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Effect of a nursing educational program on competency and parenting practices among parents having children with attention deficit hyperactivity disorder: a randomized controlled trial

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Abstract

Background Attention deficit hyperactivity disorder is a common condition most prevalent among children worldwide. When it comes to parenting, parents of children with attention deficit hyperactivity disorder exhibit lower competency and more negative parenting behaviors than parents of children without the disease. This randomized controlled trial aimed to assess the effect of a nursing educational program on competency and practices among parents of children with attention deficit hyperactivity disorder.

Methods A total of 50 parents, most of whom were mothers with children aged between 5 and 10 years and previously diagnosed with attention deficit hyperactivity disorder, were chosen at random and split into equal study and control groups. The study group received eight sessions of the nursing educational program, with each session lasting 60 to 90 min, while the control group only received routine interventions.

Results The results of the current study show statistically significant differences between the study group and control group in terms of positive parenting practices, negative parenting practices, over-reactive practices, functional family practices, interactive practices, satisfactory parenting sense of competency, and effectiveness of parenting sense of competency.

Conclusion The nursing educational program presents benefits in improving parenting practices and enhancing parenting sense of competency among parents of children with attention deficit hyperactivity disorder.

Keywords Attention deficit hyperactivity disorder, Parenting practices, Nursing educational program

Background

One of the most prevalent behavioral disorders among children is attention deficit hyperactivity disorder (ADHD). The DSM-V charts ADHD diagnosis based on continuing inattention and/or hyperactivity-impulsivity. Inattention includes carelessness, attention struggles, and task avoidance; hyperactivity-impulsivity involves fidgeting, excessive talking, and interrupting. Diagnosis requires six or more symptoms from either category, impacting social or academic aspects

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for at least 6 months. Onset prior to the age 12 and manifestation in various settings are crucial. Symptoms should not stem from another disorder [1].

The World Health Organization (WHO) outlines neurodevelopmental disorders as one of today's greatest public health challenges, as ADHD being one of the most prevalent among children worldwide, which typically coincides with delayed language development, impairment in motor functions, and impaired emotional control as well as with other psychiatric disorders [2]. Around 5% of children worldwide are thought to suffer from ADHD [3]. Between 1 and 20% of kids worldwide, in both developed and developing countries, have ADHD. Arab countries, for instance Egypt, exhibit a broad spectrum, with percentages ranging from 1.3 to 20%. Prevalence may vary depending on the study's design, demography, informants, diagnostic standards, and sample size [4].

The term parenting practices (PP) refer to certain behaviors utilized by parents and child-care providers to benchmark childhood development and socialization goals. Positive practices encompass warmness, affection, sensitivity, and responsiveness, while negative practices are viewed as harsh, authoritarian, rejecting, controlling, or abusive [5].These practices are linked to the children's physical, mental, nutritional, and health development as well as their ability to acquire real-world skills that support their social development and the establishment of a safe environment [6].

Parenting practices (PP) are crucial for children's development and well-being in a variety of contexts and groupings. Positive child outcomes, for example, language growth, autonomy, emotional, social, and intellectual abilities, as well as a decrease in internalization and externalization of behavior problems, are linked to responsive parenting and consistent, predictable family routines [7].

A parental sense of competency (PSOC) has been defined as a parent's beliefs in their ability to effectively parent and one's satisfaction with parenting. PSOC includes two facets of parenting: parental satisfaction and parental efficacy. PSOC has been demonstrated to serve as a protective element in children's development [8].

The amount and severity of ADHD symptoms, coexisting disorders, and various short- and long-term consequences linked to typical functional impairments in ADHD have all been narrated to parenting practices [9]. Therefore, it is of great significance to carry out a nursing educational program for parents with ADHD that provides knowledge, skills, and support to manage their child's condition and improve family dynamics.

Methods

Aim of the study

This study sets out to assess how a nursing educational program affects competency and parenting practices among parents whose children were diagnosed with ADHD.

Setting and study design

Two outpatient clinics affiliated with psychiatric and mental health facilities were chosen. Helwan Hospital's outpatient clinics for psychiatry and mental health were the first. The second was the Beit El-Shams Clinic for Child Psychiatry, which is located at El-Abasia Hospital for psychiatric disorders and addiction management. Regarding data collection methodology, this study is classified as a randomized control trial with the use of a pretest–posttest design for both the experimental and control groups. In-person interactions between participants and researchers were used to conduct the study.

The study initiated in November 2021 and completed in March 2022. The nursing educational program was implemented at the outpatient clinics. The nursing educational *program was implemented twice monthly in each hospital*. The sessions were designed to accommodate the patients' follow-up schedule, which occurred every 2 weeks, thus avoiding the need for patients to attend the sessions separately, which might affect their attendance commitment. The participants were assigned into four groups, with six to seven parents in each group. The sessions included lectures, group discussions, questions and answers, and demonstrations to practice new skills. The nursing educational sessions were delivered in a classroom-like room designated by the outpatient clinics' management for conducting educational sessions for children and their families. *The sessions were conducted by one of the researchers who was trained in relaxation techniques, behavior modification, and parental guidance. Additionally, certified in a TOT course.*

Sample size and study sampling

Sample size

A sample size of 50 participant was calculated using a G*Power version 3.1.1 for power analysis. A power of 0.95 (B − 1 − 0.95 = 0.05) at alpha 0.05 (one sided) was used as the significance level, and effect size = 0.05 was utilized.

Random allocation

Stepwise random cluster sampling was used for sample selection, followed by a single-blind randomized controlled trial using a closed opaque envelope approach. Two groups were selected: the study group received

the nursing educational program, and the control group received traditional care (hospital social worker-led family counselling sessions for parents whose children diagnosed with ADHD). Following written agreement, parents of children with ADHD were chosen at random (see Fig. 1).

Participants

Fifty parents father/mother, who regularly brought their children previously diagnosed with ADHD, were recruited. They were recruited from families attending the outpatient clinics of two psychiatric governmental hospitals where ADHD treatments for children were being provided (Fig. 1).

Study instruments and measures

The general characteristics of the participants were obtained from a sociodemographic questionnaire. The information submitted contained age, gender, marital status, education, and occupational status.

Parenting practices were assessed using the parenting practices scale, which was established by Kahraman and colleagues in 2017 [10] and used to gauge parents' negative and positive practices regarding their children. PPS contains six domains: positive/constructive problem-solving practices contain 12 items, negative/inefficient solving practices contain 9 items, functional/purposeful family practices contain 9 items, over-reactive practices contain 12 items, inconsistent practices contain 5 items, and interactive practices contain 5 items. The respondents' scores were tallied, with a higher score indicating more effective parenting practices. A person can receive a score as low as 52 or as high as 156.

Scoring criteria

As for the scoring system of the parenting practices scale questionnaire, the responses to items were against a 3-point Likert scale with anchors. The answer to every question converted to reverse scored data: "never" equals 1, "often" equals 2, and "always" equals 3. The following items are on the scale in reverse order: (2, 5, 6, 7, 8, 10, 15, 17, 20, 21, 23, 25, 26, 27, 29, 31, 33, 38, 39, 41, 42, 45, 47, 48, 50, and 52).

Parenting competency was assessed using the Parenting Sense of Competency Scale (PSOC) which was established by Gibaud-Wallston and Wandersman in 1978 [11] and used to evaluate parents' perceived competence. A 17-item scale makes up the PSOC, with two subscales used to measure parenteral competency on two dimensions: satisfaction and efficacy. The satisfaction dimension examines parent anxiety, motivation, and frustration which consists of eight items. The efficacy dimension assesses parent competence, capability level, and problem-solving abilities, which consists of nine items.

Scoring criteria

As for the scoring system of the parenting sense of competency scale questionnaire, the responses of items were against a 3-point Likert scale with anchors. The answer to every question was converted to numerical data, the answer "disagree" equals 1, the answer "undecided" equals 2, and the answer "agree" equals 3, while the PSOC's items (2, 3, 4, 5, 8, 9, 12, 14, and 16) have reverse codes.

The scales' reliability was evaluated through internal consistency and split-half reliability methods, yielding

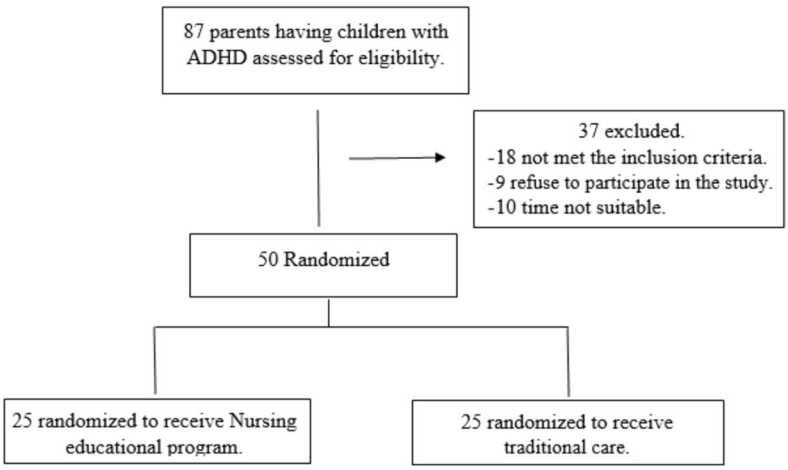

Fig. 1 Flowchart of the study population

coefficients exceeding 0.80 for both scales (PPS and PSOC). To ascertain content validity, three psychiatric and mental health nursing experts evaluated the scales. Modifications were made to certain elements to better align with the needs of parents dealing with ADHD. Furthermore, the instruments underwent translation from English to Arabic, conducted at Helwan University's Center for Specialized Languages.

Procedure

The data collection for this study commenced in early December 2021. *The program was implemented in 4 months, with two sessions per month in each hospital*, where the sessions were adapted to coincide with the date of the next follow-up of the participants so that their attendance was not required specifically for the program, which would facilitate their regularity in the program and would not constitute an obstacle to the implementation of the program. Researchers began with simple and well-liked more challenging information. Sessions included questions and answers, lectures, group discussions, and hands-on practice of new skills through participant demonstrations.

The application of the nursing educational program in outpatient clinics was two sessions every month, one session per day at each hospital, running from 11 AM to 12:30 PM. The parents were divided into four groups, each comprising six to seven parents. The researchers implemented the program using evidence-based methods such as cognitive behavioral therapy (CBT), mindfulness-based stress reduction (MBSR), and established parenting interventions like positive parenting program. The program was tailored through initial assessments of participants' needs, the tailoring of content, and ensuring the significance of cultural appropriateness. The program was flexibly delivered according to the participants' preferences. The program was piloted and continuously refined in line with participant feedback to ensure relevance and effectiveness. Tailoring was necessary to address individual differences, enhance engagement, and achieve intended outcomes, thereby maintaining the program's credibility and integrity.

Within the nursing educational program, a dedicated handbook was designed specifically for the program. This handbook included a detailed schedule outlining the planned activities and lectures for each session. This handbook was aimed at providing participants with a comprehensive overview of the topics discussed and the activities planned. Additionally, the sessions were recorded both in audio and visual formats and made accessible to participants using a QR code. This approach allowed participants to access the educational materials and lectures after the sessions concluded, enhancing opportunities for effective learning and content review.

The nursing educational program's design consisted of eight sessions implemented over three stages. The first session was the assessment session for acquaintance and data collection, as well as six sessions for the nursing educational program that covers the theoretical and practical application of the learned knowledge about ADHD, as well as how to relax, manage a child's behavior, improve problem-solving abilities, suggest solutions and come up with alternatives, engage in positive parenting practices, and enhance parental competency, while the final session was for post-intervention evaluation.

In this study, IBM's Statistical Package for the Social Sciences (SPSS) program, version 20, headquartered in Illinois, Chicago, USA, was used for all statistical analyses. Qualitative data were depicted using frequencies and percentages, while quantitative data were presented through means and standard deviations (SD). The educational program's effectiveness was evaluated by calculating Cohen's d effect sizes, indicating small effect (0.2 to 0.3), moderate effect (0.4 to 0.7), and large effect (0.8 or higher) effects in group comparisons. This analysis, coupled with independent sample *t*-tests for numerical variables, facilitated a comprehensive assessment against the control group. Additionally, all variables underwent a Shapiro–Wilk test for normality to ensure suitability for the statistical tests employed, considering significance at a *p*-value of 0.05 or lower.

Results

In both the study and control groups, most participants were mothers (study: 76%, control: 96%) with a mean age of 35.4 ± 5.447 and 35.8 ± 44.749, respectively, for the study and control groups. The results of our study indicate that 76% of the study group and 60% of the control group were unemployed. Notably, before the intervention, no statistically significant variances existed between the groups indicating a similarity in characteristics (see Table 1).

In both the study and control groups, most participants were mothers (study: 76%, control: 96%) with a mean age of 35.4 ± 5.447 and 35.8 ± 44.749, respectively, for the study and control groups. The results of our study indicate that 76% of the study group and 60% of the control group were unemployed. Notably, there were no statistically significant differences between the groups before the intervention, indicating a similarity in characteristics (see Table 1).

The current study revealed notable disparities in post-program scores between the study and control

Table 1 Participant characteristics at baseline in the study and the control groups

Sociodemographic items		Study group ($n=25$)		Control group ($n=25$)		χ^2	*p*-value
		No	%	No	%		
Parent's age	25: < 35	11	44.0	10	40.0	1.088	0.581
	35: < 45	12	48.0	12	48.0		
	> 45	2	8.0	3	12.0		
Mean ± SD		35.40 ± 5.447		35.84 ± 4.749			
Parent's sex	Male	6	24	1	4	4.153	0.053
	Female	19	76	24	96		
Parents' no. of children	One/two	9	36	11	44	0.333	0.564
	More than two	16	64	14	56		
Family history of ADHD	Yes	10	40	16	64	2.885	0.089
	No	15	60	9	36		
Occupation	Employed	6	24	10	40	1.47	0.225
	Unemployed	19	76	15	60		
Educational level	Read and write	7	28	4	16	4.397	0.222
	Primary	2	8	2	8		
	Secondary	10	40	6	24		
	University	6	24	13	52		

groups, particularly in the total positive problem-solving practice subscale and the item of attention needed to determine whether what parents want from their children is compatible with their personalities, with $t=$ (2.704 and 2.286) and $p=$ (0.009 and 0.02), respectively. Also, in the post-nursing educational program, significant differences were observed in negative problem-solving practices. As regards the items of a child's punishment depend on the parent's mood, the cause of the investigation of their child's misbehavior and whether the child supports one of the parents when arguing with their spouse (or other adults at home) where t = (2.939, 2.712 and 2.131) and $P=$ (0.005, 0.009 and 0.03) respectively (find Table 2).

The study revealed significant differences between the post-program scores of the study and control groups, notably within the functional family practice's overall scale and specific subitems, such as "telling children about personal problems" (e.g., disputes with spouses or problems at work). These differences were significant, with *t*-values of 2.563 ($p=0.01$) and 2.842 ($p=0.007$), respectively (find Table 2).

Furthermore, parents reported notable differences in their child's post-nursing educational program, particularly in advising them to avoid problems and providing simple, sequential instructions. Statistically significant differences were observed with *t*-values of 2.488 ($p=0.01$) and 2.394 ($p=0.02$), respectively. Moreover, the nursing educational program led to a significant improvement in the subscale of overreactive practices, showing a significant difference with a *t*-value of 2.056 ($p=0.04$) (see Table 2).

Highly significant differences were observed between the levels of satisfactory parenting sense of competency following the nursing educational program. These differences were notable across various subscales and their respective subitems, including "knowing what a good parent needs to know, being a parent is controllable, any problems can be solved easily, feeling thoroughly familiar with the mother/father role, and being a good mother/father is a reward." The differences were statistically significant, with *t*-values of 3.374 ($p=0.002$), 2.12 ($p=0.039$), 4.575 ($p=0.000$), 2.039 ($p=0.025$), and 4.075 ($p=0.000$), respectively (find Table 2).

Moreover, significant differences were observed in parental efficacy between both groups in the post-nursing educational program regarding total subscales and its subitems of sleeping in the same manner as when waking up and possessing skills and interests outside of parenting where $t=2.327$, 4.129, and 2.031 at $p=$ (0.026, 0.000, and 0.048), respectively. *Statistically significant items which were driven from PSOC scale and PPS were selected to be included in* Table 2 *to determine the size of effect using Cohen's d test.*

Our study reveals that there were no statistically significant differences between total scores of parenting practices, parenting competency, at pre-intervention which reflect homogeneity of the sample. However, statistically significant differences were found between total scores of parenting practice and total parenting for both groups

Table 2 Change in study outcomes by the intervention and control groups

Outcomes	Study group Mean + SD	Control group Mean + SD	*T*-test	*p*-value	*d*
Attention is needed to see if what you want from your child is suitable for his/her personality	1.88 + 0.526	1.52 + 0.586	2.286	.027*	0.64
Total positive problem-solving	27.48 + 1.939	25.76 + 2.52	2.704	.009**	0.76
Child punishment depends on the parent's mood	2.56 + 0.507	2.08 + 0.640	2.939	.005**	0.83
Cause investigation of the child's misbehavior	2.16 + 0.624	1.68 + 0.627	2.712	.009**	0.76
The child supports one of the parents when they argue with their spouse (or other adults at home)	2.32 + 0.627	1.92 + 0.640	2.131	.030*	0.63
Total negative problem-solving	21.12 + 1.94	19.04 + 2.46	3.319	.002**	0.93
Telling the child about personal problems (e.g., a dispute with a spouse/problem at work)	1.84 + 0.688	1.36 + 0.490	2.842	.007**	0.80
Total functional family practice	18.88 + 1.59	17.52 + 2.12	2.563	.014*	0.72
Describing what to do in a simple and sequential order	1.76 + 0.523	1.40 + 0.500	2.488	.016*	0.70
Asking the child to avoid problems when having inappropriate wishes	1.96 + 0.455	1.64 + 0.490	2.394	.021*	0.67
Total reactive practices	22. 4 + 2.29	21.12 + 2.11	2.056	.045*	0.58
Accompanying activities in which the child participates	2.32 + 0.476	1.84 + 0.554	3.286	.002**	0.92
Total interactive practices	11.28 + 0.98	10.4 + 1.58	2.356	.023*	0.67
Knowing what is needed to be a good parent	2.84 + 0.374	2.52 + 0.653	2.125	.039*	0.60
Being a parent is manageable, and any problems are easily solved	2.76 + 0.436	2.00 + 0.707	4.575	.000**	1.3
If anyone can find the answer to what is troubling my child, I am the one	2.68 + 0.476	2.28 + 0.678	2.141	.020*	0.68
Feeling completely comfortable with the role of being a parent	2.40 + 0.577	2.00 + 0.645	2.309	.025*	0.65
Considering being a good mother/father as its reward	2.64 + 0.490	1.84 + 0.850	4.075	.000**	1.15
Total satisfactory Parenting Sense of Competency (PSOC)	20.68 + 1.28	18.68 + 2.67	3.374	.002**	0.95
Going to bed the same way as waking up in the morning	2.20 + 0.577	1.48 + 0.653	4.129	.000**	1.16
Talents and interests lie in areas other than parenting	2.08 + 0.572	1.68 + 0.802	2.031	.048*	0.57
Total efficacy in Parenting Sense of Competency (PSOC)	16.88 + 1.27	15.4 + 2.92	2.327	.026*	0.66

* Significance level at $p < 0.05$. **$p < 0.01$

Table 3 Comparison between total scores of parenting practice and competency for both groups at pre- and post-intervention

Items		Study group Mean + SD	Control group Mean + SD	*T*-test	*p*-value
Total parenting practices score	Pre	99.72 + 7.68	102.04 + 3.78	1.354	0.182
	Post	111.24 + 6.187	103.52 + 3.89	5.284	.000**
Total parenting competency score	Pre	34.96 + 5.24	34.76 + 6.54	0.119	0.906
	Post	37.56 + 1.557	34.08 + 4.618	3.570	.001**

Significance level at $p < 0.05$. **$p < 0.01$

Table 4 Comparison between total scores of parenting practice and parenting competency at pre- and post-intervention ($n = 25$)

IItems	Pre-intervention Mean + SD	Post-intervention Mean + SD	Paired *t*-test	*p*-value
Total parenting practice score	99.72 + 7.69	111.24 + 6.187	5.592	.000
Total parenting competency score	34.96 + 5.24	37.56 + 1.557	2.432	.023*

*Significance level at $p < 0.05$

at post-behavioral training program where $t = 5.284$ and 3.570 at $p = (0.000, 0.001)$ respectively (find Table 3).

Our study found statistically significant differences between total scores of parenting competency within the study group at pre- and post-intervention where $t = 2.432$ at $p = < 0.05$. Additionally, highly statistically significant differences between total scores of parenting practice within the study group at pre and post intervention where T = 5.592 at $P < 0.001$ (find Table 4).

Discussion

This study aimed to evaluate how the nursing educational program affects the competency and parenting practices among parents of children with ADHD. A total of

50 primarily females aged 35–45 having children with ADHD were recruited, with two-thirds of both groups having sufficient monthly income. Our study showed no statistically significant variations in the study and control groups' sociodemographic characteristics, indicating a harmonious and matching relationship between the two groups.

The results of this study show that there was a statistically significant difference in parental positive problem-solving practices between the study and control groups. This can be explained by giving parents more authority to apply positive problem-solving approaches during nursing educational program sessions. This result matches the findings of the study conducted by Tarver and colleagues (2022), who studied a self-help version of the new forest parenting program for parents having children with attention deficit hyperactivity disorder: a qualitative study of parent views and acceptability [12].

This result conflicts with other research on parenting programs that use groups and was done by Furlong and colleagues (2012) [13],which showed a considerable decrease in negative parenting practices but no discernible improvement in parents' self-reports of their positive parenting practices. as reported by Braet and colleagues (2009) and Gardner and Woolgar (2018) [14, 15]. Nonetheless, a review and a few studies of group-based parenting programs conducted by Chacko and colleagues (2009), as well as Hutchings and colleagues (2007), contradict this finding [16, 17]. It is possible that parents' strong self-reports of excellent parenting practices before therapy contributed to this paradoxical conclusion.

The current study found significant improvement in negative problem-solving practices among post-nursing educational program participants compared to the control group. This improvement may be due to parents understanding and accepting their children's ADHD issues, believing in their ability to manage problem behavior. This study's substantial decline in negative parenting practices is in line with an evaluation of group-based parent education initiatives performed by Au and colleagues (2014) [18] who showed a significant improvement in parenting practice and efficacy and a reduction in the intensity of child behavior problems at the post-intervention.

The study's outcomes reveal notable differences in post-program scores between the study and control groups, particularly within the total subscale of functional family practice. These differences stem from the nursing educational program's intentional focus on equipping parents with a diverse range of skills. These encompass adept responses to behavior, management of mild disruptions, promotion of positive social interactions, and the consistent enforcement of rules and consequences. This aligns with a study conducted by Turan and colleagues (2022), exploring the impact of a parenting program on children with attention deficit and hyperactivity disorder. Their findings similarly emphasize the program's effect on symptoms and family functioning among children with persistent symptoms despite medical treatment [19].

Our study found significant improvement in functional family practice in post-program scores between study and control groups, attributed to nursing educational programs focusing on appropriate behavior response, neglect of disruptive behavior, and consistent rule enforcement. This finding matches the findings of the study conducted by Anastopoulos and colleagues (1993) [20] who studied parent training for attention deficit hyperactivity disorder: its impact on parent functioning and reported that parent training accompanied improvements in parent functioning.

The findings of the present study reveal significant variances in overreactive practices between the study and control groups after a post-nursing educational program. This result can be explained by acquired skills, such as active listening, attentiveness, self-regulation, and relaxation techniques, improved psychological well-being, and reduced emotional distress compared to reactive parenting approaches. This finding matches the findings of the study performed by van der Oord and colleagues (2012) [21] who examined the efficacy of mindfulness training for children with ADHD and mindful parenting for their parents and reported that there was a significant reduction in parental over reactivity practices after parent training for parents having a child with ADHD.

Findings of the current study revealed that significant effects of the nursing educational program were found on the parenting sense of competency satisfaction subscale at post-intervention. The finding demonstrated the importance of nursing educational programs that aim to empower parents' sense of competence by educating parents on the techniques required to control behavior problems. This finding is in the same vein with the findings of the study performed by Au and colleagues (2014) [18]. However, this finding is in contrast with the findings of the studies performed by Hand and colleagues (2013) and Leung and colleagues (2003) [22, 23].

Similarly, the efficacy sub-scale of PSOC was significantly improved after the implementation of the nursing educational program. This finding may be due to the skills that parents learned through the nursing educational program. Strategies of behavior modification helped them adjust the undesirable behaviors that children use and increase desirable behaviors. The newly acquired skills made the parents feel comfortable and capable of fulfilling their role as parents which increased

their efficacy and competency. This finding is similar to the finding of the Sweden study conducted by Löfgren and colleagues (2017) [24]. However, this finding mismatches the findings of the study conducted by Mah and colleagues (2021) [25].

This study highlights the positive effect of nursing educational programs on enhancing parenting practices and bolstering the sense of competency among parents with children diagnosed with ADHD. Nevertheless, the study encountered limitations; the sample size was restricted, and time constraints hampered scheduling sessions for employed parents. Additionally, the recruitment process posed challenges, necessitating an extended period to select suitable participants based on research criteria. Moving forward, we recommend future studies involve children as informants. This approach could yield unique perspectives on managing ADHD, providing valuable insights into experiences, perceptions, and potential interventions. Ultimately, this may contribute to the development of more effective intervention strategies.

Conclusion

The nursing educational program successfully improved parenting practices and enhanced parental sense of competency among parents whose children have attention deficit hyperactivity disorder.

Abbreviations

ADHD	Attention deficit hyperactivity disorder
PPS	Parenting Practices Scale
PSOC	Parenting Sense of Competency Scale
DSM	Diagnostic and Statistical Manual of Mental Disorders

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Authors' contributions

AED, ZO, and WA, shared the design, data collection and interpretation of the data, and writing of the draft. All the authors read and approved of the study.

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Availability of data and materials

The corresponding author can provide the datasets used and/or analyzed for this study upon reasonable request.

Declarations

Ethics approval and consent to participate.

The ethical committee number (17) of Helwan University's Faculty of Nursing approved the study on September 25, 2019. Each participant gave written, informed consent before beginning their participation. Every participant was free to leave the research at any time. Every study technique was carried out in accordance with the ethical standards delineated in the Declaration of Helsinki and its later amendments.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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