DOI: https://doi.org/10.18569/tempus.v14i2.2737

Educational resources for training professionals caring for children with disabilities: an overview

Recursos educacionais para capacitação de profissionais que cuidam de crianças com deficiências: um overview

Recursos educativos para Capacitación de cuidadores para niños con discapacidades: una visión general

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ABSTRACT: The health sector deals with challenges to train professionals who take care of children with disabilities and have multiple needs to cover both child development and support for families. This overview describes the training processes of education, health and social care professionals who care for children aged 0-12 with neurodevelopmental disorders. The PubMed, Embase, Cochrane Library, CRD, Web of Science, Campbell Collaboration, Health System Evidence, Epistemonikos and Joanna Briggs Institute databases were used in May 2018. The included studies dealt with training processes, modalities of distance education, classroom attendance or both. In the 23 selected reviews, educational resources were identified as: in-service training (courses); software for e-learning; standards and guide for practices; assessment tools. Few initiatives have promoted interdisciplinary practices.

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Keywords: Professional Training. Disabled Children. Neurodevelopmental Disorders.

RESUMO: O setor saúde lida com desafios para capacitar profissionais que cuidam de crianças com deficiências e que apresentam múltiplas necessidades, as quais perpassam tanto o desenvolvimento infantil como o apoio às famílias. Este overview descreve os recursos de capacitação de profissionais da saúde, educação e assistência social que cuidam de crianças de 0 a 12 anos com transtornos do neurodesenvolvimento. Foram utilizadas, em maio de 2018, as bases PubMed, Embase, Cochrane Library, CRD, Web of Science, Campbell Collaboration, Health System Evidence, Epistemonikos e Instituto Joanna Briggs. Os estudos incluídos tratavam de processos de formação e modalidades de educação à distância, presencial ou ambas. Nas 23 revisões selecionadas, foram identificados recursos educacionais como: treinamento em serviço; softwares para educação à distância; normatizações e guias de trabalho; ferramentas de avaliação. Poucas iniciativas promoveram práticas interdisciplinares.
Palavras-chave: Capacitação Profissional. Crianças com Deficiência. Transtornos de Neurodesenvolvimento.

RESUMEN: El sector de la salud tiene desafíos en la capacitación de profesionales que atienden a niños con discapacidades y tienen varias necesidades para cubrir el desarrollo infantil y el apoyo a las familias. Este resumen describe los procesos de capacitación de los profesionales de la educación, la salud y la atención social que atienden a niños de 0 a 12 años con trastornos del desarrollo neurológico. En mayo de 2018 se utilizaron las bases de datos PubMed, Embase, Cochrane Library, CRD, Web of Science, Campbell Collaboration, Health System Evidence, Epistemonikos y Joanna Briggs Institute. Los estudios incluidos trataban sobre procesos de capacitación y métodos de educación a distancia, en persona o ambos. En las 23 revisiones seleccionadas, los recursos educativos se identificaron como: capacitación en el servicio; software para capacitación a la distancia; normas y guías de trabajo; herramientas de evaluación. Pocas iniciativas han promovido prácticas interdisciplinarias.
Palabras clave: Formación Professional. Niños con Discapacidades. Trastornos del Neurodesarrollo.

INTRODUCTION

According to the United Nations (UN), in 2016, more than 5 million children did not reach full development until the age of five[1]. Child development must be constantly observed by the different professionals who assist these children in order to provide a quick diagnosis and, when necessary, assertive treatment in a timely manner[2].

Disabilities have a considerable impact on child development by interfering in social, cultural, economic and political aspects. It is estimated that disabilities in children and adolescents aged 0 to 14 years reach a prevalence of approximately 5.1% worldwide[1].

The World Health Organization (WHO) considers disability as a dysfunction in the physical, mental, intellectual and sensory structure (auditory and visual), causing temporary or permanent impairments in individuals. The International Convention on the Rights of Persons with Disabilities recognizes that disability is an evolving concept, in which the dysfunctions of individuals interact with the environmental and attitudinal barriers that prevent their full participation in society, on an equal basis. From this perspective, disability as a relationship between the individual and his/her environment reflects the ability of a society to deal with the functional diversity of its members and offer opportunities that prevent exclusion due to prejudice, discrimination or ignorance[3].

Some deficiencies are called Neurodevelopmental Disorders (NDD), which, according to the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), are conditions characterized by specific limitations in learning or in the control of basic functions, which can restrict the child development and affect social, personal and academic skills. The most well-known disorders are those related to Communication, Autism Spectrum, Attention Deficit/Hyperactivity Disorder, Specific Learning Disorder and Motor Disorders[4].

At the United Nations General Assembly, the Convention on the Rights of the Child recognized that children, when living in complex and difficult situations such as disability, need special support. In this sense, promoting differentiated service with trained professionals and in an interdisciplinary way brings more cooperation, protection and security in the development and care of these children[5].

The aspects of education and re-education in children with NDD go beyond the field of strictly biological interactions, as they also involve psychosocial strategies for better child development. Among such strategies, there is the teaching-learning process involving space for educational diversity and multifunctional resources that allow children to overcome difficulties in language, movement, attention, concentration and visual processing[6]. Likewise, it is plausible to assume that health care to meet the needs of these children and their families is complex at all levels of health care and also in the field of education and social assistance, from the perspective of comprehensive care. Given this reality, it is identified that the creation of a support network involves different professionals in the field of education and health, supporting directly or indirectly the teacher, the family, the school community and the child[7].

In this sense, there are gaps in knowledge about how to better train professionals who care for these children regarding motor, cognitive, sensory, behavioral and attitudinal development[8]. Training and qualifying professionals – educators, doctors, psychologists, nurses, social workers, among others – who deal with these children is still a challenge due to the peculiarities resulting from the multiple conditions that permeate the child development and support for families[4].

This overview aimed at describing the educational resources directed to health, education and social assistance professionals who take care of children from 0 to 12 years old with neurodevelopmental disorders that present some type of disability.

METHOD

This overview encompasses systematic reviews or narratives about the training processes of professionals who deal with children with neurodevelopmental disorders affected by some type of disability. The studies were identified in the PubMed, Embase, Cochrane Library, CRD, Web of Science, Campbell Collaboration, Health System Evidence, Epistemonikos and Joanna Briggs Institute databases in May 2018. Studies mentioned in the selected articles and studies indicated by experts were manually checked. The overview protocol of reviews was registered on the Prospero platform (CRD42018100715). The checklist of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) was used to write this article[9].

The strategy used in the search combined Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH) terms according to the PICO acronym: *"Health Personnel"[Mesh] OR "Educational Personnel"[Mesh] OR "Social Workers"[Mesh] AND "Child"[Mesh] OR "Infant"[Mesh] OR "Disabled Children"[Mesh] AND "Neurodevelopmental Disorders"[Mesh] AND "Education, Continuing"[Mesh] OR "Staff Development"[Mesh] OR "Education, Distance"[Mesh] OR "Education"[Mesh]*, in addition to the following free terms: *(Health Professional), (learning), (professional development), (self-directed learning), (self-regulated learning), (massive open online course), (online course), (continuing professional development), (informal learning), (interprofessional learning), (community of practice), (learning community), (learning network).* The strategies were adapted according to each database. There was no time or language restriction. Studies on education/training processes, distance education modalities, on-site or both, with professionals in the areas of health, education and social assistance, children from 0 to 12 years old with some type of neurodevelopmental disorder were included. Studies with incomplete texts, primary studies, reports, editorials, conference proceedings, newspaper comments and case reports were excluded, as well as those dealing with children with mental disorders and over the age of 12 years.

Two of the authors (AMA, NFM) read the title and abstracts independently using the Rayyan QCRI software, and later read the full text. Disagreements were discussed with two other reviewers (JMG and FTSE). Two authors (AMA, NFM) independently extracted the data using Microsoft Excel 2013 software.

The quality of the studies was assessed for systematic reviews by two authors (AMA, NFM) using Amstar 2 (Assessing the Methodological Quality of Systematic Reviews) through the website https://amstar.ca/mascripts/Calc_Checklist.php, originally composed of 16 questions that

assess the quality of the article's information, categorized as high, moderate, low and critically low quality. A third reviewer (JMG) decided upon the disagreements.

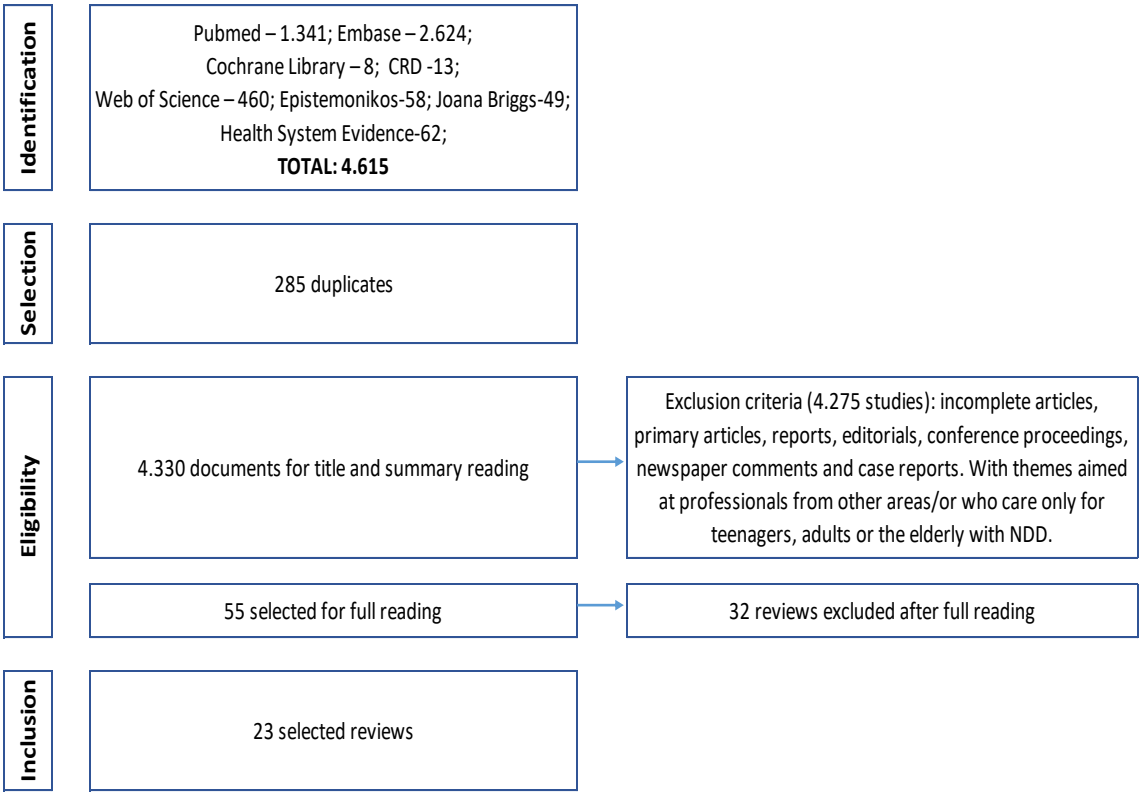
The variables used to extract and analyze the reviews were: place of study, year of publication, type of disability attended, type of disorder, type of professional, modality (on-site and/or distance education), type of educational process (continuing education and/or permanent), intervention/educational resources used and the main outcomes of the interventions. An overview of reviews was carried out due to the qualitative nature of the findings, making it impossible to produce meta-analyses.

Education related to work, throughout life, is the subject of many debates and approaches. In the scope of this work, we will adopt an instrumental definition in order to identify the main resources with the educational experiences reported in the included studies. Thus, continuing education is considered a process of technical-scientific updating that runs through the academy with a focus on professional practice[10]. Permanent education deals with training on the work process itself, preferably carried out in the workplace, evaluated and monitored by the team[11]. Both approaches consider these subjects protagonists in the construction of knowledge to assist society by developing a critical capacity in the care and attention to individuals[12].

RESULTS

55 articles were selected. After full reading, 32 were excluded for not meeting the eligibility criteria, with 23 reviews left (Figure 1).

Figure 1. Flowchart of selection of articles on training programs that deal with children with disabilities



Source: Own elaboration based on the PRISMA flowchart

The United States of America (13) had the largest number of publications, followed by Canada (3), United Kingdom (2), England (2), Australia (1), Brazil (1), Israel (1) and lastly one multicenter study with all European countries (1) (Table 1).

Regarding the types of reviews, 19 were narrative and 4 were systematic reviews (Chart 1), which were assessed by Amstar 2 as moderate quality.

The types of NDD were based on the DSM-5[1] classification and a predominance was found in the selected studies, in decreasing order, for intellectual disability (9), autistic spectrum disorder (7) and communication disorder (6). The types of disabilities identified in the studies were approximately 96% for intellectual disabilities, 43% for physical disabilities and 13% for sensory disabilities (Chart 1).

Most studies addressed health professionals (21), followed by education (16) and social assistance (1). Among the types of modalities, about 83% (19/23) of the articles addressed on-site training processes, 17% (4/23) used Distance Education (DE) and 4% (1/23) used both types (on-site and distance education) (Chart 1).

Chart 1. Description of studies included in the review (n=23)

Author/Year	Country	Type of Study	Type of NDD	Type of Disability	Type of Professional	Type of Modality	Educational Process
Bagnato SJ & Neisworth JT/1999[13]	USA	Narrative Review	Communication Disorders and Motor Disorders	Physical and intellectual disabilities	Health and Education	On-site	Continuing Education and Permanent Education
Beatson JE et al./2006[14]	USA	Narrative Review	Autistic Spectrum Disorder	Physical and intellectual disabilities	Health and Education	On-site	Continuing Education
Bellando J, Lopez M/2009[15]	USA	Narrative Review	Autistic Spectrum Disorder	Physical and intellectual disabilities	Health and Education	On-site	Permanent Education
Bellando J et al./2015[16]	USA	Narrative Review	Autistic Spectrum Disorder	Physical and intellectual disabilities	Health and Education	Distance Education	Permanent Education
Garg P et al./2015[17]	Australia	Systematic Review	Autistic Spectrum Disorder	Intellectual Disability	Health and Education	On-site	Continuing Education
Harrison S, Laforest ME/2011[18]	Canada	Narrative Review	Attention Deficit Hyperactivity Disorder and Autistic Spectrum Disorders	Physical and intellectual disabilities	Health	On-site	Continuing Education

James J et al./1971[19]	USA	Narrative Review	Epilepsy	Intellectual Disability	Health	On-site	Continuing Education
Jones G/2006[20]	United Kingdom	Narrative Review	Autistic Spectrum Disorder	Intellectual Disability	Health and Education	On-site	Continuing Education and Permanent Education
Little L/1999[21]	England	Narrative Review	Attention Deficit Hyperactivity Disorder and Communication Disorder	Intellectual Disability	Health and Education	On-site	Permanent Education
Malin NA, Race DG/2010[22]	England	Narrative Review	Communication Disorders/Intellectual Disabilities/Motor Disorders	Physical and intellectual disabilities	Health and Education	On-site	Permanent Education
Merrick J et al./2004[23]	Israel	Narrative Review	Intellectual Disability	Intellectual Disability	Health and Education	On-site	Permanent Education
Mu K e Royeen C/2004[24]	USA	Narrative Review	Autistic Spectrum Disorder	Intellectual Disability and visual and hearing impairment	Health	On-site	Continuing Education
Njoroge WFM et al./2017[25]	USA	Narrative Review	Intellectual Disability	Intellectual Disability	Health and Education	On-site	Continuing Education

Pennington L/2004[26]	United Kingdom	Systematic Review	Cerebral Palsy	Physical, hearing, visual and intellectual disabilities	Education	On-site	Permanent Education
Pignatiello A et al./2011[27]	Canada	Narrative Review	Intellectual Disability	Intellectual Disability	Health	Distance Education	Continuing Education
Pinto-Martin JÁ/ 2005[28]	USA	Narrative Review	Autistic Spectrum Disorder and Pervasive Developmental Disorders	Physical and intellectual disabilities	Health	On-site	Permanent Education
Rainforth B/ 2002[29]	USA	Narrative Review	Communication Disorders/Intellectual Disabilities/Motor Disorders	Physical and intellectual disabilities	Health	On-site	Continuing Education
Robinson NM et al./2000[30]	USA	Narrative Review	Intellectual Disability	Intellectual Disability	Health and Education	On-site	Continuing Education
Salvador-Carulla L et al./2015[31]	All from Europe	Systematic Review	Intellectual Disability	Intellectual Disability	Health, Education and Social Assistance	On-site	Continuing Education

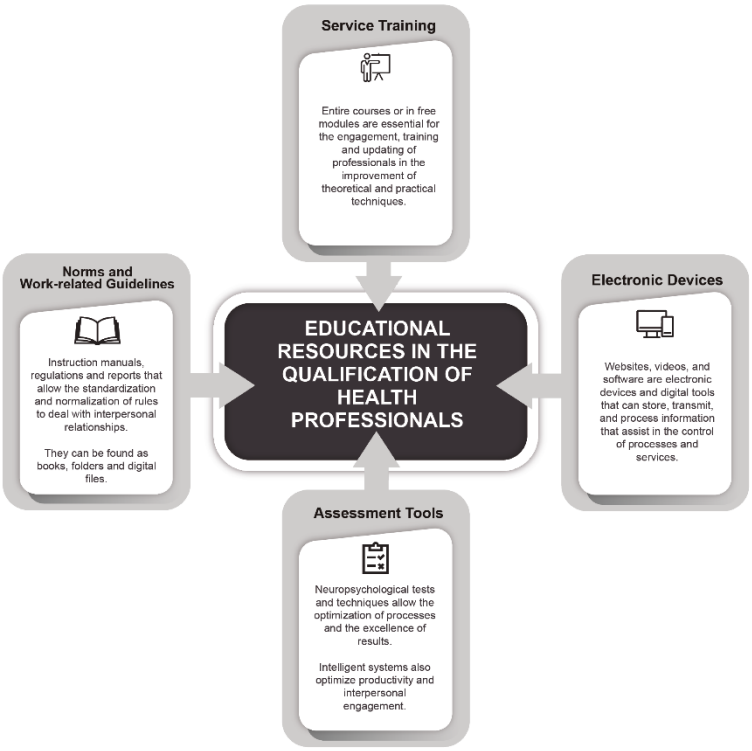
Santos MTN et al./2014[32]	Brazil	Systematic Review	Attention Deficit Hyperactivity Disorder and Communication Disorder	Intellectual Disability	Health	Distance Education	Continuing Education
Swiezy N et al./ 2008[33]	USA	Narrative Review	Autistic Spectrum Disorder	Visual impairment, Hearing impairment	Health and Education	On-site	Continuing Education and Permanent Education
Telzrow CF/1991[34]	USA	Narrative Review	Specific Learning Disorders/Intellectual Disabilities/Motor Disorders	Physical and intellectual disabilities	Health and Education	On-site	Continuing Education and Permanent Education
Ylvisaker M et al./ 2001[35]	USA and Canada	Narrative Review	Specific Learning Disorders/Communication Disorders/Intellectual Disability/Attention Deficit Hyperactivity Disorders	Intellectual Disability	Education	Distance and On-site Education	Continuing Education

Source: Own elaboration

Most studies (17/23) used continuing education as a training process and 11 addressed permanent education (11/23), 4 of which adopted both educational processes for the world of work (Chart 1).

The educational resources identified in the training processes, represented in this study were: in-service training with complete or modular courses[13,14,15,17,18,19,20,21,22,23,26,31,33,34,35]; electronic devices such as websites, softwares and videos[16,20,28,32]; norms and working guidelines such as regulations, reports[22,29]; assessment tools using neuropsychological tests and techniques[21,28] (Figure 2).

Figure 2: Educational resources identified in the training processes



Source: Own elaboration

The interventions covered different strategies such as the participation of professionals in the learning process to deal with children with NDD, the most mentioned being the training programs related to academic training and professional practice[13,14,15,17,18,20,22,23,24,25,26,31,33,34,35,] measurement tools to support professionals[16,19,21,28,29,30] and use of information and communication technologies[20,27,28,32], allowing the approach of professionals and children with NDD (Chart 2).

The analyzed outcomes evidenced the construction/reconstruction of teaching-learning in the practice of health, education and social assistance professionals about a more inclusive proposal, taking into account: the need for changes in academic curricula[14,15,16,24,30]; multidisciplinarity and intersectoriality in services[13,15,17,18,23,24,25,26,27,29,33,34]; identification of the potential of children

with NDD[15,18,21,26,31,33,34]; organization of resources to meet the specific needs of children[15,16,17,18,22,24,27,29,31]; educational materials that bring agility to the implementation of professional practice[14,18,19,20,21,32]; NDD screening in the routine of professionals[15,17,20,21,27,28,33]; the importance of technology in rehabilitation[17,18,21,23,24,26,29,30,32]; and injury prevention in children with NDD[35] (Chart 2).

Chart 2. Description of types of resources, educational interventions and outcomes

Author/ Year	*Type of Educational Resource	Intervention	Description of the Strategy Adopted	Outcome Reported by the Authors
Bagnato SJ & Neisworth JT/1999[13]	IT	Development standards for educational practices	Adoption of the types of standards (usefulness, acceptability, authenticity, equity, sensitivity, convergence, congruence and collaboration) appropriate for the development of best practices and greater adherence to the mandates of the Individuals with Disabilities Education Act.	Collaborative work among professionals in a multidisciplinary way with standards and practices suitable for the development of people with disabilities.
Beatson JE et al./2006[14]	IT	Training Programs in Education and Leadership with Disability in Neurological Development	Adoption of the Vermont Interdisciplinary Leadership Education for Health Professional Program (VT-ILEHP Program) for Healthcare Professionals that offers advanced training for graduate students. Adoption of the Vermont Rural Autism Project (VT-RAP) which prepares graduate students of Speech Therapy and community professionals to better serve young children with or suspected of having Autism Spectrum Disorder and their families.	Family-centered care and implementation of these practices in their academic training curricula.
Bellando J, Lopez M/2009[15]	IT	Specialization of nurses at school	School nurses provide early identification and guidance for health problems in schools, especially for children with Autistic Spectrum Disorder. Develop Individual Health Plans (IHP) for each student with medical needs and can help teachers create diaries to record pertinent behavioral observations.	Insertion of a school nurse as an on-site consultant who can support teachers to observe medical and behavioral needs.
Bellando J et al./2015[16]	ED	Package/kit of tools	Package of textual tools with questions that includes a link to videos of professionals who discuss challenging behaviors from a legal and clinical point of view. Provides an overview of the internal strategies they can use to manage difficult behaviors.	Individualized Educational Plan that addresses the Education for Persons with Disabilities Act (IDEA) and a student's rights to an appropriate free education.

Garg P et al./ 2015[17]	IT	Educational activities for general practitioners with patients with Autistic Spectrum Disorder	Educational programs for general practitioners and other primary care providers that assist in the early identification of patients with Autistic Spectrum Disorder.	Better knowledge of General Practitioners (GPs) in communication for diagnosis, surveillance and support of children.
Harrison S, Laforest ME/2011[18]	IT	Undergraduate Training Programs	1. Camp Rotary: a variety of health care needs is addressed at the camp, such as medication administration, tube feeding, tracheotomy care, catheterization, glucose and urine tests and even physical therapy; 2. Sensory Motor Instructional Leadership Experience (SMILE): psychometric stimulation program for children with special needs. Students are responsible for assessing the child's skills and creating specific goals and activities for each session that stimulate the child's development at different levels.	Students learn the importance of health promotion in a dynamic and interdisciplinary environment, where the focus is on what children can do, rather than diagnosing and treating what they cannot do.
James J et al./1971[19]	IT	Materials on the experiences of patients with epilepsy	It presents changes in the educational process for graduate students in the fields of Medicine and Nursing. As seminar products, multidisciplinary educational materials were developed on the experiences of patients with epilepsy.	The educational materials made it possible to reduce the time interval between the discovery of new knowledge and the application of that knowledge to the patient.
Jones G/2006[20]	IT and ED	Service Orientation Contents (Guide)	Part 1: guidance on Autistic Spectrum Disorder; Part 2: Set of tips and questions, with good practices; Part 3: Website with case studies.	Adherence to the consultation guide with suggestions and comments from readers.
Little L/1999[21]	AT	Neuropsychological study evaluation tests	1. *Wechsler* Intelligence Test in word reading and mathematical reasoning; 2. Learning tests for children are used to examine the ability to organize words in categorical relationships; 3. *Rey-Osterietch* Complex Figure Test is used to measure the child's ability to organize complex visual spatial material; 4. Logical exams show neurological signs on the left side and asymmetric posture of the left arm, differences in left-right tactile sensitivity.	Nurses play a vital role in identifying, educating and providing resources for children. The instruction must be verbal, sequential and repeated many times, because these children do not apply learning from one situation to

				another.
Malin NA, Race DG/2010[22]	GR	Policy reports for management and services guidance	1. Jay Committee Report: sought to investigate a “new care profession”; 2. Warnock Report was used adopted in the Education Act of 1981, the process of identifying children with “special educational needs”; 3. Griffiths Report (DoH, 1988) and a White Paper (DoH, 1989), addressed the impact of increased social security spending and the growing private sector that came with the health professionals and Community Care Act of 1990.	The “transformational reform agenda” appears to have incorporated health and social care provision within a mixed economy model with increasing use of the private and voluntary sectors.
Merrick J et al./2004[23]	IT	Training on the Multisensory Stimulation Room (Snoezelen)	The environment in the Snoezelen room is created according to the needs and wishes of the patients, but the health or education professional is present to interact with the patient so that the time spent in the room is more structured and active..	Ministry of Social Affairs; the Ministry of Education introduced Snoezelen as a treatment concept for students enrolled in special education programs and enabled multidisciplinary interaction between the service team and health and education professionals.
Mu K e Royeen C/ 2004[24]	IT	Teaching content to apply in practice	Outline the main components of best practices in the field of serious disabilities, paying special attention to issues of curriculum, educational setting and instructional strategy. Best practices in school-based occupational therapy. Participation activities proposed in the International Classification of Functioning, Disability and Health.	Integrated therapy and a transdisciplinary approach can be a desirable way to provide occupational therapy services in a natural environment and daily routines to increase student participation and help them succeed in inclusive environments.

Njoroge WFM et al./2017[25]	IT	Training for undergraduate/graduate students in the areas of Health and Social Assistance	Interdisciplinary training aiming to evaluate different competences proposing a change of curriculum, in the areas of child psychiatry, child psychology and social assistance, in an interdisciplinary way.	The contributions of different health professionals to improve the primary care team included: the development of collaborative relationships to provide healthy interprofessional teams, mutual respect and shared values.
Pennington L/2004[26]	IT	Communication training for conversation	Training to facilitate communication between parents, teachers and educational assistants in the development of the child with Cerebral Palsy. The training aims at improving both the child's speech and language development, as well as helping those involved to identify the child's communication signals.	The training enabled an improvement in the communication of mothers with their children and caused a greater interaction between the children and the others involved.
Pignatiello A et al./2011[27]	ED	Telelink via Internet	The Telelink website is used via the Internet. It is a model targeted at attending patients and professionals in consultations and providing continuing education, often to multiple websites simultaneously.	It was found that it has the multiplier effect, transferring knowledge from one to many. They helped to reduce the sense of professional isolation.
Pinto-Martin JÁ/ 2005[28]	ED and AT	Checklist (CHAT)	Technology available for screening – an instrument for children with Autism Spectrum Disorder for nurses.	Improved screening for routine development and specific screening for autism.
Rainforth B/2002[29]	N	Alternative model of service provision	Alternative model of providing physical therapy services in educational contexts, with the aim of improving availability, impact and satisfaction with occupational therapy and physical therapy services in educational settings.	Development of therapists and their full participation in educational teams.
Robinson NM et al./2000[30]	AT and N	Tests and instructional norms for the service	Reading tests are performed on children with mental retardation and giftedness to assess intellectual ability. Curricular proposals were mentioned to bring more autonomy by encouraging children to monitor and manage their own learning.	Issues in behavioral management, reinforcement, task analysis and individualized control were worked out in minute detail with students.

Salvador-Carulla L et al./2015[31]	IT	Training and educational actions on intellectual disability	Training and educational actions related to Intellectual Disability or other related health problems, with a particular focus on mental health.	Identification and management of Intellectual Disabilities.
Santos MTN et al./2014[32]	ED	Telehealth	Telehealth initiatives in children's tele-rehabilitation practices, the method by which communication technologies are used to provide distance rehabilitation. The development of rehabilitation interfaces with tele-rehabilitation can be an important strategy to increase the effectiveness and efficiency of rehabilitation actions.	Impact on coverage compared to conventional clinical rehabilitation practices through telehealth.
Swiezy N et al./ 2008[33]	IT	In-service training program	Helping Answer Needs by Developing Specialists (HANDS), a professional training program that uses coaching and feedback for collaboration between professionals.	Individuals improve their skills, knowledge and real application within the work environment.
Telzrow CF/1991[34]	IT	In-service Multifactorial Assessment	Educational procedures that ensure that children suspected of being disabled are identified (two activities are basic: identification of children and multifactorial assessment – MFE).	Cooperative learning between professionals from different clinical and educational disciplines.
Ylvisaker M et al./2001[35]	IT	Political agenda for Pediatric Cranioencephalic Trauma	Seven topics involving children with Traumatic Brain Injury are discussed: (1) incidence of TBI and prevalence of persistent educational disability; (2) diversity and central trends within the population; (3) assessment; (4) intervention and support in school settings; (5) training and support for educators; (6) intervention and support for families; and (7) systems change and flexibility.	Public and private agencies should continue to support efforts to prevent injuries and examine the effectiveness of prevention campaigns.

Source: Own elaboration. *IT = In-Service Training, ED = Electronic devices, AT = Assessment tools, GR = Guiding Reports, N = Norms

DISCUSSION

The results have shown that education, health and social assistance professionals are the strategic audiences for continuing and permanent education initiatives to deal with the difficulties faced by children with NDD who have some type of disability. Different educational resources were identified, such as training in services, whether in the form of occasional or modular courses, devices for distance education, standards and work guides and assessment tools. The findings can be useful for understanding what educational resource options are and which can be used according to the singularities and potentialities of each service.

Most studies bring health professionals as the central audience for training initiatives in the search for the most assertive treatment when diagnosing children with NDD. Limitation is discussed when the focus of training is on the health sector. One of the limitations, according to Downs[36], refers to the fact that the attitudes of multi-professionals in the health sector are very fragmented in services, limiting the practice of collective preventive and curative care to essentially vertical programs. The other limitation is related to the entrance door of these children, which can happen by different professionals, not only in the health area, but also in daycare centers and schools that reach education and social assistance professionals. It is also worth mentioning that health policies aimed at the care of children with NDD need to address comprehensiveness as a fundamental principle to achieve results across the fields of health, education and social assistance[37]. Finally, it is understood that support services and the structuring of intersectoral programs would facilitate interdisciplinary participation for better monitoring and prognosis[38].

The different on-site and distance modalities were present in the studies found. Studies have shown the use of electronic devices such as websites, software for distance education, corroborating with innovative advances with the advent of Information and Communication Technologies (ICT) in a teaching-learning interaction environment for the construction of knowledge[39].

It is recognized that in-service training is not the only way to train professionals; however, it was still the most used. The trend in the use of assistive technologies provides new opportunities to access tools and electronic devices that allow the training of professionals[40]. According to Traisman[41] the technological evolution will provide tools that will simplify routine tasks by grouping multiple functionalities, bringing more facilities in the proposed performance of children with NDD.

The educational resources identified in this study reveal varied methodological strategies, reflecting the context and purpose of the training proposals. They can offer more agile responses, given the transformations that have occurred in society with the management and treatment of children with NDD[42]. When compared to the process of transforming more traditional or

conventional professional training programs, it is noted that many guidance documents validated by professional councils or regulatory bodies are out of date, arbitrarily guiding the practical organization in services[43].

It was observed that the training processes that act in the management of intersectoral services and in the organization of interdisciplinary routines were scarce, being extremely important to condition participation strategies with more than one professional in the monitoring of children with disabilities in order to promote psychomotor and social development. The findings did not prioritize work environments and, therefore, it is believed that the training of professionals who care for children with NDD is still little practiced by the management of health, education and social assistance services. Disruptions in the planning of already consolidated arrangements and compositions are important because they allow reorientation in the daily routine of services, building new therapeutic strategies for professionals with the active participation of the family[44].

Despite the observations mentioned above, some outcomes related to improving the training of professionals were found, such as the development of attitudes and skills of how to work collaboratively, practice empathy and qualified listening in order to improve communication between specialist and family caregiver as well as among specialists from different sectors[13,14,15]. For primary care professionals, as well as day care centers and schools, the focus is also on sharing knowledge and information on child development and on the functioning of care networks, aiming at early prevention, reference and counter reference and monitoring in the construction of care itineraries[16,17].

The education of workers who deal with children with NDD is mainly conditioned by the academy in its formative role of updating, preparing and teaching, contributing continuously to the teaching process. It is worth mentioning that the process of training professionals evidenced in the findings brings the relevance of curriculum reformulation with changes in political and institutional guidelines regarding the contents and instruments applied in permanent/continuing education[45]. However, it is important to seek the insertion of an interdisciplinary care network for children with NDD, with an intersectoral scope in the training and development process, to enhance the relationship between continuing education and permanent education at its different levels of complexity[46].

LIMITATIONS

The study has limitations regarding the selected narrative reviews, because they were described without considering the quality of the studies due to the lack of a validated method for this purpose. Likewise, it was not possible to perform meta-analyses due to the qualitative nature of the results found. However, it has brought important contributions in the identification of the teaching-learning processes with the professionals who assist children with NDD that allows them to improve in virtual environments, to elaborate contents with an emphasis on

multidisciplinary practice, to seek the transition from a pragmatic to a creative approach, to think about praxis of the social needs and challenges of each NDD, establish relationships to exchange information and how to better express ideas and opinions about doubts and uncertainties experienced in the work environment.

Despite the fact that we sought to detail educational processes, such as pedagogical approaches, the findings showed primarily educational resources used. However, it was possible to describe some trends for continuing or permanent education, which can support the implementation and systematization of training methodologies, distance learning and tools that promote interactions between professionals from different areas who work directly or indirectly with children with NDD, helping in the treatment of these disorders, as well as in child development.

PRACTICAL AND FUTURE RESEARCH IMPLICATIONS

The practical implications reveal the development of educational resources that provide the best to do and live with children with NDD; the education, health and social care professionals should not be limited to just passing on knowledge, but also caring for children, enabling autonomy and completeness in order to carry out their own actions and decisions. Further research is needed to assess the real effects of educational processes on comprehensive care. The detailing of educational resources – in the different scenarios in which they were researched –, of the care strategies and the outcomes found is essential to structure the evidence base necessary for it to have reproducibility and implementation in multivariate contexts.

Future research must investigate the outcomes of each educational resource isolated and/or combined with different areas and professionals. Researches comparing interventions with similar educational resources in different scenarios will also allow establishing the real value of the applicability of the educational resource.

It is noteworthy that the needs of children with NDD take into account the different socio-cultural realities, as well as economic assessments and other aspects of world policies for inclusion in disability. Qualitative studies involving health, education and social assistance professionals provide directive findings about barriers and facilitators to achieve the best choices of educational resources for training professionals who deal with children with some type of disability and their families.

FINAL CONSIDERATIONS

The eligible reviews in this overview pointed out potential benefits among the different educational resources described, allowing us to understand the importance of including children

from 0 to 12 years old with neurodevelopmental disorders who have some type of disability, identifying factors related to the practical and theoretical aspects of electronic devices, evaluation tools, guidance reports, standards with emphasis on the qualification and training processes of professionals in the areas of health, education and social assistance. Despite the presentation of different educational resources, few describe the potential to promote interdisciplinary and intersectoral practices in order to achieve better results than isolated interventions.

When studying children with NDD, one becomes aware that it is necessary to understand the specificities of each disability so that physical, intellectual and sensory accessibility are respected and provided. There was a scarcity of initiatives focusing on social assistance, support for the family and the school community.

FINANCING

Oswaldo Cruz Foundation, Newton Fund and British Council with the project “Helping health professionals to provide the necessary care to the families of children with congenital syndrome related to the Zika virus in Brazil”.

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Article submitted in April 2020
Article approved in June 2020
Article published in April 2021