

Psychosocial Correlates of Recurrent Abdominal Pain in Paediatric Patients

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ABSTRACT

Background: Recurrent abdominal pain (RAP) is a very common distressing complaint in the pediatric population. Etiology remains an enigma as in majority of the cases the cause is not identified and therefore these cases are considered to be functional in origin.

Aims: To study psychological and social correlates in children with RAP and use of standardized scales to assess functional disorders (Anxiety state, anxiety Trait, and depression) and to see the association of negative life events in these patients.

Methods: We enrolled 49 children (age 5-12 yrs.) with complaint of recurrent abdominal pain, out of which 6 were excluded having organic cause of pain. These 43 cases termed as functional cases of RAP were compared with 40 control children of same age group. Standardized scales were used to define psychological disorders (vide supra) and negative life events and other stressors. Mean score of these factors were compared with that of control group.

Results: Out of 43 cases 8 patients (5 cases anxiety state, 2 cases anxiety state+anxiety trait and 1 case of depression) were found to have psychological disorders which were significantly higher than control groups. When we compared mean scores of anxiety state, anxiety trait and raw scores of depression, we found positive correlation of anxiety trait and depression in RAP group. Our study failed to establish positive correlation with negative life events in patients with RAP.

Conclusion: Our study showed not only a significant anxiety disorder in the cases but also a higher mean anxiety trait scores and higher depression raw scores than control. Therefore, it is suggested that such cases maybe followed up for development of anxiety or depression later.

Key Words: Recurrent abdominal pain (RAP), Anxiety Trait, Anxiety state, Depression

INTRODUCTION

Recurrent abdominal pain (RAP) is a very common distressing complaint in pediatric population. RAP affects 10-20% of children in community. (1-3)

Apley defined RAP as “at least three episodes of pain abdomen, severe enough to affect their routine activities over a period longer than three months”. (1)

Chronic abdominal pain is now a preferred terminology rather than recurrent abdominal pain and is defined by The American Academy of Paediatrics Subcommittee on Chronic Abdominal Pain (CAP) in 2005 as long lasting (>12 weeks), intermittent or constant abdominal pain that is functional or organic. (5)

Etiology remains enigma. Initially RAP was attributed to organic diseases in 5-

10% of cases ^(1,4) however in a majority of cases, the etiology of pain was not elicited and such cases were termed as functional.

Later some Indian studies have found organic causes in 74% of cases of RAP of which 38.4% were positive for giardiasis. ⁽⁶⁾ Another study ⁽⁷⁾ quoted high percentage of organic causes (82.4%) and giardiasis was found in significantly high number (67% of organic cases) of patients. Studies done to establish a correlation between H. Pylori and RAP found no correlation. ⁽⁸⁾ In other studies, occult constipation diagnosed by rectal examination or plain X-Ray abdomen was found in 42.6% of the patients ⁽⁹⁾ and Irritable bowel syndrome was identified commonest cause of functional RAP. ⁽¹⁰⁾

In 2006, Rome III criteria were introduced to classify functional gastrointestinal diseases (FGID). In FGID, abdominal pain related to functional gastrointestinal disorder H2 classifies abdominal pain into functional dyspepsia, irritable bowel syndrome, abdominal migraine, childhood functional abdominal pain and functional abdominal pain syndrome. H3 includes functional constipation

An Indian study found that tantrums prior to school, school absenteeism and punishment given out were more common in nonorganic RAP ⁽¹¹⁾ and that it has also been associated with school absenteeism, attention seeking during illness, anxiety and family history especially parental history of painful symptoms and other more stressful life events. ⁽¹²⁾

Causes of RAP have been ascribed to various factors like abnormalities related to the gastrointestinal tract such as reduced gut motility, stool retention and chronic constipation, lactose intolerance and irritable bowel, psychological stressors such as stressful life events, anxiety, depression and somatization, and family related factors such as excessive parental anxiety, parental reporting of painful symptoms, preoccupation with health concerns, stressors in family life and even pattern of

family interaction. These have been proposed by various researchers to explain etiology and maintenance of recurrent pain abdomen. ⁽¹³⁻²⁰⁾

Pathophysiology of functional RAP has been attributed to abnormal physiological processes involving dysregulation of the brain-gut nervous system. Visceral hypersensitivity, altered motility, visceral hyperalgesia due to mucosal inflammation, infection or allergy resulting in sensitizing of the afferent nerves.

It is hypothesized that emotional stress such as anxiety, depression and other family related factors all contribute to dysregulation of brain gut nervous system connections resulting in heightened reactivity of bowel in such situations.

Different population based studies have demonstrated different etiological diagnosis of RAP. Functional abdominal pain remains still the most common diagnosis of chronic abdominal pain in absence of red flag sign [75 to 85%] ⁽²¹⁾ and despite advanced investigations; there is still lack of clear cut biomedical explanation for RAP in absence of red flag signs such as weight loss, malaena and other systemic symptoms

Most Indian studies have used structured questionnaire ⁽¹¹⁾ or interview with a psychiatrist to establish psychological disorder in the nonorganic cases of recurrent abdominal pain. ⁽⁷⁾

There is little data in Indian children with RAP where standardized scales were used to establish anxiety, depression and association of RAP with stressful life events. Also, little attempt has been made to distinguish the anxiety into trait anxiety and state anxiety as RAP itself could be a cause of a transient state of anxiety.

Therefore, this study was undertaken in a special economic cohort of patients who had easy access to insured healthcare. Standardized anxiety, depression and stressful life event scales were used and anxiety was subclassified as anxiety trait and state anxiety.

MATERIALS AND METHODS

The study was conducted in the department of pediatrics at ESIPGIMSR, ESIC Hospital, Basaidarapur, New Delhi, India in 2015.

ESIC cohort is unique as it consists of employees with a salary of less than 21000 per month and are insured for themselves and their family for free health services close to their residential areas.

Children aged between 5-12 years with recurrent pain abdomen who satisfied Apley's criteria for RAP were included in the study after applying exclusion criteria. Exclusion criteria for possibility of any organic disease were positive investigations; associated with nausea, vomiting, diarrhea & anorexia; constipation; anaemia; malaena; organomegaly; joint pain, rash; night awakening; photophobia; weight loss; menses; urinary complaints; worm infestations; fever >7 days; tonsillitis.

Informed consent was taken from the parents. Detailed history was noted; physical examination of children was recorded on a pre-designed proforma and children were screened for any organic disease.

The pre-designed proforma had details pertaining to baseline demographic data such as age sex birth order family structure. Parental information such as education, occupation, migrant or non-migrant (living with family in Delhi for 1 year or more) was recorded. The clinical details of pain abdomen, family history of pain, psychosocial stress, specific school stressors, secondary gains, coping strategy, treatment received and pattern of school absenteeism and academic performance as per their last report card as overachiever grade A(90 to 100%), B (80 to 89.9%), average grade C (70 to 79.9) D (60 to 69.9%) and underachiever grade E <60% was recorded in the proforma.

All patients were subjected to relevant routine investigations like CBC (complete blood counts), urine routine, culture & sensitivity, stool examination, LFT (liver function tests), KFT (kidney

function tests), USG abdomen, X-Ray chest & abdomen, Serum amylase, Serum lipase and celiac serology were done to rule out any organic cause. However endoscopy was not available in our center so patients who had already received empirical treatment for giardiasis and H. pylori infection at the dispensary but had no relief and satisfied Apley's criteria were enrolled.

The children were administered standardized scales for anxiety state & trait, depression and life events. The clinician was blinded to all the investigative status of the patients.

In very young children who did not understand questions well, illustrative examples were given with help of parents to augment the understanding of the question and obtain answers. These illustrative examples set were same for each set of questions.

The questions were reformatted in local Hindi language with the help of a Hindi translator and help of the parent was taken in order to obtain the answers. For children less than 8-9 years of age, a standardized example per question was given in order to obtain answer. This scale was first administered to 10 children less than 9 years with examples and with the help of parents and a clinician the best set of examples were established prior to testing the patients.

Depression was measured by child's depression rating scale-revised (CDRS-R). The scale had 17 items. Raw scores were taken and converted into 'T' score. 'T' score >55 were considered significant.

Anxiety scale for trait anxiety and state anxiety was measured by STAIC (State Trait Anxiety Inventory Scale) form C1(state) and C2(trait) developed by C.D. Spielberger, C.D. Edwards, J. Montouri and R. Lushene).

Mean score for male school children was taken as a score of 36.7 with a standard deviation of 6.32 in case of trait anxiety, score of 31 with standard deviation of 5.71 in case of state anxiety.

Mean score for female school children was taken as a score of 38 with a standard deviation of 6.6 in case of trait anxiety and score of 30.7 with standard deviation of 6.01 in case of state anxiety. Anxiety score was taken as high if greater than mean+1 standard deviation. Stressful life events as enumerated by life Events Scale for Indian Children, Department of Psychiatry, Post Graduate Institute of Medical Education and Research, Chandigarh which had 50 items and the stressful events in past one year were taken. In cases and controls stressful events were measured as present or absent.

STATISTICAL ANALYSIS

Data were analyzed descriptively and analytically; percentages & proportions were calculated, mean and standard deviations were derived. Fisher Exact Test and Chi square test was applied to find the statistical significance of the data wherever required.

RESULT

Of total 49 children (age 5-12 yrs) enrolled for study, six children were excluded from the study because they were found to have organic etiology (vide infra). Mother of almost all subjects was housewives while fathers were employed in factory/company/organized sectors with pay up to 21,000/ per month and being an insured employee of ESIC organization.

SOCIODEMOGRAPHIC DETAILS

TABLE 1: AGE OF BOYS AND GIRLS WITH MEAN(SD)/No (%)

	CASE	CONTROLS
MEAN	8.81(2.15)	8.93(2.28)
BOYS	15(34.9%)	27(67.50%)
GIRLS	28(65.1%)	13(32.50%)

TABLE 4: TABLE SHOWING PARENTAL EDUCATION BOTH GROUPS CASES AND CONTROL

In this study, parental education was also taken into account which is given below.

CASES

GROUP	Illiterate N (%)	Up to high school N (%)	Intermediate N (%)	Graduate N (%)	Post Graduate	Total
Father	3(6.98%)	23(53.49)	13(30.23)	4(9.30)	0	43
Mother	7(16.28%)	24(55.81%)	6(13.95%)	5(11.63)	1(2.33)	43

CONTROL

GROUP	Illiterate N (%)	Up to high school N (%)	Intermediate N (%)	Graduate N (%)	Post Graduate	Total
Father	2(5%)	31(77.50)	5(12.50)	1(2.50)	1(2.50)	40
Mother	6(15)	29(72.50)	2(5)	3(7.5)	0	40

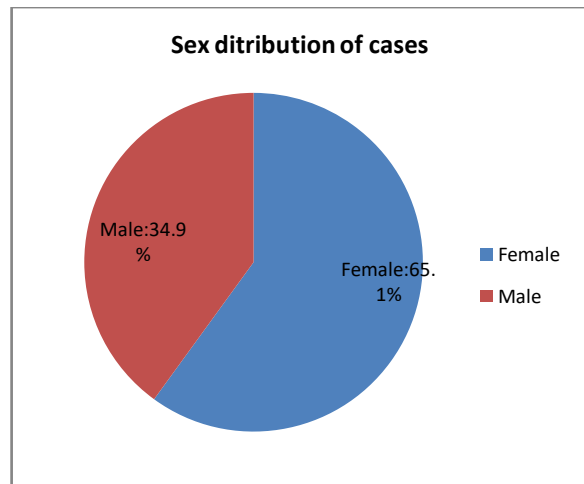


FIGURE 1: SHOWING SEX DISTRIBUTION OF CASES

Out of total 43 patients included 34.9% were males and 65.1% were females.

TABLE 2: FAMILY CHARACTERISTICS (CASES) NO(%)

S.N	CASES	CONTROLS
JOINT	16(37.21)	20(50)
NUCLEAR	27(62.79)	20(50)
MIGRANT	33(76.74)	14(35)
NON-MIGRANT	10(23.26)	26(65)

TABLE 3: TABLE SHOWING STATISTICAL SIGNIFICANCE OF TYPE OF FAMILY BETWEEN THE TWO GROUPS

Groups	Nuclear	Non-nuclear	χ^2	P-value
Case	27	16	1.3804	0.2400
Control	20	20		Not Significant

There was no correlation of type of family (nuclear versus non-nuclear) with RAP.

TABLE 4: TABLE SHOWING STATISTICAL SIGNIFICANCE OF THE TWO GROUPS (MIGRANTS VS NON-MIGRANTS)

Groups	Migrant	Non-migrant	χ^2	P-value
Case	33(76.74%)	10(23.26%)	14.7027	0.000126
Control	14(35%)	26(65%)		Significant

There is a strong correlation between migration and RAP, i.e. migrants were more prone to have recurrent abdominal pain.

Another unique feature of this study was that parental discipline and any relation with RAP, if any, was also taken into account. Parents were categorized into three categories -Lenient, Autocratic including punitive, Authoritarians. Most of the parents (38) were lenient in their

behavior while 3 were Autocratic and 2 Authoritarian.

PARENTING	NO (%)
Autocratic	3(6.98%)
Lenient	38(88.37%)
Authoritarian	2(4.65%)

TABLE 5: SHOWING STATISTICAL SIGNIFICANCE OF TYPE OF PARENTING

Groups	Lenient parents	Non-lenient	χ^2	p-value
CASE	38	5	2.5027	0.11365
CONTROL	30	10		Not significant

So there was no significant difference in parenting pattern in both the groups.

In this study we also took into account family, psychosocial and school related stressors in relation to RAP.

LIFE EVENTS AND SCHOOL RELATED STRESSORS

Among cases, life events were positive in 19 (44.19%) while absent in 24(55.81%). While in case of control life events were positive in 10(25%) while negative in 30(75%).

TABLE 6: SHOWING STATISTICAL SIGNIFICANCE OF LIFE EVENTS

GROUPS	Life events +	Life events -	χ^2 and P value
CASES	19	24	Chi2=3.3557
CONTROLS	10	39	P Value=0.066972

This result is not significant at p <0.05.

Academic performances were graded into -1) over achiever (grade A 90-100%, Grade B-80-89.9%)

-2) Average (Grade C-70-79.9%, D=60-69.9%)

-3) Under achiever (grade E or Fail, E=<60%)

TABLE 7: SHOWING ACADEMIC CATEGORY OF PARTICIPANTS

CATEGORY	CASE	CONTROL
OVERACHIEVER	35(81.40%)	13(32.50%)
AVREAGE	6(13.95%)	25(62.5%)
UNDERACHIEVER	2(4.65%)	2(5%)

TABLE 8a: SHOWING STATISTICAL SIGNIFICANCE OF BEING OVERACHIEVER VERSUS NON-OVERACHIEVER

Groups	OVERACIEVER	NON-OVERACHIEVER	χ^2	p-value
CASE	35	8	20.3157	0.000007
CONTROL	13	27		SIGNIFICANT

TABLE 8b: SHOWING STATISTICAL SIGNIFICANCE OF BEING UNDERACHIEVER VERSUS AVREAGE OR ABOVE.

GROUPS	UNDERACHIEVER	AVERAGE OR ABOVE	χ^2	p-value
CASE	2	41	0.0055	0.940895
CONTROL	2	38		NOT SIGNIFICANT

In our study we found that there is positive correlation between academic performance and recurrent abdominal pain. Overachievers were more likely to experience recurrent abdominal pain whereas there was not any significant difference between underachievers of the

two groups. Most of the subjects in our cohort were above average or average, only few of them were in under achiever groups.

School stressors were present in 6 patients in case versus 2 in control as given below:

TABLE 9: SHOWING STATISTICAL SIGNIFICANCE OF PRESENCE OF SCHOOL STRESSORS

GROUP	SCHOOL STRESSORS (+)	SCHOOL STRESSORS (-)	χ^2 & p value
CASES	6	37	$\chi^2=1.9074$
CONTROLS	2	38	P value=0.1672

The association of school stressors with recurrent pain abdomen was not significant.
ORGANIC CAUSE OR ABNORMAL LAB REPORTS: These 6 patients were excluded from the study.
ORGANIC ETIOLOGY
KOCHS ABDOMEN 1

MESENTERIC LAP 4
GIARDIASIS 1

So out of total 49 cases 6 cases were found to have an organic cause and hence these were excluded.

TABLE 10: PSYCHOLOGICAL ANALYSIS OF PATIENTS VERSUS CONTROLS

GROUPS	ISOLATED ANXIETY STATE	Isolated ANXIETY TRAIT	ANXIETY STATE +TRAIT	DEPRESSION	NORMAL	TOTAL
CASES	5		2	1	35	43
CONTROLS	0	0	0	0	40	40

So, anxiety state was found more frequently as compared to trait anxiety which which was found in 2 patients which were also having state anxiety.

TABLE 11: COMPARISON OF PSYCHOLOGICAL DISORDERS IN CASES VERSUS CONTROLS (FISHER'S EXACT TEST)

	CASES	CONTROLS	p-VALUE
PSYCHOLOGICAL DISORDER	8	0	
NORMAL	35	40	0.0056
TOTAL	43	40	SIGNIFICANT

So it was found that psychological disorders are significantly higher in cases of RAP when compared to controls.

TABLE 12: PREVALENCE OF PSYCHOLOGICAL DISORDER IN MALE VERSUS FEMALE

PSYCHOLOGICAL DISORDERS	MALE	FEMALE
ANXIETY STATE	2	3
ANXIETY TRAIT	0	0
BOTH STATE+ TRAIT		2
DEPRESSION	1	0
TOTAL	3	5

TABLE 13: COMPARISON OF PREVALENCE OF PSYCHOLOGICAL DISORDER IN MALE VERSUS FEMALE

GROUPS	PSYCHOLOGICAL DISORDER PRESENT	NORMAL	χ^2	p-value
MALE	3	12	0.0296	0.8634
FEMALE	5	23		Not significant

There was no statistical significance between male and female patients for prevalence of psychological disorder.

We didn't find any psychological disorder among controls, so mean scores of various groups were calculated and comparison were done to draw the conclusions as given below:

TABLE 14: MALE (CASE) TRAIT ANXIETY Versus FEMALE (CASE) TRAIT ANXIETY

Groups	Mean TRAIT SCORE	STANDARD DEVIATION	95% C. I	Standard Error of Mean	t-statistics	D.F (Degree of freedom)	p-value
MALE(n=15)	25.67	6.477	-4.4292	2.426	0.194	41	0.8473 NOT SIGNIFICANT
FEMALE(n=28)	26.14	8.0953	To 5.3692				

There was no statistical significant difference between males and females mean trait anxiety score when evaluated for cases.

TABLE 15: MALE (CASE) STATE ANXIETY Versus FEMALE (CASE) STATE ANXIETY

Groups	Mean STATE SCORE	STANDARD DEVIATION	95% C. I	Standard Error of Mean	t-statistics	D.F (Degree of freedom)	p-value
MALE(n=15)	32.07	5.147	-3.1251	1.691	0.171	41	0.8647 NOT SIGNIFICANT
FEMALE(n=28)	32.36	5.3556	To 3.7051				

There was no statistical significant difference between males and females mean state anxiety score when evaluated for cases.

TABLE 16: MALE (CASE) Depression RAW SCORE Versus FEMALE (CASE) Depression RAW SCORE

Groups	Mean Depression RAW SCORE	STANDARD DEVIATION	95% C. I	Standard Error of Mean	t- statistics	D.F (Degree of freedom)	p-value
MALE(n=15)	22	11	-6.5432 To 4.5432	2.745	-0.364	41	0.7175 NOT SIGNIFICANT
FEMALE(n=28)	21	7					

There was no statistical significant difference between males and females mean depression raw score when evaluated for cases.

TABLE 17: MEAN ANXIETY TRAIT SCORE OF CASES VERSUS MEAN ANXIETY TRAIT SCORE OF CONTROL GROUP

Groups	Mean TRAIT SCORE	STANDARD DEVIATION	95% C. I	Standard Error of Mean	t- statistics	D.F (Degree of freedom)	p-value
CASES(n=43)	26	7.5366	-6.7805 TO -1.5595	1.312	-3.178	81	0.0021 SIGNIFICANT (p<0.05)
CONTROL (n=40)	21.83	3.594					

There was observed statistical significant difference between anxiety mean trait score of cases as compared to mean anxiety trait score of controls.

TABLE 18: SHOWING MEAN (CASE) STATE ANXIETY Versus MEAN (CONTROL) STATE ANXIETY

Groups	Mean STATE SCORE	STANDARD DEVIATION	95% C. I	Standard Error of Mean	t- statistics	D.F (Degree of freedom)	p-value
CASES(n=43)	32	5.232	-3.2320 TO -0.1320	0.845	-1.834	81	0.0704 NOT SIGNIFICANT (p>0.05)
CONTROL (n=40)	30.35	1.131					

There was no statistical significant difference between anxiety state of cases as compared to anxiety state of controls.

TABLE 19: MEAN (CASE) RAW SCORE (DEPRESSION) Versus MEAN (CONTROL) RAW SCORE DEPRESSION

Groups	Mean RAW SCORE	STANDARD DEVIATION	95% C. I	Standard Error of Mean	t- statistics	D.F (Degree of freedom)	p-value
CASES(n=43)	22	8	-6.4484 TO -1.3516	1.281	-3.045	81	0.0031 SIGNIFICANT (p<0.05)
CONTROL (n=40)	18.1	1.2969					

There was statistical significant difference between case and control when compared on parameter of raw score of depression in both the groups.

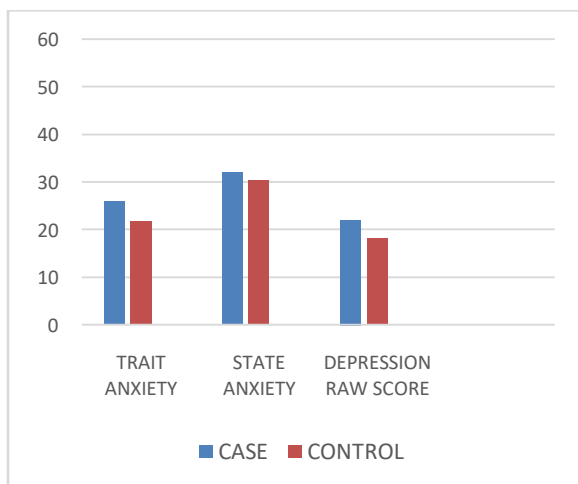


FIGURE 2: CHART SHOWING PICTORIAL REPRESENTATION OF DIFFERENCE IN SCORES OF CASES VERSUS CONTROL

DISCUSSION

RAP is broadly classified into functional and organic causes. Many studies suggest varying magnitude of organic causes ranging from 9 to 82%.and many studies support relations between psychological stressors and RAP. (22-26)

There are studies which indicate anxiety as an important factor for symptom expressions in RAP. (27,28)

John V. Campo et al reported anxiety disorder in 33(79%) patients with RAP (29) and depression in 18(43%) patients. Anxiety disorder was more likely to precede RAP by a mean of 35.2 months, while RAP preceded the development of depressive disorder in 22% patients. This

study showed that RAP patients had a higher level of anxiety and depressive symptoms compared to the control subjects.

Garber et al⁽³⁰⁾ identified anxiety in 11 (85%) and major depressive disorder in 5(38%) of his patients.

In our study, anxiety was found in 7 patients, isolated state anxiety was present in 5 cases, anxiety state and trait in 2 female cases of children with functional RAP but in the control group no child was diagnosed to have either anxiety or depression. One case had depression while no control had depression. Our cohort showed that 8 patients (18.6%) had an associated psychological disorder while others (81.39%) did not show any correlation with psychological disorders. When compared with control groups mean score for anxiety trait and depression raw score were statistically significant.

Olafsdottir et al investigated 25 patients with RAP⁽³¹⁾ and found that 40% of the subjects were harassed at school, 48% were frequently absent from school due to pain. School absenteeism was found in 25.6% of the patients in another study.⁽³²⁾ We found a positive correlation of RAP with academic overachievers i.e those scoring grade A or B and $\geq 80\%$ as per their last reported marks.

Studies report a positive correlation of functional RAP with migration and negative life events.⁽³¹⁾ We observed positive statistical correlation of migrant families with symptoms of RAP similar to this study⁽³¹⁾ but unlike it, we didn't find any statistical significance of negative life events with RAP which is similar to a study by Greene JW et al⁽²²⁾ wherein no statistically significant association with negative life events was observed.

Socioeconomic status was similar in both the groups, so couldn't assess the impact of different socioeconomic status of families on symptoms expression in RAP.

Olafsdottir et al⁽³¹⁾ found a tendency for high scores in RAP patients as compared to controls, for depression, anxiety and withdrawal but personality profile scores

were within normal limits. Our study documented higher scores for anxiety trait, depression raw score in cases with functional RAP versus controls. Difference between mean scores of anxiety trait and raw score of depression with that of control groups were found to be statistically significant ($p < 0.05$).

Our study showed similar results to a study⁽³³⁾ where higher psychological scores (anxiety, depression) were noted in RAP patients than healthy control groups.

A study⁽³⁴⁾ showed that depression is not prevalent in children with RAP, but it was found that parents especially mothers had higher depression score than mothers of healthy children. In our study we found a significant T score to diagnose depression in one case and 7 cases had borderline T scores of 40 to 55. When the mean raw scores of cases were compared with that of control group, there was a statistical significant difference.

Based on several hypothesized etiologies of RAP in the past many interventions such as dietary intervention e.g. Lactose free diet, probiotics, pharmacological therapy- pizotifen, famotidine, drotaverine, CBT, relaxation techniques and alternative medicine has been used. But authors of Cochrane reviews found that there was no evidence of medication in children⁽³⁵⁾ and some studies did not recommend use of antidepressants in management of FGID,⁽³⁶⁾ or fiber supplement, lactose free diet and lactobacillus.⁽³⁶⁾ Recently it was concluded that drotaverine is an effective and safe drug in the management of RAP.

Several authors have suggested a biopsychosocial approach to a patient so that investigations and medications can be prescribed judiciously.

CONCLUSION

This study showed a statistically significant anxiety disorder in cases as compared to control but amongst those with documented anxiety, the number of patients who had state anxiety was more. Only one

case had a T score significant enough to diagnose depression based on standardized score. Our study also showed higher mean anxiety trait scores than control and higher depression raw scores and 7 of the cases had borderline high T scores, therefore it is suggested that such cases maybe followed up for development of anxiety or depression in future, even though T score for depression at this point was not significant to diagnose depression as per the standardized scale. We suggest that further studies with a larger and a more heterogenous sample are required in the future as this cross-sectional study was limited to a relatively homogenous socioeconomic group with a salary income less than 21000. We recommend that for each case of functional abdominal pain, screening for anxiety and depression should be done with standardized scales so as to individualize psychosocial interventions as a part of complete management. Another limitation of our study was that endoscopy was unavailable, therefore histological diagnosis of helicobacter pylori or of food allergies was not possible.

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Conflict of interest: None

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