ORIGINAL ARTICLE

ASSOCIATION OF AGGRESSION WITH SOCIO-DEMOGRAPHIC CHARACTERISTICS: A CROSS SECTIONAL STUDY AMONG RURAL ADOLESCENTS

Pratyay Pratim Datta[1], Kazi Ashique Firdoush[2]

[1]Department of Pharmacology; [2]Department of Biochemistry, Hi-Tech Medical College and Hospital, Bhubaneswar, India

Correspondence: Dr. Pratyay Pratim Datta, Email: pratyaypratimdatta@gmail.com.

ABSTRACT

Introduction: Adolescence is a period of immense physical, mental and social changes. Aggression is very common feature in this period in the present day world. But very limited studies have been conducted regarding aggression among adolescents in rural India. The present study was conducted to find out different socio-demographic characteristics associated with aggression among adolescents.

Materials and methods: The community based cross sectional study was conducted in Ramnagar, Jalapara and Rasulpur villages of Singur block of Hooghly district of West Bengal in Eastern India. The study included adolescents aged between 15 and 19 years of age. To assess aggression, Direct and Indirect Aggression Scale (DIAS) was used. Collected data was compiled, tabulated and analyzed using SPSS version 16.0.

Results: A high proportion of adolescents scored very high in DIAS scale. Total aggression score was significantly higher among older adolescents (18-19 years of age), among males, among adolescents belonging to lower income groups and whose mothers were working. Physical aggression score was significantly higher in younger adolescents, but other types of aggression were found to be significantly higher among older group.

Key words: Aggression, DIAS, Adolescents.

INTRODUCTION

Aggression is a behaviour aimed at causing physical or psychological pain to any living being. It may be of direct or indirect type. Direct aggression again may be physical or verbal. Physical aggression includes hitting, punching, pushing, slapping, kicking etc. On the other hand, verbal aggression means abuse, spreading of rumour, malign etc. Any aggressive behavior that is carried out via another person is considered as indirect aggression. Many theories regarding aggression have been postulated. According to some scientists [1, 2] this behavior is largely related to learning from social environment. Another hypothesis suggests association of this behaviour with frustration which may occur after being prevented from reaching a goal [3].

WHO has defined adolescence period from 10 to 19 years of age. Adolescents are often not able to cope up with the drastic changes that take place in their physical & psychological health. The psychological problems in this period occur due to disturbed relationship with parents, teachers, seniors and peers, scholastic backwardness compared to high expectation, sexual experimentation and substance abuse. All these are often directly or indirectly associated with aggression as well as psychological morbidity.

Literature review revealed that there is little amount of work on aggression among adolescents in India. Different factors related with aggressive behaviour of Indian adolescents have not been studied in details. Considering this backdrop, we conducted the present study to find out different socio-demographic characteristics associated with aggression among adolescents.

MATERIAL & METHODS

Study area and Study population:

This community based cross sectional study was conducted in three villages of Singur block, Hooghly district, West Bengal, India. The names of villages are Ramnagar, Jalapara and Rasulpur. The area is under the field practice area of All India Institute of Hygiene and Public Health, Kolkata, India. The villages are approximately 50km away from the city of Kolkata. A large proportion of the residents from this area go to Kolkata on daily basis for their livelihood. Another

large chunk of residents of this area are dependent on agriculture. The present study was conducted among adolescents aged 15 to 19 years of age in these three villages.

Sample size and study design:

The present study was conducted in between January to April, 2011. It was a community based cross sectional study. Adolescents aged 15 to 19 years of age in Ramnagar, Jalapara and Rasulpur villages, who were interested to take part in the study and both adolescents and their parents given informed consent were included in the present study. Total number of adolescents in this age group in these three villages was found to be 287. Out of them, 12 adolescents among them were not present at the time of survey even after 3 repeated visits. Parents of 17 did not give consent to include their children in the study. So the final sample size was 258.

Study parameters and study tools:

Data was collected regarding the socio-demographic variables like age, sex, religion, caste, type of family, working status of mothers of adolescents, and per capita monthly income of the families from which the adolescents belonged. For these data collection, a pre designed, pre tested, semi structured questionnaire was used.

Besides collecting basic socio-demographic information, we used validated Bengali version of Direct and Indirect Aggression Scale (DIAS) for data collection [4]. DIAS questionnaire was developed by K. Bjorkqvist et al. It contains 24 questions with 5 options for each question. The scoring is as per 5 point Likert Scoring System (0-1-2-3-4). The options ranged from "0 = never, 1 = seldom, 2 = sometimes, 3 = quite often, 4 = very often". The questionnaire contains 7 items for physical aggression, 5 items for verbal aggression and 12 for indirect aggression. The questionnaire was translated into Bengali (local language) & retranslated back to check validity.

Informed consent was taken from the parents of respondents. Institutional Ethical Committee clearance was taken prior to conduction of the study.

Statistical analysis:

After collection of data it was double entered in Microsoft Excel Sheet and validated. A clean database was generated and copied into SPSS sheet (version 16.0). Then the whole data was analyzed in SPSS (version 16.0). Distribution of study population according to age, sex, religion, caste, type of families, working status of mothers and per capita monthly income were analyzed. The distribution of participants according to different domains of aggression was also analyzed. Association of total as well as different types of aggression scores with different socio-demographic parameters was analyzed. Chi square test of significance was performed to find out the association.

RESULTS

Table 1 describes basic socio-demographic characteristics of the study population. The study population comprised of 135 males (52.3%) and 123 females (47.7%). Majority of the study population belonged to Hindu religion (65.9%) and the rest belonged from Muslim community (34.1%).

Table 1: Socio demographic characteristics of the study population according to sex

Socio-demographic Characteristics	Male (%)	Female (%)	Total (%)
Age			
15	34 (25.2)	21 (17.1)	55 (21.3)
16	24 (17.8)	20 (16.3)	44 (17.1)
17	28 (20.7)	27 (22.0)	55 (21.3)
18	24 (17.8)	27 (22.0)	51 (19.8)
19	25 (18.5)	28 (22.8)	53 (20.5)
Religion			
Hindu	83 (61.5)	87 (70.7)	170 (65.9)
Muslim	52 (38.5)	36 (29.3)	88 (34.1)
Type of family			
Nuclear	97 (71.9)	85 (69.1)	182 (70.5)
Joint	38 (28.1)	38 (30.9)	76 (29.5)
Caste			
General	115 (85.2)	116 (94.3)	231 (89.5)
Scheduled caste	20 (14.8)	7 (5.7)	27 (10.5)
Working status of Mother			
Working	9 (6.7)	9 (7.3)	18 (7.0)
Housewife	126 (93.3)	114 (92.7)	240 (93.0)
Monthly Income (per capita)			
Up to 500	48 (35.6)	24 (19.5)	72 (27.9)
501-800	38 (28.1)	35 (28.5)	73 (28.3)
801-1000	26 (19.3)	34 (27.6)	60 (23.3)
More than 1000	23 (17.0)	30 (24.4)	53 (20.5)
Type of Family			
Nuclear	97 (71.9)	85 (69.1)	182 (70.5)
Joint	38 (28.1)	38 (30.9)	76 (29.5)

Majority of the adolescents (89.5%) belonged from general caste and the rest 10.5% were from backward caste (scheduled caste). 93.0% adolescents had mothers who were homemaker and only 7% mothers were working and earnings for the family. 70.5% adolescents were from nuclear family and 29.5% were from joint family. Data regarding per capita monthly income in Indian rupees was taken. 27.9% had per capita income up to 500 rupees, 28.3% had per capita income between 501—800 rupees, 23.3% between 801—1000 rupees and 20.5% had per capita monthly income more than rupees 1000.

Table 2 shows the score of Direct and Indirect Aggression Scale (DIAS) in the study population. 41.9% of them scored in between 31-40 (median score 34) when total aggression score is considered. 19.8% scored between 41—50, 19.8% above 50 and 18.6% scored below or equal to 30. Majority of the study population (58.1%) had physical aggression score between 6—10. Only 5.4% scored above 15.

Table 2: Distribution of different aggression scores in the study population

DIAS (n=258)			
Total Aggression Score	**No. (%)**	**Verbal aggression score**	**No. (%)**
<=30	48 (18.6)	<=4	61 (23.6)
31-40	108 (41.9)	5-8	151 (58.5)
41-50	51 (19.8)	9-12	33 (12.8)
>50	51 (19.8)	>12	13 (5.0)
Physical aggression score	**No. (%)**	**Indirect aggression score**	**No. (%)**
<=5	40 (15.5)	<=15	51 (19.8)
6-10	150 (58.1)	16-20	148 (57.4)
11-15	54 (20.9)	21-25	47 (18.2)
>15	14 (5.4)	>25	12 (4.7)

Regarding verbal aggression score the commonest group was between 5—8 (58.5%) and least common group is those scored above 12 (5.0%). Majority (57.4%) of the study participants scored between 16 and 20 as far as indirect aggression score is considered.

Table 3: Association of total aggression scores according to different socio-demographic parameters

Variable	No. (%)	Total aggression score				χ^2 (df.), p value
		<=30	31—40	41—50	>50	
Age						
15—17	154 (59.7)	28 (18.2)	54 (35.1)	33 (21.4)	39 (25.3)	10.753 (3), 0.013
18—19	104 (40.3)	20 (19.2)	54 (51.9)	18 (17.3)	12 (11.5)	
Sex						
Male	135 (52.3)	22 (16.3)	48 (35.6)	33 (24.4)	32 (23.7)	8.853 (3), 0.031
Female	123 (47.7)	26 (21.1)	60 (48.8)	18 (14.6)	19 (15.4)	
Working status of mother						
Housewife	240 (93.0)	47 (19.6)	102 (42.5)	48 (20.0)	43 (17.9)	8.162, (3), 0.043
Working	18 (7.0)	1 (5.6)	6 (33.3)	3 (16.7)	8 (44.4)	
Religion						
Hindu	170 (65.9)	29 (17.1)	74 (43.5)	33 (19.4)	34 (20.0)	1.017 (3), 0.797
Muslim	88 (34.1)	19 (21.6)	34 (38.6)	18 (20.4)	17 (19.3)	
Caste						
General	231 (89.5)	45 (19.5)	100 (43.3)	44 (19.0)	42 (18.2)	5.374 (3), 0.146
Scheduled caste	27 (10.5)	3 (11.1)	8 (29.6)	7 (25.9)	9 (33.3)	
Type of Family						
Nuclear	182 (70.5)	39 (21.4)	73 (40.1)	37 (20.3)	33 (18.1)	4.035 (3), 0.258
Joint	76 (29.5)	9 (11.8)	35 (46.1)	14 (18.4)	18 (23.7)	
Per capita income per month						
Up to 800	145 (56.2)	27 (18.6)	49 (33.8)	36 (24.8)	33 (22.8)	10.934 (3), 0.012
More than 800	113 (43.8)	21 (18.6)	59 (52.2)	15 (13.3)	18 (15.9)	

Analysis was done to find the association of different socio-demographic parameters with the total aggression score as well as scores obtained in different sub-categories. Table 3 shows that total aggression score was significantly higher among adolescents aged 15—17 years as compared to those aged 18 and 19 years (p=0.013). Male participants were found to be scored significantly higher than their female counterpart (p=0.031). So, males were found to be more aggressive than female. It was also revealed that adolescents whose mothers were working were found to be significantly more aggressive than those whose mothers were homemakers (p=0.043). There was no significant difference in total aggression score among different caste categories, according to the type of the families of the adolescents and among different religions. Median of per capita monthly income was found to be rupees 800 and it was found that poorer group (whose per capita monthly income was less than rupees 800) had significantly higher aggression scores than the richer group (p=0.012).

Analysis was also done to find out the association of socio-demographic parameters with the sub-domains of DIAS. Table 4 highlights the association with the physical aggression scores. It was revealed that physical aggression score was significantly higher in younger adolescents (15-17 years) than among 18—19 years (p<0.001). Males were found to be significantly more physically aggressive than females (p=0.001). There was no significant difference of physical aggression scores among different religions, different castes, and types of the families as well as working status of mothers. But economically poorer categories were significantly more physically aggressive than higher income groups (p=0.045).

Table 4: Association of physical aggression scores according to different socio-demographic parameters

Variable	No. (%)	Physical aggression score				χ^2 (df.), p value
		<=5	6—10	11—15	>15	
Age						
15—17	154 (59.7)	18 (11.7)	78 (50.6)	48 (31.2)	10 (6.5)	27.210 (3), <0.001
18—19	104 (40.3)	22 (21.2)	72 (69.2)	6 (5.8)	4 (3.8)	
Sex						
Male	135 (52.3)	19 (14.1)	67 (49.6)	41 (30.4)	8 (5.9)	16.088 (3), 0.001
Female	123 (47.7)	21 (17.1)	83 (67.5)	13 (10.6)	6 (4.9)	
Working status of mother						
Housewife	240 (93.0)	39 (16.2)	141 (58.8)	48 (20.0)	12 (5.0)	4.030 (3), 0.258
Working	18 (7.0)	1 (5.6)	9 (50.0)	6 (33.3)	2 (11.1)	
Religion						
Hindu	170 (65.9)	25 (14.7)	104 (61.2)	33 (19.4)	8 (4.7)	2.021 (3), 0.568
Muslim	88 (34.1)	15 (17.0)	46 (52.3)	21 (23.9)	6 (6.8)	
Caste						
General	231 (89.5)	39 (16.9)	134 (58.0)	45 (19.5)	13 (5.6)	5.096 (3), 0.165
Scheduled caste	27 (10.5)	1 (3.7)	16 (59.3)	9 (33.3)	1 (3.7)	
Type of Family						
Nuclear	182 (70.5)	30 (16.5)	108 (59.3)	33 (18.1)	11 (6.0)	3.282 (3), 0.350
Joint	76 (29.5)	10 (13.2)	42 (55.3)	21 (27.6)	3 (3.9)	
Per capita income per month						
Up to 800	145 (56.2)	20 (13.8)	77 (53.1)	39 (26.9)	9 (6.2)	8.071 (3), 0.045
More than 800	113 (43.8)	20 (17.7)	73 (64.6)	15 (13.3)	5 (4.4)	

Table 5: Association of verbal aggression scores according to different socio-demographic parameters

Variable	No. (%)	Verbal aggression score				χ^2 (df.), p value
		<=4	5—8	9—12	>12	
Age						
15—17	154 (59.7)	44 (28.6)	93 (60.4)	13 (8.4)	4 (2.6)	14.319 (3), 0.003
18—19	104 (40.3)	17 (16.3)	58 (55.8)	20 (19.2)	9 (8.7)	
Sex						
Male	135 (52.3)	35 (25.9)	79 (58.5)	16 (11.9)	5 (3.7)	1.821 (3), 0.610
Female	123 (47.7)	26 (21.1)	72 (58.5)	17 (13.8)	8 (6.5)	
Working status of mother						
Housewife	240 (93.0)	58 (24.2)	137 (57.1)	33 (13.8)	12 (5.0)	4.109 (3), 0.250
Working	18 (7.0)	3 (16.7)	14 (77.8)	0 (0.0)	1 (5.6)	
Religion						
Hindu	170 (65.9)	40 (23.5)	97 (57.1)	23 (13.5)	10 (5.9)	1.103 (3), 0.776
Muslim	88 (34.1)	21 (23.9)	54 (61.4)	10 (11.4)	3 (3.4)	
Caste						
General	231 (89.5)	54 (23.4)	137 (59.3)	31 (13.4)	9 (3.9)	6.699 (3), 0.082
Scheduled caste	27 (10.5)	7 (25.9)	14 (51.9)	2 (7.4)	4 (14.8)	
Type of Family						
Nuclear	182 (70.5)	46 (25.3)	99 (54.4)	26 (14.3)	11 (6.0)	4.816 (3), 0.186
Joint	76 (29.5)	15 (19.7)	52 (68.4)	7 (9.2)	2 (2.6)	
Per capita income per month						
Up to 800	145 (56.2)	37 (25.5)	82 (56.6)	20 (13.8)	6 (4.1)	1.506 (3), 0.681
More than 800	113 (43.8)	24 (21.2)	69 (61.1)	13 (11.5)	7 (6.2)	

Association of socio demographic parameters with verbal aggression scores is depicted in Table 5. This scores were significantly higher in older age group (18—19 years) than 15—17 years group (p=0.003). 6.5% females in comparison to 3.7% males scored above 12; 47.7% females in comparison to 52.3% males had score below or equal to 4. So, overall, verbal aggression scores were found to be higher in female; but these differences were statistically not significant (p=0.610). No other parameter was found to be significantly associated with the verbal aggression.

Table 6 depicts that indirect aggression scores were significantly higher among older adolescents (p<0.001). Though proportion of female in higher scores group was found to be higher than male (7.3% female vs. 2.2% male scored more than 25; 20.3% female vs. 16.3% male scored between 21—25) but these differences were statistically not significant (p=0.115). Working mothers' adolescent sons and daughters scored significantly higher than homemakers' adolescent sons and daughters (p=0.016). Other socio-demographic parameters were not significantly associated with indirect aggression score.

Table 6: Association of indirect aggression scores according to different socio-demographic parameters

Variable	No. (%)	Indirect aggression score				χ^2 (df.)), p value
		<=15	16—20	21—25	>25	
Age						
15—17	154 (59.7)	42 (27.3)	96 (62.3)	14 (9.1)	2 (1.3)	39.232 (3), <0.001
18—19	104 (40.3)	9 (8.7)	52 (50.0)	33 (31.7)	10 (9.6)	
Sex						
Male	135 (52.3)	25 (18.5)	85 (63.0)	22 (16.3)	3 (2.2)	5.936 (3), 0.115
Female	123 (47.7)	26 (21.1)	63 (51.2)	25 (20.3)	9 (7.3)	
Working status of mother						
Housewife	240 (93.0)	51 (21.2)	139 (57.9)	40 (16.7)	10 (4.2)	10.283 (3), 0.016
Working	18 (7.0)	0 (0.0)	9 (50.0)	7 (38.2)	2 (11.1)	
Religion						
Hindu	170 (65.9)	36 (21.2)	90 (52.9)	36 (21.2)	8 (4.7)	4.600 (3), 0.204
Muslim	88 (34.1)	15 (17.0)	58 (65.9)	11 (12.5)	4 (4.5)	
Caste						
General	231 (89.5)	49 (21.2)	129 (55.8)	43 (18.6)	10 (4.3)	3.904 (3), 0.272
Scheduled caste	27 (10.5)	2 (7.4)	19 (70.4)	4 (14.8)	2 (7.4)	
Type of Family						
Nuclear	182 (70.5)	38 (20.9)	99 (54.4)	35 (19.2)	10 (5.5)	2.629 (3), 0.452
Joint	76 (29.5)	13 (17.1)	49 (64.5)	12 (15.8)	2 (2.6)	
Per capita income per month						
Up to 800	145 (56.2)	27 (18.6)	91 (62.8)	22 (15.2)	5 (3.4)	4.614 (3), 0.202
More than 800	113 (43.8)	24 (21.2)	57 (50.4)	25 (22.1)	7 (6.2)	

DISCUSSION

Adolescence is the transition period between childhood and adulthood. Immense changes in the psychological, physical and social domains are experienced by the adolescents. In the rapidly changing world now the children as well as adolescents are much lonelier as compared to previous scenario. Aggression is a common phenomenon in this period of life particularly in the later part. In the present study aggression of adolescents aged 15 to 19 years of age is assessed based on Direct and Indirect Aggression Scale (DIAS).

Overall the aggression score was significantly higher in adolescents aged 18-19 years as compared to 15-17 years. So, the older adolescents were found to be more aggressive. The expectation from the family on the older adolescents is often too high and they are often unable to fulfill the expectations; as a result often they experience un-well behavior from the family members resulting in depression. Depression often gives rise to aggressive behavior in them. Moyer (1976) identified eight types of aggression; of which irritable aggression indicates the relation of aggression with frustration, deprivation and stressful situation. According to frustration aggression hypothesis (3), the motivation for aggression increases when the ongoing behavior is interrupted or when an individual is prevented from reaching a goal leading to frustration. On the other hand the peer effect on older adolescents is higher than the younger one. According to social learning theory of aggression by Albert Bandura, human aggression is largely learnt by watching other people behave aggressively, either in person or in films [2].

There is a strong relation of testosterone with aggression [5, 6, 7, 8]; which may be the reason of more aggressive behavior among males. Concentration of testosterone most clearly correlated with aggressive responses involving provocation. It has also been revealed that testosterone levels of criminals who committed aggressive crimes were higher than testosterone level of criminals who committed non-aggressive crimes. Overall testosterone level of male is significantly higher than females. In the present study also male participants scored significantly high than the female participants as far as total aggression score was considered. It is corroborative with the findings from a meta-analysis [9].

It was also revealed in the present study that adolescents, whose mothers were working, scored significantly higher than those whose mothers were housewives. The adolescents, whose mothers are working, usually feel lonelier in the daytime and there is more scope to be engaged in anti-social activities. Beside they often feel neglected from the family members; they perceive that enough care is not being taken to them. So, according to negative affect theory of aggression, there is more chance of these adolescents to be aggressive. The present study also highlights the same findings.

The poorer section of the study participants was found to be more aggressive than the richer group. Again the negative affect theory as well as frustration aggression hypothesis can be the result of this.

Physical aggression is a behavior aimed at causing physical pain to any living being. It was found to be significantly high in male as compared to female. The high level of testosterone can well explain it. But as far as age association with physical aggression was considered, it was revealed that it was significantly high in younger age group (15-17 years). Another study was conducted by Lee KH et al among younger children (5-11 years old) who also got higher prevalence of physical aggression among younger children [10]. Like the total

aggression score, physical aggression score was also found to be significantly higher among poorer section of the community.

Verbal aggression is a behavior aimed at causing psychological pain to any living being. This behavior was found to be significantly higher among older adolescents. So, with the increase in age, the behavior changes from physical to verbal aggression. With the gradual maturity of brain the individuals are more and more interested to harm psychologically than that of physical harm. It is also the fact that to take action against a verbally aggressive person is difficult than to take action against a physically aggressive persons.

Indirect aggression is a behavior which is not done directly but via another person as a media. It was also found to be significantly higher among older adolescents and among adolescents whose mothers were working.

There are areas in the brain related with the aggressive behavior of a person. The areas are hypothalamus, amygdala, prefrontal cortex, cingulate cortex, hippocampus, and periaqueductal gray matter of the midbrain. But beside the neural mechanism of aggression, the environmental factors related with the aggressive behavior often take a significant role. The present study highlighted the socio-demographic parameters in the rural India which are strongly correlated with aggression.

Conflict of Interest: None declared.

REFERENCES

1. Bandura, A. (1973). Aggression: A social learning analysis. Englewood Cliffs, NJ:Prentice-Hall
2. Henry PS Charles CM. Social Learning Theory. *Journal of Organizational Behavior Management,* 1982; 3(4): 55–63.
3. Berkowitz L. Frustration-Aggression hypothesis: Examination and Reformulation. *Psychological Bulletin.* 1989; 106(1): 59-73
4. Direct & IndirectAggression Scales (DIAS). K. Björkqvist, K.M.J. Lagerspetz, & K. Österman, ÅboAkademi University, Finland (1992)
5. Terburg D, Morgan B, van Honk J.The testosterone-cortisol ratio: A hormonal marker for proneness to social aggression.*Int J Law Psychiatry.* 2009 Jul-Aug;32(4):216-23.
6. Hermans EJ, Ramsey NF, van Honk J.Exogenous testosterone enhances responsiveness to social threat in the neural circuitry of social aggression in humans. *Biol Psychiatry.* 2008 Feb 1;63(3):263-70.
7. Mehta PH, Beer J.Neural mechanisms of the testosterone-aggression relation: the role of orbitofrontal cortex.*J CognNeurosci.* 2010 Oct;22(10):2357-68
8. Kreuz LE, Rose RM. Assessment of aggressive behavior and plasma testosterone in a young criminal population.*Psychosom Med.* 1972 Jul-Aug; 34(4):321-32
9. Card NA, Stucky BD, Sawalani GM, Little TD.Direct and indirect aggression during childhood and adolescence: a meta-analytic review of gender differences, intercorrelations, and relations to maladjustment.*Child Dev.* 2008 Sep-Oct;79(5):1185-229.
10. Lee KH, Baillargeon RH, Vermunt JK, Wu HX, Tremblay RE. Age differences in the prevalence of physical aggression among 5-11-year-old Canadian boys and girls. *AggressBehav.* 2007 Jan-Feb;33(1):26-37.