

Knowledge and Perception Regarding Autism Spectrum Disorder (ASD) Among Primary School Teachers in Pakistan

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ABSTRACT

Objective: To measure the knowledge and perception regarding autism spectrum disorder (ASD) among primary school teachers in Pakistan

Methodology: This cross-sectional study was conducted in public and private sector schools of Islamabad and Rawalpindi from October 2025 to April 2026, involving 94 primary school teachers selected through convenience sampling. Data were collected using a self-administered structured questionnaire, distributed via Google Forms, which was constructed based on validated tools from previous studies. Descriptive statistics were used to summarize the data, with categorical variables presented as frequencies and percentages and continuous variables as mean $\pm$ standard deviation. The relationship between knowledge, attitude, and teaching experience was assessed using Spearman correlation analysis, while binary logistic regression was employed to identify predictors of good knowledge regarding autism spectrum disorder (ASD), with statistical significance set at $p < 0.05$.

Results: Ninety-four teachers (96.8% females) completed the survey. Misconceptions regarding knowledge about ASD were identified. Overall, 80.9% ($n=76$) of participants had heard of ASD and 72.3% ($n=68$) reported having knowledge about ASD in children. Most respondents correctly identified delayed speech (80.9%), difficulties in making friends (77.7%), poor eye contact (69.1%), and rigid routines (63.8%) as common features of ASD. However, misconceptions were present. Nearly one-quarter (24.5%) believed ASD resulted from poor parenting, 36.2% believed children with ASD generally have lower intelligence than their peers, and 53.2% believed children could outgrow ASD with treatment

Conclusion: Results suggest that teachers have an inadequate understanding of autism spectrum disorder due to several misconceptions. This calls for increased education and training of teachers with regard to autism and other childhood neurobehavioral disorders.

Keywords: Autism spectrum disorder, children, awareness, knowledge, teachers.

Authors' Contribution:

^{1,2}Conception; Literature research; manuscript design and drafting; ^{3,4}Critical analysis and manuscript review; ^{5,6}Data analysis; Manuscript Editing.

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Introduction

Autism Spectrum disorder (ASD) is a range of neurobehavioral disorders defined by defects in social interaction and communication along with

repetitive and restrictive patterns of behavior.¹ In recent years, the prevalence of ASD has increased.² As per World Health Organization (WHO), ASD affects 0.76% children around the world.³ ASD

affects more boys than girls globally.⁴ Pakistan has still no accurate data regarding exact prevalence of ASD as there is reluctance to seek medical help for neurobehavioral disorders due to social stigma.⁵ Teachers hold a unique position for early recognition of developmental and behavioral disorders due to their daily interaction with children and teachers observe their learning abilities and language skills in classroom environment.⁶ Role of teachers in early recognition of ASD symptoms and its longterm outcome cannot be underestimated.⁷ Previous studies from both developed and underdeveloped countries have reported varying levels of knowledge regarding ASD among primary school teachers. Certain studies have shown satisfactory recognition of ASD symptoms, whereas other studies have highlighted misconceptions regarding causes and treatment of ASD. In Pakistan, Ayub et al.⁸ and another study from Karachi⁹ demonstrated important gaps in knowledge of teachers and perceptions regarding ASD. However, variations in educational settings, teacher training opportunities, and regional characteristics may influence awareness levels, limiting the generalizability of findings across the country. Despite this, evidence regarding the knowledge and perceptions of primary school teachers in Pakistan remains limited. Despite of the fact that previous studies from Pakistan have identified gaps in awareness of teachers regarding ASD, still evidence remains limited and is restricted to certain specified regions. Moreover, limited studies have explored the relationship between knowledge of teachers and attitudes toward children with ASD. It is important to understand these factors for devising special training programs for teachers. Therefore, this study aimed to assess the knowledge and perceptions regarding autism spectrum disorder among primary school teachers in Pakistan.

Methodology

This cross-sectional study was conducted on 94 primary school teachers in various public and private

schools of Islamabad and Rawalpindi from October 2025 till April 2026. Ethical approval was obtained from the Ethical Review Committee of Bahria University College of Medicine, Islamabad. (Letter no. 2511). Informed consent was taken from the participants. A total of 94 primary school teachers were enrolled in this study. Primary school teachers who were teaching in public or private schools and who gave consent were included in the study. Teachers who did not give informed consent, those teaching higher grades/classes, and those teachers who were teaching children with special needs were excluded from the study. Due to feasibility and resource constraints, convenience sampling technique was used. A structured questionnaire was designed on the basis of previously published validated tools that were used to assess knowledge of teachers and their perceptions regarding Autism Spectrum Disorder (ASD). Most items were adapted from previous studies⁸ and certain modifications were made according to the objectives of the study and keeping in view the local context. The questionnaire consisted of three sections: demographic characteristics, ASD related knowledge, and attitudes/perceptions toward children with ASD. The section of knowledge was comprised of 12 items that assessed awareness, symptoms, causes and treatment of ASD. Score "One" was given for correct responses, whereas incorrect or "don't know" responses were scored as zero.⁹ Respondents were categorized into good, moderate and poor knowledge based on the number of correctly answered questions. Those who answered at least 9 questions correctly, were categorized as good knowledge, those who answered 6 to 9 questions were categorized as moderate knowledge and those who answered less than 6 questions correctly were categorized as poor knowledge. The attitude/practice section consisted of 9 items that assessed perceptions about inclusive classroom teaching, confidence of teachers regarding teaching ASD students, referral practices and need for training programs for teachers.

Cronbach alpha coefficient was used to assess reliability of the knowledge and attitude scales. Self-administered online questionnaire distributed via Google Forms was used for data collection. Prior to participation informed consent was obtained from the participants. Confidentiality of participants was maintained. Data was analyzed using SPSS version 27. Descriptive statistics was used to summarize data. Categorical variables were presented as frequencies and percentages, while continuous variables were expressed as mean $\pm$ standard deviation. Relationship between knowledge, attitude, and teaching experience was assessed using Spearman correlation analysis. Binary logistic regression analysis was used to recognize predictors of good knowledge regarding ASD. A p-value of <0.05 was considered statistically significant.

Ethical approval was obtained from the Ethical Review Committee of Bahria University College of Medicine, Islamabad (Letter # 2511), and informed consent was secured from all participating teachers.

Results

A total of 94 primary school teachers participated in the study. Most respondents were female (n=91, 96.8%), held a Master's degree or higher (n=57, 60.6%), and worked in private schools (n=67, 71.3%) (table 1). The largest age group was 36–45 years (n=36, 38.3%), while 63.8% (n=60) had ≤ 10 years of teaching experience. Most teachers belonged to Islamabad & Rawalpindi area (n=69, 73.4%). Only 18 teacher (19.1%) had received formal training related to the education of children with special needs. 2 teachers were trained in child psychology; 1 teacher was trained in pedagogy & 1 teacher was trained in Applied Behavior Analysis (ABA).

The internet (n=68, 72.3%) and colleagues, family members or friends (n=64, 68.1%) were the most common sources of information regarding ASD, whereas books (n=16, 17.0%) and newspapers (n=8, 8.5%) were infrequently cited as information

sources. Workshops were reported as a source of information by only 24.5% (n=23) of participants.

Table I: Demographic and professional characteristics of participants

Characteristic	N (%)
Gender	
Male	3 (3.2)
Female	91 (96.8)
Age Groups (years)	
16-25	17 (18.1%)
26-35	29 (30.9%)
36-45	36 (38.3%)
>45	12 (12.8%)
Residence	
Islamabad	41 (43.6%)
Rawalpindi	28 (29.8)
Lahore	21 (22.3%)
Chakwal	3 (3.2%)
Karachi	1 (1.1%)
Education Level	
Intermediate	4 (4.3)
Bachelor's	33 (35.1)
Master's	49 (52.1)
M. Phil	8 (8.5)
School type	
Public	27 (28.7)
Private	67 (71.3)
Teaching experience (years)	
0-10	60 (63.8%)
11-20	23 (24.5%)
21- 30	10 (10.6%)
> 30	1 (1.1%)
Formal training in special education	
Yes	18 (19.1)
No	76 (80.9)

Overall, 80.9% (n=76) of participants had heard of ASD and 72.3% (n=68) reported having knowledge about ASD in children. Most respondents correctly identified delayed speech (80.9%), difficulties in making friends (77.7%), poor eye contact (69.1%), and rigid routines (63.8%) as common features of ASD. However, misconceptions remained common.

Nearly one-quarter (24.5%) believed ASD resulted from poor parenting, 36.2% believed children with ASD generally have lower intelligence than their peers, and 53.2% believed children could outgrow ASD with treatment. Uncertainty was particularly evident regarding the role of medications in ASD management, with 39.4% responding “don't know.” (Table II)

Table II: Teachers' knowledge regarding ASD	
Knowledge item	Positive Response n (%)
Heard of ASD	76 (80.9)
Knowledge of ASD in children	68 (72.3)
Recognized delayed speech	76 (80.9)
Recognized poor eye contact	65 (69.1)
Recognized difficulty making friends	73 (77.7)
Recognized rigid routines	60 (63.8)
Recognized speech/behavioral therapy as treatment	76 (80.9)
Correctly rejected poor parenting as cause	49 (52.1)
Correctly rejected lower IQ stereotype	39 (41.5)
Correctly rejected the belief that ASD is outgrown	17 (18.1)

Table III: Teachers' attitudes toward ASD	
Attitude item	Positive response n (%)
Support mainstream schooling with additional support	66 (70.2)
Comfortable teaching a child with ASD	36 (38.3)
Support teacher training workshops	85 (90.4)

The knowledge scale demonstrated good internal consistency (Cronbach's $\alpha = 0.803$). The mean knowledge score was 6.88 ± 2.97 out of 12. Only 17.0% (n=16) of participants demonstrated good knowledge, whereas 61.7% (n=58) had moderate knowledge and 21.3% (n=20) had poor knowledge regarding ASD. (Figure 2)

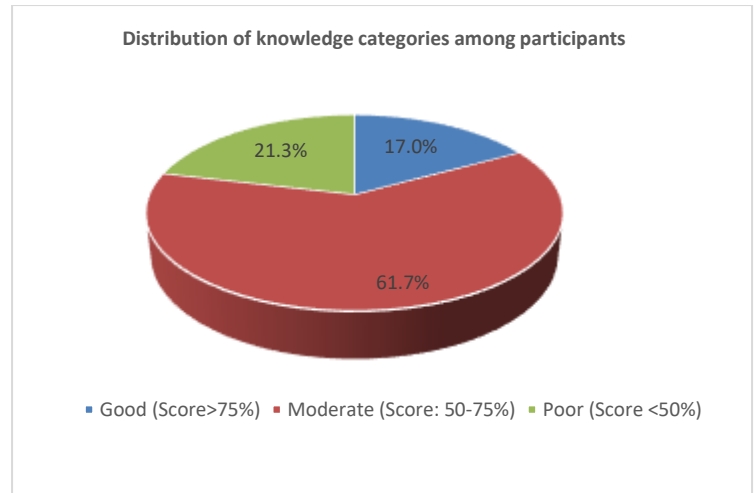


Figure 1. Distribution of knowledge categories among participants

Comparison of mean knowledge scores showed no significant differences between teachers working in private and public schools (7.12 ± 2.87 vs 6.30 ± 3.16 , $p = 0.225$) or between teachers who had received formal training and those without training (7.83 ± 2.48 vs 6.66 ± 3.04 , $p = 0.131$)

Most teachers supported training workshops on ASD (n=85, 90.4%) and believed that children with ASD should be educated in mainstream schools provided additional support was available (n=66, 70.2%). However, only 38.3% (n=36) reported feeling comfortable teaching a child with ASD, and 59.6% (n=56) believed that teaching a child with ASD could disrupt learning for other students. Furthermore, 59.6% (n=56) believed that children with ASD should be educated in special schools rather than mainstream classrooms. (Table 3)

The attitude scale demonstrated moderate internal consistency (Cronbach's $\alpha = 0.582$). The mean attitude score was 2.47 ± 1.30 out of 5. No statistically significant difference was observed between public and private school teachers (2.74 ± 1.48 vs 2.36 ± 1.21 , $p = 0.199$). Teachers who had received formal training demonstrated higher attitude scores than untrained teachers (3.00 ± 1.57 vs 2.34 ± 1.20), although this difference narrowly failed to reach statistical significance ($p = 0.053$)

Less than half of participants (n=40, 42.6%) reported having previously taught a child with ASD. Approximately three-fifths indicated that they would refer a suspected case of ASD to a psychiatrist (n=57, 60.6%) or a child specialist physician (n=59, 62.8%). Spearman correlation analysis demonstrated a statistically significant positive correlation between knowledge and attitude scores ($r_s = 0.346$, $p = 0.001$), indicating that teachers with greater knowledge regarding ASD tended to exhibit more positive attitudes toward children with ASD. No significant correlation was observed between teaching experience and knowledge score ($r_s = -0.051$, $p = 0.627$) or between teaching experience and attitude score ($r_s = -0.085$, $p = 0.415$).

Binary logistic regression was performed to identify factors associated with good ASD knowledge (>75% score). School type (OR 3.10, $p = 0.162$), formal training (OR 2.04, $p = 0.260$), and educational level (OR 1.18, $p = 0.779$) were not significant predictors of good knowledge.

Discussion

Teachers play an important role in early identification of children with developmental disorders like autism spectrum disorder (ASD) as they are more likely to recognize cases that even mothers can sometimes miss. Hence it is crucial for school teachers to have baseline knowledge regarding learning disorders. This study explored the knowledge and attitudes of primary school teachers regarding ASD and recognized significant gaps that may affect timely identification and management of these children.⁹

In general, participants demonstrated a moderate level of knowledge regarding ASD, with a mean knowledge score of 6.88 ± 2.97 out of 12. Only 17% of teachers showed good knowledge, while 61.7% had moderate knowledge and 21.3% had poor knowledge regarding ASD. Findings of this study showed that although teachers have some knowledge about ASD, but significant shortcomings

still persist. A study by Ayub et al and Saleem et al have also revealed similar findings as of our study, it was also noted that teachers lag behind in detailed understanding about ASD and its management^{8,10}

There was lack of formal training regarding educating special need children among participants, with only 19.1% teachers had received any such training. This was consistent with a study conducted in Karachi where 8% teachers in private sector and 9% public sector teachers had received training to deal with children with special needs.¹¹ The lack of formal training programs can result in poor understanding of behavioral and developmental disorders and lack of confidence in dealing with children with special needs. These findings emphasize the significance of introducing structured training programs for teachers.

Most frequently reported source of information regarding ASD was found to be internet and social networks, used by 72.3% of respondents. Similarly, a study from Ethiopia also reported 63.2% teachers using digital media for gaining information regarding ASD.¹² Although digital resources enhance easy access to information, authenticity of such information is questionable. So, relying on online information regarding health-related issues should be augmented by reliable resources and training workshops. There was encouraging response about knowledge regarding clinical features of ASD. Majority of participants correctly recognized poor eye contact, delayed speech, difficulties in social interaction, and rigid routines as common clinical features of ASD. Recognition of clinical features of ASD symptoms was higher than previously reported studies conducted in Pakistan. This may be due to enhanced awareness regarding neurobehavioral disorders in children.¹³ Timely identification of these symptoms by teachers is very crucial as it can assist in timely referral and management of these children. Although knowledge regarding symptoms of ASD was encouraging, misconceptions about ASD were still present. About one-quarter of participants think that ASD occurs due to poor parenting style.

Moreover, more than 50% believed that ASD can be cured with adequate management. Similar misconceptions have been reported from a study conducted in Lahore.¹⁰ A study from Iraq demonstrated that 74.4% teachers had misconceptions about ASD¹⁴ whereas a systematic review showed similar findings.¹⁵ These perceptions can result in stigma, delay in referral, and unrealistic expectations about treatment results. These findings highlight the need for specialized training courses for teachers to better equip them in dealing with autistic children.

Teachers had satisfactory knowledge regarding management of ASD, with most teachers rightly identifying behavioral and speech therapies as correct treatment strategies. A study from Nepal has shown similar results.¹⁶ However teachers were not sure regarding the role of medicines and whether it is a lifelong disease or not. Although timely intervention can significantly improve certain symptoms, ASD is a lifelong neurobehavioral disorder rather than a completely curable disease. The attitudes of teachers about ASD demonstrated varying results. Though 70.2% of teachers supported that the children with ASD should be taught in mainstream schools, but only 38.3% teachers were comfortable while teaching a student with ASD. Around 60% teachers believed that teaching a child with ASD could disturb and spoil the environment of the class and an equal proportion believed that ASD children should be educated in special schools. These findings highlight the lack of confidence in teachers to deal with autistic children. Similar concerns are demonstrated among teachers in other countries and emphasize the challenges faced by teachers.^{15,17}

There was a positive correlation between knowledge and attitude scores in our study. More positive attitudes toward children with the ASD was demonstrated by teachers who had better knowledge regarding ASD. This shows that improving teachers' knowledge through training programs will not only enhance early identification

of ASD but also increase their acceptance and positive attitude toward inclusive classroom settings. Similar findings have been shown in a previous research study conducted in China.¹⁸

It was encouraging to find that more than 90% of teachers supported the idea for organizing training workshops for teachers related to ASD. It was consistent with findings from previous studies from Pakistan, India, Iraq, and other countries, where teachers identified need for additional training for children with special needs.^{19,14,20}

Limitations: This study has several limitations. Convenience sampling might have limited the generalizability of the its results to all primary school teachers in Pakistan. Moreover, comparatively a small sample size might have limited the ability to recognize significant associations between characteristics of participants and level of knowledge. Despite of the above-mentioned limitations, this study gives valuable insight into knowledge of teachers and attitudes regarding ASD and emphasizes significant areas for future interventions regarding training of teachers.

Conclusion

Generally, the findings of this study showed that primary school teachers have moderate knowledge regarding ASD, but significant misconceptions still exist. Training courses for teachers focused on awareness regarding ASD are needed to improve support for children with ASD within school settings to help children with ASD.

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