



Understanding Attention Deficit Hyperactivity Disorder (ADHD) in Children: A Qualitative Analysis of Family Responses and Behavioral Challenges

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Abstract:

Background: This study explored the behavioral problems of children with ADHD and family responding behaviors.

Methods: This present research uses Thematic Content Analysis (TCA) for carrying out the qualitative study to analyze the feedback of primary caregivers of children with ADHD aged between 6 and 9 years. The ADHD-affected children were using the services of the Child Development Clinic (CDC). Data was collected using the in-depth interview guide.

Results: Based on the data obtained from 14 dyads of a primary caregiver and a child with ADHD, two study themes emerged. The first one was related to the behavioral problems of the ADHD children, for which the family caregivers reported three categories: 1) impulsivity, characterized by being hot-headed, aggressive, impatient, and lacking caution; 2) inattention, reflected by having a short attention span, a lack of self-discipline, forgetfulness, and a lack of due diligence; and 3) hyperactivity, denoted as being energetic and restless. The second theme encompassed the family's response behaviors and family-child interactions; most family caregivers indicated that they provided the child with opportunities to perform day-to-day self-services and help with home chores. They also encouraged the child to learn to develop creativity, perform meditation for mindfulness, and practice exercise, by inculcating positive parenting within the family.

Conclusion: Children with ADHD in Thailand presented three behavioral problems: impulsivity, inattention, and hyperactivity. Their family response behaviors were to decrease behavioral problems while enhancing the affected child's capacity, health, and well-being. Results also suggested that strengthening positive family-child interactions and positive parenting in a family were important key strategies in taking care of children with ADHD.

Keywords: ADHD, Children, Behavioral problems, Family responding behaviors, Family-child interactions, Positive parenting.

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1. INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most prevalent mental health problems among children and adolescents, with a rising trend [1]. ADHD is a neurodevelopmental condition related to deficient brain and nervous system functions that usually start in early

childhood and follow a persistent trait-like course into adolescence and adulthood [2]. Children with ADHD may have behavioral problems such as inattention, hyperactivity, and impulsivity [3]. The prevalence of children and adolescents with ADHD in recent years was approximately 2.0-7.0 percent globally, while there were 8.0 and 8.1 percent in the United States of America and

Thailand, respectively [1, 4]. The prevalence of ADHD was higher in males than in females [5, 6], and the prevalence of diagnosis increases with age [7]. It often persists into adulthood and is a risk factor for other mental health disorders and long-term negative outcomes, including impaired working memory abilities and impairments in the activities of daily living [8]. It also involves under-academic achievement [9], difficulties with employment and relationships, and criminality [6]. It also affects household income and results in higher total financial burdens [10] and increased stress in families on their children's behavior [11]. Results from several longitudinal studies indicated that the unsolved problem behaviors of children with ADHD at the beginning would put them at a greater risk of mental health problems in the future [2].

Behavioral problems in children with ADHD are caused by their limited understanding of surrounding situations, which results from their attention deficit and lack of executive functions [12]. Approximately 57.0 percent of the children with attention deficits had persistent problem behaviors until adulthood [2]. In addition, untreated children with ADHD face suffering and family burdens. Meanwhile, the utilization of treatment for children with ADHD affected the family's economic status. One study found that families of children with ADHD had five times higher expenses than those of general families [10], particularly those having medication treatment. The non-pharmacological treatment was used in the early stage of ADHD before drug initiation, either alone or in combination with other treatments, such as medication, behavioral therapy, psycho-education, psychotherapy [6], social interventions [13], mindfulness training [14] and parent behavior training [15]. Difficulties handling the child's abnormal behavior are frustrating for many caregivers in the family [11]. However, families had to change or adjust their behaviors to cope with the behavioral problems of the children with ADHD.

Since the family serves as a primary and closest environmental unit for childcare, it is important for all family members to observe the behavioral problems of the children with ADHD and to help improve them while they are in the treatment process to minimize potential health risks and problems. This present study is built on the Ecological Theory, which explains the family as an important ecosystem for children's development [16], including psychological, emotional, and behavioral formation. This theory further explained that the illness of one family member would affect all members. Meanwhile, changing the behavior(s) of one family member could lead to changing behaviors of other family members or even the entire family [17]. This study explored the experiences of primary caregivers in taking care of children with ADHD. It analyzed changes in practice to reduce the behavioral problems of the affected children. This empirical research was a multi-phase study. Findings from this present study could provide ways for the researchers to develop further a model to enhance family skills in early detection, finding suitable preventive strategies and responding behaviors and solutions to alleviate behavioral

problems of the at-risk ADHD children and the children with ADHD in initial stage, thereby increasing effective adjustment and coping skills of a family to assist and alleviate behavioral problems and to increase the quality of life of the affected children.

2. METHODS

This study aimed to explore the behavioral problems of children with ADHD and family responding behaviors among primary family caregivers and their children with ADHD.

2.1. Design

This qualitative study focused on the dyads of a primary caregiver and a child with ADHD aged between 6 to 9 years. It was aimed to explore the behavioral problems of the affected children and their family responding behaviors to alleviate such problems. After receiving approval from the ethical research committees, one of the researchers advertised the research project to the caregivers of the children with ADHD who came to utilize services at the CDC in a selected tertiary care hospital and collected data from those who were willing to participate in the project. This study was one of the multi-phased projects carried out from June till September 2021.

2.2. Participants

The dyads of a family caregiver and a child with ADHD aged between 6 to 9 years were recruited from those utilizing health care services at the CDC of a hospital located in one selected province in northeastern Thailand. Fourteen dyads demonstrated the saturation point.

2.3. Data Collection and Research Tools

Data collection used the in-depth interview guide, observation list, and field notes. The in-depth interview guide comprised three parts of semi-structured questions. Part 1 included general information about the child with ADHD, their caregivers, and their family information and background. Part 2 included current and past behavioral problems of the child with ADHD as perceived by the caregivers. This part contained four open-ended questions asking each caregiver about the perceived characteristics and behaviors of their child with ADHD and descriptions of the behavioral problems of the affected child chronologically from past to present, both before and after the child was diagnosed with ADHD. Finally, Part 3 comprised family responding behaviors and related changes to alleviate the child's behavioral problems. This part contained four open-ended questions, including "What are the current behaviors and related problems of the child in a family, a school, and other settings?" "What are the responding behaviors you and related family members have performed to alleviate the child's behavioral problems?" "Was there any change in family responding behaviors to alleviate the child's behavioral problem in the initial past up to the present? If no, please specify the reason(s). If yes, please specify why it happened so" and "What are the consequences or outcomes of a family's responding behaviors in general

and in particular?"

The in-depth interview guide was pilot-tested with five caregivers in the CDC in the study hospital and was considered relevant rather than offensive, and no modifications were made.

Observation lists and field notes were used to broaden the researchers' range of vision and understanding of livelihood. They manifested behavioral problems of the children with ADHD and their family responding behaviors by recording descriptions of emotions, facial expressions, manners, gestures, surrounding atmosphere, and responses of each caretaker and his or her interactions with the affected child during the interviews. The researcher (KK) also wrote a reflexive journal daily during the data collection period to reflect the researcher's ideas, thoughts, and introspective comments on what had been observed, particularly the responding behaviors to alleviate the child's behavioral problems reported by the caregivers of the child with ADHD in each family context. The consequences of such responses were also chronologically studied from past to present.

2.4. Data Analysis

Data analysis used the Thematic Content Analysis (TCA) method with an application of the ATLAS.ti 22 program. Data was transcribed verbatim, and it was analyzed in parallel with data collection. An inductive TCA was then analyzed following seven steps: 1) becoming familiar with the data, 2) generating initial codes based on content analysis, 3) building a coding frame, 4) searching for themes, 5) reviewing themes, 6) defining and naming themes, and 7) producing the report [18].

2.5. Data Trustworthiness

Data trustworthiness [19] was obtained by performing: 1) connection with the caregivers and use of an introductory question to build rapport before beginning the in-depth interviews, 2) member checking by focus

group discussion involving four participants, 3) peer debriefing with one specialist, and 4) triangulation by ensuring the consistency between the derived conclusions and the collected data from the in-depth interviews, observation, and field notes.

3. RESULTS

General information about the participants and results of the two major themes, namely behavioral problems of children with ADHD and family-responding behaviors, were as follows.

3.1. General Information of the Participants

The participants included 14 dyads of a caregiver and a child with ADHD, of which mainly were living in an extended family (13, 92.1%), residing in rural communities (10, 71.4%), and having a family monthly income of 10,000 Bath and over (13, 92.1%). The primary caregivers were all women who were (14, 100.0%), mothers (9, 64.2%), divorcees (8, 57.1%), and those having a high school education (6, 42.9%), respectively. Their age ranged from 22.0 to 60.0 years, with an average of 42.0 years (SD = 11.8).

Children with ADHD, both boys and girls, had an equal number (n = 7); their ages ranged from 6 years and one month to 8 years and 11 months, with an average of 7.1 years (SD = 0.96). They were first diagnosed with ADHD at the age of 4 years, 10 months, to 7 years, with an average of 5.6 years (SD = 1.1). Their duration of being diagnosed with ADHD ranged from 8 months to 3.0 years, with an average of 1.5 years (SD = 0.6).

3.2. Behavioral problems of children with ADHD

Based on the experiences and reflections of the caregivers, the children with ADHD were reported to have nine behavioral problems, which were categorized into three subgroups of the ADHD core symptoms, including impulsivity, inattention, and hyperactivity, as demonstrated in Table 1.

Table 1. Behavioral problems among children with ADHD (n=14).

Behavioral Problems	Sample Quotes	Frequency n (%)
Impulsivity		
Hot-headed	"He is hot-headed and can't control his emotions. One day, his grandfather closed the door, and he couldn't get into the house and became so angry he then injured himself by kicking the door and a glass cabinet." (ID4)	13 (92.8%)
Aggressive	"He is aggressive, telling off other people using rough terms and destroying things. He also used offensive words when playing games on the phone with his friends. When offended, he reacted madly, threw things, and destroyed items without caring about the damages." (ID2)	9 (64.3%)
Impatience	"I think he's impatient. For example if he wants to eat a snack, he'll have to eat it right away. When I tell him to wait, he refuses and makes me go buy it right away." (ID11)	5 (35.7%)
Lack of caution	"She loves to play hard, and she is also careless. Her arms are full of bruises despite being a girl." (ID1)	3 (21.4%)
Inattention		
Short attention span	"He does not stay focused on anything, doesn't complete his tasks, and doesn't want to write. His handwriting for his homework is poor. He doesn't want to recheck. He spends a short time to complete his work." (ID14)	11 (78.6%)
Lack of self-discipline	"When she gets up, she won't take a shower. She doesn't want to do anything. I have to keep telling her to complete her tasks." (ID5)	6 (42.8%)
Forgetfulness	"He forgets what he has been taught, and I have to reiterate it. He doesn't have a good memory. Soon after he has been taught, he'll forget. For example, he can write the alphabet when they are shown to him, but he cannot do it on his own afterward." (ID4)	5 (35.7%)

(Table 1) contd....

Behavioral Problems	Sample Quotes	Frequency n (%)
Lack of due diligence	"He isn't careful. When he writes, he's always in a hurry, doing it quickly at a bare minimum and without rechecking." (ID8)	3 (21.4%)
Hyperactivity		
Energetic and restless	"He isn't steady and likes to climb. He frequently has accidents from climbing school windows." (ID14)	11 (78.5%)

3.2.1. Impulsivity

The children with ADHD were reported to be hot-headed, aggressive, impatience, and had lack of caution, as shown in the following descriptions.

3.2.1.1. Hot-headed

The children with ADHD had a short temper and quickly got angry, impatient, and criedeasily, especially when things did not meet their expectations.

3.2.1.2. Aggressiveness

The children with ADHD were found to swear at others with offensive words, beat or harm others such as friends or siblings, as well as destroy things.

3.2.1.3. Impatience

The children with ADHD were found to be unable to follow the rules. They had difficulty waiting in lines or awaiting his/her turn in the group plays and often interrupted others.

3.2.1.4. Lack of Caution

The children in this group were found to be careless and put themselves at risk.

3.2.2. Inattention

The children with ADHD were observed to have short attention, lack of self-discipline, forgetfulness, and lack of due diligence, as explained in the following descriptions.

3.2.2.1. Short Attention Span

The children with ADHD in this study were found to have short attention spans and they could not carry along tasks or assignments until they finished, and some were easily distracted.

3.2.2.2. Lack of Self-discipline

The children in this group were found to have poor organizational skills for their age, such as not storing toys or appliances after usage or not keeping their personal belongings in place, and some were unable to maintain their daily routines.

3.2.2.3. Forgetfulness

The children in this group were found to forget things repeatedly and often easily.

3.2.2.4. Lack of due Diligence

The children in this group had difficulty giving attention to details, such as going through their homework briefly without rechecking or making corrections or revisions.

3.2.3. Hyperactivity

The children with ADHD were reported to be energetic and restless, for they constantly had excessive motion activities. They expressed "hyperactivity" and were unable to stay still and frequently had accidents from running or climbing either at home or at school.

3.3. Family Responding Behaviors to Alleviate Behavioral Problems of Children with ADHD

Two subthemes of family responding behaviors emerged as the ways to reduce behavioral problems of their child with ADHD based on the caregivers' experiences. These subthemes included family-child interactions and positive parenting.

3.3.1. Family-child Interactions

The caregivers indicated four categories of family-responding behaviors to alleviate the behavioral problems of children with ADHD. These included the following, as mentioned in Table 2.

3.3.1.1. Promotion of Day-to-day Self-help and doing Home Chores

Many caregivers indicated that the children with ADHD were more likely to be interested in their surroundings and wanted to be involved in every activity. The family's activities to encourage family-child interactions included: 1) interactive teaching with the child, to self-help in maintaining his/her daily routine activities, such as taking a shower, grooming, dressing, and others, and 2) teaching the child to help in doing home chores, for example, dishwashing, folding clothes, and keeping the toys in place after playing.

3.3.1.2. Promotion of Cognitive Processes and Creativity

The caregivers observed and found out that their child with ADHD loved painting and playing with toys. They thought to enhance the child's cognition and creativity by playing with toys or doing some artwork. Consequently, the caregivers set up activities to do together with the child using simple materials or toys based on their child's preferences. These activities included painting, clay working, building Lego, and others.

3.3.1.3. Promotion of Mindfulness and Meditation

Given that children with ADHD usually had short attention spans, the caregivers tried to encourage family-child interactions through simple mindfulness and meditation practice. They taught the child to practice a conscious mind, peacefulness, and calm mind while suppressing anger and enhancing appropriate reactions.

The activities included counting from 1-10 and increasing concentration in daily life by praying before bedtime.

3.3.1.4. Promotion of Exercise

Given the recognition that the child with ADHD tended to be restless with excessive motion activities, some of the caregivers chose relaxing activities that could help the child stay focused on a simple set of movements or tasks and refine those movements based on their preferences. These

playing activities included dancing, playing football, skateboarding, and cycling.

3.3.2. Positive Parenting

The caregivers reported that their families had modified the way they raise their children with ADHD. Such changes have brought experience and the perception that positive caregiving could be better than scolding or punishing. The result was the following changes in how the children were brought up as demonstrated in Table 3.

Table 2. Summary of family responding behaviors using family-child interactions (n=14).

Family-child interaction	Sample quotes	Frequency n (%)
Promotion of day-to-day self-help and home chore help	"I let him help me with the home chores, such as sweeping the house and making the beds. Consequently, he could stay focused on such tasks in a brief time." (ID10)	12 (85.7%)
Promotion of cognitive processes and creativity	"I persuade him to do activities with concentration, such as building Lego toys. This activity could keep him still for a longer period because he would try to connect all the pieces into shape till he was done. He likes to draw pictures now and then, which makes him sit and stay more still." (ID7)	10 (71.4%)
Promotion of mindfulness and meditation	"When she is angry, I often teach her to stay calm by counting 1 to 10 before she decides to express her anger. And it works out all right. She's calm and doesn't go on a rampage right away." (ID6)	8 (57.0%)
Promotion of exercise	"Nowadays, I take her to play skateboard. She then becomes more still. I notice that when she plays, she's more attentive and careful. She sometimes performs a cover dance. Dancing requires memory, so she is attentive and remembers things better. It looks like she remembers the choreography well." (ID3)	7 (50.0%)

Table 3. Summary of positive parenting themes and practices in families having children with ADHD (n = 14).

Positive parenting practices	Sample quotes	Frequency n (%)
Proactive parenting		
Self-study for suitable knowledge in special child-rearing	"Sometimes, if I don't know anything, I ask my neighbor, who has a child with ADHD. They have experience and can give me suggestions. But I sometimes ask my child's teachers because they have experience with children with ADHD." (ID2)	10 (71.4)
Watching problems and providing a safeguard	"I teach and keep my child from having problems with friends, such as I always teach my child to do well with friends at school and not to tease them. Otherwise, they wouldn't play with him." (ID4)	3 (21.4%)
Positive discipline		
Setting family rules for the child	"I set rules and try to have her follow them. But I won't force her. For example, when she has to do her homework, if I say do it now, she'll resist and refuse to do it. But if the family rules are flexible enough for her to be ready to work, that's more effective. Consequently, maybe she'll ask me if she can play first and then do some homework, and then she will keep the promise and follow our established rules." (ID5)	9 (64.2%)
Avoiding punishment by beating the affected child	"At a time when I didn't know that the child had ADHD. Our family used to punish him by beating him, which led him to have more aggressive behaviors. Once, his father punished him by beating him. He had a very harsh response. He ran upstairs and reviled his parents in impolite words. His father said, "No need to bother me again." Consequently, he was so angry that he didn't speak to his father for nearly a week. Our family also got together and agreed upon adjustment by taking a new approach, such as teaching the child when he is calm, and punishing the child by beating doesn't work because it only pauses bad behaviors, and the child will do wrong again in the long run." (ID10)	8 (57.1%)
Respectfulness		
Communicating with the child using polite words and manners, especially to apologize the child whenever caregivers do something wrong	"I think when I speak to him nicely and well, such as when I praise him, he will be willing to practice writing. I also notice it is a very effective way to involve him in activities." (ID1)	8 (57.1%)
Allowing the child to do his/her own daily routine activities	"I let him help me with chores, such as sweeping our house and making the beds. Those things keep him still and focused for at least a moment." (ID10)	8 (57.1%)
Attachment		
Setting up time to play and talk to the child	"I play with him in simple activities using easy-to-find things in our home, such as painting and filling bottles with sand. I think they keep more still, and we are able to do some other activities." (ID2)	8 (57.1%)
Showing love and patience while keeping close contact to enhance the child's emotional responses and endeavor to cultivate	"When she's not still, such as when writing, I sit close by her. Then I encourage and teach her, letting her slowly finish her writing." (ID11)	5 (35.7%)
Empathetic leadership		

(Table 3) contd....

Positive parenting practices	Sample quotes	Frequency n (%)
Warning of- and giving suggestions on the child's misconduct	"When she's aggressive, I'll firstly try to hold my emotions and to keep quiet. When she calms down, I then will give her a warning and teach her." (ID5)	6 (42.8%)
Giving child reasoning	"I teach him to think. For example, when he speaks roughly, I say to him, 'In my opinion, I don't think that such words should be said.' Then I'd ask him to think, 'Do you think speaking nicely would be better?'" (ID2)	6 (42.8%)

4. DISCUSSION

The children with ADHD included in this present study were those diagnosed with ADHD for approximately 8 months to 3.0 years. Their caregivers had experience in caring for them and recognizing their behavioral problems. All behavioral problems of the children with ADHD reported by the caregivers in the initial phase were external problems that could be resolved by changing the behavior of the families toward their children.

The pathology of ADHD can explain the problems exhibited by the children. Children with ADHD highly exhibit impaired white matter organization of the brain, particularly in the frontal-pontine fiber supplying to and from the supplementary motor area, which is considered critical to behavioral control and motor function [20]. The white-matter microstructure of the brain in young people with ADHD has also been significantly associated with deficits in a variety of neuropsychological functions, including the Executive Function (EF) [21], which is a high level of functioning of the brain that controls ideas, decision making and goal-directed behaviors. It consists of five aspects including inhibition, shift, emotional control, working memory, and planning/organizing [22]. Children with ADHD were more likely to have EF impairments regarding continuity and cross-domain associations, which could lead to a range of socio-emotional problem behaviors in the future [23]. Therefore, it is important to put more concentration on providing appropriate care and curative treatment or solutions to help solve initial behavioral problems among young children because such problems can affect their mental health and quality of life in the future. Moreover, behavioral problems such as comorbid conduct disorder and major depressive disorder are the main predictors of ADHD persistence from childhood to adulthood [2]. In addition, behavioral problems in children can result from the environment and family upbringing. Based on the general data, as many as eight children with ADHD were from families having parental divorce, accounting for 57.10%. Children in a family with parental divorce were more likely to have behavioral and emotional problems [24]. The caregivers in this present study reported that all the children with ADHD had access to mobile device usage. Accessibility to mobile phone usage can be put under caution because it can potentially cause children with regular use of cell phones for more than 60 minutes on a typical day to perform misconduct behaviors and behaviors related to hyperactivity and inattention. However, mobile phone applications and games can encourage both positive (*i.e.*, better learning from attractive motion pictures and stories) and negative outcomes (*i.e.*, aggressive and violent) in children [25].

This present study revealed that the caregivers were uncertain about their abilities to initially identify whether the behavioral problem(s) of the child would be considered as the ADHD symptom (s) or not. This was because some behaviors, such as energy and restlessness, were viewed as common for preschoolers. Consequently, the caregivers and families took a long period, ranging from 8 months to 3 years, to observe and monitor such behavioral problems until they decided to utilize services at the child-development clinic for school-age children. Most of the children in the present study have been diagnosed with ADHD at an average age of 5.6 years, which is comparable to the reported age of first diagnosis of ADHD being 6 years [26]. However, recent studies have shown that families can begin to notice different behaviors between children having high risk and low risk for ADHD when the children reach the age of one year or older [27]. So, if families notice that their children are starting to have behavioral problems, as reported by the caregivers, these problems could be used as information for monitoring the risk of ADHD among young children. Monitoring such risk can potentially assist caregivers and families in providing initial care early for the at-risk children, and such assistance can lead to more positive changes in behavioral problems of the affected children, thereby increasing permissive treatment of ADHD for them in the future.

For behavioral problems of the children with ADHD, the caregivers recognized that changing behavioral problems of children could be possibly reduced by effective family-child interaction. Since all the study caregivers were primary caregivers currently residing in the same house as the children with ADHD, they were crucial persons for making changes on the part of the children. Based on the ecological system theory [16], a family can be viewed as a microsystem nearest to the child with ADHD and is the most influential system where interactions between caregivers and other members in a family context impact the health, development, and adjustment of the affected children. Family-child interaction is, therefore, critical to the learned behaviors of children with ADHD.

Family-child interactions: This study found that the caregivers perceived four subcategories of family-child interactions that helped in minimizing behavioral problems of the children with ADHD. First, the promotion of day-to-day self-help and home chore help was found to possibly stimulate the working memory of the children with ADHD. Working memory was one of the impairments most found in this group of children. It also served as an important predictor of an individual's ability to perform daily activities [8]. In addition, children with ADHD who had prolonged working memory impairment without

receiving any appropriate correction or treatment could develop adverse effects when they entered adulthood. Second promotion of cognitive processes and creativity, the caregivers indicated they tried to promote the cognitive processes of the children with ADHD by using learning activities to develop their creativity skills, thereby increasing their thinking ideas [28]. Third, in the promotion of mindfulness and meditation, the caregivers indicated their efforts to effectively increase the ability of the children with ADHD to stay calm by counting numbers and to be mindful by praying and meditating. Keeping the affected children with concentration could improve their attentiveness and impulse control [14, 29]. Fourth, in the promotion of exercise, the caregivers tried to encourage their affected children to perform physical exercise to help them to be more attentive, improve recognition, and better self-discipline. Importantly, the exercise served as a key feature to develop executive function (EF), attention, and motor skills in children with ADHD [30].

Consequently, family-child interactions, as reported by the caregivers, although varying in practices from family to family, have contributed to the development of EF in children. Previous studies indicated that children with high EF seem to have lesser behavioral problems. On the contrary, children with less EF seemed to have increased external behavioral problems [31]. The family-child interaction, therefore, can enhance the EF development of children with ADHD in their family contexts.

For family responding behaviors, the caregivers recognized that most of them had changed and/or modified their ways of child rearing and raising, specifically for the children with ADHD, towards positive parenting. They had learned that such practices were helpful in reducing the behavioral problems of their ADHD-affected children. Positive parenting practices applied by the caregivers in this present study seemed to adhere to the positive parenting explained by Eanes in 2016. Eanes presented five principles of positive parenting: attachment, respectfulness, proactive parenting, empathetic leadership, and positive discipline. The caregivers in this present study also reported that they had to modify their child-rearing and raising practices to provide special care for a child with ADHD in a family using positive parenting. Their modification of child-rearing towards positive parenting included five comparable themes suggested by Eanes (2016), with ten practices from the result of the study consistent with this parenting style [32]. For the positive parenting style of the children with ADHD, this present study found that the caregivers tried to set up family rules for and avoid punishment of the affected children by beating them, thereby creating positive discipline for them. In addition, physical punishment such as beating, pinching, scolding, and embarrassing children with ADHD are viewed as inappropriate practices to assist in the adjustment of the affected children. Besides, punishment suffers the affected children, and their acceptance of target behaviors may not be sustained.

Grounded on the family system theory, the present

study viewed a family having special children with ADHD as a social subunit of emotions, where a family manifested and coped with the behavioral problems of a child with ADHD that affected the whole family's emotional well-being. When one family member has a health problem, it affects other members and can lead to changes in the entire family system [17]. When shifted responding practices to behavioral problems of the affected child is made by one family member, they can affect both the child and the other family members since a family is also viewed as one interlocking bond. Therefore, modification of responding behaviors to alleviate the child's behavioral problems of a family caregiver can lead other family members to engage in and be aware of their abilities to modify the behavioral problems of the affected child with ADHD as well. Behavioral intentions cause changes in behavior toward the child by family members through applying knowledge and skills. Improved behavioral problem-responding behaviors will enable the salience of behaviors to be a habit-forming and automatic process based on the perception of the environment [33], thereby reducing the potential impact on the child with ADHD. The efforts of the family to self-study for appropriate special childcare drive practical knowledge and skills as they constantly search for new knowledge. In this study, most of the caregivers have acquired knowledge from medical personnel alongside pre-and primary school teachers and other experienced caregivers in their proximity context. Consequently, they used knowledge based on their direct experience and learned that punishment of the affected child by beating them is a negative approach that could temporarily stop the children's behavioral problems and could lead their children to repeat the mistake by destroying others, such as friends or younger siblings when having an opportunity.

Positive parenting principles have currently received more attention as the key strategies to provide care and prevent behavioral problems in children with ADHD. Positive parenting was found to decrease physical punishment and problems related to ADHD efficiently [34]. One study indicated that the children with ADHD having severe behavioral problems who received the positive parenting program, namely the Triple P-Positive Parenting Program, significantly had declined behavioral problems [35]. In addition, minimizing behavioral problems of the children with ADHD led to improved family functioning, especially regarding better recognition of the child's manifested problems, reduced depression, anxiety, and stress, as well as increased abilities of the caregivers to care for their affected children [35]. Therefore, positive parenting concepts demonstrated well as both effective and applicable means for families having children with ADHD. The application would be effective when based on their environmental and sociological contexts (Supplementary file) .

CONCLUSION

The present study highlighted some of the ways the caregiver-child with ADHD dyads may impact the

experiences in special child-rearing and raising practices to initially recognize symptoms of ADHD and their subsequent behavioral problems, as well as the caregivers' responding behaviors to alleviate behavioral problems of the children with ADHD. Findings demonstrate that the caregivers still have problems in initially recognizing ADHD symptoms. Behavioral problems of children with ADHD, which include particularly hot-headedness, aggressiveness, short attention span, lack of self-discipline, energy, and restlessness, are essential for finding appropriate solutions to alleviate such behavioral problems. Specifically, positive parental style for the caregivers' responding behaviors to subsequent behavioral problems of the affected children is found to be both negative (*i.e.*, physical punishment in an initial phase) and positive approaches (*i.e.*, setting up a time to play and talk to the child, communicating). Findings reported here suggest that parent-child interaction, particularly positive parenting, needs to be strengthened to develop their children's executive functions (EF) and alleviate the affected children's behavioral problems, such as promoting day-to-day self-help, cognitive processes and creativity, mindfulness and meditation, and exercise. Implications include finding ways to strengthen the ability of the caregivers to initially detect the ADHD symptoms and subsequent behavioral problems using appropriate tools such as the Child Behavior Checklist (CBCL) [36], Swanson, Nolan, and Pelham-IV (SNAP-IV) [37] and other ways to modify the child's behavioral problems in addition to pharmacological treatment of children with ADHD.

LIST OF ABBREVIATIONS

CDC	=	Child Development Clinic
TCA	=	Thematic Content Analysis
ADHD	=	Attention Deficit Hyperactivity Disorder
EF	=	Executive Functions

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Maha Sarakham Hospital Ethics Committee (Ref No MSKH_REC 64-02-007; Oct 1, 2021) and the Maha Sarakham University Ethics Committee (Ref No 100-044/2564; Dec 30, 2021).

HUMAN AND ANIMAL RIGHTS

All the humans were used under the ethical standards of the committee responsible for human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2013 (<http://ethics.iit.edu/ecodes/node/3931>).

CONSENT FOR PUBLICATION

The consent for the publication of detailed personal data was obtained from the involved parents. The consent to participate in the study of all participants was voluntary. The results of the individual interviews were kept confidential with assigned codes and pseudonyms.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The data and supportive information are available within the article.

FUNDING

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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SUPPLEMENTARY MATERIALS

Supplementary material is available on the Publisher's website.

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