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ARTICLE

An Exploratory Investigation of Difficulties in Applying Functional Behavior Assessment and Implementing Behavioral Intervention Plans in ADHD Programs in Saudi Arabia

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ABSTRACT

Functional behavior assessment (FBA) and behavioral intervention plans (BIPs) can be effective for students with attention deficit hyperactivity disorder (ADHD); however, teachers may face difficulties when implementing FBA procedures and, in turn, BIPs because of lack of time, insufficient training, and multiplicity of beliefs. Thus, it is important to identify the difficulties teachers may face and the obstacles that can deter them from implementing intervention plans. This is a worthwhile endeavor because nearly all classrooms will have students with behavioral problems who will benefit from specifically designed educational interventions. This study aimed to identify the difficulties in applying FBA and the barriers in implementing BIPs among Saudi teachers in specialized ADHD programs. Using the descriptive-analytical approach, a questionnaire targeting difficulties and barriers was administered to 209 public school teachers from specialized ADHD programs in Saudi Arabia. The results revealed that the difficulty level of applying FBA in ADHD programs was high. The level of barriers in implementing BIPs was moderate. Finally, the study indicated that barriers in implementing BIPs could be predicted by the difficulties of applying FBA. The results suggest the importance of finding better practices, restructuring the provision of ADHD programs, training teachers, improving assessment tool availability, and ensuring cooperation between school administrators and teachers.

KEYWORDS

Functional behavior assessment (FBA); behavioral intervention plans (BIPs); attention deficit hyperactivity disorder (ADHD); Saudi Arabia

1 Introduction

Globally, more than 5% of all children and adolescents have attention deficit hyperactivity disorder (ADHD). This disorder is marked by inattentiveness, impulsiveness, and hyperactivity [1–6]. ADHD is diagnosed in children of up to 12 years [7]. Children with ADHD exhibit a range of educational problems in academic achievement, discipline, and relationships with peers [3,8,9]. Despite these challenges, such children receive most of their education in general education classes [10].

Students with ADHD find it difficult to adapt to a regular classroom setting, and the resulting educational problems are easily noticed in the classroom [1,11]. According to the Individuals with Disabilities Education Act (IDEA), students with ADHD are eligible to receive special education services

to help them adjust to the school environment and achieve academic success [12]. Saudi Arabia has given special attention to students with ADHD. In July 2014, the Minister of Education issued a decision to initiate special educational programs for students with ADHD in all public schools. Since then, ADHD programs have been extended to more areas in Saudi Arabia to provide educational services that meet the needs of students with ADHD and help them in school settings [13].

With educational services, students with ADHD can adapt in school and integrate into classrooms [14] through the implementation of effective interventions that eliminate undesirable behaviors and/or increase desirable ones [15]. One of the most important practices mandated by the IDEA (2004) to reduce undesirable student behaviors is functional behavior assessment (FBA). FBA aims to collect data in a structured manner to develop supportive behavioral intervention plans (BIPs) based on the behaviors of students with ADHD [16–22].

Through FBA, teachers identify the recurring behaviors of students with ADHD that affect their academic achievement or the classroom environment [15,23]. One of the integral parts of BIPs is describing recurring behaviors and the causes of behavioral problems. This description is used when developing intervention plans based on reinforcement rather than punishment [22,24], in order to meet each student's specific needs as expressed in one or more behaviors [25].

Research has supported the effectiveness of FBA and BIPs with students exhibiting behavioral problems in educational settings (e.g., [20,26–28]. However, teachers may face challenges when implementing FBA procedures [17] and, in turn, BIPs because of lack of time, insufficient training, and multiplicity of beliefs [21]. Thus, it is important to identify the difficulties teachers may face and the obstacles that can deter them from implementing intervention plans. This is a worthwhile endeavor because nearly all classrooms will have students with behavioral problems who will benefit from specifically designed educational interventions [17]. The current study aimed to investigate the difficulties and barriers in implementing FBA and BIPs in ADHD programs in Saudi Arabia. It also explored the possibility of predicting the barriers in implementing BIPs according to difficulties in applying FBA.

2 Methods

2.1 Participants

The study population consisted of public school teachers of specialized ADHD programs in Saudi Arabia (201 males and 120 females) based on statistics from the Ministry of Education [29]. They were invited to participate in the investigation regarding the difficulties of applying FBA and implementing BIPs in their programs for students with ADHD. Two hundred and nine teachers responded (118 male [56.5%] and 91 female [43.5%]). Concerning academic qualifications, 143 (68.4%) held a bachelor's degree or lower, and the remaining 66 (31.6%) had a postgraduate degree. Regarding teaching experience, 76 (36.4%) of them had five years or less, 111 (53.1%) had six to ten years, and 22 (10.5%) had more than ten years of experience.

2.2 The Questionnaire

Based on a survey of related literature [14,21,30,31], a research questionnaire, comprising two parts, was constructed. The first included demographic characteristics: gender, academic qualification, and years of service in education. The second included two dimensions: the difficulties of applying FBA (eight items) and barriers in implementing BIPs (12 items). Participants answered questions according to a five-point Likert scale ranging from 5 = *strongly agree* to 1 = *strongly disagree* with a category length of 0.80 to identify the degree of agreement: *strongly disagree* = 1.80 or less, *disagree* = 1.81–2.60, *neutral* = 2.61–3.40, *agree* = 3.41–4.20, and *strongly agree* = 4.21 or more.

The questionnaire was presented to five special education specialists from Saudi universities for opinions regarding the clarity of items and their dimension relevance. This led to the reformulation of some items. The agreement between the five referees was high, indicating that the questionnaire had good content validity. The survey was written in Arabic and then translated into English. The validity of the translated survey was established by two bilingual professional translators using a back-translation procedure [32].

Correlations among the items and total scores for the subscales they belonged to were computed to check the questionnaire's internal consistency. Correlations ranged from 0.863 to 0.921 for items pertaining to difficulties of applying FBA, and 0.863 to 0.921 for items pertaining to barriers in implementing BIPs. All correlations were significant at the 0.01 level, establishing high internal consistency. The difficulties and barriers subscales yielded significant alpha reliability estimates (0.967 and 0.971, and 0.94, respectively), indicating that the questionnaire was quite reliable.

2.3 Data Analysis

The data were analyzed using the SPSS Statistics 26 program to extract frequencies and percentages for the participants' demographic characteristics. Furthermore, means, standard deviations, and ranks were computed to identify participants' opinions regarding the difficulties of applying FBA and the barriers in implementing BIPs. Finally, a simple regression analysis was conducted using the enter method to explore the effect of the difficulties of applying FBA and the barriers in implementing BIPs.

3 Results

Table 1 shows that the difficulty levels in applying FBA in ADHD programs in Saudi Arabia are high ($M = 3.553$; $SD = 1.087$). A noticeable dispersion in the participants' responses is also observable.

Table 1: Ranks, means, and standard deviations of the difficulties of applying FBA

Rank	Item	*M*	*SD*
A1	It is difficult to collect data on students' problem behaviors using various measurement tools.	3.65	1.274
A5	It is difficult to test the behavior function in case I am not sure about it.	3.61	1.285
A4	It is difficult to identify the function of the behavior (attracting attention, avoidance, achieving something desirable).	3.60	1.229
A7	It is difficult to identify the appropriate behaviors that the student needs to learn.	3.58	1.215
A2	It is difficult to collect data using the ABC model.	3.56	1.155
A6	It is difficult to develop a good behavioral hypothesis.	3.55	1.197
A3	The data collection does not help in understanding the causes of the target behavior.	3.53	1.135
A8	The data collection does not help in developing the BIP.	3.35	1.147
	Total	3.553	1.087

Table 2 reveals that the level of barriers to implementing BIPs in ADHD programs in Saudi Arabia is average ($M = 3.270$; $SD = 1.025$). Data also reveal a noticeable dispersion in responses.

Table 2: Ranks, means, and standard deviations of the barriers in implementing BIPs

Rank	Item	*M*	*SD*
B10	Inability to monitor the implementation of interventions.	3.50	1.136
B11	Inability to maintain learned behaviors after interventions.	3.45	1.180
B7	Inability to identify direct interventions that the student needs.	3.44	1.117
B8	Inability to find an alternative behavior for unacceptable behavior.	3.44	1.163
B9	Inability to use appropriate tools to measure behavior.	3.38	1.167
B12	Inability to generalize learned behaviors.	3.34	1.234
B6	Inability to define the observed behavior operationally.	3.23	1.133
B2	Inability to discuss the plan in the interdisciplinary team.	3.16	1.176
B3	Inability to get access to effective training that helps with the application of FBA.	3.10	1.195
B5	Inability to provide the necessary resources (e.g., supports) to meet the requirements of BIP.	3.09	1.235
B1	Inability to develop a comprehensive work plan for the student.	3.07	1.179
B4	Inability to make adaptations in the classroom environment.	3.05	1.210
	Total	3.270	1.025

Table 3 shows the predictive power of the difficulties of applying FBA for the barriers in implementing BIPs. There was a strong correlation coefficient (0.804) between the predicting and the predicted variables ($R^2 = 0.646$). Thus, the predicting factor explained 64.60% of the variance in the barriers in implementing BIPs. The *F* value was 377.40, which was significant at the 0.01 level. These results indicate that the barriers in implementing BIPs can be predicted by the difficulties of applying FBA.

Table 3: Analysis of regression to predict the difficulties of applying FBA by the barriers to implementing BIPs

Predicting actors	Unstandardized coefficients	Standardized coefficients	Correlation	*p*	R^2	% of explained variance	*F* value	
	B	Beta					*F*	*p*
Constant	6.928	–	0.804	0.000	0.646	64.60%	377.40	0.000
Difficulties	1.137	0.804						

4 Discussion

Many teachers face difficulties when implementing FBA procedures in specialized ADHD programs in general education schools in Saudi Arabia. They also face some barriers in implementing BIPs for students with ADHD. Therefore, this study investigated the level of these difficulties and barriers. Results revealed high difficulty levels in applying FBA in ADHD programs. The level of barriers in implementing BIPs was moderate. Finally, the study showed that the barriers in implementing BIPs could be predicted by difficulties of applying FBA.

Public school teachers in specialized ADHD programs were found to have difficulties in applying FBA. This could be due to their lack of experience, thus affecting how they overcome these difficulties through the available assessment tools. Furthermore, the obstacles present in the classroom environment contribute to

highlighting these difficulties when applying FBA in specialized ADHD programs. This concurs with Sullivan et al. [33], who reported similar difficulties in the application of FBA. It is also in line with the study of Young et al. [34], in whose study teachers were found to have limited experience in applying FBA among students with behavioral problems.

A possible explanation for the presence of barriers in implementing BIPs is that teachers in specialized ADHD programs lack experience in developing BIPs that are based on the results of FBA. These barriers may also be due to lack of cooperation among general education teachers, school administration, and teachers in specialized ADHD programs. Another possible deterring factor is the lack of necessary tools for classroom adaptation, which may negatively affect the successful implementation of BIPs among students with ADHD. This finding is consistent with Collier-Meek et al. [14], Long et al. [31], Oram et al. [28], and Robertson et al. [21]. These studies reported similar factors deterring the implementation of BIPs among students with behavioral problems, which ultimately reduces effectiveness. Finally, the results of the current study supported the predictability of barriers in implementing BIPs according to the difficulties of applying FBA. This seems logical because it is difficult to develop effective BIPs without the successful application of FBA procedures. It also has a solid empirical basis, given that the findings of Ingram et al. [18] supported the effectiveness of behavioral interventions based on the results of the FBA.

4.1 Limitations and Implications

This study was conducted on public school teachers in specialized ADHD programs in Saudi Arabia in the academic year 2021. General education teachers were not represented in the sample. Therefore, a similar examination with a larger sample, including both ADHD teachers and general education teachers, is recommended to identify the differences between the two groups and find solutions to the difficulties they face in applying FBA and the barriers in implementing BIPs. Finally, there is a need to conduct experimental studies to test the effectiveness of training programs in enhancing teachers' skills in applying FBA procedures and implementing BIPs to meet the needs of students with ADHD.

Several implications can be derived from the findings of this study. First, it is important to eliminate the difficulties that deter the implementation of FBA and BIPs in programs for ADHD by finding the best methods and practices for addressing them. Second, it is recommended that decision-makers in the Ministry of Education develop a comprehensive working plan to re-configure the provision of ADHD programs in public education schools and re-structure the school environment to help teachers implement FBA and BIPs for students in ADHD programs. Third, it is important to provide teachers with appropriate training on how to apply FBA procedures using the principles of applied behavior analysis as well as train them on developing BIPs based on the data they collect from students with ADHD. Fourth, it is pertinent to increase accessibility to assessment tools that are appropriate for students with ADHD in their local environments and encourage teachers to apply them. Fifth, school administrations should cooperate with special educators and eliminate the difficulties and barriers they face. Fifth, general education teachers should be educated about the importance of continuous cooperation and consultation with teachers in ADHD programs. Finally, it is important that teacher preparation programs in colleges educate teachers on the methods of assessing and diagnosing individuals with behavioral problems as well as teach them about the principles of applied behavior analysis.

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