

Knowledge and attitude of Saudi women regarding autism

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ABSTRACT

Autism spectrum disorder (ASD) is a neurodevelopmental disorder causing family stress. Increasing awareness about ASD will improve the mothers' engagement with their children and help them bear the stress effect of this disorder. *Aim:* To evaluate Saudi women's knowledge and attitude regarding ASD at Tabuk University, Kingdom of Saudi Arabia. *Design:* Descriptive design was utilized to fulfill the purpose of the study. *Setting:* This study was done at 5 colleges of Tabuk University, with a female section (applied medical sciences, science, medicine, business administration, computing and information technology) representing 25% of Tabuk University colleges. *Sample:* A convenience sample of women in the previous colleges (90) was taken according to inclusion criteria. Three data collection tools were used; 1) A self-administrated questionnaire sheet, including socio-demographic data. 2) Knowledge quiz 3) ASD attitude scale: to assess the attitude of women as regards ASD. *Results:* The participants mean age was 36.23 years, and although 52.2 % of women were inadequate knowledge, more than half of participants 53.3% were positive attitude regarding ASD. A statistically positive correlation is between the participants' knowledge and their attitude. Social status, educational level & women's work experience are significantly related to their knowledge about ASD ($p < 0.05$). *Conclusion:* Inadequate knowledge regarding ASD was prevalent among the current study participants. At the same time, most of them had a positive attitude toward ASD. Therefore, health education campaigns must be enhanced to improve knowledge and attitude about ASD.

Keywords: Knowledge, Attitude, Saudi Women, Autism Spectrum Disorder

1. INTRODUCTION

Autism spectrum disorder (ASD) is considered a complex neurodevelopmental disorder characterized by persistent restrictions in social communication and interaction and the presence of repetitive patterns of activities, behavior, and interests that vary in severity. Male sex is one of the well-recognized factors for ASD. Hereditary, Parental and environmental factors also play a role in causing ASD as exposure to tobacco, pollutants, and metals, and other maternal conditions that affect the fetus (Lord et al., 2018). World Health Organization estimated that the international prevalence of ASD is 6.25 per 1,000 populations (WHO, 2019). One/per 100 children worldwide had ASD (Zeidan et al., 2022).

In Arab Gulf countries, the prevalence was estimated from 1.4 to 29/10,000 (Hayat et al., 2019). ASD in Saudi Arabia is higher than reported in developed countries, affecting 42,500 cases; many still undiagnosed (Al-Salehi et al., 2009). The latter study in Saudi Arabia, conducted in 2022, showed a higher prevalence of ASD among Saudi children in Riyadh from two and four years old was estimated to be 2.5%, with 3:1 as ratio of a male to female (AlBatti et al., 2022). Another study conducted in two other main towns in Saudi Arabia showed the prevalence of ASD for Jeddah was 2.618 per 1,000 children and 3.68 per 1,000 children for Makkah (Heba et al., 2021).

ASD is a constant lifetime condition that includes problems in childcare, which are present from early months that put great stress on parenting abilities, especially if the parent's perceptions of the demands of their parental role exceed their coping skills (Kiami & Goodgold, 2017). Family history of ASD contributes to more severe ASD (Heba et al., 2021). The early signs of ASD include communication and language delays, repetitive behavior, no reaction to verbal cues, and disturbed sleep patterns, resulting in overall severe effects of daytime that contribute to high-stress levels in parents or caregivers. More inclusive diagnostic criteria and increased risk factors accompanying this disorder reflect on increasing numbers of discovered cases (Klukowski et al., 2015; Johnson et al., 2018). Families cost a lot of money, although the government's services were available in Saudi Arabia because their awareness of early intervention services provided to children with ASD was still very poor.

Autistic children in the Saudi population suffer psychological, social, emotional, and financial challenges (Khan et al., 2020; Omar, 2014). Diagnosis of ASD as young as 18 months of age, especially with other behavioral and medical conditions as obesity, gastrointestinal tract problems, seizures, attention-deficit/hyperactivity disorder, and anxiety, affects the child's quality of life. Parent support intervention based on knowledge and targeted to main symptoms of ASD or other behaviors will directly benefit the child. The most widely used tool for screening ASD is a questionnaire-based tool (M-CHAT) (Hyman et al., 2020; Bearss et al., 2015). In order to manage children with ASD interventions are delivered through developmental therapies and behavioral practices to minimize decreased social communication and repetitive behaviors (Ameis et al., 2018).

The severity of ASD features is completely associated with the stress of both parents, especially psychopathology symptoms of mothers (Estes et al., 2013). Promoting coping strategies through social support, increasing awareness about ASD, and applying behavioral approaches will improve the mothers' engagement with their children and help them bear the stress effect (Miranda et al., 2019). Educational programs should be directed to promote mothers' knowledge concerning ASD to permit early diagnoses and suitable treatment plans for their children (Anwar al., 2018). Studies related to our topic are rarely addressed in Tabuk City. So, this study directed to evaluate mothers' knowledge and attitude about ASD at Tabuk University, Saudi Arabia.

Aim of the study:

To explore Saudi women's knowledge and attitude regarding ASD at Tabuk University, Saudi Arabia through:

1. Assess women's knowledge about ASD
2. Assess women's attitudes regarding ASD
3. Assess the relationship between women's knowledge and their attitude regarding ASD

2. SUBJECTS AND METHODS

Research Design

Descriptive design was used to achieve the purpose of the study.

Setting

The study was applied in female sections at five colleges of Tabuk University (applied medical sciences, science, medicine, business administration, computing and information technology).

Subjects

Subject Type, Size, and Criteria

A simple random sample of 25% (5 colleges) of the total 20 Tabuk University colleges was selected randomly, then a convenient sample of working women in the selected colleges was taken (90 women) according to:

Inclusion Criteria:

Women available at the interview, had children, and were accepted to contribute in the research.

The exclusion criteria:

Women with children with ASD or any mental disorders and who rejected to contribute in the study.

Data collection instrument

Data were collected using an interview self-reported questionnaire. It was established by researchers after reviewing the previous literature. It consisted of three main parts: *The first part* included basic data of the study participants like age, social status, educational level, residence and work experience. *The second part, Part II:* knowledge quiz about ASD: Was adopted from prior studies (Barned et al., 2011; Hyman et al., 2020) and comprised 11 dichotomous (yes/no) questions to assess the participants' knowledge regarding ASD definition, risk factors, symptoms, diagnosis, and behavioral intervention. The incorrect answer scored zero, and the correct answer scored one; therefore, the overall knowledge quiz score is 11. The sum of items obtained the overall knowledge score; then, it was categorized as adequate if the overall score ($< 60\%$) and inadequate if the overall score ($\geq 60\%$). The reliability of the knowledge quiz was assessed using Cronbach's alpha, and its result pointed to good internal consistency ($r=0.766$). *Part III:* ASD attitude scale was adapted from the previous literature (Alyami et al., 2022; Liu et al., 2016). The scale comprises three items ranked on a 3-points Likert scale from agree (3) to disagree (1). The overall scale score ranged from 5-to 15. The participant was a negative attitude if the overall score was < 10 and a positive attitude if the overall score was ≥ 10 . The reliability of the attitude scale was assessed using Cronbach's alpha, and its result indicated good internal consistency ranging from (0.62 to 0.78). In addition, a jury of four psychologists and community health nursing specialists examined the self-reported questionnaire for content, and concept strength.

Methods

The following steps were followed to fulfill the study.

Pilot Study

A pilot study was done on ten percent of the study sample (9) women that were excluded from the sample to test the application of the tools.

Procedures

The data were collected from July to December 2021, covering a period of 6 months. The researchers visited the previously declared areas. They interviewed each woman clarified the aim of the study for contribution. Upon consent to contribute, an interview self-reported questionnaire was disseminated to the women. Average time for the accomplishment of questionnaires (25-30 minutes).

Statistical Analysis

The Statistical IBM software was used for data analysis, version 23 (IBM Corp., Armonk, N.Y., USA). Descriptive statistics were done to describe the features of the study subjects (e. g. frequency, percentages, mean, and standard deviation). Test of significance (t test and chi-square test) was used. Correlation was calculated between s total knowledge of women and their attitudes. A statistically significant difference was detected at a p -value $\leq .05$.

3. RESULTS AND DISCUSSION

Table 1 represents the participants' basic characteristics. The participants mean age was 36.23 years, and most were married (70.0%). In addition, more than three-quarters of them had a university education (76.7%), and the majority, 97.8%, resided in urban areas. Furthermore, the mean work experience of the women was 12.54 years, and half were ≥ 10 years of work experience.

Table 1 the participants' basic characteristics (n = 90)

Characteristics	No	%
Age		
20-30	25	27.8
31-40	25	27.8
41-50	34	37.8
51-60	6	6.7
Min –Max	20-54	

Mean \pm SD	36.23 \pm 9.71	
Social status		
Married	63	70.0
Divorced	19	21.1
Widow	8	8.9
Educational level		
University education	69	76.7
Above secondary school	15	16.7
Secondary school	6	6.7
Residence		
Rural	2	2.2
Urban	88	97.8
Work experience		
≥ 5 years	19	21.1
5-10 years	26	28.9
≥ 10 years	45	50.0
Min –Max	3-28	
Mean \pm SD	12.54 \pm 5.41	

Table 2 Participant knowledge about ASD (n=90).

Items	Correct answer		Incorrect answer	
	No	%	No	%
1- ASD is a neurological disorder that* affects the functioning of the limbs	34	37.8	56	62.2
2- Most autistic children have an intellectual disability	29	32.2	61	67.8
3- Impaired social interaction and language communication is important to be diagnosed with ASD	60	66.7	30	33.3
4- ASD is a developmental disorder	24	26.7	66	73.3
5- Early and proper behavioral intervention is an effective treatment method of ASD	52	57.8	38	42.2
6- Autistic children talk a lot*	10	11.1	80	88.9
7- Most autistic children are females*	7	7.8	83	92.2
8- No visual communication for autistic children during conversation with others	65	72.2	25	27.8
9- Most autistic children have a problem with imaginary playing	40	44.4	50	55.6
10- We can diagnose ASD disorder depending on physical features only*	39	43.3	51	56.7
11- Genetic factors play is important as a cause of ASD	41	45.6	49	54.4

The reversed item*

The knowledge of ASD is shown in Table 2. It was found that 92.2, 88.9%, 73.3%, and 67.8% of the studied women had incorrect answers regarding most autistic children being females, Autistic children talk a lot, ASD is a developmental disorder & most autistic children have an intellectual disability, respectively. Furthermore, 72.2, 66.7 & 57.8% of participants were answered correctly about no visual communication for autistic children during conversation with others, impaired social interaction and

language communication is important to be diagnosed with ASD & Early and proper behavioral intervention is an effective treatment method of ASD respectively.

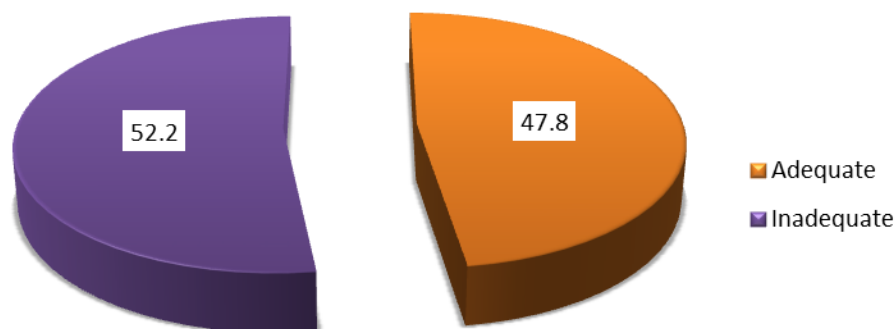


Figure 1 Participants' overall knowledge of ASD (n = 90)

Figure 1 clarifies the evaluation of overall knowledge of ASD. It was obvious that 52.2 % of the women had inadequate total knowledge regarding ASD.

Table 3 Participants' attitudes toward ASD (n=90).

Items	Agree		sometimes		disagree	
	No	%	No	%	No	%
1. looking for important information toward ASD	46	51.1	27	30.0	17	18.9
2. Autistic people not receive special education*	65	72.2	12	13.3	13	14.4
3. Feel sympathy for people with ASD	68	75.6	20	22.2	2	2.2
4. Awareness of ASD is adequate in Saudi Arabia	40	44.4	22	24.4	28	31.1
5. Feel equipped to handle children with ASD	43	47.8	14	15.6	33	36.7

The reversed item*

Table 3 illustrates that more than three-quarters of participants felt sympathy for people with ASD (75.6%). In addition, 72.2% agreed that autistic people receive special education. Around half of them agreed they were looking for important information toward ASD and felt equipped to handle children with ASD, 51.1% and 47.8%, respectively. Only 44.4% of the women agreed that awareness of ASD is adequate in Saudi Arabia.

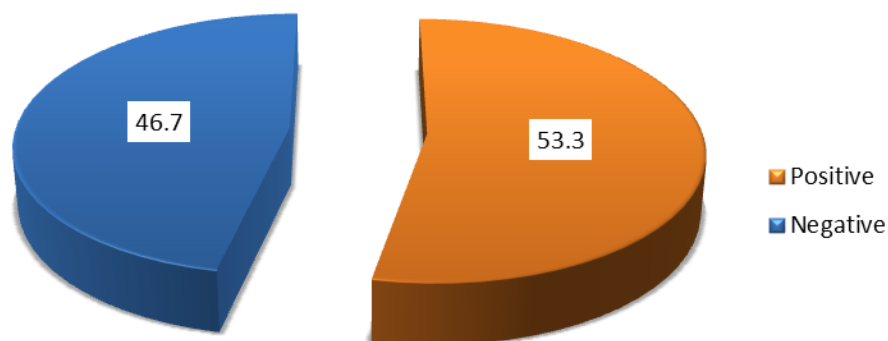


Figure 2 Participants' overall attitude toward ASD (n = 90).

Table 4 Statistically correlation between total studied women knowledge and their attitude (n=90).

	Total knowledge	
	R	p-value
Total attitude	0.386	.000**

Figure 2 illustrates the overall attitude of the studied women toward ASD. It was obvious that 53.3% of the studied women were a positive attitude toward ASD, and 46.7% of them had a negative attitude toward ASD. Table 4 illustrates a highly positive correlation ($P < 0.000$) between the total knowledge of studied women & their total attitude.

Table 5 Relation between total knowledge and the participants' basic characteristics (n=90).

Items	Inadequate (n=47)		Adequate (n=43)		X ²	P- value
	No	%	No	%		
Age						
20-30	14	29.8	11	25.6	3.857	0.277
31-40	15	31.9	10	23.3		
41-50	17	36.2	17	39.5		
51-60	1	2.1	5	11.6		
Residence						
Urban	45	95.7	43	100.0	1.871	0.171
Rural	2	4.3	0	0.0		
Social status						
Married	27	57.4	36	83.7	13.477	.001**
Divorced	17	36.2	2	4.7		
Widow	3	6.4	5	11.6		
Educational level						
University education	45	95.7	24	55.8	20.32	.000**
Above secondary school	2	4.3	13	30.2		
Secondary school	0	0.0	6	14.0		
Work experience						
≥5 years	12	25.5	7	16.3	13.7	.000**
5-10 years	20	42.6	6	14.0		
≥10 years	15	31.9	30	69.7		

Table 5 clarifies that relation was significant ($P < 0.05$) between total knowledge scores of women, their social status, educational level & their work experience. Contradict, no significant relation ($P > 0.05$) was detected between total knowledge scores of women & their age or residence.

ASD is the most progressive neurogenic disease, including hereditary and environmental risk factors Bozzi, (2018). The parents of children with ASD suffer impairment in all quality of life domains compared to parents of normal children Perumal et al., (2014). The parent's stress of autistic children reached high levels in 77% of the cases due to child behaviors, community, and services barriers Kiami & Goodgold, (2017). Mothers play an effective role in care of autistic children. In order to decrease their stress, they should partner with the professionals in all phases of care by educating them about the child's diagnosis and improving their practice regarding the care of their children Levy et al., (2016).

Our study result revealed that more than half of the participants were inadequate total knowledge of ASD. These weakness areas include replies for the following. Most autistic children are females; autistic children talk a lot, ASD is a growing disorder &

most autistic children have an intellectual disability. These results are congruent with Adli et al., (2017). They reported that more than half of their participants, 52.6% were poor knowledge with nearly the same weakness areas. A recent Saudi study was conducted among autistic children mothers in Al Ahsa, Saudi Arabia, by Mousa et al., (2021) found that 69.8% of all mothers had a low knowledge level and lacked perception about ASD. Another Saudi study was conducted by Haimour & Obaidat, (2013), their study revealed that general education teachers had a weak knowledge level about ASD while special education teachers had a good knowledge level. The same result was found in several other studies. First, Ullah et al., (2015) found a lack of awareness regarding ASD among teachers from both public and private sectors. Second Ayub et al., (2017) stated that 17% only of teachers replied more than 50% of the items about ASD correctly. Third, Anwar et al., (2018) who study knowledge, awareness, and perceptions about ASD among Parents in Pakistan and found a deficiency of awareness about ASD diagnosis and treatment methods. This difference might be because special education teachers are prepared well to deal with a student with ASD and receive in-service training programs about autistic children than other teachers in public schools. Surprisingly, poor knowledge regarding ASD was also found among families that have one or more autistic children in a study conducted in the eastern region of Saudi Arabia by Khan et al., (2020). Furthermore, a study by Abirami et al., (2018) revealed that 42% of parents have inadequate knowledge and supported the idea that social progress depends on children and parents are responsible for the foundation for their children, so each mother as the caregiver must be supported as the primary teacher of her child and equipped with accurate information about the care needed and commercially available devices that can provide children with independence.

Other studies are found an increase in knowledge level than our study First, Alharbi, (2018) conducted a cross-sectional study in Riyadh, Saudi Arabia, to evaluate the knowledge and attitude of families and health care providers regarding ASD. The study showed that all participants' health care providers and families know well about ASD. Second, Bakır & Geçkil, (2016) assess the knowledge of nurses and midwives and find a moderate level of the participants' knowledge scores about ASD and its early diagnosis. Third, Ferreira & Franzoi, (2019) evaluate nursing students' knowledge about ASD and concluded that students had equitable knowledge levels regarding ASD but with important weaknesses, mainly about symptoms and treatment. This increase in knowledge than our study due to their specialty in medical fields and studying of this disorder.

An important point found by the current study is that although above fifty percent of the participants had inadequate knowledge regarding ASD, above fifty percent of them had a positive attitude regarding ASD. As obvious in our study, nearly half of them agreed they were looking for important information toward ASD and felt equipped to handle children with ASD. Nearly three-quarters of women felt sympathy for people with ASD and agreed that autistic people receive special education. This was consistent with a recent Saudi study by Alyami et al., (2022) conducted a study using electronic survey to evaluate the knowledge and attitude of the population in Saudi Arabia. Above fifty percent of the women were keen to partner in treating and caring for autistic children, and 72.7% of them agreed that preschools should have therapists and teachers for special education. Also, recommended increasing government funds to facilitate educational services to improve the community knowledge about ASD. Other previously mentioned studies by Alharbi, (2018) & Adli et al., (2017) were consistent with our study, the former author, reported that most of study respondents demonstrated positive attitudes toward ASD. The latter one found that most participants' attitude were positive towards ASD and felt sympathy towards people with ASD. Furthermore, Surman et al., (2015) explored knowledge, attitudes, and behaviors about ASD among adults in Istanbul. Found that high percentage of the study sample were positive attitude and recommended health education programs aiming at the promotion of awareness and consciousness towards ASD. In addition, Liu et al., (2016) this study measured knowledge and attitudes toward ASD in preschool teachers, reported average fairly neutral or slightly preferred attitudes towards ASD children, and highlighted increasing government funding for staffing and training needs of teachers functioning with ASD children.

The present study demonstrated positive correlation ($P < 0.000$) between the total knowledge of studied women & their total attitude and relation was significant ($P < 0.05$) between women's total knowledge, educational level & their work experience. This was congruent with study by Liu et al., (2016). They reported that higher education levels and knowledge about ASD were significantly associated ($p < 0.05$). Furthermore, a study by Shetty & Rai, (2014) demonstrated positive correlation between Teaching experience and women's knowledge.

The current study found that there is no relation between total knowledge scores of women and their age. This was agreement with previously Saudi study by Alyami et al., (2022) indicted that the mean ASD knowledge score displayed no statistical difference between participants according to their age. On the other hand, Mousa et al., (2021) showed no significant differences were present in education level when correlated with knowledge about ASD and also, the same study detected significant association between the mothers' age and their knowledge, this contradiction between our study and the last study may be due to differences between participants characteristics as the latter study's participants were women with autistic children.

4. CONCLUSION

The study indicates that, although more than fifty percent of women in Tabuk University were inadequate knowledge, more than half of them had a positive attitude regarding ASD. Furthermore, our findings demonstrated a statistically positive correlation between the participants' total scores of knowledge and their attitude. Social status, Educational level & women's work experience are significantly related to their knowledge about ASD.

Recommendations

Awareness programs are greatly required for women in Tabuk city to enhance their knowledge and attitude toward ASD. Educational campaigns in improving awareness and attitude about ASD is requires. The present study should be replicated on a larger sample and other settings.

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Author Contributions

All authors have contributed in introduction and design, or analysis and discussion of the data; preparing the research or revising it for significant content; and agreement of the final version.

Informed consent

Written approval to fulfill this research was got from the accountable authorities of Tabuk University, and agreement was taken orally from each woman before the interview and after giving explanation of the purpose of the research; the woman was comforted that all collected information is confidential and used only for the purpose of the study.

Ethical approval

Ethical approval was taken from the Local Research Ethics Committee of Tabuk University under "ethical committee approval number (UT-112-07-2021) after finding that the research fulfilled the criteria of ethical approval.

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Conflicts of interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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