

COMMUNICATION AND AUTISM SPECTRUM DISORDERS: REVIEW OF KNOWLEDGE OF TEACHERS IN PRE AND POST-INTERVENTION PHASES

Comunicação e transtornos do espectro do autismo: análise do conhecimento de professores em fases pré e pós-intervenção

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ABSTRACT

Purpose: to assess the knowledge of teachers in elementary education about the communication of people with autism spectrum disorders at two different times, pre and post-intervention. **Methods:** it was a comparative and descriptive study, involving 160 teachers from municipal elementary school of both genders, aged between 23 and 65. To check the teachers' knowledge of communication in autism spectrum disorders, a specific questionnaire for this study was developed and applied. It was offered to teachers and administered at two different times, pre and post-intervention. The intervention procedure consisted of two meetings of four hours each, conducted by speech therapist and the delivery of a guidance manual on the autism spectrum disorders, emphasizing the aspects of communication and language. The responses pre-and post-intervention were analyzed and compared. The results were treated statistically ($p < 0.05$ and in some cases $p < 0.01$, the chi-square test for proportions was used). **Results:** it was observed that the teachers had a limited knowledge and inadequate communication about the autism spectrum disorders and on these clinical cases in general. In addition, there was significant increase of correct answers by the teachers after the intervention. **Conclusion:** there is a restricted teachers' knowledge of communication in autism spectrum disorders and positive effects after the intervention procedures, through the analysis of the pre and post-intervention phases, which showed a significant increase in appropriate responses on the autism spectrum disorders.

KEYWORDS: Autistic Disorder; Intervention Studies; Communication; Teachers; Education; Speech, Language and Hearing Sciences

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■ INTRODUCTION

The speech therapy can contribute significantly to the development, implementation and evaluation of strategies to promote health and development and implementation of actions aimed at social and educational inclusion of children and adolescents with autism spectrum disorders (ASD). With the growing process of inclusive education and

controversies that this issue raises, the performance of the speech therapist in the field of Education it is also essential, in order to facilitate the insertion and retention of students with special educational necessities in regular schools¹.

Communication has been highlighted in the literature as one of the central elements of ASD²⁻⁸ frameworks, especially with regard to the pragmatic aspects of language^{2,9}. This aspect is directly related to the skills of social interaction and changes in behavior¹⁰. Thus, this study highlights the role of the teacher, vital interlocutor to the development and learning of students with ASD, since this is the professional who can facilitate the apprehension of the different aspects of the context, in which those students are included.

The role of the teacher and his training as a mediator and inclusion agent, as well as the role of the school, offering suitable space to receive and keep the children is properly assisted is the most important factors^{11,12}. Where teachers positively perceive their relationship with children with ASD, there is significant improvement in behavioral and social aspects in the classroom. The literature has indicated that among the alternatives to support the construction of inclusive, welcoming and cooperative social contexts in school, it is described the development of proposals for intervention directed at different segments of people who are part of specific social environment^{11,13,14}.

However, there are few training programs and training for services designed to enable teachers

to attend students with ASD, and when there are, besides insufficient in number, they are usually limited in scope and content¹². In Brazil, intervention programs specifically addressed to ASD population and studies and training opportunities for teachers who check the results of such procedures, are even scarcer. The objective of this study was to assess the knowledge of primary school teachers concerning the communication of people with autism spectrum disorders (ASD), in two specific situations, pre-and post-intervention, with the application of a questionnaire, conducted by speech pathologists.

METHODS

This study was authorized by signing the Informed Consent of the participants, elaborated for specific purposes of this research, according to Resolution n°.196/96 and approved by the Committee of Ethics in Research of the institution, protocol n° 0286/2012.

A cross-sectional study was realized, comprising 160 teachers from four different municipal elementary schools of São Paulo city (40 teachers from each school), who had been teaching students from 1st to 5th grade, ages from 23 to 65, both genders, with 148 females and 12 males.

During the years of professional experience, 54 teachers reported having worked with children with ASD and 33 teachers reported having some additional training on the subject. Other data related to the characterization of the participating teachers can be observed in Table 1.

Table 1 – Characterization of the participating teachers.

Identification of the teachers			
Basic training (initial)	Number of teachers	Period of professional performance	Number of teachers
Pedagogy	84	Below 1 year	1
Teaching	12	01 the 05 years	35
Physical education	9	05 the 10 years	53
Faculty of arts	3	10 the 20 years	55
Not reported	3	Over 20 years	14
More than one graduation	32	Not answered	2
Other graduation	17	---	---

Subtitle 1: Other graduation: Law, Psychology, Chemistry, Fine Arts, Mathematics, Languages Portuguese and German, Social Sciences, Philosophy, Geography, Pedagogy, History, Visual Arts, Journalism, Biological Sciences, Informatics and Business Management.

To conduct this survey, a questionnaire was devised specifically for this purpose, the contents of the items are derived from descriptions in the literature that addresses the communication with ASD and the inclusive education process for this population^{5,6,15-17}.

The first version of the questionnaire contained 50 items and was submitted to three judges for suggestions and considerations for inclusion and exclusion of subjects and items that address communication in ASD. These judges are doctors in areas related to Education and Speech Therapy, familiar with the subject investigated. From considerations of the judges, the necessary adjustments were provided for the final version of the questionnaire.

After these steps, the final version of the instrument consisted of 40 items, divided into two parts: part 1 with 28 questions regarding knowledge of the teachers on aspects of communication of people with ASD, and part 2 with 12 questions concerning personal and professional identity of teachers. The 28 questions relating to communication in ASD has four possible answers, only one of which is considered adequate. The response options for each question were: agree, partially agree, I disagree, I have no opinion on the matter. It is worth mentioning that when the alternative referred to the last option (I have no opinion on the matter), the issue was regarded as incorrect.

For the selection of teachers, contacts with the directors of the schools were established and explained the research and its objectives. From these contacts, calls were conducted for teachers to participate in the study. After exposure of the survey, teachers who agreed to participate signed a Free Consent Form.

Two applications of the questionnaire with 160 participating teachers, called pre-and post-intervention were performed. The first application occurred on prearranged dates and times of collective activities of teachers, to facilitate their adhesion. The questionnaire was given to each participant along with instructions on how to answer it. After the intervention (post-intervention phase), the same questionnaire was administered to the same teachers, to analyze the effects of the intervention on teachers' knowledge. The time of application of the questionnaire was about 15 minutes.

The intervention took place one month after the first administration of the questionnaire (pre-intervention phase), on prearranged dates and times

of collective activities of teachers to facilitate their adhesion. It was held in the amphitheater or meeting room of the participating schools, and consisted of a short procedure, consisting of two four-hour weekly meetings on the theme "Autism Spectrum Disorders and communication." It was selected an intervention organized by brief procedures, seeking to meet the immediate need described by the participating teachers, which is lack of time and heavy workload. Besides seeking the operationalization of the research, it aimed to address the effectiveness of strategies which facilitate the adhesion of these professionals.

The meetings were conducted by two speech therapists with experience in the field, each being responsible for a date. The meetings were held in lecture format with dialogue-exhibition, encouraging the exchange of experiences and teacher participation. Multimedia device to display the content and presentation of videos that exemplify moments of interaction between children with ASD and their therapists in speech therapy sessions, was used. At the end of the second meeting the questionnaire was reapplied (post-intervention phase). In addition, the researchers gave teachers a guidance manual on the subject worked.

The data obtained from the responses of 160 teachers to Part 1 of the questionnaire, administered before and after the intervention were statistically analyzed. The chi-square test for proportions, was applied, in order to verify possible differences between applications in pre-and post-intervention. P was adopted as descriptive measure, with the critical significance level of 5% ($p < 0,05$) and in some cases, 1% ($p < 0,01$), indicating stronger correlations¹⁴.

■ RESULTS

The results deal with the analysis of Part 1 of the questionnaire constituted of 28 questions, concerning knowledge of 160 teachers about aspects of the communication of people with ASD. It was observed that there was no statistically significant difference between the results obtained from the teachers of a school in relation to other participants. As shown in Table 2, the data are presented by the frequency exposure of correct and incorrect answers in the pre and post intervention phases.

Table 2 – Indexes of correct and incorrect answers, for the questions concerning the communication of people with ASD, in the pre and post intervention phases.

Items of the questionnaire	Pre intervention		Post intervention		Sig. (p)
	FC	FI	FC	FI	
1. Children with ASD cannot communicate.	112	48	126	34	0,111
2. The process of communication of people with ASD is normal.	59	101	87	73	0,039*
3. There are different levels of ASD.	127	33	148	12	0,001*
4. The quality of communication of these individuals does not depend on the degree of disorder to which it belongs.	84	76	123	37	< 0,001*
5. There are days and times when the communication of people with ASD appears to be worse.	94	66	130	30	< 0,001*
6. People with ASD can develop/improve their communication.	126	34	143	17	0,013*
7. People with ASD do not talk.	23	137	33	127	0,491
8. People with ASD speak properly.	64	96	117	43	< 0,001*
9. Other people can understand the speech of people with ASD.	50	110	76	84	0,051
10. People with ASD have repetitive speech.	54	106	109	51	< 0,001*
11. People with ASD understand what people say.	78	82	118	42	< 0,001*
12. They respond when people talk to them.	95	65	129	31	< 0,001*
13. They may say “you” when “I” is intended, e.g. they use the pronoun “you” to refer to themselves.	36	124	98	62	< 0,001*
14. They speak appropriately according to context.	39	121	66	94	0,063
15. People with ASD initiate a conversation.	95	65	130	30	< 0,001*
16. They have difficulty sustaining / maintaining a conversation with others.	41	119	83	77	0,003*
17. The person with ASD asks questions.	66	94	74	86	0,551
18. People with ASD have abnormalities in the production of speech (speech), including volume, tone, speed, pace and modulation.	54	106	102	58	< 0,001*
19. Make gestures to communicate.	64	96	79	81	0,279
20. Seek to attract the attention of adults.	52	108	80	80	0,047*
21. Can express different emotions, such as laughing, smiling and crying for no apparent reason.	97	63	119	41	0,041*
22. Present difficulties in social skills, isolating from people, trying to keep away.	79	81	134	26	< 0,001*
23. Show their wishes and / or make requests.	65	95	100	60	0,005*
24. Seem not to be listening when people talk to them, directly.	50	110	49	111	> 0,999
25. People with ASD never express emotional reaction to an event or situation.	42	118	30	130	0,477
26. They allow body contact.	80	80	91	69	0,359
27. They have difficulty performing mimicry or facial expression.	36	124	99	61	< 0,001*
28. People with ASD do not maintain eye contact.	18	142	4	156	0,462
Total	1880	2600	2677	1803	< 0,001*

Statistic test applied= chi-square for Proportions, $p < 0,05$ and $p < 0,001$.

Subtitle 2: ASD = autism spectrum disorder; FC = frequency of correct answers; FI = frequency of incorrect answers; sig = significance; p = value; * = results which showed a statistically significant correlation.

It was found by using the Chi-square test for proportions, a statistically significant increase in the number of correct answers marked by 160 teachers in the post-intervention time, when compared with the pre-intervention (Table 2). It was also possible to observe the application of the chi-square test for proportions, which on analysis by item 18 (items 2, 3, 4, 5, 6, 8, 10, 11, 12, 13, 15, 16, 18, 20, 21, 22, 23, 27) among the 28 items comprising the questionnaire, showed a statistically significant increase in the number of correct answers marked, in the post-intervention time.

It is worth mentioning, as shown in Table 2, in the analysis by items, for all 28 items of the questionnaire, it is possible to observe an increase in the number of correct answers in the post-intervention, when compared to the pre-intervention, even if this difference is not statistically significant for 10 items (1, 7, 9, 14, 17, 19, 24, 25, 26, 28). Furthermore, no significant differences were observed when comparing the results observed from questionnaires answered by the four groups of teachers from different schools.

■ DISCUSSION

This research allowed to achieve the desired objective of assessing the knowledge of elementary school teachers about communication in autism spectrum disorders (ASD) before and after an intervention procedure.

The findings indicated the limited knowledge of the participating teachers on the communication of people with ASD in the pre-intervention phase. Aspects of communication in ASD are very important²⁻⁸, so it is essential for teachers to know about these characteristics.

In this study, the levels of knowledge in the pre-intervention phase are negative indicators of quality of services in health and education, dispensed to this population in a city with high quality health and education, considering the national context. The lack of knowledge is associated to the use of inappropriate practices by the teachers¹⁴. Accordingly, the findings suggest a scenario which shows the need for urgent action to modify the situation¹. Corroborating the findings of this research, the issue concerning the deficit of knowledge and training of professionals to work together with ASD in Brazil has been advised by other authors^{1,16}.

Therefore, intervention with teachers in the context of regular education is relevant in order to provide conditions which favor social interactions and communication of students with ASD, promoting, generally, their development and learning. Other authors state that initially, changes must be present

in the social representation of the child with ASD. It is important for the school and teachers to base their practices through understanding the different aspects to this kind of disorder, as well as its characteristics and consequences for the infantile development¹⁸⁻²³. However, many educators still resist working with children with ASD afraid of not knowing how to handle them. In addition, preconceived ideas influence the expectations of the teachers about the performance of their students and, eventually affecting the effectiveness of their actions^{11,13}.

As stated in the literature, children with ASD are very different, presenting their specific characteristics, thus differentiating themselves from other groups of disabled and non-disabled, further hindering the search for educational resources and methodologies to be applied in the mediation of their development. Thus, a large variety of learning opportunities should be provided, to teach relevant skills and goals to those children with ASD²¹⁻²⁵, which implies the need for specific training, to adequately assist these students^{1, 11,12,17}.

With concerns applied to this study intervention, although it was based on brief procedures, there was a positive effect on production rates of global propositions concerning the knowledge of 160 teachers, in the analysis of the total number of items in the questionnaire, in the post-intervention phase. In the analysis by item, most of the issues, demonstrated a significant increase in the number of correct answers, marked in the post-intervention phase.

Furthermore, in the analysis by items, for all items of the questionnaire, it was observed an increase in the number of correct answers in the post-intervention phase, even if the difference is not statistically significant for all items. However, in some issues where no significance was observed, it was noted that teachers had more difficulty, when the correct answer was not referring to a more direct and incisive alternative as the alternative "partially agree". It is suggested that the correct answer to this type of question implies a more enhanced level of knowledge, more difficult to acquire in brief interventions.

As others authors have emphasized, short courses on the characteristics and needs of students with learning difficulties, or the introduction of these topics in the disciplines of training courses have been employed, aiming to train future teachers, or the ones who have already trained to inclusive education¹⁴. The increased knowledge of teachers about ASD, arising from participation in educational programs, certification courses, lectures on the subject was observed in other studies^{13,17}.

Several strategies can be used to improve the knowledge of the teachers about the ASD, however it is necessary to identify the personal and institutional barriers that hinder the fulfillment of this goal. The strategies used to operationalize the intervention performed in this study, have also influenced this type of barrier, for example, the difficulty of members adhesion of professional for very long intervention programs, justified by the intense workload, reported by teachers. Thus, brief interventions organized procedures are important tools for information dissemination, and may be used, but training for dealing with ASD requires a wider range of interventional procedures, including in-service training for teachers.

Another issue to be analyzed, refers to the instrument used in this study, which allowed the collection of important data on the communication of people with ASD and can be employed in other studies on the subject, which can also provide a comparison of results obtained in different populations.

These results demonstrate the need for further studies on this issue, aiming to contribute to inclusive education and communication and better meet the educational needs of students with ASD.

■ CONCLUSION

Given the results of this study concluded that teachers have little knowledge on the communication of people with ASD, and have insufficient training on the subject. The observed data also show that the intervention employed by brief procedures, seeking to meet the immediate need described by the participating teachers, which is lack of time and heavy workload, was effective to produce higher levels of knowledge. However, it is emphasized that the issue of teacher training for inclusive education and management of diversity found in schools is much more vast and complex, and therefore, is an enterprise that demands more attention of scientists and policy makers from Brazil.

Furthermore, the data focused on timely communication aspects highlight the fundamental and particular character of the action and the contributions that the speech pathologist can contribute to the educational context of children and adolescents with ASD.

RESUMO

Objetivo: analisar o conhecimento de professores de ensino fundamental sobre a comunicação de pessoas com transtornos do espectro do autismo, em dois momentos distintos, pré e pós-intervenção. **Métodos:** trata-se de um estudo descritivo comparativo, em que participaram 160 professores de escolas municipais de ensino fundamental, de ambos os gêneros, com idades entre 23 e 65 anos. Para verificar o conhecimento dos professores sobre a comunicação nos transtornos do espectro do autismo, foi elaborado e aplicado um questionário especificamente para este estudo. O instrumento, oferecido aos professores, foi aplicado em dois momentos distintos, pré e pós-intervenção. O procedimento de intervenção constou de dois encontros, de quatro horas cada, conduzidos por fonoaudiólogos e entrega de manual de orientação sobre os transtornos do espectro do autismo, com ênfase em aspectos da comunicação e linguagem. Foram analisadas e comparadas as respostas pré e pós-intervenção. Os resultados foram tratados estatisticamente ($p < 0,05$ e em alguns casos $p < 0,01$; foi utilizado o teste de Qui-quadrado para Proporções). **Resultados:** foi possível observar que os professores apresentavam conhecimento restrito sobre a comunicação nos transtornos do espectro do autismo e sobre esses quadros clínicos de modo geral. Além disso, verificou-se aumento significativo de respostas corretas por parte dos professores após a intervenção. **Conclusão:** constatou-se um restrito conhecimento dos professores sobre a comunicação nos transtornos do espectro do autismo e efeitos positivos do procedimento de intervenção, por meio da análise comparativa entre as fases pré e pós-intervenção, que evidenciou aumento significativo de respostas adequadas sobre os transtornos do espectro do autismo.

DESCRIPTORIOS: Transtorno Autístico; Estudos de Intervenção; Comunicação; Docentes; Educação; Fonoaudiologia

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