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Review

Is psychoeducation for parents and teachers of children and adolescents with ADHD efficacious? A systematic literature review

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ABSTRACT

Objective. – To identify evidence from comparative studies on the effects of psychoeducation programs on clinical outcomes in children and adolescents with ADHD.

Method. – Articles published between January 1980 and July 2010 were searched through electronic databases and hand search. A qualitative systematic review of comparative studies of psychoeducation in ADHD was performed. Psychoeducation was considered if studies use a specific therapeutic program focusing on the didactically communication of information and provide patients and families with coping skills.

Results. – Seven studies were identified (four randomized-controlled trials, three uncontrolled pre-post treatment designs). Studies differed on whether psychoeducation approaches were applied to parents of ADHD children (three studies), to ADHD children/adolescents and their families (three studies) or to their teachers (one study). Positive outcomes measured as improvement on a number of different variables, including patient's behavior, parent and child satisfaction, child's knowledge of ADHD, children's opinion of the use of medication and adherence to medical recommendations were found.

Conclusions. – Although available evidence is limited and some findings may be difficult to be interpreted, the positive role of psychoeducation and other educational interventions in children and adolescents with ADHD in regard to several outcome measures is supported by most of the literature referenced in this review.

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1. Introduction

Current practice guidelines for the treatment of youth with mental health problems tend to endorse integrating psychopharmacologic treatment with psychosocial interventions such as psychotherapy, parent skills training, and psychoeducational programs. Psychoeducation is a novel treatment paradigm, which includes information about the illness and its treatment, skills development, and patient empowerment and it is considered as a well-established evidence-based practice for some severe psychiatric disorder in the adulthood [8].

A multitude of studies have demonstrated solid evidence favoring the efficacy of psychoeducation as an adjunctive treatment to pharmacotherapy in schizophrenia, bipolar disorder and other medical conditions, including cardiovascular diseases, diabetes and asthma [19,11,15]. The aim of such psychoeducational approaches is to encourage symptom recognition, to allow

active participation in treatment, to enhance adherence to treatment – both pharmacological and non-pharmacological – and to provide patients and families with coping skills [17]. A large amount of the evidence on the benefits of psychoeducation in child and adolescent patients and their parents comes from studies where previous experiences in the fields of adult psychiatry have been extrapolated to younger populations [7,9]. Attention-deficit/hyperactivity disorder (ADHD) is a neurobehavioral disorder characterized by developmentally inappropriate symptoms of inattention, hyperactivity and impulsivity. ADHD usually has a childhood onset of symptoms that typically results in a chronic and pervasive pattern of impairment in school, work, social, and daily adaptive functioning. The newest thinking indicates that beneficial outcomes in ADHD are obtained via a multimodal treatment approach including medication, psychological therapies, psychosocial interventions (education or training), or a combination [3].

The relevance of psychosocial interventions (including psychoeducation) has long been recognized as an important part of effective treatment for ADHD. The Multimodal Treatment study of ADHD (MTA), a large pediatric randomized, multicenter trial on ADHD,

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identified specific advantages (including improvement of symptoms and family functioning) [25] of multimodal treatment (pharmacotherapy plus psychosocial interventions) compared with psychopharmacology alone [31], and clinical recommendations in current practice guidelines for diagnosis and treatment of ADHD in children (and adults) suggest combination treatment should integrate psychoeducation as one important component [22].

In spite of these evidence and recommendations, we are not aware of any systematic review of the effects of psychoeducation on clinical outcomes. We conducted a systematic review to determine whether psychoeducation could be effective in children and adolescents with ADHD. We searched and evaluated randomized clinical trials (RCTs) and other studies on the effects of psychoeducation on children and adolescents with ADHD, their parents/relatives, and teachers. We summarized the evidence pertaining to benefits of psychoeducation on ADHD with regard to different clinical outcomes. This paper aims to be a rigorous qualitative systematic review following established methodological criteria in the topic of the psychoeducational interventions in ADHD children and adolescents, which might contribute to advance in the clinical management of ADHD.

2. Methods

Our review protocol was designed to examine the methodological quality of study reviews, using recommended methods for conducting such systematic reviews [13,14,24]. Table 1 describes procedures undertaken in order to develop our systematic review.

2.1. Framing questions

First of all, we formulated the free form question of our review (“Is psychoeducation for children and adolescents with ADHD efficacious?”). After that we structured the question including the populations (“In ADHD children/adolescents—or in their families or teachers-...”), the interventions (“Do psychoeducation strategies-...”), and the outcomes (“...improve any clinical outcomes?”).

2.2. Search strategy

A flowchart describing the process for identifying relevant literature is reported on Fig. 1.

2.2.1. Generating a list of potentially relevant studies

In order to get a precise search strategy, multiple databases of research in health care were selected (EMBASE 1980–2010, Ovid MEDLINE® 1950–2010; British Nursing Index and Archives 1985–

2010; EBM Reviews–DARE; CCTR; CMR; HTA; NHSEED; ACP; Cochrane DRS; PsycINFO 1806–2010; health and psychosocial instruments; social policy and practice; OvidMEDLINE® in-process and other nonindexed citations 1950–2009; and Cumulative Index for Nursing and Allied Health Literature CINAHL).

A strategy developed including different keywords (Psychoeducation; Education; Attention deficit/hyperactivity disorder; ADHD); free text words; and Boolean operators (AND; OR) was used. In order to avoid publication bias; the CINAHL database was used; as it usually lists unpublished dissertations and theses. Finally; reference lists from identified studies and the latest issues of the key journals were hand-searched in order to be considered.

2.2.2. Selecting all relevant studies

2.2.2.1. *Inclusion and exclusion criteria.* Studies were included in the initial collection based on specified search criteria: To be included, a study had to meet all the following criteria:

- studies must be primarily treatment-outcome studies;
- studies had to assess the effects of psychoeducation as part of multimodal treatment in ADHD children/adolescents (DSM-III or DSM-IV);
- studies had also to consider efficacy, broader efficacy, and treatment adherence as one of the primary outcome measures;
- publication in a peer-reviewed journal. Studies evaluating psychoeducation delivered alone or in combination with other therapeutic approaches were included in our review. However, when the psychoeducational component of a more complex therapeutic approach was only minimal and/or not described in a clinical trial, we did not include this type of study in our review.

Because there is no yet a formal working definition of what psychoeducation for ADHD is, we included the definition of “psychoeducation” as a professionally-delivered treatment modality that integrates both psychotherapeutic and educational interventions. The term comprises “didactic psychotherapeutic interventions which are adequate for informing parents and their relatives about the illness and its treatment, facilitating both an understanding and personally responsible handling of the illness and supporting those afflicted in coping with the disorder” [2]. Case reports, care guidelines, and second articles wherein the data used were from a previous report were not included.

2.2.2.2. *Screening of citations and article selection.* Titles and abstracts of studies identified using the above search strategy were reviewed to determine whether or not they met inclusion criteria. Full manuscripts were obtained for the articles that met inclusion criteria and for those articles with unclear titles or abstracts. All papers that did not meet the inclusion criteria were excluded and the decisions for exclusion documented. In order to avoid selection bias, both the screening and selection processes were independently conducted by two reviewers (AM, MF), and final decision on the eligibility of the studies was made by consensus. The observed agreement was high at 85% (Kappa = 0.85).

2.2.2.3. *Data extraction and coding of studies.* A data extraction form was developed. The reviewers independently revised all selected studies and gathered the following information:

- study design (randomized controlled interventions, uncontrolled studies);
- outcome measures (improvement of behavior-reduction of ADHD symptoms, improvement of academic performance, treatment adherence, parents’ or patients’ satisfaction, etc.);
- clinical intervention, depending on the type of patients included in psychoeducation (children/adolescents, parents, teachers);

Table 1

Procedures undertaken in order to develop our systematic review.

<i>Framing questions</i>
Defining a structured question
Defining population, intervention and outcomes
Variations in studies
<i>Search strategy</i>
Generating a list of potentially relevant studies
Identification of potential databases to search
Search term combination
Reference list and other resources
Selecting all relevant resources
Study selection criteria
Screening of citations
Obtaining full manuscripts
Study selection
Minimizing bias
<i>Quality assessment</i>
Development of a quality assessment checklist
Quality assessment: tabulation of studies and barcharts

Reviews and Dissemination's guidance for undertaking systematic

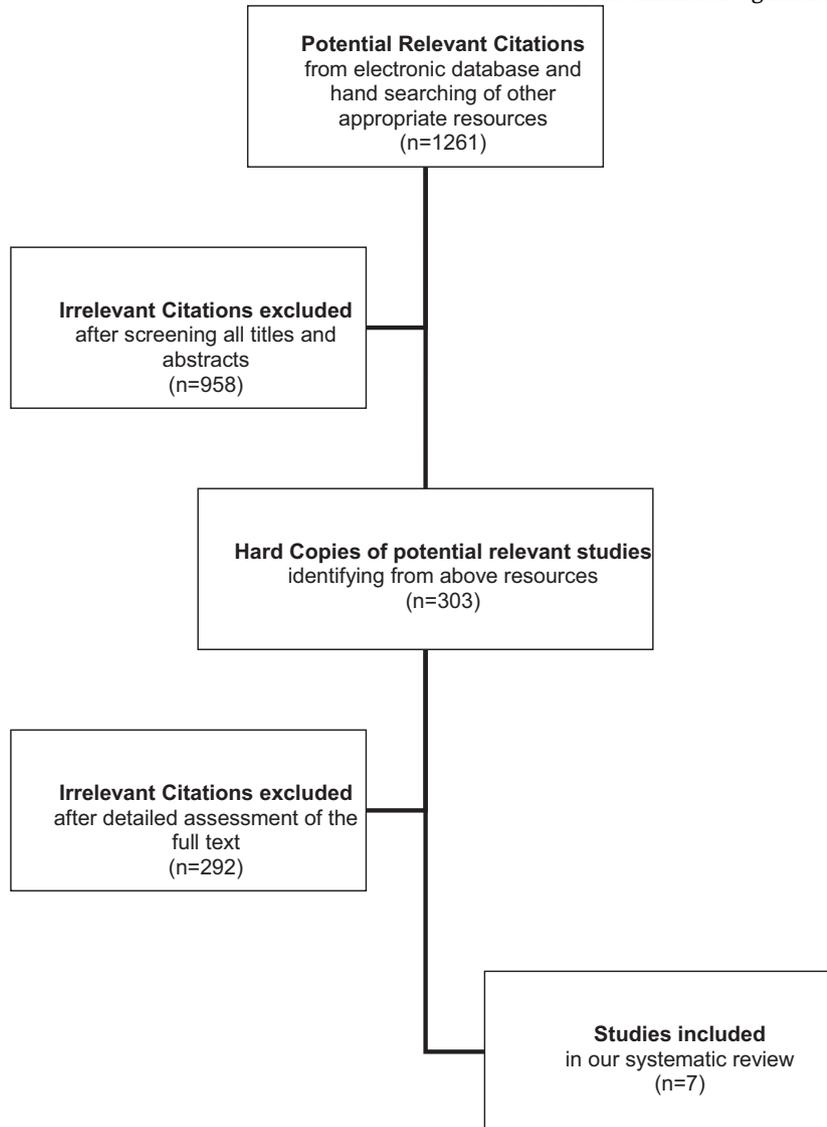


Fig. 1. Flowchart describing the process for identifying relevant literature.

adherence definition (taking ADHD medications as prescribed, keeping appointments as scheduled);

- and, method used to measure adherence (direct methods included blood or urine levels of drug markers or metabolites; indirect methods included the impression of the treating physician, direct questioning to patients and families, pill counting, or microelectronic monitoring of the medication bottle) [10].

Due to a number of discrepancies between different authors when trying to describe the concept of “psychoeducation”, psychoeducational strategies were reviewed by an expert on the topic (FC), who independently gave his comments on the rigorosity of the approach used. General characteristics, including authors’ names, country where the study was conducted, length of follow-up, educational program characteristics, and description of experimental and control intervention were also obtained. Extracted data were compared and differences were solved by consensus.

2.3. Assessing quality of the included studies

The methodological design of all included studies was assessed according to quality criteria adapted from those in the Centre for

reviews [23] and also the Cochrane Effective Practice and Organization of Care Review Group (EPOC) quality criteria (data collection checklist) [4] for assessing methodological quality of the RCTs. In accordance with EPOC criteria, we sought the method of concealment allocation, data on baseline measurement, follow-up of professionals and patients, blinded outcome assessment, reliability of primary outcome measures, protection against contamination, and further characteristics.

2.4. Data analysis

Extracted data were entered into a database, and evidence tables and descriptive statistics were produced to summarize the information extracted from the articles. Data related to the aims of the study (treatment adherence and broader efficacy) were emphasized, together with the quality of the evidence provided by the study. Because of the considerable heterogeneity of the study designs, lengths, and intensities of the treatments, and outcome measures, a formal meta-analysis of individual studies’ effect sizes was not deemed necessary.

3. Results

3.1. General characteristics of included studies

The search strategy yielded a total of 1261 publications. After title and abstract screening, 303 studies were identified as

potentially relevant. Finally, seven eligible studies fulfilled our inclusion criteria. The main results of these studies are reported in Table 2. A total of 2034 participants were included in the review, with a mean number of patients per study of 290 and sample sizes ranging from 50 to 1514 subjects. One study significantly contributed with bigger sample size [21].

Table 2

Main characteristics of studies included in this review.

Study	Design/duration	Psychoeducation N applied to:	N	Outcome measures	Comment
Ialongo et al. 1993 (USA) [12]	RCT (double blind) 9 months	Children & parents	96	ADHD symptoms (CBCL, SNAP checklist, CPRS) Attention and impulsivity (CPT) Clinic based observation (SOAP) Management of child's behavior problems (KBPAC) Peer relations and social skills (TCCPRSS) Family relationships (PICRF) Intelligence (PPVT) Academic functioning (WRAT) Consumer satisfaction questionnaire (CSQ)	No differences in effectiveness of the psychoeducation perceived by neither parents nor children between groups Greater improvement on the management of child's behavior problems on the psychoeducational group (KBPAC) Comparing pre and post intervention, psychoeducation resulted in greater improvement in parent rating on the cardinal features of ADHD (Conners, SNAP), aggression and externalizing behavior (CBCL) Trend toward erosion of treatment gains during the 9 months follow-up
McCleary & Ridley 1999 (Canada) [18]	Uncontrolled pre-post treatment comparison/ 9 months	Parents	107	Effects on parent-adolescent conflict and adolescent behavior (CBQ and IC questionnaires) Satisfaction and self-reported effects (investigator-designed questionnaire)	Positive outcome on adolescent behavior at home and decrease on parent-patient conflict Participants evaluating the program as very helpful
Sonuga-Barke et al. 2001 (U.K.) [28]	RCT (Unblinded)/ 15 weeks	Parents	78	ADHD symptoms (PACS) Maternal well-being and satisfaction (GHQ and PSOC)	ADHD symptoms and maternal well-being tended to improve with educational program (non-significant statistical difference)
Miranda et al., 2002 (Spain) [20]	RCT (Unblinded)/ 4 months	Teachers	50	Neuropsychological functions (MFF, Stroop color test, Rey complex figure, WISC-R digit span, WISC-R arithmetic, WISC-R coding, ITPA, CRRTF) Parents ratings on child behavior (EPC) Teachers ratings of child behavior (Conners abbreviated, self-control rating scale, school problem inventory) Teachers' knowledge about ADHD (questionnaire designed by authors) Classroom behavior and scholastic achievement	Positive outcome on teacher knowledge, parents' and teachers' ratings of ADHD symptoms, child academic performance
Monastra, 2005 (USA) [21]	2 uncontrolled pre-post treatment comparison studies/2-year	Parents	1514	Percentage of children who receive pharmacological treatment after 2 year Medication side effects Barriers to medication adherence	Positive outcome on patient's adherence to medical recommendations Positive outcome on medication side effects (decrease from 92%-15% of appetite loss)
Lopez et al. 2005 (USA) [17]	Uncontrolled pre-post treatment comparison/ 4-month	Children & parents	90 (depression+ ADHD)	Parents and children/adolescent satisfaction (PSQ, CASQ) PEEP for CMAP psychoeducation program for ADHD	Positive outcome on parents and children satisfaction
Svanborg et al., 2009 (Sweden) [29]	RCT, blinded 10 weeks	Children & parents	99	ADHD symptoms: (ADHD-RS, CGI-S) Health related quality of life (CHIP-CE Achievement domain) Treatment adherence	Increased parental knowledge and awareness of the disease and its pharmacological treatment Greater improvement in parent ratings of ADHD-RS, CGI, and CHIP-CE in both groups Positive effects on treatment compliance, parenting skills, and confidence

ADHD: attention deficit hyperactivity disorder; ADHD-RS: attention deficit hyperactivity disorder- Rating Scale; CASQ: Child Adolescent Satisfaction Questionnaire; CBCL: Child Behavior Checklist; CBQ : Conflict Behaviour Questionnaire;; CHIP-CE: Child Report form Illness Profile- Child Edition; CGI-S: Clinical Global Impressions- Severity; CPRS: Conners Parent Rating Scale; CRRTF: Cancellation of Rapidly Recurring Target Figures test; CPT: Continuous Performance Test; CSQ: Consumer Satisfaction Questionnaire; EPC: Scale of Behavioural Problems;; GHQ: General Health Questionnaire; IC : Issues Checklist; ITPA: Illinois Test of Psycholinguistic Abilities; KBPAC: Knowledge of Behavioral Principles as Applied to Children; MFF: Matching Familiar Figures; PACS: Parental Account of Childhood Symptoms (PACS); PCS: PEEP for CMAP: Patient and family Education Program for Children's Medication Algorithm Project; PICRF: Family Personality Inventory for Children-Revised Format; PPVT: Peabody Picture Vocabulary Test Revised; PSOC: Parental Sense of Competence Scale; PSQ: Parent Satisfaction Questionnaire; PT: Parent Training; RCT: randomized clinical trials;; SNAP checklist; SOAP: Structured Observation of Academic and Play Setting; TCCPRSS: Teacher Checklists of Children's Peer Relations and Social Skills; WISC-R: Weschler Intelligence Scale for Children Revised; WRAT: Wide Range Achievement Test; WS: Waiting List control.

Three of the studies evaluated the effects of psychoeducation when applied only to parents, three studies were carried out in ADHD children/adolescents and their families, and psychoeducation was performed with teachers in 1 study (Table 1). Three studies were uncontrolled pre-post intervention design, but none of them included a control group for comparison. Studies were conducted in several locations: Canada & the US (4), United Kingdom (1), Sweden (1), and Spain (1) [12,17,18,20,21,28,29]. All studies evaluated outpatients from psychiatric services and psychiatric children's hospitals. Follow-up duration varied considerably from 10 weeks [29] to 24 months [21], with a median of 27 weeks. The age of the patients included in the studies ranged widely from 3 to 20 years [20,28]. Some authors focused on psychoeducation of younger children [28], whereas others included pre-adolescents [18]. Finally, 3 authors did not give mean age for the children included but only their age range [12,17,21].

As for ADHD diagnostic criteria, 1 study used the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R) [12], whilst the DSM-IV criteria were used in the rest of selected studies. Diagnostics were based on the following sources of information: clinical interviews with parents, teacher and parent rating scales and questionnaires, and developmental pediatric assessment. Only one study mentioned the inclusion of ADHD patients with comorbid conduct and oppositional defiant disorders [12]. Table 1 includes a more detailed description of selected studies.

3.2. Types of psychoeducation

Most of the studies used psychoeducation to refer to informative sessions where general information about ADHD was provided; in some cases sessions also included didactic presentations, discussions, slides and written detailed manuals or programs, or EEG examination, and consultation plus a manual for parents [11,17,18,21,29].

In others psychoeducation was provided along with behavioral interventions, including parent training [18] and child self-control instruction training [12], classroom management techniques [20], parents or family counseling [21]. However, some authors provided educational packages and behavioral management techniques [17,18,20].

Psychoeducation was provided by one or more psychiatrists, clinical assistants, psychologists, or social workers; target audience varied by author. Additionally, outcome measures differed across studies. Characteristics of the different psychoeducational approaches are shown on Table 3.

3.3. Outcomes of psychoeducational interventions

The outcomes evaluated were both clinical (ADHD core symptoms, other symptoms and comorbidities, objective academic achievement, treatment adherence, general behavior, and side effects) and subjective (knowledge and opinions towards ADHD, QoL and functioning, parents' satisfaction, and coping abilities). Both types of outcomes were assessed in 4 studies [12,18,20,29], 1 assessed only clinical outcomes [21], and 1 study assessed only subjective outcomes [17]. The results below are presented according to the types of outcomes reported.

3.3.1. Clinical outcomes

Three of the studies included ratings of ADHD core symptoms [12,20,28,29]. A statically significant reduction of core ADHD symptoms was shown in studies assessing the effects of psychoeducation applied to parents using a pre-post design, however this difference could not be demonstrated in the RCT studies. Ialongo et al. [12], found no evidence of an additive effect

of psychoeducation (as part of parent training) plus child behavioral interventions based on ratings of ADHD symptoms scales. One of the studies that evaluated a very thorough psychoeducation for teachers reported good improvements in ADHD primary symptoms [20].

In another study ADHD core symptoms and maternal well-being tended to improve with educational program [28]. The reports from other studies [29] did not include explicit accounts about the effects of psychoeducation on ADHD core symptoms.

Academic achievement was included in three studies [12,20,29]. Improvements were only reported in the study about teacher-directed psychoeducation [20].

Effects on treatment adherence were also evaluated. Three of the studies included treatment adherence as a primary [21] or secondary [12,29] outcomes. There was a very wide range of adherence rates (from 87.3 to 96%, with a median of 92.7%) [12,29]. Studies used various types of measuring; however, all of them used indirect measuring methods (direct questioning to or questionnaires completed by the parents). Other studies used more objective measurements. Monastra et al. [21] reported 95% adherence rates with medical recommendation in a 2-year follow-up period after three informative sessions [21]. The lack of information provided by the clinicians prior to offering treatment choices showed to be a major barrier to treatment. Furthermore, lack of information also had an impact on maintaining treatment as most treatment discontinuations were due to fear of medication usage or side effects experienced by parents and patients, as well as to the persistence of emotional, behavioral, or social problems [21]. In addition, treatment gains were slightly better maintained when parent training and child self-control instructions were provided when compared to medication alone condition in one study [12].

Evaluations of non-core ADHD symptoms and comorbidities were also reported. One study [21] reported reductions of internalizing symptoms with the psychoeducational process; and in two further studies [12,21], general improvements of noncore ADHD symptoms was also reported. Generic evaluations of child's behavior (not framed within conduct disorder or other comorbidities) were evaluated in three additional studies [12,18,20]. Other two studies reported improvements in parents' ability to manage children's behavior [12,18] after parental psychoeducation. In the study of psychoeducation for teachers [20], improvements regarding behavioral management in academic settings were reported.

A direct evaluation of the influence of psychoeducation on side effect reporting was only included in one study [21]. The authors described a reduction in the reporting of fears associated with medication usage (including side effects), with significant declined in appetite loss and insomnia over a 2-year period.

3.3.2. Subjective outcomes

One study included QoL measures [29]. Parental reports of children's QoL indicated improvement, particularly in the area of achievement [29]. All QoL assessments were made in shortly after intervention. Finally, two studies showed general improvement in parent satisfaction [17,18], while others did not report any change.

3.3.3. Methodological aspects of the studies

Methodological quality of the included studies was assessed using the quality assessment checklist developed for the review and EPOC criteria (Table 4). Despite the randomization in their studies, none of the authors reported on how allocation concealment was done. Blindness was achieved in 2 of the 6 studies [12,29] (though one study [11] didn't list psychoeducation as a randomized option). Studies did not use a validated scale as primary outcome. Contamination prevention was not reported in

Table 3
Main characteristics of the types of psychoeducational interventions.

Study	Psychoeducation description	Strategies	Frequency/number/duration sessions	Who provided psychoeducation	Other interventions	Limitations
Ialongo et al. [12]	Didactic presentations, discussions, role playing, homework role playing, token reinforcement system, contingency management techniques, problem solving plans, and detailed written manuals	Informative session and written material provided to parents as part of a parent training program	Weekly, 12 x 90-minute sessions	Graduate students with 2 years of supervised clinical training (and 1 undergraduate psychologist) Sessions videotaped and supervised	Parent training, children self-control training, school consultation	Program based mainly on behavioral strategies rather than information or didactic strategies
McCleary & Ridley [18]	Videotaped strategies, brief lectures and hand outs with presentations, homework, manual	Course, guidelines and structure outlined in a manual	Weekly, 10x120-minute sessions	Clinicians	Problem solving and parenting skills	1 single session Outcomes measured in teachers only
Sonuga-Barke et al. [28]	Parents given the opportunity to express their concerns and discuss their feelings	Non-directive approach, monitoring behaviour in order to structure future discussions	Weekly, 8x60-minute sessions	Specially trained health visitors therapists	Audiotaped for integrity of intervention	Individual provision of information Un-structured intervention
Miranda et al. [20]	General information about ADHD: nature, incidence, effects of ADHD on behavior and learning, early identification, progression, treatment	1 informative, session as part of a teacher training course	8 three-hours sessions over a month period (but only 1 informative)	Psychologists	Behavioral therapy/behavioral modification	1 single informative (Psychoeducational) session Outcomes measured by teachers only
Monastra [21]	Informative sessions, dietary habits and educational approaches on ADHD	Informative sessions and a manual for parents	Weekly, 6 x 90-minute sessions (plus 6 month, 1 year and 2 years sessions)	Licensed psychologist trained in T.O.V.A and QEEG		Different providers Psychoeducation program not explicit
Lopez et al. [17]	Psychoeducation program for ADHD, informative sessions, didactic presentations, discussions, and written detailed manuals	Psychoeducation program	1 to 19 "Educational contacts": time psychiatrist or clinical assistant spent with patients and/or families (16.5 min average)	Psychiatrists/clinical assistants		Psychoeducation program not explicit
Svanborg et al. [29]	Psychoeducation program for ADHD, informative sessions, didactic presentations, discussions, slides and written detailed manuals	Workshop included; introductory lectures, group discussion, problem solving, modeling and role plays based on real life situations, video, ADHD game, concentration tool	Weekly, 10x180-minute sessions	Group leaders, psychiatrists or clinical assistants	Problem solving and parenting skills	

ADHD: Attention deficit hyperactivity disorder; TOVA: Test of variables of attention; QEEG: quantitative electroencephalography.

Table 4
Quality of RCT studies according to EPOC criteria^a.

Study	Concealment of allocation	Follow-up of patients	Blind assessment of primary outcome	Baseline measurement	Reliable primary outcome measurement	Protection against contamination
Ialongo et al. [12]	Not reported	Yes	Yes	Yes	Yes	Not reported
McCleary & Ridley [18]	Not reported	Yes	No	Yes	Yes	Not reported
Sonuga-Barke et al. [28]	Yes	Yes	No	Yes	Yes	Yes
Miranda et al. [20]	Not reported	Yes	No	Yes	Yes	Not reported
Svanborg et al. [29]	Yes	Yes	No	Yes	Yes	Not reported

^a Only RCT designed studies were included.

any study, and only 1 study offered a description of withdrawal [12], and only one [29] reporting how missing data was managed.

The considerable heterogeneity of the study designs and outcome measures precluded to calculate a global effect sizes. When it was possible to calculate, effects size ranges were considered as “small to moderate” depending on the intervention.

4. Discussion

Though available evidence is limited and some findings may be difficult to be interpreted, the positive role of psychoeducation and other educational interventions in ADHD children and adolescents in regard to several outcome measures is supported by most of the literature referenced in this review. Following previous guidelines and recommendations on the topic, psychoeducational interventions must be considered as part of a multidimensional approach for ADHD young people and its environment once the diagnosis is established and also throughout the course of its treatment [10]. However, since most of the conclusions come from pre-post design studies using no control group for comparison and the psychoeducational program delivered differed to each other to a great extent, these findings must be still interpreted with caution.

In general, the studies investigating psychoeducation in ADHD suffered from small sample size, were poorly powered, and the outcomes selected differed for each study, making it difficult to draw any firm conclusions. Although we restricted inclusion to randomized and quasi-randomized studies, the methodological quality of some of these studies was limited, and the strength of evidence was not equal for all interventions. Insufficient data and a lack of common concept of « psychoeducation » made meta-analytical approach impossible. The outcomes that could be summarized were also limited.

4.1. Review of the concept of psychoeducation for ADHD

Differences among the revised studies may be due to a number of reasons including differences in the interventions provided, populations and outcome measures. One of the major issues found was the heterogeneity in terms of what psychoeducation meant for different studies. Psychoeducation is commonly seen as an important early step in providing care for children and adolescents with ADHD, and although widely provided, this is not an intervention frequently evaluated therefore providing a systematic review of the existing evidence elucidating the benefits of psychoeducation in this population becomes particularly salient. To psychosocial treatment providers and clinicians there is a major difference between psychoeducation and psychosocial therapy or treatment. Psychoeducation must be understood as a mainly informative intervention that integrates both psychotherapeutic and educational components [1,5]. In this sense, psychoeducation could include any clinician's attempt to provide the patient and/or caregivers with information about illness and its treatment, above and beyond just giving feedback about diagnosis and recommended

treatment. Thus provision of brochures, viewing of videotape, provision of information sessions come under that concept. The importance of these educational programs would lie in the power to improve a positive therapeutic relationship with the clinician, to disentangle controversial points that might have arisen from other previous general resources, and to make these families and young people active agents in the decision-making process in order to enhance therapeutic adherence [30]. In most of the reviewed studies psychoeducation was combined with problem-solving strategies, communication or assertiveness training. Some of them reported vague or unclear information about methodological procedures that were undertaken. Problem-solving skills training treatments and communication enhancing treatments go well beyond basic psychoeducation, and when only cognitive-behavioral approaches were used the study was not included on the review. On the other hand, the combination of different approaches for ADHD makes difficult to disentangle the real effects of the psychoeducational intervention, and this happened for most of the reviewed studies. To attribute any gains found to pure psychoeducation when the active ingredients may have been the more therapeutic components of all interventions combined can be misleading.

Unfortunately, there is not yet a working definition of what psychoeducational interventions for ADHD are, or what their intended outcomes can or should be, or how or to whom such interventions should be delivered. The definition of psychoeducation used in our review was taken from studies of adults with schizophrenia. Schizophrenia and ADHD are very different disorder; therefore the goals (anticipated outcomes) of interventions while overlapping, may not be the same. In order to gain a better understanding of the efficacy of these programs, more exhaustive studies with adequate RCT designs and proper psychoeducational procedures targeting more specific areas of children impairment must be done in the future. In addition, a proper concept of psychoeducation more adapted to the children with ADHD and their families is thus required. In Fig. 2 we propose an algorithm of psychoeducational approaches in ADHD. Psychoeducation for parents/careers and teachers of ADHD children and adolescents must be considered once the diagnosis is made and also throughout the course of its treatment. After a specific psychoeducation program is carried out other psychological approaches including parenting management, CBT, and family therapy could be considered as part of the multidimensional package, together with the appropriate medication.

4.2. Provision of psychoeducation program in the different populations

In considering differences among different populations, it is important to remember that psychoeducation was applied to children and adolescents with a wide age range, to their parents, and/or their teachers. This may have led to differences in response as younger children with ADHD and those with anxious or depressive disorders are those who probably best respond to psychological approaches [31], such as behavioral and parent-training interventions, while for older children other approaches

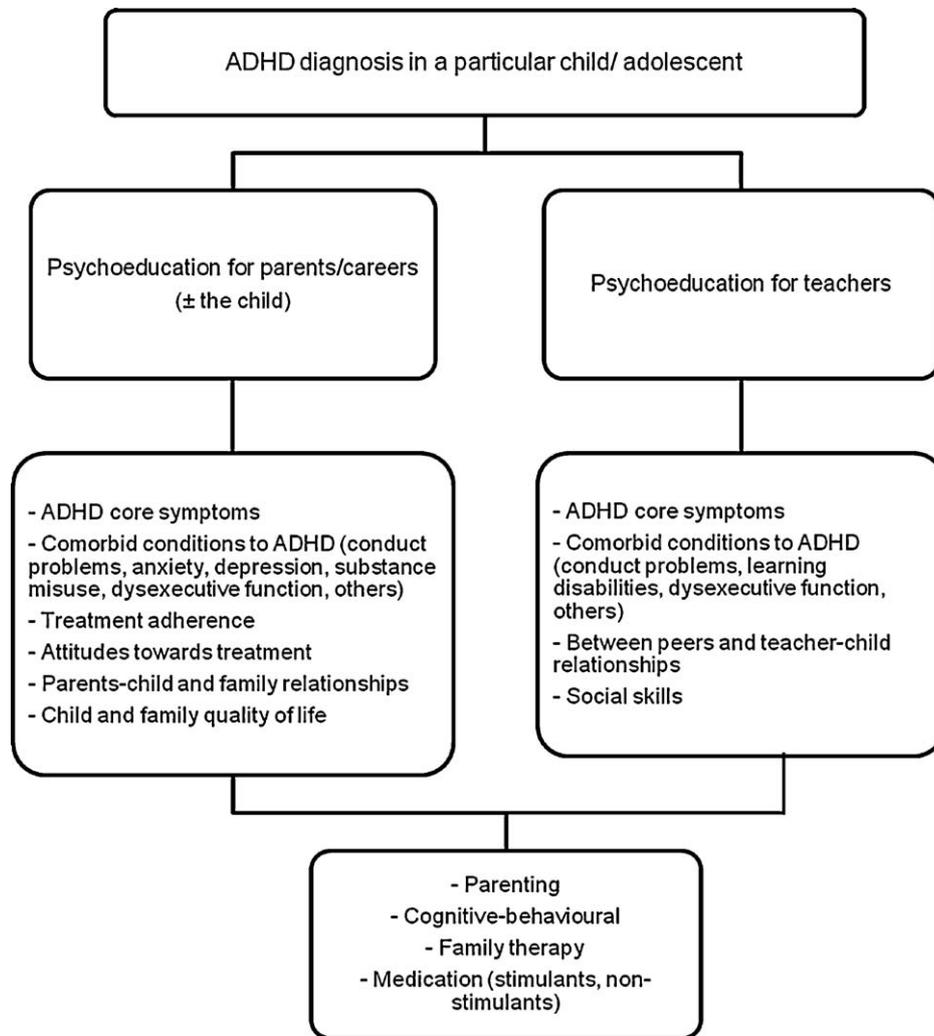


Fig. 2. Flowchart describing recommendations for psychoeducational approaches in ADHD children and adolescents.

Psychoeducation for parents/careers and teachers of ADHD children and adolescents must be considered once the diagnosis is made and also throughout the course of its treatment. After a specific psychoeducation program is carried out other psychological approaches including parenting management, CBT, and family therapy could be considered as part of the multidimensional package, together with the appropriate medication.

such as cognitive behavioral therapy, social skills training and self-instructional training coupled with parent training. In order to get a good effectiveness from the intervention provided, it might be very useful to disentangle the specific groups who could benefit the most from these educational packages.

There may be differences in the expected outcomes when psychoeducation is delivered to parents or caregivers, to teachers or to the patients themselves. Although smaller, there is some evidence that highlight the importance of psychoeducation in teachers. Providing information about illness and its treatment to teachers seems to create a therapeutic relationship that may improve children social behavior and the development of skills in coping to troublesome events. The evidence supporting children with ADHD may benefit from their parents being given psychoeducation as tend to be better known. The psychoeducation process of information transfer, emotional discharge, and symptoms management, will facilitate parents handling the illness and supporting children and adolescents in coping with the disorder.

4.3. Effects of psychoeducation in the different outcomes

This review highlights the potential role of psychoeducation in a number of different areas, including an improvement in consumer

satisfaction levels, an enhancement of adherence to medical regimens [6], and improvement in positive functioning outcomes (reduction of the number of parent-child issues and conflicts [18], reduction of externalizing behaviors [12,20], etc.). These results have to be interpreted with caution, as studies reviewed did not adjust for confounding factors that may be mediating for clinical response (e.g., treatment dosage or other psychotherapeutic approach) and due to the methodological flaws mentioned earlier.

There was also a wide range of different clinical outcomes used, including improvement in ADHD core symptoms, functioning at school, treatment adherence, and external behavior; these outcomes describe behavior that may have influenced the different effect sizes observed post-psychoeducation. For the participants who dropped out the study most of the authors did not give any data related to the outcome measures used, such as treatment adherence or parent's points of view. This is important since outcomes measured could be directly linked with withdrawal [6,18].

4.4. Psychoeducation and medication

Some of these studies provided medications to children, some did not. For the studies comparing psychoeducation in children

with and without medication, it seems that the efficacy of the psychoeducation program was reinforced when applied together with medication [12,29]. These findings are in line with previous findings showing a higher efficacy of combined therapies for some children and adolescents with ADHD (MTA Group). Medication is known to dramatically improve peer interactions, but increases in positive social behavior are far less robust. Such changes might require intensive, long-term application of the behavioral components of combined treatments, since the majority of children with ADHD are not receiving the necessary treatments for the recommended duration [27,31]. Though clinical interventions may be effective, parents often have ambivalent attitudes about potential interventions, particularly pharmacological treatment [16]. Several factors, including a history of medication use and counseling for ADHD [26], have been shown to be positively related to parents' acceptance of ADHD interventions. Parents' knowledge of ADHD has been demonstrated to be positively related to medication acceptance [16]. The skills acquired by parents, teachers, and patients during psychoeducational sessions should serve to ensure maintenance of treatment gains and, therefore, of treatment adherence, as well as broader areas of functioning including QoL and functional outcomes.

To summarize, whereas our systematic review of the evidence for psychoeducational approaches in ADHD was limited, we believe that the failure to find sufficient support for psychoeducation may be less a function of the rationale of the treatment than of the inadequacies and flaws of the studies. Major challenges to examining the evidence on psychoeducation in ADHD include: the vast differences in the definition of psychoeducation, the differences in subjects, level of complexity and degree of diversity of the interventions, and differences in outcome measures employed. Although widely provided, there is clearly a need of additional scholarly thinking and research for clarifying and defining the construct of psychoeducation in ADHD. The field has necessarily to redefine the role of psychoeducation in the overall treatment of children with ADHD and what a psychoeducational intervention for ADHD should include. With a clearer concept, proper and more stringent studies with good statistic power and strict psychoeducational components must be done.

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