IMPACT OF PARENTAL PSYCHIATRIC PROBLEMS ON ADJUSTMENT BEHAVIOUR OF ADOLESCENTS: A STUDY THROUGH ADJUSTMENT INVENTORY OF SCHOOL STUDENTS

Statistics

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ABSTRACT

Objective- It has been revealed by various studies that parental psychiatric disorders affect several aspects of children's development, including their adjustment behaviour. This study aims to study impact of parent's psychiatric health on adjustment behaviour of adolescent students using Adjustment Inventory of School Students. **Methods-** A Case-Control cross-sectional study was conducted on adolescent students of class XI in New Delhi, India (Control group) and adolescents of parents diagnosed suffering from some psychiatric disorders as identified by DSM IV in a New Delhi hospital (Case group). A total number of 116 respondents between the age-group 15-18 years were selected. **Results-** The effect of parents' psychiatric health is observed with Adjustment Inventory of School Students for 'Case' and 'Control' groups. The differences in social and emotional adjustments of the two groups were statistically significant (p -values < 0.001) but the difference between educational adjustments was not significant as the means of scores for both the groups were higher than the healthy range. However the total adjustment scores were significantly different as p -value < 0.001 .

KEYWORDS

Adjustment, Parental Psychiatric Health, Permutation Test, Power Of The Test, Welch Test

1. INTRODUCTION

Mental illness is a condition wherein the affected person loses control over their thoughts and feelings. The degree of illness varies from mild depression to the serious condition like schizophrenia. Mental illness of one member in the family enhances the chance of affecting the mental health of others (www.webmd.com). Particularly children growing up in this kind of environment have higher chances of developing some mental disorders. Unable to understand what is happening around them, they become prone to emotional as well as psychological adjustment disorders as the environment at home is not conducive enough for their proper growth. The problem is more aggravated at the age of adolescence due to peculiar nature of this age.

Adolescence is the phase through which every kid passes before entering into adulthood. Since it is filled with too many changes, both physical and emotional, the adolescent is bound to face great pressure. They are supposed to act and think like adults whereas they are mostly not out of childhood phase. So they find it difficult to adjust to the needs of this changing scenario around them. At this stage of physical and emotional changes, the adolescent needs the support and understanding of parents to overcome this dilemma. However, if one or both the parents are mentally unwell, the adolescent is not only deprived of that support but may have to provide support to his or her parents instead. The whole situation may be difficult for him/her to handle and they may become prone to having issues in adjustment at the societal, emotional and academic levels.

Extensive research has been done to find the cause and effects of non-adjustment of young adults. Rajkumar G., Saravanan M., and Anbarasi M. (2016) studied the effect of academic-related factors like increasing age, type of school, medium of instruction and type of accommodation on adjustment problems in adolescents. They concluded that the students of government school showed more somatic symptoms than private school students. This study also reveals that though there is no significant difference in adjustment between students of different medium of instruction but day scholars showed poor social dysfunction, while hostellers showed poorer social and overall adjustment. Sekar, J., & Lawrence, A. S. (2016) investigated emotional and educational adjustment of higher secondary school students in relation to academic achievement. They found a low positive relationship between emotional, social, and educational adjustments of higher secondary school students in relation to academic achievement and suggested a need of some psychological support to students from parents as well as teachers. It was also suggested that the schools should not only give importance to high achievement of their students, but also to teaching to adjust with oneself and with their environment. Menon S. (2015) explored the role

of gender and age in the adjustment issues among the adolescent school students. It was concluded that the adjustment level at all age groups is average, the scores at age thirteen and fifteen are slightly higher indicating slightly poorer adjustment than subjects in the age group of fourteen. The gender did not have significant effect on total adjustment but male tend to adjust socially better than their female counterparts and female tend to achieve more success in education as compared to males. There are not many studies to explore the effect of family and parents on the adjustment behaviour of school going adolescents, particularly when the family environment is not healthy, although mental health problems are on rise (Ramchandani, P., & Stein, A., 2003). With this background, we have tried to study the effects of psychiatric health of parents on the adjustment capabilities of adolescents.

Although adjustment is a qualitative characteristic, but it can be quantified and measured with the help of several available tools. Strength and Difficulties Questionnaire (Goodman, 1997) measures child emotional and behavioural issues. Indian Health Questionnaire (Long et al 2013) is a comprehensive test which talks about the nutrition module, home, school, family environment, drugs usage, measures mental health and exposure to technology, violence and injury.

The Adjustment Inventory of School Students (AISS) is a questionnaire developed by Sinha and Singh (1971) which is used widely to measure the adjustment of secondary school students in the three areas of adjustment namely, Emotional adjustment referring to the way how one controls his/her emotions in the time of the favourable and unfavourable circumstances; Academic adjustment referring to the mechanism in which learners try to hone their skills in order to achieve the set standards by the institutes for their career advancement; and Social adjustment referring to the efforts put in by the individual to meet the standard, values and expectations of the society for his/her social acceptance.

In this study, AISS has been used to measure adjustment between two different groups; one with parents having no psychiatric issues (Control group) and other with at least one parent having psychiatric problem(s), diagnosed on the basis of DSM IV (Case group). Statistical techniques like permutation test and t-test have been used to compare the adjustment scores of the two groups. The powers of the two tests have been computed by simulating the data sets several number of times. Correlations have been computed between three adjustment factors for both the groups and a linear relation between the three factors of adjustment has been obtained using multiple linear regression. Besides the introduction, materials and methods are

discussed in section 2, results in section 3 and paper is concluded with discussion in section 4.

2. Objective, Materials and Methods

2.1 Objective

The aim of the study is to test if the psychiatric illness of parents affects the adjustment capabilities of the (school going) adolescent.

2.2 Material

In a cross-sectional study carried in duration of one calendar year, information was collected on 116 students in the age group 15-18 years from the state of Delhi using AISS questionnaire in a face-to-face interaction. Students were chosen from two different sources using two different sampling methods. 58 students out of 116 were having one or both parents suffering from some psychiatric problems as identified by DSM IV and were utilizing the services of the Department of Psychiatry and Drug De-addiction Center, Lady Hardinge Medical College, New Delhi. These students were put in 'Case' group and were questioned during their visits to the hospitals while accompanying their parents. The data on these students was collected by experts, in presence of healthy parent. Sampling method for the 'Case' group was purposive. Remaining 58 students, put under 'Control' group were class XI students from a New Delhi Municipal Corporation (NDMC) School, New Delhi. The parents of these students were mentally healthy as no psychiatric condition was reported on them. The control group responses were collected in a single visit from all the willing and eligible students of the school, in the presence of a child psychiatrist and school authorities. The adolescents were matched on the basis of socio-economic status, age, gender and educational level.

Inclusion Criteria for Case group and Control group

Case group

1. Adolescents of age group between 15 to 18 years with at least one parent having been diagnosed as suffering from a psychiatric illness as per DSM IV.

2. Subjects willing to participate in the study with written informed consent from their healthy parent/ guardian.

Control group

1. Subjects of age group between 15 to 18 years with none of parents having been diagnosed with any psychiatric problems.
2. Subjects willing to participate in the study with written informed consent from the school authorities and the parents.

Exclusion Criteria: (for both the groups)

1. Subjects with history of head injury with neuro-organic consequences.
2. Subjects suffering from any medical or surgical (non-psychiatric) disease.
3. Subjects not willing to participate due to any reason.

2.3 Methods

In order to compare two groups of adolescents, parametric and non-parametric statistical tests were used. Permutation test was used without making any assumption on the form of underlying distribution and t-test was used assuming the underlying distribution to be normal. The powers of the two tests were compared using simulation. Correlations were computed among the three factors of adjustment for both the groups and multiple linear regression was used to study the extent of linear relationship between them (as specified by AISS).

3. Results

3.1 Data Description

In this study, a sample of 116 school going adolescents, with an average age of 16 years has been taken. The Control group (58 adolescents) has 79.3% of boys and 20.7% girls and Case group (58 adolescents) has 77.6% boys and 22.4% girls. The students were matched with respect to socio-economic background. The factor wise descriptive statistics for both the groups have been presented in Table 1 below:

Table 1: Factor-wise Descriptive Statistics for 'Control', and 'Case' groups

Descriptive	Adjustment factor					
	Control (N= 58)			Case(N= 58)		
	Emotional	Social	Educational	Emotional	Social	Educational
Mean	2.759	2.845	8.379	9.414	6.69	7.948
Median	2	2	8	10	7	8
Minimum	2	2	6	2	1	1
Maximum	4	5	12	16	20	15
Standard deviation	0.9236	0.9515	1.4121	3.2065	3.0619	3.4204

The descriptive statistics clearly indicate the difference in the three adjustment factors for both the groups. Whereas the medians of the 'Emotional' and 'Social' aspects of adjustment for 'Control' group are 2 each, indicate the emotional and social adjustments stability of adolescents in this group; for 'Case' group, these are 10 and 7 respectively which are quite high. The standard deviations for all the three factors in 'Case' group are higher as compared to those for 'Control' group which indicates at a wider range of problems faced by 'Case' group students with regard to adjustment. Irrespective of the gender of the participant, 'Case' group adolescents have more adjustment problems than 'Control' group adolescents.

The Figure 1 below depicts the frequency distribution of students for the total adjustment score for 'Control' group and for 'Case' group:

Figure 1: Frequency distribution of total adjustment scores for 'Control' group and 'Case' group.

Evidently 'Control' group adolescents are more adjusted as 55 out of 58 are in 'Satisfactory' category (marked by ≤ 18 score) and 3 in 'Good' category (marked by $>18 \leq 24$ score). However for 'Case' group, the largest number (26) of participants is in 'Average' category (marked by $>24 \leq 33$ score).

The factor wise frequency distribution of the two groups is depicted in Figure 2 below:

Figure 2: Frequency distributions of the two groups for the three factors of adjustment.

For 'Control' group, both emotional and social adjustment scores were in 'Satisfactory' category (≤ 6). However educational adjustment was in 'Good' category only for 51 participants out of 58. For 'Case' group, majority of the participants was in 'Good' category only for all the three factors (29, 30, 33 for emotional, social and educational adjustment respectively) with many participants in 'Average' category also for emotional and educational adjustments.

3.2 Hypothesis Testing

The data was tested for reliability and normality. To examine the effect of parental mental illness on the adjustment behaviour of the adolescents, following hypothesis were set:

H_{0i} : mean score of i^{th} adjustment of 'Control' group = mean score of i^{th} adjustment of 'Case' group

H_{1i} : mean score of i^{th} adjustment of 'Control' group $\neq$ mean score of i^{th}

Table 2: t-test (Welch test) and permutation test for testing the equality of means in case of the three factors of adjustment as well as the total adjustment

Adjustment factor	F-test			Welch test			Permutation test	
	Confidence interval	Ratio of variance	p-value	Confidence interval	t-statistic	p-value	z-statistic	p-value
Emotional	(0.0491, 0.1402)	0.0829	<0.001	(-7.5299, -5.7805)	-15.189	<0.001	-5.7233	<0.001
Social	(0.0572, 0.1631)	0.0966	<0.001	(-4.6849, -3.0047)	-9.1322	<0.001	-6.9703	<0.001
Educational	(0.1009, 0.2879)	0.1704	<0.001	(-0.5367, 1.3988)	0.8871	0.378	0.8879	0.3746
Total	(0.0876, 0.2500)	0.1479	<0.001	(-11.9081, -8.2299)	-10.91	<0.001	-7.6643	<0.001

The null hypothesis was rejected for emotional and social factors of adjustment as well as for total adjustment score as p -value < 0.001, implying that adjustment behaviour of the adolescents in the two groups was statistically different. The parental mental health was affecting the adjustment behaviour of the adolescents.

A simulation study was carried out to corroborate our findings for total adjustment. Taking the distribution of the underlying parent population as normal, two samples of size 100 were generated; the first corresponding to the 'Case' group adjustment scores with mean and standard deviation 23.97 and 6.55 respectively and the second corresponding to the 'Control' group total adjustment scores with the sample standard deviation 2.50 and mean equal to 'Control' group mean plus a number S_i ($= 0.50, 1.00, 1.50, 2.00, 2.50, 3.00, 3.50$). Welch test and permutation tests were carried to check the equality of means for the two generated samples. The process was repeated 100 times and the powers of the tests were computed for each value of S_i . For $S_i = 3.50$, powers of both the tests were equal to 1 and the means of the two groups were different statistically. The powers of the two tests in the entire procedure were almost the same which means that the non-parametric permutation test performed as good as the parametric t -test. (Table 3)

adjustment of 'Case' group;

i = Emotional, Social, Educational, Total.

The F -test for equality of variance was rejected in all the four cases. Then means were tested for equality using Welch test. Also, permutation test was used to test the same hypothesis.

The results are presented in the following table:

Table 3: The powers of t-test and permutation tests for different simulation parameters

Power	Counter(S_i)	0.50	1.00	1.50	2.00	2.50	3.00	3.50
t-test (Welch test)		0.13	0.32	0.63	0.75	0.93	0.97	1
Permutation		0.13	0.30	0.64	0.75	0.93	0.96	1

The Figure 3 below shows the powers of the two tests for different simulation parameters.

Figure 3: Powers of t-test (Welch test) and permutation test as the difference between the sample means varies

3.3 Correlation Matrix

Further, the correlation between the factors of AISS was obtained for both the groups. The results have been presented in Table 4 below:

Table 4: Correlation between the factors of AISS for the two groups

Factor	Control group			Case group		
	Emotional	Social	Educational	Emotional	Social	Educational
Emotional	1			1		
Social	-0.0633	1		0.1831	1	
Educational	0.4212	0.6061	1	0.1971	0.1794	1

Correlations of educational adjustment with both the other adjustments were significant for the 'Control' group but none was significant for the 'Case' group, which in turn means that it was not possible to predict one factor on the basis of other. Multiple linear regression (MLR) was applied for 'Control' group with social and emotional adjustments as predictors and educational adjustment as the response variable. The results are presented in Table 5 below:

Table 5: Multiple linear regression of educational adjustment as response variable; social and emotional adjustments as predictor variables.

Coefficients	Estimate	Std. Error	t - value	Pr(> t)
Intercept	3.7510	0.5530	6.783	< 0.001
Social	0.9428	0.1300	7.250	< 0.001
Emotional	0.7055	0.1340	5.266	< 0.001
Multiple R^2			0.6411	
Adjusted R^2			0.636	
F(2, 55) = 37.88			p-value < 0.001	

The R^2 value of 0.636 indicates the extent of variability in educational adjustment that can be explained by variation in emotional and social adjustment behaviour in case of 'Control' group.

4. DISCUSSION

Everyone makes adjustment in the life for its happy and successful pursuit. During this process, one needs a driving force to move on, especially the adolescents who are on the verge of greater physical and psychological changes/development. In a 2016 meta-study, Schulte-Korn G. estimated that 10-20% of school going children and adolescents have mental health problems which in turn affect their educational advancement. In a 2009 study on students of a Malaysian

University, Abdullah et al. found that up to 70% of the first year students may have moderate to severe adjustment issues. The impact of parental psychiatric disorder on children is not included routinely in medical education, but a 1985 study by Taylor, D. C. suggested that context and background of parents' sickness should be considered to avoid misdiagnosis of childhood maladjustment and disorders.

The AISS questionnaire is an effective tool to measure adjustment levels among the adolescents and a guide towards the treatment and has been used widely in various studies in India (Srivastava, P. S., & Singha, P. (2017), Basu, S (2012), Iangrai, H. (2005)). Through AISS questionnaire in this study, we confirmed the significant impact of parental mental illness on the adjustment behaviour of adolescents, particularly in the areas of emotional and social adjustments. This is consistent with a 2015 study by Amgain, Bhatta, Amgain and Dhungana, wherein the adolescents of non-convicted parents had average adjustment which is half in case of adolescents of convicted ones. As far as educational adjustment was concerned, we did not find a statistically significant difference in the adjustment behaviour of the two groups which is in contrast with the conclusion of a 2017 study by Gargano, L.M. et al. that parental mental health is an important factor in the adolescent educational achievement. The possible reasons for this deviation could be that in both the groups, adolescents were from similar economic background and were mostly from government schools. However as far as total adjustment scores were concerned, there was a significant difference between the two groups. This is in tune with the study by Wadhawan, K. (2018) which concluded that there is a difference in adjustment levels of urban and rural students. Two different statistical tests, parametric Welch test and non-parametric permutation test yielded the same results thus asserting the strength of non-parametric tests (Huo, M., et al., 2014). The robustness

of the two tests was established through simulations by computing powers of the two tests. MLR is a powerful and widely used technique to obtain linear relationships between predictor and response variables for psychiatric studies (Palmius N, (2018), Hussain, A. *et al.* (2016), Teresia Angarne-Lindberg & Marie Wadsby (2008)). We used MLR to get a statistically significant dependence of educational adjustment on social and emotional adjustments in case of 'Control' group.

The major limitation of this study was that it was confined to one school for 'Control' group and in 'Case' group only those adolescents were included who used to accompany their parents during their visit to the hospital. However, the horizon of the study may be expanded to include the impact of age, gender, and diverse socio-economic conditions on the adjustment behaviour of the adolescents along with parental mental illness. This study can be taken as a baseline study for future work.

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