ORIGINAL ARTICLE

Awareness of Autism among Primary Educators in Rural Andhra Pradesh

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Abstract

Aim: This study aims to assess the knowledge of autism among elementary school teachers in and around the coastal belt of Andhra Pradesh. **Materials and Methods:** This descriptive cross-sectional observational study was conducted in 137 elementary schools in the coastal districts of Andhra Pradesh, India. Data were collected using a validated questionnaire encompassing foundational knowledge, social and communication behavior, emotional characteristics, and physical health-related issues. **Results and Discussion:** A total of 319 subjects participated in the study. The highest level of awareness has been identified in foundational knowledge, at 47%, whereas physical and health-related issues scored the lowest at 37%. While 54.84% of participants were aware that autism is a developmental disorder, only 33.33% recognized gastrointestinal issues in children who have an autism disorder. There is no considerable difference in awareness noticed between educators at public and private educational institutions, except for Q.18 ($P = 0.000028$). **Conclusion:** Awareness levels between age categories and educational settings were assessed. These findings suggest the significance of regular academic programs to improve. Awareness of autism spectrum disorder (ASD) among caregivers. Enhancing awareness of early signs, behavioral characteristics, and associated conditions can significantly support early diagnosis and better treatment for children diagnosed with ASD.

Key words: Autism spectrum disorder, awareness, delayed language skills, delayed cognitive skills

INTRODUCTION

Autism spectrum disorder (ASD) is a neurodevelopmental disability. It is defined by qualitative impairment in social interactions, qualitative impairment with respect to communication, and restricted stereotyped behaviors.[1] Centers for Disease Control and Prevention reports that approximately 1 in 100 children has been diagnosed with autism. Since 1985, the prevalence of ASD has shown a progressive increase, ranging from 0.07% to 2.64%.[2] Autistic children have social communication problems and have restricted or repetitive behaviors. It is challenging to diagnose autism.[3] Children with autism appear normal on the outside, but they engage in puzzling and unsettling features that differentiate them from other children.[4] Studies have shown that the majority of the children are diagnosed at the age of 4, which is a school-going age. The early detection of signs of autism is possible through developmental monitoring. As teachers are among the primary caretakers for children, awareness of ASD would help in early identification and aid in enhancing the quality of life for these children.[4]

According to the areas studied and the screening method utilized, the occurrence of ASD in India ranges from 0.15%

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to 1.01%. ASD was found in 1 in 125 children aged 3–6 years and 1 in 85 children aged 6–9 years in the International Clinical Epidemiology Network study. The prevalence rates in rural areas, hilly areas, urban regions, tribal areas, and coastal areas are 0.90%, 0.6%, 1.01%, 0.1%, and 0.61%, respectively. In Tamil Nadu, the frequency of autism has risen in the past 2 years. The prevalence rate is 0.42–0.5/10,000 population.[4]

Although there is not one specific established cause for autism, evidence indicates that genetic as well as environmental factors may be significant. Factors such as advanced maternal age, fetal distress, and respiratory infections during pregnancy have been linked to ASDs. In addition, perinatal and neonatal risk factors, including labor complications, preterm birth, neonatal jaundice, delayed birth cry, and birth asphyxia, are associated with ASD.[4] ASD occurs more often in males than females in a ratio of 4:1. The earliest signs are delayed speech, sleep, and eating difficulties.[5]

The present study aims to analyze the knowledge of autism among elementary school teachers in and around the coastal belt of Andhra Pradesh.

MATERIALS AND METHODS

Study design and study site

A qualitative cross-sectional descriptive observational study was conducted over 8 months (July 2024 to February 2025) in 137 primary schools in the coastal districts of Andhra Pradesh.

Sample size

A total of 340 elementary school teachers took part in the survey. Due to incomplete data submission, 21 were removed from the study. Before collecting data, the study's purpose was clearly explained to the participants. The sample size was calculated with a margin of error of ±5% and at a confidence level of 95%.

Study criteria

All elementary school teachers who gave their consent were included in the study. Teachers who refused to participate in the study and incomplete questionnaires.

Study tools

The sampling method is simple, randomized sampling. The probability of the study is 95% confidence. A validated open-ended questionnaire was prepared (reference from the Centers for Disease Control and Prevention). Data were collected using a Google survey form and an exploitation sheet with 20 questionnaires was used. All information was gathered through a one-to-one questionnaire on ASD. The questionnaire included questions categorized into four sections: six foundational questions, nine social and communication behavior questions, three behavioral and emotional characteristics questions, and two physical and health-related issues questions. Scale for level of awareness is estimated as 0–30% low awareness, 31–60% medium awareness, 61–80% moderate awareness, and 80–100% high awareness. For descriptive statistics, "YES" responses were considered "1" and "NO" responses as "0." Before gathering the data, we obtained informed consent from the teachers and provided them with an explanation of the study's purpose and nature.

Statistical analysis

The data were compiled in pre-designed Google Forms, recorded in spreadsheets, and double-checked for errors. All the categorical variables expressed in numbers (n) and frequencies (%) were analyzed. The data were analyzed using the Statistical Package for the Social Sciences (SPSS® statistics) program IBM SPSS Statistics 29.

$$\text{Categorize wise level of awareness} = \frac{\textit{Total Yes Responses}}{\textit{Total Responses}} \times 100$$

RESULTS

Data from 319 private and government elementary school teachers were analyzed, with a high percentage of females (n = 193, 60.5%) and 126 (39.5%) males. Many respondents were from the 38 to 47 age group 92, 28.8%). The youngest respondent was 18 years old, and the oldest was 63 years old. Elementary school teachers were distributed by the work environment, with 74.2% of teachers working in private schools and 25.8% in government schools. The highest number of participants were from private institutions [Table 1].

The degree of awareness in different domains is as follows: Foundational (47%), social and communication behavior (39.6%), behavioral and emotional (44%), and physical and health-related issues (37%). The detailed question numbers and their knowledge grades are shown in Table 2.

When we analyzed the data, we observed that private teachers have better knowledge than government teachers regarding unusual sleeping and eating habits in autistic children (Table 3, Q.18). There is no significant difference observed in positive responses regarding the knowledge of autism between private and government school teachers, except for Q.18 (P = 0.000028). In the government organizations, the

average number of positive responses by the subjects was 38.7, with a standard deviation of 6.93. This was considerably smaller than the private sector, where the average number of correct responses was 107.3, with a standard deviation of 14.5. The Chi-square test and *P*-values of all questions are shown in Table 3.

DISCUSSION

ASD is a complicated developmental disorder that manifests as a variety of social, behavioral, and communication challenges. The awareness of these features among primary educators is crucial for prompt recognition and management. This study analyzed the knowledge levels of elementary school teachers regarding various characteristics of children with autism and compared the results with those from other studies.

Awareness of developmental delays and communication challenges

In the present research, 54.8% of participants knew that ASD is a developmental disorder. A similar study by Arif *et al*. revealed that 47% of subjects recognized autism as a learning and mental disorder.[6] The level of knowledge related to developmental disorders was medium. Hence, it is required to enhance knowledge of ASD related to the developmental disorder.

Awareness of delayed language skills was 45.1% in the current research, whereas the Otaif *et al*. study revealed 53.3% of participants knew that autistic children have delayed language skills,[5] which indicates a medium level of awareness of this critical feature. Therefore, the findings emphasize the necessity for focused educational programs to enhance the understanding of ASD-related delayed language skills among educators.

Delayed movement skills were recognized by 48.3% of respondents, and delayed cognitive or learning skills were known to 50.5% of respondents in the present study. Arif *et al*. reported slightly higher awareness in 64.1% of subjects in their study,[6] which indicates a medium level of awareness of this feature. Hence, it emphasizes the need for an improved understanding of cognitive delays in ASD.

Awareness of social and communication behaviors

Social and communication deficits are hallmark features of ASD. While 44% of subjects knew that the lack of eye contact is the key characteristic of ASD, this awareness is significantly lower than the 74.5% of subjects having awareness reported by Arif *et al*.[6] and the 55.5% of awareness reported by Al-Sharbati *et al*.[7] This indicates medium-to-moderate awareness regarding this hallmark feature of ASD. Research has shown that ASD children avoid eye contact from as early as 2 months of age, emphasizing the importance of early recognition and intervention.

The present research reveals notable gaps in awareness regarding early social deficits linked to autism. Among the respondents, 40% acknowledged that autistic children commonly fail to get back to their names by 9 months, and 44% were aware that autistic children might lack facial expressions by the same age. These findings are consistent with research by Al-Sharbati *et al*., where 40% of participants showed awareness of such social deficits,[7] and Otaif *et al*., where only 26.6% of respondents were familiar with these early signs.[5] Collectively, these results underscore a consistently low-to-moderate level of understanding about critical early markers of ASD. This limited awareness emphasizes the urgent need for focused educational programs to improve prompt recognition and management.

Furthermore, 36.5% of respondents knew that autistic children use few or no gestures in the current study, highlighting the low awareness of non-verbal communication

Table 1: Demographic variables of primary school teachers

Demographic characteristics	Class	*n* (%)
Gender	Female	193 (60.5)
	Male	126 (39.5)
Age	18–27	48 (15)
	28–37	84 (26.4)
	38–47	92 (28.8)
	48–57	76 (23.8)
	58–67	19 (6)
Employee type	Government	82 (25.8)
	Private	237 (74.2)

Table 2: Level of knowledge based on the distribution of questionnaire responses

Question number	Question type	Percentage of awareness	Level of knowledge
Q1, Q3, Q4, Q13, Q14, Q15	Foundational questions	47	Medium
Q2, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12	Social and communication behavior	39.6	Medium
Q16, Q18, Q20	Behavioral and emotional characteristics	44	Medium
Q17, Q19	Physical and health-related issues.	37	Medium

Table 3: Percentage of positive responses according to the type of organization

S. No.	Question name	Government *n* (%)	Private *n* (%)	Chi-square	*P*-value
Q1	Do you know that ASD is a developmental disorder?	58 (71)	140 (59)	3.518	0.060705
Q2	Do you know that an Autistic child does not keep eye contact?	43 (52)	106 (45)	1.4561	0.227549
Q3	Do you know that autistic children do not respond to names by 9 months of age?	32 (38)	108 (46)	1.0598	0.303262
Q4	Do you know that autistic children do not show facial expressions such as happy, sad, angry, and surprised by 9 months of age?	41 (50)	91 (38)	3.3815	0.065933
Q5	Do you know that autistic children do not play simple interactive games such as pat-a-cake by 12 months of age?	30 (37)	108 (46)	2.0034	0.156951
Q6	Do you know that an autistic child uses few or no gestures by 12 months of age (for example, does not wave goodbye)?	32 (39)	106 (45)	0.8068	0.369077
Q7	Do you know that an autistic child does not share interests with others by 15 months of age (for example, show you an object that they like)	39 (48)	106 (45)	0.1975	0.656729
Q8	Do you know that autistic children do not point to show you something interesting by 18 months of age?	28 (34)	104 (44)	2.3804	0.122864
Q9	Do you know that an autistic child does not notice when others are hurt or upset by 2 years of age?	39 (48)	106 (45)	0.1975	0.656729
Q10	Do you know that autistic children do not notice other children and join them in play by 3 years of age?	32 (39)	116 (50)	2.4109	0.120491
Q11	Do you know that an autistic child does not pretend to be something else, such as a teacher or superhero, during play by 4 years of age	39 (48)	116 (50)	0.0467	0.828862
Q12	Do you know that an autistic child does not sing, dance, or act for you by 5 years of age	47 (57)	114 (48)	2.0698	0.150237
Q13	Do you know that an autistic child has delayed language skills?	37 (45)	131 (55)	2.5188	0.112495
Q14	Do you know that an autistic child has delayed movement skills?	43 (52)	123 (52)	0.0071	0.932729
Q15	Do you know that an autistic child has delayed cognitive or learning skills?	43 (52)	110 (46)	0.8862	0.346503
Q16	Do you know that an autistic child has hyperactive, impulsive, and/or inattentive behavior?	43 (52)	102 (43)	2.1716	0.140576
Q17	Do you know that an autistic child has a complaint of epilepsy or seizure disorder?	37 (45)	97 (41)	0.4398	0.507213
Q18	Do you know that an autistic child has unusual eating and sleeping habits?	34 (41)	80 (34)	17.5417	0.000028
Q19	Do you know that an autistic child has gastrointestinal issues (for example, constipation)?	34 (41)	80 (34)	1.5761	0.209318
Q20	Do you know that an autistic child has unusual moods or emotional reactions?	43 (52)	102 (43)	2.1716	0.140576
	Average±SD	38.7±6.93	107.3±14.54	---	---

ASD: Autism spectrum disorder

challenges in autism. Contrary to this, Otaif *et al*. reported that 56.8% of subjects believed autistic children could communicate through non-verbal means.[5] This disparity underscores a critical gap in understanding the diverse range of communication impairments related to autism. These results underscore the significance of educating teachers and caregivers about the non-verbal communication difficulties faced by autistic children to foster early identification and provide appropriate support.

In the present research, limited awareness was observed regarding deficits in interactive play. 37.6% of respondents knew that ASD children did not play simple games by 12 months, and 40.8% of participants knew that autistic

children did not notice when others were hurt or upset by 2 years of age. In contrast, Shetty and Rai highlighted a considerably higher awareness, with 86.5% of participants acknowledging deficits in interactive play.[8] This disparity underscores the need to incorporate education on social and communication behaviors into ASD awareness programs to deal with the knowledge gap and promote early recognition.

Behavioral and emotional characteristics

Behavioral and emotional characteristics, such as hyperactivity, impulsivity, and inattention, were recognized by 41.9% of respondents in the current research. Similar to this, the study by Arif *et al*. reported that 43% of subjects were aware of the above characteristics.[6] 50.5% of the present study population has an awareness of unusual moods or emotional reactions in ASD children. Similarly, Shetty and Rai's research results showed that 56.7% of subjects knew the unusual moods in autistic children.[8] This indicates medium awareness regarding these features of ASD. These characteristics, though common in ASD, appear to have varying degrees of recognition among study populations, likely influenced by cultural and societal norms.

Physical and health-related issues

Physical symptoms and health-related issues associated with ASD, such as epilepsy and gastrointestinal issues, have shown low awareness levels in current research at 40.8% and 33.3%, respectively. While these conditions are secondary to the core characteristics of ASD, their recognition is crucial for a holistic understanding of the disorder and for providing effective, comprehensive care. This was similar to the findings of Arif *et al*., who reported even lower awareness of eating habits (26%) among their study participants.[6] These results underscore a worldwide challenge in recognizing and addressing the broader medical and health-related aspects of autism, highlighting the importance of increased education and awareness among both the general population and health-care professionals to enhance outcomes in autistic children.

Recent research by Vanderpuye *et al*. and Van Herwegen *et al*. claims that additional training is needed to improve understanding of autism and to dispel myths and information gaps.[9,10] According to some studies done so far on teachers' awareness levels, teachers of students with autistic children frequently report an insufficiency of in-depth training, preparation, and confidence regarding the disorder. We also observed the same difference in understanding of ASD.

CONCLUSION

Awareness levels differed across various age groups and teaching environments. These findings emphasize the need for structured training programs to improve teachers' understanding of ASD and enhance awareness of early signs, behavioral characteristics, and associated conditions that can significantly support early diagnosis and better care for children with ASD.

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