4)		
Financial Aid			
Parents	50.2 (16.4)	1.78 (2, 220)	0.171
PTPTN	45.7 (16.3)		
Scholarship	47.6 (21.9)		
Mental Exercise			
Yes	46.9 (16.7)	-1.08 (221)	0.280
No	49.4 (16.8)		
CRAFFT Scale For Alcohol And Substance Abuse			
No Problems Reported	48.3 (17.5)	-0.26 (221)	0.795
Potential Of A Significant Problem	49.0 (14.6)		

Table 5 demonstrates the association of age, gender, ethnicity, academic year, relationship status, religion, financial aid, mental exercise including alcohol and substance abuse with the anger of the participants. Participants below or equal to 22 years old had a higher mean score in the anger compared to those above or equal to 23 years old which were 49.7 ± 17.1 and 47.4 ± 16.6 respectively. There was a non-significant association between age and the anger as the P-Value was 0.304. "Females" had a mean score of 49.9 ± 15.2 while "Males" had 47.0 ± 18.4 for the Anger. However, the association was not significant as the P-Value was 0.197.

In terms of ethnicity, "Malays" obtained the highest mean score for the anger which was 51.6 ± 19.2 followed by "Indians" with a mean score of 51.0 ± 15.5, participants of "Other" ethnicities with mean score of 46.3 ± 17.0 and lastly "Chinese" with mean score of 45.5 ± 17.1. The association between ethnicity and the anger was also not significant as the P-Value was 0.119. According to academic year, students in "Year 4" had the highest mean score of 49.8 ± 18.9 followed closely by "Year 3" with mean score of 48.5 ± 16.3 and lastly "Year 5" with the lowest mean score of 43.8 ± 13.5, but again the association was not significant as the P-Value was 0.472.

In terms of relationship status, it is seen that participants who are "Married" obtained the highest mean score on the anger that was 51.0 ± 5.7 compared to participants "In A Relationship" with mean score of 49.7 ± 15.1 and students who are "Single" with mean score of 47.7 ± 17.9. However, the association was not significant as the P-value was 0.658. As for religion, Hindus scored the highest mean score which was 51.5 ± 16.0, followed by Muslims with mean score 50.2 ± 19.7, participants of other religion or are atheist or agnostic with 48.0 ± 13.4, Christians with 46.3 ± 18.0 and lastly Buddhists with 46.1 ± 16.2. This similar to previous variables was not significant as the P-value was 0.336.

The next variable is Financial Aid. It was seen that students financially supported by "Parents" have the highest anger mean score which was 50.2 ± 16.4 followed by students under "Scholarship" with a mean score of 47.6 ± 21.9 while students under "PTPTN" aid had the lowest mean score of 45.7 ± 16.3. The association was not significant as the P-Value was 0.17. As for Mental Exercise it can be seen that participants who do not practise any form of mental exercise had a higher score for the anger compared to students who practise a form of mental exercise with mean scores of 49.4 ± 16.8 and 46.9 ± 16.7 respectively. The association for this variable was not significant either as the P-Value was 0.280. Finally for Alcohol and Substance Abuse, participants under "Potential of a Significant Problem" category had a higher anger mean score which is 49.0 ± 14.6 compared to students that fell under the "No Problems Reported" category with a mean score of 48.3 ± 17.5. The association for this was not significant as well as the P- Value was 0.795.

Table 6. *Multiple Linear Regression Analysis of Association between Age, Gender, Ethnicity, Academic Year, Relationship Status, Religion, Financial Aid, Mental Exercise, Alcohol and Substance Abuse with Anger.*

Variables	Anger Regression Coefficient (b)	P-Value
Age Categories		
≥23	Reference	
≤22	3.13	0.232
Gender		
Female	Reference	
Male	-2.73	0.293
Ethnicity		
Malay	Reference	
Chinese	-7.69	0.353
Indian	-3.61	0.655
Others	-9.14	0.241
Academic Year		
Year 5	Reference	
Year 3	0.53	0.918
Year 4	2.94	0.575
Relationship Status		
In A Relationship	Reference	
Married	-1.77	0.888
Single	-2.89	0.234
Religion		
Islam	Reference	
Buddhism	1.88	0.807
Christianity	-0.41	0.957
Hinduism	2.31	0.762
Others	0.54	0.949
Financial Aid		
Self-Finance	Reference	
PTPTN	-4.72	0.062
Scholarship	-4.62	0.439
Mental Exercise		
No	Reference	
Yes	2.12	0.383
CRAFFT Scale For Alcohol And Substance Abuse		
No Problems Reported	Reference	
Potential Of A Significant Problem	1.59	0.591

Association between Age with anger yielded a Direct Causal-Outcome relationship with Regression Coefficient, b = 3.13. There was no significant association of Age with anger as the P-value was 0.232.

Association between Gender with anger yielded an Inverse Causal-Outcome relationship with b = -2.73. There was no significant association of Gender with anger as the P-value was 0.293.

Association between Ethnicity and anger was calculated by making "Malay" as the reference ethnicity and then compared with other ethnicities which were depicted as (Chinese/Malay), (Indian/Malay) and (Others/Malays). All three yielded Inverse Causal- Outcome relationship with b = -7.69, b = -3.61, b = -9.14 respectively. There was no significant association between Ethnicity and anger as the P-values were 0.353, 0.655 and 0.241 respectively.

Association between Academic Year and anger was done by making "Year 5" as the reference which was then compared to "Year 3" and "Year 4". These were depicted as (Year 3/Year 5) and (Year 4/Year 5). Both had Direct Causal-Outcome relationship with b = 0.53 and b = 2.94

respectively. There was no significant association between Academic Year and anger as the P-values were 0.918 and 0.575 respectively.

Association between Relationship Status (Married/ In A Relationship) and anger yielded Inverse Causal-Outcome relationship, with b = -1.77, while Relationship Status (Single/In a relationship) and anger yielded Inverse Causal-Outcome relationship, with b = -2.89. There was no significant association between Relationship Status and anger as the P-values for both were 0.888 and 0.234 respectively.

Association between Religion and anger was calculated by making "Islam" as the reference and was then compared with other religions. The regression coefficient of (Hinduism/Islam) was 2.31, (Buddhism/Islam) was 1.88, (Others/Islam) was 0.54 and (Christianity/Islam) was -0.41. This means that (Hinduism/Islam), (Buddhism/Islam), and (Others/Islam) yielded Direct Causal-Outcome relationship, while and (Christianity/Islam) yielded Inverse Causal-Outcome relationship. There was no significant association between Religion and anger as (Hinduism/Islam) had P-value of 0.762, (Buddhism/Islam) had P-value of 0.807, (Christianity/Islam) P-value of 0.957 and (Others/Islam) had P-value of 0.949.

Association between Financial Aid and anger was calculated by setting "Self-Finance" as the reference point before comparing with other forms of financial aid. These were depicted as (PTPTN/Self Finance) and (Scholarship/Self Finance). (PTPTN/Self-Finance) yielded b = -4.72, while (Scholarship/Self-Finance) yielded b = -4.62, meaning that both have Inverse Causal-Outcome relationship. There was no significant association between Financial Aid and anger as the P- values were 0.062 and 0.439 respectively.

Association between Mental Exercise (Yes/No) and anger yielded a Direct Causal- Outcome relationship with b = 2.12. There was no significant association between Mental Exercise (Yes/No) and anger as the P-value was 0.383.

Association between CRAFFT Scale for Alcohol and Substance Abuse (No Problems Reported/Potential of a Significant Problem) yielded Direct Causal-Outcome relationship with b = 1.59. There was no significant association between CRAFFT Scale for Alcohol and Substance Abuse as the P-value was 0.591.

Table 7. *Association between Anger and Mental Wellbeing.*

Variables	Correlation Coefficient (r)	P-Value
Mental Wellbeing	- 0.2	0.002

Table 7 demonstrates the association between anger and mental wellbeing. The degree of association based on the scatter plot is weakly negative. The Correlation Coefficient (r) is -0.2 which indicated that there was little correlation between the two variables besides proving that there is negative association between anger and mental wellbeing. This is further supported by the fact that the P-value was less than 0.05 which means that the weak association is significant.

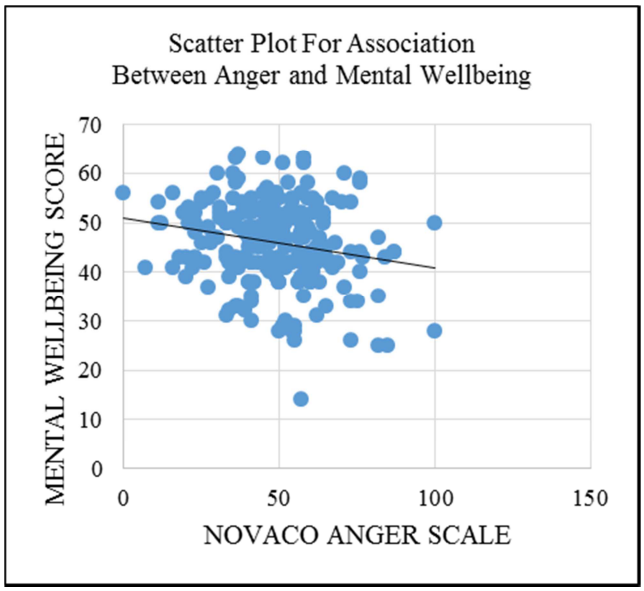

Figure 1. *Association between anger and mental wellbeing.*

4. Discussion

A cross sectional study was done to study the factors that affect anger and its implication on an individual's mental wellbeing. Anger is considered as a negative emotion both in terms of subjective experience and social evaluation, yet it is common for an individual to experience anger despite negative reinforcements [22]. In studies conducted by James R. Averill (1982), there is no definitive cause of anger, but there are four main classes of variables that the "cause" may present as, which are frustration, psychological arousal, aggressive stimuli and extrinsic motivation [23]. In this study, the factors pertaining to the demographic characteristics, financial aid, alcohol intake and substance use, and practise of mental exercise that may affect the anger of participants were studied as previous studies were more focused on factors that were of the four main classes except for age and gender. There are already a number of studies that included age and gender as factors that may influence anger and it was found that anger is not directly affected by both [24-27]. In like manner, the degree of anger of participants including the skills they adapted to manage their anger and the significance of their anger on their mental wellbeing were also studied.

Under the Novaco Anger Scale, a grand total of 223 students participated and it was revealed that 91 (40.8%) of the participants had "Remarkably Low" anger score, 63 (28.3%) had an "Average Amount of Anger", 55 (24.7%) were "Substantially More Peaceful", 10 (4.5%) were "Substantially More Irritable" and 4 (1.8%) had "Intense Furious Reactions". The mean score for Novaco Anger Scale in this study was 48.5 (16.8%), which is of a lower anger score than expected. In a previous similar study done, the anger score had a mean of 58.1, which is higher compared to the estimated 10% average among Malaysians [16].

The association of anger source, anger duration, how anger affects medical students' study and academic life, how anger

affects medical students' relationship, anger expression, anger suppression and anger outburst were also analysed. For the category of "Anger Source", majority of the participants, 82 of them (36.8%) revealed that their main source of anger was their own "Self", while the second most rated source was "Friends" which was from 66 participants (29.6%). This can be explained as medical students undergo a very demanding and taxing course, rooting to increasing their anger in stressful situations and because students' social circle comprises of mostly their friends. This was followed by results from 15 of the participants (6.7%) that stated that their "Spouse/Partner" were their main cause of anger. "Family" had a minimal number of rates, that is from 13 of them (5.8%) and the remaining of the study group, 47 of the participants (21.1%) chose "Other" sources to which aggravated their anger. In a previous study done in Manipal India, when asked regarding sources of anger, friends were rated as the chief source of anger [16].

Under the "Duration of Anger', most of the medical students of this survey, 147 individuals (66%) noted that their anger lasted "A Minute/Hour', while 58 of them (26%) said that their anger lasted for about 'A Day' and 11 (4.9%) revealed that their anger duration is for 'Less Than A Week'. A small minority of the study participants, 7 of them (3.1%) mentioned that their anger lasted for "More Than A Week/Month". In a previous similar study, 49% of student population reported having anger episodes that last a day on average [16].

Following that, the percentage of "Anger Affecting the Studies" of medical students was tabulated and a large majority, 116 individuals (52%) stated that they are "Rarely" affected by their anger while 51 of them (22.9%) said that they "Never" have had anger affecting their studies. On the other hand, 36 of the participants (16.1%) noted that anger "Often" hampers with their studies. The least numbers fell under the category of "Most Of The Time" and "All The Time" which were from 13 participants (5.9%) and 7 participants (3.1%) respectively. Besides the ones mentioned above, we also surveyed on how "Anger Affected Relationships" of medical students. The results obtained were as follows, a large number of individuals, 136 of them in total (61%) revealed that anger "Rarely" affects their relationship, meanwhile 42 (18.8%) on the other hand stated that anger "Often" had an effect on their relationship. Students admitting that anger affected their relationship "Most Of The Time" were of 9 individuals (4%) and a very small number of the students, 3 in total (1.4%) agreed that being angry affects their rapport with their partner "All Of The Time". In a previous similar study, 23% of medical students said that anger does not interfere with their work, study, or relationships at all. A huge majority, summing up to 102 students (65%), stated that they found it "Somewhat Difficult" to concentrate on their work, study, and relationships. 9% of students said that it is very difficult for them to concentrate on these aspects, while 5 students (3%) find it extremely difficult to stay focused in their work, study, and maintaining good relationships with others when they are angry [16].

Results for "Expression of Anger" by the participants were tabulated. Majority of them which comprises of 99 participants (44.5%) stated that they "Rarely" expressed their anger. 67 students (30%), revealed that they "Often" expressed their anger and 38 of them (17%) stated that they express their anger "Most Of The Time'. The least of the results came from 10 of the study group participants (4.5%) of the study group stating they "Never" and the remaining 9 (4.0%), claiming that they express their anger "All The Time". In a previous study, based on anger expression and passive anger conduct, 64% of students behave indifferently and pretending to tolerate an offending item or person (dispassion). But in case of aggressive anger 16.5% of students express the anger through destructive behaviors such as substance abuse and poor eating habits [16].

Other than that, "Suppression of Anger" was also calculated and tabulated. A number of 76 students (34%) said they "Often" suppress their anger and 61 (27.4%) do it "Most Of The Time". Besides that, 51 students (22.9%) revealed they "Rarely" suppress their emotion when they were angered or in a heated mood. Students who suppressed their anger "All Of The Time" were of 26 individuals (11.7%) and the least number stated they "Never" suppress their anger, which were 9 students (4%).

The last category is of "Anger Outburst". In this study, 161 of the study group participants (72%) which was the large majority said they have anger outbursts "Rarely". Students who had outbursts "Often" were 35 in number (15.7%) and 18 in number (8.1%) stated they "Never" had any outbursts. The students saying that they had outbursts "Most Of The Time" and "All Of The Time" were a small number that were 7 (3.1%) and 2 (0.9%) respectively.

In the current research study, regarding the association between socio-demographics and anger, age, gender, ethnicity, academic year, relationship status, and religion revealed no significance as their P-values were higher than 0.05, in contributing to the anger of the sample size of medical students. Under the category of financial aid, it depicted no significance when associated to the anger. Students who performed mental exercise too was not significant association. Also, students who had potential of a significant problem pertaining to alcohol intake and substance use, did not show any significance of association with anger.

Besides that, the association between anger and the mental wellbeing of the participants were studied. In a previous similar study, medical students with a higher score for their tendency towards getting angry have much poor mental health compared to the ones with lower anger tendencies [19]. In this research, the Correlation Coefficient (r) is -0.2, which indicated that there was little correlation between the two variables besides proving that there is negative association between anger and mental wellbeing. This is further supported by the fact that the P-value was less than 0.05 which means that the weak association is significant.

4.1. Implication

The purpose and intention of this study analysis can be implied to health professionals too. Anger extent of health professionals can affect not only their career and dignity, but also the lives of their patients. When health professionals have anger to a dangerous extent, it has a noteworthy aftermath on their mental wellbeing.

Although aggression not as common, in this current era where human lifestyle are much more hectic and demanding as a health professional, the tendency to feel angry will be increased, hence the chances of aggressing will be higher. In light of this fact, anger management is extremely crucial for all health professionals because their noble work requires them to have a sound mind when dealing with human lives. Besides that, effective anger management is also important to safeguard the health professionals' mental, emotional and physical wellbeing.

Anger can affect judgement and decision-making. Health professionals who are angry and unable to control their anger effectively, will most probably have a clouded judgment, hence indirectly putting humans lives at risk when they are treating their patients. This further emphasizes that effective management is critical to provide the best care to patients.

4.2. Limitations

Throughout the study, there were a few limitations that we came across. One of the limitations of the study was that it was done among students of little age gaps. This research project was mainly carried out in the Melaka-Manipal Medical College Muar and Melaka campuses only and the participants were all from the same course of degree, and the same college, which curbed the results. The response rate of the study is only from medical students of the same college which is only one institution and cannot be used to represent all undergraduate medical students in Malaysia, let alone the general population. Besides, the response rates among the medical students of different semesters too were not equal. Students from Batch 34 and 35 gave the lowest response rates. Another limitation could be the fact that not all the students that participated were in a neutral mindset while answering the questionnaire. This was mainly because some of our study participants were in more fast paced, stressful postings as compared to the other participants that were in less demanding postings. One other limitation of this study is that there was a lack of follow-ups, so the changes of association between anger and the mental wellbeing of the study participants could not be assessed.

4.3 Recommendations

As for recommendations, it is suggested that the study to be carried out among health professionals and in the general population too. If this study is to be carried out among students, it should be carried out among undergraduate medical students of different age groups or a wider span of age range and of different places or institution. All these will help yield a more accurate and more precise result which in turn may even help represent the general population. If this study is to be done again among medical students of Melaka-Manipal Medical College, a more equal amount of response should be received from each semester of the MBBS course by implementing a different sampling method. In addition, the study should be done with follow ups to see the changes over time, as different clinical postings of medical students in clinical phases, show different results when in association between anger and their mental wellbeing.

5. Conclusion

Based on this study, there was little correlation between anger and mental wellbeing that showed significance. Similarly, there was also no significant association between age, gender, ethnicity, academic year, relationship status, religion, financial aid, mental exercise, alcohol and substance abuse with anger. More research in various settings should be implemented to understand better the correlation between factors affecting anger and its effects on the mental wellbeing among undergraduate medical students. This research, however, can be used as reference for future researches regarding the platform of anger and mental wellbeing.

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References

[1] Mayne, T. J., & Ambrose, T. K. (1999). Research review on anger in psychotherapy. Journal of Clinical Psychology, 55 (3), 353-363. doi: 10.1002/(SICI)1097-4679(199903)55:33.0.CO;2-B.

[2] Harris, W., Schoenfield, C. D., Gwynne, P. W., & Weissler, A. M. (1964). Circulatory and humoral responses to fear and anger. The Psychologist, 7-155.

[3] *The American heritage dictionary of the English language*. (2000). Boston: Houghton Mifflin. Anger

[4] Cox, D. L., Stabb, S. D., & Bruckner, K. H. (2000). *Womens anger: Clinical and developmental perspectives*. Philadelphia, Pa: Brunner/Mazel.

[5] Stein, N. L., & Levine, L. J. (1989). The causal organisation of emotional knowledge: A developmental study. *Cognition & Emotion, 3* (4), 343-378.

[6] Feindler, E. L., Marriott, S. A., & Iwata, M. (1984). Group anger control training for junior high school delinquents. *Cognitive Therapy and Research, 8* (3), 299-311.

[7] Nasir, R., & Ghani, N. A. (2014). Procedia - Social and Behavioral Sciences. *Behavioral and Emotional Effects of Anger Expression and Anger Management among Adolescents, 140*, 565-569. Retrieved from https://doi.org/10.1016/j.sbspro.2014.04.471.

[8] Cacciopo, J. T., Berntson, G. G., Laresen, J. T., Poehlmann, K. M., & Ito, T. A. (1993). The psychophysiology of emotion. *Lewis M, Haviland-Jones JM, Editors. Handbook of Emotions. 2,* 173-191.

[9] Philpart, M., Goshu, M., Gelaye, B., Williams, M. A., & Berhnae, Y. (2008). Prevalence and risk factors of gender-based violence committed by male college students in Awassa, Ethiopia. *Violence and Victims.*

[10] Goodwin, R. D. (2006). Association between coping with anger and feelings of depression among youths. *Am J Public Health,* 664-669. doi: 10.2105/AJPH.2004.049742.

[11] Abrahams, N., & Jewkes, R. (2005). Effects of South African men's having witnessed abuse of their mothers during childhood on their levels of violence in adulthood. *Am J Public Health.,* 1811-1816. doi: 10.2105/AJPH.2003.035006.

[12] Krug, E. G., Dahlberg, L. L., Mercy, J. A., & Lozano, R. (2002). World report on violence and health. *Geneva: World Health Organization*.

[13] Satar, S., Cenkseven, F., & Karcioglu, O. (2005). An investigation of the anger levels of residents: Medical compared with surgical disciplines. *Postgraduate Medical Journal,* 653-656.

[14] Goleman, D. (1997). Emotional intelligence: Why it can matter more than IQ. *New York: Bantam Books,* 75-92.

[15] Jackson, J., Kuppens, P., & Sheeber, L. (2011). Expression of Anger in Depressed Adolescents, 463-474. Retrieved from doi: 10.1007/s10802-010-9473-3.

[16] Gayathri, S. P., Joanne, T. M., Jonas, J. A., Eugene, T. Y., & Kumar, N. (2016). "Anger Management among Medical Undergraduate Students and Its Impact on Their Mental Health and Curricular Activities. Retrieved from https://doi.org/10.1155/2016/7461570.

[17] Knight, J. (1999). A New Brief Screen for Adolescent Substance Abuse. Retrieved from Jun; 153 (6): 591-6. PMID: 10357299.

[18] Dhalla, S. (1999-2010). A Review of the Psychometric Properties of the CRAFFT Instrument. Retrieved from Curr Drug Abuse Rev. 2011 Mar 1; 4 (1): 57-64. PMID: 21466499.

[19] Novaco, R. (1975). Anger Control: The Development and Evaluation of an Experimental Treatment. Retrieved from Lexington Books, Mass, USA.

[20] Novaco, R. (2003). Retrieved from https://www.wpspublish.com/store/Images/Downloads/Product/NAS- PI_Manual_Chapter_1.pdf.

[21] Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., Brown, S. S.,... Stanfield, S. (2015). Warwick-Edinburgh Mental Well-being Scale (WEMWBS) User Guide Version 2. Retrieved from https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs/researchers/userguide/we mwbs_user_guide_jp_02.02.16.pdf.

[22] Averill, J. (1983). Studies on Anger and Aggression: Implications for Theories of Emotion. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.473.6194&rep=rep1&type=p df

[23] Averill, J. (1982). Anger and Aggression: An Essay on Emotion. New York: Springer-Verlag.

[24] Buntaine, R., & Costenbader, V. (1997). Self-Reported Differences in the Experience and Expression of Anger Between Girls and Boys.

[25] Stoner, S., & Spencer, W. (1987). Age and Gender Differences with the Anger Expression Scale. Educ Psychol Meas. Retrieved from 47: 487-92. 39.

[26] Kopper, B., & Epperson, D. (1991). Women and Anger: Sex and Sex Role Comparisons in the Expression of Anger. Psychology of Women Querterly. Retrieved from 15: 7-14.

[27] Emel, K., Abdulkadir, K., & Faith, C. (2011). Anger Management and Factors That Influence Anger in Physicians. Retrieved from Balkan Med J 2011; 28: 62-8.

[28] Potegal, M., Kosorok, M., & Davison, R. (1996). The Time Course of Angry Behavior in the Temper Tantrums of Young Children. Retrieved from Annals of the New York Academy of Sciences, vol. 794, pp. 31–45.