Original Research Article

A PRE-EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF PLANNED TEACHING PROGRAMME ON AUTISM SPECTRUM DISORDER (ASD) IN TERMS OF KNOWLEDGE AMONG TEACHERS TEACHING IN SELECTED PRIVATE PRE-SCHOOLS OF DELHI

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ABSTRACT

Background: Autism Spectrum Disorder (ASD) is a developmental disorder characterized by social interaction, behaviour, and communication difficulties. It is a spectrum disorder, with symptoms varying greatly among individuals. **Aim:** The main objective of the study was to assess the effectiveness of the planned teaching programme on Autism Spectrum Disorder among teachers teaching in selected private pre-schools of Delhi, to assess the knowledge on ASD among teachers teaching in selected private pre-schools of Delhi, to develop a planned teaching programme on ASD, & to seek the association between pre-test knowledge of teachers teaching in pre-schools after the administration of PTP on Autism Spectrum Disorder with selected background characteristics. **Materials and Methods:** The quantitative research approach and pre-experimental design, one-group pre-test post-test only were adopted for this study. The data was collected from 30 pre-school teachers by convenient sampling technique through structured knowledge questionnaire on ASD. **Result:** The data obtained was analyzed by using the descriptive and inferential statistics. The findings of the study showed that there was deficit in knowledge of the teachers teaching in pre-schools i.e. 21 teachers (70%) had inadequate knowledge prior to the implementation of the planned teaching programme, followed by 9 teachers (30%) with moderately adequate knowledge and 0 teachers (0%), who had adequate knowledge. After the implementation of a planned teaching programme, the results showed that 9 teachers (30%) had inadequate knowledge, followed by 17 teachers (56.7%) with moderately adequate knowledge and 4 teachers (13.3%) with adequate knowledge. **Conclusion:** The study's findings concluded that planned teaching programme was effective in increasing of knowledge of pre-schools teachers on ASD and pre-test knowledge score was moderately adequate those who had more than 5 years of teaching experience.

INTRODUCTION

Disabilities in social interaction, behaviour, and communication are hallmarks of the developmental disorders, known as Autism Spectrum Disorder (ASD). Symptoms might differ greatly from one individual to another, and the illness persists throughout a person's life. Problems or discrepancies in physical skills, as well as cognitive and social capacities, are signs. Some of the ways in which autistic persons learn, behave, think, communicate, and interact may differ from those of typically developing individuals. Because there is a wide range in the kinds and intensities of symptoms experienced by people with autism, the illness is often called a spectrum disorder.[1] The World Health Organization (WHO) predicts that one in every 100 children is autistic. Although autism can be discovered in young children, a diagnosis is generally established much later in life. Although the specific causes of autism are unknown, it's possible that both inherited and environmental factors play a role. There isn't any proof that immunisations induce Autism.[2] Before the age of roughly 12 months, autism is difficult to identify, but by the time a kid is 2 years old, a diagnosis can typically be made. Some of the

1465

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symptoms of beginning include delayed language and social skill development and repetitive behavioural patterns. Intellectual performance in autistic individuals can range from severely impaired to highly functional. An intellectual deficit is thought to be present in approximately half of autistic individuals. People on the autism spectrum may have varying levels of care and assistance requirements. Some people with autism are able to manage on their own, but others may need constant assistance. Autism can also have an effect on the quality of life of those who care for autistic people. Interventions that can assist individuals with autism in developing their social and communication abilities include speech therapy, occupational therapy, social skills training, and applied behaviour analysis (ABA).[3] In addition to helping autistic people, these methods can reduce the stress and hardship that autistic families endure. Every person with Autism Spectrum Disorder (ASD) deserves access to quality healthcare, quality education, and other supports that help them thrive and participate fully in society.

The development, health, wellbeing, and quality of life of individuals with autism can be optimised through a variety of interventions that begin in early childhood and continue throughout their lives. Autistic children's communication and social skills can be greatly improved with early psychosocial therapies supported by evidence. As part of standard care for mothers and children, it is advised to track how a child is developing. Individuals with Autism Spectrum Disorder (ASD), including children, teenagers, and adults, as well as their carers, should have access to up-to-date information, resources, referrals, and practical assistance after a diagnosis has been made. Health promotion, care, and rehabilitation are only a few of the many integrated services that are necessary to meet the complicated health-care needs of autistic persons. Health care must work in tandem with other fields, especially those dealing with education, employment, and social services.[4-7] Autism Spectrum Disorders (ASD) have an estimated monetary cost in the United States, although no figures are available for the years 2015–2025. In 2015, the total yearly costs of direct medical, direct non-medical, and productivity were estimated to be $268 billion, which is between 0.884 and 2.009 percent of GDP. By 2025,[4] the anticipated total will rise to $461 billion, which is between 0.982 and 3.600 percent of GDP. In 2015, these figures were higher than those for stroke and hypertension and were on par with the most recent projections for diabetes and ADHD. The expenditures of Autism Spectrum Disorder (ASD) are projected to surpass those of diabetes and Attention Deficit Hyperactivity Disorder (ADHD) by 2025, assuming the current rate of prevalence continues.[4] Autism affects almost 18 million individuals in India. The number of autistic children in India is on the rise, according to statistics. The alarming rise in autism cases in the country can be attributed to a multitude of factors, including a lack of understanding, inadequate infrastructure, and inaccurate diagnosis. Autism Spectrum Disorder (ASD) affects about 1% to 1.5% of children between the ages of 2 to 9. A diagnosis of mild to severe learning disability has been made for around 10% of school-aged youngsters. The illness is frequently mistaken for mental retardation or even schizophrenia, which causes a significant delay in diagnosis.[6,7]

MATERIALS AND METHODS

This study adopted a quantitative research approach using a pre-experimental one-group pre-test post-test design. The focus was to assess the effectiveness of a planned teaching program on Autism Spectrum Disorder (ASD) in enhancing knowledge among teachers working in selected private pre-schools of Delhi.

The independent variable was the planned teaching program on ASD, while the dependent variable was the knowledge level of teachers. Background characteristics such as age, educational and professional qualifications, teaching experience, and previous exposure to information on ASD were also considered.

The research was conducted in selected private pre-schools in Delhi. These settings were chosen based on availability, feasibility, administrative approval, and willingness of participants. The study population included teachers currently employed in these pre-schools, and a sample of 30 teachers was selected using a convenient sampling technique. Inclusion criteria required participants to be available and willing to participate during the data collection period.

A structured data collection tool was used for this study. It consisted of two sections: Section A gathered background characteristics of the participants, and Section B was a structured knowledge questionnaire on ASD. Section B included 20 multiple-choice questions and 10 true/false items, making a total of 30 questions. Each correct response was awarded one point; incorrect or unattempted items scored zero. The total possible score ranged from 0 to 30. Knowledge levels were categorized as follows: 0–17 (Inadequate), 18–24 (Moderately Adequate), and 25–30 (Adequate).

The tool was developed after a thorough literature review and consultation with experts. A planned teaching program on ASD was designed considering the knowledge level of the target group, language simplicity, teaching method, and topic relevance.

After obtaining necessary permissions from school authorities, participants were briefed about the study and their informed consent was taken. On the first day, a pre-test was administered to assess baseline knowledge. This was immediately followed by the delivery of the planned teaching program. A post-test was conducted on the eighth day using the same structured questionnaire to evaluate the gain in knowledge.

Data were analyzed using both descriptive and inferential statistics. Frequencies and percentages were used to describe background characteristics and knowledge categories. Mean, median, standard deviation, and paired t-test were used to compare pre-test and post-test scores. Fisher's Exact Test was used to examine associations between pre-test knowledge scores and selected background variables.

RESULTS

The study included 30 teachers teaching in selected private pre-schools of Delhi. The demographic characteristics of the participants are shown in Table-1. The majority of teachers (43%) were in the age group of 31–35 years, followed by 27% in the 21–25 years range. Only 10% of the participants were aged 36 years and above. Notably, all participants were female (100%), with no representation from male or transgender categories.

In terms of educational qualifications, more than half (54%) had completed 10+2 with a diploma, while 33% were graduates and only 13% had completed post-graduation. Professionally, 60% of the teachers held a B.Ed. degree, while 40% had a diploma in education. None had pursued an M.Ed. or other professional qualifications.

Regarding teaching experience, 40% of the teachers had 6 years and above of experience, 23% had less than 2 years, and 15% had over 10 years of teaching experience. The rest (20%) had between 3 to 5 years. A significant portion had undertaken Nursery Teacher Training (40%) or Nursery and Primary Teacher Training (37%), while 23% had completed a Diploma in Elementary Education. In terms of previous exposure to Autism Spectrum Disorder (ASD), 47% of the participants reported mass media as their source of information, 40% cited magazines, and 13% referred to books. Notably, none of the teachers had undergone any previous training, in-service education, or professional development programmes related to ASD.

Table-2 presents the level of knowledge of teachers on ASD before and after the planned teaching program. During the pre-test, a large majority (70%) of teachers had inadequate knowledge, while 30% had moderately adequate knowledge, and none demonstrated adequate knowledge. After the intervention, the post-test scores revealed substantial improvement: 56.7% of participants achieved moderately adequate knowledge, 13.3% reached the adequate category, and only 30% remained in the inadequate knowledge range. This clearly indicates a positive impact of the planned teaching program on the knowledge levels of participants.

Further statistical analysis, as shown in Table-3, supports these findings. The mean pre-test score was 16.57 with a median of 15.50, while the post-test mean increased to 20.07 with a median of 19.50. The mean difference between pre- and post-test scores was 3.5, showing an improvement in knowledge after the intervention. The standard deviation was slightly higher in the post-test (3.493) compared to the pre-test (3.091), indicating a broader spread of scores post-intervention. The paired t-test value calculated was 9.143 with degrees of freedom (df) = 29. The result was statistically significant at $p < 0.05$ ($t_{(29)} = 3.659$), confirming that the increase in knowledge scores was not due to chance.

Table-4 presents the association between pre-test knowledge scores and selected background characteristics using Fisher's Exact Test. Among the variables tested, only teaching experience showed a statistically significant association with pre-test knowledge levels ($p = 0.041$). Teachers with more than five years of experience demonstrated relatively better knowledge compared to those with less experience. Other variables such as age, educational qualification, professional qualification, course undertaken, and previous source of information on ASD did not show statistically significant associations with knowledge scores ($p > 0.05$ in each case).

These results suggest that while the planned teaching program was effective in enhancing the knowledge of all participants, teaching experience played a notable role in determining baseline awareness and understanding of Autism Spectrum Disorder.

Table 1: Frequency and percentage distribution of the teachers teaching in selected private pre-schools of Delhi by their background characteristics
n = 30

Background Characteristics	Frequency	Percentage (%)
Age (in years)		
21–25	8	27%
26–30	6	20%
31–35	13	43%
36 and above	3	10%
Gender		
Male	0	0%
Female	30	100%
Transgender	0	0%
Educational Qualification		
10+2 with Diploma	16	54%
Graduation	10	33%
Post-graduation	4	13%
Others	0	0%
Professional Qualification		

Diploma in Education		12	40%
B.Ed		18	60%
M.Ed		0	0%
Others		0	0%
Teaching Experience			
< 2 years		7	23%
3–5 years		6	20%
6 years and above		12	40%
10 years and above		5	15%
Specify the Name of Course Undertaken			
Nursery Teacher Training (NTT)		12	40%
Nursery and Primary Teacher Training (NPTT)		11	37%
Diploma in Elementary Education		7	23%
Others		0	0%
Previous Source of Information on ASD			
Mass-media		14	47%
Books		4	13%
Magazines		12	40%
Others		0	0%
Previous Training / In-service Education / Programme on ASD			
Yes		0	0%
No		30	100%

Table 2: Frequency and percentage distribution of the teachers by their level of knowledge on ASD n = 30

Knowledge Category	Categories of Knowledge Scores	Pre-test Frequency	Pre-test Percentage (%)	Post-test Frequency	Post-test Percentage (%)
Inadequate Knowledge	0–17	21	70%	9	30%
Moderately Adequate Knowledge	18–24	9	30%	17	56.7%
Adequate Knowledge	25–30	0	0%	4	13.3%

Table 3: Maximum score, range of obtained scores, mean, median, mean difference, standard deviation and 't'-value of pre-test and post-test scores of teachers teaching in selected private pre-schools of Delhi n = 30

Knowledge Test	Possible Range of Knowledge Scores	Obtained Range of Knowledge Scores	Mean	Median	Mean Difference	Standard Deviation	Paired 't'-test Value	df
Pre-test	0–30	8–23	16.57	15.50	3.5	3.091	9.143	29
Post-test	0–30	15–27	20.07	19.50	—	3.493	—	—

$t_{(29)} = 3.659$, $p < 0.05$ (significant)

Table 4: Fisher's Exact Test showing association between pre-test knowledge scores with selected background characteristics n = 30

Selected Demographic Variables	Frequency	%	Inadequate	Moderately Adequate	Adequate	Test Applied	*p*-value
Age (in years)						Fisher's Exact Test	0.236
a. 21–30 years	14	46.7	8	6	0		
b. 31 years and above	16	53.3	13	3	0		
Educational Qualification						Fisher's Exact Test	0.287
a. Up to Graduation	26	86.7	17	9	0		
b. Post-Graduation and above	4	13.3	4	0	0		
Professional Qualification						Fisher's Exact Test	0.528
a. Diploma in Education	12	40.0	8	4	0		
b. B.Ed.	18	60.0	13	5	0		
Teaching Experience						Fisher's Exact Test	**0.041***
a. Up to 5 years	15	50.0	14	1	0		
b. More than 5 years	15	50.0	7	8	0		
The Course Undergone						Fisher's Exact Test	0.640
a. NTT and NPTT	23	76.7	17	6	0		
b. Diploma in Education and Others	7	23.3	6	1	0		
Previous Source of Information on ASD						Fisher's Exact Test	0.418

a. Mass-media and Books	18	60.0	14	4	0	
b. Magazines and Others	12	40.0	7	5	0	

Significant at p < 0.05

DISCUSSION

The findings of this study revealed that a majority of teachers teaching in selected private pre-schools of Delhi initially had inadequate knowledge regarding Autism Spectrum Disorder (ASD). The pre-test data indicated that 70% of participants scored in the inadequate knowledge category. However, following the implementation of the planned teaching programme (PTP), there was a significant improvement in knowledge levels. In the post-test, only 30% of teachers remained in the inadequate category, while 56.7% demonstrated moderately adequate knowledge and 13.3% achieved adequate knowledge. This clearly demonstrates the effectiveness of the planned teaching programme in enhancing awareness and understanding of ASD among pre-school teachers.

The statistical analysis further supports this conclusion. The mean knowledge score improved from 16.57 in the pre-test to 20.07 in the post-test, with a significant mean difference of 3.5. The paired t-test value of 9.143 with $p < 0.05$ confirms the statistical significance of this improvement. These results affirm that structured educational interventions, such as the PTP used in this study, can positively influence the knowledge level of early childhood educators.

In support of these findings, a similar study conducted in Mysore evaluated the effectiveness of a structured teaching program among parents of autistic children. The study reported a significant increase in post-test knowledge scores, underscoring the importance of disseminating autism-related knowledge not only to parents but also to educators who interact with children in early developmental stages.[8]

Another study conducted in Udaipur also supports these outcomes. It evaluated a planned teaching programme on ASD among both pre-primary teachers and parents. The results showed that pre-primary teachers exhibited a greater improvement in knowledge than parents following the intervention, indicating that educators benefit considerably from structured learning programs aimed at enhancing their understanding of ASD.[9]

Moreover, the present study also identified a significant association between teaching experience and pre-test knowledge scores, indicating that those with more than five years of experience had relatively better baseline knowledge. This aligns with findings from a study in Vellore district, which assessed ASD knowledge among primary school teachers and found a high proportion of inadequate knowledge, thereby highlighting the ongoing need for targeted educational interventions.[10]

Overall, the current study reinforces the value of structured, well-designed teaching programmes in increasing autism awareness and understanding among pre-school educators. Such initiatives are essential for promoting early identification, support, and inclusion of children with ASD in mainstream educational settings.

CONCLUSION

The study's findings concluded that planned teaching programme was effective in increasing of knowledge of pre-schools teachers on ASD and pre-test knowledge score was moderately adequate those who had more than 5 years of teaching experience.

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1469

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