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Metacognition and Thought Control Strategies in Adolescents with OCD

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Abstract: This cross-sectional and correlational research study was undertaken to assess metacognitive and thought control strategies in adolescents with OCD and to compare with matched healthy controls. Purposive sampling was used. Volunteering and symptomatic adolescents aged 10 to 16 years of age, matched to age, gender, and education were recruited in the study(n=20) and control group(n=20), respectively. MINI KID 7.2.0, C-YBOCS, MCQ-C, and TCQ-CA were administered. The study group scored more on negative belief about worry, SPR, cognitive monitoring, worry, punishment, and re-appraisal. The symptom severity was found to be significantly correlated to negative belief about worry(0.49, $p<0.05$), SPR (0.45, $p<0.05$), over all metacognitive beliefs(0.58, $p<0.01$), and worry (0.48, $p<0.05$). Findings suggest that metacognitive beliefs and thought control strategies have significant relationship with symptom severity in OCD, respectively. The smaller sample size do not allow generalizability of the findings.

***Index Terms*- Metacognitive beliefs, thought control strategies, OCD, adolescents.**

I. INTRODUCTION

Adolescents are capable of worry and have abstract capacity to form beliefs about the their thoughts. This capacity develops and betters itself as children mature into adolescence. Ego-centrism and beliefs about social taboos, enable adolescents to evaluate their cognitive and social behaviour. Thoughts become important to adolescents, as their capacity to anticipate and comprehend future repercussions improve (Klaczynski, 2005). Worrying is common in children as young as 7 years of age(Piaget, 1970). Worrying and fears are non-pathological in nature and developmentally it is essential for existence from evolutionary perspective. However, recent decade has brought to light that it is not just intrusive thoughts but the belief in their significance and need to rectify the dissonance resultant of intrusive distressing thoughts brings attention towards the metacognitive processes and thought control strategies involved in psychological disorders. Adolescents are capable of metacognitive beliefs, beliefs about the significance of thoughts and seem to imply strategies to contain the overt distress caused by them(Steinberg, 2004). Metacognition which is better understood as cognition about cognition, that is, awareness of knowledge, cognitive beliefs, strategies playing role in cognitive awareness, appraisal, and need to control thoughts and cognitive process seems to play mediatory factors towards obsessive compulsive beliefs resulting into thought control strategies(Wilson & Hall, 2012).

Wells' metacognitive model of various anxiety disorder explains the importance of metacognitive processes as an etiological and maintaining factor in psychological disorders. The model leads with cognitive attentional bias towards intrusive thoughts, activation of beliefs about thoughts and it's importance. This leads to maladaptive coping strategies to neutralize the distress. These maladaptive strategies have paradoxical effects. They flare cognitive overt distress due to increased appraisal of intrusion, incompetence to countervail the intrusive thoughts, and distress caused by it. It is analogous to not thinking about 'the yellow bus' , which is inevitable since suppression only exacerbates the pathology(Wells, 1997). Such intrusions are very likely in obsessive compulsive disorder. Obsessive compulsive disorder is commonly defined by intrusive ruminations and acts that may be covert, overt or both to neutralize the distress caused by them. International classification of mental disorder states that individual is aware of the futility of the phenomena and recognizes them as his or her own. This is not uncommon in children and adolescents(Rasmussen & Eisen, 1990).

However, such studies have been much common among adults with very few studies generalized for adolescent population. Previous studies have indicated that higher cognition like belief about one's thought process and thought control strategies play a role in the maintenance and exacerbation of the symptomatology. These studies have provided us with results that generalised on the adult population and a few studies that included older adolescents (Wells et al,1997, Purdon& Clark, 1999, Cartwright-Hatton et al. 2004,Touson & Irak, 2008, Hauser et. al 2017). However, a few studies also explored these variable in children and adolescents from age range 7-17 years (Baccow et al. 2009, 2010) or adolescents across age range 10-17 years (Meiser-Stedman, 2014). Studies also indicate the children and adolescents are capable of higher cognitive skills of monitoring, knowing about knowing as studied by Flavell, Freidrich, & Hyot in 1970. These metacognitive strategies are measurable (Wells et al., 1997; Cartwright-Hatton et al.,2004).

In the light of current literature and it's significant dearth in Indian population among adolescents suffering of OCD this study was taken up.

II. METHOD

2.1 STUDY DESIGN

This is a cross-sectional case control research work. It is a non-interventional and correlation study on adolescents who are currently diagnosed with Obsessive Compulsive Disorder as per DSM-5 criteria with the symptom severity rating of 8 and more on C-YBOCS using standardized tools

2.2 STUDY SAMPLE

The sample included 20 subjects in the study and control group, diagnosed of Obsessive Compulsive Disorder and healthy control subjects, respectively. For the recruitment of the subjects into the groups purposive sampling method was used. The study sample was drawn from the Child and Adolescent Psychiatry outpatient services from the Department of Psychiatry at King George's Medical University, Lucknow, on specified weekdays between November 2017 to March 2018. All the subjects, diagnosed with Obsessive Compulsive Disorder (as per DSM-5) were screened as per the selection criteria of the study group.

The inclusion Criteria for study group entailed of having symptomatic adolescents from age range 10 years through 16 years, who fulfilled criteria of OCD as per DSM-5. The subjects were ruled out of any other AXIS I disorders, i.e, psychiatric comorbidity of Psychosis, Depression, Bipolar Disorder, ASD, SLD, ADHD, ODD, Conduct disorder, Tic disorder, Substance use disorder, and Mental retardation, and those OCD patients having sub-clinical score of <7 on C-YBOCS were excluded. It was made sure that patients who had not undergone any psychotherapeutic intervention were included. The healthy control group subjects consisted of subjects matched on the basis of age, gender, and education using group matching method.

2.3 TOOLS

a. Mini-international Neuropsychiatric Interview 7.0.2 for children (MINI-KID-7.0.2) by Sheehan DV et al 2010. is a short and structured diagnostic interview developed for ruling out psychiatric disorders, updated according to DSM-5 diagnostic criteria by Sheehan DV et al 2010. The test–retest reliability estimates based on kappa (κ) has been found from 0.33 to 0.79 across disorders, the samples and the informants. The parent–youth agreement on disorders was found to be low (average $\kappa = 0.20$) and the confirmatory factor analysis divulges evidence supporting that the convergent and the discriminant validity.

b. Children's Yale Brown Obsessive Compulsive Scale(C-YBOCS , Goodman, 1986) is a clinician administered, meant to assesses the severity of obsessive compulsive symptoms suitable for subjects from age 6 through 17 years by interviewing both parent and child about symptoms that occurred in the past and those apparent presently. They are further scored on the basis of the magnitude of disturbance, duration involved in the obsession and compulsions, and ability to control or yield to them. The reliability and convergent and divergent validity of the CY-BOCS-CR/PR were found to be satisfactory with internal consistency of 0.87 . There are two sections for obsession and compulsion respectively, that are completed by the clinician.

c. Metacognitions questionnaire for children (MCQ-C, Bacow et al 2009) is an adaptation of Metacognitive Questionnaire for Adolescents (Cartwright-Hatton et al., 2004). This questionnaire is used for assessing metacognition in children and adolescents from ages 7 through 17 years. It consists of 24-items that measures levels of cognitive monitoring, positive meta-worry, negative meta-worry and SPR(superstition-punishment-responsibility) belief. The internal consistency to be 0.73 and satisfactory. The concurrent validity of each subscale was established using CDI AND PSWQ-C in the clinical sample.

d. Thought Control Questionnaire for children and adolescents (TCQ-CA, Meiser-Stedman, 2014) was adapted from the original TCQ by Wells and Davis 1994 which was meant for adults. This tool has acceptable reliability and validity calculated with Cronbach's a coefficients for the TCQ-CA subscales were found to acceptable based on the initial pilot study on high school pupil and later on psychiatric patients aged 10-16 years. This is a metacognitive tool consisting of 30 items and five subscales of thought control strategy, namely, distraction, punishment, reappraisal, social control, and worry.

III. PROCEDURE

The study was conducted after getting ethical clearance from the ethical committee and research cell of King George's Medical University Lucknow. The old as well as new cases patients diagnosed with OCD attending the Child and Adolescent Psychiatry O.P.D on specified days, Department of Psychiatry, King George Medical university, Lucknow, were initially assessed according to DSM-5 and then the diagnosis was confirmed by the consultant Psychiatrists of the respective OPD. Patients were then assessed on the basis of inclusion and exclusion criteria. The aforementioned tools mentioned were administered on all subjects of both the groups except C-YOBCS which is applicable on clinical subjects.

The sample size comprised of 20 subjects in the study group and 20 comparable healthy controls based on group matching of age, gender, and education. It was ensured that psychotherapeutically naïve subjects were included and had no other psychiatric comorbidities were present in the subject. The subjects were advised not to take any benzodiazepines a night before the assessments, hence, effect of drugs were partially controlled.

3.1 STATISTICAL ANALYSIS

The results are presented in frequencies, percentages and mean ±SD. Chi-square test was used to compare the categorical variables between the groups. Unpaired t-test was used to compare the continuous variables between the groups. Pearson correlation coefficient was calculated amongst clinical parameters. The p-value<0.05 was considered significant and <0.001 was considered as highly significant. All the analysis was carried out on SPSS 20.0 version (Chicago, Inc., USA).

IV. RESULTS AND DISCUSSION

39 patients were screened in all, and 5 potential subjects were excluded due to the other psychiatric illnesses, 5 potential subjects and their guardians withdrew content, 5 potential subjects were ruled out because of they did not satisfy the criteria age range and 4 potential subjects who were previously under treatment were found to asymptomatic at the time of screening. Finally, there were 20 participants in the study group with matched subjects in the control group.

4.1 RESULTS

As depicted in table-4.1 the mean age of the Study Group (14.05±1.28) and the Control Group(13.95±1.32) had no statistically significant differences. The groups consisted of 16(80%) male and 4(20%) female patients in each of the groups, respectively, with no statistically significant difference between the groups in terms of gender and years of education.

TABLE 4.1 :Socio-demographic characteristics of the sample

SOCIO- DEMOGRAPHIC VARIABLES		STUDY GROUP n=20	CONTROL GROUP n=20	SIGNIFICANCE
Age Range	10-16 YRS	20(100%)	20(100%)	t=0.12; p= 0.45
	Mean	14.05±1.28	13.95±1.32	
Gender	Male	16(80%)	4(20%)	Chi-square= 0.00 p=1.00
	Female	16(80%)	4(20%)	
Education	≤ 8th Grade	9 (45%)	7 (35%)	Chi-square= 0.42; p=0.52
	9th-10th Grade	11 (55%)	13 (65%)	

There were no statistically significant among the socio-demographic differences between the study and the control group.

TABLE 4.2: Distribution of participants on the basis of severity and duration of OCD

SEVERITY	FREQUENCTY	PERCENTAGE
MILD	7	35
MODERATE	4	20
SEVERE	7	35
EXTREME	2	20

DURATION	CASES
DURATION<6 months	3 (15%)
6 months-12 months	14 (70%)
>12 months	3 (15%)
MEAN / SD± (in months)	13.25 ± 9.07 months

Table 4.2 shows that when assessed on C-YBOCS 7(35%) subjects had Mild, 4(20%) had Moderate, 7(35%) had Severe, and 2(20%) had Extreme level of severity of symptoms of OCD.

In terms of duration of OCD, 3(15%) had less than 6 months of duration, 14(70%) were within duration of 6-12months while 3(15%) had the duration more than 1 year. The mean duration of the 20(100%) subjects was found to be 13.25 (SD 9.07 months).

TABLE 4.3: Comparison of the study and control group on MCQ-C

MCQ-C	STUDY GROUP (N=20)	CONTROL GROUP (N=20)	t-value, d.f.	p-value
POSITIVE WORRY	17.35±3.96	15.60±4.89	1.24, 38	0.22
NEGATIVE WORRY	11.75±3.72	7.60±1.75	4.50, 38	**<0.001****
SPR	19.55±3.79	6.70±1.38	14.24, 38	**<0.001****
COGNITIVE MONITORING	15.50±4.69	9.90±1.91	4.93, 38	**<0.001****
FULL SCALE MCQ-C	64.15±.68	51.20±15.38	3.18, 38	**0.05***

Table 4.3 depicts that the study group was found to be using increased Negative worry (t=4.50), SPR (Superstition-Punishment-Responsibility) (t=14.24), Cognitive monitoring (t=4.93) and full-scale score on MCQ-C (t=3.18, p<0.05*) at p<0.001**.

- *significant at level p<0.05
- **significant at level p<0.001

TABLE 4.4: Comparison of the study and control group on TCQ-CA

TCQ-CA	STUDY GROUP (N=20)	CONTROL GROUP (N=20)	t-value, d.f.	p-value
DISTRACTION	16.45±4.12	20.85±2.15	4.22, 38	**<0.001****
SOCIAL CONTROL	13.30±3.78	18.10±4.37	3.71, 38	**<0.05***
WORRY	12.65±4.22	7.10±1.61	5.49, 38	**<0.001****
PUNISHMENT	14.80±5.35	6.00±0.00	7.35, 38	**<0.001****
RE-APPRAISAL	14.75±3.46	10.25±2.48	4.71,38	**<0.001****
FULL SCALE TCQ-CA	71.95±8.73	62.30±6.56	3.94, 38	**<0.001****

Table 4.4 depicts that the study group was used significantly less of distraction and social thought control strategy at p<0.05* and significantly increased use of worry, punishment, and reappraisal at p<0.001**. The full scale TCQ-CA score of the study group was significantly higher than the control group at p<0.001**.

- *significant at level p<0.05
- **significant at level p<0.001

TABLE 4.5: CORRELATION OF SEVERITY OF OCD AND MTACOGNITIONS

PARAMETERS	SEVERITY(CORRELATION COEFFICIENT, P-VALUE)
FULL SCALE MCQ-C	**0.58, 0.007****
POSITIVE WORRY	0.29, 0.21
NEGATIVE WORRY	**0.49, 0.02***
SPR	**0.45, 0.04***
COGNITIVE MONITORING	0.20, 0.38
FULL SCALE TCQ-CA	0.42, 0.06
DISTRACTION	-0.16, 0.51
SOCIAL	0.02, 0.93
WORRY	**0.48, 0.03***
PUNISHMENT	0.24, 0.30
RE-APPRAISAL	0.27, 0.26

Table 4.5 depicts that the study group was found to have significantly positive correlation with severity and metacognitive variables of Negative meta-worry (r=0.49), SPR (Superstition-Punishment-Responsibility) (r=0.45), and Worry (r=0.48) at p<0.05 while the full-scale score on MCQ-C has significantly positive correlation with severity(r=0.49) at p<0.01.

*significant at level p<0.05

**significant at level p<0.001

4.2 DISCUSSION

The aim of the research paper was to study the metacognitive processes and thought control strategies in adolescents with obsessive compulsive disorder and compare with healthy control group. Additionally, correlation of the severity of obsessive compulsive disorder with metacognition and thought control strategies were studied, respectively.

The study group scored significantly higher on metacognitive strategies of 'negative belief about worry' (11.75±3.72), 'Superstition-Punishment-Responsibility' (SPR 19.55±3.79), and 'Cognitive Monitoring' (Cognitive awareness 15.50±4.69) was found to be significantly higher at p<0.001 level. The overall score of metacognition of the study group on MCQ-C (64.15 ± 1.68) was found to significant at p<0.01. Psychopathology in the anxiety spectrum disorder involve metacognitive beliefs (Ryum et al., 2017, Wells, 1997; Wells & Matthews, 1994). Negative beliefs about worry , inflated responsibility, and cognitive awareness about worry has been found to be significant in obsessive compulsive disorder (Cougle, Lee, & Salkoviskis, 2007; Gwilliams et al, 2004; Salkoviskis & Forrester, 2002; Salkoviskis et al., 1995). The negative belief about worry are the beliefs about uncontrollability and danger of the thoughts. Salkoviskis in his comprehensive cognitive-behavioural model of OCD (Salkovskis, 1985;) emphasized that negative appraisal of thoughts and need to do something about it so as to harmonize the disturbance is classic among individuals with OCD. The results were consistent with the previous literature(Cartwright-Hatton et al., 2004; Ellis & Hudson, 2011). Beliefs of uncontrollability and danger about worry(negative beliefs about worry) was found to be significantly related to severity of OCD(0.49. p<0.05). This finding is consistent with the finding of Smith & Hudson(2013).

SPR is the negative belief about the thoughts related to themes of superstition, punishment, and inflated responsibility. Superstitious beliefs about intrusive ruminations and it's importance is a common clinical picture as understood by thought action-fusion, thought-object fusion, and thought-event fusion. This leads to negative interpretation of the occurrence of intrusion. Intrusions give rise to the metacognitive beliefs and need to control or at least neutralize the distress caused, which is a fairly common phenomena given that individuals with OCD exhibit inflated responsibility and cognitive rigidity in OCD. Both punishment and inflated responsibility has been repeatedly quoted as one of the independent predictors of OCD (Salkoviskis, 1998; Salkoviskis et al., 1995; Fehm & Hoyer, 2004; Wells, 2005). The current study maintains that there is a significantly positive relationship(0.45, p<0.05) with symptom severity and SPR (Wells, 1997, 2000; Gwilliams et al., 2004).

Cognitive monitoring is the metacognitive capacity to monitor and examine one's own thought. This awareness towards metal processes in itself is not detrimental, however excessive monitoring leads to cognitive overload. Inflated cognitive monitoring has detrimental ramifications when it interacts with individual characteristics and/or fixating thoughts in OCD. The tendency to excessively reflect upon one's thoughts and cognitive processes seem to increase negative evaluation of the ruminations, a common characteristic in OCD (Janeck, Calamiri, Riemann, & Heffelfinger, 2003).

The over-all score on metacognitive questionnaire was found to be higher than that of healthy control group(64.15 ± 1.68, p<0.01). Adolescents with anxiety disorder seem to score more on over-all metacognitive beliefs than healthy ones. This is consistent with previous literature on adolescents with OCD by Smith & Hudson, Mather & Cartwright-Hatton, 2004; Matthews et al, 2006. The study group scored higher on all subscales except positive worry. Individuals with OCD experience distress and understand the futility of the obsessions and compulsions. Even after being aware of the futility and unrealism of the phenomena, they fail to forbid themselves from ruminating on it and acting on the impulse to neutralize it, due to cognitive inflexibility (Rachman, 1998). Subjects with anxiety disorder seem to invariably react to neutralize the maladaptive cognitive and metacognitive beliefs(Wells, 1995; Salkoviskis, 1985). Increased positive belief about worry in the study group was expected, however, it was not found to be so. Awareness of the pointless of obsessions seems to explain lack of positive beliefs about worry. However, simple as it may seems, one cannot deny the fact that individuals having anxiety disorders more often score higher on positive beliefs about worrying and thinking than their non-clinical counterparts. The basic metacognitive tenets of anxiety disorder or specifically OCD, implies that individuals have positive beliefs about worry as it helps them cope. Though this may not add up to better coping skills (Wells, 1997; Ellis & Hudson, 2011).

Adolescents with OCD were found to have scored higher on the thought control strategies of worry(12.65±4.22), punishment(14.80±5.35), and re-appraisal(14.75±3.46) at p<0.001. The subscale of worry is tendency to substitute intrusive thoughts with something mundane to worry. The subscale of punishment is related to punishing oneself for the tabooed intrusive thought. Worry and punishment have been found to be maladaptive in anxiety disorders (Meiser-Stedman, 2014). Worry and punishment have been found to have significant relationship with OCD (Wilson & Hall, 2012). The current study maintains that thought control strategy of worry is significantly correlated with symptom severity(0.48, p<0.05), but punishment as thought control strategy does not seem to be related with OCD. However, metacognitive belief of punishment in SPR has positively significant relationship with OCD(0.45,p<0.05). Re-appraisal is to review and re-evaluate the aspects of intrusive thoughts and events. Repetitive cognitive appraisal of intrusive thoughts and events interact with one's emotional experience of oneself and the circumstances. This repetitive re-appraisal results in perseverative thought process and cognitive rigidity which is in turn linked to increased cognitive monitoring (Fresco, Frankel, & Mennin et al., 2002). The study group scored less on the thought control strategies of distraction (16.45±4.12, p<0.001) and social control (13.30±3.78, p<0.01). The healthy group on the contrary scored more on distraction(20.85±2.15, p<0.001) and social control(18.10±4.37, p<0.01) which seems to be protective factor. Social control is a strategy of using peer and social support to tackle ruminations and distraction is strategy to engage oneself into something else in order to avoid ruminations. Obsessions and compulsions often render debilitated is form meaningful relationships as they are time-consuming and distressing along-with cognitive rigidity it becomes difficult to distance oneself from ruminations and intrusive thoughts. The personal significance given to intrusions and meta-cognitive beliefs give to it, makes it rather impossible to de-centre oneself from such thoughts(Wells, 1995; Wells & Meyer, et al., 1997).

4.3 Strength of the study

The strength of the study lies in its group matching and homogenous sample. It was made sure that psychotherapy naïve individuals were included in the study, and effect of drug was partially controlled.

4.4 Limitation of the study

Several significant positive correlations of severity were expected with- metacognitive belief of cognitive monitoring, thought control strategies of re-appraisal, punishment and significant inverse relationship with distraction and social control were expected. However, in parts due to limitation of the tools' sophistication, namely MCQ-C and TCQ-CA such relationships may have failed to replicate. These tools are not specifically meant for assessing phenomena related to obsessive-compulsive disorder. The sample size is humble, sub-clinical anxiety and depression could not be assessed due to rigid time frame allotted for the study.

4.5 Future implication of the study

This study may be replicated on larger sample size which may help in understanding the metacognitive model in adolescent population that can be generalized. The current study leaves room for a metacognitive and thought control strategy tool meant for Asian adolescents specific to the disorder for comprehensive understanding and generalizability of the findings towards the metacognitive model of OCD for urban and rural population

V. CONCLUSION

The metacognitive beliefs in adolescents with OCD has been found to be increased with negative belief about the danger and uncontrollability of thoughts, superstition-punishment-responsibility, and over all metacognitive beliefs were found to be correlated to severity of obsessive compulsive disorder. The thought control strategies of worry, punishment, and reappraisal were increased and less of social control and distraction in adolescent with OCD compared to health controls. However, the thought control strategy of worry was found to be correlated to severity of OCD.

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