

Effectiveness of Various Teaching Programs on Knowledge and Attitude Regarding Attention Deficit Hyperactivity Disorder (ADHD) and Learning Disabilities (LD) of Children among Primary School Teachers: A Systematic Review

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ABSTRACT

Background: Many children suffer from attention deficit hyperactivity disorder (ADHD), which is defined as a persistent pattern of inattention or impulsivity that is formed during growth. It is manifested in two or more contexts (e.g., at home, school or work) and negatively affects the individual's social, academic or occupational functioning. ADHD is usually co-occurring with LD. Early identification and intervention of these problems are very important to address issues at early age. The studies include systematic review of effectiveness of various teaching programs on knowledge and attitude regarding Attention deficit hyperactivity disorder (ADHD) and learning disabilities (LD) of children among primary school teachers.

Objectives: To establish the new findings on the effectiveness of various teaching programs on knowledge and attitude regarding Attention Deficit Hyperactivity Disorder (ADHD) and Learning disabilities (LD) of children among primary school teachers.

Methodology: The search of significant articles was carried out in PubMed/ Medline, SCOPUS, CINAHL, PsycINFO, Embase, Elsevier and Google Scholar with the following key words: "teaching program", "Knowledge", "Attitude", "Primary school teachers", "ADHD", "LD", "Children", "Systematic review". Systematically searched for studies including knowledge and attitude regarding Attention Deficit Hyperactivity Disorder (ADHD) and Learning disabilities (LD) of children among primary school teachers. The included studies were evaluated according to predefined quality criteria.

Results: Analysis was done in terms of Meta analysis. 92 papers were retrieved by the search. Among them, 27 were evaluated to be of higher quality. Studies recruiting sample of primary school teachers and excluded parents.

Conclusion: Based on the review it was concluded that ADHD was found to be co morbid with LD. Both ADHD and LD were more prevalent in primary school age children and prevalence increased as per age. There was less knowledge and less favorable attitude among primary school teachers regarding ADHD and LD. Teaching programs were effective in improving knowledge and attitude among primary school teachers regarding ADHD and LD. Education programs should be established to increase awareness about ADHD and LD among primary school teachers.

Key words: Attention Deficit Hyperactivity Disorder, ADHD, Learning disabilities, LD, Primary school teachers, Children, Knowledge, Attitude.

INTRODUCTION

Children are in continuous process of growth and development. If they are provided with favorable and an enabling environment, they may bloom into an ever fragrant flower, and shine as better citizens in future. [1] Children are born with the desire and capacity to learn. They learn with different ways and at different rates. If we can meet their needs, provide a safe and nurturing environment, then can shine at their own best time. [2]

In year 2013, the prevalence of ADHD among primary school children was found to be 11.32% in South India. Prevalence was found to be higher among the males (66.7%) as compared to that of females (33.3%). The prevalence among lower socio-economic group was found to be 16.33% and that among middle socio-economic group was 6.84%. [3]

ADHD is the most common emotional, cognitive, and behavioral disorder in children. [4] Three subtypes of ADHD are now recognized as per the DSM-IV criteria, namely the predominantly inattentive, predominantly hyperactive-impulsive, and combined types. [5]

Learning Disability is also termed as "Specific Academic Skill Disorder" or

"Specific Learning Disability" and defined as "A heterogeneous group of disorders manifested by problem in reading, writing, listening, speech and mathematical performance without the presence of sensory impairment, mental retardation and social and emotional disturbances". [1]

Children with LD are a major challenge for teachers and members of caring families because these children require continuous help to adapt to learning situations. Response of the school personnel to needs of LD children determines the successes of these children. [6]

Educational programs for teachers are the most effective therapeutic approach for management of such problems, which allow children to achieve their potentials in school as individuals. [7]

METHODS

A systematic review was conducted by electronic search to identify articles in PubMed/ Medline, SCORPUS, CINAHL, PsycINFO, Embase, Elsevier and Google Scholar with the following key words: "Video based teaching", "Knowledge", "Attitude", "Primary school teachers", "ADHD", "LD", "Children", "Systematic review".

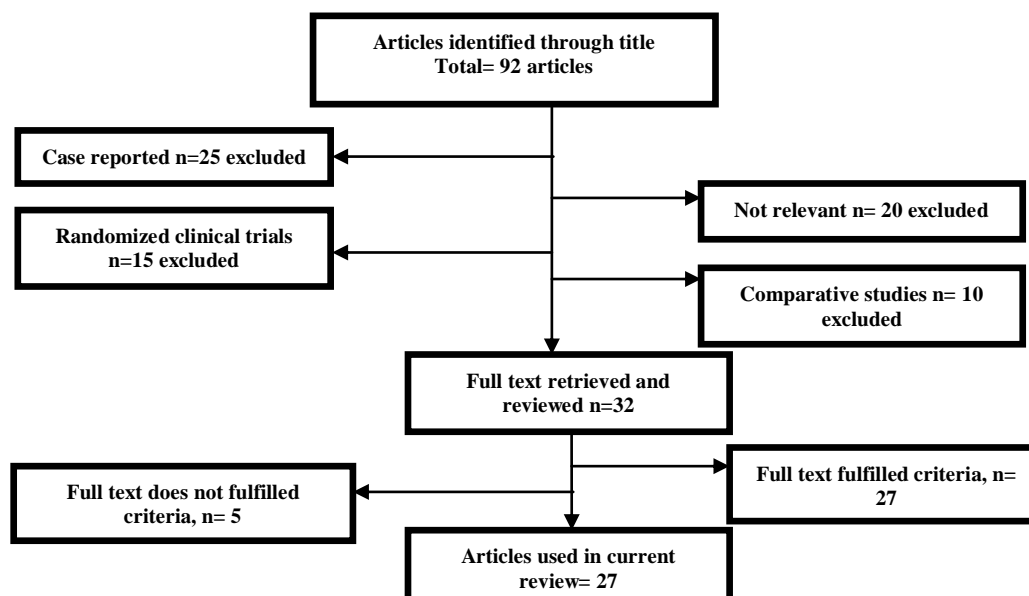


Figure 1: A flow chart for the 27 articles retrieved and reviewed for this research strategy into the Attention Deficit Hyperactivity Disorder (ADHD) and Learning Disabilities (LD)

Inclusion criteria were publications in the English language, publication in a peer-reviewed journal, and a study focusing on the studies including knowledge and attitude regarding Attention Deficit Hyperactivity Disorder (ADHD) and Learning disabilities (LD) of children among primary school teachers. Descriptive, cross sectional, systematic review, quasi experimental studies were included and studies on parents of ADHD and LD children, case reports/series, randomized clinical trials regarding treatment comparison and studies on the impact of ADHD and LD on different aspects of life were excluded. The search generated a total 92 articles. Out of 92 articles, the full texts of the 22 articles were retrieved and reviewed. A flow chart for the research strategy is shown in **Figure 1**.

RESULTS

Analysis was done in terms of Meta analysis. 92 papers were retrieved by the search. Among them, 27 were evaluated to be of higher quality. A systematic review was done to evaluate the effectiveness of teaching programs on knowledge and attitude regarding Attention Deficit Hyperactivity Disorder (ADHD) and Learning disabilities (LD) of children among primary school teachers.

The reviews were divided into three areas:

- related to prevalence of Attention Deficit Hyperactivity Disorder (ADHD) and Learning Disabilities (LD) among primary school children
- related to knowledge and attitude regarding Attention Deficit Hyperactivity Disorder (ADHD) and Learning Disabilities (LD) of children among primary school teachers
- related to effectiveness of teaching programs on knowledge and attitude regarding Attention Deficit Hyperactivity Disorder (ADHD) and Learning Disabilities (LD) of children among primary school teachers

Review related to prevalence of Attention Deficit Hyperactivity Disorder (ADHD) and Learning Disabilities (LD) among primary school children

Out of 12 studies, four studies (33.33%) were cross sectional descriptive studies on prevalence of ADHD found that male gender was significantly associated with increased prevalence of ADHD symptoms. [8-11] One systematic review study of the epidemiology of attention deficit hyperactivity disorder suggested that the total prevalence of ADHD ranged between 1.3-16%, prevalence of hyperactive type ADHD between 1.4- 7.8% and the prevalence of inattention type between 2.1-2.7%. [12] Four descriptive studies (33.33%) on prevalence of learning disabilities also suggested that LD is more common in males than females and also ADHD is co morbid with LD, emotional and conduct disorders. [13-16] Two descriptive studies (16.67%) on prevalence of learning difficulties found that average age of LD is 9 years and most common is mathematic disability. [17,18] None of the study suggested about socio economic status and other associated medical illness.

Sample reviews:

A cross-sectional comparative study was conducted to estimate the prevalence of ADHD and to determine its risk factors in Menoufia governorate, Egypt. Total 1362 children were recruited as sample from randomly selected four primary schools. Complete history taking, medical/ psychological assessment, and IQ estimation, Arabic forms of Conner's questionnaire were used as tools for the study. Study results revealed that prevalence of ADHD was 6.9% and the male: female ratio was 3.5: 1. It further revealed that the main risk factors were neonatal problems. Study concluded that prevalence of ADHD among school children was high and dealing with its risk factors is mandatory for prevention, early management, and better outcome. (11)

A descriptive study was conducted to investigate the prevalence and pattern of learning difficulties (LDs) among primary school students (Grade 1-Grade 3) in Jordan. Total 306 students were recruited as sample by random sampling technique. Tools used in study were selected variables, Arabic version of the Woodcock-Johnson basic achievement tests that measure reading, spelling, and calculation skills. Study results revealed that prevalence and co-morbidity rates were high among all LDs conditions. It further revealed that there was a higher prevalence of LDs in males than in females, as grade level increases, prevalence of identified LDs also increases. Study concluded that students who were identified with LDs were more likely to be from low socioeconomic status attending public schools. (15)

A descriptive study was conducted to estimate the prevalence of mathematic disability amongst primary school children of Karaj, Tehran, Iran. Total 432 students were recruited as sample by multi-stage sampling technique. Tools used for study was Raven test, Frostig Visual-Perception test, Wepman Auditory discrimination test, Rutter behavioral questionnaire and Iran Key-math test and the participants whose total standard scores in Iran Key-math test were one standard deviation below the mean were selected as a mathematical disability (MD). Study results revealed that the mathematic disability prevalence in primary students was 0.46%. Study concluded that the prevalence of mathematic disability is much less than the previous researches due to inappropriate screening of co morbid disorders with the mathematic disability. (18)

Review related to knowledge and attitude regarding Attention Deficit Hyperactivity Disorder (ADHD) and Learning Disabilities (LD) of children among primary school teachers

Out of 12, four studies (33.33%) were cross sectional descriptive studies on knowledge and attitude of primary school teachers towards children with learning

disabilities found teachers had low knowledge and less favorable attitude towards inclusion of children with learning disabilities in regular schools. [19-22] Seven studies (58.3%) were descriptive studies on knowledge and attitude of primary school teachers towards children with ADHD found teachers had low knowledge and less favorable attitude towards children with learning ADHD and there is a need to establish educational programs for teachers.

Sample reviews:

A cross-sectional descriptive study was conducted to assess primary and secondary school teachers' knowledge and attitudes toward ADHD at Trinidad & Tobago, Caribbean region. Total 277 subjects were recruited as sample by using convenience sampling technique. The tool for study was self-report questionnaire. Result of the study revealed that out of 440 questionnaires distributed, 63% questionnaires were returned and there was significant effect of education level ($p < 0.01$). Further it revealed that the total knowledge scores were low, mean was 12.6/26 and attitudes toward children with ADHD were generally positive. Study concluded that there was a need for teachers within the region to become more educated as it was expected that such interventions can increase identification of children with ADHD, give teachers greater confidence in their ability to manage these children, and improve overall classroom management within the schools. (22)

A descriptive study was conducted to investigate the foundation phase teachers' perceptions of Attention Deficit Hyperactivity Disorder (ADHD) at private and public schools in South Africa. Total 130 subjects were recruited as sample in the study by convenience sampling technique. Self-developed open ended questionnaire was administered for data collection and thematic content analysis was used as study tool to identify themes. Study result revealed that the teachers had a limited understanding of ADHD and teachers preferred medication instead of alternative

intervention methods. It further revealed that 15% of all of the teachers said that ADHD is a neurological condition, 20% of private school teachers and 8% of public school teachers referred to the neurology of the condition. Study concluded that teachers' understanding of ADHD was limited to the behaviors that are displayed by learners such as an inability to sit still, remain focused, complete work and sustain concentration. [23]

A descriptive study was conducted to investigate teachers' knowledge and misconceptions of Attention Deficit Hyperactivity Disorder (ADHD) at Riyadh, KSA. A total of 429 teachers were recruited as sample in the study. Tool in the study was 'The Knowledge of Attention Deficit Disorder Scale' (KADDS) along with a demographic questionnaire. Study results revealed that knowledge of teachers about ADHD was insufficient and level of knowledge of teachers about ADHD was positively related to their prior training and experience with ADHD. Study concluded that teachers have a major role in the identification and assessment of students with ADHD, so teachers need to be educated and supported to further their professional development regarding ADHD through in-service training. Teachers who are knowledgeable about ADHD are better prepared to be in a position to offer adequate teaching, assistance, and support for children with ADHD. [24]

Review related to effectiveness of various teaching program on knowledge and attitude regarding Attention Deficit Hyperactivity Disorder (ADHD) and Learning Disabilities (LD) of children among primary school teachers

Two out of four studies (50%) were quasi experimental on effect of teaching programs on knowledge and attitude of school teachers regarding Attention Deficit Hyperactivity Disorder (ADHD) found that experimental group had significant higher mean score of attitude and knowledge regarding ADHD that means program was

effective in terms of knowledge and attitude. [25] One quasi experimental study was about effectiveness of a learning package on competency of primary school teachers regarding learning disabilities among children suggested that Learning Package improves the competency of primary school teachers regarding learning disabilities and similar studies may be replicated on a large sample. [26] One randomized controlled trial was about effectiveness of attention deficit hyperactivity disorder training program on the knowledge and attitudes of primary school teachers towards pupil found that training program significantly improved the knowledge and attitudes of the teachers in the intervention group towards ADHD. [27]

Sample reviews:

A quasi experimental study was conducted to identify the effect of instructional coaching program on knowledge and attitude of school teachers regarding Attention Deficit Hyperactivity Disorder (ADHD) in Korea. Total 70 teachers were recruited as sample for the study. Tools used in the study were knowledge scale, attitude scale, and practice scale. Instructional coaching program consisted of eight 60 minute sessions. Study results revealed that the experimental group had significant higher mean score of attitude and knowledge regarding ADHD. Study concluded that instructional coaching program was well structured and significantly improved not only teachers' attitudes, knowledge, and teaching skills but also the behavior of children with ADHD in class and the program is recommended as a means of facilitating teaching and managing children with ADHD in class. [25]

A quasi experimental Study was conducted to evaluate the effectiveness of a learning package on competency of primary school teachers regarding learning disabilities among children at primary school of Bhainyawala, Dehradun. Total 38 teachers were recruited as sample in the study by using convenience sampling technique. Tools for study were structured

knowledge questionnaire, attitude scale and knowledge of skill checklist followed by learning package. Result of study revealed that the mean post test knowledge score (13.7) was higher than mean pretest score (5.4) and mean post attitude score (31.9) was higher than mean pretest score (26.6) with ($p < 0.05$). The study concluded that the Learning Package improves the competency of primary school teachers regarding learning disabilities and similar studies may be replicated on a large sample. ⁽²⁶⁾

A quasi experimental study was conducted to assess the effectiveness of Structured Teaching Program on knowledge, attitude and management strategies among primary school teachers toward children with Attention Deficit Hyperactivity Disorders at west Qalubya. Total 60 primary teachers were recruited as sample by using convenience sampling technique. Tools in the study were socio demographic data sheet, knowledge scale, attitude scale, and behaviors management strategies scale. A structured teaching was given as intervention to experimental group. Study result revealed that structured teaching program was effective with teachers of selected primary schools on improving their knowledge, change attitude and behavior management strategies into more positively one. The study concluded with recommendation that there is the need to implement this program at others primary schools in different setting for further benefits. ^[28]

CONCLUSION

Based on the above reviews it was concluded that ADHD was found to be co morbid with LD. Both ADHD and LD were more prevalent in primary school age children and prevalence increased as per age. Attention Deficit Disorder Evaluation Scale (ADDES) and Woodcock-Johnson basic achievement tests school version tools along with structured tools were found to be appropriate to investigate about ADHD and LD among primary school children. There was less knowledge and less favorable

attitude among primary school teachers regarding ADHD and LD. There was a significant positive relationship between knowledge and attitude of primary school teachers toward children with ADHD and LD. Teaching programs were effective in improving knowledge and attitude among primary school teachers regarding ADHD and LD. Education programs should be established to increase awareness about ADHD and LD among primary school teachers.

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