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Abstract

Introduction: Social anxiety is common among adolescents with a prevalence range of 9-34%. People with social anxiety have intense fear of being evaluated negatively when they come in contact with strangers and as a result they are less satisfied with their life experiences. Our study aimed to screen school going adolescents for social anxiety disorder and to estimate their perceptions about quality of life.

Methods: This cross-sectional study was conducted in Karachi, Pakistan from January to February 2016. We recruited 450 high-school students of ages 14-17 using a self-administered questionnaire based on the Liebowitz Social Anxiety Scale for Children and Adolescents (LSAS-CA-SR) and the brief version of the World Health Organization Quality of Life (WHOQOL-BREF) questionnaire.

Results: In this school-based study, 23.8% screened positive for social anxiety with a preponderance of adolescents from public than private schools (33% vs. 18%, $p < 0.001$). Social anxiety status, however, was not associated with gender and age. Screening positive for social anxiety was found to be associated with a significant difference in mean scores on all four domains (physical health, psychological health, social relationships, and environment) of WHOQOL-BREF.

Conclusion: Social anxiety is prevalent among Pakistani school adolescents with a substantial negative effect on quality of life. Adolescents must be targeted with interventions such as group treatment and mentorship programs that are effective in tackling the menace of social anxiety.

Keywords: Social anxiety; Adolescents; Quality of life

Abbreviations: LSAS-CA-SR: Self-report version of the Liebowitz Social Anxiety Scale for Children and Adolescents; WHOQOL-BREF: The brief (26-question) version of the original 100-question World Health Organization Quality of Life Questionnaire

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Introduction

Social anxiety is common in adolescence [1]. It is defined as the excessive fear of embarrassing oneself when placed in a social or performance situation where one is likely to be scrutinized and judged by strangers [2]. Kessler et al. predicted a 13% lifetime prevalence of social anxiety disorder in the United States, making it the third most prevalent mental disorder after depression and alcohol abuse [3,4]. Adolescents make up 1.2 billion of the world population [5]. Prevalence of social anxiety disorder among adolescents has been reported as 9%, 10%, and 34% for United States, India, and Saudi Arabia respectively [6-8].

The multifactorial etiology of social anxiety has been the subject of many studies. As with other mental illnesses, environmental, genetic and behavioral factors contribute to its pathogenesis [9].

Pakistan is a low-middle income country and has battled many challenges including terrorism that have led to high rates of mental illness among its citizens. As of 2014, it has a population of 192 million. Forty millions of Pakistan's population consists of adolescents (11-19-year-olds) [10]. Social anxiety has a substantial negative effect on the quality of life-the subjective sense of life satisfaction and well-being of a person. The adolescents afflicted,

tend to be under-confident and report functional deterioration; eventually leading to a decline in their academic performance and peer interactions [11]. In spite of this, few seek help. In a clinic setting, Katzelnick et al. diagnosed social anxiety disorder in 8.2% of 7165 participants; only 0.5% of these had a pre-existing diagnosis of the same [12].

Mental health, in general, and child psychiatry in particular, have been neglected in Pakistan. There are currently no countrywide studies that estimate the burden of mental illness among children [13]. According to the World Health Organization, in 2008, there were only 342 psychiatrists in the country and a mere 0.4% of the allocated health budget was spent on mental health [14]. In these dire circumstances, it has become imperative to determine the undiagnosed burden of social anxiety as it can coexist with mental illnesses such as major depression, generalized anxiety disorder and substance use disorder [4]. Identification of these high-risk individuals can help implement targeted mental health interventions before functional impairment sets in, making the situation challenging to treat and control.

Our paper presents results on the prevalence of social anxiety among adolescents and their perceptions about quality of life.

Methods

This cross-sectional study was conducted among school going children of selected schools in Karachi, Pakistan from January to February 2016. Students between the ages of 14-17 were invited to participate in the study, as this is the age when social anxiety generally manifests [7,15].

The Aga Khan University Ethics Review Committee approved the study protocol and questionnaire. Before embarking on the main study, we pre-tested the questionnaire on 10 students of ages 14-17 from a public/private school, which was not included in the main sample. Using the results from the pre-test survey, we modified the questionnaire to the cultural context of Pakistan. The modifications in the questionnaire are available on request.

We approached 9 schools in Karachi, based on the social class that they belong to, asking for permission to conduct the survey. Four schools gave permission, of these, two were subsidized government-run public schools and two were private schools that cater to the higher socio-economic group. Informed consent was taken from the principals of all four schools.

We approached all students who were present in school on the scheduled day of our visit. All students of ages 14-17, who gave consent, were enrolled. First, the students were given a brief talk regarding the questionnaire. They were then asked to fill out the form and all queries were addressed by the authors. Questionnaires were collected at the end and reviewed. All participants who had missed any questions were asked to fill them in.

Our questionnaire was composed of two validated scales-the self-reported Liebowitz Social Anxiety Scale for Children and Adolescents (LSAS-CA-SR) and the brief version of the WHO quality of life questionnaire (WHOQOL-BREF). We sought permission from the authors to allow us use of these questionnaires.

Data were entered into EpiData3.1 and exported into IBM Statistical Program for Social Sciences version 22 (SPSS 22). Data were screened and coded according to the instructions for each of LSAS-CA-SR and WHOQOL-BREF scales. We computed χ^2 -test to study the relationship between social anxiety and demographic variables, and independent samples t-test and Pearson product-moment correlation coefficient to study the relationship between social anxiety and quality of life. A p-value of less than 0.05 was considered significant.

Approximately 24% of the participants missed at least one question on the LSAS-CA-SR scale, making it difficult to calculate and categorize the final score. This was also true for WHOQOL-BREF. To reduce the impact of a diminished sample size, we filled the missing data by imputation [16].

All of LSAS-CA-SR and WHOQOL-BREF variables were set for multiple imputations by AUTO method. Five imputed data sets were generated and used in analysis. Splitting the file according to imputation number generated pooled measures. SPSS 22 does not give standard deviations for pooled estimates so standard deviations were calculated using the mean of standard deviations of all imputed data sets.

We shared our results with the principals of all four schools and provided a presentation to the schools to educate the children about social anxiety. We also gave recommendations to the schools such as putting in place of a buddy system and teacher mentorship program, and offered to assist them in these endeavors.

Results

We recruited 450 participants; the socio-demographic profile of the participants can be seen in **Table 1**. With a cut-off value of 60, 23.8% screened positive for social anxiety. The descriptive statistics for the LSAS-CA-SR and WHOQOL-BREF are summarized in **Tables 2 and 3**, respectively. A chi-square test showed a significant difference in social anxiety between those who went to public compared to private schools (**Table 4**). Independent samples t-test revealed a statistically significant difference in the mean scores of children with and without social anxiety for all four WHOQOL-BREF domains (**Tables 5 and 6**). These results suggest that social anxiety does have an effect on quality of life.

Table 1 Socio-demographic profile of the participants.

Demographic	Frequency
Gender	
Boys	237 (52.7%)
Girls	211 (46.9%)
Missing	2 (0.4%)
Age	
14	3 (0.7%)
15	43 (9.6%)
16	184 (40.9%)
17	220 (48.9%)
School Type	
Public	217 (48.2%)
Private	233 (51.8%)

Table 2 Descriptive statistics—minimum, maximum, mean, and standard deviation of scores for the LSAS-CA-SR scale.

Imputation Number	N	Minimum	Maximum	Mean	Standard Deviation
Pooled Data					
Fear	450	0	55.4	19.3	11.7
Avoidance	450	0	64.8	24.9	12.2
Total LSAS-CA score	450	0	106	44.2	21.9
Valid N	450				

Table 3 Descriptive statistics for WHOQOL-BREF domains.

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Pooled Data					
Domain 1: Physical	450	13.0	81.0	52.9	12.1
Domain 2: Psychological	450	6.4	94.0	61.9	13.8
Domain 3: Social	450	0.0	100.0	69.1	21.1
Domain 4: Environment	450	0.0	100.0	66.9	16.4
Valid N (list wise)	450				

Table 4 Relationship between demographics and social anxiety status.

	Social anxiety likely	Social anxiety unlikely	Total (100%)	χ^2 -test (df)	p-value
Pooled data					
Gender					
Male	52 (21.9%)	185 (78.1%)	237	3.260 (1)	0.071
Female	61.6 (29.2%)	149.4 (70.8%)	211		
Age					
14-15	11 (23.9%)	35 (76.1%)	46	1.5852 (2)	0.463
16	41.4 (40.5%)	142.6 (59.5%)	184		
17	61.2 (27.8%)	158.8 (72.2%)	220		
School type					
Public	71 (32.7%)	146 (67.3%)	217	12.434 (1)	0.001
Private	42.6 (18.2%)	190.4 (81.7%)	233		

Table 5 t-test comparing WHOQOL-BREF domains and mean Social anxiety scores for children with and without Social anxiety.

Domain number and name	t	Significance (2-tailed)	95% Confidence Interval of the Difference	
			Lower	Upper
Pooled data				
1. Physical health	2.118	0.034	0.209	5.402
2. Psychological health	2.941	0.003	1.506	7.543
3. Social Relationships	3.44	0.001	3.544	13.019
4. Environment	4.875	<0.001	5.225	12.266

Table 6 Pearson product–moment correlation coefficients for WHOQOL-BREF domain scores vs. LSAS-CA-SR scores.

Imputation Number	Pearson correlation coefficient (r)	p-value
Pooled Data		
Domain 1: Physical	−0.129	0.006
Domain 2: Psychological	−0.240	<0.001
Domain 3: Social	−0.179	<0.001
Domain 4: Environment	−0.282	<0.001

Discussion

In our sample, 24% screened positive for social anxiety. This result is comparable to that of Al Khathami, who in a sample of 564 Saudi Arabian students found a prevalence of 34%, higher

than that reported in Western populations [8]. Social anxiety has a peak onset in teenage suggesting that during this time, genetic, behavioral, and environmental factors act synergistically in the pathogenesis of the disorder [17]. The United Nations terms adolescence the ‘precarious decade,’ a time when children undergo a host of physiological and psychological changes that herald the onset of puberty [5].

There was a preponderance of social anxiety in public school students as compared to their private-school counterparts. This could be because public school students belong to a lower socio-economic status, a factor, which has been found to be associated with social anxiety [18,19]. Additionally, in government-run public schools there are limited opportunities for one-on-one mentorship as here not only is the student-to-teacher ratio is

higher, they also report high rates of teacher absenteeism, placing their students at a disadvantage as mentorship from an adult or an older student is beneficial in lowering anxiety levels [20,21].

Surprisingly, we did not find any disparity in Social anxiety rates among girls and boys. We expected that more girls would report social anxiety symptoms, because studies from the West indicate that girls are more likely to feel socially-anxious than boys as girls tend to be more conscious about their appearance and behavior [22]. We suggest two possible reasons for our result. First, cultural variation may be responsible as studies conducted in other Eastern countries such as China [18] and Saudi Arabia [8] too did not demonstrate any sex difference in Social anxiety symptoms. Second, literature indicates that girls indulge in 'co-meditation'-mulling over negative experiences with friends, and this ability to foster close, confiding relationships protects against anxiety [8]. However, we did not assess the impact of co-meditation and close relationships in this study.

The data obtained in this study indicate that social anxiety levels have a negative relationship with perceived quality of life. Our results lend credence to the observations of previous investigators who have found that socially-anxious people fare worse on quality of life measurements as compared to their non socially-anxious peers [8,23-25]. As this was a cross-sectional study, we could not ascertain if social anxiety causes a reduction in quality of life or if a poor quality of life causes feelings of social anxiety. In most cases, social anxiety goes unrecognized because people do not seek help [26]. Essau et al. found that in a sample of 1035 German adolescents in the age group of 12 to 17, nearly 50% had a social fear, yet only a few students sought professional help [27]. A chronic condition, social anxiety causes marked functional deterioration that persists into adulthood and can lead to suicidal tendencies [28]. This bodes unwell for the future, as in Pakistan mental health is hardly a national priority. The cavalier attitude toward mental illness is evident by the fact that attempted suicide is a criminal offence in Pakistan, punishable by prison [29]. Against this background, the role of school personnel has become crucial in identifying and treating anxious adolescents. Schools are an efficient and inexpensive way of reaching out to a

large body of adolescents. One study found that schools provide up to 70-80% of mental health services for students [30].

Our study used self-reported scales for studying social anxiety disorder in adolescents as this methodology reduces social-desirability bias [31]. The study was conducted in the school setting as that is where children encounter many social scenarios (talking to unfamiliar classmates, asking questions in class, eating in public) that make them uncomfortable [26]. We recruited children because self-reports are recommended for studying social anxiety as they are deemed more reliable than reports from parents or teachers [8].

This study, however, did not include a diagnostic interview; the LSAS-CA-SR is a self-reported scale that can be used only as a screening tool or for monitoring response to treatment. The schools and study participants were selected by convenience sampling. We also could not include adolescents who had no access to schooling. Nationally representative surveys need to be conducted to gauge the burden of mental illness among children.

Conclusion

Our results suggest that social anxiety is prevalent among adolescents and socially-anxious adolescents endorse a lower quality of life. In view of our findings, we suggest that parents and teachers be educated about social anxiety and encouraged to collaborate in curtailing the spread of anxiety and mental illness in children. Efforts can be made to put in place a mentorship program where teachers or older students befriend and support younger students. Lastly, Ryan et al. have recommended a school-based group treatment program where students receive social skills training and exposure therapy to overcome their fears of social embarrassment [26]. Such programs are the need of the hour as they help adolescents cope with anxiety and stress.

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