RESEARCH ARTICLE

Exposure to violence and its association with symptoms of aggression: A cross sectional study among medical students of Karachi, Pakistan

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Abstract

Objective: To explore the experience of violence and its association with symptoms of aggression among medical students.

Methods: The cross-sectional study was conducted from January 5 to 14, 2018, at Dow University of Health Sciences, Karachi, and comprised medical students who were interviewed using a self-reporting questionnaire that had three sections: demographics, the Aggression Questionnaire, and the Exposure to Violence Scale. Data were analysed using SPSS 20.

Results: Of the 192 subjects, 144(75%) were females and 48(25%) were males, with an overall mean age of 21.39+/- 2 years. Total exposure to violence was significantly higher among older male respondents ($p<0.05$). It was significantly associated with higher severity of physical aggression and hostility ($p<0.05$). However, it had no significant relationship with verbal aggression and anger ($p>0.05$).

Conclusion: A large proportion of medical students reported exposure to violent events, which was also associated with increased aggression among them.

Keywords: Aggression, Violence, Trauma, Medical students, Pakistan. (JPMA 69: 654; 2019)

Introduction

The World Health Organisation (WHO)defines violence as 'the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation".[1] Violence is among the leading causes of death for people aged 15-44 years worldwide.[2] Globally an estimated 1.6 million people had lost their lives to violence in the year 2000, with almost half of these deaths attributed to suicides, one-third to homicides, and one-fifth to armed conflicts.[1] It is thus a global pandemic, but the low and middle income countries (LMICs) have been affected the most because of growing political resentment, poverty, unemployment and terrorism.[3]

Pakistan has long suffered from internal security issues and political, economic, religious, and ethnic violence. According to South Asia Terrorism Portal, 57,364 casualties have been attributed to terrorism-related violence in Pakistan, from 2003 to 2015.[4] Although terrorism-related incidents are reported from all major cities in Pakistan, Karachi has experienced frequent acts of terrorism and violence due to its geopolitical significance.

In a developing country like Pakistan, there is a paucity of data related to experience of violence and its relationship with mental health and behavioural symptoms. Hence, there is a dire need to address the possible effects of violence on mental health and behaviour in the youth to facilitate effective policy-making and culture-specific psychosocial interventions. Although people from all walks of life have been crippled by frequent violence-related incidents in Karachi, these experiences cause major difficulties in the personal development among the adolescents and the youth.

For instance, a study reported that 93.2% of the respondents had witnessed a traumatic event and 76.4% had experienced it themselves.[5] Increasing violence and terrorism-related incidents lead to disruption of daily routine and a constant concern for safety of oneself as well as of family and friends. This is also associated with several psychopathologies such as post-traumatic stress disorder (PTSD), anxiety, depression, symptoms of aggression, and substance use, leading to poor academic performance and interpersonal predicaments.[6,7] Moreover, exposure to violence in general is also associated with risk for perpetrating aggression and violence by the same individual.[8]

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The consequential sequelae of exposure to traumatic events become more marked during adolescence which is a transitional stage of important physical and psychological development as the young ones observe things around them, make inferences that become scripted and the regulate principles of future behaviour in the life ahead. Aversive stimulations in the form of provocations and frustrations are important precursors of aggression. This notion is substantiated by a study that reported that prior violence exposure had a significant effect in increasing aggression, normative beliefs about aggression, and aggressive fantasy both by imitations of violence and development of associated cognition as the child gets older.[9]

The current study was planned to fill this gap in indigenous literature by exploring the experience of violence and its association with symptoms of aggression among medical students.

Subjects and Methods

The cross-sectional study was conducted from January 5 to 14, 2018, at Dow University of Health Sciences (DUHS), Karachi. Medical students were conveniently approached and interviewed, using a self-reporting questionnaire that consisted of three sections: demographics, The Aggression Questionnaire, and the Exposure to Violence (ETV) scale. Permission was obtained from the institutional review board and written informed consent was taken from the subjects.

Sample size was calculated using GPower (v 3.1.7). Previous studies assessing association between aggressive behaviours and exposure to violence reported moderate effect sizes.[10] Therefore, we judged a minimum sample size of 146 to be appropriate for multiple regression analysis by keeping a moderate effect size f2 (0.15), power (95%), alpha (0.05) and an estimated k (predictors) = 6.

The English version of The Aggression Questionnaire[11] was used to evaluate aggression among the respondents.[11] It is a psychometrically validated instrument that assesses anger across four domains: physical aggression, verbal aggression, anger and hostility. The scale consists of 29 items recording responses on a Likert scale ranging from 'extremely uncharacteristic of me' to 'extremely characteristic'.

Exposure to violence was assessed that assesses a respondent's exposure to violence through three routes using a 24-item questionnaire.[10] The questionnaire records responses regarding exposure to violence on a dichotomous scale coded as yes/no.

Data was analysed using SPSS 20. Mean scores and standard deviation were calculated for quantitative variables and frequencies for categorical variables. Regression analysis was run to identify predictors of total exposure to violence among the respondents. Respondents' age, gender and scores on aggression subscales were added as predictors of total exposure to violence. Prior to running multiple regression analysis, all assumptions were tested. Tolerance (TOL) and Variance Inflation Factor (VIF) values were used to assess multi-collinearity, and histograms were visualised to assess normality of data. Moreover, confounding points in the datasets were excluded.

Results

Of the 192 subjects, 144(75%) were females and 48(25%) were males, with an overall mean age of 21.39±2 years.

Respondents were exposed to 7.8±3.6 episodes of violence. On further breakdown of routes, the respondents had witnessed mean 3.99±2.03 episodes of violence, had been victimised 1.44±1.49times themselves and had learned about 2.44±1.35 episodes of violence indirectly. Males scored higher than females on witnessing, victimisation and total exposure to violence,

Table-1: Mean scores (SD) on exposure to violence scale and the aggression questionnaire.

Variable	Mean (SD) Males	Mean (SD) Females	t-stat	Full sample Mean (SD)
Physical aggression	24.33 (6.94)	21.53 (6.46)	2.55*	22.23 (6.67)
Verbal aggression	18.73 (5.62)	17.26 (6.66)	1.46	17.63 (6.06)
Anger	19.35 (5.44)	18.26 (5.71)	1.16	18.54 (5.65)
Hostility	21.52 (5.95)	18.26 (5.71)	1.27	20.42 (6.92)
Witnessing	5.08 (1.99)	3.63 (1.91)	4.54***	3.99 (2.03)
Victimization	2.04 (1.75)	1.24 (1.35)	3.28**	1.44 (1.49)
Learning	2.65 (1.34)	2.36 (1.35)	1.24	2.44 (1.35)
Total exposure	9.77 (3.75)	7.24 (3.44)	4.41***	7.87 (3.61)

* denotes $P < 0.05$, ** denotes $P < 0.001$, *** denotes $P < 0.001$.
SD: Standard deviation.

Table-2: Responses on victimisation subscale.

Statement		Frequency	Percentage
Subject chased to hurt	No	160	83.3%
	Yes	32	16.7%
Subject hit, slapped, punched,	No	133	69.3%
	Yes	59	30.7%
Subject attacked with a weapon	No	182	94.8%
	Yes	10	5.2%
Subject shot, not killed	No	187	97.4%
	Yes	5	2.6%
Subject shot at	No	186	96.9%
	Yes	6	3.1%
Subject in a serious accident	No	178	92.7%
	Yes	14	7.3%
Subject sexually assaulted	No	182	94.8%
	Yes	10	5.2%
Subject threatened to hurt	No	165	85.9%
	Yes	27	14.1%
Subject in a natural disaster	No	149	77.6%
	Yes	43	22.4%
Subject in a frightful situation	No	123	64.1%
	Yes	69	35.9%

Table-3: Responses on witness subscale.

Statement		Frequency	Percentage
Someone chased to be hurt	No	116	60.4%
	Yes	76	39.6%
Someone get hit, slapped, punched,	No	36	18.8%
	Yes	156	81.2%
Someone attacked with a weapon	No	123	64.1%
	Yes	69	35.9%
Someone shot, not killed	No	160	83.3%
	Yes	32	16.6%
Someone shot at	No	167	87.0%
	Yes	25	13.0%
Heard gunfire nearby	No	17	8.9%
	Yes	175	91.1%
Someone in a serious accident	No	87	45.3%
	Yes	105	54.7%
Someone killed	No	154	80.2%
	Yes	38	19.8%
Someone threatened to hurt	No	105	54.7%
	Yes	87	45.3%

but the difference was not significant on the learning subscale (Table-1).

The most endorsed items on the victimisation subscale were being in a frightful situation, experiencing a natural disaster, hit, slapped and punched, and chased and threatened to hurt. Ten (5.2%) students had also experienced a sexual assault (Table-2).

On the witness subscale, the majority of subjects had witnessed a nasty episode (Table-3).

Table-4: Responses on learning subscale.

Statement		Count	Column N %
Someone shot, not killed	No	72	37.5%
	Yes	120	62.5%
Someone killed	No	62	32.3%
	Yes	130	67.7%
Someone killed themselves	No	133	69.3%
	Yes	59	30.7%
Someone died suddenly	No	52	27.1%
	Yes	140	72.9%
Someone raped	No	174	90.6%
	Yes	18	9.4%

Table-5: Association of exposure to violence with age, gender and aggression.

Variable	Unstandardized Coefficients		Standardized Coefficients	t-statistic	P-value
	B	Std. Error	Beta		
(Constant)	11.854	3.169		3.741	<0.001
Age	-0.263	0.117	-0.145	-2.251	0.026
Gender	-1.999	0.526	-0.240	-3.801	< 0.001
Physical aggression	0.157	0.043	0.291	3.672	< 0.001
Verbal aggression	0.032	0.047	0.053	0.669	0.504
Anger	-0.039	0.052	-0.061	-0.749	0.455
Hostility	0.089	0.039	0.170	2.295	0.023

On the learning subscale, the most endorsed items were 'someone getting shot but not killed', and 'killed and died suddenly'. Overall, 189(98.43%) students had witnessed a traumatic event the study sample, 128(66.67%) had experienced a traumatic event and 173 (90.10%) had learned about a traumatic event indirectly (Table-4).

Linear regression analysis revealed 17.8% variation in total scores on exposure to violence scale ($p<0.001$). It was significantly higher among older male respondents ($p<0.05$). It was significantly associated with higher severity of physical aggression and hostility ($p<0.05$). However, it had no significant relationship with verbal aggression and anger (Table-5). Males scored higher on physical aggression subscale than females ($p<0.05$), but no significant difference was found on anger, hostility and verbal aggression subscales ($p>0.05$ each).

Discussion

The study found a higher percentage of respondents who were exposed to violence. These individuals had frequently experienced, witnessed or learned about traumatic experiences. These traumatic experiences were significantly associated with increasing age, male gender, physical aggression, and hostility among the

respondents.

In comparison with the studies conducted in the developed countries, our respondents reported significantly higher mean scores for physical aggression, verbal aggression, anger, and hostility. These high scores in our cohort can be attributed to the recent wave of terrorism and violence, especially in Karachi. A similar study in a public-sector university in the United States used the Aggression Questionnaire to estimate the physical aggression, verbal aggression, anger and hostility among college students,[12] and reported mean scores among men for physical aggression to be 23.3, verbal aggression 14.4, anger 17.6, and hostility 21.8. For women, it reported mean scores of 16.4, 15.3, 16.4, and 19.9 respectively. Similar results were replicated in another study in Japan, reporting significantly lower scores on the Aggression Questionnaire.[13]

In our study, almost all students had either witnessed or learned about a traumatic event, while two-third had experienced violence themselves. A small percentage of young adults (9.7%) in our study were also exposed to sexual trauma. Respondents in our study reported a significantly higher exposure to violence than their counterparts in a study in Cape Town, South Africa, and Nairobi, Kenya,[14] reporting that around 58% of the South African and 59% of the Kenyan adolescents had been exposed to a violent event in the street, neighbourhood or school. Similarly, a multisite study conducted in the United States reported lower rates of exposure to violence than our study.[15] Similar results were replicated in another study in Iran which focussed on domestic violence than community violence.[16] Similar to other studies, Iranian respondents reported far lower rate of exposure to violent events in their community than the sample of the current study. This considerable difference in the rate of traumatic experience can be attributed to the high crime rates and violence in Karachi in the last few decades. The community has witnessed gang wars, gunfights on the street, kidnapping for ransom, extortion, and terrorist attacks in the last few years. It was described as nation's crime capital where a crime has infiltrated every segment of society.[17] Despite a recent drop in crime rate and violence, the Centre for Research and Security Studies (CRSS) observed Karachi as the most violence-affected region in the country.[18]

Our analysis demonstrated a positive association of increasing age and male gender with the exposure to violence. It can be ascribed to the fact that young adults are more likely to experience traumatic experience as they grow older. Males are more likely to be afflicted by the community trauma than females. Our results were consistent with the increased rates of victimisation and witnessing scores among males than females reported in another study from the United States, where males were more likely to face community violence with the exception of sexual trauma and domestic violence, which is more prevalent in females.[19] This gender difference becomes more evident while considering the patriarchal society of Pakistan where males are more exposed to the social environment and community.

Exposure to violence can have multitude of effects on human personality. It was strongly linked with physical aggression, verbal aggression and hostility among our respondents. According to Scarpa et al., exposure to violence is considered an independent risk factor for depression, anxiety, aggression, PTSD and dissociative experiences across the lifespan.[20] It can have a toxic effect on the bio-psychosocial makeup of an individual. Consequently, the affected individual is more likely to perceive violence as a normal human behaviour through an emotional desensitisation process.[21] Moreover, the underlying biological mechanism also precipitates a reduced resting heart rate, elevated blood pressure, reduced basal cortisol levels, increased cortisol reactivity to stress, and increased vagal tone.[20] All of these psychophysiological correlates have been frequently observed in the victims of community violence who continue to have increased episodes of aggression and antisocial behaviours.[20]

The current study has several limitations, and, hence, these results should be interpreted with caution. The results are not generalisable to the whole Pakistani population due to its geographical limitation and sampling by convenience. The participants were not asked about their year of study. Moreover, its cross-sectional design limits inferences regarding temporal and causal direction of the relationship between aggression and exposure to violence. No data was collected from non-medical universities or the general public to provide meaningful comparisons. We encourage future research to conduct longitudinal studies among medical, non-medical and community samples.

Conclusion

A large proportion of medical students reported exposure to violent events, which was also associated with increased aggression among them. Most notably, physical aggression and hostility appeared to be significantly associated with exposure to traumatic events.

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