

Cat fit and bull fight: Assessment of aggression in medical students as a prelude to conduct violence in future

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Abstract

Background: The intensity of aggression present in any person determines his/her threat to conduct violent and impulsive act against members of the society or else family, friends or foes, which necessitates a crucial analytical instrument for identification of such behaviour in smaller groups of societies.

Objectives: To assess a group of medical students from Kathmandu, Nepal for potential risk they bear to conduct violence in future medical practice.

Methodology: A self-administered pre-validated Bush and Perry Aggression Questionnaire was used in this descriptive cross-sectional study to analyse emotional and cognitive component among 235 medical students of Nepal between February and May 2019. A Likert-type bipolar scale was used for response format ranging from one (extremely uncharacteristic) to five (extremely characteristic). Questionnaire explored four factors: physical aggression, verbal aggression, anger and hostility. Mean scores of aggression were computed and compared with gender and level of education by conducting independent t-test with level of significance at 0.05.

Results: The mean scores were 20.73 ± 6.33 , 13.97 ± 3.87 , 18.79 ± 5.20 and 20.17 ± 6.68 , for physical aggression, verbal aggression, anger and hostility respectively. Males had higher score of physical aggression statistically significant at $p < 0.05$. The mean Bush and Aggression Perry Questionnaire score was calculated to be 71.66 ± 15.71 , but insignificant ($p > 0.05$) when compared between sexes, and level of education (second semester and seventh semester students).

Conclusion: Male medical students were more prone to hostility and physical aggression than female students who were more liable (statistically insignificant) to verbal aggression and anger.

Key words: Actuarial assessment; Bush and Perry Aggression Questionnaire; Medical students; Violence.

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INTRODUCTION

Amongst diverse variants of anti-social behaviours, aggression is considered to be one of the chief indicators to the risk of violence. Aggression could be persistent or continual behaviour in some individuals with extreme

behaviour problems whereas among wide-range of individuals this component is more or less situational or temporary. Anger as one of the components of aggression has been correlated as a link between aggression and hostility¹.

An assessment for intensity of aggression present in any person determines his/her threat to conduct violent and impulsive act against members of the society or else family, friends or foes. This necessitates a crucial analytical instrument for identification of such behaviour in smaller groups of societies, which in our study are group of medical students.

Noteworthy progress has transpired with time to analyze behavioral problems and their correlate among various

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groups of individuals^{2, 3}. These analyses were carried out in the form of inventories, interviews, checklists and questionnaires; formats which have modified with time owing to academic developments in the field of behavioral sciences^{4,5}. Validation and accuracy of these tools are linked to components of risk of violence, most of which are based on lengthy interviews and complex interpretations. An alternative method of assessment which has evolved with time is by scoring in a scale of inventories; the actuarial assessment method (AAM)⁶.

Through this article, an attempt is made to analyze components associated with aggressive behavior using AAM in adolescent to adult group of medical students of Nepal aged 18-25 years, using Bush and Perry Aggression Questionnaire¹. Four factors - physical aggression, verbal aggression, anger and hostility as postulated by Bush and Perry underwent an actuarial analysis to assess risk of violence among male and female medical students in future using series of questions under each factor^{1,4}.

METHODOLOGY

The self-administered pre-validated questionnaire used in this descriptive cross-sectional study, designed as Bush and Perry Aggression Questionnaire (BPAQ), was intended to analyze emotional and cognitive component¹ among adolescents to adult medical students of Kathmandu, Nepal. The study was conducted from 2nd February 2019 to 4th May 2019. A Likert-type bipolar scaling method for response format was used, which ranged from one (extremely uncharacteristic of subject) to five (extremely characteristic of subject). The questionnaire explored four factors: physical aggression (nine items), verbal aggression (five items), anger (seven items) and hostility (eight items). The maximum achievable score by a subject on the BPAQ is 145 viz. physical aggression-45, verbal aggression-25, anger aggression- 35 and hostility aggression- 40. A non-probability sampling incorporated 235 medical students from one among five medical institutions within Kathmandu valley. From among the five medical colleges in Kathmandu valley, one was chosen purposively. From a total of approximately 490 students enrolled in MBBS curriculum in the college, 40% were enrolled in the study once the selection criteria were met. An additional 20% was added to cover withdrawal issues and a minimum sample size of 235 was estimated. Following ethical clearance from Institutional Review Committee, Kathmandu Medical College, self-reported data was subjected to response bias by implementation of compliance by means of informed expressed consent.

Age, gender, level of education was assessed against risk of violence in future, which was derived using a valid questionnaire assessing physical, verbal aggression, anger and hostility. Data was entered and analyzed using Statistical Package for the Social Sciences (SPSS version 17.0). Descriptive statistics were calculated for mean and standard deviation. Mean scores of aggressions were computed and compared with age, gender and level of education by conducting independent t-test with level of significance at 0.05.

RESULTS

Among the total respondents (235), there were 51.5% males and 48.5% females. The mean age of the respondents was 21.52 years (minimum 18 years, maximum 25 years). From a total of nine questions on physical aggression, 51.5% answered that it was extremely uncharacteristic of them to be unable to "control the urge to strike another person", whereas 25% reported that it was extremely characteristic of them to "resort to violence to protect my rights". In context to verbal aggression, it was reported to be extremely uncharacteristic of 18.3% of respondents to get into arguments when people disagreed with them. From the total respondents, in response to query about anger, around 35% reported that it was extremely characteristic of them to "flare up quickly but get over it quickly". In context to hostility, 15.3% reported that it was extremely characteristic of them to "sometimes feel that people are laughing at me behind my back".

The mean scores were 20.73 ± 6.33 for physical aggression, 13.97 ± 3.87 for verbal aggression, 18.79 ± 5.20 for anger and 20.17 ± 6.68 for hostility. When compared with gender it was seen that males had a higher score of physical aggression than females which was statistically significant at $p < 0.05$. However, females showed higher mean scores in verbal aggression, anger and hostility when compared to males. But these findings were not statistically significant (Table 1).

The 95% confidence interval of the difference between lower and upper bounds were 1.08 and 4.27 for physical aggression, -1.09 and 0.90 for verbal aggression, -2.32 and -0.34 for anger and -3.80 and -0.40 for hostility.

The mean BPAQ score was calculated to be 71.66 ± 15.71 among total respondents (minimum 37 points, maximum 73.66 points) but showed insignificant p-value ($p > 0.05$) when mean BPAQ scores were compared between males and females (Table 2). The mean BPAQ scores when compared between the semesters

Table 1: Comparison of scores by gender

Variable	Gender	N	Mean	SD	SEM	p-value
Physical aggression	Male	121	22.03	5.55	.50	0.001
	Female	114	19.35	6.82	.63	
Verbal aggression	Male	121	13.92	3.98	.36	0.85
	Female	114	14.01	3.77	.35	
Anger	Male	121	18.31	5.01	.45	0.14
	Female	114	19.30	5.38	.50	
Hostility	Male	121	19.14	6.56	.59	0.01
	Female	114	21.25	6.66	.62	

*p-value from t-test/significance at 0.05; SD: Standard Deviation, SEM: Standard Error of Mean

Table 2: BPAQ score by gender

Variable	Gender	N	Mean	SD	SEM	p-value
BPAQ Score	Male	121	73.42	14.44	1.31	0.80
	Female	114	73.92	17.01	1.59	

*p-value from t-test/significance at 0.05; SD: Standard Deviation, SEM: Standard Error of Mean

that the students were enrolled in (second semester 73.66 ± 14.33 and seventh semester 73.66 ± 17.52), the difference in means was not statistically significant as well ($p\text{-value} > 0.05$).

DISCUSSION AND CONCLUSION

Violence is characterised by behaviour intending to cause physical or psychological harm to a person's body, mind, reputation or property, instigated by one's aggressive behaviour. This behaviour can be hostile when the act is impulsive and prompted with rage. Assessment of aggression can thus help identify a person's chances of conducting violence to society when s/he is under influence of stress and anger. Hostility is a continuous cognitive emotion in human resulting from a negative appraisal which is expressed through anger. Anger is a transitory feeling triggered by specific conditional activities of the brain. Moreover, hostility is a prolonged negative expression of anger resulting from negative appraisals^{7,8}. Both anger and hostility are forms of aggression, either verbal or physical.

At present, trending scientific approaches being practiced by researchers to assess risk of violence are the Actuarial Approach Model and Structural Professional Judgment Model (SPJ). Both of these approaches are similar in the sense that pre-determined risk factors demonstrated systematically in past researches are re-analyzed among different subject groups^{9,10}. The vital difference in these two approaches lies in the decision or judgment by the evaluator. Fixed algorithms and scores are calculated for AAM numerically to focus on prediction, whereas in SPJ approach, personal expertise

and aptitude to interpret the facts provided by subjects through structured assessment are rated by professionals with empirical knowledge, moreover, focusing on invention or rediscovery in clinical/diagnostic set-up rather than in prediction of risk for violence in a given community^{11,12}.

Although SPJ method was initially considered the better method for risk assessment researches among adults and adolescents^{13,14}, evenhanded data verifications congregated over time have shown that AAM is functional in determining people at high risk of repetition of aggressive behavior even after facing retribution of the previous such act, in other words; recidivism to aggressive act¹⁵⁻¹⁷. With rising concern related to violence against and/or by the doctors in Nepal, an attempt was made through this study to analyze if the trait of aggression is possessed by the doctor during his early career as a student. The AAM method hence justified as a tool in this study to reckon risk of violence among medical students in future.

Neurobiological allusion of emotional regulations susceptible for violence and impulsive acts are believed to be facilitated due functional or structural anomalies in an inter-connected neural meshwork comprising of amygdala, areas of prefrontal cortex, hypothalamus, anterior mid cingulate cortex, pre-optic region, insular cortex and ventral striatum¹⁸. A study done on Japanese population by Seishu Nakagawa et al using a magnetic resonance imaging in hostile behavior subscale proposed association of hostility with gray matter density; moreover, the anterior mid-cingulate

cortex was concluded to be vital for cognitive aspects of hostility¹⁹. The sex differences for hostility in their study showed male to be more inclined towards hostility than females, a finding as similar to our study (p-value=0.01).

Lesch KP and Merschedorf U outlined the classical neurotransmitters associated with aggression. Impulsive acts and aggressive behaviour were correlated with cerebrospinal fluid concentration of a serotonin metabolite 5-HT which provided a convincing relation²⁰. Androgens, oestrogens and post pubertal testosterone are few mediators among many more that interact with the serotonin 5-HT receptors to facilitate aggression through a pathway; too complex for detailed understanding of aggression at a molecular level²¹.

Although the mechanism of causation of aggression has been explored to a molecular level, the actual reason as to why psychometric analyses done in cross cultural settings globally produce similar kind of results when compared with male and female sexes is an appealing matter for further study with larger sample size and multi-disciplinary approach including psycho-social, molecular and genetic analysis. Almost all studies referred over period of time from at different parts of world have produced similar kind of results that males are more prone to hostility and physical aggression than females and that females are less but significant and liable to verbal aggression and anger²²⁻²⁵. The result from our analysis among male and female medical students was no exception to this (significant for physical aggression in males at p<0.05).

The increasing number of violence against medical personnel as reflected in press and medical anecdotes

has emerged as a disorderly menace in and around Indian sub-continent²⁶⁻²⁸. Factors associated for violent activities within healthcare facility can broadly be identified due to three major factors: the patient factor, the facility/environment and the medical professional's factor. Gross examples of speculations behind such medico-legal acts have been outlined due to long working hours, time deficit for examination of outnumbered patient in a given time frame resulting in poor doctor patient communication, unrestricted entry of patient's/visitors under influence of drugs/alcohol, lack of protocols for preparedness in such circumstances, inability to identify individuals prone to conduct such act within hospital premises and apathy in government policy to handle such cases, to name a few^{29,30}.

This study is a probe into the doctor factor; a psycho-social trait for risk of violence that a future doctor may possess during his adolescence which possibly could determine his aggressive behaviour later in his career; hence resulting in a breach in communication between healthy doctor-patient relationships. Certain level of mindfulness based interventions in such adolescent medical students may be effective in reducing aggression through emotional regulations. Case controlled studies on effect of such mindfulness measures including effects of meditations, yoga, dialectical behaviour and commitment therapy on aggression and violence have proved that such interventions play vital role in reducing unanticipated outcomes during healthcare procedures³¹. Authors also suggests, further such studies be conducted in more objective methods that provide a multifaceted understanding of aggression among not only medical students but fresh medical graduates.

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