

Challenges Faced by Classroom Teachers in Distance Learning for Students with Attention Deficit Hyperactivity During COVID-19 Pandemic

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Abstract

Remote and virtual classrooms could negatively affect the academics of students, especially in case of a child suffering from attention deficit hyperactivity disorder (ADHD). The aim of the present study was to understand the obstacles and differences between the teachers regarding their use of teaching methods, tasks and assignments, tests and evaluation methods and communication between teacher and parents of students with ADHD, during distance learning in COVID-19 pandemic. Data were collected through a questionnaire which was reviewed by some experts in the field of this study from several KSA universities. The result showed that there were statistically significant differences among responses of classroom teachers regarding all the dimensions. Furthermore, there were statistically significant differences between participants in their opinion toward all dimensions according to their specialization and years of experience which was not in the case of age and academic qualifications of the participants. Thus, it was concluded that teachers were willing to co-operate with the students having ADHD during online classes, but they face difficulties in handling them as ADHD students lacks concentration and can be distracted easily.

Keywords: attention deficit hyperactivity disorder, COVID-19, online classes, students, teachers

1. Introduction

Since December 2019, the entire world witnessed the Corona virus disease 2019 (COVID-19) pandemic which affected all aspects of life including education (Wendel et al., 2020; Daniel 2020; Breaux et al., 2021). COVID-19 is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which belongs to family *Coronaviridae* and genus Beta-coronavirus (Shereen et al., 2020, Ciotti et al., 2020). The SARS-CoV-2 is a rapidly spreading viral disease which affect the respiratory system in particular and may lead to multi organ failure and eventually death (Gallagher, 2020). With the increase in number of COVID-19 infection and severe cases, the world witnessed partial or complete lockdown affecting all aspects of life including education. This led to distance learning in the education system. As the distance learning is not compatible or accessible to all, several students experienced difficulties in their studies especially students suffering from attention deficit hyperactivity disorder (ADHD).

ADHD is a neurobehavioral disorder and scientists specializing in special education and psychology have defined ADHD as poor performance due to poor concentration. In the Kingdom of Saudi Arabia (KSA) studies revealed that more than 16% of students suffered from ADHD (Hakim, 2020). The problem has increased because of the ongoing COVID-19 pandemic and many teachers are experiencing issues due it too. Although contemporary distance learning has positive impact in terms of social distancing and limiting the spread of the COVID-19 between students and teachers, the teachers face obstacles while teaching ADHD students through Saudi education platforms as this effect does not lie only on the teachers, but also on the focus of the rest of the students in the class (Hakim, 2020). Therefore, the KSA has established a set of programs within universities to train and qualify teachers to meet the needs of students suffering from ADHD, and how to deal with these students who through distance learning. Also, the Ministry of Education in the KSA has recognized that students with ADHD can be considered as a special education category (Hakim, 2020).

Thus, for the present study we tried to understand the obstacles and the differences between teachers in the KSA in terms of their use teacher's tasks, tests, and their interaction with parents of students suffering from ADHD,

during distance learning in the COVID-19 pandemic. We tried to find out the differences among classroom teachers in terms of teaching methods used with class and homework, assessment, evaluation and contact with families.

2. Methodology

2.1 Study Participants

The study recruited the teachers who teach students suffering from ADHD in Saudi Arabia. A total of 46 participants were recruited including both male and female.

2.2 Data Collection

Data were collected through a questionnaire which was reviewed by some experts in the field of this study from several Saudi universities. The questionnaire in its final form were divided into two sections as follows:

Section 1: Socio-demographics included age, academic qualification, specialization, and years of experience.

Section 2: Components addressing the challenges faced by the teachers of students with ADHD in remote learning in the KSA during the COVID-19 pandemic. It has four component which contains some statements subject to five Likert progress measure. The statements are:

- 1) The methods of teaching: 13 statements.
- 2) Tasks and assignments assigned to the pupil: 7 statements
- 3) Tests and evaluation methods: 7 statements
- 4) Communication between teacher and parents: 11 statements.

The Likert scale is a bipolar grading method used for measuring either negative or positive responses for a given statement (Ubersax, 2006). The below-mentioned table (Table 1) represents the score of the agreement for a given statement according to Likert scale in addition to the weighted mean.

Table 1. The 5-level Likert items

Agreement level	Weight	Score interval
Strongly Disagree	1	1 – < 1.80
Disagree	2	1.80 – < 2.60
Undecided	3	2.60 – < 3.40
Agree	4	3.40 – < 4.20
Strongly Agree	5	4.20 – 5.0

2.3 Data Processing and Analysis

After completing data collection, its sorting and coding was done. The data were then analyzed through Statistical Package for Social Sciences (SPSS) version 24. Cronbach's alpha coefficient was used to test the reliability of the questionnaire. The construct validity (internal consistency) was calculated using the Pearson correlation coefficient for the questionnaire by evaluating the correlation coefficient among every statement and the summated scale as total degree of the component it belongs to (See supplementary data 1 for details). Percentages and frequencies were calculated for describing the samples in accordance with their socio-demographic characteristics. Mean, standard deviation and chi-square analysis was done for studying the participants opinion for each statement. The non-parametric Kruskal Wallis test was done to test the difference between participants in their opinion toward each component according to their demographic data.

3. Results

3.1 Demographic Characteristics of Participants

The demographic data of all the study participants as frequency distribution are shown in Table 2. Majority (34.8%) of the participants were in the age group of 31–40 years. Also, most (82.6%) of the participants had bachelor's degree only with 56.5% of the participants having more than 10 years of experience.

Table 2. Frequency distribution of participants according to demographic characteristics

Variables	Categories	Frequency (f)	Percentage (%)
Age	22–30 years	6	13.0%
	31–40 years	16	34.8%
	41–50 years	15	32.6%
	51 years and above	9	19.6%
Education	Bachelor	38	82.6%
	Master or PhD	2	4.3%
	Other	6	13.0%
Specialization	Religious Sciences	4	8.7%
	Arabic Literature	4	8.7%
	Social Sciences	8	17.4%
	Natural Sciences	3	6.5%
	Mathematics	7	15.2%
	Kindergarten	9	19.6%
	Other	11	23.9%
Years of Experience	Less than 5 years	10	21.7%
	6–10 years	10	21.7%
	More than 10 years	26	56.5%
Total		46	100%

3.2 Research Questions and Test of Hypotheses

First hypothesis: There are no statistically significant differences among the responses of classroom teachers in the KSA regarding the teaching methods used with students with ADHD.

The mean for first component (the methods of teaching) was 4.23 which lies in the range (4.20–5.0) according to five-Likert scale, indicating that the majority participants strongly agree to the statements of the first dimension in general. The chi-square test showed that all p-values are less than 0.05 except for Item 7. Thus, there are statistically significant differences between observed and expected frequencies so the opinions can be interpreted according to mean and level of response (Table 3). Therefore, we can safely reject the first null hypothesis i.e., there are statistically significant differences among the responses of classroom teachers in KSA regarding the teaching methods used with students with ADHD. The statements according to the highest acceptance level are as follows:

- 1) I am keen to use appropriate teaching methods for all pupils in the virtual classroom, came in the first order with mean (4.54) and level of response (Strongly Agree).
- 2) I catch the attention of pupil well before moving from task to other, came in the second order with mean (4.43) and level of response (Strongly Agree).
- 3) I explain the required lesson objectives at the beginning of the lesson, came in the third order with mean (4.39) and level of response (Strongly Agree).
- 4) (I help the pupil at dealing with the online learning environment and give him enough time to learn about it) and (I point out the important issues in the lesson that the pupil should focus on) came in the fourth order with mean (4.37) and level of response (Strongly Agree).

Table 3. Means, standard deviations, and chi square test for the answers of each statement in the first component (the methods of teaching)

Statements	Mean	SD	Level	Chi-Square	Rank
1. I am keen to use appropriate teaching methods for all pupils in the virtual classroom.	4.54	0.96	Strongly Agree	57.8**	1
2. I give pupils a time to perform light physical activity before teaching to help them eliminate excess energy.	4.35	1.08	Strongly Agree	38.0**	6
3. I help the pupil at dealing with the online learning environment and give him enough time to learn about it.	4.37	0.80	Strongly Agree	15.2**	4
4. I explain the required lesson objectives at the beginning of the lesson.	4.39	0.71	Strongly Agree	17.4**	3
5. I use fun educational games and aids that help pupils understand the lesson.	4.24	1.18	Strongly Agree	31.4**	8
6. I use a variety of smart apps while delivering lessons.	4.11	1.08	Agree	35.1**	10
7. I catch the attention of pupil well before moving from task to other.	4.43	0.50	Strongly Agree	0.8	2
8. I allow pupil to move in front of the stage for a short time when needed.	4.04	1.03	Agree	41.2**	11
9. I inform the pupils of the time remaining for any activity that they do.	4.35	0.85	Strongly Agree	30.3**	7
10. I point out the important issues in the lesson that the pupil should focus on.	4.37	0.88	Strongly Agree	17.5**	5
11. I review what the pupil learned during the lesson again.	4.22	1.05	Strongly Agree	28.6**	9
12. I provide the pupil with recordings of the lessons so they can watch them again.	4.02	0.95	Agree	23.0**	12
13. I set an appropriate time for the pupil to hold an individual learning session after the end of the learning platform time.	3.59	1.24	Agree	21.4**	13
Total	4.23	0.95	Strongly Agree		

Second hypothesis: There are no statistically significant differences among the responses of classroom teachers in KSAA with regard to using appropriate class tasks and homework with students with ADHD.

The mean for the second component (tasks and assignments assigned to the pupil) was 4.22 which lies in the range (4.20–5.0) according to five-Likert scale, indicating that the majority participants strongly agree to the statements of the second component in general. The chi-square test showed that all p-values are less than 0.05. It implies that there are statistically significant differences between observed and expected frequencies, so the opinions can be interpreted according to mean and level of response (Table 4). Therefore, we can safely reject the second null hypothesis i.e., there are statistically significant differences among the responses of classroom teachers in KSA with regard to using appropriate class tasks and homework with students with ADHD. The statements according to the highest acceptance level are as follows:

- 1) I provide clear and simplified assignment instructions, came in the first order with mean (4.48) and level of response (Strongly Agree).
- 2) I give the pupils a specific assignment or one task at a time, came in the second order with mean (4.33) and level of response (Strongly Agree).
- 3) I give pupils short assignments or divide up long assignments, came in the third order with mean (4.30) and level of response (Strongly Agree).
- 4) (I give pupil more time to finish the required tasks and assignments) and (I identify duties that are appropriate to the pupil's individual characteristics and needs), came in the fourth order with mean (4.20) and level of response (Strongly Agree).

Table 4. Means, standard deviations, and chi square test for the answers of each statement in the second component (tasks and assignments assigned to the pupil)

Statements	Mean	SD	Level	Chi-Square	Rank
1. I give pupils short assignments or divide up long assignments.	4.30	1.01	Strongly Agree	33.0**	3
2. I provide clear and simplified assignment instructions.	4.48	0.69	Strongly Agree	38.3**	1
3. I allow pupil to provide the non-written answer (drawing, oral).	4.07	1.00	Agree	7.6*	6
4. I give pupil more time to finish the required tasks and	4.20	0.91	Strongly Agree	10.7**	4
5. I reduce the amount of writing tasks assigned to pupil.	3.96	1.30	Agree	17.5**	7
6. I give the pupils a specific assignment or one task at a time.	4.33	0.70	Strongly Agree	22.7**	2
7. I identify duties that are appropriate to the pupil's individual characteristics and needs.	4.20	1.09	Strongly Agree	41.2**	5
Total	4.22	0.96	Strongly Agree		

Note. * Chi-Square shows significant difference at the level (0.05), ** Chi-Square shows significant difference at the level (0.01); ii Supplementary Table; ** Correlation is significant at the level (0.01), * Correlation is significant at the level (0.05).

Third hypothesis: There are no statistically significant differences among the responses of classroom teachers in KSA with regard using appropriate tests and assessments methods for pupils with ADHD.

The mean for third component (tests and evaluation methods is 4.21 lies in the range (4.20–5.0) according to five-Likert scale, which indicates that the majority participants strongly agree to the statements of the third component in general. The chi-square test showed that all p values are less than 0.05 which implies that there are statistically significant differences between observed and expected frequencies, so the opinions can be interpreted according to mean and level of response (Table 5). Thus, we can reject the third null hypothesis i.e., there are statistically significant differences among the responses of classroom teachers in KSA with regard using appropriate tests and assessments methods for pupils with ADHD. The statements according to the highest acceptance level are as follows:

- 1) I train the pupils on test skills such as understanding the instructions, making sure to complete the answer to a question before moving to the next question, reviewing the answers, came in the first order with mean (4.43) and level of response (Strongly agree).
- 2) I collaborate with the pupil's guardian to train him for testing at home, came in the second order with mean (4.37) and level of response (Strongly agree).
- 3) I use continuous evaluation method for pupil performance in each subject, came in the third order with mean (4.30) and level of response (Strongly agree).
- 4) I use methods to evaluate the pupils that are appropriate to his individual characteristics and needs, came in the fourth order with mean (4.28) and level of response (Strongly agree).

Table 5. Means, standard deviations, and chi square test for the answers of each statement in the third component: tests and evaluation methods

Statements	Mean	SD	Level	Chi-Square	Rank
1. I use continuous evaluation method for pupil performance in each subject.	4.30	1.01	Strongly agree	15.2**	3
2. I train the pupils on test skills such as Understanding the instructions, making sure to complete the answer of a question before moving to the next question, reviewing the answers.	4.43	0.58	Strongly agree	17.4**	1
3. I divide the exam into several parts and allow the pupil to carry out them on different days instead of one long exam.	3.93	1.08	Agree	18.2**	6
4. I collaborate with the pupil's parent to train him for testing at home.	4.37	0.83	Strongly agree	33.1**	2
5. I conduct the exam for the pupil alone or with a small group.	3.93	0.98	Agree	14.7**	7
6. I provide the pupil with additional time to finish the test.	4.22	0.87	Strongly agree	52.5**	5
7. I use methods to evaluate the pupil that are appropriate to his individual characteristics and needs.	4.28	0.86	Strongly agree	12.6**	4
Total	4.21	0.89	Strongly Agree		

Fourth hypothesis: There are no statistically significant differences among the responses of classroom teachers in the KSA with regard to contacting with parents of pupil with ADHD.

The mean of the fourth component (communication between teacher and parents) is 4.38 which lies in the range (4.20–5.0) according to five-Likert scale, indicating that the majority participants strongly agree to the statements of the fourth component in general. The chi-square test showed that all p values are less than 0.05 except for Item 9, which was not significant. It implies that there are statistically significant differences between observed and expected frequencies, so the opinions can be interpreted according to mean and level of response. Thus, we can reject the fourth null hypothesis i.e., there are statistically significant differences among the responses of classroom teachers in KSA with regard to contacting with parents of pupil with ADHD. The statements according to the highest acceptance level are as follows:

- 1) I inform the pupil's guardian about the positive behavior of pupil, so we can work together to support and reinforce the pupil, came in the first order with mean (4.67) and level of response (Strongly agree).
- 2) (I constantly provide the parent with enough information about his son's level) and (The relationship between me and the parent is based on continuous communication and mutual cooperation for the benefit of the pupil) came in the second order with mean (4.43) and level of response (Strongly agree).
- 3) (I supply the parents with the electronic applications that assist the pupil in learning) and (I provide instructions to guide the parents and direct them toward the methods of good interaction with their sons) came in the fourth order with mean (4.41) and level of response (Strongly agree).
- 4) I inform the pupil's parent about the negative behavior of pupil in the classroom, so we can work together to correct them) came in sixth order with mean (4.39) and level of response (Strongly agree).

Table 6. Means, standard deviations, and chi-square test for the answers of each statement in the fourth component: communication between teacher and parents

Statements	Mean	SD	Level	Chi-Square	Rank
1. I send assignments to the pupil's guardian via e-mail or learning platforms.	4.28	0.83	Strongly agree	28.3**	9
2. I supply the parents with the electronic applications that assist the pupil in learning.	4.41	0.58	Strongly agree	17.5**	4
3. I coordinate a meeting with the pupil's guardian through internet applications or phone call.	4.26	0.80	Strongly agree	25.3**	10
4. I receive and answer all parents' inquiries.	4.37	0.77	Strongly agree	34.9**	7
5. I inform the pupil's parent about the negative behavior of pupil in the classroom, so we can work together to correct them.	4.39	0.77	Strongly agree	33.0**	6
6. I inform the pupil's guardian about the positive behavior of pupil, so we can work together to support and reinforce the pupil.	4.67	0.47	Strongly agree	5.6*	1
7. I provide instructions to guide the parents and direct them toward the methods of good interaction with their sons.	4.41	0.80	Strongly agree	16.5**	5
8. I constantly provide the parent with enough information about his son's level.	4.43	0.58	Strongly agree	17.4**	2
9. I inform the parent of the study problems facing the pupil and I cooperate with him to find appropriate solutions.	4.37	0.49	Strongly agree	3.1	8
10. I send messages to remind parents about the duties and activities required from the pupil at the end of the school day.	4.15	0.97	Agree	8.7*	11
11. The relationship between me and the parent is based on continuous communication and mutual cooperation for the benefit of the pupil.	4.43	0.62	Strongly agree	20.1**	3
Total	4.38	0.70	Strongly Agree		

3.3 Differences Between Participant's Opinions Toward the Component According to Demographic Characteristics.

Tables 7–10 shows the results of non-parametric Kruskal Wallis Test to study the difference between participants in their opinion toward each component according to age, academic qualification, specialization and years of experience. It was found that p-value (0.019) for only the second component (tasks and assignments assigned to the pupil) was less than 0.05. Hence, there are statistically significant differences between participants in their opinion toward second component according to their age. Also, it was found that the corresponding p-values are greater than 0.05 for other components, indicating no statistically significant differences between participants in their opinion toward the methods of teaching, tests and evaluation methods

and communication between teacher and parents) according to their age (Table 7). Further, it was found that p-values for all the components are greater than 0.05, indicating no statistically significant differences between participants in their opinion toward all components according to their academic qualification (Table 8).

Table 7. Kruskal Wallis test for each component according to age.

Variables	Categories	n	Mean Rank	Test Statistic	p-value
The Methods of Teaching	22–30 years	6	16.83	5.09	0.165
	31–40 years	16	28.25		
	41–50 years	15	24.37		
	51 years and above	9	18.06		
Tasks and Assignments Assigned to the Pupil	22–30 years	6	11.50	9.91*	0.019
	31–40 years	16	28.63		
	41–50 years	15	26.47		
	51 years and above	9	17.44		
Tests and Evaluation Methods	22–30 years	6	15.17	3.05	0.383
	31–40 years	16	25.22		
	41–50 years	15	23.23		
	51 years and above	9	26.44		
Communication between Teacher and Parents	22–30 years	6	20.83	2.59	0.460
	31–40 years	16	27.06		
	41–50 years	15	23.67		
	51 years and above	9	18.67		

Table 8. Results of Kruskal Wallis Test for each component according to academic qualification

Variables	Categories	n	Mean Rank	Test Statistic	p-value
The Methods of Teaching	Bachelor	38	24.47	1.22	0.544
	Master or PhD	2	20.75		
	Other	6	18.25		
Tasks and Assignments Assigned to the Pupil	Bachelor	38	24.37	2.89	0.235
	Master or PhD	2	8.00		
	Other	6	23.17		
Tests and Evaluation Methods	Bachelor	38	24.43	1.72	0.424
	Master or PhD	2	12.50		
	Other	6	21.25		
Communication between Teacher and Parents	Bachelor	38	23.21	0.427	0.808
	Master or PhD	2	20.25		
	Other	6	26.42		

Furthermore, all the corresponding p-values were found to be less than 0.05 indicating that there are statistically significant differences at level between participants in their opinion toward all components according to their specialization (Table 9). Lastly, it was found for the third component that the p-value (0.032) is less than 0.05, hence, there are statistically significant differences between participants in their opinion toward (tests and evaluation methods) according to years of experience. For other components, p-values were greater than 0.05 indicating no statistically significant differences between participants in their opinion toward the methods of teaching—tasks and assignments assigned to the pupil and communication between teacher and parents according to years of experience (Table 10).

Table 9. Results of Kruskal Wallis Test for each component according to specialization

Variables	Categories	n	Mean Rank	Test Statistic	p-value
The Methods of Teaching	Religious sciences	4	24.88	14.06*	0.029
	Arabic literature	4	38.63		
	Social Sciences	8	20.13		
	Natural sciences	3	20.50		
	Mathematics	7	12.57		
	Kindergarten	9	31.44		
	Other	11	21.23		
Tasks and Assignments Assigned to the Pupil	Religious sciences	4	26.00	22.19**	0.001
	Arabic literature	4	39.50		
	Social Sciences	8	12.38		
	Natural sciences	3	26.33		
	Mathematics	7	16.93		
	Kindergarten	9	35.39		
	Other	11	18.55		
Tests and Evaluation Methods	Religious sciences	4	23.13	13.45*	0.036
	Arabic literature	4	40.63		
	Social Sciences	8	15.88		
	Natural sciences	3	12.33		
	Mathematics	7	20.64		
	Kindergarten	9	29.44		
	Other	11	22.95		
Communication between Teacher and Parents	Religious sciences	4	19.75	21.55**	0.001
	Arabic literature	4	42.50		
	Social Sciences	8	16.00		
	Natural sciences	3	21.50		
	Mathematics	7	15.71		
	Kindergarten	9	35.17		
	Other	11	19.36		

Table 10. Results of Kruskal Wallis Test for each component according to years of experience

Variables	Categories	n	Mean Rank	Test Statistic	p-value
The Methods of Teaching	Less than 5 years	10	20.30	0.749	0.688
	6–10 years	10	24.80		
	More than 10 years	26	24.23		
Tasks and Assignments Assigned to the Pupil	Less than 5 years	10	18.55	3.72	0.155
	6–10 years	10	19.90		
	More than 10 years	26	26.79		
Tests and Evaluation Methods	Less than 5 years	10	15.85	6.89*	0.032
	6–10 years	10	19.75		
	More than 10 years	26	27.88		
Communication between Teacher and Parents	Less than 5 years	10	17.90	2.83	0.243
	6–10 years	10	22.40		
	More than 10 years	26	26.08		

4. Discussion

As the world suffered from the COVID-19 pandemic, the disease has also affected several other aspects of life including education (Wendel et al., 2020; Daniel 2020; Breaux et al., 2021). The contemporary distance learning in the times of COVID-19 pandemic has several significant impacts in terms limiting the spread of the disease among the students and teachers. Yet teachers have to face obstacles while teaching through Saudi education platforms especially in case of students suffering from ADHD. Furthermore, the distance learning is not compatible with all students, especially students with ADHD, which can negatively affect the focus of students in their studies and consequently, their academic level. Therefore, the present study was designed to understand the obstacles faced by the teachers and the differences between teachers in the KSA in terms of their use of tasks, tests, and their interaction with parents of students suffering from ADHD during distance learning in the COVID-19 pandemic. Additionally, this study showed the interest of the Saudi Ministry of Education in training and qualifying teachers to deal with these students with ADHD.

For ADHD students, it is usually not only at school but at home as well, and it appears through the hyperactivity of the child by significantly comparing to those around him/her. The hyperactivity can be of three types, first the compound, in which the child suffers from distraction, in addition to hyperactivity. As for the second type, the activity of these children is somewhat normal, but they suffer from lack of focus. In the third type, the child is very active, but he has a high concentration, and they are the least common category among students in the KSA (Sarah et al., 2020). There is a large knowledge gap between the aspects of ADHD, and it was proved by an analytical study of the role of primary school teachers, where the results showed that the degree of control of students in the secondary stage is much greater than the control of children. This is because the child wants discovery and does not care about the threat. Therefore, teacher-training programs really focus on children, not adults (Awadalla et al., 2016). Our present study found that the study participants i.e., the teachers were able to perform majority of their tasks in the virtual classroom. However, our study found that there are statistically significant differences between participants in their opinion toward all dimensions according to their specialization and years of experience. The teachers faced several problems while dealing with students with ADHD.

Our study found that majority teachers were ready to use appropriate teaching methods, explained the required lesson objectives and were able to catch the attention of students well before moving from one task to another. They also provided clear and simplified assignment instructions and gave specific and short assignments or one task at a time. A study was conducted in some schools in the KSA recently which proved that there were obstacles faced by teachers in while teaching students with ADHD using distance-learning methods during the COVID-19 pandemic (Hakim, 2020). Thus, the KSA has prepared training courses for teachers focusing on how to deal with these students and offered scientific solutions to meet these constraints. In a study conducted by the author Fahad et al., in Saudi, it was found that teachers play an important role in reading more about the issue of ADHD, which affects a large proportion of school students in the KSA. Therefore, nearly 90% of teachers have a good background on this subject, especially in the recent COVID-19 pandemic. A study concluded that the responsibility of teachers about students suffering from ADHD has become greater due to the emergence of distance learning. Therefore, teachers are facing greater challenges with these students while carrying out the distance learning process. The study also stated that “teachers show high knowledge of ADHD symptoms and diagnosis, and the most well-known symptom about ADHD was that children with ADHD (89%) would leave their seats during their lessons even if this was not allowed. In addition, there are other symptoms such as running, jumping, and climbing that most teachers do not yet know about (Alanazi et al., 2021). Similar previous studies have proved that successful schools are the ones that help students with ADHD. This is done by taking in account the differences between students with and without this syndrome. In addition, teachers use electronic technologies that suit the abilities of these students, especially after the transformation of traditional learning into distance learning after the emergence of the COVID-19 pandemic (Bolinger et al., 2020).

In addition to the participation of parents and their cooperation with teachers to solve problems, follow up on developments are encouraged in parents. Also, parents of students with ADHD should use games, graphics and sounds that draw their attention to motivate them to study and focus. Also, isolating these students will not be feasible. Teachers must deal with these students like the rest, and not let them know that there is a difference between them and their peers (Bolinger et al., 2020). Similarly, in our study the teachers were found to be willing to constantly communicate with the parents and inform about the student’s behavior.

Additionally, according to author Sarah et al., when dealing with a student with ADHD, the teacher can increase the tests to improve the student’s academic achievement, but it does not mean that the student is being punished, but on the contrary, it will help students with ADHD to increase their performance. The teacher must also train the student on how to segment the questions and answer them, and not to evade and be distracted while answering. In addition to encouraging him permanently to raise his academic level (Bolinger et al., 2020). Similarly, our study participants were found to eager to train the students on test skills such as understanding the instructions, making sure to complete the answer to a question before moving to the next question, reviewing the answers, and also collaborate with the guardian and use continuous evaluation method for their performance. A study showed the extent of technology use in schools and its impact on special education students. They found that the use of technology is not enough benefit to control students who suffer from ADHD. Thus, in case of use of virtual classrooms, the teachers need to pay much more attention to the students with ADHD to increase their concentration in studied and overall performance.

5. Conclusion

Children spent most of the time of the day on virtual classroom and studying, and this atmosphere is incompatible with the behavior of students with ADHD. Our study showed that teachers are willing to co-operate

with the students with ADHD but they difficulties in handling them as ADHD students lacks concentration and can be distracted easily. Thus, there should be proper training of teachers who deals with students with ADHD and parents should also get fully involved during their virtual classes to help them gain concentration in studies in the times of COVID-19 pandemic. Further research should be done with broader group of participants from different countries on the challenges faced by classroom teachers in distance learning for students with ADHD. These data from other places should be compared with the current data and implement any possible method which may help teachers in teaching ADHD students in virtual classroom.

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Appendix A

Supplementary Tables

Reliability Coefficient

Test of reliability ensures that the survey instrument provides a nearly similar result for replicated measures, in the same population or similar composition population. A reliable survey is universal and produces similar results every time it is performed. Cronbach's Alpha is the most common method for reliability, so the coefficient of reliability was calculated using it and represented in the following table:

Supplementary Table 1. Reliability Test

Components	No. of Items	Cronbach's Alpha
1. The Methods of Teaching	13	0.842
2. Tasks and Assignments Assigned to the Pupil	7	0.690
3. Tests and Evaluation Methods	7	0.705
4. Communication between Teacher and Parents	11	0.881
Overall Questionnaire	38	0.921

We found that each component's coefficients are in the range (0.690–0.881), which is considered high. The Cronbach's Alpha of the overall questionnaire is (0.921). In general, we can conclude that the questionnaire in its final configuration has high reliability, which makes it suitable for data collection.

Construct Validity (Internal Consistency)

Construct validity refers to the process or method of ensuring that a questionnaire precisely measures what it is aimed to measure. It was calculated for the questionnaire by calculating the correlation coefficient between each statement and the summated scale as the total degree of the component belongs to, and the results are presented in the table shown below:

Supplementary Table 2. Construct Validity (Internal Consistency)

Components	Item No.	Pearson Coefficient	p-value	Item No.	Pearson Coefficient	p-value
1. The methods of Teaching	1	.541**	0.000	8	.855**	0.000
	2	.833**	0.000	9	.329*	0.026
	3	.639**	0.000	10	.345*	0.019
	4	.390**	0.007	11	.294*	0.047
	5	.779**	0.000	12	.814**	0.000
	6	.875**	0.000	13	.470**	0.001
	7	.352*	0.016			
2. Tasks and Assignments Assigned to the Pupil	1	.642**	0.000	5	.487**	0.001
	2	.505**	0.000	6	.613**	0.000
	3	.752**	0.000	7	.709**	0.000
	4	.509**	0.000			
3. Tests and Evaluation Methods	1	.381**	0.009	5	.768**	0.000
	2	.669**	0.000	6	.639**	0.000
	3	.680**	0.000	7	.436**	0.002
	4	.717**	0.000			
4. Communication between Teacher and Parents	1	.698**	0.000	7	.619**	0.000
	2	.743**	0.000	8	.681**	0.000
	3	.816**	0.000	9	.682**	0.000
	4	.659**	0.000	10	.682**	0.000
	5	.644**	0.000	11	.728**	0.000
	6	.660**	0.000			

In the above table it was found that all correlation coefficients between each statement and the total score of the component varies between moderate to high and was in the range (0.294–0.875) which are positive and significant at levels of significance 0.01 and 0.05. This means that each group of statements measure the component they belong to, and accordingly the questionnaire enjoys high level of construct validity (internal consistency).

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