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Therapist Reported Cognitive Questionnaire For Assessing Cognition In Patients With Adhd

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Abstract

Background and aim: Attention-deficit hyperactivity disorder (ADHD) is a common, developmental disorder, involving inappropriate and disruptive levels of inattention and/or hyperactivity with impulsivity. The aim of the study was to investigate and interpret the validity and reliability of the Therapist Reported Cognitive Questionnaire for assessing cognitive function in patients with ADHD**.**

Introduction: ADHD is typically identified in the younger childhood years with symptoms often persisting throughout adulthood. Studies have reported impairments in basic cognitive processes such as slow processing speed, distractibility, and increased reaction time variability.

Need of study: There is a limited information regarding cognition function in ADHD. So, through this study we create Therapist Reported Cognitive Questionnaire for better interpretation of cognitive function in patients with ADHD.

Method: General cognitive questionnaires were collected based on these questionnaires, Therapist reported cognitive questionnaire of 21 questions was created. On the basis of inclusion criteria of age between 6 to 14 years and exclusion criteria, 50 patients were indulged in the study. This questionnaire was filled by therapist on the basis of activities performed by patient mentioned in the questionnaire. Result: The study showed that the questionnaire is reliable as the Cronbach's alpha of each question is .997, approximately near to 1 and is also valid as the correlation of each question with the total score is significant 0.01 level. Conclusion: The study findings revealed that the Therapist Reported Cognitive Questionnaire is reliable as well as valid and significant in assessing cognitive function in ADHD Patients.

Keywords: ADHD Questionnaire; cognition questionnaire; cognition measure; ADHD measure: cognition processes

Introduction

ADHD is considered the most common neurodevelopmental or child psychiatric disorder with severe consequences in social, vocational, academic, individual, and family settings, often resulting in a financial burden [1]. ATTENTION- DEFICIET/ HYPERACTIVITY DISOTDER (ADHD) is the most diagnosed

disorder in children today (Barkley, 1998). Many of the causes suggested for ADHD are biological or have biological consequences that are related to their effects on brain function [7].

Cognition in ADHD

Most individuals with ADHD have deficits in one or more cognitive domains. The relationship between clinical symptoms and cognitive functioning is a complex one [8]. Besides the behavioral symptoms of ADHD, studies have reported impairments in basic cognitive processes such as slow processing speed, distractibility, and increased reaction time variability [2-6]. Processing speed refers to how quickly an individual can react to a given stimulus within a limited time frame, it does not reflect individual differences in specific abilities, but rather differences in the time needed to execute cognitive operations [9]. Distractibility refers to individuals' attention being pulled away from the target stimulus [2]. more specifically, the shift in attention toward the non-target stimulus possibly leads to incomplete or incorrect encoding of the target stimuli (e.g., missing a go signal/cue required to execute a correct response in a stop signal task). Increased distractibility in ADHD is attributed to an inability to filter out irrelevant information [10]. or excessive orientation towards task-irrelevant stimuli [11].

Dysfunctions in cortico-striato-thalamo-cortical neuroanatomical circuitry are thought to produce periodic lapses of attention causing periodic fluctuations and increased reaction time variability in children with ADHD [12]. Increased reaction time variability, in particular, is a consistently replicated deficit of neuropsychological performance in ADHD. The studies even suggested that slow processing speed in ADHD may disappear after controlling for reaction time variability ADHD [(2,13,14]. Impairments in complex cognitive functions such as executive functioning and memory have also been reported in ADHD. [15,16,17].

Basic cognitive processes can be seen as a foundation of complex cognitive processes. [18]. For example, when an individual shows a deficit in reaction time and errors as a result of increased reaction time variability [14], and being easily distracted (i.e., deficits in basic processes), these deficits may manifest in any more complex function that built up on these processes. Put differently, the measured task performance is an outcome of both basic and complex cognitive processes combined. The questions emerge to what extent each type of these processes independently contribute to poor task performance in ADHD and whether tasks' indices, used to estimate complex cognitive functions reflect impairments in basic information processing rather than deficiencies in complex cognitive processing. The above-mentioned questions have been partly addressed in children with ADHD. Metin et al. [19] and Salum et al. [20] showed that reaction time and performance accuracy combined reflect inefficient basic information processing rather than independent effects of executive dysfunctions in children with ADHD.

Aim of the study

To investigate validity and reliability of therapist Reported Cognitive Questionnaire for assessing cognitive function in patients with ADHD.

Objectives of the study

1. To investigate the interpretation of cognitive function through Therapist Reported Cognitive Questionnaire in patients with ADHD.
2. To interpret validation of therapist reported cognitive questionnaire in patients with ADHD.
3. To interpret reliability of therapist reported cognitive questionnaire in patients with ADHD.
4. To investigate the significance of therapist reported cognitive questionnaire in patients with ADHD.

Methodology

Primary data is the main source of data collection procedure used in the study. For the purpose of the study 50 subjects were selected and each subject has been assigned to perform activity according to the questions asked in the questionnaire.

- Study design: Survey questionnaire
- Study technique: Convenient Sampling
- Sample size: 50
- Study centre: Santosh college of physiotherapy, Centre for hope (Ghaziabad)
- Study duration: 6 months

Inclusion criteria
- ADHD
- Age- ranging from 6 to 14 years
- Consent to participate in study

Exclusion criteria
- Blurry vision, Aphasia, Uncontrolled cardiovascular disease
- ADHD cognition medicine
- Other hip, knee, foot, or spinal deformity

Steps in designing the questionnaire

Data
Data has been selected on the basis of objectives of the study.50 sample size data were selected on the basis of inclusion criteria.

Items
21 numbers of questions were prepared and related to the cognition function. Each item was checked and related to the objectives of the study.

Design The Individual Questionnaire
Each individual question of this questionnaire was designed as closed question item.
These closed question items were prepared on the basis of the checklist or 5-point rating scale with 5 frequencies.

I. Very often
II. Quite often
III. Occasionally
IV. Very rarely
V. Never

Closed question items produced quantitative data and will help to numerically code and analyze statistically.
Response format
This questionnaire was filled by therapist depending on the response of activity done by the respondent or child asked in the questionnaire about the cognition. The therapist will rate the questions out of the 5 possible frequencies.

I. Very often
II. Quite often
III. Occasionally
IV. Very rarely
V. Never

Wording
The questionnaire has confined each question to single idea. The questionnaire has avoided leading or biased questions. Medical jargon /complex vocabulary has been avoided at all cost. All questions were worded in the same direction. The language has been kept as simple as possible.

Design the layout and presentation
Polite conversation has been established from the outset. A brief introduction was explained to the parents of the children about the purpose of the study. The questions were sequenced more comfortable from general to particular. Consent has been taken from the parents. Therapist filled the questionnaire by performing the activities mentioned in the questionnaire from the child. The response of those activities performed by the child has been noted by the therapist.

Procedure

The aim and objectives of the study were explained to the subjects and their parents. Informed consent is signed by parents. General Cognitive questionnaires were collected (The cognitive Assessment Questionnaire [21], Cognitive Reserve Questionnaire [22], Cognitive Assessment System [23]). Based on these questionnaires,

Therapist Reported Cognitive Questionnaire for ADHD is created in which 21 questions were formed. According to our study, inclusion and exclusion criteria Therapist Reported Cognitive Questionnaire was applied in patients with ADHD. Therapist filled the Therapist Reported Cognitive Questionnaire on the basis of response of activities mentioned in the questionnaire done by the patients. cognition function was assessed in ADHD patients.

Result

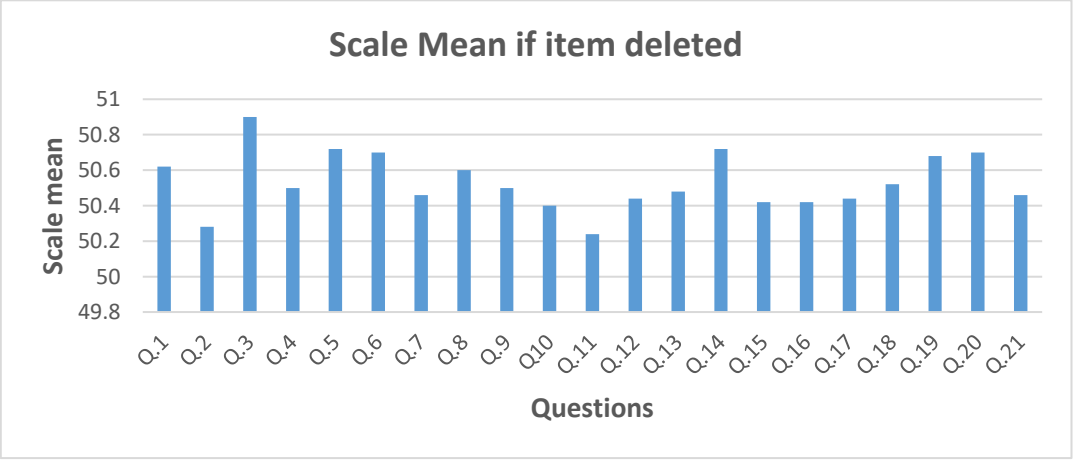
The study was conducted on a total of 50 patients with the age criteria for sample selection in inclusion ranges from 6 to 14 years. The questionnaire was completed by therapist on the basis of patient's response. Statistical analysis is organized into four sections.

1. Scale mean if item deleted

Scale mean if item deleted was recorded of each question of the questionnaire.

Questions	Scale Mean if item deleted
Q.1	50.62
Q.2	50.28
Q.3	50.9
Q.4	50.5
Q.5	50.72
Q.6	50.7
Q.7	50.46
Q.8	50.6
Q.9	50.5
Q10	50.4
Q.11	50.24
Q.12	50.44
Q.13	50.48
Q.14	50.72
Q.15	50.42
Q.16	50.42
Q.17	50.44
Q.18	50.52
Q.19	50.68
Q.20	50.7
Q.21	50.46

Table no.1.1 Descriptive table for scale mean if item deleted



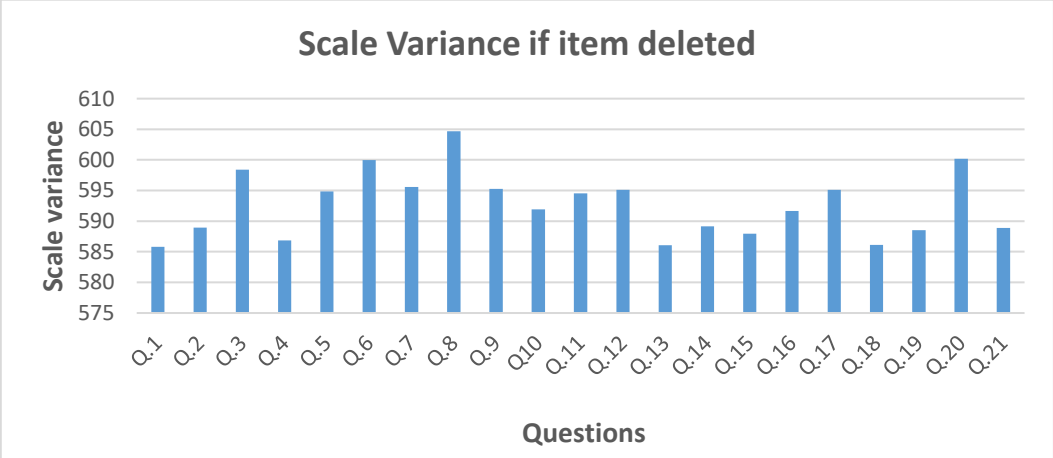
Graph 1.1 Descriptive graph for scale mean if item deleted

2. Scale variance if item deleted

Scale variance if item deleted was recorded of each question of the questionnaire.

Questions	Scale Variance if item deleted
Q.1	585.791
Q.2	588.94
Q.3	598.378
Q.4	586.867
Q.5	594.859
Q.6	599.969
Q.7	595.56
Q.8	604.694
Q.9	595.276
Q10	591.918
Q.11	594.513
Q.12	595.109
Q.13	586.051
Q.14	589.144
Q.15	587.963
Q.16	591.636
Q.17	595.109
Q.18	586.132
Q.19	588.549
Q.20	600.173
Q.21	588.866

Table no.1.2 Descriptive table for scale variance if item delete



Graph no.1.2 Descriptive graph for variance if item deleted

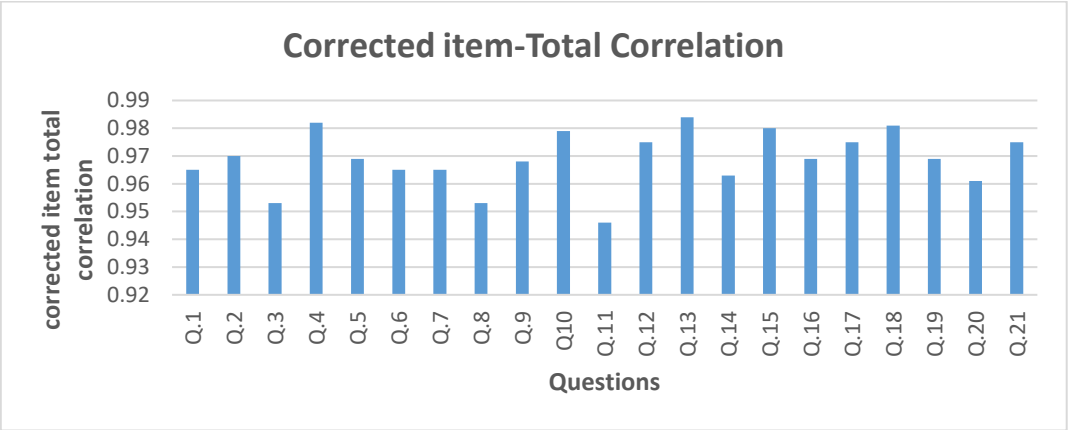
3. Corrected item total correlation

Corrected item-total correlation was recorded of each question of the questionnaire.

Questions	Corrected item-Total Correlation
Q.1	0.965
Q.2	0.97
Q.3	0.953
Q.4	0.982
Q.5	0.969

Q.6	0.965
Q.7	0.965
Q.8	0.953
Q.9	0.968
Q10	0.979
Q.11	0.946
Q.12	0.975
Q.13	0.984
Q.14	0.963
Q.15	0.98
Q.16	0.969
Q.17	0.975
Q.18	0.981
Q.19	0.969
Q.20	0.961
Q.21	0.975

Table no.1.3 Descriptive table for scale variance if item deleted.



Graph no.1.3 Descriptive graph for corrected item-total correlation

From the above table and graph we observed corrected item-total correlation of each question. The questionnaire is valid as the correlation of each question with the total score is significant to 0.01 level. Hence we reject our null hypothesis.

4. Cronbach's alpha if item deleted

Cronbach's alpha if item deleted was recorded of each question of the questionnaire.

Cronbach's alpha if item deleted of first to twelfth question was .997 and of question thirteenth it was .996 and from question fourteenth to twenty first Cronbach's alpha if item deleted was .997.

Questions	Squared Multiple Correction	Cronbach's Alpha it item deleted
Q.1	.	0.997
Q.2	.	0.997
Q.3	.	0.997
Q.4	.	0.997
Q.5	.	0.997
Q.6	.	0.997
Q.7	.	0.997
Q.8	.	0.997
Q.9	.	0.997
Q10	.	0.997
Q.11	.	0.997
Q.12	.	0.996
Q.13	.	0.997

Q.14	.	0.997
Q.15	.	0.997
Q.16	.	0.997
Q.17	.	0.997
Q.18	.	0.997
Q.19	.	0.997
Q.20	.	0.997
Q.21	.	0.997

Table1.4 Descriptive table for Cronbach's alpha if item deleted

	Reliability Statistics	
	Cronbach's Alpha Based on	
Cronbach's Alpha	Standardised items	N of items
0.997	0.997	21

Table 1.5 Descriptive table for reliability statistics

We used Cronbach's Alpha for the reliability check.
The result of this study showed that the questionnaire is reliable as well as valid and there is a significance of therapist reported cognitive questionnaire for assessing cognition in ADHD patients.

Discussion

The study was conducted on a total of 50 populations picked from both male and female with the age ranging from 6 to 14 years. The study included 50 patients with ADHD who fulfill the inclusion criteria and the therapist reported cognitive questionnaire is created and the therapist filled the questionnaire on the basis of response of activities done by the patients.
The findings of the study suggest on the basis of test performed that the interpretation of therapist reported cognitive questionnaire is valid as well as reliable for assessing cognitive function in patients with ADHD. There is also significance of therapist reported cognitive questionnaire in assessing cognitive function. In this chapter the major findings of the study are discussed with the reference studies.
Uekermann, Jennifer, et al discussed that Attention-deficit hyperactivity disorder (ADHD) is associated with a range of cognitive deficits and social cognition impairments, which might be interpreted in the context of fronto-striatal dysfunction. So far only few studies have addressed the issue of social cognition deficits in ADHD. Social cognition refers to the ability to understand the mind and feelings of other people and includes the perception of emotions from prosody, faces and body posture. More complex social cognition abilities entail the ability to reason about mental states, empathy and humour processing. Although the database on social cognition in ADHD is as yet surprisingly sparse, there is evidence suggesting deficits in the perception of emotional prosody and faces in children and adults with ADHD. [24]
Bradley JD et al. have discussed that the initial discussion of the genetic and environmental contributions to development of this disorder demonstrates that either or both factors can bring into being a dysfunction that leads to the expression of hyperactive, impulsive, and/or inattentive symptoms. Clearly, both genetic and environmental factors may play a role in the development of the disorder, with each being equally important in terms of the overall development of the disorder in groups of children. [7]
Zhou Q et al. discussed that the perceptual reasoning was the key cognitive domain influencing the ADHD children from the parent's perspective. In addition, the classroom behavior was the most important symptom, and the verbal comprehension was the key cognitive domain impairment affecting ADHD children from a teacher's perspective. To our knowledge, this is the first study using network analysis to examine the ADHD symptoms and cognitive domains, and our results provide a better understanding of ADHD symptoms in order to design personalized treatment strategy. Here, in this study, we systematically analyzed the ADHD patents' symptoms and cognitive profiles, and identified a set of interactions between ADHD symptoms and cognitive domains using the network approach. [25]
Parke, Elyse M., et al. published a study that children with ADHD performed significantly worse on measures of cognitive ToM and affect recognition and received lower ratings of pragmatic language and cognitive empathy than typically developing peers. These domains, particularly pragmatic language, predicted parent ratings of problematic and adaptive behaviors. Results establish a relationship between specific social cognitive abilities and daily functioning, which has implications for treatment. [26]

Future research
Study can be done on wider sample size. Study can be done on different sample, population and age group.
Clinical relevance
The study findings revealed that there is clinically significance of Therapist reported cognitive questionnaire in assessing cognitive function in ADHD patients. The study was conducted on a total of 50 patients picked from both male and female participants with the age ranging from 6 to 14 years who fulfill the inclusion criteria. The questionnaire was created with 21 questions related to cognition function. The therapist filled the questionnaire on the basis of activities performed by the patients those activities mentioned in the questionnaire. The findings of the study suggested that the questionnaire is reliable and then only cognition function is assessed.

Conclusion

Therapist reported cognitive questionnaire appear therefore to be promising. The study findings revealed that there was a significance of Therapist reported cognitive questionnaire on assessing cognition in ADHD. The findings of the study also revealed that the questionnaire is both reliable and valid. From the questionnaire's theoretical point of view, memory, action and perception were all reported as affected in the patients. The study findings also suggested that it helped in assessing cognition function in ADHD Patients.
Limitation
There are some limitations of this study making it difficult to draw definite conclusions.
The focus was on less number of patients which restrict generalization. Therefore, in future, experimental studies in a larger population on patients with similar disorders could be conducted for generalization of the protocol and better applicability.

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