PARENTS' AWARENESS OF ASD AND THEIR ATTITUDE TOWARDS AUTISM DIAGNOSTIC TESTS FOR PRE-SCHOOLER

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Abstract

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition caused by abnormalities in the brain. It is essential for parents to have a thorough understanding of ASD and a positive mindset toward diagnosis a[1]nd associated tests, in order to provide a successful treatment in the case of a child presenting with ASD symptoms. This study aims to evaluate parents' awareness and attitudes towards ASD and its diagnostic tests for children between the ages of 2 and 6 years old, as well as their possible association with demographic variables. Therefore, a cross-sectional study was conducted between January and February of 2023. Data were collected from the eastern region of KSA (n=392) through a snowball strategy using an online questionnaire to assess knowledge and attitude. The questionnaire utilized in this study was created by reviewing existing literature. Chi-square and logistic regression analysis were conducted using SPSS, and the results revealed a moderate level of knowledge and a neutral attitude, with lower education levels and not knowing an autistic child being significant factors that affected the results, which showed a correlation between low knowledge and negative attitude. Considering these findings, it is critical to expand public awareness of autism spectrum disorder (ASD) in Saudi Arabia, particularly among parents, by launching educational campaigns and providing additional resources for families of children with ASD.

***Keywords** Attitude, autism spectrum disorder, children, knowledge, parents, preschoolers, Saudi Arabia.*
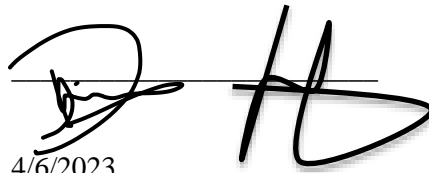
Introduction

List of Abbreviations

Abbreviation	Definition
ASD	Autism spectrum disorder
CDC	The Centers for Disease Control and Prevention
IRB	Institutional Review Board
KSA	Kingdome of Saudi Arabia
SPSS	Statistical Package for the Social Sciences

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Graduation Project Report Disclaimer

This report has been prepared and written by the graduation project research group (4th year students) under general guidance of the graduation project advisor. During this project, students gain practical experience by collecting data conduct the analysis and write the report addressing an interesting research question relevant to healthcare in Saudi Arabia. The report is not intended for publication but to be graded by the faculty of the PH department as part of fulfilment of graduation project course.

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CH.1 – INTRODUCTION

This chapter presents an overview of the background (Section 1.1), significance and scope of this research, as well as definitions of terms utilized (Section 1.2). Additionally, Section 1.3 outlines the aims and objectives of this work, while Section 1.4 offers a summary of the subsequent chapters in this thesis.

1.1   Background

The recent data by Zeidan et al., (2022) states that the ratio for autism prevalence is 1/100 globally. This ratio is significantly striking; As autism is defined by the CDC: as "a developmental disability that can cause significant social, communication and behavioural challenges". Autism is widely considered a long-term condition (American Psychiatric Association, 2021), for which there is no known cure (NHS, 2022), nor universally accepted treatment.

To guarantee a good quality of life for those with autism spectrum disorder (ASD), adaptive strategies, attention, care, therapy, and adherence to a consistent routine are all essential (NIH, 2021). Moreover, early intervention is required to achieve the highest possible quality of life for those diagnosed with ASD (Baoum et al., 2022). Symptoms of ASD can appear as early as three years of age, and if they are left untreated, the severity of these symptoms may increase. Therefore, this research calls for policymakers to take action to address the increasing prevalence of the condition, which can impact different demographic groups in various ways regardless of socioeconomic status.

1.2   Significance and Definitions of key terms

For treatments to be effective, parents must possess a high level of awareness and possess a positive attitude toward the diagnosis and its related tests. Thus, it is important to analyse the correlation between levels of awareness and attitude with demographic characteristics in Saudi Arabia due to the increasing prevalence of autism, its management, and treatment delicacy. Studies have shown that awareness of autism tends to be low and there is yet to be research regarding attitudes toward diagnostic tests.

Key terms: Knowledge, Attitude, Parents, Autism spectrum disorder, Preschoolers.

1.3   Aims and objectives

This study aims to measure the level of parents' awareness of autism and their attitude towards diagnostic tests for pre-schoolers (2-6 years old). Additionally, this research seeks to determine the factors that can affect parents' awareness of autism spectrum disorder (ASD) and their attitude towards ASD diagnostic tests for pre-schoolers.

1.4   Thesis outline

The following chapters will view the literature which is essential to understand the topic. Methods will be employed to gather and analyse data, the results of which will be discussed in detail. The conclusion will summarize the research and provide references for further reading.

CH.2 – LITERATURE REVIEW

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder brought up by brain abnormalities (CDC, 2022). Autism spectrum disorder is diagnosed in around one in one hundred children around the world. It has been found that there is a rise in the estimated global prevalence of autism, which is due to several variables coming together, such as increased public health awareness and global public health response, advancements in case definition and identification, and increased community capacity (Zeidan et al., 2022). Symptoms of ASD can appear as early as three years old or younger (CDC, 2022). It is a chronic disorder with no cure (Mayo Clinc, 2022). The longer the autistic child is without interventions or treatment, the worse the symptoms will be (CDC, 2022). However, early intervention has been proven throughout the literature to have a significant positive impact on the long-lived condition of the patient (Baoum et al., 2022). Parents need to be aware of autism spectrum disorder (ASD) and the importance of early diagnosis in case of suspicion, as children are under their care and responsibility. Early interventions can have significant benefits, making it essential for parents to understand the importance of early diagnosis. This literature aims mainly to review the published research about the awareness of ASD in the general Saudi population, focusing on parents' awareness and their attitude toward ASD and its diagnostic tests for their children.

2.1. Awareness of Autism Spectrum Disorder (ASD)

In Saudi Arabia, the overall awareness of ASD in the general public is low (Alsehemi et al., 2017; Alyami et al., 2022). And it is crucial to have a greater understanding of ASD, especially with the increasing prevalence of autism cases (Alsehemi et al., 2017; Alyami et al., 2022). However, it is essential to consider potential bias in the responses of Alyami et al.'s (2022) study, as the majority of the participants were males (86.1%). Furthermore, other research has yielded conflicting results. In general, the studies showed a high level of awareness regarding the disorder since people were familiar with the characteristics of children with autism. However, people show little knowledge regarding the causes of ASD (Abualhommos et al., 2022; Almana et al., 2017). Thus, through these studies, it has been shown that the lowest percentage of awareness regarding ASD has been mainly about treatment and etiology since fewer questions concerning this aspect were answered correctly in these research papers.

According to Alyami et al., (2022), a low percentage of people know that ASD is not curable, which corresponds with Almana et al., (2017) which showed that 51.2 % of Saudis thought ASD is curable. Furthermore, some individuals may hold myths and incorrect information about the causes of autism spectrum disorder (ASD). For instance, Almana et al. (2017) found that 58% of participants believed that ASD is caused by the devil, and 47.7% did not think that genetic factors contribute to the occurrence of ASD. But it is important to note that genetic factors do play a role in autism (Chaste & Leboyer, 2012; Lyall et al., 2014). However, 95% were aware that ASD is not a communicable disease. Although the

generalization of the results in Almana et al.'s (2017) study may be challenging due to the absence of responses from the south or north regions.

It appears that the level of awareness among families of children with autism is sufficient (Alharbi, 2018). Unfortunately, research has been conducted in Saudi Arabia to measure parents' awareness of ASD is almost non-existent. And the available studies have solely concentrated on parents or families who already have a child with autism (Alharbi, 2018). In general, various factors can influence parents' understanding of autism spectrum disorder (ASD), including religious beliefs. An ethnographic study conducted in Saudi Arabia discovered that many mothers of children with autism saw ASD as a gift from God and believed they should accept it (Alqunaibet, 2019). And this study presents how religious faiths can affect the beliefs of Saudi parents regarding ASD and how can affect the way they cope with it.

2.2. Attitude toward ASD

One of the most significant challenges confronted by parents of autistic children is the stigma (Alshaigi et al., 2020). Families play a crucial role in evaluating the mental health of individuals with autism under their care. However, the stigma surrounding autism can negatively affect the well-being of caregivers (Papadopoulos et al., 2019). A study conducted by Alshaigi et al., (2020) revealed that there was a 33.7% rate of self-stigma among parents of autistic children in Riyadh, Saudi Arabia. The outcomes revealed that mothers raising children with ASD experienced self-enacted stigma more commonly than fathers. The findings indicated that Saudi parents of children with ASD believed themselves to be stigmatized by their kid's disorder because of symptoms and behavioural traits of autism in a child who presents to be physically normal and the Saudi population's absence of information and comprehension regarding the nature of ASD (Alshaigi et al., 2020).

According to current evidence, therapies to improve the performance of autistic children are more efficient when started early in life to enhance a child's growth course and achieve their full potential (Baoum et al., 2022; Khan et al., 2020; Landa, 2018). There is a study conducted to compare the effect of early interventions on children of school age who had been diagnosed with ASD at 2 years and those who had been diagnosed after three years of life (Clark et al., 2018). The results show that the needs of these children who were diagnosed earlier were less, and their independence was better (Clark et al., 2018).

Because of that, it is recommended that all children, especially those presenting neurodevelopmental problems, should undergo ASD screening (AlBatti et al., 2022). This requires a positive attitude toward autism diagnostic tests among parents. There has been a lack of research regarding this aspect. According to Almana et al., (2017), 96% are aware of the importance of early intervention for ASD. This percentage may give a glimmer of hope that the attitude of population of Saudi Arabia toward ASD diagnostic tests could be positive to reach the benefits of early intervention.

In conclusion, autism spectrum disorder (ASD) is one of the developmental diseases that requires intense care and awareness from caregivers, especially parents. Therefore, the lack of research regarding the level of awareness and attitude towards a moderately stigmatized disorder doesn't aid in the understanding of what autism patients need among policymakers. Especially in the face of the increase of ASD in recent years. Therefore, further research is required in this field to assure a better future for autistic children.

CH.3 – RESEARCH METHODOLOGY

This chapter will demonstrate the methodology and the research design that will be implemented to acquire the levels of awareness of (ASD) and the attitude toward diagnostic test and their relationship with demographical variables. The layout of this chapter is as follows, Section 3.1 will review the research design, following that section 3.2 will explain the study setting, Then section 3.3 will elaborate on the participants in the study, section 3.4.1 discuss the instruments that will be used in the research and further explain their use, section 3.4.2 summarizes the process that will be used with the timeline of the data collection, section 3.4.3 examines the ethical approval of the research, lastly, section 3.5 explore the method of analysing the data of this study.

3.1. Research design

This study is a cross-sectional study. The dependent variables are the knowledge and the attitude of parents, and the independent variables are the demographic information which includes, being a parent (having a child), being aware of ASD tests, gender, age, educational level, geographical area, having an autistic first-degree relative and knowing an ASD child.

3.2. Study setting

This study will be conducted in the Eastern province and specifically these four cities: Dammam, Dhahran, Al Khobar, and Qatif.

3.3. Participants

The research participants are parents or possible parents living in the four cities: Dammam, Dhahran, Al Khobar, and Qatif. The sample will include married and engaged individuals (with or without children) and divorced or widowed individuals (with children only). The targeted sample will be obtained using a questionnaire. The inclusion criteria are all the individuals who have children (married, divorced, or widowed). In addition to engaged and married people who are most likely to have children in the future. The research sample will exclude unmarried people or widowed and divorced people who have no children in addition to people who don't live in the selected cities (Khobar, Dammam, Qatif, and Dhahran).

3.4. Data collection methods

3.4.1. Instruments

A bilingual questionnaire with 28 questions will be used for collecting data. The questionnaire has been constructed through different research, mainly from three research, (Almana et al., 2017; Alsehemi et al., 2017; Alyami et al., 2022; Ilg et al., 2012) and modified to be suitable for the research objectives. The validity test has been conducted by experts and all the questions included in the questionnaire have had a validity ratio above the critical value; of 0.8. A pilot study has been conducted before distributing the questionnaire by using Cronbach's alpha test to check the reliability of the study tool, and all the questions have alpha values from 0.7 and above. The questionnaire consists of three sections. The first section inquiries about the demographical data, and the second section measures the participant's knowledge about (ASD). Questions are regarding ASD characteristics, causes, and treatment. The last section measures the attitude of the participants toward autism and the diagnostic tests.

3.4.2. Procedure and timeline

The snowball technique will be used to collect the data, and the questionnaire will be distributed via social media programs such as WhatsApp, Twitter, Snapchat, and Instagram. The collection of the data will be done from the 19th of January to the 2nd of February.

3.4.3. Ethics and limitations

Ethical approval of the study was taken from the Institutional Review Board (IRB). All participants will be informed that the information collected will be anonymous and that their responses would be collected for scientific purposes only with no identification.

Participants have the right to withdraw from the study at any time. the ethical approval number is IRB-UGS-2022-03-502 from the Institutional Review Board (IRB) in IAU.

3.5. Analysis

Descriptive statistics analysis will be used to determine the level of knowledge and attitude of parents towards (ASD), and a Chi-square test will be performed to check for any associations between the level of knowledge and attitude of parents and certain demographic factors. Logistic regression will then be conducted to assess the impact of the independent variables on the dependent variables.

CH.4 – RESULTS

In the results chapter, the collected data were analysed to address the three main research questions regarding parents' knowledge of ASD, their attitudes toward autism and its diagnostic tests, as well as any influencing factors.

A total of 392 responses were obtained from the eastern province, with 199 (50.8%) from Qatif, 123 (31.4%) from Dammam, 39 (9.9%) from Khobar, and 31 (7.9%) from Dhahran. Most respondents were female 275 (70.2%), and 162 (41.3%) were over 45 years old. Regarding educational level, 296 (75.5%) had college or higher qualifications, while 96 (24.5%) had below college qualifications. 24 (6.1%) reported having a first-degree relative with autism, while 200 (51%) reported knowing an autistic child in their surroundings. Of those who have taken ASD tests for their children, 19 (4.8%) received a positive result which indicated that their children had ASD.

Conversely, 13 (3.3%) received a negative test result indicating their children did not have ASD. Lastly, 167 (42.6%) considered themselves aware of ASD tests, while 225 (57.4%) considered themselves not aware, as is shown in (Table 1).

Table 1 Descriptive statistics

Demographic Information	N	%
City		
Dammam	123	31.4%
AL Khobar	39	9.9%
Dhahran	31	7.9%
Qatif	199	50.8%
Gender		
Female	275	70.2%
Male	117	29.8%
Age		
<20	27	6.9%
20-24	38	9.7%
25-29	30	7.7%
30-34	35	8.9%
35-39	34	8.7%
40-44	66	16.8%
>45	162	41.3%
Having Children		
Yes/ expecting	333	84.9%
No	59	15.1%
Educational Level		

Above college	296	75.5%
Below college	96	24.5%

Do You Have a First-degree Relative (father, mother, brother, sister, husband, wife) with Autism?

Yes	24	6.1%
No	368	93.9%

Do you know an autistic child in your surrounding?

Yes	200	51.0%
No	192	49.0%

Have you done an autism test for your child?

Yes/Considering it	39	9.9%
No/NA	353	90.1%

What is the result of the diagnostic test?

My child has autism disorder	19	59.4%
My child does NOT have autism disorder	13	40.6%

I am aware of the diagnostic test of autism for pre-schoolers (2-6 years)

Yes	167	42.6%
No	225	57.4%

4.1. Knowledge level and attitude status

In this research sample, 163 (41.6%) participants had a low level of knowledge, while 229 (58.4%) had a high level of knowledge. Similarly, 190 (48.5%) had a negative attitude and 202 (51.5%) had a positive attitude (Table 2). A 50% percentile was used to calculate the level of knowledge and attitude, with 0-7 representing a low level of knowledge, 8-12 a high level, 0-20 a negative attitude, and 21-25 a positive attitude. The 12 knowledge questions had three options (Yes, No & I don't know) coded into two groups "Yes" earning a score of 1, and "No, I don't know" earning a score of 0. With respect to the five attitude questions, a scale was used to assign scores depending on whether the answers were positive or negative.

Table 2 Categories and scores of the knowledge level and attitude status

Knowledge level and attitude status				
	Categories	Scores	N	%
Knowledge level	Low	0-7(<50%)	163	41.6
	High	8-12(50-100%)	229	58.4
			392	100.0
Attitude status	Negative	5-20(<50%)	190	48.5
	Positive	21-25(50-100%)	202	51.5
			392	100.0

4.2. Factors affect the knowledge level and attitude status.

A chi-square test was conducted to determine if there is any association between the demographic information of the participants and their knowledge level and attitude status. As a 95% confidence interval was used, a p-value of 0.05 or less indicated a significant association. (Table 3) shows the results of the chi-square test. Education level and knowing an autistic child were the only independent variables that showed an association, suggesting that both factors can affect knowledge level and attitude status.

Table 3 Chi-square test for knowledge level and attitude status with demographic factors

Variables	Knowledge level High	Low	X^2	P-value	Attitude status Positive	Negative	X^2	P-value
Gender								
Female	162	113	.091[a]	0.762	143	132	.081[a]	0.776
Male	67	50			59	58		
Age								
<20	14	13			12	15		
20-24	22	16			23	15		
25-29	17	13			15	15		
30-34	27	8	6.217[a]	0.399	20	15	4.518[a]	0.607
35-39	21	13			21	13		
40-44	37	29			31	35		
>45	91	71			80	82		
Educational level								
Above college	187	109	11.261[a]	**<.001 ***	161	135	3.962[a]	**0.047 ***
Below college	42	54			41	55		
Having children								
Yes/expecting	194	139	.023	0.879	175	158	.925	0.336
No	35	24			27	32		
Having an autistic first degree relative			.000	0.993			1.232	0.267
Yes	14	10			15	9		
No	215	153			187	181		
Knowing an autistic child in your surrounding			8.430	**0.004 ***			9.121	**0.003 ***
Yes	131	69			118	82		
No	98	94			82	108		
Done an autism test for your child								
Yes/Considering it	21	18	.373[a]	0.542	22	17	.521[a]	0.521
No/NA	208	145			202	190		
The result of the diagnostic test								
My child has autism disorder	14	5	2.647[a]	0.266	11	8	.361[a]	0.835
My child does NOT have autism disorder	6	7			7	6		

I am aware of the diagnostic test of autism for pre-schoolers (2-6 years)			.013[a]	0.908				
Yes	97	70			87	80		
No	132	93			115	110	.037	0.847

The logistic regression analysis was performed to examine the influence of educational level and knowing an autistic child on both a "low knowledge level" and a "negative attitude" (Table 4). The results for knowledge indicate that the coefficient (B) for educational level is positive, indicating that if the value of the variable is "below college", the probability of achieving a low knowledge level increase. The p-value of 0.001 suggests that the influence is significant, while the odds ratio of 2.208 indicates that being below college increases the probability of having a low knowledge level by 2.208 times. For the second variable, not knowing an autistic child also increases the probability of having a low knowledge level, as the coefficient (B) is positive, with a significant influence indicated by a p-value of 0.004. The odds ratio of 1.823 suggests that not knowing an autistic child increases the chance of having a low knowledge level by 1.823 times.

Furthermore, the attitude results show a positive coefficient for both educational level (below college) and not knowing an autistic child in one's surrounding (0.464 and 0.612 respectively), indicating that these variables increase the likelihood of having a negative attitude. However, the influence of the educational level was not found to be significant, as its p-value was 0.053, while the p-value of 0.003 for the second variable suggested a significant influence. The odds ratio of 1.590 for educational level suggests that being below college increases the chance of having a negative attitude by 1.590 times, while the odds ratio of 1.844 for not knowing an autistic child indicates that this increases the chance of having a negative attitude by 1.844 times.

Table 4 Logistic regression

	B	df	Sig.	Exp(B)
Low knowledge level				
Educational level (Below college)	.792	1	.001	2.208
Not knowing an autistic child in your surrounding	.600	1	.004	1.823
Constant	-.2.234	1	<.001	.107
Negative attitude				
Educational level (Below college)	.464	1	.053	1.590
Not knowing an autistic child in your surrounding	.612	1	.003	1.844
Constant	-1.552	1	<.001	.212

CH.5 – DISCUSSION

5.1. Knowledge level & attitude status

This study aims to assess the level of knowledge and the attitude status that parents have about autism spectrum disorder (ASD). The key findings are that the percentages of the

participants with a high level of knowledge are very similar to those with lower levels of knowledge, the percentage for the high knowledge level participants stands at 58.4% compared to 41.6% of the latter. Similar results with the attitude; the percentage of high positive attitude were barely above half of the participants with 51.5%. This can conclude that the target population has a moderate level of knowledge and a neutral attitude. The majority of the responders were females, which might affect the results due to a study that found that gender had a significant impact on attitude toward autism, with women exhibiting more positive attitude than men (Kuzminski et al., 2019). However, in contrast of recent research that discovered most Saudi citizens lack knowledge of ASD (Alsehemi et al., 2017; Alyami et al., 2022). However, more than 80% of Alyami's responses were of the male gender which could affect the generalization.

On the other hand, Abualhommos et al., (2022) stated that the Saudi community's knowledge is moderate, which corresponds with this research results. It is important to note that all these studies measure the awareness of the public, parents, and others toward autism. However, this paper focuses exclusively on parents, as no other published studies are related to this topic. But, there is a single study that measures parents' awareness of autism, and the results showed the level of awareness to be sufficient, except it targeted parents of autistic children only (Alharbi, 2018). Overall, the level of knowledge in the four cities; Qatif, Dammam, Khobar, and Dhahran, is moderate which is concerning, given that KSA is considered a developed country, and most of the participants; 75.5%, received "Above college" education.

However, there is no previous research in Saudi Arabia to compare the attitude results with, except for Alyami et al., (2022) where they measured the attitude toward advocacy and care and that study showed a positive attitude. One other research found that the majority feel the importance of early intervention in ASD (Almana et al., 2017). But despite this result, in this study, the attitude seems to be neutral.

5.2. Factors that affect the knowledge level and attitude status.

According to the results of this study, educational level and knowing an autistic child are the only factors affecting the level of knowledge and attitude toward autism spectrum disorder. These findings confirm previous research, such as Abualhommos et al., (2022), which found that having a master's degree or higher increases the chance of being knowledgeable of ASD 3.5 times, and Dillenburger et al., (2013), which found that higher education level increases the awareness level 2.5 times. Our results suggest that not knowing an autistic child is associated with a low knowledge level. This is in line with Dillenburger et al., (2013), which indicates that knowledge of autistic people or greater contact with them is associated with a higher level of knowledge of the disorder. Correspondingly, a study in Australia showed that knowing and spending time around someone with autism was a significant factor influencing attitudes toward autism (Kuzminski et al., 2019). In conclusion, knowledge and attitude are closely related to education, so increasing the educational level increases awareness, knowledge, and having a positive attitude. Additionally, knowing people with autism will make the disorder more familiar which in turn helps raise the level of knowledge of the disorder and lean towards a positive attitude.

CH.6 – CONCLUSION

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition caused by brain abnormalities. Early intervention has been shown to have a significant positive impact on the long-term outcome of patients with ASD. Studies have shown that in Saudi Arabia, the overall awareness of ASD among the public is low, with little to no knowledge about the actual causes and treatment of ASD. However, the level of awareness in families with autistic children seems to be sufficient.

This study focused on assessing the levels of knowledge and attitude of parents towards (ASD) and its diagnostic test in four cities in the eastern region of KSA, they are Dammam,

Khobar, Dharan, and Qatif. And the demographic factors affecting knowledge and attitude. After conducting a snowball technic in the questionnaire and analyzing the data using SPSS.

To investigate the potential correlation between the participants' demographic data and their knowledge level and attitude status, a chi-square test was performed, and afterward the logistic regression analysis. The results showed a significant association between knowledge and attitude with educational level and knowing an autistic person. And it showed a close percentage between high and low awareness and negative and positive attitudes. However, the level of knowledge and attitude was higher among participants with a higher educational level and who knew an autistic child. Hence, concluding that the targeted population had moderate knowledge and a neutral attitude.

The study's main limitation is the low percentage of male participants, which could affect the generalization of the results. The findings indicate a need to increase public awareness of autism spectrum disorder (ASD) in Saudi Arabia, particularly among parents, through educational campaigns and providing more resources about ASD for parents in general.

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APPENDICES
Appendix A

The Questionnaire

	PART 1- DEMOGRAPHICS	الجزء 1 – المعلومات الديموغرافية:	
1	**Marital status:**	**الحالة الاجتماعية**	**1**
	1. Married	أ. متزوج/ة	
	2. Divorced	ب. مطلق/ة	
	3. Widowed	ج. أرمل/ة	
	4. Engaged	د. خاطب/مخطوبة	
	5. Single	هـ. أعزب/عزباء	
2	**Do you have a child/ children?**	**هل لديك طفل / أطفال؟**	**2**
	1. Yes	أ. نعم	
	2. No	ب. لا	
	3. Expecting/ pregnant with the first child	ج. حامل بأول طفل	
3	**Gender**	**الجنس**	**3**
	1. Female	أ. أنثى	
	2. Male	ب. ذكر	
4	**Age**	**العمر**	**4**
	1. <20	20 >	
	2. 20-24	20-24	
	3. 25-29	25-29	
	4. 30-34	30-34	
	5. 35-39	35-39	
	6. 40-44	40-44	
	7. >45	45<	
5	**Highest educational level**	**أعلى مستوى تعليمي**	**5**
	1. Elementary school	أ. ابتدائي	
	2. Middle school	ب. متوسط	
	3. High school	ج. ثانوي	
	4. Bachelor's degree	د. بكالوريوس	
	5. Master's degree	هـ. ماجستير	
	6. PhD Degree	و. دكتوراه	
6	**Where do you live**	**اين تسكن؟**	**6**
	1. Dammam	أ. الدمام	
	2. AL Khobar	ب. الخبر	
	3. Dhahran	ج. الظهران	
	4. Qatif	د. القطيف	
7	**Do you have a first-degree relative (father, mother, brother, sister, husband, wife) with autism?**	**هل لديك أحد الأقارب من الدرجة الأولى (الوالد، الوالدة، الأخ، الأخت، الزوج، الزوجة) مصاب/ة بمرض التوحد؟**	**7**
	1. Yes	أ. نعم	
	2. No	ب. لا	
8	**Do you know an autistic child in your surrounding?**	**هل تعرف طفلًا مصابًا بالتوحد في محيطك؟**	**8**
	1. Yes	أ. نعم	
	2. No	ب. لا	
9	**I am aware of the diagnostic test of autism for pre-schoolers (2-6 years)**	**أنا على علم باختبارات تشخيص التوحد للأطفال ما قبل سن المدرسة (2-6 سنوات)**	**9**
	1. Yes	أ. نعم	
	2. No	ب. لا	
10	**Have you done an autism test for your child?**	**هل أجريت اختبار التوحد التشخيصي لطفلك؟**	**10**
	1. Yes (go to Q12)	أ. نعم (أنتقل لسؤال 12)	
	2. NO (go to Q13)	ب. لا (أنتقل لسؤال 13)	
	3. Considering it (go to Q13)	ج. أفكر بالأمر (أنتقل لسؤال 13)	
	4. NA (go to Q13)	د. لا ينطبق (أنتقل لسؤال 13)	
11	**What is the result of the diagnostic test?**	**ما هي نتيجة الفحص التشخيصي؟**	**11**
	1. My child has autism disorder	أ. طفلي يعاني من اضطراب التوحد	
	2. My child has NOT autism disorder	ب. طفلي لا يعاني اضطراب التوحد	
	3. The result isn't out yet	ج. النتيجة لم تظهر بعد	
	PART 2 - KNOWLEDGE QUESTIONS	**الجزء 2 – أسئلة معرفية:**	

12	Have you ever heard about autism spectrum disorder?		هل سمعت عن اضطراب طيف التوحد؟	12
	1. Yes		أ. نعم	
	2. No		ب. لا	
13	People with ASD have restricted and repetitive behaviors, interests, or activities:		الأشخاص المصابون بالتوحد لديهم سلوكيات أو اهتمامات أو أنشطة محدودة ومتكررة	13
	1. True		أ. صح	
	2. False		ب. خطأ	
	3. I don't Know		ج. لا اعلم	
14	People with ASD have behavioral problems (Throwing objects, aggression towards others, yelling)		يعاني الأشخاص المصابون بالتوحد من مشاكل سلوكية (رمي الأشياء، العدوانية تجاه الآخرين، الصراخ)	14
	1. True		أ. صح	
	2. False		ب. خطأ	
	3. I don't Know		ج. لا اعلم	
15	People with ASD have oral speech delays		يعاني الأشخاص المصابون باضطراب طيف التوحد من تأخر في النطق	15
	1. True		أ. صح	
	2. False		ب. خطأ	
	3. I don't Know		ج. لا اعلم	
16	People with ASD have difficulty communicating		يعاني الأشخاص المصابون بالتوحد من الصعوبة في التواصل	16
	1. True		أ. صح	
	2. False		ب. خطأ	
	3. I don't Know		ج. لا اعلم	
17	Genetics plays an important role in the development of autism		تلعب الوراثة دورًا مهمًا في تطور مرض التوحد	17
	1. True		أ. صح	
	2. False		ب. خطأ	
	3. I don't Know		ج. لا اعلم	
18	Autism is NOT Related to Using Electronic Devices		التوحد غير مرتبط باستخدام الأجهزة الإلكترونية	18
	1. True		أ. صح	
	2. False		ب. خطأ	
	3. I don't Know		ج. لا اعلم	
19	The Improper Parental Upbringing of the Affected Child Does NOT Cause Autism		التنشئة الأبوية غير السليمة لا تسبب مرض التوحد	19
	1. True		أ. صح	
	2. False		ب. خطأ	
	3. I don't Know		ج. لا اعلم	
20	Autism is NOT a Result of a Curse or Evil Eye Put Upon/Inflicted on the Family		التوحد ليس نتيجة عين او حسد اصابت الأسرة	20
	1. True		أ. صح	
	2. False		ب. خطأ	
	3. I don't Know		ج. لا اعلم	
21	Early intervention can lead to significant gains in children with autism's social and communication skills		يمكن أن يؤدي العلاج المبكر إلى مكاسب كبيرة لدى الأطفال المصابين بالتوحد في المهارات الاجتماعية ومهارات الاتصال	21
	1. True		أ. صح	
	2. False		ب. خطأ	
	3. I don't Know		ج. لا اعلم	
22	There is no Known Vaccination that Can Cure/Prevent Autism		لا يوجد تطعيم معلوم يمكن أن يعالج / يوقي من التوحد	22
	1. True		أ. صح	
	2. False		ب. خطأ	

	3. I don't Know	ج. لا اعلم	
23	**Even With Proper Treatment, Most Autistic Children Will Not Outgrow Autism Eventually.**	حتى مع العلاج المناسب معظم أطفال التوحد لن يتخلصوا تماما من المرض	23
	1. True	أ. صح	
	2. False	ب. خطأ	
	3. I don't Know	ج. لا اعلم	
PART 3- ATTITUDE QUESTIONS		الجزء 3 – أسئلة التوجه	
24	**It is important to conduct early diagnostic tests to detect autism in children aged (2-6 years)**	من المهم أن يتم الحصول على تشخيص مبكر للتوحد (من عمر ٢ – ٦ سنوات)	24
	1. Strongly Disagree	أ. أوافق بشدة	
	2. Disagree	ب. أوافق	
	3. Neutral	ج. محايد	
	4. Agree	د. غير موافق	
	5. Strongly Disagree	هـ. غير موافق بشدة	
25	**I feel the importance of early autism screening for pre-schoolers (2-6 years)**	أشعر بأهمية فحص التوحد المبكر للأطفال في سن ٢-٦ سنوات	25
	1. Strongly Disagree	أ. أوافق بشدة	
	2. Disagree	ب. أوافق	
	3. Neutral	ج. محايد	
	4. Agree	د. غير موافق	
	5. Strongly Disagree	هـ. غير موافق بشدة	
26	**I feel equipped to handle children with special needs.**	أشعر أنني مستعد للتعامل مع الأطفال ذوي الاحتياجات الخاصة.	26
	1. Strongly Disagree	أ. أوافق بشدة	
	2. Disagree	ب. أوافق	
	3. Neutral	ج. محايد	
	4. Agree	د. غير موافق	
	5. Strongly Disagree	هـ. غير موافق بشدة	
27	**I don't feel ashamed if someone in my family was showing symptoms of autism**	لا أشعر بالخجل إذا ظهرت على أحد أفراد عائلتي أعراض التوحد	27
	1. Strongly Disagree	أ. أوافق بشدة	
	2. Disagree	ب. أوافق	
	3. Neutral	ج. محايد	
	4. Agree	د. غير موافق	
	5. Strongly Disagree	هـ. غير موافق بشدة	
28	**If my child at the age of (2-6 years) shows autism symptoms, I would prefer to have a medical diagnosis rather than use traditional medicine or alternative medicine**	إذا ظهرت على طفلي في عمر (٢-٦) أعراض التوحد، فإنني أفضل الحصول على تشخيص طبي بدلا من استخدام الطب الشعبي او الطب البديل	28
	1. Strongly Disagree	أ. أوافق بشدة	
	2. Disagree	ب. أوافق	
	3. Neutral	ج. محايد	
	4. Agree	د. غير موافق	
	5. Strongly Disagree	هـ. غير موافق بشدة	

Appendix B

The IRB Approval

Kingdom of Saudi Arabia
Ministry of Education
Imam Abdulrahman Bin Faisal
University
Office of the Vice President for
Research & Higher Studies

جامعة الإمام عبدالرحمن بن فيصل
IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY

المملكة العربية السعودية
وزارة التعليم
جامعة الإمام عبد الرحمن بن فيصل
وكالة الجامعة للدراسات
العليا والبحث العلمي

اللجنة الدائمة لأخلاقيات البحث على المخلوقات الحية
Institutional Review Board
NCBE Registration No.: HAP-05-D-003

IRB Number	IRB -UGS-2022-03-520		٢٠٢٢-٠٣-٥٢٠-يوجس-أيرب
Project Title	Parents' awareness of ASD and their attitude towards autism diagnostic test for pre-schooler		
Student Investigators	Dina Al-ahmadi, Hawra Alhashim		
Supervisor	Lecturer / Salma Almulla		
College / Center	CPH	**Department**	PH
Approval Date	11/12/2022		

The application was reviewed and approved at Imam Abdulrahman Bin Faisal University IRB through an Expedited Review on Sunday, December 11, 2022.

Approval is given for seven months from the date of approval. Projects, which have not commenced within three months of the original approval, must be re-submitted to the University Institutional Review Board (IRB) Committee. If you are unable to complete your research within the validation period, you will be required to request an extension from the IRB Committee.

On completion of the research, the Principal Investigator is required to advise the Institutional Review Board if any changes are made to the protocol, a revised protocol must be submitted to the Institutional Review Board for reconsideration.

Approval is given on the understanding that the "Guidelines for Ethical Research Practice" are adhered to. Where required, a signed written consent form must be obtained from each participant in the study group.

Chairman of the Institutional Review Board

Professor Badr Abdulrahman Aljandan

Stamp
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CC. – Dean
Deanship of Scientific Research
– Director General
King Fahd Hospital of the University
– Director
Center for Research and Medical Consultations
– Supervisor General for Quality and Safety
King Fahd Hospital of the University
– Director
Monitoring Office for Research and Research Ethics
–Director
Pharmacy @ KFHU