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Addresses

Editorial office
Dr. Shahul Ameen
St. Thomas Hospital, Kurisummoodu PO,
PIN - 686 104, Kottayam Dt., Kerala, India
E-mail: shahulameen@yahoo.com

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Guest Editorial

Medical Council of India's New Competency-Based Curriculum for Medical Graduates: A Critical Appraisal

The Medical Council of India (MCI)'s new competency-based curriculum for medical graduates is a major landmark for medical education in India;[1] it represents a paradigm shift. The Council's attempt to modernize medical education is laudable and in keeping with recent global trends.[2-4] This editorial attempts to highlight the new curriculum, foregrounds the problems related to the mental health service delivery in the country, critically examines the new curriculum and its application to the Indian context, discusses its advantages and limitations, and suggests future directions.

COMPETENCY-BASED EDUCATION

Unlike the old curriculum which focused on knowledge, was organized on systems and disciplines, was time-based, and had a summative evaluation, competency-based learning emphasizes the skills required for good medical practice. It focuses on learning the critical competencies needed for success in clinical practice and provides standards and framework for measuring performance. The basic feature of any competency-based training is that it measures learning that occurs in a training program, rather than time. It allows for self, objective, and multisource assessments. The approach has been used for training in diverse medical specialties.[5,6]

GOALS OF THE NEW CURRICULUM

The thrust of the new curriculum attempts to make medical education in India more learner- and patient-centric, gender-sensitive, and outcome- and context-oriented.[1] It underscores the need for integration of disciplines both horizontally and vertically, while respecting the strengths and necessity of subject-based instruction and assessment. While the new curriculum emphasizes competencies, it continues to focus on traditional medical disciplines and on time rather than on mastery of a specific set of skills, making it different from ideal competency-based models.

The new curriculum identifies essential skills, describes methods and contexts of teaching, and recognizes standardized measurement of competencies.[1] It aims to produce "Indian Medical Graduates" with requisite knowledge, skills, attitudes, values, and responsiveness, so that they may function appropriately and effectively as physicians of first contact in the community.

The new curriculum co-opts national goals of "health for all," of providing holistic care, of developing a scientific temper, and of producing ethical medical practitioners.[1] It aims to focus on common medical conditions and provision of comprehensive care, emphasizes bio-psycho-socio-economic dimensions of health and illness, and aligns with national health priorities. It aspires to produce medical graduates who are competent clinicians, who develop patterns of lifelong learning to keep up with advances in science, who become excellent in communication and bedside manners, and who will lead multidisciplinary healthcare teams and provide leadership for the many national public health programs. Its intention is to produce clinicians who understand and provide preventive, promotive, curative, palliative, and holistic care with compassion.

It lists 412 topics for learning and 2,949 outcomes to be mastered.[1] It argues that broad competencies can be achieved in a phased manner, while retaining the subject-wise character of the current organization of

specialties and integrating teaching and learning across disciplines during the undergraduate course.

CHANGES TO THE CURRICULUM

The changes to the curriculum, proposed by the MCI, are welcome as they are aimed at empowering physicians. The shift in focus from knowledge to the acquisition of skill will result in confidence to manage problems in medical practice. The identification of the skills required for a successful practice, being based on common conditions seen in primary and secondary care, will necessarily improve medical education. The older curriculum, which focused on traditional teaching (e.g., lectures, which transmit information) and assessment methodology (written and oral examinations, which examine knowledge imbibed), should now be replaced by an emphasis on skills to be acquired. The formative assessments planned should augment summative assessments.

The Clinical Implementation Support Programme, being planned for medical faculty, will train teachers in competency-based education; its aims, principles, and scope; competencies to be mastered; methods of teaching and learning; and types of assessments and evaluations. The new curriculum aims to deemphasize the compartmentalizations of the traditional medical disciplines through horizontal and vertical integration of teaching–learning methods which focus on outcome competencies to be mastered.

The new curriculum also encourages the use of skill laboratories. It requires simulated and guided environments to demonstrate how skills are acquired and also mandates the performance and certification of some skills during the course, prior to clinical internship. It streamlines formative and internal assessments to achieve the objectives of the curriculum. It attempts to support and strengthen curricular governance by increasing the involvement of the Curriculum Committee and Medical Education Departments/Units.

The document provides subject-wise outcomes, so-called "sub-competencies" that must be achieved at the end of instruction in that subject. It includes the core subject outcomes and outcomes/competencies in other subjects which need to be integrated. Learning domains (Knowledge, Skill, Attitude, Communication) and the expected level of achievement in that subject (Knows, Knows How, Shows How, Performs) are also identified. The suggested learning methods include lectures, bedside clinics, small group discussion, and demonstration-observe-assist-perform sessions. The suggested assessment methods include written examination, viva voce, and skill assessment – clinical, skill laboratory, and practical. However, independent performance without supervision is required rarely in the preinternship period.

COMPETENCIES RELATED TO MENTAL HEALTH AND ILLNESS

Competencies related to mental health and illness are divided into 19 topics and 117 outcomes.[1] The 19 topics include (i) doctor–patient relationship, (ii) mental health, (iii) introduction to psychiatry, (iv) alcohol and substance use, (v) psychotic disorders, (vi) depression, (vii) bipolar disorders, (viii) anxiety, (ix) stress-related disorders, (x) somatoform disorders, (xi) personality disorders, (xii) psychosomatic disorders, (xiii) psychosexual and gender identity disorders, (xiv) psychiatric disorders in childhood and adolescence, (xv) mental retardation, (xvi) psychiatric disorders in the elderly, (xvii) psychiatric emergencies, (xviii) therapeutics, and (xix) miscellaneous. These topics are broad and cover all disorders currently being taught in Psychiatry to medical students.

Each topic has specific competencies to be learned, resulting in 117 outcomes.

Table 1 shows the specific outcomes for mental health and psychosis. These competencies focus on a basic understanding of psychiatric disorders and their treatment. In addition, there are 45 competencies across nine subjects where Psychiatry is either vertically or horizontally integrated, specifically with General Medicine, Geriatrics, Paediatrics, and Community Health.

The main advantage of the new curriculum is the highlighting and a new focus on the basic competencies required of a medical graduate. The fact that Psychiatry features as a subject in the new curriculum suggests that the discipline is being considered a core subject and that many competencies related to Psychiatry are mandatory for future Indian doctors.

COMMENTARY

The new curriculum and its relevance, usefulness, feasibility, impact, advantages, and disadvantages are discussed under the following heads: (i) mental healthcare delivery, (ii) primary and secondary healthcare, (iii) impact of settings, (iv) examination systems, (v) new curriculum in perspective, and (vi) future direction.

Mental healthcare: Aspiration and reality

India, a signatory to many international agreements (Alma Ata Declaration,[7] 65th World Health Assembly

Table 1: Examples of topics, competencies, domains, levels, teaching-learning methods, assessment, and integration

No.	Competency The student should be able to	Domain K/S/ A/C	Level K/KH/ SH/P	Core (Y/N)	Suggested teaching- learning method	Suggested assessment method	Competencies to certify	Vertical integration	Horizontal integration
Topic: Mental health No. of competencies: (5) No. of procedures that require certification: (NIL)									
PS2.1	Define stress and describe its components and causes	K	K	Y	Lecture, SGD	Written/ viva voce	Nil		
PS2.2	Describe the role of time management, study skills, balanced diet, and sleep-wake habits in stress avoidance	K	KH	Y	Lecture, SGD	Viva voce	Nil		
PS2.3	Define and describe the principles and components of learning memory and emotions	K	K	Y	Lecture, SGD	Written/ viva voce	Nil		
PS2.4	Describe the principles of personality development and motivation	K	K	Y	Lecture, SGD	Written/ viva voce	Nil		
PS2.5	Define and distinguish normality and abnormality	K	K	Y	Lecture, SGD	Viva voce	Nil		
Topic: Psychotic disorders No. of competencies: (6) No. of procedures that require certification: (NIL)									
PS5.1	Classify and describe the magnitude and etiology of schizophrenia and other psychotic disorders	K	KH	Y	Lecture, SGD	Written/ viva voce	Nil		
PS5.2	Enumerate, elicit, describe, and document clinical features, positive symptoms	S	SH	Y	Bedside clinic, DOAP session	Skill assessment	Nil		
PS5.3	Describe the treatment of schizophrenia including behavioral and pharmacologic therapy	K	KH	Y	Lecture, SGD	Written/ viva voce	Nil	Pharmacology	
PS5.4	Demonstrate family education in a patient with schizophrenia in a simulated environment	K/S/ A/C	SH	Y	Bedside clinic, DOAP session	Skill assessment	Nil		
PS5.5	Enumerate and describe the pharmacologic basis and side effects of drugs used in schizophrenia	K	KH	Y	Lecture, SGD	Written/ viva voce	Nil	Pharmacology	
PS5.6	Enumerate the appropriate conditions for specialist referral in patients with psychotic disorders	K	K	Y	Lecture, SGD	Written/ viva voce	Nil		

Domain: K: Knowledge, S: Skill, A: Attitude, C: Communication. Level: K: Knows, KH: Knows How, S: Skill, SH: Show How, P: Perform independently. Teaching: SGD: Small Group Discussion, DOAP Session: Demonstrate (by Student) Observe, Assist Perform. Skill assessment: Clinics, Skills laboratory, Practical, etc.

Resolution on Mental Health,[8,9] the Mental Health Gap Action Programme,[10] and Comprehensive Mental Health Action Plan 2013–2020),[11] has developed many national mental health plans, policies, and programs (National Mental Health Plan –1982,[12] the Revitalised National and District Mental Health Programs,[13] and the Mental Health Policy – 2014).[14] These efforts recognize the significant burden of mental illness and the large treatment gap in mental healthcare delivery.

These plans, policies, and programs also acknowledge the lack of the required number of specialist mental health professionals (psychiatrists, psychologists, psychiatric nurses, social workers, etc.). They argue for training and empowering primary and secondary healthcare professionals for mental healthcare delivery. Care in the community for people with mental distress, illness, or disease through the integration of mental healthcare delivery in primary care through the National Health Missions has also been suggested. Despite these much-hyped efforts, the reality on the ground for people with mental illness has hardly changed across the country.[15-17]

Primary and secondary healthcare: The complex reality

The vision of the many national and international plans and programs has not been translated into reality in the Indian context. The problems related to health services in India are multifaceted and include poor infrastructure, overburdened primary care systems, inappropriate training for health professionals, professional apathy, limited finances, impoverished environments, and low morale of primary healthcare staff.[16] The lofty aims of the Indian plans and policies remain on paper because of the complex reality of healthcare delivery in India.[15-17] Mental healthcare delivery through primary healthcare requires robust systems mandating significant strengthening of existing facilities, organization, and procedures.

Settings and their impact on presentations and perspectives

The problems related to poor primary healthcare systems in the country are also compounded by significant differences in primary and tertiary care approaches to mental health and illness.[18] Differences in settings, patient profiles, and physician perspectives result in the lack of enthusiasm for tertiary care psychiatric concepts,

classification, diagnosis, and management strategies among primary and secondary care physicians. The fact that most patients report nonspecific symptoms and milder, mixed, and subsyndromal presentations associated with psychosocial stress and physical adversity makes the use of classical tertiary care concepts and categories (e.g., major depression) difficult to use in primary care. Yet, common clinical presentations seen in primary care (e.g., mixed anxiety depression) are not recognized as a psychiatric diagnoses even in psychiatric classifications for use in primary care.[18-20]

Family physicians argue that the use of symptom counts to diagnose mental disorders, without consideration of psychosocial context, particularly psychosocial hardship, identifies nonclinically significant distress, especially at lower degrees of severity.[18-20] They consider such efforts a medicalization of distress. On the other hand, general practitioners recognize the importance of psychosocial support, realize that spontaneous remission and placebo responses are common, and understand the limitations of using antidepressants for less than severe depression.[21,22] They readily acknowledge the importance of social determinants of mental health.

Population differences between settings, with lower prevalence of classic psychiatric presentations (e.g., generalized anxiety and major depression) in primary care, often result in high false-positive rates when such labels are used in general medical settings.[18-20] Primary care physicians argue that patients seek medical help when they are disturbed or distressed, when they are in pain, or when they are worried about the implication of their symptoms. Many such forms of distress are normal reactions to adversity and mainly require psychological and social support. Consequently, family and primary care physicians use the International Classification of Primary Care-2 (ICPC-2),[23] which focuses on reasons for clinical encounters, patient data, and clinical activity rather than psychiatric labels. They also prefer general guidelines for management to detailed, separate, and specific protocols.[18-20]

Similarly, categories like acute and chronic psychosis, easily identified and managed in primary care, are trumped by the specialist conceptualization of schizophrenia and bipolar disorders more commonly encountered and recognized in specialist practice but difficult to identify in general medical settings. Categories useful in primary care seem to be unacceptable to specialists and unsuitable in their settings and vice versa.[18-20]

Primary healthcare professionals demand caution in translating specialist concepts and classifications for use in primary care, and yet, their perspectives are marginalized in official classifications, management guidelines, and in curricula for training basic physicians. The many differences in patient populations and perspectives suggest a "category fallacy" (i.e., the unwarranted assumption that psychiatric categories and diagnoses have the same meaning when carried over to a new cultural context/clinical setting with its alternative frames or systems of meaning) when specialist cultures are imposed on primary care.[19]

The culture of Psychiatry in primary care borrows heavily from specialist approaches and attempts to adapt it to the reality of primary care. The low rates of recognition and treatment of mental illness in primary care across countries, despite education and retraining programs for general practitioners, suggest the failure of tertiary care approaches in primary care. The fact that such psychiatric approaches to classification for primary care (e.g., International Classification of Diseases 10 Primary Health Care[24] and Diagnostic and Statistical Manual IV Primary Care[25]) were unheard of and unused in general and family practice speaks of their mismatch to the primary care context.[18-20]

Despite major differences in settings, populations, and perspectives, psychiatric training continues to be provided in psychiatric facilities and in tertiary care settings. Consequently, the failure of physicians to recognize and diagnose classical psychiatric presentations, uncommon in primary care practice, results in their inability to manage patients with mental distress and illness. Psychiatric training often deskills and disempowers even the most diligent of students; physicians would rather refer their patients than manage common mental distress and illnesses. Clinical practitioners, while being unable to challenge the international psychiatric concepts and classifications for use in primary care, do not actually use them in their practice, undermining such schemes.[19-20]

Nevertheless, psychiatrists, trained in tertiary care and familiar and confident in specialist approaches, assume that patients presenting to primary care will have similar presentations and will benefit from specialist perspectives. Consequently, specialists devise curricula and training programs wholly inappropriate for use in primary care, thus, perpetuating inadequacy and lack of confidence among basic physicians to manage psychiatric presentations in primary care.[26-28] However, countries with strong traditions in general and family practice recognize these difficulties and pay lip service to the official and specialist classification, methods, and treatment protocols and train physicians in primary care using general practice and family physician perspectives, principles, and approaches.[3,4]

Examination systems

It is widely recognized that student learning is driven by assessments and examination systems. To change the curriculum while continuing with the present examination system which focuses on recall of knowledge predicts failure to achieve the goals of the new curriculum. Assessment in Psychiatry, currently done by single theory question in the final examination, will not inspire significant student enthusiasm for learning the subject. Psychiatry, currently assessed within general/internal medicine, cannot compete with current medical teaching which emphasizes physical diseases with a focus on rare conditions (e.g., mitral stenosis and regurgitation of rheumatic etiology) and an absence of emphasis on common clinical presentations (e.g., patients with medically unexplained symptoms). Summative assessment with a single theory question, often more than a year after the Psychiatry posting, does not communicate the importance of mental health and illness in routine medical practice and will not motivate students to engage with the subject. While the new curriculum does not specify the duration and distribution of postings in Psychiatry, it is still possible to have such exposure during the final year.

The new curriculum in perspective

While the focus on competencies is a major shift in emphasis, the new curriculum essentially maps the old psychiatric syllabus in bite-sized capsules. It basically takes tertiary care psychiatric concept and perspectives (e.g., separate diagnostic and management status of anxiety, depression, somatoform, stress-related, psychosomatic, and personality disorders) and transfers them as the competencies required for medical graduates, when most clinical psychiatric presentations in general medical settings are mixed, mild, subsyndromal, and associated with psychosocial adversity.[24-26]

Detailed examinations of the new curriculum related to mental health, distress, illness, and disease suggest that traditional psychiatric topics have been rewritten as competencies, with the majority of them focusing on the transmission of knowledge, taught in tertiary care settings, and assessed using traditional written and viva voce examination.

While the overall curriculum argues for formative evaluations during the clinical postings in psychiatric facilities, the majority of psychiatric competencies continue to focus on the transmission and recall of knowledge rather than the evaluation of skills required to recognize and manage such problems in busy general medical settings.

The new curriculum does not require a single mandatory competency related to Psychiatry during the course; the curriculum argues that these will be achieved during the internship, essentially suggesting old wine in a new bottle. It does not acknowledge the difference between specialist psychiatric and general medical settings, nor does it take into account the significant disparities between psychiatric and physician perspectives. The new curriculum essentially imposes tertiary care standards and specialist perspectives for Indian medical graduates who are to work in primary care and secondary care facilities in the country.

The new curriculum, while arguing for vertical and horizontal integrations, does not suggest any need to collaborate with departments of general and family medicine or community health where medical graduates will work after the internship.

The new curriculum, while arguing for formative assessments during the Psychiatry posting, does not suggest any contribution to the overall assessment (i.e., addition to summative assessments).

Future directions

Recent attempts at developing psychiatric curricula for training physicians for general medical settings take a radically different approach.[3,4,20,26-30] The following form the core components of these programs:

(i) They acknowledge the significant differences in settings, perspectives, and presentations in primary and secondary care. They are set in primary and secondary care settings and demonstrate clinical identification and management using patients attending such facilities for training medical students about mental distress and illness
(ii) Consequently, they collaborate and integrate teaching–learning with departments of General and Family Medicine and Community Health. While collaboration with the Department of Family Medicine is ideal and should be recommended, their absence in most medical colleges poses a major challenge
(iii) They use general and family physician concepts and perspectives for use in busy general hospital settings, for clinical exposure
(iv) They recognize that psychiatric diagnosis is essentially syndromic and management, symptomatic
(v) They identify broad clinical presentations commonly seen in primary and secondary care. Delirium, dementia, substance use, psychosis, physical symptoms, health anxiety, and suicide attempts seen in medical settings are used to teach about problems in adults. Intellectual and learning disability, attention deficit, nocturnal enuresis, and temper tantrums are the focus in children

(vi) They use simple, general, and common management guidelines for ease of mastery by physicians. These include recognition of the clinical presentation, ruling out underlying medical disease, eliciting and managing patient and family perspectives related to illness and educating them, discussing stress and context, prescribing appropriate medication, negotiating a plan of action, and considering situations for specialist referral

(vii) They also discuss and demonstrate the management of patients who attempt suicide; those with suicide risk; those who are angry, tearful or agitated; and those who present with grief and bereavement, as these presentations are common in medical settings and managing them requires competence

(viii) They attempt to emphasize "primary medical care" for common psychiatric presentations in general practice. They emphasize a holistic approach to care, which requires the use of psychotropic medications and simple psychological interventions which can easily be implemented in busy clinical practice

(ix) Assessment systems attempting to evaluate skills and competencies acquired during training need a change to Objective Structured Clinical Examinations. Emphasis should be on practical strategies to recognize and manage common conditions which present to general medical settings. Such evaluations should also be part of General Medicine and Community Health university examinations, as Psychiatry does not have university-level assessments

(x) Recognizing and managing common clinical presentations in primary care and general medical settings (e.g., unexplained medical symptoms, substance dependence and withdrawal, acute and chronic psychosis, delirium, suicide attempt, nocturnal enuresis, temper tantrums) should be mandatory competencies to be mastered during the medical course

(xi) A substantial proportion of the summative assessment for Psychiatry should be an internal assessment for competencies mastered. In addition, mental health and illness should also be evaluated as part of summative assessments in General Medicine, Community Health, Pediatrics, and Forensic Medicine

(xii) The new curriculum demands collaboration between departments, the curriculum committee of the medical college to develop specific learning objectives, and the integration and coordination between medical disciplines throughout the course. Specific learning objectives related to depression, anxiety, somatic presentations, and stress-related presentations in general medical practice require a coordinated approach to teaching. The ICD-10 for Primary Health Care[24] and the ICPC-2[23] can form the basis for such integration

(xiii) The Curriculum Committee of the Indian Psychiatric Society can take the lead in designing and implementing specific learning objectives in general medical settings. The time frame for implementation of the new curriculum allows time till May 2020 to develop a detailed competency-based curriculum for mental health and illness.

Mastery in recognizing and managing psychiatric presentations seen in general medical practice demands that training is necessarily situated in such facilities. Moving psychiatric training out of specialist settings and resituating it within primary and secondary care settings will allow for the recognition of common presentations and appreciation of local reality, encourage holistic management, and improve understanding of general practice and Family Medicine perspectives.[24-26] Encouraging psychiatrists to work in primary and secondary care and general medical settings will also allow for a liaison approach which understands local contexts and appropriate management strategies. Regular interaction between specialists and general physicians will result in fertilization of perspectives and practice relevant to primary medical care. It will provide confidence and professional satisfaction, which will result in a sense of ownership.[24-26]

There is a need to create transformative educational initiatives which provide key stakeholders the opportunity to collaborate, understand, invest, and develop the care of mental distress, illness, and disease in primary care. Reimagining psychiatric education for primary and secondary care practice demands the understanding of local reality, which should not only transform psychiatric practice but also influence psychiatric theory.

CONCLUSION

The new MCI curriculum which shifts the focus from knowledge to competencies is a major advance. However, the continued use of specialist concepts, perspectives, diagnoses, and management approaches set in tertiary care facilities means that the opportunity to train basic medical doctors in recognition and management of clinical presentations commonly seen in primary and secondary care has been lost. The discipline in India needs to collaborate and liaise with teachers in General and Family Medicine and Community Health, who run primary and secondary medical facilities, to develop a curriculum appropriate to the needs of the country.

K. S. Jacob[1,2]

[1]Professor of Psychiatry (Retired), Christian Medical College, Vellore, Tamil Nadu, India, [2]Department of Psychiatry, Ballarat Health Services, Ballarat, VIC, Australia

Address for correspondence: Prof. K. S. Jacob
Ballarat Health Services, Ballarat, VIC, 3350, Australia.
E-mail: ksjacob1959@gmail.com

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Review Article

The *P* Value and Statistical Significance: Misunderstandings, Explanations, Challenges, and Alternatives

Chittaranjan Andrade

ABSTRACT

The calculation of a *P* value in research and especially the use of a threshold to declare the statistical significance of the *P* value have both been challenged in recent years. There are at least two important reasons for this challenge: research data contain much more meaning than is summarized in a *P* value and its statistical significance, and these two concepts are frequently misunderstood and consequently inappropriately interpreted. This article considers why 5% may be set as a reasonable cut-off for statistical significance, explains the correct interpretation of $P < 0.05$ and other values of *P*, examines arguments for and against the concept of statistical significance, and suggests other and better ways for analyzing data and for presenting, interpreting, and discussing the results.

Key words: *Compatibility interval, confidence interval, P value, statistical significance*

In empirical research, statistical procedures are applied to the data to identify a signal through the noise and to draw inferences from the data collected. Statistical procedures, therefore, steer us toward a better understanding of the data and toward drawing conclusions from the data. It is therefore important to fully understand what statistical procedures and their results mean when these procedures are applied in research.

All inferential statistical tests end with a test statistic and the associated *P* value. This *P* value has been accorded such an elevated status that, now, everybody who performs or reads research is familiar with the expression "$P < 0.05$" as a cut-off that indicates "statistical significance." In this context, most persons interpret $P < 0.05$ to mean that "the probability that chance is responsible for the finding is less than 5%" and that "the probability that the finding is a true finding is more than 95%." Both these interpretations are incorrect; unfortunately, they are widely prevalent because they are an easy way to explain and understand a slightly tricky concept.

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Department of Psychopharmacology, National Institute of Mental Health and Neurosciences, Bengaluru, Karnataka, India

Address for correspondence: Dr. Chittaranjan Andrade
Department of Psychopharmacology, National Institute of Mental Health and Neurosciences, Bengaluru - 560 029, Karnataka, India.
E-mail: andradec@gmail.com

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This article considers why 5% could be a reasonable cut-off for statistical significance, explains what $P < 0.05$ really means, discusses the concept of statistical significance and why it has been roundly criticized, and suggests other and perhaps better ways of interpreting the results of statistical testing.

WHY 5%?

Imagine that you toss a coin and it falls tails. Then you toss it again, and it falls tails again. Well, that can certainly happen. You toss it a third time, and it falls tails again. This, too, can sometimes happen; the same face shows thrice in a row. When you toss it a fourth time, and it falls tails, you sit up and take notice. And when you toss it a fifth time, and it falls tails yet again, you develop a strong suspicion that there is something wrong with the coin.[1] Why? Theoretically, if you toss an unbiased coin in runs of five for several dozen trials, a run of five identical faces can certainly happen by chance. However, you did not toss the coin in dozens of trials. You tossed it in just one trial. You found that the coin showed the same face on all five occasions in that one trial. In other words, something that should have been a rather rare occurrence happened the very first time. This suggests that at least for that coin, it may not have been a rare occurrence, after all. In other words, you consider that your finding is significant. That is, you reject the null hypothesis that the coin is unbiased and accept an alternate hypothesis – that the coin is biased.

Simple mathematics tells us that the probability that a tossed coin will display the same face (heads or tails) five times in a row is $0.5 \times 0.5 \times 0.5 \times 0.5 \times 0.5$; that is, 0.0625. This *P* value, 0.0625, is rather close to the value 0.05 that is by general convention set as the cut-off for "statistical significance."

A slightly more scientific explanation for choosing 5% as the cut-off is that approximately 5% (4.5%, to be more precise) of the normal distribution comprises outlying or "significantly different" values, that is, values that are more than two standard deviations distant from the mean. Other explanations have also been offered.[1]

WHAT DOES *P* < 0.05 REALLY MEAN?

Imagine that you conduct a randomized controlled trial (RCT) that compares a new antidepressant drug with placebo. At the 8-week study endpoint, you find that 60% of patients have responded to the drug and 40% have responded to placebo. The Chi-square test that you apply yields a *P* value of 0.04, a value that is less than 0.05. You conclude that significantly more patients responded to the antidepressant than to placebo. Your interpretation is that the new antidepressant drug truly has an antidepressant effect. The conclusion is correct but iffy because the 5% cut-off and even the concept of statistical significance are being challenged. The interpretation is wrong because a *P* value, even one that is statistically significant, does not determine truth.

So, what are the right conclusion and the right interpretation? This requires an understanding of what statistical testing means.[2] Imagine that the null hypothesis is true; that is, the new antidepressant is no different from placebo. Now, if you conduct a hundred RCTs that compare the drug with placebo, you would certainly not get an identical response rate for drug and placebo in each RCT. Rather, in some RCTs, the drug would outperform placebo, and in other RCTs, placebo would outperform the drug. Furthermore, the magnitude by which the drug and placebo outperformed each other would vary from trial to trial. In this context, what $P = 0.04$ (i.e., 4%) means is that *if the null hypothesis is true and if you perform the study a large number of times and in exactly the same manner, drawing random samples from the population on each occasion, then, on 4% of occasions, you would get the same or greater difference between groups than what you obtained on this one occasion.*

However, you did not perform the RCT a large number of times. You performed it just once. You found that on the *single* occasion that you performed the RCT, the result that you obtained was something that would be considered rare. So, perhaps the finding is not really rare. This is possible only if the null hypothesis is false. Therefore, just as you rejected the null hypothesis that the tossed coin was unbiased (see the previous section), you reject the null hypothesis that the drug is no different from placebo. Because this (correct) reasoning is rather complicated, many prefer to explain and understand the concept in simpler but incorrect ways, as stated in the introductory paragraph to this article. Other incorrect interpretations have also been described.[3]

INTERPRETATIONS FOR *P* < 0.05 AND *P* > 0.05

If the null hypothesis is rejected ($P < 0.05$), why cannot we conclude that just as the drug outperformed placebo in our study, the drug is truly superior to placebo in the population from which the sample was drawn? The answer is that the *P* value describes a probability, not a certainty. So, we can never be certain that the drug is truly superior to placebo in the population; we can merely be rather confident about it.

Next, imagine that instead of obtaining $P = 0.04$, you obtained $P = 0.14$ in the imaginary RCT described earlier. In this situation, we do not reject the null

hypothesis, based on the 5% threshold. So, can we conclude that the drug is no different from placebo? Certainly not, and we definitely cannot conclude that the drug is similar to placebo, either. After all, we did find that there was a definite difference in the response rate between drug and placebo; *it is just that this difference did not meet our arbitrary cut-off for statistical significance.* So "not significantly different" does not mean "not different from" or "similar."

WHY IT COULD BE NECESSARY TO STOP USING A THRESHOLD FOR STATISTICAL SIGNIFICANCE

From the previous section, it is quite clear that *just as the P* value *lies along a continuum of 0 to 1, our interpretations should also lie along a continuum of differing levels of confidence (or diffidence) in the null hypothesis*; we can never be certain, either way. This means that the *P* value should be reported as an exact value and should be regarded as a continuous variable. Consequently, it should be considered fallacious to insert an arbitrary threshold to define results as significant or nonsignificant, as though significant versus nonsignificant results are in some ways categorically different the way people who are dead versus alive are categorically different. Expressed otherwise, declaring statistical significance does not improve our understanding of the data over and above what is already explained by the value of *P*.[4] In fact, declaring significance may give us a false sense of confidence that a finding exists in the population, while rejecting significance may give us a false sense of confidence that the finding does not exist.

It follows, therefore, that it is fallacious to privilege significant results for journal publication or for media dissemination. Finally, the probability continuum is also the reason why a study which obtains a nonsignificant result *does not contradict* a study which obtains a significant result; both obtained findings that lie along a continuum, and the contradiction exists only because the findings lie on the opposite sides of an arbitrary and imaginary fence, $P < 0.05$, that we insert into this continuum. Bayesian methods are no exception to these assertions.[5]

THE 95% CONFIDENCE INTERVAL

Imagine an RCT in which 10 of 20 patients responded to a new antidepressant drug and 11 of 22 patients responded to placebo. The response rate is exactly 50% in each group. The difference in response rates is 0%. Whatever statistical test is applied, the *P* value will be 1.00. Does this mean that we are 100% certain that there is no difference between drug and placebo? No! What $P = 1.00$ means is that if the null hypothesis is true and if we perform the study in an identical manner a large number of times, then on 100% of occasions we will obtain a difference between groups of 0% or greater! This is actually common sense. If the drug truly has no antidepressant effect, then on some occasions the drug will outperform placebo by some margin, on other occasions placebo will outperform the drug by some margin, and perhaps on some occasions the results will be identical in the two groups; that is, on all (100%) occasions we obtain a difference between groups of 0% or greater.

This brings us to a question: if everything boils down to repeating the study a large number of times and getting different answers each time, can we reduce the range of uncertainty to something that could actually be helpful? Here is where 95% confidence intervals (CI) come into the picture. Means, differences between means, proportions, differences between proportions, relative risks (RRs), odds ratios, numbers needed to treat, numbers needed to harm, and other statistics that are obtained from a study are accurate only for that study. However, what we really want to know is what the values of these statistics are in the population, because we wish to generalize the results of our study to the population from which our sample was drawn. We cannot know for certain what the population values are because it is (usually) impossible to study the entire population. However, the 95% CI can help give us an idea. Whereas the 95% CI, like the *P* value, is also frequently misunderstood; here is an explanation. If we repeat a study in an identical fashion a hundred times, then 95 of the 95% CIs that we estimate in these studies would be expected to contain the population mean. So, by inference, if we examine the 95% CI that we have obtained from a single study, the probability that this particular CI contains the population mean is 95%.[6]

In the RCT example cited earlier in this section, the response rate was 50% in each group; that is, there was no difference in the response rate between the drug and placebo. A little calculation will tell us that the RR for response is 1.00 and that the 95% CI is 0.55-1.83. That is, we are 95% confident that the population result for the response to drug versus placebo lies within the range of the drug being as much as 45% inferior to placebo to as much as 83% superior to placebo. Notice that there is no need whatsoever to bring statistical significance into the picture here. Also notice that the 95% CI provides a range of values that are possible for the population, which is far more informative than a dichotomous inference of significance versus nonsignificance.

UNCERTAINTY AND THE 95% COMPATIBILITY INTERVAL

Basing interpretations on a 0.05 or other threshold tends to provide an element of certainty to the interpretations. As already explained, this certainty is illusory because probability lies along a continuum. Furthermore, just as there are variations within a data set, there will be variations across replicatory studies, even across hypothetical replications. We can never be certain about which data set and which set of conclusions provide the best fit to the population. So, taking the discussion to its logical end, Amrhein *et al.*[5] and Wasserstein *et al.*[4] suggested that instead of drawing dichotomous conclusions that imply certainty, scientists should embrace uncertainty.

In this context, as one possible solution, Amrhein *et al.*[5] offered the suggestion of reconceptualizing 95% CI as compatibility intervals. That is, all values within the 95% CI are compatible with the data recorded in the study; the point estimate (e.g., a mean or a RR), *regardless of "statistical significance,"* is the most compatible, and other values in the CI are progressively less compatible (but nevertheless still compatible) the greater their distance from the point estimate. Explained somewhat simplistically, this means that (provided the study was well-designed, well-conducted, and well-analyzed) the point estimate obtained in the study has the best chance of being the population value, and that all the other values in the 95% CI also have a chance of being the population value, with progressively decreasing likelihood the greater the distance from the point estimate.

Explained with the help of an example, consider the RCT in which we found that the RR for a response to the study drug (vs. placebo) was 1.00 (95% CI, 0.55-1.83). We should not interpret this finding as nonsignificant; rather, we should consider that the most likely interpretation is that the drug is no better or worse than placebo, and that lower efficacy (to the most extreme and least likely value of 45% worse) and higher efficacy (to the most extreme and least likely value of 83% better) possibilities are also compatible with the data recorded in the study. The reader is once again reminded that statistical significance does not enter the picture anywhere.

If the 95% CI for an RR is 0.95–2.20, the traditional interpretation would have been "not significant," but a better interpretation would be that the results are mostly compatible with an increase in risk. Similarly, if the 95% CI for an RR is 0.65–1.05, the traditional interpretation would again have been "not significant," but the better interpretation is that the results are mostly compatible with a decrease in risk. In this regard, Amrhein *et al.*[5] remind readers that even a 95% CI describes probabilities; it does not exclude the possibility that the population value lies outside the compatibility range. It must also be remembered that the 95% CI is an estimate; it is not a definitive statement of where the population parameter probably lies.

NO TO *P* AND NO TO A THRESHOLD FOR STATISTICAL SIGNIFICANCE

P values and the concept of statistical significance have been questioned for long.[7] In 2016, the American Statistical Association (ASA) released a statement on statistical significance and *P* values.[8] The statement asserted that *P* values were never intended to substitute for scientific reasoning. The statement highlighted six points: (1) *P* values can provide an indication of how compatible or incompatible the data are with a specified statistical model. (2) Taken alone, the *P* value is not a good test of a hypothesis or a good evaluation of a model. (3) *P* values do not estimate the probability that a hypothesis is true or the probability that chance is responsible for the findings. (4) *P* values, including those that meet arbitrary criteria for statistical significance, do not indicate an effect size or the importance of a result. (5) scientific conclusions and decision-making should not be based only on whether or not the *P* value falls below an arbitrary threshold; and (6) drawing proper inferences requires complete reporting and transparency. The ASA added that other statistical estimates, such as CIs, need to be included; and that Bayesian approaches need to be used, and false discovery rates need to be considered. Some of these points have already been explained; the rest are out of the scope of this article, and the reader is referred to the original statement.

Doing away with *P* and a threshold for statistical significance will, however, be hard. This is because estimating *P* and declaring statistical significance (or its absence) has become the cornerstone of empirical research, and if changes are to be made herein, textbooks, the education system, scientists, funding organizations, and scientific journals will all need to make a sea change. This could take years or decades if indeed it ever happens. The motivation to effect the change will be small, because *P* values are easy to calculate and use, alternatives are not easy to either understand or use, and, besides, there is no consensus on what the alternatives must be.[4]

IN FAVOR OF RETAINING DICHOTOMOUS DISTINCTIONS

There is a small but definite role for the retention of the $P < 0.05$ threshold for statistical significance.

Dichotomous interpretations of research findings need to be made when action is called for, such as whether or not to approve a drug for marketing.[9] Preset rules are required in such situations; uncertainty, recommended by Armhem *et al.*,[5] cannot be embraced because, then, no decision would be possible. In such circumstances, study findings will need to meet or exceed expectations, and so a threshold for statistical significance needs to be retained. However, to protect the integrity of science and reduce false-positive findings, there may be a case to set the bar higher, such as at $P < 0.005$.[10] In fact, in genetics research, reduction in the false-positive risk is achieved by setting the bar very high, such as at $P < 0.00000001$ or lower. If a threshold for significance were to be completely discarded, as many now demand, then there is a risk that study results will be interpreted in ways that suit the user's interest; that is, bias will receive a free pass.[11] Setting a threshold for *P* is also necessary for sample size estimation and power calculations.

There are other circumstances, too, when a threshold for *P* may be required. An example is for industry quality control, or for risk tolerance. Consider a man who uses a parachute; he would like to be far more than 95% certain that the parachute will open.[1] Thresholds will also be required as a filter when choosing variables for further investigation, as in brain imaging or genome analyses.[4]

RECOMMENDATIONS

The *P* value should be interpreted as a continuous variable and not in a dichotomous way. So, we should not conclude that just because the *P* value is < 0.05 or some other predetermined threshold, the study hypothesis is true. Likewise, we should not say that just because $P > 0.05$ or some other predetermined threshold, the study hypothesis is false. These are, in any case, wrong interpretations of what the *P* value means.

Whereas a threshold for statistical significance could be useful to base decisions upon, its limitations should be recognized. It may be wise to set a threshold that is lower than 0.05 and to examine the false-positive rate associated with the study findings. It is also important to examine whether what has been accepted as statistically significant is clinically significant.

Examining a single estimate and the associated *P* value is insufficient. It is necessary to assess as much as possible about the estimate. Besides absolute values, 95% CIs should be examined as compatibility intervals, and the precision of this interval should be considered. Measures of effect size, such as standardized mean deviation, RR, and numbers needed to treat, and the confidence (compatibility) intervals associated with these measures of effect size should also be reported.

All findings should be interpreted in the context of the study design, including the nature of the sample, the sample size, the reliability and validity of the instruments used, and the rigor with which the study was conducted.

FURTHER READING

Readers who are enthusiastic may refer to a special supplement of the American Statistician, published in 2019, titled "Statistical Inference in the 21st Century: A World Beyond $P < 0.05$." This issue contains 43 articles on the subject, some of which are technical but many of which are understandable to the average medical scientist. Whereas the concepts of *P* and statistical significance are not altogether rejected, and whereas there is no consensus on what the best alternative is, many proposals have been made. These include transforming *P* values into S-values, deriving second-generation *P* values, using an analysis of credibility, combining *P* values with a computed false-positive risk, combing sufficiently small *P* values with sufficiently large effect sizes, the use of a confidence index, the use of statistical decision theory, and, as already discussed, the use of compatibility intervals.

The articles in this special issue are arranged in five sections: Getting to a post "$P < 0.05$" era; interpreting and using *P*; supplementing or replacing *P*; adopting more holistic approaches; and reforming institutions: changing publication policies and statistical education. The editorial in the special issue[4] presents a useful summary of each article, provided by the authors of the articles.

Last but not least, readers are also strongly encouraged to consult the article by Goodman[3] which lists 12 *misconceptions* about the *P* value. These are as follows: if the *P* value is 0.05, the null hypothesis has a 5% chance of being true; a nonsignificant *P* value means that (for example) there is no difference between groups; a statistically significant finding (*P* is below a predetermined threshold) is clinically important; studies that yield *P* values on opposite sides of 0.05 describe conflicting results; analyses that yield the same *P* value provide identical evidence against the null hypothesis; a *P* value of 0.05 means that the observed data would be obtained only 5% of the time if the null hypothesis were true; a *P* value of 0.05 and a *P* value less than or equal to 0.05 have the same meaning; *P* values are better written as inequalities, such as $P < 0.01$ when $P = 0.009$; a

P value of 0.05 means that if the null hypothesis is rejected, then there is only a 5% probability of a Type 1 error; when the threshold for statistical significance is set at 0.05, then the probability of a Type 1 error is 5%; a one-tail *P* value should be used when the researcher is uninterested in a result in one direction, or when a value in that direction is not possible; and scientific conclusions and treatment policies should be based on statistical significance.

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Review Article

Depression in Children and Adolescents: A Review of Indian studies

Sandeep Grover, Venkatesh Raju V, Akhilesh Sharma, Ruchita Shah

ABSTRACT

Background: Depression is a common mental disorder seen across all age groups, including children and adolescents. Depression is often associated with significant disability in children and adolescents. **Aim:** This review aims to evaluate the Indian research on depression in children and adolescents. **Results:** Available data suggest that the point prevalence of depression/affective disorders ranges from 1.2% to 21% in the clinic-based studies; 3%–68% in school-based studies and 0.1%–6.94% in community studies. There has been only one incidence study from India which estimated the incidence to be 1.6%. With respect to the risk factors for depression, studies have reported various education-related difficulties, relationship issues with parents or at home, family-related issues, economic difficulties, and other factors. A limited number of studies have evaluated the symptom profile, and the commonly reported symptoms include depressed mood, diminished interest in play activities, concentration difficulties, behavior problems in the form of anger and aggression, pessimism, decreased appetite, decreased sleep, anhedonia, and somatic symptoms. None of the studies from India has evaluated the efficacy/effectiveness of various antidepressants in children and adolescents with depression. **Conclusion:** There is a wide variation in the point prevalence reported across different studies, which is mainly due to methodological differences across studies. Limited data are available with respect to symptom profile and factors associated with depression in children and adolescents.

Key words: *Children and adolescents, depression, epidemiology, prevalence*

Depression is a common illness worldwide, occurring in all age groups, including infants.[1] According to the estimates of the World Health Organization, 322 million people, amounting to 4.4% of the world population, suffer from depression.[2] Depression is one of the leading causes of disease burden worldwide and is ranked as the second leading cause of disability. It is also considered as a major contributor to the global burden of diseases.[3,4] Over the years, it is recognized that the age of onset of depression is decreasing, and it is now increasingly being recognized

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Department of Psychiatry, Post Graduate Institute of Medical Education and Research, Chandigarh, India

Address for correspondence: Dr. Sandeep Grover
Department of Psychiatry, Post Graduate Institute of Medical Education and Research, Chandigarh, India.
E-mail: drsandeepg2002@yahoo.com

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in children and adolescents.[5] Although a large amount of data are available for depression in children and adolescents from various parts of the world, there are limited data from India. This article attempts to collate the information regarding epidemiology, clinical features, risk factors/life events, symptom profile, and comorbid disorders seen in children and adolescents with depression in India. For this review, a thorough Internet search using search Engines of PubMed, Google Scholar, and Science Direct was carried out. The keywords, used in different permutations and combinations, included the following: depression, depress*, children, adolescents, adolescen*, treatment, treat*, antidepressants, antidepress*, intervention, management, India, symptoms, comorbidity, comorbid*, prevalence, and epidemiology.

We did not include studies which specifically evaluated depression in children and adolescents with specific physical illnesses. This review also does not cover data specific to mania or bipolar disorders in children and adolescents. Similarly, data pertaining to depression in children and adolescents published as case reports or case series were excluded.

Available data have been organized to understand the epidemiology, risk factors/life events associated with the development of depression, symptom profile, comorbidity, and intervention studies.

EPIDEMIOLOGY OF DEPRESSION IN CHILDREN AND ADOLESCENTS

Studies which have evaluated the point prevalence of depression among children and adolescents can be categorized as clinic-based, school-based, and community-based.

Clinic-based studies

Clinic-based studies have mostly followed retrospective design, in which data of children registered in various child guidance clinics or child and adolescent psychiatry services have been analyzed for evaluating the clinic prevalence of various psychiatric disorders. Some of these studies have given the clinic prevalence of depression, and others have given data for the point prevalence of affective disorders.[6-13] The age group has varied in different studies, and the usual range has been 0–18 years. The sample size of these studies has varied from 100 to 6109, and most of these studies have relied on the International Classification of Diseases (ICD) system (9th or 10th revision) for making the diagnosis. The prevalence of depression/affective disorders in these studies has varied from 1.2% to 21% [Table 1]. One study from Chandigarh evaluated the data of all the children and adolescents visiting the clinic and looked at the time trends of clinic prevalence of depression/affective disorders.[9] This study showed that during the decade of 1980–1989, the clinic prevalence of affective disorders was 2%, which increased to 6.6% during the decade of 1990–1999 and which further increased to 13.49% from 2000 to 2006. Although these clinic-based studies provide useful clinical data with respect to the prevalence of depression, they do not reflect the actual point prevalence of depression in the community-based population, as it is well-known that a significant proportion of patients with various psychiatric disorders do not seek consultation. Furthermost, most of these studies have come from large tertiary care hospitals

Table 1: Prevalence of depression in children and adolescent in clinic-based studies

Author	Study design	Study site	Sample size	Age range of participants in years	Sampling period	Instrument used	Point prevalence
Malhotra and Chakrabarti[6]	Retrospective study	Chandigarh			Screening of records 1984-1988	No specific instrument used, ICD-9 diagnosis	1.2%
Chadda and Saurabh[7]	Retrospective study	New Delhi	386	0-13	All children (13 years or below) who attended OPD from Jan 1991 to Dec 1992	No specific instrument used, ICD-9 diagnosis	3.4%
Sidana *et al*.[8]	Retrospective	Delhi	300	2-12	1994-1996	ICD-10	6%
Malhotra *et al*.[9]	Retrospective	Chandigarh	6109	0-15	1989-2005	ICD-9/10	1980-89: 2% 1990-99: 6.6% 2000-05: 13.49%
Sagar *et al*.[10]	Retrospective study	New Delhi	930	<16	June 2008-May 2010	No specific instrument used, semi-structured datasheet, DSM-IV diagnosis	Mood disorder: 4.1% Depression: 2.9% Bipolar: 1.2%
Solanki and Rastogi[11]	Retrospective study	Sagar/Indore, Madhya Pradesh	175	0-16	Jan-Aug 2014	ICD-10	4%
Chakraborty and Bandyopadhyay[12]	Retrospective study	Joka, West Bengal	100	1-12	Not available	DSM-5	4%
Vivek and Nimish[13]	Retrospective study	Meerut	100	6-18	Jan 2016-2017	ICD-10 and MINI-KID	21%

ICD–International Classification of Diseases; DSM–Diagnostic and Statistical Manual of Mental Disorders; OPD–Outpatient Department

located in the urban locality, whereas the majority of the Indian population reside in rural areas. Hence, though these studies provide useful information, they are not reflective of the trends in the larger community.

School-based studies

In the recent one decade or so, there has been a proliferation of school-based studies which evaluated the point prevalence of depression in school-going children and adolescents.[14-16] These cross-sectional studies have mostly evaluated the participants by scales used to quantify depression, such as Beck Depression Inventory (BDI), Patient Health Questionnaire-9 (PHQ-9), Centre for Epidemiological Studies – Depression (CES-D), Depression Anxiety and Stress (DAS) scale, or self-designed questionnaires. The school-based studies have mostly come from urban areas, with occasional studies evaluating the students from rural schools, and one study evaluating students from tribal areas. However, very few studies either used two-stage sampling method, which involves the initial use of screening instrument, followed by evaluation of the patient on structured clinical interviews such as Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI-KID), or Kiddie Schedule for Affective Disorders and Schizophrenia, or used semi-structured interview to evaluate the participants on Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV or ICD-10 criteria [Table 2].[17-37] A few studies have directly evaluated the participants on structured clinical interviews such as MINI-KID. One of the studies also included school dropouts while evaluating the point prevalence of depression. Studies that were based on the use of screening instruments, such as rating scales, have usually reported a point prevalence rate of depression ranging from 3% to 68%, with a majority of the studies reporting the point prevalence of depression to be >40%.[17-25,27,29,31,32,34,37] Studies that used structured instruments have reported relatively lower point prevalence rates, ranging from 2.33% to 25%.[26,28,30,33,35,36]

These findings clearly suggest that one-stage screening of participants using a rating scale usually overestimates the point prevalence of depression.[17-25,27,29,31,32,34,37] The study that compared urban, rural, and tribal school students showed that major depressive disorders were more prevalent in students from the urban locality (4.1%), whereas point prevalence was 3.5% in the rural high school students and it was lowest in the participants from tribal schools.[33] Another study which included school dropouts too reported significantly higher point prevalence rate for affective disorders among school dropout girls (59%), compared with school-going girls (20.3%) and boys (9.33%), irrespective of their school status.[18]

Community-based studies

There are many community-based studies that evaluated the point prevalence of depression or psychiatric disorders in different age groups.[38-56] However, there are a limited number of studies that specifically focused on children and adolescents.[38-45] Most studies focused on any age group and included children and adolescents too in the process and did not provide specific point prevalence data for depression in children and adolescents.[46-56] Nandi *et al*. provided data on point prevalence of psychiatric disorders in a rural population from West Bengal and reported lack of depression in children and adolescents.[38-40] In a study from Bengaluru, multiple instruments were used to screen for various psychiatric disorders; ICD-10 Diagnostic Criteria for Research were used to ascertain psychiatric morbidity, and two-stage screening was used. The study included 2064 children and adolescents, age 0–16 years. Psychiatric morbidity was reported to be 12.5%, with the point prevalence of depression being 0.1%, all of which was seen in children and adolescents from an urban locality.[42] The recently completed National Mental Health Survey (NMHS), which used two-stage screening, reported the point prevalence of mental morbidity to be 7% among adolescents age 13–17 years, with depressive disorders (first episode, recurrent depression) being the most common morbidity with a point prevalence rate of 2.6%.[57] Another community-based survey, which included youth age 15–24 years from Himachal Pradesh, reported the point prevalence of depression to be 6.94%. However, it is important to note that in this study, depression was ascertained using a few questions covering the following features: loss of appetite, sleep disturbance, feeling apathy, feeling worthless, and lack of interest in daily activities and work.[44] Another study which evaluated 257 children and adolescents age 5–14 years from slum population in Mumbai on DSM-IV criteria reported the point prevalence of major depression to be 0.4%[43] [Table 3].

INCIDENCE OF DEPRESSION

In contrast to point prevalence studies, only one study from India has evaluated the incidence of childhood-onset psychiatric disorders among those age 4–11 years.[58] This study reported the incidence of depression to be 1.6%.[58]

FACTORS RELATED TO DEPRESSION

Compared to prevalence studies, few studies have evaluated the factors associated with the development of depression in children and adolescents. Most of the studies which have reported factors associated

Table 2: Point prevalence of depression in children and adolescent in school-based studies

Author	Study design	Study site	Sample size	Age range of participant in years	Sampling technique	Instrument used	Point prevalence
Mishra and Sharma[17]	Cross-sectional	Delhi	1097 girls	12-18	School random selected	Youth self-report Self-designed questionnaire	Anxious/ depressed: 10.3%
Nair *et al*.[18]	Cross-sectional	Thiruvananthapuram	1014	13-19	School-going and school dropouts	BDI (cut-off ≥17)	School dropout: 31% School-going: 16.1% College-going: 10%
Bansal *et al*.[19]	Cross-sectional	Pune	125	9th std		GHQ12, BDI (cut-off ≥12)	18.4%
Mohanraj and Subbaiah[20]	Cross-sectional	Chennai	964	10th, 11th, 12th classes	Two-stage random	BDI (cut-off: ≥10)	60.8%
Verma *et al*.[21]	Cross-sectional	Raipur	321	12th	Students from five schools were included. Two of the schools were affiliated to CBSE, two others to the Chhattisgarh board, and one school to the ICSE. It was used as a proxy of SES.	CES-D (cut-off: ≥15)	59.9%
Chauhan *et al*.[22]	Cross-sectional	Noida	800	16-18	Systematic random sampling	PHQ-9 (cut-off: ≥5)	38%
Kaur *et al*.[23]	Cross-sectional	Amritsar	200	18-24	Random	PHQ-9 (cut-off not mentioned)	16.5%
Sharma[24]	Cross-sectional	Chandigarh	300	11th standard	Stratified random	BDI-II (cut-off not mentioned)	55%
Patil[25]	Cross-sectional	Mangalore	500	Adolescent students, 1st and 2nd-year polytechnic college student	Systematic random sampling	BDI-1 (cut-off not mentioned)	68%
Jayanthi and Thirunavukarasu[26]	Cross-sectional	Thiruvallur	2432	9th-12th grade (14-17)	Multistage	Screened using MINI-KID depression module followed by assessment by a psychiatrist then, BDI applied to grade the severity (cut-off not mentioned)	25%
Malik *et al*.[27]	cross-sectional	Urban Rohtak	374	13-17	All the students of class 9th and 10th who were present on the day of the visit included	BDI (cut-off ≥21)	52.9%
Beniwal *et al*.[28]	Cross-sectional	Bikaner	1200	6-12	Multistage	CES-DS (cut-off ≥15) DSM IV-TR criteria	Screen positive: 121 (10.08%) Confirmed: 28 (2.33%)
Rama *et al*.[29]	Cross-sectional	Urban Bhopal	136	9th and 10th	Random	BDI (cut-off ≥11) and some self-generated questionnaire	71.3%
Balgir *et al*.[30]	Cross-sectional study	Patiala	912	11-16	Stratified cluster sampling	SDQ followed by ICD-10 for those with SDQ+	SDQ: 40.2% Urban: 4.5% Rural: 3.8%
Jha *et al*.[31]	Cross sectional	Urban Bihar	1485	14-18		BDI-II (cut-off ≥14)	49.2%

Contd...

Table 2: Contd...

Author	Study design	Study site	Sample size	Age range of participant in years	Sampling technique	Instrument used	Point prevalence
Sandal *et al*.[32]	Cross-sectional	Chandigarh	470	9th-12th	Systematic random	DAS scale (cut-off not mentioned)	Depression: 65.53% Anxiety: 80.85% Stress: 47.02%
Satyanarayana *et al*.[33]	Cross-sectional	Tribal, rural, and urban areas of Mysuru	Tribal: 186 Rural: 200 Urban: 194	14-16	Schools were selected, and sampling was done according to probability proportionate to the size	MINI-KID	3.1% overall Urban: 4.1% Rural: 3.5% Tribal: 1.6%
Singh *et al*.[34]	Cross-sectional	Chandigarh		13-18	Multistage sampling technique	PHQ-9 (cut-off ≥5) for depression and associated factors by a pretested semi-structured interview schedule	40%
Basker *et al*.[35]	Cross-sectional	Vellore	178	>13	Consecutive adolescents	BDI (cut-off score of ≥5 for screening and ≥22 for diagnostic utility ICD-10 criteria	ICD-10 criteria 6.1%
Russell *et al*.[36]	Cross-sectional	Vellore	181	>13	Consecutive adolescents	BDI, CDRS-R, ICD-10 criteria	ICD-10 criteria: 6.07%
Shukla *et al*., 2017[37]	Cross-sectional	Barabanki, Uttar Pradesh	336	10-19	Multistage sampling technique	KADS (cut-off not mentioned)	18.7%

ICD–International Classification of Diseases; DSM–Diagnostic and Statistical Manual of Mental Disorders; CDI–Children's Depression Inventory; BDI–Beck's Depression Inventory; GHQ12–General Health Questionnaire-12; CES-D–Centre for Epidemiological Studies - Depression; MINI-KID–Mini International Neuropsychiatric Interview for children and adolescent; SDQ–Strength and Difficulties Questionnaire; DAS–Depression Anxiety and Stress; PHQ-9–Patient Health Questionnaire-9; CDRS-R–Children's Depression Rating Scale-Revised; KADS–Kutcher Adolescent Depression Scale

with depression have been clinic-based[10,59,60] or school-based[19,21,22,28,29,31,34,61] and have evaluated life events, demographic factors, or clinical factors associated with the development of depression. These factors can be categorized as those related to studies or education, relationship issues in the familial context, familial issues, economic difficulties, and other factors [Table 4]. A study which evaluated the factors associated with the development of depression in the descriptive analysis and then confirmed the same using binary logistic regression analysis identified being in class tenth and lack of self-satisfaction with academics as the most important predictors of depression in children and adolescents.[34]

Symptom profile of depression

Only a handful of studies have reported the symptom profile of depression in children and adolescents.[10,20,31,59,60] Most of the data are from retrospective, clinic-based studies[10,59,60] [Table 5]. As is evident from Table 5, it is difficult to compare the symptom profile, as the profile reported in the literature is not specific to any particular scale. The commonly reported symptoms have varied from study to study. Only one study had reported the symptom profile of depression in children and adolescents using the BDI.[20] As is evident from Table 3, the commonly reported symptoms include depressed mood, diminished interest in play activities, concentration difficulties, behavior problems in the form of anger and aggression, pessimism, decreased appetite, decreased sleep, anhedonia, and somatic symptoms. Only one study, from Rohtak, compared the symptom profile of depression in childhood and adulthood. This study included 32 children and 20 adults diagnosed with major depressive disorder as per DSM-IV criteria.[62] Compared with the adults, more children presented with the somatic symptoms, and the predominant mood symptom in the children was irritability, in contrast to sadness in the adults. In children, dysfunction was noted exclusively in the form of poor scholastic performance and reduced play activity; whereas among the adults, dysfunction manifested in the form of poor work performance. The groups did not differ in terms of family history of affective disorders, type of onset, or presence of precipitating factors.[62] A study from National Institute of Mental Health and Neurosciences, Bengaluru, reported that children and adolescents with BPAD-II are often diagnosed

Table 3: Point prevalence of depression in children and adolescent in community-based studies

Author	Study design	Study site	Sample size	Age range of participant in years	Sampling technique	Instrument used	Point prevalence
Nandi *et al*.[38]	Cross-sectional	Rural West Bengal	1060 persons	All age (all members of the family)	Field survey, door-to-door enquiry of each family as a unit and of each member of the family separately	Self-designed schedules	0 (in 0-23 years)
Nandi *et al*.[39]	Follow-up of 1972 study	Rural West Bengal	1539 persons	All age (all members of the family)	Field survey, door-to-door enquiry of each family as a unit and of each member of the family separately	Self-designed schedules	0 (in 0-23 years) between 1972 and 1982
Nandi *et al*.[40]	Follow-up of 1972 study	Rural West Bengal	1539 persons	All age (all members of the family)	Field survey, door-to-door enquiry of each family as a unit and of each member of the family separately	Self-designed schedules	No data
Anita *et al*.[41]	Cross-sectional	Rural and urban area Rohtak	400 children each from urban and rural	6-14	Data not available	Data not available	Psychiatric disorders: 16.5% Depression: 0.37%
Srinath *et al*.[42]	Cross-sectional	Urban and rural areas of Bengaluru	2064	0-16	Stratified random sampling	ICD-10 DCR	Psychiatric disorders: 12.5% Depression: 0.5% (2 cases of 1578 cases between 4 and 16 years)
Patil *et al*.[43]	Cross-sectional	Urban slums Mumbai	257 children urban slum	5-14	The household was used as a sampling unit and a systematic random sampling method used for selecting household	Semi-structured diagnostic interview schedule-based on DSM-IV	Psychiatric morbidity: 14.8% Depression: 0.4%
National Health Mission, Himachal Pradesh survey 2014-15[44]	Cross-sectional	Whole of HP	2895	10-24	Stratified multistage clustered survey covering the whole state	Self-designed questionnaire	6.94%
Mishra *et al*.[45]	Cross-sectional	Rural and suburban areas of eastern Uttar Pradesh	200	11-18	Systemic random sampling	CDI (cut-off: ≥19)	14.5%

ICD–International Classification of Diseases; DCR–Diagnostic Criteria for Research; DSM–Diagnostic and Statistical Manual of Mental Disorders

and categorized as major depression as a past history of hypomania is missed. In this study of 61 subjects diagnosed as having major depression, 20% of subjects had a diagnosis of hypomania in the past.[63]

Although community-based studies have not reported symptom profile, many of these studies have reported the severity of depression based on the various cut-offs given for a particular scale [Table 6]. In general, most of these studies suggest that depression in children and adolescents is of mild severity, and only a small proportion of them have severe depression. In clinic-based studies, as is understandable, the depression seen is more severe, where moderate depression was reported in more than half (56%) of the participants and severe depression in one-fourth (26%).[59]

COMORBIDITY IN CHILDREN AND ADOLESCENTS WITH DEPRESSION

Few clinic-based studies have reported on comorbid psychiatric disorders in children and adolescents presenting with depression.[10,59,62] Among the various psychiatric disorders, the commonly reported comorbidities include anxiety/anxiety disorders (10.36%–57.65%),[10,32,59,62] dysthymia (20%),[59] attention deficit hyperactivity disorder (7.77%–20),[10,62] conduct disorder (5.18%–9%),[10,59] dissociative disorder/conversion disorder (5.18%–9%),[10,59,62] and obsessive compulsive disorder (7%).[59]

INTERVENTION STUDIES

Although antidepressants are used in the management of depression in children and adolescents, no studies from India have evaluated the efficacy/effectiveness of antidepressants in children and adolescents with depression. However, a few studies have reported the use of electroconvulsive therapy (ECT) for depression in children and adolescents.[64,65] These studies suggest that 12%–13% of children and adolescents receiving ECT are diagnosed with depressive disorders and that ECT is effective in most of these patients.[64,65]

Table 4: Factors associated with depression in children and adolescents

Education related
Academic satisfaction of parent[29]#
Not performing well[29]#
Physical punishment at school[19]#
Self or parental dissatisfaction with academic achievement[21]#
Stress at school[59]@
Students staying away from home[21]#
Teasing at school[19]#
Academic stressors[10]@
Change of schooling[10]@
Inability to cope with academics[31]#
Government school[34]#
Studying in class Xth and XIIth[34]#
Spending less time in studies[34]#
Lack of supportive environment in school[34]
Lower level of participation in cultural activities[34]#
Lower academic performance[61]#
Failure in examination[61]#
Relationship issues with parents or at home
Argument with our parents[29]#
Familial discord[31]#
Poor relationship with family[21]#
Relationship difficulties[31]#
Parental fights[19]#
Stress in the family[59]@
Interpersonal conflicts or scoldings[10]@
Physical abuse by family members[10]#
Family-related issues
Birth of a sibling[10]@
Family history of psychiatric illness[10]@
Change of house/residence[10,61]@,#
Rejection[28]#
Punishments[28]#
Deprivation of privileges[28]#
Working mothers[21]#
Death of a family member[61]#
Alcohol use and smoking by father[34]#
Prolonged absence or death of a parent[60]@
Economic difficulties
Economic difficulties[19,31]#
Others
Extracurricular activities and type of activities[22]#
Extracurricular activity[29]#
Going out for outing[22]#
Not having a hobby[21]#
Peer pressure[21,29]#
Social isolation[28]#
Illness, injury/death[10]@
Serious illness[61]#
Rural locality[34]#
Having a boy/girlfriend[34]#
End of a relationship[61]#

@Data from clinic-based studies; #School-based studies

Table 5: Symptom profile of depression in children and adolescents

Depressed/low mood/sadness[10,20,31,60] (51.9%-86%)
Crying spells[20] (36%-54%)
Diminished interest in play and activities[31,59] (46.3%-87%)
Problems with concentration[10,31,59] (40.7%-82%)
Excessive tiredness/fatigue/weakness[10,31,59] (32%-67%)
Behavior symptoms such as anger and aggression/agitation[31,59](47%-64%)
Self-accusation/self-criticism[10,20,31] (7.4%-62%)
Work difficulty[20] (59%)
Expectation of punishment[20,31] (43%-58%)
Pessimism[20,31] (37%-58.14%)
Decreased appetite[10,31,59] (48.1%-56%)
Anorexia[20] (37%)
Decreased sleep/change in sleeping pattern[10,20,31,59] (37%-48.1%)
Increased appetite, weight gain, and excessive sleep[59] (2.23%)
Past failure/sense of failure[20,31] (47%-55.81%)
Anhedonia[10] (51.9%)
Anxiety symptoms[10] (37%)
Irritability[10,20,31,59] (14%-66%)
Hopelessness[10] (18.5%)
Somatic symptoms/multiple somatic complaints such as head ache, abdominal pain, and chest pain[10,20,31,59,60](18.5%-53%)
Suicidal ideations/thoughts[10,20,31,59] (11.1%-27%)
Psychotic features[10,31] (7%-11%), in the form of persecutory delusions[10]
Catatonia[10] (3.7%)
Depersonalization[10] (3.7%)
Obsessive compulsive symptoms[10] (3.7%)
Guilt[10,20,31,59] (7.4%-69.48%)
Attempted suicide[31,59] (4%-16%)
Recent deterioration in school performance[59] (36%)
Dissatisfaction[20] (49%)
Self-dislike[20,31] (42%-47%)
Indecisiveness[20,31] (49%)
Social withdrawal[20] (48%)
Loss of libido[20,31] (14%-32%)
Body image changes[20] (29%)
Poor interaction[10] (33.3%)
Decreased interest in school[60] (32.3%)
Low self-esteem[31] (27%)
Death wishes[60] (17.6%)
Worthlessness[31] (29%)
Loss of energy[31] (39%)

DISCUSSION

This review of the literature on depression in children and adolescents suggests that depression does occur in children and adolescents in the Indian context. When the findings of the community-based studies, especially the NMHS, are considered, the data from India are comparable to the data from other parts of the world.[66] When the findings about the school-going adolescents are compared with the data from other countries, the point prevalence range in studies from India is wider and more heterogeneous.[67] Taken together, these findings suggest that there is a need to focus on depression in children and adolescents.

However, it is important to note that although many studies have evaluated the prevalence of depression in clinic-based samples, community samples, and school-based participants, these studies have a lot of limitations. Most of the school-based studies relied on a screening questionnaire to quantify depression.[17-25,27,29,31,32,34,37] It is well-known that screening instruments often lead to overestimation of the point prevalence of a disorder when the same is compared with an evaluation using a structured diagnostic interview.[26,28,30,33,35,36] This is also reflected by a study that used a two-stage method to quantify depression. When the study sample was screened using CED-D scale, the point prevalence of depression was found to be 10.08%, which reduced to 2.33% when evaluated on

Table 6: Severity grades for depression in children and adolescents

	Point prevalence	Severity grade
Patil *et al*.[25]	68% (BDI cut-off not mentioned)	Mild mood disturbance: 30% Borderline clinical depression: 12% Moderate: 18% Severe: 6% Extreme: 2%
Sharma[24]	55% (BDI-II cut-off not mentioned)	Mild: 19.3% Moderate: 21% Severe: 14.7%
Sandal *et al*.[32]	65.53% (DAS cut-off not mentioned)	9th std: mild: 15.56%, moderate: 29.63%, severe: 10.37%, extreme: 3.7% 10th std: mild: 25.47%, moderate: 30.19%, severe: 13.21, extreme: 4.72% 11th std: mild: 16.39%, moderate: 27.87%, severe: 9.84%, extreme: 0.82% 12th std: mild: 21.36%, moderate: 40.78%, severe: 11.65%, extreme: 2.91%
Jha *et al*.[31]	49.2% (BDI-II)	Mild: 23.4% (14-19) Moderate: 18.1% (20-28) Severe: 7.7% (29-63)
Krishnakumar and Geeta[59]	Clinic-based retrospective data	Mild: 18% Moderate: 56% Severe: 26%
Rama *et al*.[29]	71.3 (BDI)	Mild: 44.1% (11-20) Moderate: 24.3% (21-30) Severe: 3% (≥30)
Malik *et al*.[27]	52.9% (BDI)	Mild: 39.8% (11-20) Moderate: 11.3% (21-30) Severe: 1.8% (≥30)
Nair *et al*.[18]	School dropout: 31% School-going: 16.1% College-going: 10% (BDI)	Severe (31-40) and extreme (≥41) School dropout girls: 9.5% and 1.7% School-going girls: 2.6% and 0.2% School-going boys: 1.4% and 0.2%
Mohanraj and Subbaiah[20]	60.8% (BDI)	Mild: 37.1% (10-19) Moderate: 19.4% (20-29) Severe: 4.3% (≥30)
Chauhan *et al*.[22]	38% (PHQ-9)	Mild: 75.73 (5-9) Moderate: 23.52 (10-14) Moderately severe: 0.01 (15-19)
Verma *et al*.[21]	59.9% (CES-D)	Mild: 40.49% (15-21) Major: 19% (≥21)
Jayanthi and Thirunavukarasu[26]	25% (BDI cut-off not mentioned)	Minimal: 9.3% Mild: 25.4% Moderate: 45.7% Severe: 19.6%
Singh *et al*.[34]	40% (PHQ)	Mild: 29.7% (PHQ 5-9) Moderate: 15.5% (PHQ 10-14) Moderately severe: 3.7% (PHQ 15-19) Severe: 1.1% (PHQ 20-27)

BDI–Beck Depression Inventory; DAS–Depression Anxiety and Stress; PHQ-9–Patient Health Questionnaire-9; CES-D–Centre for Epidemiological Studies - Depression

DSM-IV TR criteria, suggesting that two-stage methods can actually lead to a reduction in point prevalence rate by about 80%.[28] One school-based study evaluated depression using MINI-KID depression screening module and claimed that participants found to have depression were further evaluated by the psychiatrist to confirm the diagnosis of depression. However, this study failed to give separate point prevalence rates of depression for both the evaluations.[26] Hence, it is not clear from the article whether the 25% point prevalence is for the first phase of evaluation or the second stage.

A good aspect of most of these studies is that these have used BDI to screen depression. A study from Vellore compared BDI and Children's Depression Rating Scale-Revised (CDRS-R) against the diagnosis made by the psychiatrist using ICD-10 criteria.[36] This study showed that compared with CDRS-R, BDI was a better screening instrument for depression in children and adolescents.[36] In another study, the same group of authors evaluated the diagnostic accuracy of use of BDI and CDRS-R by one pediatrician against the diagnosis by psychiatrist in a primary care setting. The authors reported that a score of ≥22 for BDI and ≥30 on CDRS-R has diagnostic utility.[35,68] If one looks at the cut-offs used in the various studies which used BDI, it is apparent that most of these studies adopted a cut-off of 14–15, which possibly can explain

the high point prevalence of depression reported in school-based studies.

Another limitation of school-based studies in the Indian context includes lack of representativeness of the study sample, considering that a significant proportion of children and adolescent dropout of the school by the middle or high school.

The community-based studies which have used two-stage method to evaluate depression, that is, initial screening followed by confirmation by use of diagnostic interviews, have reported much lower rates of depression.[42-44] However, a limitation of these studies is that these did not include any screen-negative population in the second-stage evaluation, and this could have led to the reporting of a lower point prevalence of depression.

Ideally, community- and school-based studies should preferably evaluate all the eligible children and adolescents on a structured diagnostic interview which is administered by a mental health professional or trained personnel to quantify the point prevalence of depression; however, this is often not feasible. To overcome this, it is suggested that initially the participants should be screened using a standard questionnaire, which can be administered by a minimally trained person or a layperson, and those found to have depression should be evaluated on a structured interview. However, it is important to remember that to get an appropriate estimation of the point prevalence of depression, a small proportion of the screen-negative participants too should receive an evaluation on the structured interview schedule point prevalence. Accordingly, it is suggested that future studies must follow this methodology to estimate the point prevalence of depression in children and adolescents. Also, there is a need to develop standardized universal screening and structured assessment methods for various levels of epidemiological investigations, and there is a need to use these uniformly for better comparison and information. It is reflected in results of NMHS, which yields rates of depression in adolescents comparable to global trends.

When one attempts to look at the available point prevalence data, the important fact which emerges is that except for clinic-based studies, most of the school- and community-based studies have mainly focused on adolescents rather than children (i.e., those age <12 years).

Data on factors related to depression are limited to a handful of studies and are not sufficient for generalizations. Most of the data are from clinic-based retrospective studies,[10,59,60] and these have reported certain life events to be associated with the development of depression. However, it is important to remember that the studies did not use a structured instrument to assess the life events associated with the development of depression. Retrospective studies are often limited to the documented information, and the quality of information is often guided by the motivation of the persons maintaining the records. Furthermore, regarding case-notes-based retrospective studies, the information may not have been recorded in the case notes in systematic ways. Hence, there is a need to carry out future research in this area using standardized instruments. The association of the stability of the presence of the causal factor with continuity of depression at an individual level should be studied as the children and adolescents age. Similarly, the stability of effects of a causal factor with continuity of the form of depression at an individual level too should be studied as the children and adolescents age. All this will require a prospective design to yield a better understanding of the relationship with risk factors. A high-risk population of siblings/offspring of persons with depression or other major mental disorders too can be studied for this purpose.

It is often argued that the symptom profile of depression in children and adolescents differs from that of adults, and it is not proper to use the same diagnostic criteria for children and adolescents, as used for adults.[69-71] It is surprising that only a handful of studies have evaluated the symptom profile of depression in children and adolescents.[10,20,31,59,60] The symptom profile reported in most of these studies is again based on case notes, except for one study which reported symptoms as per the BDI.[20] These studies have come up with varying point prevalence of different symptoms of depression, and accordingly, it is difficult to comment on the common symptoms of depression seen in children and adolescents in the Indian context.

Similarly, data are also limited with respect to comorbidity. Although, in recent times, there have been multicentric studies from India which evaluated the symptom profile of depression in adult[72] and elderly patients,[73] no multicentric study from India has evaluated the symptom profile of depression in children and adolescents in the Indian context. Accordingly, there is an urgent need to carry out a multicentric study to evaluate various aspects of depression in children and adolescents.

Studies from the developed countries suggest that there is a developmental perspective to the symptom profile of depression in children and adolescents. Children and adolescent group, as such, is not a homogeneous group.[74] However, none of the studies from India has looked into this aspect. Understanding this can actually help in recognizing the age-appropriate symptoms of

depression. Only one small size, clinic-based study had compared the symptom profile of depression in children and adolescents with that of adults.[62] This issue is of much importance, as in a country like India most of the psychiatrists are mainly trained in adult psychiatry and hence may not be able to pick up age-appropriate symptoms of depression. Studying these similarities and differences can provide valuable knowledge which can be useful in detecting depression in day-to-day clinical practice.

Along with cross-sectional studies, longitudinal designs are also needed to understand the continuity of symptoms. These should be seen at symptom level, to differentiate them from normal development (with the inclusion of normal and/or at risk population); syndrome level, to differentiate the total picture across the developmental level; and disorder level, to see the characteristic dysfunction and pattern of evolution.

Surprisingly, there is a lack of research in the area of biological and psychological correlates of depression in children and adolescents in India. Also, there are no data on the course and outcome of depression in children and adolescents in India.

To conclude, this review suggests that there is a wide variation in the point prevalence of depression reported in studies from India. There is a wide gap in understanding the risk factors and symptom profile of depression in children and adolescents. There is a lack of studies which evaluated the efficacy/effectiveness of depression in children and adolescents. Similarly, little is known about various correlates of depression. Accordingly, it can be said that the research on depression in children and adolescents in the Indian context lags behind that being done on adults.

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Review Article

Children of Parents with Mental Illness: The Need for Family Focussed Interventions in India

Divya Ballal, Janardhana Navaneetham, Prabha S. Chandra

ABSTRACT

Family interventions have been an integral part of mental healthcare in India for several decades. This paper highlights the need for an emerging change in the nature of family interventions in India—from generic interventions for heterogeneous caregiver groups to interventions addressing particular needs based on family stages and structures. It makes a case for recognizing the experiences and needs of one such group, that is, families affected by parental mental illness with children in their care and summarizes the current status of research on this topic in the Indian and global context. It presents implications for future research in India and discusses preliminary ideas for professionals working in adult mental health settings to address the needs of children and families affected by parental mental illness.

Key words: *Family intervention, parenting, parents with mental illness*

The formal involvement of families in mental healthcare in India can be traced back to the 1950s, with pioneering works at the Amritsar Mental Hospital; the Mental Health Centre, Vellore; and the National Institute of Mental Health and Neurosciences, Bangalore.[1] Although these early experiments showed that the involvement of families did lead to better patient outcomes, they also highlighted the burden and stress faced by the families and the importance of providing them support and education.[2,3]

Since then, rigorous studies have established the effectiveness of family interventions for various psychiatric disorders. These interventions have traditionally included a heterogeneous group of caregivers comprising predominantly of parents and spouses and sometimes, siblings and adult children.

RECENT TRENDS IN FAMILY INTERVENTIONS IN INDIA

In the last few years, there has been an increasing recognition that the needs of caregivers might vary based on the structure of the family or how the caregiver is related to the person with the illness. For instance,

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Department of Psychiatric Social Work, NIMHANS, Bengaluru, Karnataka, India

Address for correspondence: Dr. Janardhana Navaneetham
Department of Psychiatric Social Work, 1st Floor, MV Govindaswamy Centre, NIMHANS, Bengaluru - 560 029, Karnataka, India.
E-mail: janardhannimhans@gmail.com

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Amaresha *et al*.[4] reported that siblings of persons with schizophrenia have distinct needs compared with other caregivers, such as a need for brief interventions, telephonic services, and support groups, with a higher focus on illness management and functionality. Similarly, Pashapu *et al*.[5] explored the marital needs of couples where one of the spouses has schizophrenia and found that they specifically face issues in family communication, role functioning, sexual relationship, and legal issues. Philip[6] reported that aging parents of persons with schizophrenia had particular concerns related to future, including the ill member's self-management of the illness and handing over of caregiving after their death. These studies developed and tested psychosocial interventions addressing the unique needs of these caregiver groups.

Another such group, with distinct experiences and needs, is children who have a parent with mental illness. Although they have long been known to be at high risk genetically and environmentally,[7] it is only in recent years that research into preventive mental health for this group has emerged. An encouraging development in this field in India has been the growing movement around perinatal psychiatry, with interventions addressing the parenting needs of mothers with mental illness and their infants.[8,9] However, studies focusing on older children and adolescents affected by parental mental illness are fewer. Children of varying age groups have differing needs; therefore, the impact of parental mental illness and the opportunities for intervention with them can be diverse.[10]

The rest of this paper reviews the existing research on this topic, both from the global and Indian context. Findings from studies on parents with mental illness and their children are briefly summarized, followed by descriptions of preventive interventions developed for the children. The last section discusses how these findings can inform future research and service development for this population in India.

CHILDREN OF PARENTS WITH MENTAL ILLNESS: THE GLOBAL CONTEXT

Globally, 12–45% of mental health service users are reported to be parents.[11] The experiences and needs of families affected by parental mental illness have been predominantly studied from the perspective of the parent with mental illness and their children. These findings are reviewed in the following sections.

EXPERIENCES OF PARENTS WITH MENTAL ILLNESS

Studies done around the world with parents with mental illness have described their challenges. Parents have reported that the illness interferes with parenting and have described parenting as stressful and burdensome.[12-16] A two-way relationship between parental mental health and the parent–child relationship has been proposed, wherein parental psychopathology can strain parent–child relationships and possibly lead the child to distance from the parent emotionally, thereby further disenfranchising the parent, increasing their distress, and impeding recovery.[17]

In addition to the direct impact of the mental illness on parenting, parents have described other circumstances that add to their vulnerability. Mental illness often co-occurs with other psychosocial adversities such as poverty, marital discord and separation, and downward social and economic mobility,[18,19] thereby increasing the patients' need for support. There is also stigma and discrimination in relation to parenthood experienced by those with mental illness, including being stopped from having children, being seen as unfit parents, being separated from their children, and being blamed for their child's difficulties.[20] Parents have reported that the fear of losing child custody prevents them from seeking treatment, disclosing to professionals that they are parents, and discussing parenting difficulties.[21,22] The stigma of "failing as a parent" has been described as perhaps greater than the stigma of mental illness itself.[21]

Despite these negative experiences and effects, many parents have also described parenting as a "road to recovery" as it enriches and provides a structure to their lives[23] and motivates them to seek treatment.[24] Therefore, there is a need to expand our understanding of parenting with mental illness. Instead of focusing exclusively on deficits and impairments in parenting, which leads to further marginalization and exclusion,[14] there is a need to pay equal attention to the individual strengths and motivations of parents and also to the structural barriers that increase their vulnerability.[25] They need to be provided with ongoing instrumental, emotional, and social support so that they can be better parents.[26,27]

EXPERIENCES OF CHILDREN OF PARENTS WITH MENTAL ILLNESS

Studies exploring children's experiences of living with a parent with mental illness have also described both positive and negative aspects. Children have identified concerns such as lack of information, disruptions in the family, having to take up caregiving roles, and lack of support services. Children also have difficulties in managing their emotions and experiences of stigma and social isolation.[28] At the same time, children have also reported positive gains from these experiences, such as

becoming more mature and responsible, and they report wanting to be involved in the care of their parent.[29-31]

Recurring themes in these narratives are the children's need for information and support. Children have talked about the need for education about parental mental illness, improved coping skills, and support from mental health professionals and schools.[32,33] Many children have reported feeling apprehensive about visiting their parent in the hospital and expressed that the - hospitals need to be "family friendly" and accommodate needs of the children of parents with mental illness, and at the same time acknowledge their caring efforts.[34,35]

INTERVENTIONS FOR FAMILIES AFFECTED BY PARENTAL MENTAL ILLNESS

Based on the needs that have emerged from these studies, several interventions have been developed for families affected by parental mental illness. Some interventions include only the parents or the children, but with a focus on the family, whereas other interventions involve the whole family. Interventions with parents predominantly focus on training in parenting skills[36,37] or psychoeducation and peer support.[38] Let's Talk about Children[39] is one such psychoeducational intervention that involves 15–45 min discussions with the ill parent and his/her partner, to assess the child's situation and empower the parents to talk to their children about the illness.

Interventions targeted at the children are mostly aimed at providing psychoeducation, peer support and respite, in individual or group formats.[40-43] Some also provide skills training[44,45] and resource coordination.[46] Although some of these activities are delivered in a clinic setting, others are designed as after-school workshops,[47,48] camps,[49,50] or online interventions,[51,52] to make them more accessible for children.

A third set of interventions targeting the whole family involve interventions such as psychoeducation; cognitive restructuring; teaching communication skills, problem-solving and parenting strategies; and case-management strategies. One of the earliest and most researched is Beardslee's preventive family intervention or "Family Talk."[53] This was originally designed for parents with affective disorders and their children aged 8–15 years and involved 6–10 sessions with a clinician. Separate sessions with parents and children focus on gathering history, psychoeducation, and preparation for a joint session. The joint session focuses on initiating and enhancing communication about the illness between the parents and the children. This intervention has been adapted to include other age groups and diagnoses.[39,54,55]

Other family interventions entail child-inclusive discussions to generate care plans and discuss parenting issues.[56-58] Some interventions have used the cognitive-behavioral approach in a single family format[59,60] or a multi-family group format.[61,62] Studies also highlight community and home-based interventions-including services that link families with environmental supports and provide access to financial resources and liaison and advocacy services.[63-65]

A recent systematic review reported that preventive interventions with this population lead to significant improvement in parenting behaviors,[66] and a meta-analysis reported positive effects on the children's behavioral and emotional health, with interventions that jointly addressed parents and children yielding larger effects.[67] However, they also pointed out a lack of high-quality studies and recommended adoption of more rigorous research methods to test the interventions[66-68]

CHALLENGES IN WORKING WITH FAMILIES AFFECTED BY PARENTAL MENTAL ILLNESS

Various challenges in working with this population have been identified within adult mental health systems, including the complexity of the issue;[69] a lack of attitude, knowledge, skill and confidence for working on parenting and family issues;[70] a lack of clarity about staff roles; and limited options of referral services.[71]

It has also been suggested that mental health systems often operate from an individual level, problem/deficit-focus approach, where preventive interventions are not given priority. Hence, issues of parenting and children are addressed only if abuse or neglect is identified or if the child develops a diagnosable disorder.[72]

To overcome these challenges, Maybery and Reupert[73] recommend the adoption of family-sensitive policies at the organizational level, coupled with ongoing workforce training. Such a system would set up processes to routinely identify a service user's children, assess the family's parenting and child-related needs, and provide psychoeducation to each family member and have a clear system of referrals. Additionally, the agency would have more specialized family services, such as family therapy, where families with more intensive needs can be referred.

Several interventions have been designed for professionals in adult mental health settings to sensitize and equip them to work with children and families affected by parental mental illness.[74-76] Other measures include having designated "child representatives"[77] or "child-responsible personnel"[78] in adult mental health settings.

In addition to improvements in adult mental health services, other recommendations include increasing investment in child and adolescent mental health services, creating adequate community support for families, building intersectoral collaborations such as with child-protection agencies, and lobbying governments to recognize this group of vulnerable children.[10]

CHILDREN OF PARENTS WITH MENTAL ILLNESS: THE INDIAN CONTEXT

There are no large-scale epidemiological studies from India that report the prevalence of parenthood among persons with mental illness, but a few clinic-based studies provides an approximate picture. A study of persons with schizophrenia found that about 49% of them had children,[79] and a study of female inpatients in a psychiatric hospital reported a figure of 66%.[80] Another recent study reported that despite stigmatizing experiences related to marriage and childbirth, 57% of the participants with mental illness were married, and many of them had children.[81]

Studies done in India with children of parents with mental illness have found that they use maladaptive coping strategies[82] and have higher levels of internalizing and externalizing problems.[83,84] Adult children of parents with mental illness have reported that they had experienced many disruptive experiences in their childhood, such as unstable families, parental discord, and having to discontinue education to go into employment.[85] Many of them, though resilient, reported burden and lack of support[86] and lower levels of psychological well being.[87]

It has been reported that children are negatively affected by poor information about parental illness and inadequate role functioning in the ill parent.[5] Spouses of persons with mental illness have reported concerns about the effects of parental mental illness and the ways to support their children.[88]

Much of this literature focuses on deficits and risks, and there is little published literature in the Indian context about how ill parents perceive their parenting role, how children experience growing up with an ill parent, how families navigate parenting challenges, and what support they need.

IMPLICATIONS FOR THE INDIAN MENTAL HEALTH SETTING

Due to the lack of literature from India, our current understanding of these topics rests predominantly on western studies. Although western studies set a precedent for the conceptualization of preventive interventions for children and families with parental mental illness, local studies are needed to contextualize these findings to India—both to the culture of Indian families and to the way Indian mental health services are organized.

Research with family caregivers in India is still predominantly limited to concepts such as stress and burden,[89] and there is a need to shift the focus to understanding their experiences as a whole and to explore themes related to parenting and children. Several characteristics of Indian families, such as rigid hierarchical structures and an emphasis on kinship obligations, might affect the way parents and children relate and communicate with each other.[1,89] As formal foster care is uncommon in India,[81] some children are likely to be in the informal care of extended family members. These features of the Indian context could alter the experiences of families with parental mental illness.

Additionally, these interventions need to be adapted to suit the way Indian mental health systems are organized and the resources that are available. Research is also needed to identify how other agencies such as child protection systems, schools, and general healthcare settings can play a role in supporting children, parents, and families affected by parental mental illness. The inadequacy of resources is a major barrier in not prioritizing preventive child and family mental health in India.[90] Therefore, in addition to studying outcomes, rigorous studies examining the cost-effectiveness and returns-on-investment of preventive interventions with this population are needed, to support policies and services for this population.[65] In building workforce capacity, training a few specialist professionals who can go on to provide consultations and carry out advocacy and further capacity-building programmes[10] may be an efficient option.

Some ways to increase visibility for this population within adult mental health services would be to routinely assess if service users are parents and if so, to document information such as the children's age and living and parenting arrangements. It would be useful to keep in mind that persons with mental illness and their families might be apprehensive in initiating discussions about parenting and children.

Children themselves might have concerns about inheriting the illness from the parent and might feel anxious at the prospect of meeting with mental health professionals. This reiterates the need for professionals to raise these topics in sensitive ways. When children accompany or visit their parent in the hospital, professionals could encourage them to share their experience and concerns and appreciate them for their contributions to the care of the parent. Where appropriate, and when families and children are willing, children could be invited to participate in routine family interventions or referred to specialist child and family psychiatric services.

CONCLUSION

Despite a long tradition of involving families in mental healthcare in India, more attention needs to be focused on the diversity among families affected by mental illness. There is a growing understanding of the unique vulnerabilities and needs of children and families affected by parental mental illness. This highlights the need to take forward research in this area and for developing preventive child and family mental health interventions.

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Original Article

Interventions for Childhood Anxiety Disorders – What Works Best from a Child's Perspective: A Qualitative Study

Preeti Kandasamy, Satish Chandra Girimaji, Shekhar P. Seshadri, Shoba Srinath, John Vijay Sagar Kommu

ABSTRACT

Background: Anxiety spectrum disorders are the most prevalent psychopathology among children and adolescents. Qualitative research in childhood anxiety disorders can provide valuable insights regarding interventions. The objectives of this study were to examine the child's perspectives on the subjective experience of concerns, the impact of the symptoms on socioacademic functioning, and the process of recovery with interventions. **Methods:** Children and adolescents aged 6–16 years, presenting with any subtype of anxiety spectrum disorder as per International Classification of Diseases and Related Health problems, 10th Revision (ICD-10) Diagnostic Criteria for Research, were included. Convenience sampling was used, and 30 children fulfilling inclusion and exclusion criteria were selected. An interview guide with simple questions to facilitate response was used, at the baseline and 12th week of follow-up, to generate a written narrative account of the experience of concerns, the impact of symptoms, and the treatment process. Children received treatment as usual, which included a workbook-based cognitive behavioral intervention. **Results:** Content analysis was done using 30 baseline and 20 follow-up narratives. Clustering of themes were done. Themes related to the recovery process reflected perceived improvement in academic performance and competence, apart from the improvement in symptoms. There were more themes in favor of cognitive interventions. **Conclusion:** Children's narratives highlight the importance of cognitive interventions for anxiety disorders.

Key words: *Anxiety disorder, child, interventions, qualitative study*

Key messages: *This qualitative study elicited children's perspectives on illness experience and treatment impact in our sociocultural setting. Children's narratives highlighted the importance of cognitive interventions in childhood anxiety disorders.*

Anxiety disorders are considered the gateway disorders for many of the adult psychiatric disorders.[1] Childhood anxiety disorders, if untreated, can lead to chronic

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Department of Child and Adolescent Psychiatry, National Institute of Mental Health and Neurosciences, Bangalore, Karnataka, India

Address for correspondence: Preeti Kandasamy
Department of Psychiatry, Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry, India.
E-mail: preetikandasamy@gmail.com

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anxiety, depression, and substance abuse.[2] It is therefore vital to effectively recognize and treat anxiety disorders in childhood and adolescence.

An epidemiological study conducted in Bangalore found a prevalence of 4% for anxiety disorders in children age 4–16 years.[3] The anxiety disorders among adolescents study had reported the prevalence of anxiety disorder to be 14.4% (4.8% in boys and 9.6% in girls) as per Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM IV-TR).[4] This study documented the prevalence, pattern, comorbidities, and relationship with depression, associated suicidal phenomenon, and school phobia.[5] The prevalence of anxiety disorder among children in the clinic population at a tertiary care center was reported to be 20%.[6]

Interventional studies in the Indian context are limited, and we mostly rely on research information from the west. Qualitative research is scarce in child psychiatry, but research has highlighted the need for qualitative research to enhance our understanding of the children's experience and to provide them better care models. This study aimed at examining the child's perspectives on the subjective experience of concerns, the impact of the symptoms on the socioacademic functioning, and the process of recovery with interventions.

METHODS

The study was conducted at a child and adolescent psychiatry clinic at a tertiary care academic institute, after obtaining the Institutional Ethics Committee approval. Informed consent from parents and assent from the child was obtained for participation in the study. Children and adolescents with a diagnosis of separation anxiety disorder of childhood, phobic anxiety disorder of childhood, social anxiety disorder of childhood, generalized anxiety disorder of childhood, social phobia, specific phobia, panic disorder, obsessive-compulsive disorder, or posttraumatic stress disorder as per International Classification of Diseases and Related Health problems, 10th Revision (ICD-10) Diagnostic Criteria for Research were included. Screen for Child Anxiety Related Emotional Disorders (SCARED) was used for the initial screening, and Mini International Neuropsychiatric Interview for children and adolescents was used to establish the diagnosis. The first author made the diagnosis, and it was concurred by the second author. Convenience sampling was used, and 30 children fulfilling the inclusion and exclusion criteria participated in the study.

A workbook for cognitive-behavioral therapy (CBT) was used to standardize the interventions received by all the study participants in addition to the standard care. The components of the workbook were reviewed and approved by all authors and were delivered by the first author. It included training in labeling and monitoring anxiety, mind–body relationship, relaxation strategies, thought diary, problem-solving, coping strategies, challenging negative thoughts, and teaching a friend overcome anxiety. This was delivered over four to eight sessions as per the needs of the child.

The following interview guide was used to generate a response. Children and adolescents gave a written narrative account at baseline and at 12 weeks of follow-up.

At baseline:

1. What is the nature of your concerns (problems)? What is your current experience of these concerns and how significant are they?
2. What impact do these symptoms have on you and the activities you perform at home, school, and other situations? How do they affect your well-being? How do they affect your efficacy (competence)?
3. What do you feel is the cause/reason for these problems (symptoms)?
4. How hopeful do you feel about improvement/recovery? In what way you want the treating team to assist you in the process of recovery?

At follow-up:

1. What is the nature of your current concerns (problems)? What change have you experienced in the past 3 months?
2. What impact do these symptoms have on you and the activities you perform at home, school, and other situations? How do they affect your well-being? How do they affect your efficacy (competence)?
3. What is your current thinking about the cause/reason for these problems (symptoms)?
4. How hopeful do you feel now about improvement/recovery? In what way did the treating team assist you? What have you learned and mastered in the past few months? What do you feel helped you?

RESULTS

The qualitative analysis was done using 30 written narratives at baseline and 20 written narratives at follow-up. There were 16 boys and 14 girls. Children who had completed at least four sessions of CBT (n = 20) gave the follow-up narrative at the end of 12 weeks. There were 15 narratives by children age 6–12 years and 15 by adolescents in the age range of 13–16 years. There was no significant difference in gender or age group among those who provided the follow-up narratives.

The most common diagnosis was social anxiety disorder (n = 19), followed by generalized anxiety disorder (n = 11), obsessive-compulsive disorder (n = 7), and separation anxiety disorder (n = 4). Around 56% (n = 16) had two or more anxiety disorders.

Most children were school-going and able to give a written narrative account. A few younger children (n = 3) required assistance in understanding the questions and writing down their thoughts. Adolescents' narratives were more detailed than those by younger children. The illness experience and illness impact were analyzed using the baseline narratives; and the treatment impact and the subjective experience of change using the follow-up narratives.

Content analysis was done manually by examining core statements made in response to the interview guide. Thematic analysis was done, commonalities and differences were examined, and repetitive themes were identified. A few predetermined themes were used during the analysis to assess the change process with the intervention (e.g., internalization of interventions). Data interpretation was examined independently by the third author to establish the validity of the findings.

Repetitive themes emerged in the areas of achievement, interpersonal difficulties, self-esteem, and self-efficacy. Impact on academic and nonacademic achievement, as well as interpersonal difficulties in family, peer, and social setting, emerged during analysis [Table 1]. A few examples are provided below:

1. Illness experience:
a. Terms used to describe anxious affect

For example, *anxious (n = 5) > scared/tensed/shy (n = 4) > nervous/afraid (n = 2)*
b. The most common responses for the question on the perceived cause of the illness were internal (n = 12) or external (n = 10), and a few had a disease model (n = 5). External causes included life events.

"The reason for this problem is tension and worry."

Table 1: Themes for illness impact

Illness impact	Categories	No. of responses
Achievement	Academic	18
	Play and extracurricular	9
Interpersonal relationship	Peer	16
	Family	6
	Others	2
Self	Self-esteem	6
	Cognitive development	4
	Social development	1

"Stress about studies. I always think more about the future."

2. Illness impact:
A majority of responses on illness impact reflected the impact on performance in academic activities (n = 18), play (n = 16), and other age-appropriate activities (n = 5). Responses on the impact on relationships showed perceived impairment in peer relationship (n = 16), family relationship (n = 6), and interaction with school authorities (n = 2).

For example, "Cannot complete the day."

"I never go out to play or for anything else."

3. Treatment impact:
For the interview guide on treatment impact, there were more responses to nonpharmacological intervention as against pharmacological interventions. Cognitive components (n = 14) such as problem-solving, positive self-talk, challenging negative thoughts, and process-based approach were more common among the responses than behavioral interventions (n = 6) such as relaxation strategies, graded exposure, and exposure and response prevention. A few children (n = 4) also reported parental interventions such as psychoeducation and addressing parental anxiety as having helped them. Children's responses to treatment impact reflected their perceived improvement in academic performance and competence, apart from the improvement in the symptoms.

For example, "Return to school."

"Giving exams without fear."

"Performing better."

Two samples are given below to enable comparison of the child's subjective experience at baseline and at follow-up, which highlight the impact of the treatment.

Sample 1:

Baseline:

"I'm afraid, and I feel anxious for silly things. Whenever I am pointed out to answer or something else, my whole body starts shivering, and I sweat a lot. I thought of myself a waste-bin."

"These symptoms made me feel I am good for nothing. I can't face any problem and this has been my behavior throughout my life. I'm going to be someone who can't face things."

"All this problem is because I want myself to be the best person in the world and I started stressing myself for that."

Follow-up:

"Now I'm able to understand my problems and why I'm suffering like this. I'm able to overcome things and to suggest myself solutions for these problems. Before, I used to depend on parents now I can do it myself. Whenever the symptoms occur, I'm able to manage them."

"Now also I want myself to be the best, but I don't stress myself like before. The therapy sessions helped me to get back to my studies and my dreams. They made me think and act and changed me a lot. I don't worry about the results. I can feel the change in me, and the people around me can also see the change in me."

Sample 2:

Baseline:

"My problems are somehow related to people around me. Right now, I'm scared—very scared of my school and exams. I don't want to go to school. These problems are making me feel irritated, angry, frustrated and depressed, which in turn ruins my relationship with other people. I'm getting panic attacks. My fear of exams is leading to this."

Follow-up:

"My problems are about relationship issue, indecision, low self-confidence, and self -esteem. These make me panicky, irritating, and angry too. Depression is also there (but I can't realize it). I become nervous; as a result, I'm not able to do anything properly. I start daydreaming, and I've mood swings."

"I've grown up a lot in this past one and a half months. I'm more sure of myself now and have started realizing my mistakes. I now have more faith in myself. I've learned to relax and not to take life so seriously. I've learned to let go. I've learned to praise myself, and my mood is more balanced … I think, the one thing that helped me besides medicines is talks with my doctor and parents."

DISCUSSION

This qualitative study was an attempt to collect the opinions children with anxiety disorders have regarding the illness experience and treatment process. It elicited the impact the symptoms had on the child's achievement, interpersonal functioning, and self-esteem, the depth of which other clinical measures and rating scales often fail to capture.

Follow-up narratives reflected a perceived improvement in self-efficacy and competence with the interventions; themes reflected internalization of cognitive interventions.

The study answers a few critical questions that a clinician often encounters while handling young children with anxiety: To what extent the improvement made is part of the natural course of development or the effect of treatment? Do cognitive behavioral interventions help the children in our cultural setting? If so, which component? The study adds clinical value and relevance to the already existing quantitative data.

It was interesting to note that only a few children perceived that the medications helped them (n = 4). Most responses of the children (n = 30) mentioned the cognitive, behavioral, and other psychosocial interventions as having helped them. Although there is a larger focus on behavioral interventions for childhood anxiety disorders such as relaxation strategies and graded exposure, it was interesting to note that many responses reflected that cognitive interventions helped them most.

The use of workbook-based CBT seems viable in our sociocultural setting and feasible for delivery to school-going children. However, challenges were encountered in retaining the children for multiple sessions. Attrition was high: one-third of them had dropped out by the 12th week of follow-up.

There has been a move toward research with children engaging them as active participants.[7] This study has reiterated the fact that systematic and rigorous qualitative research has much to offer child and adolescent psychiatry.[8] Studies with more rigorous methodology are required.

Limitation

The sample was heterogeneous and included children with different anxiety disorders, with a wider age range of 6–16 years. This might explain the differences in the reported experiences.

CONCLUSION

This qualitative study was an attempt to elicit children's perspective on illness experience and treatment process. Children's narratives highlighted the importance of cognitive interventions. Further studies examining the efficacy of workbook-based cognitive-behavioral interventions are needed to address the current lack

of trained professionals to deliver cognitive-behavioral interventions.

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Conflicts of interest
There are no conflicts of interest.

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Original Article

Emotional and Behavioral Problems among Left-Behind Children in Indonesia

Raisatul Umami, Sherly S. Turnip

ABSTRACT

Background: The number of migrant workers in Indonesia has been increasing over the years. Most of the migrant workers are females with children, creating a huge number of left-behind children (LBC). The issue of LBC has become important to discuss because LBC tends to experience more emotional and behavioral problems than non-LBC. The aim of this study was to assess and compare emotional and behavioral problems between LBC and non-LBC in Indonesia. This paper analyzes data from a project by the Community Mental Health Research Group from the Faculty of Psychology, Universitas Indonesia, held in 2015 - 2016. **Materials and Methods**: Participants were 629 adolescents: 359 LBC and 270 non-LBC. The data were acquired in a cross-sectional study conducted in rural Indonesia. Data on emotional and behavioral problems were assessed with Strength and Difficulties Questionnaire, while data related to risk factor variables were collected using multidimensional scale of perceived social support, the 6-item De Jong Gierveld Loneliness Scale, and Inventory of Parent and Peer Attachment. The data were analyzed with descriptive statistics and multiple regression analysis. **Results:** The prevalence of emotional and behavioral problems in LBC was 28.4% compared to 21% among non-LBC. Peer attachment, communication, social support, and loneliness were identified as factors that impact the emotional and behavioral problems among LBC. **Conclusions:** LBC has more emotional and behavioral problems than non-LBC. Comprehensive understanding of various protective and risk factors is needed to provide impactful interventions for LBC.

Key words: *Adolescents, emotional and behavioral problem, left-behind children, migrant parent*

Key messages: *This study indicated that the absence of a parent in the left-behind children's life, due to the demands of to be a migrant worker, may cause the LBC to face mental health problems such as emotional problem, hyperactivity, conduct problem, and peer problem.*

Indonesia is one of the several countries which have a relatively large number of migrant workers.[1] According to the report on National Authority for the Placement and Protection of Indonesian Overseas Workers (BPNP2TKI), in 2017, the migrant population has reached 261.820 people in both formal and informal sectors. The report also mentioned that more than 70% of Indonesian migrant workers were female

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Dapartment of Clinical Psychology, Faculty of Psychology, Universitas Indonesia, Kampus UI Depok, West Java, Indonesia

Address for correspondence: Sherly S. Turnip
M.Phil., Ph.D., Dapartment of Clinical Psychology, Faculty of Psychology, Universitas Indonesia, Kampus UI Depok, West Java, Indonesia.
E-mail: sherly.saragih@gmail.com

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and had children.[2] Consequently, they had to leave their children in their hometown while going overseas to work. These children were usually called "left-behind children" (LBC), defined as children who were left behind by their migrant parents in their hometown and were cared by the other parent, other relatives, or a non-relative caregiver for more than 12 months.[3,4]

There are numerous studies concerning the issue of LBC mental health condition.[5,6] One study in China showed that LBC showed more mental health problems, such as loneliness, anxiety, and depression; less support from their family; and a higher rate of rejection from others. Studies have found that the absence of migrant parents had caused the children to be more likely to have psychological problems, and the LBC are prone to have psychopathology and less prosocial behavior.[7-10] Children need their parents to care for, look after, and teach them.[11] Even though their role can be partially replaced by relatives or other caregivers, these children still lose attention and affection from their parents.[12] A recent study found that children who lived with a relative or a non-relative caregiver experienced more difficulties at school and in psychosocial aspects than children who were raised and cared for by their own parents.[13]

Letser *et al*. showed that the separation of parent and children may cause numerous problems such as insecure attachment patterns, emotional distress, and behavioral problems in the children and that LBC were more lonely than non-LBC.[14] They were also more likely to be unhappy and reluctant to share their emotions with other people compared to non-LBC. Moreover, numerous bizarre and abnormal behaviors were also found in LBC as part of their way of getting attention from their caregiver and to suppress their loneliness.[15] Another study from China comparing LBC and non-LBC aged under 18 years found that LBC showed more sadness, desperation, motivation for leaving the house, and even suicidal attempts.[16] Moreover, this study also revealed that LBC were more addicted to alcohol, tobacco, and internet compared to their counterparts.

Previous studies also explored possible risk factors for the emergence of an emotional and behavioral problem in LBC, including poverty, loss of communication with parents, the age of the child when left behind, and loss of social support from significant others.[17-19] Emotional and behavioral problems of LBC have been an important issue in numerous studies. Unfortunately, only a few studies on LBC had been conducted in Indonesia, and virtually none in rural areas. The aim of this study was to investigate the prevalence of emotional and behavioral problems among LBC and non-LBC in rural Indonesia. In addition, this study also examined the demographic and other factors that contribute to the emotional and behavioral problems of LBC, including gender, parent's working status, parent's education level, living arrangement and caregiver, communication, social loneliness, peer attachment, and social support.

MATERIALS AND METHODS

Subjects and procedure

This study used the data from the project of "Community Mental Health Research Group Faculty of Psychology Universitas Indonesia" in 2015–2016. The project compared the mental health of adolescents who were left behind by their parents to work as a migrant worker abroad and the adolescents who lived with their parents, in a rural area in Karawang and Lombok provinces of Indonesia. The participants of the study were 359 adolescents who were left behind by their parents (LBC) and 270 non-LBC, aged 11–16 years. The study was conducted in several junior high schools. The project was designed as a one-shot study. Data collection was conducted from April 2015 to March 2016.

Ethical clearance was obtained from Institutional Ethical Committee at the Faculty of Psychology (reference number: 187/FPsi.Komite Etik/PDP. 04.00/2018). Permission was obtained from the school boards prior to the data collection process by explaining the objectives, the procedures, and risk of this study. After obtaining the school's permission, informed consent from the children and their guardians were collected prior to data collection. The data collection was done at school during normal school time. Researchers administered the questionnaires collectively. Before the distribution of the questionnaires, researchers explained that there is no right or wrong answer policy within the questionnaires. Attention was paid to confidentiality and voluntary action of the participants.

Instruments

Demographic data

The following demographic variables were assessed in a self-report questionnaire: gender, age, parent working status, parent's education level, living arrangement, and caregiver.

Psychological variables

Strengths and Difficulties Questionnaire (SDQ)

The Strength and Difficulties Questionnaire is a self-report tool that measures 25 items of emotional and behavioral difficulties.[20] It has five subscales: emotional symptom (e.g., I worry a lot); hyperactivity (e.g., I get restless. I cannot sit for long); conduct problem (e.g., I fight a lot); peer problem (e.g., is bullied

by others); and prosocial behavior (this subscale was not included in this study). Each item is scored from 0 to 2 (not true, somewhat true, and certainly true). Total difficulties score was obtained from the sum scores of emotional symptoms, hyperactivity, conduct problem, and peer problem (0–40). Afterward, the results were divided into two main categories, internalizing and externalizing problems. Internalizing problems were calculated as the total scores of emotional problems and peer problems sub-scales, while externalizing problems were calculated from the sum of conduct problems and hyperactivity sub-scales.

The SDQ is a valid instrument to screen for emotional and behavior difficulties among adolescents and has been used widely in many other countries.[21] The internal consistency of the total difficulties (Cronbach's *alpha* = 0.7–0.8) was classified as "good."[22] The SDQ has been subsequently adapted and translated to Bahasa Indonesia. It has been used extensively to examine problems in Indonesian adolescents.[23]

Multidimensional Scale of Perceived Social Support (MSPSS)

MSPSS[24] has acceptable reliability (Cronbach's *alpha* = 0.83) and has been validated for Indonesian children.[25] There were 12 items, and each item is scored from 1 to 7, with score 1 indicating "strongly disagree" and score 7 indicating "strongly agree." MSPSS consists of three sub-scales: perceived social support from family, perceived social support from a friend, and perceived social support from significant other. The total score of MSPSS is calculated from the result of all sub-scales.

The 6-item de Jong Gierveld Loneliness Scale

The 6-item De Jong Gierveld Loneliness Scale is a self-report tool that measures emotional loneliness and social loneliness. The instrument can be used as a one-dimensional or multidimensional measure.[26] The one-dimensional score is obtained by summing the scores of all items, while the multidimensional score is obtained by summing the scores of items per subscales. In this study, loneliness was used as a multidimensional measure.

The scale consists of six statements and uses a Likert scale with answers ranging from "strongly disagree" to "strongly agree." Item numbers 1, 5, and 6 measures emotional loneliness, and item numbers 2, 3, and 4 measures social loneliness. A higher score in emotional loneliness reflects a higher level of loneliness. On the other hand, a higher score in social loneliness reflects a lower level of loneliness.

Inventory of Parent and Peer Attachment (IPPA)

The IPPA measures the quality of the participant's attachment with a specific figure such as parents and/or their peer.[27] The IPPA consists of 24 statements; item numbers 1–12 represent attachment with the parent, whereas item numbers 13–24 represent attachment with a peer. The IPPA consists of three dimensions: trust, communication, and alienation. The questionnaire has four continuum scales: scale 1 means "almost never" or "never," scale 2 means "sometimes," scale 3 means "often," and scale 4 means "always." The total score is calculated by adding the scores obtained in all the dimensions of trust, communication, and alienation. The highest possible score is 48.

Statistical analysis

Descriptive analysis was performed to describe the percentage of scores for LBC and non-LBC. The differences in abnormal score between LBC and non-LBC were analyzed using the Chi-square test. Multiple regression was used to investigate risk factors for emotional and behavioral problems, such as gender, communication, social loneliness, peer attachment, and social support from significant others. Total difficulties were treated as the dependent variable. All analyses used SPSS version 23.0 with $P < 0.05$ considered as statistically significant for two-tailed tests.

RESULTS

Demographic data

A total of 359 LBC of migrant workers and 270 children of non-migrant workers participated in this study. Both of the groups came from two provinces in Indonesia: Karawang and Lombok. The general demographic characteristics of participants are presented in Table 1.

Prevalence of behavioral and emotional problems in left-behind children vs non-left-behind children

Table 2 demonstrates that LBC has significantly more behavioral problems compared to the non-LBC. Prevalence of total difficulties, peer problem, and hyperactivity were significantly higher among LBC compared to non-LBC.

Risk factors of emotional and behavioral problems

Table 3 presents the regression analysis results for the variables that could be potential risk factors of emotional and behavioral problems. The demographic variables gender and communication had a negative relationship. Variables of social loneliness and peer attachment presented a positive relationship, while variable of social support from significant other had a negative relationship. The most important risk factors for emotional and behavioral problem were peer attachment and followed by social loneliness. The total contribution of all risk factors toward emotional and behavioral problems among the adolescents was 18.2%.

Table 1: Demographic data of left-behind children and non-left-behind children

Variables	Categories	Left-behind children (*n*=359), *n* (%)	Non-left-behind children (*n*=270), *n* (%)
Gender	Males	168 (46.8)	122 (45.2)
	Female	191 (53.2)	148 (54.8)
Age	<12 years	20 (5.6)	7 (2.6)
	12−15 years	318 (88.6)	261 (96.7)
	>15 years	20 (5.6)	2 (0.7)
Parent working status	Father	109 (30.4)	139 (51.5)
	Mother	170 (47.4)	27 (10)
	Both	80 (22.3)	104 (38.5)
Father's education level	Elementary	218 (60.8)	185 (68.6)
	Junior high school	85 (23.7)	48 (17.8)
	High school	46 (12.8)	26 (9.6)
	Bachelor	10 (2.8)	11 (4.1)
Mother's education level	Elementary	232 (64.6)	220 (81.5)
	Junior high school	89 (24.8)	35 (13)
	Senior high school	31 (8.6)	13 (4.8)
	Bachelor	7 (1.9)	2 (0.7)
Caregiver	Living at least with one parent	195 (54.3)	247 (91.5)
	Relative caregiver	130 (36.2)	14 (5.2)
	Non relative caregiver	34 (9.5)	9 (3.3)

Table 2: Comparison of abnormal scores of emotional and behavioral problems between left-behind children and non-left-behind children

Variables	Percentage of abnormal scores		χ^2	*p*
	Left-behind children *n* (%)	Non-left-behind children *n* (%)		
Emotional symptoms	105 (29.2)	71 (26.3)	0.73	0.39
Hyperactivity	30 (8.4)	11 (4.1)	4.63	0.03*
Conduct problems	118 (32.9)	71 (26.3)	3.16	0.07
Peer problem	47 (13.1)	20 (7.4)	5.23	0.02*
Total difficulties	102 (28.4)	57 (21)	4.34	0.03*

*Significant at $P<0.05$

Table 3: Table of multiple regressions predicting emotional and behavioral problem presented with 95% confidence interval (CI)

Factors	β	(95% CI)	*p*	R^2
Gender	−0.51	(−1.74-0.54)	0.30	18.2
Communication	−0.81	(−3.68-0.30)	0.09	
Social loneliness	0.12	(0.13-1.42)	0.009*	
Peer attachment	0.40	(0.35-0.56)	<0.001**	
Social support from significant other	−0.44	(−0.21-0.08)	0.39	

*Significant at $\rho < 0.01$; **$\rho < 0.001$

DISCUSSION

The prevalence of emotional and behavioral problems among LBC was 28.4%, considerably higher than in non-LBC (21%). This result is consistent with a study of LBC and non-LBC done in China, which found that LBC had more emotional and behavioral problems compared to non-LBC.[8] Several factors were related to the emotional and behavioral problems found in LBC, including the poor quality of life, the LBC's age, loss of communication with their migrant parent, inadequate support from their caregiver, and peer problems.[28,29] Furthermore, the analysis of this study revealed that communication, peer problem, loneliness, and social support from significant others had a shared impact on the difficulties faced by these adolescents.

This study found that LBC with higher peer attachment were more prone to develop emotional and behavioral problems. Unfortunately, the peer attachment measured in this study was not sufficient to assess the quality and stability of the relationship. If a child experiences unstable peer attachments, it may generate negative affects like social loneliness, psychological distress, and behavioral problems. Adolescents with unstable peer relationships manifested higher rates of depression and anxiety compared to adolescents who engaged in stable peer relationships.[30] This might be because adolescents with secure peer attachment can effectively communicate their feelings with their peers.[31] Such circumstances would not be available in adolescents with an anxious peer attachment. Hence, they would have a tendency to experience a higher level of psychological distress, including anxiety and negative school attitude, compared to adolescents with a secure peer attachment.[32] Other than that, internalizing problems have also been linked to the quality of friendship and peer attachment,[33] which can be seen in the ability of a good relationship with peers in preventing the emergence of internalizing problems.[31] During adolescence, peers have a strong influence on emotional support and self-esteem and can help deal with stressful situations. Therefore, adolescents who have a good relationship with their peers are predicted to develop less emotional and behavioral problems in the future.[33]

This study also revealed that communication and social support from significant others can act as protective factors for adolescents to cope more effectively with their emotional and behavioral problems. Adolescents who engage in frequent communication with their parents tend to be happier. This finding supports the result of another study which reported that children who frequently communicate with their parents show higher scores for happiness and life satisfaction compared to those who had only infrequent communication.[18] Furthermore, a meta-analytic study identified a negative correlation between perceived social support and loneliness during adolescence. That study also suggested that receiving social support from significant others could prevent adolescents from experiencing behavioral and emotional problems such as loneliness and isolation.

The parent's level of education in LBC families was also important to examine.[34] LBC from families with a low level of education tend to have less support and fewer resources, to live in poorer neighborhoods, and to have peers with behavioral problems.[35] Among the recorded sample, it was found that 60–80% of LBC parents were only elementary school graduates. Consequently, the methods they used in the upbringing of their child might be limited, due to a lack of proper education. Differences arose in LBC families with a higher level of education, who might have appointed a proper caregiver for their child or had relatives – also with a higher education level – take care of their child.

Children who were cared to by a non-familial caregiver were more likely to have mental health problems compared to those who were cared for by their extended family. Furthermore, several studies had shown that children who lived with other caregivers had experienced more difficulties at school compared with those who lived with and were cared to by their own parents.[13] Another study found that children who were cared for by a physically and mentally healthy caregiver were less likely to have a mental health problem. One possible explanation of this finding is that healthy caregivers have the capacity to provide better support and care for the LBC.

This study has some limitations. First, the data were cross-sectional and only provided the statistical association between selected variables and adolescent mental health. However, this research used the latest and most relevant data for examining the current condition of LBC and non-LBC in Indonesia. Second, this study did not measure other demographic data of the significant others who were living with the children, such as their socioeconomic status, mental health status, or level of education. Third, this study did not measure other factors that might be related to the emotional and behavioral problem of LBC, including parental psychopathology, quality of friendship, physical health status of the child, the relationship between the caregiver and the parents, and also family relationships before the child was left behind. Despite these limitations, this research could be useful for designing appropriate intervention programs for adolescents who are left behind by their migrant parents.

CONCLUSION

LBC experienced more emotional and behavioral problems such as emotional symptoms, hyperactivity, conduct problems, and peer problems. The absence of a parent in the child's life, due to the demands of a migrant worker, may cause the LBC to face mental health problems. There were many factors that may trigger a child's emotional and behavioral problems. Thus, effective strategies such as mental health intervention for LBC, and enrichment programs, both for the LBC and their teachers, could prevent emotional and behavioral problems in LBC. In addition, to increase the interaction between LBC and their parents, the governments could also limit the duration and frequency of work among migrant workers.

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Conflicts of interest
There are no conflicts of interest.

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Original Article

Neuro-Cognition in Adolescents with Dissociative Disorder: A Study from a Tertiary Care Center of North India

Ayushi Dixit, Shweta Singh, Sujita K. Kar, Amit Arya, Vivek Agarwal

ABSTRACT

Background: Dissociative disorder is a common neurotic disorder. Patients with dissociative disorder experience significant psychological distress and have deficits in various domains of neurocognitive functions. **Objective:** To assess the neurocognitive functioning of adolescents diagnosed with dissociative disorder and compare it with that of healthy controls. **Materials and Methods:** This is a cross-sectional observational study conducted on adolescents diagnosed with dissociative disorder, attending child and adolescent specialty clinic of a tertiary care hospital of North India from October 2016 to February 2017. Healthy control subjects were also recruited for comparison on study variables. Malin's Intelligence Scale for Indian children and standardized neuropsychological tools were administered for the assessment of intellectual functioning and neurocognitive functioning. **Results:** A total of 50 participants with dissociative disorder and 50 healthy controls completed the study. Participants of both the groups had an average level of intellectual functioning. Participants with dissociative disorder showed poorer performance on tasks of attention and executive functions. After the Bonferroni correction, deficits were detected in the domains of coding ($P = 0.0012$), maze ($P = 0.0001$), and mathematics ($P = 0.0016$). **Conclusions:** Adolescents with dissociative disorder have impaired neurocognitive functions in comparison to healthy controls.

Key words: *Adolescents, dissociative disorder, neuro-cognition*

Key messages: *a) Adolescents with dissociative disorder have deficits of certain neurocognitive functions in comparison to healthy control. b) Though the overall intellectual functioning of patients with dissociative disorder are comparable with that of healthy controls, significant deficits remain in the domains of coding, arithmetic, and maze task.*

The recently conducted National Mental Health Survey (2015–16) had revealed, in a community representative population, the prevalence of mental morbidity in adolescents aged between 13 and 17 years to be 7.3% in India.[1] The proportion of patients diagnosed with dissociative disorders in India ranged between 1.5–15.0 per 1000 outpatients and between 1.5–11.6

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Department of Psychiatry, King George's Medical University, Lucknow, Uttar Pradesh, India

Address for correspondence: Dr. Sujita K. Kar
Department of Psychiatry, King George's Medical University, Lucknow - 226 003, Uttar Pradesh, India. E-mail: drsujita@gmail.com

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per 1000 inpatients. The prevalence rate of dissociative disorder in child and adolescent group in India has been reported to be 12.5%.[2]

Several studies have focused on the psychosocial variables related to patients suffering from dissociative disorder.[3-6] The cognitive aspect of dissociative disorder is less understood. Recent studies have focused on the functional connectivity between the brain regions involved in emotion processing and those involved in representing sensory information, which may be enhanced, generating unusual motor sensory symptoms in the context of stress.[4,7,8]

A century ago, Janet (1919) was the first to conceptualize dissociative symptoms as having a neurocognitive component – in particular, as disorders of memory processing that arise in the wake of trauma. Later, neurobiological models pointed to deficits in both memory and attention and postulated that these deficits would be more prominent during the presence of symptoms and during testing conditions that were stressful or that provoked anxiety.[9,10]

The importance of intelligence in the genesis of neurotic illness has been reported in the literature.[11-13] The intellectual functioning of patients with dissociative disorders has been studied, but the results are very inconsistent, as some studies report average intellectual functioning in dissociative disorders, whereas some other studies report decreased baseline intellectual quotient or presence of scatters on intellectual testing.[14-16] The presence of scatter on intelligence subtests indicates the presence of neurocognitive deficits which may be an important causal factor of dissociation. Studies on neurocognition in dissociative disorder had also showed mixed results. An Indian study conducted by Ranjan *et al*., (2016) on a sample of child and adolescent patients (8–16 years) suffering from dissociative disorder revealed the presence of significant deficits in the areas of visuoconstructive and visual organization abilities, verbal working memory, executive functioning, learning, and attention.[16] In another study in children and adolescents with conversion disorder, a similar pattern of neurocognitive deficits was found.[15]

Evidence suggests that children and adolescents with various subtypes of dissociative disorders exhibit impairments in spatial working memory, planning and organization, attention, verbal memory and naming tests, as well as decreased performance on tasks of visual memory and immediate memory.[17-19]

Most of the existing literature on patients with dissociative disorders are on the adult population. The evidence regarding the neurocognitive functioning in children and adolescents are inconclusive and inconsistent. We hypothesize that adolescents with dissociative disorder have deficits in neurocognitive functions (learning, memory, intelligence, visuospatial abilities, attention and concentration, and executive function) compared to healthy counterparts. The recent study of Ranjan *et al*., (2016) assessed neuropsychological functioning of children and adolescents with dissociative disorder.[16] But the study did not include a comparison with healthy controls. We adopted the concept of the above-mentioned study and aimed to assess the neurocognitive function of adolescent patients presenting with dissociative disorders and compared it with healthy controls.

MATERIALS AND METHODS

It is a cross-sectional observational study conducted in a tertiary care center of North India. The sample consisted of 50 adolescents aged between 10–16 years, with a diagnosis of dissociative disorder, and 50 age, gender, and education-matched healthy controls. It is a time-bound study of 5 months. The patients with dissociative disorder were recruited from the child and adolescent psychiatry clinic of a tertiary care hospital of North India. The diagnosis of dissociative disorder, consistent with ICD-10 criteria, was made by the consultant psychiatrist. Participants who were able to read and write as well as not having visual, speech, or hearing impairments were included in the study. Those with medical illnesses involving the central nervous system and those with mental retardation, indicated by clinical history and developmental milestones, were excluded.

Healthy controls (age, gender, and education-matched) were recruited from healthy siblings/relatives of non-psychotic, non-attention deficit hyperactivity disorder (ADHD), and non-autistic patients attending the psychiatry child and adolescent outpatient services in the same institute. They were healthy siblings of patients with either dissociative/conversion disorder, depression, or adjustment disorder. We adopted the selection criteria and domains of neuropsychological assessment from the study of Ranjan *et al*., (2016).[16]

Tools used for assessment

1. **Malin's Intelligence Scale for Indian Children (MISIC)**[20]**:** The battery comprises of 11 tests viz, information, comprehension, similarities, digit span, arithmetic, vocabulary, picture completion, object assembly, mazes, coding, and block design. Assessment on MISIC, three different types of scores were generated i.e., verbal quotient (VQ), performance quotient (PQ), and full-scale IQ. VQ

included information, comprehension, vocabulary, as well as the understanding of abstract. PQ included working memory, attention, planning and problem solving as well as visuospatial processing especially in the areas of attention, working memory, and planning and problem solving

2. **NIMHANS neuropsychological battery**[21] **(selective subtests):** The battery is a description of neuropsychological tests in current usage internationally as well as their mode of administration and normative data for Indian subjects' neuropsychological functioning in a comprehensive manner. For the purpose of the present study, selective subtests were opted. The tests selected from the battery were – Wisconsin Card Sorting Test (set-shifting ability), Stroop Test (response inhibition), and Rey's Auditory Verbal Learning Test (learning and memory).

Procedure

The study was conducted from October 2016 to February 2017, after getting ethical clearance from the institutional ethics committee. Patients and controls were recruited as per the selection criteria. Written informed consent and assent were sought from the legal guardians of the participants and all the participants included in the study, respectively. Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID) 6.0 version was applied to rule out the presence of any comorbid psychiatric disorder. Sociodemographic and clinical details and neurocognitive functioning of the subjects of both the groups were assessed using the above tools. At the time of assessment, participants with dissociative disorder were stable. Neuropsychological assessments were completed soon after the clinical assessment. To minimize the drug effect on neurocognitive functioning, efforts were taken to administer the test at least 6 h after the last dose of medication.

Data analysis

Data were obtained using the Microsoft Excel 2007 software. Statistical analysis was performed on the SPSS version-16.0. Student's independent *t*-tests were used to compare scores of intellectual functioning and neurocognition between the experimental and the control groups. As multiple tests were applied, Bonferroni correction was used, and *P* value at 0.004 (0.05/14) was considered significant.

RESULTS

The sample was drawn from 86 consecutive referrals of children presenting with dissociative disorder. Out of 86, only 50 (33 girls and 17 boys) fulfilled the selection criteria and were included in the study. Most of the subjects were females (66%). The mean ± SD age of patients with dissociative disorder (13.3 ± 1.54 years) and control group (13.57 ± 1.31 years) were comparable. Most of the participants were belonging to the urban background (60% of the patients with dissociative disorder and 58% of control group) and were studying in 9th–10th standard. Most of the subjects were Muslims (62% in the patients with dissociative disorder and 64% in the control group), living in joint families, and with monthly family income between Rs. 10,000–20,000. The patients with dissociative disorder and the control group belonged to a comparable sociodemographic background [Table 1].

The mean duration of the current dissociative episode was 15.48 ± 8.63 days. Among the study population, 66% had mixed dissociative disorder, 18% had dissociative convulsions, 10% had dissociative stupor, and 6% had trance and possession disorder.

Assessment on Malin's Intelligence Scale for Indian Children

Patients with dissociative disorder and control group had comparable intellectual functioning in all the domains except performance quotient (t = 2.48, P = 0.0149). However, it was insignificant after applying the Bonferroni correction [Table 2].

Neurocognitive battery

Subjects of the patients with dissociative disorder showed difficulty related to attention as evident on the subtest of coding (t = 3.31, P = 0.001). The patients with dissociative disorder (92.22 ± 6.38)

Table 1: Sociodemographic profile of the participants

Parameters	Study group, *n*=50	Control group, *n*=50
Age (in years)	13.32 (±1.54)	13.57 (±1.31)
Gender		
Female	33 (66%)	33 (66%)
Male	17 (34%)	17 (34%)
Education		
Upto class 5th standard	5 (10%)	3 (6%)
6th-8th standard	18 (36%)	19 (38%)
9th-10th standard	27 (54%)	28 (56%)
Domicile		
Urban	30 (60%)	29 (58%)
Rural	20 (40%)	21 (42%)
Religion		
Muslim	31 (62%)	32 (64%)
Hindu	19 (38%)	18 (36%)
Monthly income (in INR)		
Upto 10,000	11 (22%)	6 (12%)
Between 10,000-20,000	27 (25%)	30 (60%)
Above 20,000	12 (24%)	14 (28%)

had significantly lower scores (t = 3.406, P = 0.001) on the subtest of attention (coding) as compared to the control group (95.59 ± 2.87). The patients with dissociative disorder as compared to the control group performed poorly on both the tests of working memory i.e., Digit Span Test (t = 2.19, P = 0.030) and mathematics (t = 3.24, P = 0.002). Compared to the control group, the patients with dissociative disorder was found to have poorer performance in subtest of similarities (t = 2.13, P = 0.035) as well as on the WCST (total correct response, P = 0.018; non-perseveratory errors, P = 0.012). Subjects of the patients with dissociative disorder showed decreased planning and problem-solving capacity (maze) (t = 4, P = 0.0001) as compared to the control group [Table 3].

After applying the Bonferroni correction, a significant difference persisted only in the domains of coding (P = 0.001), maze (0.0001), and mathematics (P = 0.002). Other domains that were found significant after applying the t-test were nullified after application of Bonferroni correction.

DISCUSSION

In our study, the patients with dissociative disorder and the control group belonged to a comparable sociodemographic background; hence the influence of sociodemographic variables on the study outcome is unlikely.

Both the groups had an average level of intelligence. There are differences in verbal as well as performance quotient among the study population (study and control group), which were non-significant after Bonferroni correction. The presence of scatter in attainment on subtests of intelligence battery indicates significant neurocognitive deficits in certain areas in these patients. Previous studies also found that patients with dissociative disorder had an average level of intellectual functioning and significantly lower performance intelligence as compared to verbal intelligence.[15,16]

In the present study, among neurocognitive tests, compared to the healthy controls, the subjects with dissociative disorder had impairment in the areas of attention, understanding of an abstract concept, and some aspects of executive functioning i.e., working memory, planning and problem solving, and set shifting ability. However, other neurocognitive areas like response inhibition ability, learning, memory, comprehension, visuospatial skills, and vocabulary were not different significantly among patients with dissociative disorder and healthy controls.

Table 2: Comparison of experimental and control groups on verbal, performance, and full 78-scale intelligence quotient

Domains of intelligence	Study group	Control group	*P*
Verbal quotient (VQ)	92.79 (3.29)	93.31 (2.90)	0.413
Performance quotient (PQ)	92.71 (3.01)	94.14 (2.64)	0.015
Full-scale IQ	92.73 (2.53)	93.64 (2.22)	0.064

Bonferroni correction value (α/n) = (0.05/14) = 0.00357, All the *P* values are non-significant as they are>0.004 after Bonferroni correction. VQ: Verbal quotient; PQ: Performance quotient; IQ: Intelligence quotient

Table 3: Comparison of experimental and control groups on MISIC subtests, WCST parameters, RAVLT, and stroop test

	Study group	Control group	*P*
MISIC subtest parameters			
Information	92.60 (4.69)	93.28 (3.48)	0.42
Comprehension	94.57 (7.72)	94.78 (3.31)	0.86
Mathematics	90.22 (4.01)	92.87 (4.05)	0.002**
Vocabulary	93.32 (5.32)	93.86 (3.26)	0.59
Digit Span	92.00 (3.51)	93.51 (3.22)	0.030*
Similarities	91.38 (3.91)	92.85 (2.71)	0.035*
Picture completion	92.62 (6.04)	93.65 (2.76)	0.283
Object assembly	92.32 (7.42)	93.85 (3.81)	0.209
Block design	92.96 (3.10)	93.95 (5.77)	0.288
Maze	92.02 (3.98)	94.95 (3.15)	0.0001**
Coding	92.22 (6.38)	95.59 (2.87)	0.001**
WCST parameters			
Total correct response	100.78 (6.75)	104.32 (7.69)	0.018*
Perseveratory errors	11.22 (6.81)	10.74 (6.60)	0.728
Non-perseveratory errors	16.00 (6.60)	12.85 (5.15)	0.012*
Conceptual level response	78.26 (13.37)	83.14 (11.84)	0.060
Failure to maintain set	1.88 (2.09)	1.14 (1.74)	0.065
Learning to learn score	2.37 (6.20)	0.93 (2.73)	0.146
RAVLT total learning score	39.30 (9.10)	42.27 (6.62)	0.07
RAVLT delayed recall score	7.60 (2.40)	8.44 (2.38)	0.085
Stroop effect	20.37 (7.88)	18.42 (7.15)	0.20

MISIC: Malin's Intelligence Scale for Indian Children; WCST: Wisconsin Card Sorting Test; RAVLT: Rey's Auditory Verbal Learning Test, Bonferroni correction value (α/n) = (0.05/23) = 0.003, *Non-significant as it is >0.003 after Bonferroni correction, **Significant, as it is <0.003 after Bonferroni correction

Each of the neurocognitive tasks on which dissociative disorder subjects performed poorly is dependent on adequate prefrontal cortical functioning.[22] It suggests that the pattern of cognitive difficulties shown by participants with dissociative symptoms is consistent with a disorder of cognitive control. The present study specifically focused on the adolescent population, and no significant deficits were found in visuoconstructive and visual organization abilities in the present study.

The construct of cognitive control is understood as comprising a number of partially independent functions, including proper allocation of attentional resources (measured here by coding Attention Test), conflict monitoring (WCST), response inhibition (Stroop

test), working memory (Digit Span Test, Coding), and planning and problem solving ability (maze test). The decreased working memory capacity on multiple subtests of the Digit Span Test and Coding test showed a clear deficit in the cognitive component of prefrontal cortex (PFC) function. The increased number of errors on WCST highlights the participants' difficulties in blocking interfering information throughout these domains. After Bonferroni correction, significant differences remained on the domains of mathematics, maze, and coding; however, no significant difference was found in any of the parameters of WCST, indicating the need for further research in a larger population to assess the differences in cognitive parameters. With certainty, it can be said that patients with dissociative disorder have deficits in certain parameters of neuropsychological functioning, which may be taken as soft signs or cognitive markers. Tax the resources.

The function of the PFC is to utilize the limited resources to maintain an effective balance between cognition and emotional processing.[23] The interaction between cognitive function (executive function) and emotion regulation in the PFC reflects the intactness of functional connectivity of PFC with amygdala. The above interaction is a complex process, where the emotional stimuli are processed which in turn influence the cognitive performance. This interaction process in the PFC is mediated through allocation of resources. In situations where there is an increased demand (pressure to perform), resources may get depleted and imbalance may happen in cognitive and emotional control (due to poor allocation of resources to PFC for cognitive control).[24] Hence, cognitive control is implemented by the PFC and it functions to override emotional or habitual responses to stimuli.[24] Our cohort of adolescents with dissociative disorder showed decreased performance in the above-mentioned areas. As all of the above tasks involve the PFC, a shift in the balance between cognitive/integrative processing and emotion/motor-sensory processing secondary to long-term stress will compromise individuals' cognitive/integrative capacities. These findings are consistent with earlier studies which found the presence of deficits in attention, working memory, set shifting ability, as well as planning and problem solving in subjects with dissociative disorder as compared to healthy controls.[15,16]

In this study, out of the 50 adolescents with dissociative disorders, none had a comorbid brain disease, and testing was completed soon after the presentation when the patients were receiving a low dosage of medication. In addition, patients with developmental delay were excluded, and the participants with dissociative disorders and control group were comparable in terms of their IQ. This was crucial, as multiple developmental pathways and several factors related to brain disorders that can potentially affect neurocognitive function in patients with dissociative disorder, like brain disorders (for instance, developmental delay, epilepsy, and other neurological abnormalities), childhood maltreatment, psychotropic medications, and medications for the treatment of comorbid epilepsy, had a relatively minor presence in this study. Thus, it is unlikely that they would have affected the performance of the patients with dissociative disorder as compared to the control group on these neuropsychological tests.

The present study highlights that mechanisms underpinning dissociative symptoms can be activated in what is, neurologically, a healthy brain. Thus, although brain disease may potentially be a risk factor for dissociative disorders, it cannot be considered as either a necessary or sufficient condition for their development. Adolescents with dissociative disorder have compromised PFC functions that mediate cognitive/integrative processing. This finding has important implications for therapy. The clinicians may assess the neurocognitive functioning of adolescents with dissociative disorder as it is the formative age during which the development of neurocognitive functions occurs.

Limitations

Small sample size and narrow age range selection limit the generalizability of the study findings. Though the patients were receiving very low doses of psychotropic medications (benzodiazepines or antidepressants), their effect on neurocognitive function could not be ruled out. Future studies could address these shortcomings by replicating the study on a bigger sample with a broader age range, to make the findings more generalizable. All subtypes of dissociative disorder were clubbed together due to the small sample in each subgroup. The diversity of neurocognitive dysfunction among these subgroups cannot be ruled out. The dissociative psychopathology among the patients was not quantified and hence not correlated with the neurocognitive deficits. Additionally, it would be worthwhile looking at the neuro-cognitive symptoms of patients with dissociative disorder in the remission phase. Healthy controls were healthy siblings/relatives of patients with depression, dissociative disorder, or adjustment disorder, which may limit the generalizability of the study. Choosing healthy controls from natural settings with no family members affected with psychiatric disorder might increase the generalizability of the findings. No structured screening tool was used, which is another limitation of the study.

CONCLUSION

Adolescents with dissociative disorder have obvious neurocognitive deficits compared to their healthy counterparts. Understanding the pattern of neuropsychological deficits will help in understanding the disorder from the perspective of neuropsychology. It may guide the clinician for understanding the etiopathogenesis of the disorder as well as planning the therapeutic intervention.

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Conflicts of interest

There are no conflicts of interest.

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Original Article

Factors Associated with Treatment Adherence in Children with Attention Deficit Hyperactivity Disorder

Parvin Safavi, Mehrdad Saberzadeh[1], Afsaneh Malekpour Tehrani[2]

ABSTRACT

Background: Attention deficit/hyperactivity disorder (ADHD) is a common psychiatric disorder in children. The aim of this study was to investigate factors related to treatment adherence in children with ADHD. **Methods:** This cross-sectional study was done in 118 children (aged 6–12 years) with ADHD who have been on medications for at least 6 months. The patients were selected based on the convenience sampling method from those who were referred to child psychiatry clinic. Medication Adherence Report Scale, Belief about Medicines Questionnaire specific version, and Children Symptom Inventory-4 were completed by parents and teachers. **Findings:** Medication adherence had significant negative correlation with inattention scores on teacher-report forms (r = -0.27, P = 0.003) and poor economic status (P = 0.03). There was a positive correlation between medication adherence and history of psychopharmacological treatment in the family (P = 0.01), and father's education level (P = 0.001). Treatment adherence had no significant correlation with age, gender, comorbid disorders, mother's education, family history of ADHD, medication side effects, or parental concerns and beliefs about the necessity of drug use. **Conclusion:** The factors found to have a correlation with adherence should be taken in to account by clinicians so that adherence can be improved in their patients.

Key words: *Attention deficit/hyperactivity disorder, children, treatment adherence*

Key message: *In children with ADHD, adherence to medications is positively correlated with history of psychopharmacological treatment in the family and father's education level and negatively correlated with inattention scores on teacher-report forms and poor economic status.*

Children with ADHD often are diagnosed in primary school age. It is estimated that in as many as half of the affected children, the disorder persists beyond adolescence and throughout adulthood.[1] The severity of symptoms and treatment in childhood can predict a persistence of symptoms.[2] Appropriate treatment may improve quality of life significantly.[3] Medication treatment is the cornerstone of treatment in ADHD,

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Department of Psychiatry, Clinical Research Development Unit, Hajar Hospital, Sahrekord University of Medical Sciences, [1]Student Research Committee, Shahrekord University of Medical Sciences, [2]Department of Community Medicine, Shahrekord University of Medical Sciences, Shahrekord, Iran

Address for correspondence: Dr. Afsaneh Malekpour Tehrani
Department of Community Medicine, Shahrekord University of Medical Sciences, Shahrekord, Iran. E-mail: afsanehmalekpour@yahoo.com

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so medication nonadherence is an important dilemma in the treatment of children with ADHD. Adherence has an important role in achieving treatment effects.[4] For instance, students with high adherence to ADHD medication gain higher academic grades.[5]

Treatment adherence is defined by the extent to which a patient's behaviors correspond to the recommendations of the healthcare providers.[4] Varying definitions and methodological heterogeneity cause a wide range of outcomes on measurements of adherence to ADHD medications.[6] There is no definite method to measure treatment adherence in patients on medication treatment, and investigators have used the information on refill intervals or pill counts, patient/caregiver surveys, and semistructured interviews to measure adherence.[7-10] A variety of factors related to the patient, condition, therapy, healthcare system, and socioeconomic circumstances have been detected to affect treatment adherence in different studies.[4] Factors such as type of medication (short-acting or long-acting),[11] length of treatment,[12] medication side effects,[13,14] gender and age of the patient,[15] existence of comorbidity, and type of medical center (governmental or private)[16] have been reported to affect adherence of patients to treatment directions. Ferrin *et al*.[17] and Charach *et al*.[18] reported that adolescents' beliefs and attitudes about the medication have a higher impact on medication use than the real benefits and risks. The belief that medication is effective, in addition to the minimal experience of adverse effects, has been shown to increase willingness to use ADHD medication by adolescents.[19]

A previous study by the first author showed that 21% of primary school children suspected of having ADHD were on medication treatment.[20] A significant number of ADHD patients and their families do not have compliance to recommendations about drug use. Various factors may affect adherence to medical treatments in populations with different sociocultural backgrounds. So, recognition of these factors in different geographic areas can increase our knowledge in this regard, and using the results can help to implement practical approaches to increase adherence to treatment, thus improving the patient outcomes and decreasing treatment costs.

The aim of this study was to investigate factors related to treatment adherence in children with ADHD because we found no study addressing this issue in Iran. The factors considered included age and gender of the child, academic achievement, severity of ADHD symptoms, presence of comorbid disorders, type of insurance, economic status of the family, site of residence, parent's education, family history of ADHD, history of psychopharmacological treatment in the family, type of medication, medication side effects, and parent attitudes about psychopharmacology of ADHD. These factors were selected based on previous studies[11-19] and the clinical experience of the authors.

METHODS

This was a cross-sectional study. The study population was children with ADHD referred to child psychiatry clinic of University of Shhrekord, Iran in 2018. Inclusion criteria were 6- to 12-year-old children diagnosed with ADHD who were on medication treatment for at least 6 months. Children with seizures or neurodevelopmental disorders such as mental retardation or autism spectrum disorder were excluded. Participants were selected based on the convenience sampling method. The sample size was calculated by using appropriate formula based on a similar study.[12] A total of 118 children with ADHD entered the study. Cases were diagnosed by a child psychiatrist, using clinical interview based on Diagnostic and Statistical Manual of Mental Disorders version 5 (DSM 5) criteria. The comorbidity of oppositional defiant disorder and conduct disorder was assessed by clinical interview. The study was approved by the ethics committee of Shahrekord University of Medical Sciences.

Data were collected using demographic and clinical data questionnaire, Medication Adherence Report Scale (MARS), Belief about Medicines Questionnaire specific version (BMQ-specific), and Children Symptom Inventory-4 (CSI-4).

Demographic and clinical data questionnaire included age and gender of the child, academic achievement, education of father and mother, type of insurance, economic status of the family (good, average, poor), family history of ADHD, family history of psychopharmacological treatment, and type of medication of the child.

MARS is a self-report questionnaire which covers five common patterns of nonadherent behavior, scored on a five-point Likert scale (1 = always, 2 = often, 3 = sometimes, 4 = rarely, and 5 = never). The first statement of the MARS-5 is about unintentional nonadherence ("I forget to take my medication"), whereas the other four statements assess intentional nonadherence (e.g., ",I change the dosage of my medication"). Total scores range from 5 to 25, with higher scores indicating higher adherence. A score of 23 or more was defined as high adherence.[6] The Persian translation of this questionnaire has been used in Iran,[21] and its reliability is good (Cronbach's alpha = 0.94).[22] As children who are 6–12 years old usually use medications

with the supervision of the parents; in this study, the questionnaire was filled by the parents.

BMQ-specific is an 11-item questionnaire assessing the beliefs and concerns of patients about medication treatment.[23] It has three subscales. The first, necessity (five items), investigates patients' beliefs about the necessity of prescribed medication. The second, concern (five items), assesses their concerns about potential adverse outcomes from medication use. The third subscale is one item that addresses side effects, "I get unpleasant side effects from my ADHD medicines." This item was analyzed separately due to the known role of side effects of ADHD medication in nonadherence. The total score of this scale was not calculated because each subscale measures a different entity. Each item is scored from 1 (strongly disagree) to 5 (strongly agree). The Persian translation of this scale has been used in a study and its reliability was good (Cronbach's alpha = 0.71).[24] In this study, the parents completed the questionnaire about their beliefs regarding medication treatment of their children.

The CSI-4 is a commonly used behavior rating scale for children, whose items correspond to the symptoms of disorders defined by the Diagnostic and Statistical Manual of Mental Disorders 4th edition. It consists of parent forms and teacher forms. In the present study, we used the scales for ADHD (18 items; nine items for inattention subscale and nine for hyperactivity/impulsivity subscale), oppositional defiant disorder (ODD, eight items), and conduct disorder (CD, 10 items). Each item is scored from 0 (never) to 3 (frequently) and assesses the severity of the symptoms quantitatively. The validity and reliability of Persian translation have been approved.[25]

Parents completed the questionnaires in the clinic and took the teacher form of the questionnaires to school, which was completed by the teacher and returned to the clinic. Data were entered to the Statistical Package for the Social Sciences (SPSS) software, version 22.0. We used descriptive statistics, *t*-test, Mann–Whitney test, Kruskal–Wallis test, Chi-square test, Pearson or Spearman correlation coefficient, analysis of variance, and linear regression to analyze the data.

RESULTS

A total of 118 children with ADHD were included in the study. The mean (±SD) age of participants was 8.89 ± 1.9 years, and 98 (82.4%) were boys. The mean score of medication adherence was 19.53 ± 3.2 and 25 patients (21.2%) had high adherence to treatment (score of 23 or higher). Most of the patient received methylphenidate alone (51.7%) or methylphenidate in combination (39.8%) with risperidone, atomoxetine, or clonidine. Because of few number of patients on medicines other than methylphenidate, we did not conduct statistical analysis as the results were not generable. The most frequently reported side effect was decreased appetite (19.5%). A total of 18 had comorbidity with ODD and 100 had no comorbidity.

Based on the results of Spearman' test, there was no significant correlation between age (r = -0.11, P = 0.21) and adherence to treatment, but there was a significant inverse correlation between inattention scores based on teacher report and adherence to treatment (r = -0.29, P = 0.001). In addition, the relationship between adherence to treatment and gender, academic grade, insurance status, comorbidity, family history of ADHD, and family history of drug treatment for mental disorders were evaluated [Table 1]. Table 1 shows that there was no significant relationship between having comorbidity and adherence to treatment (P = 0.55). Also, there was no significant relationship between having a family history of ADHD and adherence to treatment (P = 0.58), but there was a significant positive relationship between having a family history of psychopharmacological treatment and adherence to treatment (P = 0.01).

The results also showed that there was a significant relationship between poor economic status and lower adherence to treatment compared to average economic status (P = 0.03). There was no significant difference between average and good or between good and poor economic status regarding adherence to treatment (P = 0.85 and P = 0.35, respectively) [Table 2 and Figure 1].

Table 1: Correlation between sociodemographic variables and adherence to treatment

Variable		MARS score (mean±SD)	*P*
Gender	Girl (*n*=20)	19.50±3.21	0.74*
	Boy (*n*=98)	19.70±3.72	
Academic achievement	Good (*n*=39)	19.25±3.50	0.17¶
	Fair (*n*=60)	20.05±3.14	
	Poor (*n*=19)	18.47±2.71	
Insurance	No insurance (*n*=3)	21.33±0.57	0.38¶
	Social security (*n*=89)	19.61±3.10	
	Health (*n*=12)	19.83±3.80	
	Other (*n*=14)	18.35±4.18	
Comorbidity	Yes (*n*=18)	20.05±3.31	0.55*
	No (*n*=100)	19.44±3.29	
Family history of ADHD	Yes (*n*=84)	19.42±3.47	0.58*
	No (*n*=34)	19.79±3.34	
Family history of drug treatment	Yes (*n*=41)	20.65±2.89	0.01*
	No (*n*=77)	18.93±3.40	

*Based on Mann-Whitney test, ¶Based on Kruskal-Wallis test.
MARS: Medication Adherence Report Scale, ADHD: Attention Deficit Hyperactivity Disorder

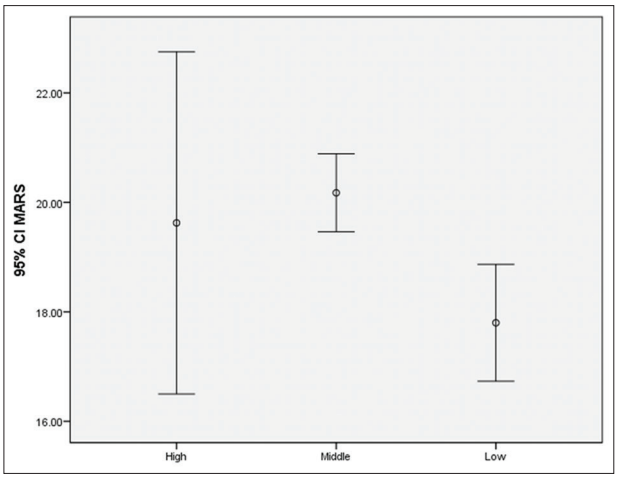

Figure 1: Medication Adherence Report Scale scores in economic status groups

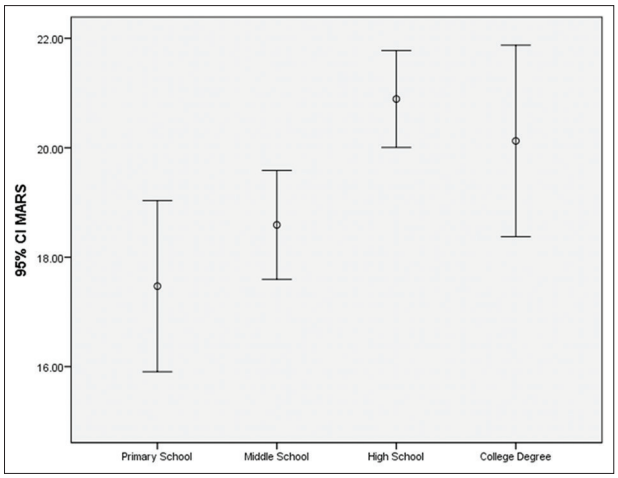

Figure 2: Correlation between father education and treatment adherence. MARS: Medication Adherence Report Scale

Analysis of variance showed that there was a significant correlation between father education and treatment adherence ($P = 0.001$); in families with fathers who had graduated from high school, there was higher treatment adherence compared to other educational levels [Figure 2].

Table 3 shows that there was no significant correlation between BMQ necessity scores or BMQ side effect scores and treatment adherence $P = 0.15$ and $P = 0.96$, respectively, but there was a significant correlation between BMQ concern scores and treatment adherence ($P = 0.03$) [Figure 2].

Linear regression was used to evaluate the relationship between different variables and treatment adherence. Those variables whose relationship with adherence had a *P* value less than 0.1 were entered in the analysis. The analysis showed that the father's education ($P <0.001$), insurance type ($P = 0.009$), history of psychopharmacologic treatment in family ($P = 0.016$), and the inattention scores from the teacher ($P = 0.04$) had a statistically significant relationship with treatment adherence (MARS score). The relation between BMQ concern and adherence was not significant ($P = 0.07$) [Table 4].

DISCUSSION

Results of the present study showed that only 21.2% of participants had high treatment adherence (92–100% of maximal MARS scores). A similar study in Sweden showed high adherence behavior in 46.5% of cases.[6] Treatment adherence was similar in boys and girls, as in the results of the study of Hwang and Lee done in Korea.[16] Also, there was a negative correlation between inattention scores based on teacher forms and treatment adherence, which may be indicating that inattention in the classroom is more frequent in children with irregular drug use.

Table 2: Correlation between economic state and adherence to treatment

Economic state	MARS score	Comparisons¶ Between Socieconomic Groups	*P*
Good (*n*=8)	19.62±3.67	Good with average	0.85
Average (*n*=80)	20.17±3.19	Good with poor	0.35
Poor (*n*=30)	17.80±2.85	Average with poor	0.03*

¶Comparison of groups with Dunn's test, *Statistically significant. MARS: Medication Adherence Report Scale, ADHD: Attention-deficit hyperactivity disorder

Table 3: Correlation between BMQ subscale scores and treatment adherence

Variables	Mean±SD MARS score	Correlation coefficient	*P*
BMQ necessity score	15.19±5.24	-0.13	0.15
BMQ side effect score	3.15±1.22	0.005	0.96
BMQ concern score	18.00±3.61	-0.20	0.02*

*Statistically significant. MARS: Medication Adherence Report Scale, BMQ: Belief about Medicines Questionnaire

In this study, unlike in the study of Hwang and Lee, treatment adherence was correlated with the type of insurance.[16] Also, results showed that families with poor economic status had lower treatment adherence compared to other economic groups. These results suggest that economic factors have an important role in drug adherence in Iran.

There was a significant positive correlation between the history of psychotropic medication use in the family and higher adherence to treatment. This may be related to higher knowledge or less concern about possible harms of psychotropic medicines in these families. Also, the results showed that there was no significant correlation between parental concerns and beliefs about the necessity of medication use and treatment adherence. But Charach and Fernandez in their study about factors affecting the improvement of treatment compliance reported that increasing the knowledge of patients and families leads to improved treatment adherence.[13]

Table 4: The relationship among MARS score and different variables

	Standardized Coefficients	*P*	95% Confidence Interval for B	
	Beta		Lower Bound	Upper Bound
Insurance	-0.238	0.009*	-1.924	-0.275
Comorbidity	0.055	0.539	-1.111	2.115
Academic achievement	0.155	0.113	-0.231	1.579
father.education	0.344	<0.0001*	0.246	1.875
family.history	0.020	0.813	-1.088	1.384
Inattention (teacher score)	-0.232	0.041*	-0.234	-0.005
Conduct disorder (mother score)	0.149	0.200	-0.038	0.179
Conduct disorder (teacher score)	-0.157	0.130	-0.237	0.031
BMQ concern score	-0.122	0.227	-0.291	0.070
BMQ side effect score	0.044	0.842	-0.194	0.079
Family history of drug therapy	-0.212	0.016*	-2.635	-0.205

*$P < 0.05$. MARS: Medication Adherence Report Scale; BMQ: Belief about Medicines Questionnaire

Results showed a positive correlation between fathers' education and treatment adherence; children of high school graduated fathers had more treatment adherence compared to other educational groups. This correlation did not exist for mothers' education. This finding may show the important role of fathers in treatment adherence of their children in the region of the study.

In this study, the correlation between the side effect of medicines and treatment adherence was not significant. This was unlike the results of the study of Charach *et al*. which reported that many patients discontinue their medication in adolescence because of medication side effects.[18] Also, Ferrin *et al*.[17] and Charach *et al*.[18] reported that adolescents' beliefs and attitudes about drugs for ADHD have a higher impact on medication use than the real benefits and risks. The difference may be due to the younger age group of the patients in our study, which usually consume drugs under the supervision of their parents.

Limitations

This study was conducted on a population of children with ADHD attending a child psychiatry clinic, so its results may not be generalizable to families who have completely discontinued their child`s medications and have not returned to the psychiatry clinic. Also, adherence in this study was measured by a self-report questionnaire which may not be as accurate as direct measurement. These limitations should be considered in the interpretation of the results.

CONCLUSION

A variety of sociodemographic factors may affect parental compliance with medical treatment in children with ADHD. These factors should be considered to improve treatment adherence in children with ADHD. It is suggested that socioeconomic factors and father's education have an important role in ADHD medication adherence in Iran.

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Conflicts of interest

There are no conflicts of interest.

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Original Article

Cognitive Schemas among Mental Health Professionals and Other Health Professionals

Saloni Dang, Pragya Sharma[1], Lokesh Singh Shekhawat[1]

ABSTRACT

Objective: Research has demonstrated that dysfunctional cognitive schemas among mental health professionals (MHPs) may influence the ability to process clients' information in an unbiased manner, may be a substantial source of error in psychotherapeutic ratings, hinder accurate reporting of clients' cognitive schemas, and have a detrimental effect on therapeutic alliance. The present study compared cognitive schemas among MHPs and other health professionals (OHPs). **Materials and Method:** A sample of 128 professionals (64 MHPs and 64 OHPs) was chosen using a purposive sampling technique. The study used a cross-sectional observational research design. The Young Schema Questionnaire Short Form 3rd version was administered on the consenting participants. **Results:** OHPs had higher maladaptive schemas on the domains of abandonment and defectiveness. Overall, males had more maladaptive schemas in the domains of abandonment, mistrust, entitlement/superiority, admiration/recognition seeking, and emotional inhibition. Among MHPs, a weak positive correlation of years of experience with vulnerability to harm or illness was seen. Among other health professionals, a significant but weak positive correlation of age with admiration/recognition seeking was seen. **Conclusion:** This study highlights the presence of maladaptive schemas in health professionals and the need for incorporation of training modules to address these.

Key words: *Cognitive schemas, health professionals, mental health professionals*

Key messages: *The present study found more maladaptive schemas in other health professionals as compared to mental heath professionals. This understanding shall aid in the development of measures incorporated during the training period, resulting in better therapeutic competence of the health professionals.*

Schemas are mental frameworks representing one's knowledge of and assumptions about the world. They can be thought of as a broad organizing principle that serves as a guide for interpreting new information about the self and the environment and solving problems. It is the mode by which the environment is broken down and organized into its many psychologically relevant facets. On the basis of schemas, individuals are able to orient themselves in relation to time and space and to categorize and interpret their experiences in a meaningful way.[1]

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Department of Psychiatry, All India Institute of Medical Sciences (AIIMS), [1]Department of Psychiatry, Dr. Ram Manohar Lohia Hospital, New Delhi, India

Address for correspondence: Dr. Pragya Sharma
Department of Psychiatry, Dr. Ram Manohar Lohia Hospital, New Delhi - 110 001, India. E-mail: pragya.cp@gmail.com

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A considerable amount of studies demonstrate the presence of maladaptive cognitive schemas as a potential vulnerability factor in the development of psychological problems and psychopathology or psychiatric disorders.[2] While many types of research have been conducted on patient populations, attention has seldom been directed toward studying cognitive schemas among mental health professionals (MHPs). Ideally, MHPs who are in close contact with clients should have little or no maladaptive schemas as these are likely to prejudice or bias their responses and/or affect the treatment quality provided by them.

In the mental health profession, with regard to psychotherapy, therapist and client collaborate to attain mutually agreed upon goals in order to retard, modify, or alleviate distress symptoms suffered by the patient/client. The therapeutic process promotes subjective experiencing of both partners and continuously generates new patterns of self- and interactional regulation.[3] Dysfunctional cognitive schemas may create cognitive risk among MHPs and influence their ability to process patients' information in an unbiased manner. This may be a substantial source of error in psychotherapeutic ratings.[4] Further, psychotherapists may have discrepancies in reporting cognitive schemas of clients.[5] For the therapist to be able to provide and productively contribute to this relational space—that is, to effectively contribute to potential corrective experiences in his or her clients—it could be argued that certain forms of therapeutic competence and emotional maturity are keys.[3]

There has been only one study on cognitive schemas in trainee MHPs.[6] The participants included trainee MHPs of both genders, in a tertiary postgraduate training institute (n = 100) in India. The results on Young Schema Questionnaire Short Form 2 (YSQ-2) indicated that males had higher maladaptive schemas across all schema domains, viz., disconnection/rejection, impaired autonomy, impaired limits, other directedness, and over-vigilance. Further, psychiatrists had higher maladaptive schemas than psychologists, and age was weakly but positively correlated with the schema of self-sacrifice and unrelenting standards. This study, however, had limitations, such as it was conducted only among the mental health trainees belonging from the same tertiary postgraduate training institute. However, we proposed to do the first ever study on comparing the early maladaptive schemas (EMS) on MHPs (already trained and not undergoing training at present) and other health professionals (OHPs) (a sample not included in the above-mentioned study). Including a comparison group is likely to yield more information and further, studying cognitive schemas among professionals is critical as trainees, in the process of training, are likely to undergo experiences that may change their patterns of thinking and behaving. However, the schemas among professionals may be more stable and resistant to change.

Thus, it was imperative to study the cognitive schemas of MHPs in order to further intervene in this regard to ensure maximum competence by the MHPs, resulting in client's improvement. Our objective was to study OHPs and compare the cognitive schemas in MHPs and OHPs. We hypothesized that there would be higher rates of maladaptive schemas among OHPs as compared to MHPs.

MATERIALS AND METHODS

After receiving the approval from Institutional Ethics Committee, qualified professionals, including both mental health (qualified professionals working in a clinical mental health care setting) and other health (qualified professionals working with patients with medical illnesses), of either gender, working in a clinical health care setting were approached and explained the nature of the study. At N = 128, the effect size is medium (0.5), α = 0.05, power = 0.80 (64 MHPs and 64 OHPs). Purposive sampling was done owing to the limited number of available and accessible MHPs. Health professionals working in various tertiary care centers were approached face-to-face and explained the nature of the study. A total of 138 professionals were approached, out of which 10 declined to participate. Six reported that the schema questionnaire incorporated personal questions they did not wish to answer, three reported lack of time as the reason, and for one professional, the reason was unknown.

Each participant who consented to participate signed a written informed consent after reading the information sheet and clarifying any doubts. Thereafter, he/she was requested to give his/her socio-demographic information including age, sex, marital status, educational qualification, current specialty, years of experience, and then complete the research tool, i.e., Young Schema Questionnaire Short Form 3 rd edition (YSQ-S3).[7] The YSQ was developed by Jeffery E. Young in 1990. YSQ-S3, a 90-item self-report questionnaire, is scored on a six-point Likert scale. It assesses 18 maladaptive schemas divided into five domains, namely disconnection and rejection, impaired autonomy and performance, impaired limits, other-directedness, over-vigilance, and inhibition. The YSQ-S3 has also been shown to have good internal consistency, a supported factor structure, and solid construct validity.[8] All data were coded by an ID number and saved in password-protected files, and strict confidentiality was maintained. Statistical analysis and comparison of the data were done using

mean, standard deviation, Chi-square and Student's t-test at an α value of 0.05.

RESULTS

The sample comprised 128 participants of whom 64 were MHPs and 64 were OHPs. The two groups differed significantly on age, years of experience, and male/female ratio. On the cognitive schemas, a significant difference was seen between MHPs and OHPs on the subdomains of abandonment and defectiveness/unlovability. No significant difference was found between MHPs and OHPs among any other domains [Table 1].

Upon analysis across gender, a significant difference was seen between males and females, with males having more maladaptive schemas than females in the subdomain of abandonment, mistrust, entitlement/superiority, admiration/recognition seeking, and emotional inhibition [Table 2]. Among MHPs, no significant difference was found between males and females on any of the domains of EMS [Table 3]. Among OHPs, a significant difference was seen between males and females with males having more maladaptive schemas than females in the subdomains of mistrust, self-sacrifice, admiration/recognition seeking, and unrelenting standards [Table 4].

Results indicated a significant but weak negative correlation of age with social isolation/alienation. No significant correlation was found between years of experience and maladaptive schemas. Among MHPs, results indicated a significant but weak positive correlation of years of experience with vulnerability to harm or illness. No significant correlation was found between age and EMS. Among OHPs, results indicated a significant but weak positive correlation of age with admiration/recognition seeking. No significant correlation was found between years of experience and EMS [Table 5].

DISCUSSION

The present research was aimed to study and compare cognitive schemas in MHPs and OHPs. Results indicated that OHPs had significantly higher maladaptive schemas in the domains of abandonment and defectiveness/unlovability. People with abandonment schema perceive that the presence of important people in their life is unlikely as they are emotionally unpredictable, they are only present erratically, they will die, or they will leave the person for someone better. People with defectiveness/shame schema feel that they are flawed, bad, inferior, or worthless and that they would be unlovable to others if exposed. As these represent commonly held irrational beliefs, it can be hypothesized that health professionals working in a mental health setting with their good knowledge of concepts of irrational beliefs may be better able to modify or restructure their own distorted perceptions or views about oneself, others and the world during their training and work experience.

On the other hand, OHPs are unlikely to undergo any similar experience and lack insight into these

Table 1: Comparison of EMS among MHPs and OHPs

EMS		MHPs Mean±SD (*n*=64)	OHPs Mean±SD (*n*=64)	*t*	*P*
Disconnection and rejection	Abandonment	1.95±0.82	2.26±0.84	−2.12*	0.04
	Mistrust	2.10±0.78	2.22±0.77	−0.88	0.38
	Emotional deprivation	1.73±0.80	2.32±3.13	−1.48	0.14
	Social isolation/alienation	2.17±0.87	2.24±0.94	−0.467	0.64
	Defectiveness/unlovability	1.64±0.64	1.95±0.86	−2.33*	0.02
Impaired autonomy and performance	Practical incompetence/dependence	1.72±0.62	1.77±0.66	−0.41	0.68
	Vulnerability to harm or illness	1.70±0.69	1.85±0.66	−1.29	0.20
	Enmeshment	1.94±0.76	2.12±0.63	−1.43	0.15
	Failure to achieve	1.80±0.73	1.99±0.09	−1.28	0.20
Impaired limits	Entitlement/superiority	3.08±2.56	2.98±1.08	0.31	0.77
	Insufficient self-control/self-discipline	2.65±0.89	2.62±0.83	0.16	0.87
Other-Directedness	Subjugation	2.32±0.85	2.18±0.68	1.08	0.28
	Self-sacrifice	3.23±0.90	3.13±1.07	0.59	0.56
	Admiration/recognition-seeking	2.63±0.82	2.70±1.02	−0.48	0.63
Over-vigilance and inhibition	Pessimism/worry	2.23±0.75	2.45±0.75	−1.64	0.10
	Emotional inhibition	2.56±0.92	2.76±0.84	0.59	0.21
	Unrelenting standards	3.30±0.87	3.25±0.97	0.31	0.76
	Self-punitiveness	2.61±0.97	2.71±0.95	-0.61	0.54

*Significant at the 0.05 level, EMS – Early maladaptive schemas; MHPs – Mental health professionals; OHPs – Other health professionals

Table 2: Comparison of EMS among males (*n*=79) and females (*n*=49) in both MHPs and OHPs

EMS		Males Mean±SD	Females Mean±SD	*t*	*P*
Disconnection and rejection	Abandonment	2.23±0.90	1.89±0.71	2.23*	0.03
	Mistrust	2.31±0.80	1.91±0.67	2.95**	*P*<0.01
	Emotional deprivation	2.22±2.84	1.71±0.79	1.23	0.22
	Social isolation/alienation	2.27±1.02	2.09±0.67	1.12	0.27
	Defectiveness/unlovability	1.87±0.85	1.73±0.57	1.49	0.14
Impaired autonomy and performance	Practical incompetence/dependence	1.75±0.68	1.73±0.57	0.16	0.87
	Vulnerability to harm or illness	1.83±0.70	1.70±0.62	1.041	0.30
	Enmeshment	2.06±0.70	1.99±0.71	0.57	0.57
	Failure to achieve	1.91±0.92	1.88±0.68	0.21	0.84
Impaired Limits	Entitlement/superiority	3.33±2.38	2.41±0.92	2.25*	0.03
	Insufficient self-control/self-discipline	2.67±0.87	2.58±0.84	0.57	0.57
Other-directedness	Subjugation	2.27±0.78	2.22±0.75	0.32	0.75
	Self-sacrifice	3.27±1.02	3.02±0.92	1.42	0.16
	Admiration/recognition-seeking	2.84±0.89	2.39±0.89	2.79**	<0.01
Over-vigilance and inhibition	Pessimism/worry	2.42±0.78	2.22±0.71	0.91	0.15
	Emotional inhibition	2.82±0.83	2.41±0.92	2.61**	0.01
	Unrelenting standards	3.3785±0.87	3.10±0.97	1.69	0.09
	Self-punitiveness	2.76±0.98	2.49±0.89	1.59	0.11

*Significant at the 0.05 level, **Significant at the 0.01 level; EMS – Early maladaptive schemas; MHPs – Mental health professionals; OHPs – Other health professionals

Table 3: Comparison of EMS among males (*n*=31) and females (*n*=33) in MHPs (*N*=64)

EMS		Males Mean±SD	Females Mean±SD	*t*	*P*
Disconnection and rejection	Abandonment	2.07±0.91	1.84±0.72	1.10	0.28
	Mistrust	2.25±0.79	1.96±0.76	1.49	0.14
	Emotional deprivation	1.81±0.76	1.6±0.84	0.82	0.42
	Social isolation/alienation	2.26±1.09	2.08±0.60	0.82	0.42
	Defectiveness/unlovability	1.69±0.71	1.59±0.58	0.63	0.53
Impaired autonomy and performance	Practical Incompetence/dependence	1.75±0.68	1.69±0.56	0.37	0.71
	Vulnerability to harm or illness	1.75±0.71	1.65±0.67	0.54	0.59
	Enmeshment	2.00±0.76	1.89±0.76	0.59	0.56
	Failure to achieve	1.76±0.83	1.84±0.65	−0.44	0.66
Impaired limits	Entitlement/superiority	3.70±3.51	2.49±0.79	1.92	0.06
	Insufficient self-control/self-discipline	2.79±0.87	2.51±0.90	1.29	0.20
Other-directedness	Subjugation	2.42±0.84	2.23±0.86	0.89	0.38
	Self-sacrifice	3.23±0.93	3.23±0.88	−0.02	0.99
	Admiration/recognition-seeking	2.81±0.81	2.45±0.79	1.82	0.07
Over-vigilance and inhibition	Pessimism/worry	2.28±0.72	2.19±0.79	0.45	0.65
	Emotional inhibition	2.75±0.84	2.39±0.97	1.58	0.12
	Unrelenting standards	3.39±0.92	3.21±1.01	0.72	0.47
	Self-punitiveness	2.69±0.97	2.53±0.97	0.68	0.50

EMS – Early maladaptive schemas; MHPs – Mental health professionals

psychological constructs and concepts. This hypothesis of self-restructuring of cognitive distortions of MHPs has previously been described in the process of "schema healing" in health workers.[9,10] A model proposed that individuals are (unconsciously) driven to occupations with similar dynamics and structures to those "toxic" environments and relationships that they experienced during childhood, with the aim of healing their EMS and the maladaptive coping strategies that resulted from them.[11] The intense interpersonal nature of health care work provides the ideal environment for the perpetual "re-enactment" of these EMS and maladaptive coping strategies to take place. The results of present study are consistent with the process of schema healing in the sense that the common distortions of abandonment and defectiveness/unlovability are rectified among MHPs when clinicians witness events and/or environment in which their schemas can be re-enacted, resulting in the process of schema healing.

Results of the study indicated that there was no significant difference between the maladaptive

Table 4: Comparison of EMS among males (*n*=48) and females (*n*=16) in OHPs (*N*=64)

EMS		Males Mean±SD	Females Mean±SD	*t*	*P*
Disconnection and rejection	Abandonment	2.34±0.88	2.01±0.66	1.35	0.18
	Mistrust	2.35±0.81	1.81±0.45	2.57**	0.01
	Emotional deprivation	2.49±3.58	1.84±0.67	0.72	0.48
	Social isolation/alienation	2.28±0.98	2.11±0.83	0.63	0.53
	Defectiveness/unlovability	1.99±0.92	1.83±0.66	0.67	0.51
Impaired autonomy and performance	Practical incompetence/dependence	1.75±0.69	1.81±0.60	−0.33	0.75
	Vulnerability to harm or illness	1.88±0.70	1.79±0.53	0.46	0.65
	Enmeshment	2.10±0.65	2.19±0.56	−0.50	0.62
	Failure to achieve	2.00±0.96	1.95±0.77	0.20	0.84
Impaired limits	Entitlement/superiority	3.09±1.18	2.64±0.62	1.46	0.15
	Insufficient self-control/self-discipline	2.59±0.87	2.73±0.73	−0.57	0.57
Other-directedness	Subjugation	2.17±0.74	2.20±0.49	−0.17	0.87
	Self-sacrifice	3.30±1.08	2.59±0.85	2.40*	0.02
	Admiration/recognition-seeking	2.85±0.96	2.25±1.07	2.12*	0.04
Over-vigilance and inhibition	Pessimism/worry	2.51±0.81	2.29±0.53	1.02	0.31
	Emotional inhibition	2.86±0.82	2.45±0.83	1.73	0.09
	Unrelenting standards	3.37±0.84	2.87±0.86	2.07*	0.04
	Self-punitiveness	2.81±0.99	2.41±0.74	1.46	0.15

*Significant at 0.05 level, **Significant at 0.01 level, EMS – Early maladaptive schemas; OHPs – Other health professionals

Table 5: Correlation between age and years of experience with domains of EMS in both MHPs and OHPs

EMS		MHPs and OHPs		MHPs		OHPs	
		Age	Years of experience	Age	Years of experience	Age	Years of experience
Disconnection and rejection	Abandonment	−0.17	−0.13	−0.13	−0.06	−0.12	−0.15
	Mistrust	−0.06	0.04	0	0.12	−0.17	−0.03
	Emotional deprivation	0.019	0	0.14	0.14	0.10	0.12
	Social isolation/alienation	−0.18*	0.00	−0.21	−0.09	−0.19	0.37
	Defectiveness/unlovability	−0.07	−0.07	−0.03	0.13	0.02	0.12
Impaired autonomy and performance	Practical incompetence/dependence	0	0.02	0	0.04	0.04	0.07
	Vulnerability to harm or illness	0.09	0.14	0.19	0.27*	0.02	0.13
	Enmeshment	−0.09	−0.08	−0.10	−0.057	0.10	0.12
	Failure to achieve	0.03	0.07	0.058	0.16	0.11	0.17
Impaired limits	Entitlement/superiority	0.07	0.10	0.38	0.40	−0.23	0.03
	Insufficient self-control/self-discipline	−0.06	−0.02	−0.08	−0.02	−0.04	−0.14
Other-directedness	Subjugation	0.04	0.07	0.02	0.05	−0.03	−0.04
	Self-sacrifice	0.02	0.04	0.06	0.05	−0.10	−0.07
	Admiration/recognition-seeking	−0.05	0.02	0.07	0.11	−0.27*	−0.16
Over-vigilance and inhibition	Pessimism/worry	−0.10	−0.06	−0.05	0	−0.08	−0.03
	Emotional inhibition	−0.02	0.01	0.05	0.07	−0.10	0.05
	Unrelenting standards	0.06	0.12	0.12	0.14	−0.11	0.10
	Self-punitiveness	0.07	0.13	0.17	0.23	−0.10	−0.03

*Significant at the 0.05 level, EMS – Early maladaptive schemas; MHPs – Mental health professionals; OHPs – Other health professionals

schemas of MHPs and OHPs across all other domains, namely mistrust, emotional deprivation, social isolation, practical incompetence/dependence, vulnerability to harm or illness, enmeshment, failure to achieve, entitlement/superiority, insufficient self-control/self-discipline, subjugation, self-sacrifice, admiration/recognition seeking, pessimism/worry, emotional inhibition, unrelenting standards, and self-punitiveness. It can be hypothesized that similarities in the training of MHPs and OHPs in a clinical setting may influence thinking and behavior among health professionals in a similar way. However, this is not supported by any previous research and requires further research.

EMS among males and females

Our findings further indicated that, upon analysis of gender differences in the total sample, male professionals had higher maladaptive schemas when compared to female professionals in the domains of abandonment, mistrust, entitlement/superiority, admiration/recognition seeking, and emotional inhibition. Similar results were observed upon subgroup analysis for OHPs. Among OHPs, males had significantly

higher maladaptive schemas in the domains of mistrust, self-sacrifice, admiration/recognition seeking, and unrelenting standards.

The previous researchers have studied cognitive schemas in university students and people with a history of substance abuse, while our study included health professionals. Previous studies report mixed evidence with respect to the presence of higher maladaptive cognitive schemas across males and females. While some studies report higher maladaptive schemas among males scattered across domains of entitlement, mistrust/abuse, dependence/incompetence, insufficient self-control/discipline, failure to achieve, dependence on others, vulnerability to harm or relational enmeshment,[12-14] other studies report presence of higher maladaptive schemas among females scattered across domains abandonment, defectiveness, dependence, emotional deprivation, enmeshment, failure, self-sacrifice, social isolation, subjugation emotional deprivation, social isolation, defectiveness, failure, vulnerability to disease and pain, and orientation to the other.[15-17]

The difference in our findings as compared to the findings of previous research could be possibly due to the difference in the variety of population under study. In addition, we assume that the difference in the EMS in terms of gender may be attributed to the reflection of role expectations of both the genders.[18] Researchers have claimed that stereotypes about men emphasize traits of autonomy and efficacy, whereas stereotypes about women stress on social relations.[19] Another research emphasized that male role promotes self-interest, self-assertion, and self-protection and places less emphasis on relationships with others, while female role foster community and other interests, with less of a focus on agency and self-development.[20] Thus, it may be inferred that the difference in maladaptive schemas among males and females results from the different gender roles assigned by one's culture.

Upon subgroup comparison among MHPs, no significant difference was found between males and females on any of the domains of EMS. A previous research found higher maladaptive schemas among males when compared to females across all schema domains, including disconnection/rejection, impaired autonomy, impaired limits, other-directedness, and over-vigilance among trainee MHPs.[6] We propose that the different findings in the previous study possibly reflect the difference in the population of health professionals. Although this study assessed cognitive schemas among mental health trainees, our study looked at professionals pursuing clinical practice after successful completion of their training.

Relationship of EMS with age

The research findings also indicated a weak negative correlation of age with social isolation/alienation in the total sample. This is a contradictory finding among health professionals, as various studies have demonstrated that older people are particularly vulnerable to social isolation and the resultant loneliness impacts their health, well-being, and quality of life.[21-23] It can be hypothesized that an inverse relation in social isolation and age in health professionals could result from the demanding environment of professionals during their training, which allows little time to interact with others. However, with age, their social interaction and involvements tend to be better.

Additionally, previous research has also indicated that even EMS can be modified by short-term psychotherapy or even community settings.[24] Furthermore, in the workplace, there are multiple social groups with which an individual might identify.[25] Thus, it can also be hypothesized that the health profession provides an avenue to the professionals with a wide variety of social groups with whom the professional may identify and possibly have fruitful interpersonal experiences which therefore lead to a reduction in the schema of social isolation. Among MHPs, no significant correlation was found between age and EMS.

Among OHPs, results indicated a significant but weak positive correlation of age with admiration/recognition seeking. It can be hypothesized that in the Indian setting, there is an excessive emphasis on becoming a doctor as it is seen as a dignified, noble, and superior position in our society. This may lead to some distorted expectations of the profession during the childhood itself. With the kind of beliefs about the health profession as a superior profession, the distorted perceptions are likely to perpetuate and be manifested as a need for recognition within the family as well as others outside the family. However, since we could find no previous study assessing the schemas among health professionals despite an in-depth search, further work needs to be done in this regard before drawing any conclusions.

Relationship of EMS with years of experience

No significant difference between any of the schema domains and years of experience was found in the total sample. When subgroup analysis was done, among MHPs, results indicated a significant but weak positive correlation of years of experience with vulnerability to harm or illness. Previous research has noted not only the inherent nature of stress in psychotherapy but also identified the occurrence of secondary stress symptoms in psychotherapists, especially those who deal with traumatic stress.[26]

Being in a mental health profession, one is exposed to and required to manage emotional turmoil of their patients, which may lead to feelings of vulnerability.[27-34] Further, we hypothesize that MHPs are exposed to a variety of mental illnesses which may lead to the development or vulnerability of fear of developing an illness themselves. Having seen both genders of different ages suffer from a wide range of illnesses, they realize that no one is immune to these disorders. No significant correlation was found between years of experience and EMS among OHPs.

STRENGTHS AND LIMITATIONS

Strengths

1. To the best of our knowledge, this is the first study on Indian health professionals which compared EMS among MHPs and OHPs, which included a considerably large sample size as well as a comparison group.
2. The study has important implications for the clinical practice by health professionals. In order for the MHPs to be able to provide and productively contribute to potential corrective experiences in their patients, it can be argued that certain forms of therapeutic competence and emotional maturity are key. Our study aimed to compare EMS, which, if present are likely to affect the treatment quality provided by MHPs.

Limitations

1. The results of the study are preliminary because of the cross-sectional design and use of purposive sampling method.
2. The measure of schema was a self-report questionnaire that is subject to bias, demand characteristics, social desirability, and response sets, all of which affect the validity of the findings. Further, MHPs are very likely to be familiar with the construct being measured and the tool used in our study which could have led to an element of bias.
3. The questionnaire could not be administered to all the participants in the presence of the researcher. Even though the researcher attempted to clarify doubts, some items could have been misunderstood.
4. There was a disproportionately higher percentage of males in the sample. The inequality in sample size regarding gender could limit the generalizability of the findings.
5. The number of participants in each specialty was also unequal, which limited us to carry out subgroup comparisons.
6. The YSQ-S3 gives raw scores and mean scores for each subscale. The higher the score, the more maladaptive is the schema. In the absence of any cut-off score, no meaningful interpretation regarding the two groups could be made.
7. The number of hypothesis testing was not controlled, which may have increased the probability of chance associations.
8. The study did not include any measures to assess and exclude the health of professionals who may have subclinical or clinically significant anxiety or depressive symptoms. Thus, a possibility of having included a mixed sample cannot be ruled out.
9. Further research is warranted on the impact of maladaptive schemas present in health professionals on their capability to establish an empathic therapeutic alliance with their patients and finally, on the patient satisfaction and overall improvement.

SUMMARY AND CONCLUSION

The present study, to the best of our knowledge, is the first to explore cognitive schemas among health professionals in India. It was hypothesized that there would be no significant difference in the EMS between MHPs and OHPs.

The findings of the study show statistically significant difference among health professionals with OHPs having more maladaptive schemas as compared to MHPs on the domains of abandonment and defectiveness. The findings also indicate that males had more maladaptive schemas as compared to females in the domains of abandonment, mistrust, entitlement/superiority, admiration/recognition seeking, and emotional inhibition. Lastly, the age of health professionals was weakly negatively correlated to social isolation. Among MHPs, results indicated a weak positive correlation of years of experience with vulnerability to harm or illness. Among OHPs, results indicated a significant but weak positive correlation of age with admiration/recognition seeking.

The current study found comparatively lower EMS (better cognitive schemas) among MHPs as compared to OHPs in India and adds to our understanding about the nature of cognitive schemas among health professionals. Even though there are several limitations, the study offers an opportunity for future studies to advance our understanding of the nature of cognitive schemas among health professionals. This understanding shall aid in the development of measures that can be incorporated during the training period itself, resulting in a better therapeutic competence of the health professionals. Both MHPs and OHPs can undergo suitable, group or individual psychological interventions during their early training years such that the therapeutic process may aid in schema healing and/or alteration of maladaptive schemas.

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Conflicts of interest

There are no conflicts of interest.

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Brief Research Communication

Adaptation and Validation of Parental Behavioral Scale for Children with Autism Spectrum Disorders to Kannada

Karukayil Sivadas Gayathri, Shivani Tiwari

ABSTRACT

Background: Assessment of parenting behaviors in parents of children with autism is crucial in the assessment and treatment processes. Efficient tools and instruments with known psychometric properties are needed to assess parenting behaviors in parents of children with autism. Given the lack of such tools in the Indian context, there is a need to develop and/or adapt tools/scale to assess the parenting behaviors in regional languages. **Aim of the Study:** To adapt, translate and validate the Parental behavioral scale for Autism spectrum disorder (PBS-A) to Kannada. **Materials and Methods:** The original version of PBS-A was given to three healthcare professionals to examine the sociocultural suitability of items. The linguistic adaptation was performed through a forward-backward translation scheme. It was then administered on 50 parents of children with autism. Further, the psychometric properties of PBS-A Kannada version were examined, viz. acceptability, test-retest reliability and internal consistency. **Results:** Kannada version of PBS-A showed an excellent test-retest reliability (ICC = 0.993) and an overall high level of internal consistency ($\alpha = 0.93$). The acceptability was found to be good among the Speech-language pathologists (SLP) ratings ($k = 0.485$). **Conclusions:** Kannada version of PBS-A is a valid and reliable scale that can be useful for assessing the parenting behavior.

Key words: *Autism spectrum disorder, parenting behaviors, parenting behavior scale*
Key messages: *(a) Kannada version of PBS-A is a valid and reliable tool to assess parenting behavior. (b) It permits easy comparison with cross-cultural and cross-linguistic parenting behavior data from parents of children with autism.*

Parenting plays a crucial role in the socialization of children and helps them acquire social, emotional and cognitive skills to function in the society.[1] The two major aspects of parenting identified are *parental warmth*, and *parental control*. *Parental warmth* refers to the support and responsiveness offered by the parents. *Parental control*, on the other hand, refers to a multidimensional construct referring to *behavioral control* offered by the parents to influence child's behavior by setting and enforcing standards of behavior, and *psychological control*, corresponding to control of child's behavior through

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Department of Speech and Hearing, School of Allied Health Sciences, Manipal Academy of Higher Education, Manipal, Karnataka, India

Address for correspondence: Dr. Shivani Tiwari
Department of Speech and Hearing, School of Allied Health Sciences, Manipal Academy of Higher Education, Manipal - 576 104, Karnataka, India. E-mail: tiwarishivani.2009@gmail.com

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psychological means such as withdrawal of love or induction of guilt.[2]

Assessment of Parental behavior suggests that parents of a child with Autism spectrum disorder (ASD) exhibit high parenting stress and other emotional difficulties.[3-8] A few studies indicate individual factors that contribute to higher levels of parental stress, such as the gender of the parents,[4,9] age of the child[9] and behavioral characteristics of the child.[5,6] Meirsschaut *et al.*[10] studied mothers' recognition of the impact of raising a child with ASD on family and personal life. Their results suggested that to maximize the outcome of intervention, parenting experiences should be taken into consideration. The parents of children with autism not only experience the stress of having a child with ASD but also have to adjust with the feelings of receiving a new diagnosis of ASD and starting up with the treatment services.

With the recent rise in the number and complexity of parenting research, various efficient tools and instruments with known psychometric properties are needed to assess the parenting behaviors in parents of children with autism. In their daily professional practices, several health care professionals use different tools to assess, diagnose and later intervene in parenting behaviors. It is thus essential to be aware of the relevance, validity and reliability measurements of such available tools.

The Ghent parental behavioral scale (GPBS)[11] that focuses specifically on parental behavior has proven validity in the European context (Dutch-speaking community). The scale was further extended to the ASD group by including specific items which are relevant for children with ASD, which resulted in the development of Parental behavior scale for ASD (PBS-A)[12] including 52 items. This scale was also extended for use in younger children and has both pre-school and toddler versions.[13] This scale can be used for research purposes. PBS-A consists of five sub-constructs: *Positive Parenting* with 11 statements, *Discipline* with six statements, *Harsh Punishment* with five items, *Material Rewarding* with four items, and *Rules* with six statements along with the two added sub-constructs: *Stimulating the Development* with 11 statements and *Adapting the Environment* with nine statements. The occurrences of these behaviors are graded on a 5-point rating scale (1-5) ranked as almost never, rarely, sometimes, often, and almost always. The questionnaire can be carried out for fathers and mothers of the child with Autism between the ages 6 and 18 years old. The scale has been found to have acceptable to good internal consistency.[13,14] These reports suggest the utility of the tool regarding the evaluation and management of children and families with ASD.

At present, only a few studies are available that focus on parenting behavior in parents of children with ASD. In particular, there are no studies on parenting behaviors available in the Indian context. The present study, therefore, aimed to adapt, translate and validate PBS-A - Short version for parents of children with ASD to Kannada, the language spoken in the state of Karnataka, India.

MATERIALS AND METHODS

The study used a cross-sectional design. The permission and consent to adapt and translate the tool to Kannada were obtained from the authors. The formal approval to conduct the study was obtained from the Institutional Ethics Committee (IEC 466/2017). The study protocol was also registered under the Clinical Trial Registry – India (CTRI, Trial registration No CTRI/2017/11/010337). The items in the original English version of the scale were given to three qualified health care professionals (who work with children with ASD), including a psychiatrist, a clinical psychologist, and a speech-language pathologist, to check for the sociocultural acceptability. The modified and adapted version (which incorporated the inputs from the three experts) of the PBS-A was then taken for translation.

The adapted English version of PBS-A was translated to Kannada by a bilingual translator. Both forward (English to Kannada), and backward (Kannada to English) translations were carried out to check the reliability of the test items. Translated Kannada version of the scale was proofread by three native speakers of Kannada language (bilingual speakers) who were university students pursuing the graduate course in Speech-Language Pathology.

The adapted and translated version of PBS-A in Kannada was checked for the content validation by giving the questionnaire along with a grading sheet to three experienced Speech Language Pathologists. They were asked to rate each item of the questionnaire as "agree" or "disagree", as well as to suggest modifications (if any). The final version of PBS-A in Kannada was then administered on the parents of children with autism, as described below.

Participants: A total of 50 parents of children with autism from Kannada speaking, reading and writing background participated in the validation of the scale. Parents of children aged 6 to 18 years who had received a formal diagnosis of ASD as per DSM-5 criteria by qualified psychiatrists and clinical psychologists were included in the study. Parents of children with autism who also had associated intellectual disability or other comorbid conditions (e.g., Attention Deficit

Hyperactivity Disorder) were excluded. Parents who were not able to read and write Kannada were also excluded.

Procedure: Participants were recruited from local hospitals, various speech and hearing centers/clinics, and special schools for children with developmental disability. Contact details of the parents from Karnataka were then retrieved from the hospital, clinics and special school records (with permission). Identified parents were then contacted (over the telephone) to obtain permission and informed consent. After receiving their written informed consent, parents were explained about the purpose of the study and about the scale and were requested to participate in the study. Parents who consented to participate were provided with the Kannada version of PBS-A to fill out their responses. They were instructed regarding how to fill the questionnaire. The filled in questionnaire forms were collected on the same day. Furthermore, the questionnaire was given to three parents once again within a duration of 15 to 30 days, in order to check for the test-retest reliability of the adapted and translated version of PBS-A in Kannada. The obtained data were subjected to statistical analysis using Statistical package for the social science (SPSS) software for Windows version 16.

RESULTS

The results of the psychometric evaluation of the scale are described as follows. In the adaptation phase, the professionals suggested a few modifications by changing the language style to make it more suitable for the Indian context, such as a few changes in some terminologies which are not familiar in the Kannada context. They suggested an alteration in specific terms that are quite harsh: for instance, '*beat*' for '*slap*,' '*task*' for '*chore*,' and '*beat*' for '*spank*.' All suggested corrections were considered and necessary changes were incorporated in the scale accordingly.

In the translation phase, the three bilingual university students suggested eliminating two items (16 and 22) from the questionnaire, as one was not meaningful in Kannada and the other was subject to a discrepancy. The statements eliminated were: (Statement no. 16) *When my child has done his/her best, I allow something extra (for instance staying up later)*, and (Statement no. 22) *I shake my child when we fight*. Subsequently, the scale was provided to three parents of children with autism for checking the ease of understanding and acceptance of their sociocultural background. Those parents could comprehend all questions without any confusion and agreed to the approval of all items to their sociocultural environment. Online-only Appendices A and B present the adapted and translated final version of the PBS-A in Kannada and adapted final version of PBS-A in English, respectively.

In the validation phase, the Kannada version was administered to 50 parents of children with autism. Their answers were coded on a 5-point rating scale: 1 as "almost never", 2 as "rarely", 3 as "sometimes", 4 as "often" and 5 as "nearly always". The mean scores (standard deviation) obtained by the parents of children with ASD on the seven domains of the scale were: *positive parenting* 46.04 (6.21); *material rewarding* 11.86 (1.83); *rules* 24.92 (4.39); *discipline* 18.94 (4.33); *harsh punishment* 11.34 (3.19); *stimulating the development* 42.08 (8.25); and *adapting the environment* 34.44 (5.29).

The scale was checked for its psychometric properties (test-retest reliability and internal consistency). The results obtained are presented as follows:

Test-retest reliability

Within 15-30 days of initial administration, we re-administered the scale on three participants to evaluate the test-retest reliability. The intraclass correlation coefficient (ICC) analysis of the data showed a high test-retest reliability (ICC = 0.993).

Acceptability

The adapted and translated Kannada version of the tool was then provided to three qualified SLPs (native Kannada speakers who also knew to read and write Kannada) for acceptability of its contents. All three SLPs were asked to indicate their agreement/disagreement with each item of the scale and provide suggestions/modifications, if any. The inter-rater reliability was found to be as: Kappa, $k = 0.485$ ($P < 0.005$), revealing a moderate agreement among the SLPs ratings.

Internal consistency

The internal consistency (reliability) of the scale was measured using the Cronbach alpha. The results showed Cronbach alpha value of 0.93, indicating excellent internal consistency. Table 1 below shows the item-to-total statistics presenting the 'Cronbach alpha if item deleted' in the final column for all 50 items of the scale. Further, the statements in each domain showed acceptable to high alpha values (*Positive Parenting*-0.84; *Material Rewarding*-0.92; *Rules*-0.93; *Discipline*-0.93; *Harsh Punishment*-0.93; *Stimulating the Development*-0.89; *Adapting the Environment*-0.92).

DISCUSSION

The present study aimed to adapt, translate and validate the widely used PBS-A - Short version for

Table 1: Item-to-total correlation of 50 items in Kannada version of PBS-A

Item	Scale mean if item deleted	Scale variance if item deleted	Item-to-total correlation	Cronbach's alpha if item deleted
POS 2	185.34	589.21	0.29	0.93
POS 8	185.18	581.29	0.50	0.93
POS 11	186.02	580.59	0.36	0.93
POS 17	185.74	568.4	0.61	0.93
POS 20	185.34	576.07	0.69	0.93
POS 26	185.24	570.68	0.74	0.93
POS 29	185	585.92	0.54	0.93
POS 31	185.46	579.27	0.57	0.93
POS 36	184.98	581.04	0.59	0.93
POS 37	186.02	563.57	0.63	0.93
POS 41	185.24	586.76	0.40	0.93
MAT 6	185.82	601.66	-0.01	0.93
MAT 24	185.6	579.02	0.44	0.93
MAT 38	185.52	580.70	0.48	0.93
RUL 4	185.1	577.24	0.64	0.93
RUL 14	185.62	566.44	0.57	0.93
RUL 22	185.5	574.95	0.58	0.93
RUL 34	185.2	575.14	0.59	0.93
RUL 44	185.5	578.75	0.57	0.93
RUL 47	185.76	564.839	0.70	0.93
DIS 1	186.92	590.32	0.25	0.93
DIS 7	186.88	596.35	0.10	0.93
DIS 10	186.12	598.59	0.04	0.93
DIS 19	186.38	584.2	0.25	0.93
DIS 30	186.24	583.86	0.29	0.93
DIS 40	186.12	589.99	0.24	0.93
HAR 3	186.68	603.24	-0.04	0.93
HAR 12	186.84	603.53	-0.05	0.93
HAR 32	186.66	575.21	0.44	0.93
HAR 42	186.88	584.19	0.33	0.93
STI 5	185.68	571.94	0.60	0.93
STI 13	185.54	578.91	0.42	0.93
STI 21	185.12	577.25	0.62	0.93
STI 25	185.32	573.77	0.62	0.93
STI 28	185.48	580.95	0.49	0.93
STI 33	186.08	568.65	0.69	0.93
STI 39	185.96	564.65	0.65	0.93
STI 43	185.94	564.14	0.72	0.92
STI 46	186.02	561.45	0.66	0.93
STI 49	186.16	579.24	0.48	0.93
STI 50	186.18	551.79	0.74	0.92
ADA 15	185.86	569.51	0.49	0.93
ADA 9	185.6	584.09	0.30	0.93
ADA 16	186.28	579.55	0.32	0.93
ADA 18	185.82	572.19	0.56	0.93
ADA 23	186	586.41	0.29	0.93
ADA 27	185.6	581.84	0.37	0.93
ADA 35	185.28	585.63	0.42	0.93
ADA 45	185.52	574.5	0.50	0.93
ADA 48	186.06	584.71	0.28	0.93

PBS-A – Parental behavioral scale for Autism spectrum disorder, POS – Positive parenting, MAT – Material Rewarding, RUL – Rules, DIS – Discipline, HAR – Harsh punishment, STI – Stimulating the development, ADA – Adapting the environment

parents of children with ASD to Kannada. The Kannada version of PBS-A yielded an overall high test-retest reliability (ICC = 0.993) as well as internal consistency ($\alpha = 0.93$), which in turn were comparable to those of the original instrument in English. Further, the extremely small percent of missing data from the current study was indicative of its higher acceptability by the participants.

Results of the present study showed higher scores on positive parenting and rules section, and lower scores on discipline and stimulating the development sections, which do not match the results of other studies from western context. It could be due to many possible reasons such as cultural variations across different communities, parent variables (socioeconomic status, educational level, and marital status), child variables (gender, the severity of autism), and context variables (the type of school). All these variables could affect the outcome of studies like this.

Our results furthermore support the claim that parenting behavior is important when considering behavior problems in children with ASD and also, focusing on the parental behavior aids further examination of the effectiveness of interventions programs.[14]

Hence, the current study should be considered as a first attempt to address this need in the Indian context. Further, it permits easy comparison with cross-cultural and cross-linguistic parenting behavior data from parents of children with ASD.

As, to the best of our knowledge, the present study was the first in the Indian context, further research is warranted to verify our results. Future investigations also can focus on evaluating the parental behavior using the Kannada version of PBS-A in parents of typically developing children and the results can be compared to better understand the parenting behaviors/practices in parents of children with autism.

CONCLUSION

The Kannada version of PBS-A is a valid and reliable scale that can be useful in Kannada-speaking population for assessing the parenting behavior for research, clinical and counseling purposes. Further, it permits easy comparison with cross-cultural and cross-linguistic parenting behavior data from parents of children with ASD.

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Conflicts of interest

There are no conflicts of interest.

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Brief Research Communication

Efficacy of PASS Reading Enhancement Programme on Neuropsychological Functions of a Child with Mild Vascular Neurocognitive Disorder and Comorbid Attention Deficit Hyperactivity Disorder: A Case Study

Pourabi Chaudhury, Prasanta Kumar Roy, Pradeep Kumar Saha[1]

ABSTRACT

Background: PASS Reading Enhancement Programme (PREP), a reading enhancement tool focusing on successive and simultaneous processing tasks, has been used successfully to improve the information processing strategies that underlie reading. The study explored the effects of training with successive processing task of PREP on various cognitive and neuropsychological functioning of an 8-year-old child with mild vascular neurocognitive disorder with comorbid attention deficit hyperactivity disorder. **Materials and Methods:** A pre–post intervention single case design was used. AIIMS Comprehensive Neuropsychological Battery in Hindi, Children's Form was used to assess the baseline performance on various neuropsychological domains. After 25 sessions of weekly outpatient-based training with PREP, reassessment was done using the same test battery. **Results:** Results indicated posttraining global improvement in the neuropsychological functioning like receptive and expressive speech, intellectual processes, memory, and reading and writing abilities. **Conclusion:** Cognitive remediation programs focusing on training in successive processing could be used in the enhancement of overall neuropsychological functioning in children with neurocognitive disorder.

Key words: *Cognitive remediation, neuropsychological functions, PASS Reading Enhancement Programme*
Key messages: *The case study shows application of PASS Reading Enhancement Programme in Mild Vascular Neurocognitive Disorder with comorbid ADHD. It enhances several neuropsychological functioning and academic performance.*

PASS Reading Enhancement Programme (PREP), a cognitive intervention program, is based on the PASS (planning, attention, simultaneous, and successive processing) model.[1] Through its various tasks, PREP helps improve all the four areas – planning, attention, simultaneous, and successive processing, though it mainly focuses on successive and simultaneous processing. The

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Department of Clinical Psychology, Institute of Psychiatry, Kolkata, [1]Department of Psychiatry, IPGME and R, Kolkata, West Bengal, India

Address for correspondence: Dr. Prasanta Kumar Roy
7 D. L. Khan Road, Kolkata, West Bengal, India. E-mail: prasanta.roy@gmail.com

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concept of three functional units (arousal unit of the reticular activating system; sensory input unit of the occipital, parietal, and temporal lobes; and the planning unit of the frontal and prefrontal areas) is used as the basis of the PASS model.[2]

In a study, researchers suggested that a specific cognitive processing deficit called successive processing deficit is involved in word reading difficulty.[3] They also suggested that the ability for language and comprehension is primarily related to simultaneous processing. Attention deficit hyperactivity disorder (ADHD) has also been found to be associated with planning deficit.[4]

Studies also found significant improvement by PREP on a standard word-decoding test in children with decoding difficulties.[5,6] Another study has shown significant improvement in reading tasks involving word reading and word decoding as well as passage comprehension following intervention using PREP in children identified as poor readers.[7] Despite having ample of evidence in favor of PREP as a cognitive training program to improve reading ability, its efficacy in other academic functions like arithmetic, writing, and global neuropsychological functions, including motor, visual, tactile, and intellectual abilities; memory; receptive-expressive language and so on; have been less explored. In addition, it might be interesting to examine the usefulness of PREP in neurocognitive disorder, another less investigated area. In this study, an attempt was made to explore the effects of training in primarily successive processing tasks following PREP[8] on neuropsychological functioning of a child with mild vascular neurocognitive disorder with comorbid ADHD, combined presentation. Since PREP is based on the three functional units,[2] which encompass the major neuropsychological domains, it was selected for the present case to evaluate its effects on neuropsychological functioning.

MATERIALS AND METHODS

Study design

A pre–post intervention single case design was used to evaluate the effects of training.

Case history

Ms. S.R., an 8-year-old, Hindu, Bengali female, studying in class 2, with 4 years of formal education, belongs to an urban, nuclear family of middle socioeconomic status. Parents reported excessive restlessness, fidgeting, and a tendency to irritate others since around 2 years of age; poor concentration, a deficit in organized speech, and difficulty in reading and writing since around 4 years of age; and significant difficulty in academics since around 6 years of age. The child had an acute nonhemorrhagic infarct in the left basal ganglia at 3 years 2 months of age, due to which there was a weakness in the right side of the body (right hemiparesis), deviation in the angle of the mouth, and impairment of speech for around 2–3 weeks. However, she recovered with the help of medication (aspirin) and physiotherapy, and within around 6 months, she was able to resume her previous functioning. Following this, difficulty in sustaining attention, organized speech, reading, and writing was observed, and restlessness was continuing. She had difficulty in remembering the sounds of all alphabets, particularly the vowels, and in combining the sounds of the alphabets to read the word. She had difficulty pronouncing words and remembering spellings, had a tendency to reverse letters like b and d while writing, and used to say one letter and write another, like saying c and writing k. She used to add or omit letters and take a long time and hesitate while reading or writing. She also had difficulty constructing sentences and made grammatical errors. The difficulties were found in both English and Bengali. The child had deficits in expressing in an organized manner, particularly while narrating any incidents. None of these deficits, except the hyperactivity symptoms, was present before the episode of the cerebrovascular attack (CVA), and the symptoms started after acute CVA. From 6 years of age, her academic performance other than in maths started deteriorating significantly. The restlessness has been improving for around 6 years, although no medical management was taken. However, the academic difficulties were showing a deteriorating progress.

There was no history suggestive of delayed motor or speech milestones, deficit in social interactions, or persistently defiant or disruptive behavior. The child was under aspirin from 3–6 years of age. However, no medical or psychological management for hyperactivity, inattention, or learning difficulty was taken. She had a family history of migraine in father and hypertension in mother. Personal history revealed that she had few friends of the same age level. She had an easy general temperament. She had a medical history of respiratory distress at 3 years 8 months of age. Birth and developmental history indicated the presence of maternal hypertension in the prenatal stage, a child born of full-term normal delivery, and the presence of perinatal jaundice. Current developmental status was age-appropriate.

Mental status examination revealed well-kempt and tidy appearance, good eye contact, and easily established rapport. Motor behavior was indicative of hyperactivity, with adequate receptive and expressive speech. Attention was easily aroused but difficult to sustain. Remote and recent memory were intact, but immediate memory was impaired. Her general intellectual functioning was average. Affect was stable, with normal thought and perception.

On psychological assessment, she had average intelligence (IQ = 95), with a significant deficit in reading and writing (as assessed on NIMHANS Index of Specific Learning Disabilities).[9] Significant inattention and hyperactive features were evident in Abbreviated Conners' Rating Scale for parent (score = 20).[10]

The child was diagnosed as 331.83 mild vascular neurocognitive disorder with 314.01 ADHD, combined presentation according to DSM-5.[11] Additional diagnosis of specific learning disorder was not considered due to the presence of organic brain damage.

Psychopathology formulation

Figure 1 shows that features of difficulty in sustaining attention, getting easily distracted, and not seeming to listen when spoken to, which are indicative of inattention, may be due to dysfunction in Unit 1 – arousal unit, which is associated with the brain stem, diencephalon, and medial regions of the cortex. Features of difficulty in following instructions and in reading, making spelling mistake, and difficulty in understanding meaning of sentences, which are indicative of learning difficulties, may be due to dysfunction in Unit 2 – sensory input unit, which is associated with the parietal, occipital, and temporal lobes. Finally, the features of forgetting things at school, leaving the seat in the class, fidgeting with things, giving up difficult tasks, difficulty waiting for the turn, and interrupting while others are talking, which are indicative of hyperactivity, may be due to dysfunction in Unit 3 – output planning unit, which is associated with the frontal lobe.

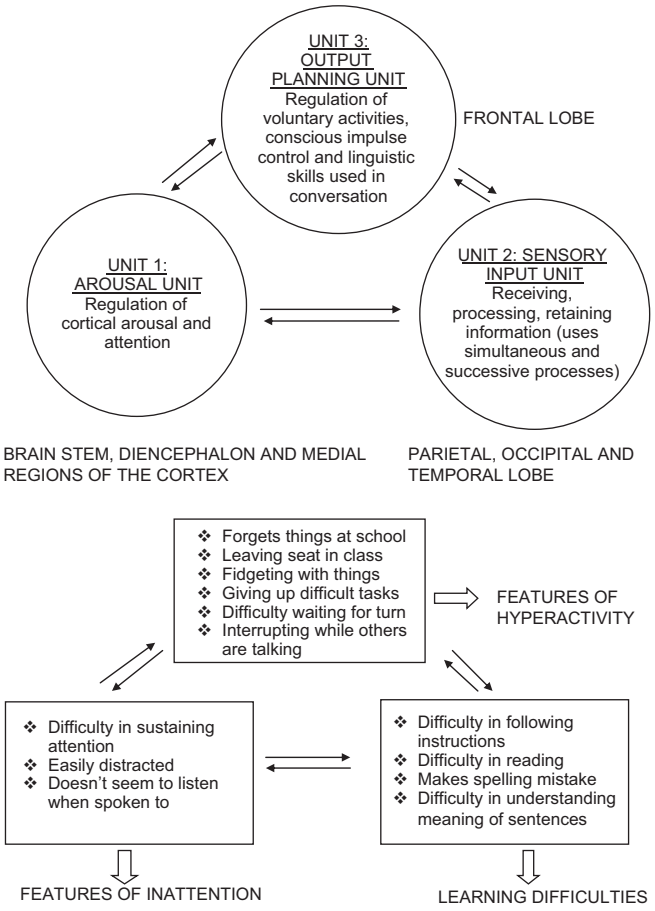

Figure 1: Etiological explanation of the case

Pre-intervention assessment (baseline assessment)

AIIMS Comprehensive Neuropsychological Battery in Hindi, Children's Form,[12] which is applicable for children having a minimum of 8 years of age and 3 years of education, was administered as a baseline measure. This battery is based on Luria's concept of three functional units, with various neuropsychological domains assessing the functioning of these units. The cognitive intervention program selected for the present case is based on the PASS model whose basis is again Luria's concept, and it focuses on improving the cognitive processes involved in the functioning of these units. Although the tool demands 3 years of education and the child was studying in class 2, it was still considered, as the child had 4 years of formal educational exposure including nursery and there is no equivalent test available for the given age. Only raw scores were calculated to assess the baseline level of functioning.

Intervention

Pass Reading Enhancement Programme

PREP involves a global training component, which consists of structured nonreading tasks based on successive and simultaneous strategies, and a curriculum-related bridging component, which involves simultaneous and successive processing strategies that are closely linked to reading and writing. There are four successive and four simultaneous processing tasks as per the 2005 revised research edition.[8] The successive processing tasks include joining shapes, connecting letters, related memory, and window sequencing. The simultaneous processing tasks include tracking, shapes and objects, shape design, and sentence verification. The tasks are further divided into three difficulty levels that allow the child to progress in strategy development.

Attention and planning are important aspects of the tasks in the programme as attention is required to perform each task, and planning skill is developed by encouraging the children to discuss their strategies and solutions both during and following each task.

Sessions

In all, 25 sessions were conducted which focused on successive processing tasks. The sessions were held once a week in the hospital outpatient department in a government setup. The sessions consisted of tasks

namely joining shapes, connecting letters, related memory, and window sequencing. Each task had a global and a curriculum-based bridging component and three prompt levels to attain mastery. If the child gained mastery in the first prompt level, training moved on to the next task. No retraining at home was advised. The sessions lasted for approximately 45 minutes.

Post-intervention assessment

AIIMS Comprehensive Neuropsychological Battery in Hindi, Children's Form[12] was again administered after 25 sessions of cognitive intervention on successive processing tasks.

RESULTS

Table 1 and Figure 2 indicate that after the training, there was an improvement in the functioning in the neuropsychological domains. The raw scores in the post-intervention assessment were considerably lower than the scores before intervention, indicating lesser dysfunction and thus an improvement in functioning. Distinct improvement was seen in the domains of receptive and expressive speech, reading, writing, arithmetic, memory, and intellectual processes along with the motor and tactile domains and the total score. Improvement was also observed in the school performance as reported by the parents, and significant improvement was noticed in examination grade too. Parents also reported enhancement in reading and writing skills of the child.

DISCUSSION

The purpose of this case study was to explore the effects of training, primarily in successive processing tasks following PREP, on neuropsychological functions of an 8-year-old child with mild vascular neurocognitive disorder with comorbid ADHD, combined presentation. Pre and post-intervention scores showed positive effects of PREP on the neuropsychological functioning of the child, indicating improvement in the various neuropsychological domains after training. From these findings, it can be said that the cognitive processes underlying the tasks included in the management programme (i.e., successive processing, attention, and planning) work on facilitating the functioning of the three functional units of Luria's model in cases of mild neurocognitive disorders as well. Thus, it helps improve neuropsychological functioning following vascular impairment. Various studies have shown improvement in word reading, word decoding, and comprehension following training in PREP in children with reading deficits.[5-7] This not only may show involvement of cognitive processes in learning problems as indicated by improvement in reading, writing, and arithmetic domains in AIIMS Comprehensive Neuropsychological Battery but also may indicate the applicability of the program in other neurocognitive conditions including speech.

However, this case study has some limitations. Simultaneous processing task could not be tried due to time limitation. NIMHANS Index of SLD and Abbreviated Conner's Rating Scale for parents could have been used during the post-intervention assessment. Moreover, this is a single case study and hence it has limited generalizability. A controlled trial of PREP module on similar cases might lead to more conclusive findings as changes in the post-intervention scores owing to normal development could not be eliminated.

Table 1: AIIMS Comprehensive Neuropsychological Battery in Hindi, Children's Form: profile of scores

Function scales	Raw score		Percentage of improvement in dysfunction
	Preintervention assessment	Postintervention assessment	
Motor	39	16	59
Tactile	11	5	55
Visual	7	4	43
Receptive speech	4	0	100
Expressive speech	12	1	92
Reading	35	10	71
Writing	34	5	85
Arithmetic	19	7	63
Memory	23	2	91
Intellectual process	20	2	90
Left hemisphere	41	16	61
Right hemisphere	32	13	59
Pathognomonic	22	9	59
Total scale	207	53	74

CONCLUSION

Cognitive remediation programs focusing on training in successive processing are useful in improving deficits

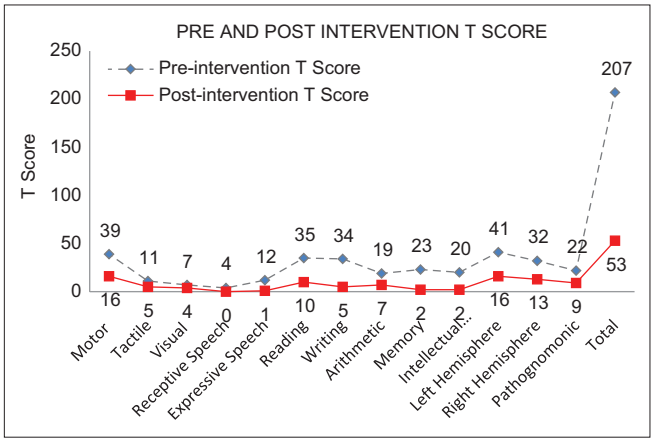

Figure 2: Pre and post intervention scores AIIMS Comprehensive Neuropsychological Battery in Hindi, Children's Form

in neuropsychological functioning following vascular impairment. Hence, the underlying cognitive factors may be responsible for the learning difficulties. Thus, PREP is beneficial and can be effectively used as a remediation program in neuropsychological dysfunction following vascular impairment.

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Conflicts of interest
There are no conflicts of interest.

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Learning Disorder or Learning Disability: Time to Rethink

Learning disorders (LDs) or specific learning disorders (SLDs) are a group of neurodevelopmental disorders that manifest during formal schooling, characterized by persistent and impairing difficulties in learning foundational academic skills for reading, writing, and/or mathematics. These are diagnosed when there are specific deficits in an individual's ability to perceive or process information efficiently and accurately. There must be significant impairment in the specified scholastic skill, and this impairment should not be due to sensory/motor deficits, mental retardation, low general intelligence, poor teaching, lack of adequate stimulation, or any such external causes.[1] This category is called "Specific developmental disorders of scholastic skills" in International Classification of Diseases 10th Edition (ICD-10).[2] It is renamed as "Developmental learning disorder" in the recently released ICD-11[3] and subtyped as those with impairment in reading, written expression, mathematics, and with other specified impairment of learning. ICD-10 subtypes were specific reading disorder, specific spelling disorder, disorder of arithmetical skills, and mixed types.

LD exists worldwide and occurs in students irrespective of their mother-tongue or medium of instruction.[4] LDs are a major cause for academic underachievement in young children. Perhaps, the most socially significant feature of LD is their invisible and seemingly benign nature, with long-term adverse effects on the scholastic achievement of affected children. Delayed and conflicting diagnoses are often common, leading to delayed intervention.

In this brief article, we intend to highlight the confusion prevailing in this area by the use of two different terms – "learning disorder" and "learning disability." Nelson's Textbook of Paediatrics[5] uses the term LD for conditions with neurodevelopmental dysfunction affecting reading, writing, and calculations. The subclassification of this is in complete agreement with the systems used in ICD-11[3] and Diagnostic and Statistical Manual 5th edition (DSM-5).[1] They have not used the term "learning disability." Intellectual disability is the term used for mental retardation.

Comprehensive Textbook of Psychiatry[6] and Rutter's Textbook of Child and Adolescent Psychiatry[7] also

use the same nomenclature and subclassification as in ICD-11[3]/DSM-5.[1] Clinical practice guidelines by Indian Psychiatry Society also uses the term LD.[4] The guidelines prepared by them defines the terms learning difficulty, disorder, and disability. According to the guidelines learning difficulty is a mild form where the child has only mild difficulty in particular areas such as reading or writing, and on standardized testing of achievements may not be substantially below the expected level, whereas in LD the child has substantial difficulty and is evident on standardized testing, and the difficulty can be overcome to a significant extent by remedial education. These guidelines define learning disability when the child has severe difficulty in particular areas that are evident on standardized test of achievement, and in spite of adequate therapeutic efforts there may not be any significant improvement. So it is more like a spectrum of increasing severity from learning difficulty to disability. Though there is some merit in this conceptualization, it is not clear whether such an approach is supported by empirical evidence. In real world one has to give a diagnosis to a child when he or she is brought for assessment. This helps the child to get educational benefits during studies and in examinations, suggesting that one has to wait till interventions may not work in practice. But a few authors, mainly those from the United Kingdom (UK), use the term "learning disability" to denote intellectual developmental disability,[8] which is termed mental retardation in ICD-10 and intellectual developmental

disorder in DSM-5.[1] Intellectual delay, as we know, causes poor scholastic performance in children, but it is characterized by global developmental delay, including delayed milestones of development, smaller head circumference, etc. The subcategories of this in ICD-10, based on IQ scores, are mild, moderate, severe, and profound.

But "*Essential Paediatrics*" by OP Ghai[9] uses the term "learning disability" to denote the condition referred to as a LD by all the above authors except those from the UK. Dyslexia, dysgraphia, dyscalculia, and reading comprehension difficulty (which are listed under SLD in DSM-5/ICD-10 and -11) are wrongly listed as subcategories here. This confusion seems to be present in other Indian literature too. In the practice guidelines by clinical psychologists, the terminology used is learning disability.[10] Karande *et al.*[11] use the term "learning disability" to describe the entity learning disorder of ICD-11 and DSM-5. Prathibha Karanth and Prema[12] use the term "learning disability" as a descriptive term for children with complex learning problems.

The Indian Academy of Paediatrics has published a consensus statement on this condition. Unfortunately, they too use the term specific learning disability. But while detailing this condition, they give a description which makes it clear that they refer to SLD as defined in ICD-11 and DSM-5.[13]

The Government of India has passed a new act covering all disabilities. This new Right of Persons with Disabilities Act (RPWD Act)[14] also uses the term "learning disability" for "learning disorder." Equating two conditions mental retardation and LD creates difficulties both for care providers and patients. The use of the term "disability" in the name of a medical condition is not acceptable as it creates conceptual confusion. A disorder is a medical condition that may or may not give rise to disability depending on its severity. Disability is the functional disadvantage suffered by a person affected by that condition.[15] It is etiology-neutral, because the same disability could be the result of different disorders. In this context, poor academic ability (disability) could be due to different causes such as intellectual deficits, mental illness, poor motivation/teaching, or SLD. So, using the word disability in the name of one of the conditions that cause the disability is confusing.

From the above discussions, it is clear that the term learning disability is used in different contexts with different meanings. "Specific learning disability" is a term used by persons working in the educational sector. It probably covers all conditions including LD and some others as well. But it lacks a clear definition and criteria for diagnosis. Use of this term has led to increased confusion and lack of access to appropriate interventions for affected children. The management is entirely different for the conditions grouped as SLD. But unfortunately, some doctors too use these terms interchangeably. A possible explanation of this could be the fact that children with such problems and their parents have multiple stakeholders such as school teachers (rural/urban, English medium/local language medium, CBSE/ICSE/Local regulatory boards), parents themselves from diverse backgrounds, educationists, right-activists, law-makers, administrators, pediatricians, and psychiatrists, who possibly have a tendency to use the terms in their "common sense" or "generic sense." Things get complicated by lack of awareness and understanding of this entity among stakeholders. Nonetheless, the scenario is improving with time.

The lack of a proper definition leads to wide variation in the prevalence rates and makes planning for remedial resources difficult. The studies are difficult to interpret because of terminological confusion. LD probably affects around 5–10% of school-going children.[16] Suresh and Sebastian report on an epidemiological survey conducted in rural Kerala to detect suspected cases of developmental language disorders and language delay using a six-item questionnaire.[17] Prevalence was 9.5% among children aged 5–12 years and 9.94% among those aged 13–16 years. But this number may not be of children with LD as defined above. In another study, among children with poor scholastic performance referred to a Child Guidance Clinic in Kerala, 55.8% were found to have LD.[18]

In the background of this confusion, we suggest that all medical personnel from all specialties stick to the single term "specific learning disorder" as defined in Nelson's textbook and ICD-11/DSM-5. A search of "MeSH database" of PubMed using the term "specific learning disability" did not yield any results.[19] This further confirms that this term is not used by medical personnel. In the United States, there is a federal law called "Individuals with Disabilities Education Act (IDEA),"[20] which covers educational benefits for children with learning-related problems. This uses the term "specific learning disability" in a way similar to that of our RPWD Act. But the American Psychiatric Association still continues to use the term LD, and they have not changed the terminology to match the legal term. Hence, there is no legal compulsion for medical personnel to modify our diagnostic terminology. Disability boards can assess and quantify disability and may mention in the certificate as such. The terminology of learning disability has not entered

into any official diagnostic system. We are bound to uphold our systems to encourage proper diagnosis, treatment, planning and research for developing better treatments, as well as to uncover underlying mechanisms of disease.

Ideally, the term specific learning disability is best abandoned as its meaning differs in different contexts. This would help us to make a clear diagnosis in children presenting with scholastic backwardness and institute appropriate intervention without delay. It may also reduce the stigma associated with this condition. Otherwise, we may end up in the confused scenario as depicted in Book of Genesis in Holy Bible "Come, let us go down, and confuse their language there so that they will not understand one another's speech. So the LORD scattered them abroad from there over the face of all the earth" (Genesis 11: 7, 8).

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Varsha Vidyadharan, Harish M. Tharayil

Department of Psychiatry, Government Medical College, Kozhikode, Kerala, India

Address for correspondence: Dr. Varsha Vidyadharan
Department of Psychiatry, Government Medical College, Kozhikode - 673 008, Kerala, India.
E-mail: drvarshavinu@gmail.com

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Cognitive Behavior Therapy for Children and Adolescents: Challenges and Gaps in Practice

Since its emergence in the 1960s, cognitive behavior therapy (CBT) remains one of the mainstays of psychotherapeutic intervention for different mental health conditions. It is one of the most evidenced-based psychotherapeutic interventions.[1] CBT is used for clients from diverse socioeconomic backgrounds, cultures, and ages.[2,3] Apart from hospitals and clinics, it is also used in schools, vocational programs, and rehabilitation centers among other settings. It has been found beneficial in generalized anxiety,[4] stress,[4] obsessive compulsive disorder,[5,6] phobias,[7] depression,[8] and behavioral problems.[9] Research also suggests fluid use of CBT in individual,[10] couple, and family formats.[11,12] Despite the evidence base of CBT for different mental health conditions, including for children and adolescents, the practice of CBT for the younger population may have several issues.[13] The authors list some of the issues that are encountered while delivering CBT in Indian children and adolescents. The opinion is based on clinical experiences and supported with literature as available.

1. **Limitations of the standard model:** While the core principles for CBT in children remain the same, several familial and cultural aspects risk binding the delivery of the therapy to limit it within behavioral management only, so much so that therapists hesitate in applying CBT in children even though CBT models for children and adolescents in specific disorders[14,15] are well-defined. Often, their primary approach and focus are more on neutralizing behavioral problems rather than core cognitive errors

   CBT and its variants have been found effective in several childhood and adolescent mental health conditions.[16-18] Reviews of efficacy studies[18,19] suggest that adolescents who receive CBT show benefits comparable to younger children. They also suggest that CBT protocol modifications routinely carried out by expert trial therapists may explain these findings, further adding that these protocols are needed to facilitate the transportability of efficacy research effects to usual care settings where therapists may have less opportunity for CBT training and expertise development

   On the other hand, reviews studying the relative effectiveness of psychological interventions, antidepressant medication, and a combination of these interventions did not establish the effectiveness of either of these interventions for treating depressive disorders in children and adolescents,[20,21] further warranting appropriately powered randomized control trials.
2. **The familial and cultural variables:** Certain familial and cultural influences have an impact on the overall therapeutic formulation for a case.[22] Many parents may fail to recognize the psychotherapeutic treatment need of their ward owing to their attitude and belief, and often the referral for consultation come from teachers. It could be an area of investigation to know the proportion of child and adolescent cases referred from school. Schools are, however, better equipped than earlier times, and many do have psychologists to counsel their students. While teachers may be proactive in referring students with academic and behavioral difficulties for psychological consultation, the mechanism to involve the teachers for their role in the therapeutic process may remain informal and unstructured. In a scenario where performance in the examination is often the benchmark of being a good student, those having certain psychotherapeutic needs can do better if given assurance and validation by teachers themselves

   Unlike in the case of adults, treatment planning and structuring for psychological intervention in children and adolescents require an active involvement of parents and teachers. Teachers are often the source of referral for young clients with academic difficulties. They have a big role in facilitating the therapy process, especially when academic difficulties are one of the major concerns for the young clients. Active involvement of the teachers can bring a better outcome of the therapy process

   There is a possibility of different therapeutic agendas of parents and the child pertaining to treatment, especially in adolescents. It is not uncommon to see differences in therapeutic goals of the child as conceptualized by the therapist and "priorities and expectations" of the parents. Adolescents, in particular, are more likely to have emotional conflicts with parents and could present a totally different perspective of the situation presented by the parents. For example, parents may

be focusing only on their ward's poor academic performance, while the adolescent client, though aware of his or her academic performance, may be more perturbed about the parents' attitude toward him or her. Parent–child attachment relationship, thus, is an important domain to be addressed and needs to be integrated for a better therapeutic outcome[23]

It may be opined that parents being critical of their wards and failing to validate their wards' efforts in the therapy process could be detrimental to the therapy outcome. Existing literature does suggest that maternal overinvolvement contributes to CBT failure among youth with anxiety disorders, and mothers' expressions of fear, such as being stiff, tense, and fidgety, have been identified in CBT failure.[24] In addition, fathers' reports of rejecting their child, and children rating their mothers as low in warmth, have also been shown as significant predictors of CBT failure[25]

A certain level of insight regarding the genesis of emotional and behavioral problems of their children is desired for a better therapeutic outcome. One study suggested that parents of children with autism, who attributed the condition to environmental factors, experienced emotional upset or confusion about the condition, or perceived the condition to be pervasive or burdensome were more likely to report clinically significant emotional and behavioral difficulties.[26] It was implied that parent perceptions are vital when developing interventions to assist with children's emotional and behavioral challenges

Considering the above, parental counseling becomes an essential component for the CBT process in children and adolescents.

3. **Issues of acceptance and stigma:** Awareness regarding mental health conditions and the readiness to consult a professional in the event of mental health issues have seen a sea change than yesteryears. However, the insight behind this awareness may not be that satisfactory. Despite the growing awareness regarding mental illness, a large number of parents may dwell in a denial of the mental health condition of their ward,[27] which can have an impact on therapy outcome. Parents and teachers, at times, involve in a blame game of not giving an individual attention and the requisite time to the ward. Developing a true insight in the parents and the family often becomes an integral part of the therapeutic program. Teachers too need to be more sensitive to the mental health needs of their students
4. **Issues in building therapeutic alliance:** Developing a working therapeutic alliance is essential for progress and positive outcome of any therapy. While adults reporting for psychotherapeutic treatment are generally competent of describing their problem concerns, setting the agenda, and discussing treatment goals, this may not be the same in the case of children. Children may not be florid in explaining their concerns, and often a thorough assessment is required to know about the child's emotions, important relationships, behavior patterns in school, family, and neighborhood. As discussed earlier, parents have a major role in the presentation of complaints; their focus may be biased toward behavioral difficulties and externalizing behavior than emotional distress of their ward. Adolescents may deny having any problem and can resist establishing rapport and a good therapeutic relationship
5. **Structuring sessions and planning of treatment:** Negotiating the aforementioned issues comes at the expense of two to three sessions, which is significant for clients from a middle socioeconomic background. The initial sessions are also devoted to developmental assessment and a cognitive or psychodiagnostic assessment required, if any. In several Asian countries including India, psychotherapy sessions are not covered by health insurance, making it appear a costly treatment, and that could be detrimental for continuation of the therapy. A big proportion of parents may believe in pharmacotherapy only and consult a psychologist only upon referral. In such a scenario, the parents may deem the therapy sessions as a compulsion and fret in the absence of a "quick and guaranteed" outcome. Considering the above, CBT in children and adolescents may not be a cost-effective treatment method in Indian scenario, increasing the risk of dropout. Dropout from psychotherapy with a therapist may impact the outcome of consultation with a new therapist, as the therapeutic process may appear a repetition to parents. Considering these, the therapist may need to focus more on short-term treatment goals than long-term goals.
6. **Assessment issues: Identifying and targeting dysfunctional cognitions:** The most important core component of CBT could also be the most difficult to achieve when dealing with children and adolescents. Language and communication competency of the child could be a barrier in the therapeutic process, as a minimum level of cognitive and linguistic competency as well as verbal reasoning is required for CBT. Thus, CBT has been inferred more suitable for mid-childhood or older children.[28] The therapeutic process of CBT essentially includes appropriate recognition of own emotions and discriminating thoughts, feelings, and behavior on the part of the client. Identification of automatic thoughts and distinguishing different

emotional states and linking of these emotional states with thoughts and events could be a difficult one with children. "Guided discovery" usually helps, but children and adolescents may lack the maturity and tenacity to sustain the process and become impatient. There also lies the risk of the child getting "guided" and choosing the alternative "suggested" by the therapist. While a guided approach may yield short-term gains in terms of improved insight on the part of young clients, the maintenance of these insights in future crisis situations could be questionable. This inference is supported by the clinical experience of seeing the same clients coming for consultations at multiple times whenever a crisis situation arises

7. **Comorbid conditions:** Children and adolescents brought to clinics may have high comorbidity[29,30] and externalizing behavior. These externalizing behaviors can take predominance over the emotional distress of the child, and accordingly, the planned therapy becomes more eclectic in approach. Literature does support the use of eclectic combinations of techniques drawn from multiple theoretical orientations,[31,32] though with a mention of lack of data of its efficacy. However, some studies do suggest the efficacy of the eclectic approach in treating anxiety symptoms in children.[33] While it is perfectly okay to go for an eclectic approach to address therapy needs, the theoretical basis or research evidence of the technique may be questioned[34]
8. **Facilitating behavioral and cognitive change:** Homework assignments, thought diaries, and activity scheduling are important tools in facilitating behavioral and cognitive change. They help in tracking compliance and effort on the part of the client. More importantly, it also helps in reviewing own progress by the client. For children and adolescents, complying with these needs active assistance from parents, family members, and teachers. As previously discussed, the role of teachers is important in the therapy process and outcome. It could be a difficult task to generalize research findings,[35] which suggest that teachers have a low knowledge about conditions such as attention deficit and hyperactive disorder but have a positive attitude toward these children and acknowledge the need for special teachers. Media reports on rejection and noncooperative attitude of schools toward children with mental health needs are common not only in India but also from western countries.[36-38] However, teachers need not be always blamed for not giving individual attention to the student, considering their existing responsibilities.
9. **Reinforcing compliance:** It is vital to reinforce adherence to the therapeutic process through planned review sessions. Emphasizing on positives is an easy method that is a kind of morale booster for the client by attending to their strengths and positives. While it is relatively easy than other components, it may pose difficulty in very adverse familial or school environment, thus clients need to be consistently motivated with positive feedback.

RECOMMENDATIONS

- CBT for children and adolescents integrates from different approaches, and the practice itself is very eclectic. There is a wide scope for customization of the CBT therapeutic package. However, the recipient is at a risk of too much experimentation and exposure to nonevidence-based techniques in the therapy process
- Considering the familial and cultural issues, it is imperative to include a psychoeducational program for parents within the CBT framework. Literature does suggest the efficacy of modified forms of CBT that include psychoeducation to parents in treating anxiety disorders in preschool and early school-aged children[39]
- While formulating a therapy plan for children, a thorough developmental assessment of the child is vital to see his or her adaptive capabilities for CBT. If not, it could be beneficial to focus on behavioral approach, using reinforcement techniques, to achieve the desired change in the child's behavior
- Children, and parents, may consider the problems as a temporary situation, and insights gained could be lost once the sessions are over. For an appropriate appraisal of stress situations, it is important that children are able to identify and label their emotions and thoughts appropriately. This is an important task for adult clients too, and considering the difficulty involved, more number of sessions are required for this. Studies suggest that while teaching skills that require various aspects of emotion understanding, clinicians must not presume that all older children or adolescents are competent, but rather should conduct an actual assessment[40]
- It is advised that behavioral experiments and homework assignments are planned with the active participation of family members.

It can be said that CBT can be used as an effective treatment for many of the childhood and adolescent mental health conditions as the first line of treatment, provided the familial, cultural, and compatibility perspectives are appropriately considered. Furthermore, efficacy studies using a standard model in specific populations are warranted.

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Susmita Halder, Akash Kumar Mahato

Department of Clinical Psychology, Amity University, Kolkata, West Bengal, India

Address for correspondence: Dr. Susmita Halder
Department of Clinical Psychology, Amity University Kolkata, Major Arterial Road, Newtown, Kolkata - 700 135, West Bengal, India.
E-mail: susmitahalder@gmail.com

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Letters to Editor

Corpus Callosum Agenesis: Neuroanatomical Model of Autism Spectrum Disorder?

Sir,

The neuroanatomical basis of autism spectrum disorder (ASD) remains undeciphered. Neural system disconnection of the brain is hypothesized as causative. A substrate of this disconnection is agenesis of corpus callosum (AgCC). It is a very rare condition and is consistently reported with autism. However, cause–effect relationship remains to be established. A meta-analysis of 10 studies on magnetic resonance imaging (MRI) of 253 patients with AgCC and ASD showed a reduction in the size of corpus callosum.[1]

Corpus callosum is responsible for functional interaction between the hemispheres in cognitive processes such as executive functions, abstract reasoning, speed of processing, and problem solving. It is also important for the development of social competence, emotional maturity, and communication of emotions.[2] However, AgCC can be asymptomatic or present with one or more neurodevelopmental disorders.[3] While symptoms of autism have been reported in children with AgCC, syndromic ASD has never been reported. We report a case of a toddler with AgCC meeting Diagnostic and Statistical Manual 5 criteria for ASD.

CASE HISTORY

A 2-year-old male child was brought to the Child Psychiatry Out Patient Department of our tertiary care centre with symptoms of hyperactivity, impulsivity, and inability to speak. Often, he would be moving aimlessly, flapping his hands. He would be fidgety and would not engage in any play activity for long. He would not play with any child and would not respond to being called. He made poor eye contact and would be engaged in solitary activities of arranging and stacking up objects. He would never share his interests or excitement, would not point at things of his interest, nor would he look at things shown by his mother. He would indicate his needs by pulling his mother's hands and using them for pointing. He would demand immediate fulfilment of his needs, and in case of any delay, would start banging his head.

He was born of a nonconsanguineous marriage, with uneventful antenatal and postnatal course. His birth cry was delayed, with significantly difficult labor, but no other significant postnatal adverse events. He had delayed development in motor, speech, communication, and social domains.

Currently, he was able to walk independently and would utter a few bi-syllables. He would not recognize his parents and would be hardly bothered by their absence. Childhood Autism Rating Scale score was 34, indicating moderate autism.[4] On Vineland Social Maturity Scale, he had the social age of 20 months, with Social Quotient (SQ) of 49, indicating moderate intellectual disability.[5] He had macrocephaly (head circumference was 51 cm, above WHO third percentile), but no other dysmorphic features were noticed. Macrocephaly prompted an evaluation for a structural neurological cause. T1 and T2-weighted MRI images showed partial agenesis of CC [Figure 1].

He met the DSM 5 criteria for ASD, intellectual disability, and attention deficit hyperactivity disorder.[6] Absence of characteristic dysmorphic features and a normal karyotype ruled out genetic syndromes. A hearing evaluation was within normal limits, and he did not have any history of seizures. His thiamine and pyridoxine levels and thyroid profile were within normal limits. We could not find any genetic or toxic cause for AgCC in our case, nor could we identify any other independent risk factor for developmental delay. Hence, we considered a diagnosis of ASD and intellectual disability secondary to AgCC. We started risperidone at 0.5 mg/day for managing hyperactivity and repetitive motor behavior. Speech therapy, occupational therapy, and behavioral therapy were also started. The child is on regular follow-up in our centre: his hyperactivity is currently manageable, and he is being engaged in multiple behavioral and educational interventions.

DISCUSSION

Our patient had socio-communicative deficits with stimming behavior characteristic of ASD before 3 years of age, which is considered to be a diagnostic

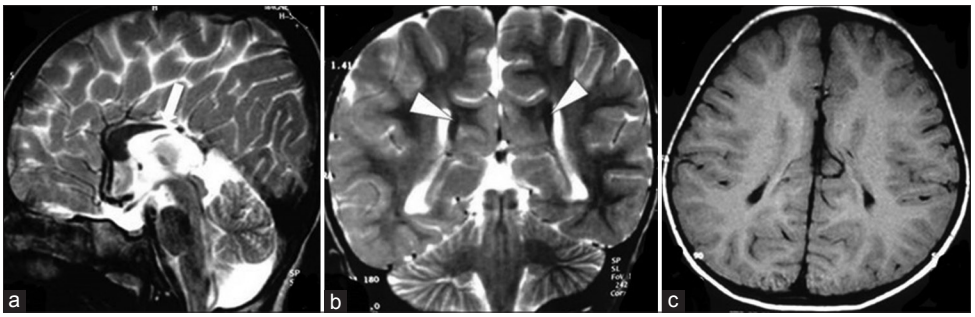

Figure 1: Cranial MRI, (a) Sagittal T2W MRI showing absent posterior body and splenium of corpus callosum (arrow), cingulate gyrus and the medial hemispheric sulci reaching upto the 3rd ventricular surface. (b) Coronal T2WI showing Probst bundle indenting medial aspect of the body of lateral ventricles. (c) Axial T1WI showing parallel orientation of ventricles

hallmark of syndromic ASD. He also had moderate intellectual disability. Presence of partial AgCC could be understood as the proximal risk factor for the autistic symptoms. The absence of posterior body can explain his moderate autism as this is the region vital for self-referential and social cognitive development.[7] Presence of Probst bundle is further evidence of AgCC, as the white matter tract, which has failed to form interhemispheric connection, has instead remained in the longitudinal orientation. This structural evidence of partial disconnection of the corpus callosum can be considered causative of ASD symptoms in the index case.

Symptoms of ASD have been reported in AgCC on parent-reported scales and screening instruments; syndromic ASD has never been reported in children.[8,9] Only two adult cases with syndromic ASD in association with AgCC have been reported till date, which includes "Rainman" Kim Peek.[7] AgCC associated with extracallosal brain lesions is associated with poor prognosis and has an adverse impact on clinical outcome. ASD with AgCC is associated with a partial/total reduction of corpus callosum volume; structural dysconnectivity dysfunction is hypothesized to be causal for ASD.[7]

Our case is unique by the fact that the diagnosis of ASD and comorbid intellectual disability has been made with AgCC in early childhood, reinforcing the structural etiological role of corpus callosum. Recent neuroimaging findings have corroborated the role of the corpus callosum in sociocognitive and self-referential deficits in autism. AgCC is being increasingly understood as a neurological model for deficits of autism. However, exact mechanisms still remain to be identified.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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There are no conflicts of interest.

Suravi Patra, Suprava Naik[1], Menka Jha[2]

Departments of Psychiatry, [1]Radiodiagnosis and [2]Neurology, All India Institute of Medical Sciences, Bhubaneswar, Odisha, India

Address for correspondence: Dr. Suravi Patra
Department of Psychiatry, All India Institute of Medical Sciences, Bhubaneswar - 751 019, Odisha, India.
E-mail: patrasuravi@gmail.com

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Developmental Delay, Hyperactivity and Mania: A Perfect Blend of Confusion in a Preschool Child

Sir,

Attention deficit hyperactivity disorder (ADHD) co-occurring with pediatric bipolar disorder (BD) has been controversial. Researchers have proposed hypotheses about the spectrum concept of ADHD and pediatric BD and that ADHD could be a precursor of BD.[1] Clinically, both the illnesses share symptoms of hyperactivity, distractibility, and irritability. ADHD has been associated with a higher risk of earlier onset of BD.[2] Despite the high comorbidity and risk, a significant number of ADHD with pediatric BD cases remain underdiagnosed.[1]

CASE DETAILS

A 5-year-old boy presented with complaints of reduced sleep since 6 months of age, increased activity levels since 1 year of age, and irritability since 3 years of age. Antenatally, the mother had pre-eclampsia. However, child-birth was normal, and he attained developmental milestones as per age for the first 6 months (e.g., social smile by 2 months, head control by 2–3 months, and ability to turn by 6 months). Thereafter, the mother observed a reduction in his sleep time from 12 h/day to ≤6–7 h/day. Delay in acquiring language, recognizing mother, and make-believe play, and deficits in emotional reactivity were noted till the age of 1 year. However, he learnt to fetch things for self, to reach out for objects, some level of hand–eye coordination, and the ability to shift things from one hand to the other.

He started walking at the age of 12–18 months, but within a few months, he was observed to be walking at a faster pace, though he would not hurt self. His activity levels were reportedly more than children of his age. He avoided eye contact, attained babbling only, and continued with less than normal sleep hours. Recognition of parents and bi-syllable words in the speech were attained at the age of 2.5 years. Parental efforts to teach him language were futile and vocabulary did not improve beyond 5–6 words. Since 3 years of age, his activity levels had increased to an extent that it was impossible to make him sit. He was not amenable to any form of training in view of lack of attention and easy distractibility. He was fussy about food but could eat himself. He did not achieve any meaningful play activities, avoided other children of his age, and preferred solitary play with inanimate objects. These complaints were also the reason for drop-out from school within 6 months of enrollment.

For the last 2 years, further worsening of symptoms, in the form of predominant irritable mood, inappropriate laughing without any stimulus, and increase in demand

for eatables, was observed. Refusal to entertain his demands would be met with aggression. Activity levels also increased to an extent that it often necessitated physical restraint. His sleep hours remained 3–4 hours at night. Moreover, parental burn-out was also observed.

EXAMINATION AND MANAGEMENT

Physical examination was unremarkable. Mental status examination revealed irritable affect, marked hyperactivity, poor content of speech, and lack of eye contact. Physical investigations including hemogram, blood biochemistry, thyroid profile, urinary copper levels, anti-streptolysin O titers and magnetic resonance imaging (MRI) of the brain were normal. Social quotient measured on Vineland Social Maturity Scale revealed borderline intelligence, and the score on Indian Scale of Assessment of Autism was 45 that ruled out autism. He was diagnosed with ADHD, borderline intellectual functioning, and mania as per the DSM-5. Exclusion approach was used to subtract features common to ADHD and mania such as hyperactivity, inattention, and intrusiveness. Apart from these common symptoms, psychomotor agitation, over-demanding, decreased need for sleep, and persistent irritability (though the evidence is conflicting)[3,4] were suggestive of mania.

Previously, he did not tolerate methylphenidate, and trials of atomoxetine and risperidone had not yielded any benefit. Therefore, we put him on sodium valproate (20 mg/kg) and clonidine (200 μg/day). Significant improvement in mood and activity was noted about 3 days after starting the medications, with Young's Mania Rating Scale (YMRS) and Connor's Abbreviated Rating Scale (CARS) scores improving from 23 and 30 at baseline to 15 and 22, respectively. At the end of 6 weeks of treatment, the patient was euthymic and significant improvement in hyperactivity and inattentiveness was noted, with YMRS score of 7 and CARS score of 13.

DISCUSSION

The index case offers several unique learning points highlighting the diagnostic dilemmas and treatment challenges faced in a very young child with developmental delays and ADHD who presented with BD. These aspects are briefly discussed here.

ADHD and BD in childhood

There are a few reports of mania occurring in children as young as 3 years of age. In a previous case series of mania in six children aged between 4 and 5 years, three had BD comorbid with ADHD.[5] Similarities between these cases and the index case included early onset of sleep disturbances, history of speech delay, poor response to methylphenidate, persistent irritability, and marked hyperactivity. The phenomenology of pediatric BD differs from that of adult-onset BD as the former has predominant irritability, continuous course of illness, and lesser frequency of well-formed delusions of grandiosity, and the course of mania in children with ADHD is largely chronic, with greater functional impairment.[6,7]

Moreover, the use of methylphenidate in patients with ADHD with BD has been controversial.[8] Further, consistent with the available evidence of efficacy of sodium valproate in the management of acute mania and that of clonidine for both ADHD and mania, we got an excellent response in the index child by utilizing both these agents.[9]

ADHD and developmental delay

ADHD, a neurodevelopmental disorder, shares many neurobiological, neuropsychological, and clinical features with autism, global developmental delay, and intellectual disability. Moreover, in addition to the core symptoms of ADHD, a lot of children present with multiple developmental delays in the form of deficits in language skills, pragmatic language, and motor and social skills.[10] However, most available evidence does not suggest whether the developmental delays/disorders observed in children with ADHD are a precursor or a consequence of ADHD. Hence, the corollary of "chicken or the egg" may be suitably utilized in this scenario.

CONCLUSION

Psychiatrists and pediatricians must be sensitized about the co-occurrence of ADHD and BD in very young children.

Declaration of patient consent

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Pooja P. Kuppili, Jitender Aneja

Department of Psychiatry, All India Institute of Medical Sciences, Jodhpur, Rajasthan, India

Address for correspondence: Dr. Jitender Aneja
Department of Psychiatry, All India Institute of Medical Sciences, Jodhpur - 342 005, Rajasthan, India.
E-mail: anejajitender@gmail.com

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Psychotherapeutic Management of Sexual Obsessions in Childhood: A Case Report

To the Editor,

Obsessive compulsive disorder (OCD) is a psychiatric condition that can lead to significant impairment in various areas of one's life and can affect the developmental process.[1] The lifetime prevalence of OCD in adolescence is found to be 1.9 ± 0.7%.[2] Early onset OCD is characterized by multiple obsessions and compulsions.[3] There is limited literature on childhood OCD characterized by pure sexual obsessions.[4] Childhood OCD is often chronic, is characterized by relapses and remissions, and has implications for long-term management.[5] Children with sexual obsessions report disgust, embarrassment, shame, and intense anxiety with these thoughts.[6] Cognitive behavioral therapy (CBT) has been considered as the most effective treatment for OCD in children and adolescents, and the chances of recovery are good in case of sexual obsessions in children as they respond to standard strategies of treatment.[4]

A 10-year-old boy studying in the 6th grade was brought to the Psychiatry Outpatient Department with complaints of distressing palpitations and crying spells. Upon exploration, these symptoms were found to be accompanied by thoughts that were sexual in nature and would occur repeatedly in his mind for the last 2 months. He was having repetitive thoughts of engaging in inappropriate sexual activity with his mother, teachers, or other females. He had fear that he might inappropriately

hug or kiss his mother or teacher. He used to try to distract himself but was unable to do so even with great effort. He used to feel disgusted and guilty after having these thoughts. These thoughts would occur at any time and irrespective of any activities he was engaging in. He had these thoughts in school, and they interfered with his academic performance as he was finding difficult to concentrate. He recognized them as his own thoughts, and in response to these thoughts, he would sometimes engage in neutralizing behavior such as thinking about some pleasant memories, to get rid of these thoughts.

He was diagnosed with F42.0 OCD-Predominantly obsessional thoughts and started on escitalopram 10 mg and clonazepam 0.25 mg. CBT was initiated. Ten weekly sessions were held with the focus on assessment, psychoeducation, building cognitive resistance and constructive self-talk, and alleviating anxiety and preparing for relapses.

A detailed history was taken along with a baseline assessment on Children's Yale- Brown Obsessive Compulsive Scale (CY-BOCS) on which 13 was the total score (11 on the five-item obsessions scale and two on the compulsions scale), indicative of mild severity of the symptoms.

The first two sessions were focused on psychoeducation, in which information was provided to the parents and the client regarding the etiology of OCD, including the neurobiological and psychosocial mechanisms along with a clarification of any misunderstandings related to the disorder. The major goals and components of CBT were communicated.

The aim of the next six sessions was to enable him to externalize OCD, to build his self-confidence, to deal with anxiety and fears, and to reward himself. He was asked to rename these thoughts. He renamed OCD as "villain," and it helped him in relieving himself of the shame and guilt he was experiencing as a result of these thoughts. When he started externalizing the thoughts, the previous level of distress started declining. He learnt that these thoughts were because of the disorder, and he was not responsible for them. The technique of "fear thermometer" was used, in which he used to rate the anxiety-provoking situations. He was taught "riding the worry hill technique," in which it was explained that dealing with fears is like riding up and down the worry hill, and he is the one who controlled the bicycle. This technique enabled him to build self-confidence and made him in charge of the situation. It was ensured that he independently dealt with his anxiety and fears, and it was conveyed to the parents by the therapist that their role was not to reassure him while he was experiencing anxiety. When he was able to deal with his anxiety independently, he was rewarded by the parents and the therapist in the form of praise and reinforcers that were planned according to his preferences. Parents were trained in differential attention. Whenever he used positive coping and did not engage in OCD related behaviors, he was reinforced by them. After the sixth session, CY-BOCS was repeated, and the score was 6, indicative of subclinical severity of obsessions. After the eighth session, CY-BOCS score was 3.

The last two sessions emphasized relapse prevention. The patient and his parents were psychoeducated regarding the possibility of relapses. The importance of having realistic expectations, identifying the relapse signs, and seeking immediate intervention was elaborated upon. A booster session was taken after 6 weeks to assess the changes. The CY-BOCS score remained 3. His academic grades improved. After 2 months, a follow-up session was taken, and the CY-BOCS score was 2, which fell in the subclinical range. Subjectively, he reported no distress, and he was managing well in his personal, social, and academic spheres.

The above case is being reported for its unique presentation and to highlight the effectiveness of CBT as a successful treatment modality along with pharmacotherapy for OCD in children. Children with OCD often have poor insight.[5] They are less likely to understand the significance of treatment without assistance from their parents and also require substantial structure and more supervision from the therapist as well as parents to participate effectively in CBT.[7]

Certain challenges were faced while managing the case. One was related to eliciting the symptoms. The child did not describe the symptoms in the first interview. However, when rapport was established, he comfortably talked about his symptoms. Rapport was built using a number of techniques in the form of making the child feel comfortable by not asking too many questions, by praising him, and by engaging him in one of his favorite activities, i.e., sketching. Because it was difficult to make the child understand the symptoms adequately, pictures and graphs were used to explain the symptoms and the techniques to deal with them. For instance, when the child was assigned homework to rate his fear and emotions associated with the symptoms, use of emoticons was made. There were no other significant challenges faced in relation to engaging the child in the therapeutic process. In this case, there was no family history of psychiatric illness, and it was difficult for the parents to understand his symptoms. The treatment thus required the involvement of the parents and the necessity to psychoeducate them regarding the illness. Because of the symptoms, there was a significant decline in his academic performance, which was also causing a

lot of distress to the patient and his parents. Therefore, the treatment focused on assessing the dysfunctions in various domains, including academics and social life, to develop strategies specific to work with these areas of difficulties. In this case, once the obsessional symptoms were dealt with, the academic performance of the child started improving. Some strategies that might be useful in improving the academic performance include a structured study schedule, time management, setting small and achievable targets, elaborative rehearsal, and use of principles of reinforcement. In some cases, if the child has difficulties in the social relationships as a result of feelings of inferiority or embarrassment because of his/her symptoms, effective social skill training methods might be useful.[8] In this case, there were certain protective factors, including good family support and cognitive sophistication in the adolescent, which made it easier for him to understand and apply the cognitive strategies effectively. The cognitive functions, especially executive functions, are one of the factors to be suggested as a good predictor for treatment response.[9]

Future work should focus on developing cognitive strategies that are specific to Indian children in intervening with sexual obsessions, to make it more culturally specific, as there might be some cross-cultural variations in the course of illness and the clinical characteristics might also differ.[10]

Declaration of patient consent

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There are no conflicts of interest.

Tanuja Bhardwaj, Pragya Sharma

Department of Clinical Psychology, Dr. Ram Manohar Lohia Hospital, New Delhi, India

Address for correspondence: Dr. Pragya Sharma
Department of Clinical Psychology, Dr. Ram Manohar Lohia Hospital, New Delhi - 110 001, India.
E-mail: pragya.cp@gmail.com

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A Case Report of Psychotic Symptoms in Social Anxiety Disorder

Sir,

Social phobias come under the category of phobic anxiety disorders and are centered around a fear of scrutiny by other people, usually leading to avoidance of social situations.[1] Although social anxiety has been found to be the most common comorbidity in people with psychosis,[2] social phobia or anxiety *per se* is a neurotic disorder in which the patient usually maintains an adequate touch with reality and is rarely associated with psychotic symptoms, beyond the self-referential feelings often observed in social anxiety disorder (SAD). Although there are a few contradictory pieces of evidence of the presence of psychotic symptoms in anxiety disorders,[3,4] it is usually accepted that there are clear lines of demarcation between anxiety disorders and psychosis. The exact prevalence of psychotic symptoms in SAD is not known. Although the presence of psychotic symptoms in SAD would have an immense impact on the severity, management, and prognosis of the disorder, there are only case reports available and the matter is not yet studied in a systematic manner. This case report details how a person with SAD gradually developed disorder-congruent delusions.

CASE REPORT

A 34-year-old married male, graduate in business administration, working as a clerical staff in the Middle East, premorbidly having anxious avoidant personality, presented to the clinical psychology department with a 3 years history of gradual onset of fear of blushing when meeting people and avoiding social interactions with familiar people, especially those in authority, after he started working in a new office. He had less anxiety when meeting unfamiliar people. His social phobia and avoidance increased in the last 2 years, with social interactions getting restricted to only his wife and child as well as colleagues during office work. He started avoiding phone conversations with friends and extended family members, as he believed that they would notice the change in his voice and come to know about his discomfort.

For the last 6 months, he started believing that his blushing during social interactions is offensive to others in the office. Moreover, he was convinced that his "fear of blushing" was contagious and was being transmitted to other people. He reported that he had transmitted his blushing to his supervisor who also started blushing during social encounters. He also believed that his supervisor was offended by the patient's presence, as he would blush more. Hence, the patient has been avoiding meeting his supervisor. Off late, he felt that more people in the office were finding him offensive, and he was transmitting the blushing to all of them. He wanted to stop going to the office, as he felt responsible for others' discomfort. He returned to Kerala to get his problem treated.

There is no history suggestive of severe depression, as the patient did not have marked anhedonia, fatigue, or diminished activity. He had past history of low mood, feeling tired, and increase in sleep and appetite that persisted for a few months after he failed in his pre-degree examination 18 years back and it resolved without treatment. Family history of depression in paternal uncle, personal history of restrictive upbringing by parents, and premorbid anxious-avoidant traits were reported. Mental status examination showed low mood, worries about his social anxiety, and firm belief about others finding him offensive as he was transmitting "fear of blushing" to them. He admitted to the possibility that there could be something wrong in his mind, and hence, wanted treatment.

A detailed psycho-diagnostic assessment indicated average intellectual functioning, social anxiety, depressive symptoms, and a high tendency for fantasy. On Beck Depression Inventory scale, he got a score of 26 indicating moderate depressive symptoms; on Beck Anxiety Inventory scale, a score of 16 indicating mild anxiety symptoms; and on Social Interaction Anxiety scale, a score of 43 indicating presence of social anxiety disorder. The diagnosis of SAD was retained as the client did not fit the criteria for severe depression with psychotic symptoms or persistent delusional disorder.

Management involved a combination of paroxetine controlled release tablets and cognitive behavior therapy (CBT) involving cue-controlled relaxation, graded exposure, and cognitive restructuring. At 1 year follow-up, the patient still continued having the delusion that his boss had developed social anxiety and blushing through him, but it appeared to have become encapsulated and to be not interfering in his daily functioning in the office. He continued interacting with his boss through phone whenever possible. He no longer believed that he was transmitting social anxiety to all his

colleagues. His interaction with colleagues was normal, and he was no longer reluctant to go to his office.

DISCUSSION

This case is different from a typical case of social phobia in two aspects: first by the presence of a firm belief that his symptoms of social anxiety, especially his fear of blushing, were contagious and his concern over spreading this fear to more and more people, and second, by his conviction that others found his social discomfort offensive.

The false belief in this patient is similar to the offensive subtype of Taijin-Kyofusho (TKS), a condition mentioned under SAD in Diagnostic and Statistical Manual of Mental Disorders 5.[5] The offensive subtype of TKS includes patients with a delusional conviction of offensiveness-persistent and excessive fear of causing offence to others in social circumstances by physical characteristics such as blushing, facial expressions, body odors, or intestinal noises. Cultural and societal norms engendering guilt, shame, and embarrassment are also likely etiological factors.[6] Belonging to a collective society with restricted upbringing, the patient would be more attentive and sensitive to the thoughts, feelings, and behaviors of significant others.

Three explanations have been suggested for the psychotic manifestations in SAD: (1) the individual's inability to challenge his social fears; (2) stressor and perpetuating role of SAD; and (3) the possibility of a primary thought abnormality leading to psychotic self-reference.[3] Greater paranoid ideation, in a non-clinical sample, was found to be associated with higher levels of social anxiety, avoidance, apprehension about evaluation, self-observation, and low self-esteem.[7]

The transformation of social apprehensions to a delusional level could also be explained using the changes in "social brain" and perception because of the increasingly worsening social isolation.[8,9] This could explain how the patient's initial fears of blushing and discomfort progressed into a delusional level with increasing isolation.

The patient improved with treatment focused on SAD - using Selective Serotonin Reuptake Inhibitor and CBT. Antipsychotics have been found to have a lower efficacy in SAD even when delusions are present. This may be because of the hypoactivity of dopaminergic circuits and D2 receptor found in SAD. Antipsychotics could further reduce dopamine action in a system that is already in deficit.[3]

The above case highlights that the commonly assumed demarcation between anxiety disorders and psychosis is questionable and points to the fragility of current diagnostic constructs. Affective and psychotic phenomena often co-occur, and such a co-occurrence predicts a poorer course and outcome, with greater persistence of schizotypal and negative symptoms, more illness behavior, greater likelihood of service use, and more evidence of familial liability for mental illness.[4] New diagnostic subcategories or expanding the social anxiety diagnosis to include psychotic symptoms, as in mood disorders, would have to be considered. This case also suggests that SAD with psychosis could be an entity midway in the dimensional spectrum between SAD and delusional disorder. In addition, the role of social isolation, secondary to social phobia, in the development of psychotic symptoms among patients with social phobia also needs to be further explored.

Declaration of patient consent

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There are no conflicts of interest.

Gitanjali Natarajan, Sangeetha P. Louis, Praveen Arathil[1]

Departments of Clinical Psychology and [1]Psychiatry, Amrita Institute of Medical Sciences, Kochi, Kerala, India

Address for correspondence: Dr. Gitanjali Natarajan
Department of Clinical Psychology, Amrita Institute of Medical Sciences, Ponekkara P.O., Kochi - 682 041, Kerala, India.
E-mail: gitanjalin@aims.amrita.edu

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Catatonia Associated with Hypernatremia

Sir,

Catatonia as a clinical entity is associated with affective disorders, psychotic disorders, and organic conditions. Acute organic catatonia is often associated with metabolic, neurological, and toxic conditions.[1] Although acute organic catatonia has been linked to various causes, there is a lack of literature on the association of acute organic catatonia with hypernatremia. In this report, we present a case of acute organic catatonia associated with hypernatremia, which improved on correction of the hypernatremia.

CASE REPORT

A 67-year-old lady presented with signs and symptoms suggestive of Alzheimer dementia for 5 years and was on treatment with Tab. donepezil 10 mg/day for the last 4 years. Since a year prior to the presentation, she was started on Tab. quetiapine 50 mg at night time for sleep disturbances and behavioral problems. She presented to the emergency outpatient services with acute onset symptoms of 1 month duration, characterized by posturing, mutism, staring, negativism, and urinary and fecal incontinence. History revealed a reduction in oral intake over the last 10–15 days. There was no associated history of fever, sore throat, running nose, or symptoms suggestive of urinary tract infection or skin lesions. In terms of psychiatric symptoms/syndromes, there was no history suggestive of depressive symptoms, sudden worsening of cognitive symptoms, or psychotic symptoms. There was no history of head injury, epilepsy, substance use, hypo- or hyperthyroidism, excessive sweating, or any other medication intake or overdose of medications.

On examination, she exhibited posturing, mutism, waxy flexibility, grasp reflex, and negativism. Further, there was evidence of dehydration and low blood pressure (100/66 mmHg). Physical examination did not reveal any evidence of neck rigidity or gross nutritional deficiencies. Neurological examination was not suggestive of any motor deficit. A provisional diagnosis of organic catatonia was considered. Her Bush Francis Catatonia Rating Scale (BFCRS) score was 21.

On investigation, her hemogram, liver function test, blood glucose levels, X-ray chest PA view, electrocardiogram, and computerized tomography scan of the brain did not reveal any abnormality. However, she was found to have raised serum sodium levels (170 mmol/L), raised serum urea (180 mg/dl), and raised serum creatinine levels (1.7 mg/dl). Other electrolytes were within normal range. Her arterial blood gas analysis also did not reveal any abnormality. Her blood culture reports mentioned "sterile." There was no evidence of autonomic fluctuation during the initial few hours of assessment.

In terms of management, all medications were stopped. Though lorazepam challenge test was considered,

in view of very high sodium, it was postponed and we decided to carry out the same after correction of serum sodium levels. In liaison with the internist, she was started on normal saline and 5% dextrose every 6 hours. During the first 24 hours, her sodium levels reduced to 164 mmol/L, and by 48 hours, her serum sodium levels reduced to 152 mmol/L. Surprisingly, there was an improvement in posturing, waxy flexibility, and mutism. By the 4th day, her serum sodium levels normalized (i.e., reached 142 mmol/L) and all the catatonic features resolved, with a BFCRS score of 1. Further exploration of the history at this time also did not reveal any depressive symptoms, delusions, hallucination, or any other psychotic symptoms. After another day of observation, she was sent home with a final diagnosis of organic catatonia. Quetiapine was started at a dose of 25 mg/day and increased to 50 mg/day after a week. Donepezil was started at 5 mg/day after 5 days of improvement of hypernatremia, and after 3 days, it was increased to 10 mg/day. There was no re-emergence of hypernatremia or catatonia.

DISCUSSION

Although there are reports of association of catatonia with hyponatremia,[2-9] there is limited data on the association of catatonia with hypernatremia. In a PubMed search, we could only find one case report documenting the association of catatonia with hypernatremia (160 mmol/L) in an 87-year-old female. This patient was also diagnosed with dementia and had reduced intake with a background of fever. In terms of catatonic features, the patient had posturing, psychological pillow, mutism, waxy flexibility, staring grasp reflex, and advertence reaction.[10] The case presented by us also had poor oral intake and showed a similar picture of catatonia. The previously reported case in the literature was also managed with normal saline and dextrose, as in our case. In our patient, all symptoms of catatonia resolved over 3 days. The previous report also suggested a similar picture.[10]

Hypernatremia is defined as an increase in the serum sodium levels above 145 mmol/L. It is considered to be a hyperosmolar condition caused by a reduction in the total body water, relative to the electrolyte content of the body. Accordingly, hypernatremia is considered as a state of reduced body water, rather than a deficiency of sodium homeostasis. It is usually seen in elderly patients who have physical or mental illnesses, with associated impaired thirst with or without restricted access to water. At times, fluid loss due to any cause can exacerbate the hypernatremia.[11]

In the index case, the patient had symptoms of 1-month duration, which started with catatonic features which were possibly preceded or associated with decreased oral intake. Although such history was not available, it is possible that both the catatonia and hypernatremia were an outcome of dehydration as a result of poor intake. Accordingly, correction of dehydration with saline and dextrose led to a correction of sodium as well as improvement in the catatonia. However, it is also possible that catatonia was associated with hypernatremia, and the presence of catatonia could have led to dehydration due to poor intake. In the index case, catatonia responded to correction of hypernatremia, which provides further evidence for the association of catatonia with hypernatremia.

As hypernatremia reflects hyperosmolarity, it leads to shrinkage of neurons and resultant brain injury. Risk factors for the development of hypernatremia include advanced age, mental and physical impairment, presence of uncontrolled diabetes mellitus, polyuria due to any cause, use of diuretics, and hospitalization or admission to a nursing home where the patient is provided with inadequate nursing care. Hypernatremia is considered to have a poor prognosis when it is associated with low systolic blood pressure, low serum pH, very high serum sodium levels (>166 mmol/L), high plasma osmolality, dehydration, or pneumonia.[11] The clinical features of hypernatremia can be broadly divided into features of dehydration (such as tachycardia, hypotension, dry mouth, and low skin turgor) and cognitive and neurological symptoms (such as confusion, obtundation, lethargy, abnormalities of speech, irritability, myoclonic jerks, seizures, and nystagmus), which could be attributed to the shrinkage of neurons due to dehydration. Some patients may have additional symptoms of generalized weakness and weight loss.[11] Our patient had features of dehydration along with features suggestive of pre-renal azotemia, which was possibly related to reduced oral intake.

Management of hypernatremia depends on the rapidity of its development. Acute hypernatremia is defined as developing over less than 24 hours, and chronic hypernatremia is defined as developing over more than 24 hours. Chronic hypernatremia must be corrected slowly, i.e., at a rate of about 8–10 mEq/d.[11] In our case, we presumed that the patient has chronic hypernatremia, and accordingly, corrected her sodium at a slower pace.

The index case demonstrates that catatonia in an elderly person may be associated with hypernatremia. While evaluating an elderly person with catatonia, hypernatremia should always be considered as a possible cause, and serum electrolytes, especially serum sodium levels, must be evaluated.

Declaration of patient consent

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Aseem Mehra, Sandeep Grover

Department of Psychiatry, Postgraduate Institute of Medical Education and Research, Chandigarh, India

Address for correspondence: Dr. Sandeep Grover
Department of Psychiatry, Postgraduate Institute of Medical Education and Research, Chandigarh - 160 012, India.
E-mail: drsandeepg2002@yahoo.com

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Revisiting Omega and Veraguth's Sign

Sir,

Omega sign and Veraguth's fold are two facial features classically considered diagnostic of melancholic depression.[1] Despite of their long history and relative objectivity, these valuable signs have been forgotten in current psychiatric practice. We will revisit these signs and their relevance to current knowledge and practice.

Omega sign (also known as "*omega melancholicum*") was first described in 1872 by Charles Darwin as "grief muscles" in his book, *The Expression of the Emotions in Man and Animals*, where he described melancholic depression in graphic details, with precocious biological insights.[2] In 1878, Heinrich Schule, a German psychiatrist, proposed the term "the melancholic omega" for the peculiar furrowing of glabellar skin above the dorsum of the nose.[2] It is called so because it resembles Greek alphabet 'Ω', appearing as two vertical slits between the eyebrows, joined at the top by a horizontal crease.[1] Oswald Bumke described similar facial expression in 1924, among patients with melancholia and also schizophrenia, which he described as the "puzzlement" (Ratlosigkeit).[2]

Veraguth's fold is a similarly important visible sign occurring in chronic depression, which was initially reported by Otto Veraguth around 1911,

who observed eyelid folds typically seen in chronic depressive patients.[3] This sign was later popularized by Heinz Lehmann's illustration in Kaplan and Sadock's Comprehensive Textbook of Psychiatry.[3,4] Veraguth's sign appears as triangular palpebral folds running diagonally from the lateral corners of the eyes, medially upward to the medial end of the eyebrows [Figure 1].[3,4]

Omega sign is formed due to excessive and prolonged contraction of corrugator and procerus muscles, as recorded by electromyography in depressed individuals.[5] It has been proposed that muscular activity in the eyebrow area influences proprioceptive fibers of the optic branch of the trigeminal nerve, which predominantly activate the ipsilateral ventromedial prefrontal cortex through the ipsilateral locus ceruleus, a phenomenon termed as "emotional proprioception."[6]

From a diagnostic point of view, Omega sign can serve as a useful clinical sign in the face of the unclear and often overlapping cluster of symptoms of the neurotic spectrum of disorders.[1] Veraguth's sign can be useful in differentiating between dementia and pseudo-dementia (depression masking as dementia), which often leads to misdiagnosis and delay in appropriate management.[7] It has also been proposed to use these facial markers digitally for diagnostic and monitoring purposes through computer algorithms and software programs, fostering a new era of use of innovative technology in the medical field.[8]

The therapeutic implication of Omega sign is rapidly gaining popularity in the form of botulinum toxin injections in the glabellar area, leading to a reduction of depressive symptoms, especially in cases of blepharospasm.[9,10] The most plausible and widely accepted explanation for this therapeutic effect is "the facial feedback hypothesis" (first proposed by Charles Darwin and William James), which postulates that facial expression influences emotional perception, thus regulating our mood state.[11] Alternative explanations include elevation in mood because of improved social connectivity and feedback because of a more positive reciprocal firing of mirror neurons.[11] It has also been proposed, on the basis of rat models, that botulinum toxin is directly transported by the trigeminal nerve into the amygdala and exerts direct central pharmacological effects.[11] After the procedure, anti-depressive effects start appearing as early as 2 weeks and often last as long as 6 months, well beyond the cosmetic and esthetic effects.[10] Common adverse effects include drooping of eyelids, bruising, erythema, and pain at the injection site, which are transient and reversible.[11]

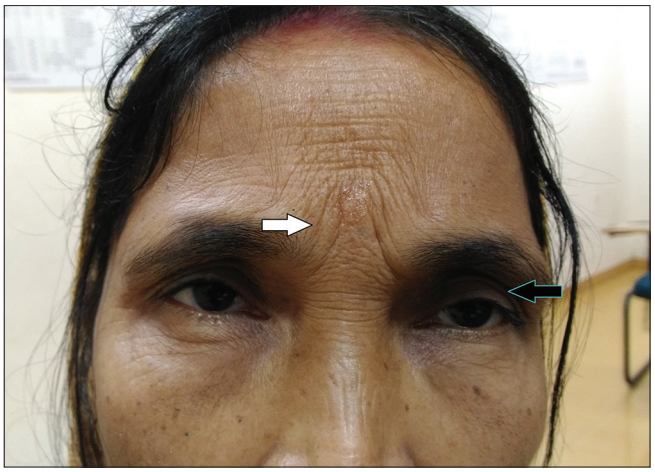

Figure 1: Vertical wrinkling between the eyebrows joined at the top by a horizontal crease (Omega sign sign-white arrow); also shows diagonal palpebral folds running medially upward (Veraguth's sign-black arrow)

The diagnostic specificity of Omega sign is limited because of overlap with similar "signs" in neurology and other dystonias. "Procerus sign" is a similar neurological sign reported in atypical parkinsonism, especially progressive supranuclear palsy, characterized by contraction of corrugator supercilii and procerus muscles, leading to vertical wrinkling on the forehead.[12] This lack of specificity and overlap with other conditions limits its value as a stand-alone clinical sign, but nevertheless, it is quite useful when used in conjunction with proper detailed history and thorough mental status examination.

In the wake of current progress in the neurobiological understanding of mental illness, we are moving toward more objective tools for diagnosis and exploring new paradigms for better management of mental illness. In this context, the Omega sign and the Veraguth's fold assume new relevance in both diagnostic and therapeutic domains.

Declaration of patient consent

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There are no conflicts of interest.

Anantprakash S. Saraf, Santanu Nath[1]

Department of Psychiatry, Mahatma Gandhi Institute of Medical Sciences, Sevagram, Wardha, Maharashtra, [1]Department of Psychiatry, AIIMS, Bhubaneswar, Orissa, India

Address for correspondence: Dr. Anantprakash S. Saraf
Department of Psychiatry, Mahatma Gandhi Institute of Medical Sciences, Sevagram, Wardha, Maharashtra, India.
E-mail: dr.anantsaraf@gmail.com

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Comments on "Utilization of Emergency Psychiatry Service in a Tertiary Care Centre in North Eastern India: A Retrospective Study"

Sir,

Naskar *et al*.[1] demonstrated the importance of psychiatry in a general hospital setting. The authors highlighted the need for addressing the biopsychosocial problems while managing a psychiatric patient in an emergency. Also, it is really appreciable that the authors collected 1-year data and provided the percentage of psychiatric illness in the emergency setting of a general hospital. There are a few concerns that need to be addressed and clarified as the findings of this study could provide a false understanding of face value.

First, the authors described the concept of "Emergency Psychiatry" as the service provided with the intention of providing immediate therapeutic interventions for "any disturbance in thoughts, feelings, or actions" as per Kaplan and Sadock's Synopsis of Psychiatry.[2] We would like to disagree with the concept of emergency psychiatry illustrated in the article. Some Indian journals have described psychiatric emergency as an acute disturbance in thought, behavior, or mood of the patient, which, if untreated, may lead to harm, either to self or others.[3,4] The same has been stated in international publications about the psychiatric emergency.[5] Hence, the concept of harm to others or self, if untreated, is very important in understanding the concept of emergency psychiatry and providing care for patients in this setting.

Naskar *et al*.[1] demonstrated "medically unexplained symptoms" (MUS) to be the most common presenting symptom (47.7%), which gives a false understanding that these are psychiatric emergencies. We agree that patients would be distressed due to the symptoms, but any harm to self or others is unlikely if not treated immediately. Many of these patients could have been redirected to the psychiatry outpatient settings, as this would save the effort and time of the resident or physician posted in the emergency department. The emergency resident could use this time for detailed assessment of patients with significant violence or self-harm behavior. This would also ensure comprehensive care for the patients with MUS in the outpatient setting and would also give the treating team an opportunity to explore the biopsychosocial context involved in the evolution of the MUS. Our reason to state the above point is that the readers should not mistake the concept of psychiatric emergency as any patient approaching the emergency ward.

The authors state that many previous studies, such as Kelkar *et al*.[6] and Bhatia *et al*.,[7] have demonstrated similar findings, which we agree with. But those were published between 1980 and 1990, and there is more awareness among psychiatrists and physicians in recent times about emergencies in psychiatry.[8] There are many recent works on emergency psychiatry presentations which state that schizophrenia, substance use disorders, mania, and dissociative symptoms are the common presenting illnesses at the emergency department, rather than the somatoform disorder.[9-12] These recent works on psychiatric emergency clearly state a presentation and profile of the psychiatric emergency patients, which differ largely from the profile stated in the article by Naskar *et al*.[1]

The description of "Distribution of the various reasons for referral from various departments," in Naskar *et al*,[1] states that 22.38% of patients referred by other departments had a previous psychiatric illness.[1] It would have been more informative if the authors had provided the reason for referral to the psychiatrist, as there is a possibility that the readers may misinterpret that these patients would have been sent for just repeating the prescriptions of psychotropics since they are in the hospital for other medical illnesses. It is a collaborative and holistic approach, but considering such cases as a psychiatric emergency might be misleading. Such situations would naturally tend to underestimate the prevalence of actual psychiatric emergencies such as violence, suicidal attempt or substance withdrawal, overdose/drug toxicities related to psychotropics, neuroleptic malignant syndrome, and catatonia[3] and might lead to a false interpretation of emergency psychiatry by the readers.

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Kumar T. Santhosh, Arun Enara, Hari H. Suchandra, Guru S. Gowda

Department of Psychiatry, National Institute of Mental Health and Neuro Sciences, Bengaluru, Karnataka, India

Address for correspondence: Dr. Guru S. Gowda
Department of Psychiatry, National Institute of Mental Health and Neuro Sciences, Bengaluru - 560 029, Karnataka, India.
E-mail: drgsgowda@gmail.com

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Comments on "How does India Decide Insanity Pleas? A Review of High Court Judgments in the Past Decade"

Sir,

Ramamurthy *et al.* examined factors associated with the outcome of an insanity plea in a convenience sample, based on data extracted from the websites of 23 High Courts in India. They concluded that the "success rate of insanity plea in Indian high courts is a modest 17.6% and, lower court verdict, documentary proof of mental illness and psychiatrist's opinion were associated with the success of insanity pleas".[1] In this letter, we raise concerns regarding their inferences.

The authors examined the relationship between the verdict of the lower court, documentary proof of mental illness, psychiatrist's opinion, and High Court verdict using Pearson's Chi-square test of independence. Pearson's Chi-square test is a non-parametric test

of significance used to test the relationship between nominal variables, provided that certain assumptions are met. Among these assumptions are the requirements that (1) the groups under study must be independent of each other, (2) the categories of the variables under examination must be mutually exclusive, and (3) each subject may contribute to one and only one cell in the frequency distribution table.[2] We note that the insanity defense is almost always introduced in a trial court and not de novo in an appellate court.[3] Thus, the verdict of the trial court and high court are repeated measures on the same subject and are, therefore, correlated; this bars the use of the Pearson's Chi-square test.[2]

So, what would be an appropriate test in this scenario? The question is hard to answer because the authors stated no hypotheses. For example, if their hypothesis was that there is no difference between the proportions of acquittal at the trial court and the High Court, then the McNemar test is appropriate.[4] Alternatively, considering that the mental health team, the lower court, and the High Court are 'classifiers' (although not independent) of the criminal competence of the accused, Cohen's Kappa statistic could have been used to measure inter-observer agreement.[5]

An application of McNemar's test with continuity correction for small sample size shows that the proportions of acquittal differed significantly between the trial court (p1 = 9/94) and the high court (p2 = 18/94) ($\chi 2^{[1]} = 4.9, P = 0.03$). Using the binomial sign test, which is an alternative to the McNemar's test for small samples (n = 94, K = 18), yields a *P* value of 0.0001, also indicating a statistically significant difference between the courts.

On a separate note, the authors have commented upon the "modest" success of the insanity plea in India. We acknowledge Seymour Pollack and Bernard Diamond's arguments for impartiality and honest advocacy, respectively, about the role of the forensic psychiatrist in criminal cases. The role of the mental health professional here is to opine upon the capacity of the accused and enable the court to determine their criminal competence.[6] Thus, where the plea of insanity is used as a defense, the role of the mental health professional is as an expert witness along the above-mentioned lines. The success rate of the insanity plea, therefore, is of less importance than the determination of the integrity of the insanity plea. What would be more relevant would be the inter-observer agreement between the forensic psychiatrist and the court verdict.

In light of the above limitations, we suggest that the results and conclusions of this study should be interpreted with caution.

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There are no conflicts of interest.

Migita Michael Dcruz, Lekhansh Shukla, Chittaranjan Andrade[1]

Departments of Psychiatry and [1]Psychopharmacology, National Institute of Mental Health and Neurosciences, Bengaluru, Karnataka, India

Address for correspondence: Dr. Migita Michael Dcruz
Department of Psychiatry, National Institute of Mental Health and Neurosciences, Bengaluru, Karnataka, India.
E-mail: migitadcruz@gmail.com

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Response to Comments on "How Does India Decide Insanity Pleas? A Review of High Court Judgments in the Past Decade"

Sir,

Dcruz *et al*.[1] have questioned the use of Pearson's Chi-square test of independence in our article[2] to determine the association between the trial court and high court judgments on the insanity plea in India. The crux of their argument is that the verdict of the trial court and high court is not independent of each other; they are repeated measures on the same subject and are therefore correlated. They have suggested the alternatives of McNemar test and Cohen's kappa statistic to analyze the data.

However, they have not considered the qualitative difference between the trial court and high court judgments. Without doubt, the verdict pronounced by the high court overrules the trial court verdict. For instance, in a murder case for which insanity plea is raised, the defendant is either imprisoned for life or acquitted (institutionalized in most cases) based on the high court judgment. Hence, it is of great interest to know the factors associated with the success of insanity pleas in high courts. Even though the verdict of the trial court and high court is repeated measures on the same subject, one cannot assume that they are correlated. The Honourable Supreme Court of India has clarified that high court, in appeal, either against an order of conviction or acquittal, has full power to review the evidence and reach its own independent conclusion.[3] It is a separate matter that we found a positive association between the trial court and high court judgments. But such an association cannot be assumed before the analysis is done. We maintain that Pearson's Chi-square test is an appropriate method to determine the association between the trial court and high court judgments.

Calculating the interobserver agreement between the psychiatrist opinion, verdicts of the trial court and the high court has been suggested as one way of analyzing the data. In our study,[2] we reported that in 32/67 cases, the psychiatrist who was treating the patient prior to the crime was called upon as the expert witness. Mean duration of 14.7 months elapsed between the last visit to the psychiatrist and the occurrence of the crime. Also, in 41/67 cases, the psychiatrist saw the patient first time after the crime. Mean duration of 275 days elapsed between the occurrence of the crime and the psychiatric evaluation. The expert witness was neither asked to give evidence regarding the mental status of the accused at the time of crime nor was he/she expected to comment on legal insanity. Keeping this in mind, there is no reason to calculate interobserver agreement between psychiatrist opinion and high court verdict. Looking for interobserver agreement between the trial court and high court judgments is more meaningful.

The use of the adjective 'modest' to describe the 17% success rate of insanity pleas in India has also been criticized. We agree that the psychiatrist as an expert witness needs to be impartial to aid the court in the delivery of justice. Consider the fact that there is a widely held assumption among the public that the insanity defense is a legal loophole helping the offenders escape justice.[4] Perusal of the vitriolic online comments to this newspaper article[5] clearly indicates that the public perception of the insanity defense in India is not far different from that in the West. It was in this context we described the success rate of insanity plea as 'modest.' There was no suggestion or insinuation that it should have been higher.

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Parthasarathy Ramamurthy, Vijay Chathoth, Pradeep Thilakan

Department of Psychiatry, Pondicherry Institute of Medical Sciences, Kalapet, Puducherry, India

Address for correspondence: Dr. Parthasarathy Ramamurthy
Department of Psychiatry, Pondicherry Institute of Medical Sciences, (A Unit of Madras Medical Mission), Kalathumettupathai, Ganapathichettikulam, Village No 20, Kalapet, Puducherry - 605 014, India.
E-mail: drparthasarathy.psy@gmail.com

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