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AUTISM SPECTRUM DISORDER

Literature Review

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THESIS
Abstract

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Abstract

Autism Spectrum Disorder (ASD) is characterized by challenges with social contact and communication and limited, repetitive patterns of activity. Primary behavioral symptoms include difficulties with reciprocal social engagement, impaired communication, and limited and repetitive actions and interests. Autism Spectrum Disorder (ASD) cannot be cured but could be managed by pharmacological and non-pharmacological treatments. Leo Kanner published the first systematic description in 1943 as "early infantile autism". The first person to formally diagnosed with ASD is Donald Triplet in 1943.

The thesis delves into the recent advancements and key aspects of Autism Spectrum Disorder (ASD) and the ways of developing care for individuals with Autism Spectrum Disorder (ASD). The aim was to clarify the main points of Autism Spectrum Disorder (ASD) to social and healthcare workers in order to provide compassionate care for individuals with Autism Spectrum Disorder (ASD). Literature review was performed as the method of the study. Twelve (N=12) articles were included from PubMed, Cinahl Complete and Science Direct. The data was analyzed by using inductive content analysis. The partner organization of this thesis work is Savonia University of Applied Sciences.

The results of the study showed that Autism Spectrum Disorder (ASD), which affects a wide range of people, is typified by confined, repetitive activities and deficiencies in social interaction. The basis for diagnosis is behavioral observation, which is frequently assisted by trained specialists and diagnostic instruments like ADOS and STAT. Medication and behavioral therapies are available for treatment, and although autism spectrum disorders are not universally common, rising awareness and evolving diagnostic standards have led to an increase in their incidence. ASD is largely influenced by environmental and genetic factors, with complicated genetic components and hereditary risk. Early detection and intervention are essential, requiring diagnostic instruments and resolving issues, such as some people's delayed diagnosis. The effects of ASD on families highlight the value of coping strategies and support systems, with socioeconomic considerations affecting early detection. The provision of individualized treatment and therapy for individuals with ASD is mostly dependent on healthcare professionals, who emphasize the need of having the necessary experience and adequate communication in healthcare settings.

The results of this thesis could benefit the social and healthcare workers, enabling them to provide compassionate care for individuals with Autism Spectrum Disorder (ASD) during practice. It is necessary to conduct additional research on Autism Spectrum Disorder (ASD), with a particular focus on early detection, innovative therapies, family support, and increasing the effectiveness of healthcare professionals.

Keywords
Autism Spectrum Disorder, Recent Advancements, Health Care Workers

CONTENTS

1 INTRODUCTION

Autism Spectrum Disorder (ASD) is characterized by challenges with social contact and communication and limited, repetitive patterns of activity (American Psychiatric Association, n.d.). Primary behavioral symptoms include difficulties with reciprocal social engagement, impaired communication, and limited and repetitive actions and interests (Geschwind 2011). Over the last half-century, Autism Spectrum Disorder (ASD) has evolved from a rare, poorly defined disorder with childhood onset to a well-known, well supported, and extensively researched lifetime condition that is acknowledged to be both highly heterogeneous and rather common. There have been numerous attempts by public health systems to identify young children with ASD in broad populations. (Lord Catherine, Elsabbagh Mayada, Baird Gillian, & Veenstra-Vanderweele Jeremy 2018.) Autism has a genetic and physiological basis rather than being brought on by improper parenting, a poor upbringing, or other comparable circumstances (Autismiliitto 2022). There is a strong inclination that the syndrome's various symptoms are intricately linked and result from a single source on the genetic, cognitive, and neurological levels. "Fractionable Autism Triad" is the name of a theory put forth by Happé & Ronald (2008). There are five pervasive developmental disorders: autistic disorder, Asperger's disorder, Rett disorder, childhood disintegrative disorder, and pervasive developmental disorder-not otherwise specified (PDD-NOS) (Faras, Ateeqi, & Tidmarsh 2010).

In the past forty years, the prevalence of Autism Spectrum Disorder (ASD) has increased 20–30 times worldwide (Jarmołowska et al.2019). Approximately 1-1.2% of the population gets a diagnosis of Autism Spectrum Disorder (ASD), which in Finland would mean 55000-65000 people (Autismiliitto 2022). Autism Spectrum Disorder (ASD) prevalence, which continues to increase, has reached 1 in 132 people (Baxter et al. 2014). Variables like geographic location and economic level directly affect the prevalence of Autism Spectrum Disorder (ASD). The prevalence of the disorder is higher in men than in women. Additionally, the prevalence in underdeveloped countries is higher than in developed countries, and it also emphasizes the role of the economy and quality of life in the prevalence of this disorder. (Jingyi Wang, Bin Ma, Jingjing Wang, Zeyi Zhang, & Ou Chen 2022.)

There is currently no specific drug treatment for autism and its symptoms. Nonetheless, based on research, the best course of treatment involves a combination of specialized and encouraging educational programming, communication training such as speech therapy, social skills assistance, and behavioral intervention. Other therapies, such as occupational therapy and physical therapy, which address any associated challenges with motor coordination and sensory deficiencies, may facilitate improvement. (National Research Council, 2001.)

Based on Díaz-Agea et al. (2022) observations made during simulation sessions, the primary mistakes made by fourth-year nursing students involving care for persons with Autism Spectrum Disorder (ASD) are clinical weaknesses, communication, lack of knowledge, emotions, and parent behavior. It emphasizes the importance of expanding nursing students' clinical simulation-based awareness of Autism Spectrum Disorder (ASD).

The purpose of this study is to conduct recent information on Autism Spectrum Disorder (ASD) to enhance the understanding of social and healthcare workers. The aim is to clarify the main points of Autism Spectrum Disorder (ASD) to social and healthcare workers in order to provide compassionate care for individuals with Autism. The thesis has been implemented by using the literature review method, and the data was analyzed by using the content analysis. Twelve articles were selected from Cinahl Ultimate, PubMed, and ScienceDirect. The partner in this thesis work is Savonia University of Applied Sciences.

2 AUTISM SPECTRUM DISORDER (ASD)

2.1 Symptoms and Characteristics

Autism spectrum disorder is a neurobiological brain illness that affects a child's ability to connect and communicate with others as well as how he sees and understands the outside environment (Moilanen Irma, Mattila Marja-Leena, Loukusa Soile, & Kielinen Marko 2012). It is a continuous condition. It aggressively emphasizes individualism and continues throughout the affected people's lives. Therefore, a child on the autism spectrum may have encounters that are very different from those of another youngster who also has the condition. (Autismiliitto 2022.) A variety of developmental diseases that first appear in early childhood fall under the general name "autism spectrum disorder." The word includes a variety of symptoms, individuality, and severity variations. The disorder shows up as abnormal interaction and communication as well as a restricted, repetitive, cold, and rigid way of behavior. (Moilanen et al. 2012.)

The primary sign seen in children on the autism spectrum is defective or lacking joint social communication abilities (Autismiliitto 2022). In contrast to children on the spectrum, who rarely do these things, a typical growing youngster continually seeks out parental attention, makes eye contact, and makes a lot of motions and facial expressions. Another characteristic of autism is the inability to show other people items that they find fascinating by pointing at or holding them up. (Moilanen et al. 2012.) One of the main characteristics that children on the spectrum display is a surprising difficulty in communication and interaction. The autism spectrum condition is characterized by difficulties with pretend play and abnormal or nonexistent facial expressions and gestures. Autism spectrum disorders include repetitive behaviors like flapping hands, flicking fingers in front of the face, walking on tiptoes, using objects in odd ways, exhibiting unrestrained fascination with things or topics, and being unwilling to deviate from routines that are comfortable to them. (Turkington & Anan 2007.)

Children with autism hardly ever ask to be picked up by parents and, on occasion, do not like being touched, which results in resistance to bodily contact and may make it challenging for the child to feel secure in another person's arms (Turkington & Annan 2007). This is not an exceptional situation, many autistic children actively seek out physical touch, particularly when it occurs on their terms (Autism Speaks 2016). Rarely do autistic children seek out novel experiences or display unusual abilities. They frequently treat people, animals, and objects the same and hardly ever seek assistance when they need it (Turkington & Anan 2007).

Another sign of an autism spectrum condition is sensitivity to sensory stimulation (Miller Lucy Jane, Schoen Sarah, Mulligan Shelley, & Sullivan Jillian 2017). Children on the spectrum interpret sensory stimuli in profoundly individual ways such as, a child may be sensory seeking, sensory avoiding, or a combination of the two. The effects of taste, smell, touch, sound, temperature, light, and color stimulation can result in sensory overload, which is similar to physical pain. A child who is experiencing sensory overload could start stimming. The child uses this as a coping strategy to calm

down when they are suffering from sensory overload. Stimming includes actions like rocking, jumping, and pacing. (Kangas Seija, Uusiautti Satu, & Määttä Kaarina 2011.)

The World Health Organization (2023) identifies environmental and genetic variables as the two main risk factors for developing autism. This conclusion is supported by research-informed evidence. Autism is not brought on by specific immunizations, illnesses, or poor parenting. However, predisposing factors have been discovered, including the age of the parents at conception, maternal obesity, low birth weight, and exposure to specific contaminants. A child may develop autistic symptoms if these risk factors are combined with genetic and environmental variables. (Barthelemy Catherine, Fuentes Joaquín, Howlin Patricia, & Gaag Rutger van der 2019.)

A child with autism may at first be attracted by a concept or object but, after some time, lose interest in it and throw it away. It is also possible that the thing continues to interest the child throughout their lives and shape who they are as a person. In circumstances where the object cannot be reached, a child can grab an adult's arm and direct it to something off the shelf that he or she desires. (Barthelemy et al. 2019.) Many autistic children often develop their skills over time and go on to lead independent lives, but some do not and must rely on others all of their lives (Grästen 2022).

2.2 Diagnosis

Since Kanner's initial definition of the disorder, both social/communicative and nonsocial characteristics have been used to describe autism. In fact, according to Kanner, the essential characteristics of autism can be simplified down to two aspects: "autistic aloneness" and "insistence on sameness". (Eisenberg & Kanner 1958.)

It is believed that autism is one of the most heritable psychiatric or developmental disorders and searching for autism vulnerability genes has been unfortunately challenging. To make a diagnosis of autism utilizing the current diagnostic criteria DSM-IV, deficits must be found in each of the three areas. With the idea that a single cause underlies each of the three areas of difficulty in autism even if this cause may vary among individuals on the autism spectrum, this triad definition resulted in a search for the cause of autism. (Happé & Ronald, 2008.) Indeed, any mental disorders and anomalies of neurological development should be diagnosed in accordance with the DSM-5 criteria, the most recent revision of which was released by the American Psychiatric Association in March 2022 under the name DSM-5 TR (Hyman Susan, Levy Susan & Myers Scott 2020).

It is pertinent to note that the diagnosis of pervasive developmental disorders (PDDs), which include the diagnoses of autism disorder, Asperger disorder, pervasive developmental disorder, childhood disintegrative disorder, and Rett disorder, was expanded with the publication of the DSMIV in 1994 (Hyman et al. 2020). To put it another way, the DSM-5 updated the DSM-IV-TR, which formerly classified five distinct diseases under the general category of "Pervasive Developmental Disorders," into a single spectrum known as Autism Spectrum Disorder (ASD). The symptoms are now more broadly defined under the new definition and apply to the entire spectrum, but

the severity of the disorder might still vary from person to person. (Faroy Michal, Meiri Gal, & Arbelle Shoshana 2016.)

2.3 Treatments for Autism Spectrum Disorder (ASD)

Autism and its symptoms are not currently being specifically treated with medication, but according to research, the most effective course of treatment combines specialized and motivating educational programming, communication training like speech therapy, social skills support, and behavioral intervention. Improvement might be facilitated by other therapies, such as occupational therapy and physical therapy, which address any underlying difficulties with motor coordination and sensory impairments. (National Research Council, 2001.)

Pharmacological treatments for Autism Spectrum Disorder (ASD). The main therapies for autism spectrum disorders include behavioral interventions. Nonetheless, other studies indicate that several medications have been useful in treating symptoms associated with autism. Randomized controlled trials (RCTs) have been utilized to investigate several medications with various modes of action. (Tromans & Adams 2018.) There are few drugs that are beneficial for autism-related symptoms (Fuentes Joaquin, Hervás Amaia, Howlin Patricia, & ESCAP ASD Working Party 2021). (Table 1.)

Primary symptoms of neurodevelopmental disorders have not been successfully treated in previous late-stage clinical trials This study provided a comprehensive review and meta-analysis of several dietary supplements and medication therapies for Autism Spectrum Disorder (ASD) (Spyridon et al. 2022). The results of this study demonstrate that several pharmacological therapies, particularly in children, such as risperidone and aripiprazole, have moderate efficacy in reducing the primary symptoms of Autism Spectrum Disorder (ASD). Of course, these medications occasionally have side effects. They found that melatonin has been successful in treating sleep issues, while omega fatty acids have been shown to reduce hyperactivity and stereotyped behaviors. The requirement for further quality research studies in this area is also emphasized in this article. (Fuentes et al. 2021.)

TABLE 1. Drugs that are beneficial for autism-related symptoms. (Fuentes et al. 2021)

Drugs for **irritability**	Drugs for **symptoms of attention-deficit hyperactivity disorder (ADHD)**	Drugs for **sleep issues**
• Aripiprazole • Risperidone • Haloperidol	• Methylphenidate • Atomoxetine • Clonidine • Guanfacine	• Melatonin

Non-pharmacological treatments for Autism Spectrum Disorder (ASD). A variety of supportive therapies and pharmacological therapies to alleviate autism related symptoms are part of the treatment and rehabilitation of autism. It is highlighted that the use of complementary and alternative medicine (CAM) in autism spectrum disorder has been extensively discussed and evaluated. "Integrative medicine" is a term that refers to the combination of conventional practices and complementary methods with some supporting evidence. (Levy & Hyman 2008.)

The use of CAM is increasing among both adults and children. In the US, CAM therapies are thought to be used with somewhere between 2% and 50% of children. Some of the CAM methods are mind-body techniques, Vitamin B6 supplements, melatonin. (Davis & Darden 2013.)

3 DEVELOPING THE CARE FOR INDIVIDUALS WITH AUTISM SPECTRUM DISORDER (ASD)

Early identification and early intervention programs. Autism spectrum disorder (ASD) is currently one of the most widespread and complex disorders influencing neurodevelopment (Sharma et al. 2018) Lord et al. 2018). Studies have reported consistent findings that support the concept of heterogeneity among individuals with autism. Heterogeneity in Autism Spectrum Disorder (ASD) refers to the wide variation in the presentation and characteristics of individuals diagnosed with Autism Spectrum Disorder (ASD). (Mandell David, Novak Maytali, & Zubritsky Cynthia 2005.)

The fundamental clinical Autism Spectrum Disorder (ASD) symptoms, as well as the rates and degrees of cognitive and linguistic development, adaptive functioning, and comorbidity with other diseases, are all heterogeneous in terms of neurobiology, start, and course. It is not unexpected to find out that early signs and stages of development differ given the vast clinical variation among patients with Autism Spectrum Disorder (ASD) across the life span. Although Autism Spectrum Disorder (ASD) is not usually diagnosed until age 3 to 4, many parents raise concerns with their pediatrician when their child is 18 months old. (Bejarano-Martín et al. 2020.) Others present with speech delay in the second year of life, whereas still others are described as withdrawing and losing skills after a period of typical development into the second year of life. Some children with Autism Spectrum Disorder (ASD)s are described as having behavioral differences from the earliest months of life. (Zwaigenbau et al. 2014.)

Between the ages of 12 and 24 months, there is substantial evidence to support social attention and social communication deficits as potential indicators of Autism Spectrum Disorder (ASD). Additionally, there is evidence of the use of unusual objects at this same age. It is advised that the child be referred for additional autism screening and, if necessary, for a more thorough developmental and diagnostic evaluation when parents express concern about any of these behaviors or when other care professionals, such as a health care provider such as community physician or nurse, developmental service provider, or early childhood educator, observe them. (Zwaigenbaum et al. 2014.)

Studies also emphasize the importance of the role of primary care providers in identifying children who need early interventions, not limited to those at risk for developing Autism Spectrum Disorder (ASD). This underlines the significance of identifying children with clinically significant delays and referring them for proper examination and care. Additionally, young children with Autism Spectrum Disorder (ASD) may find it particularly challenging to deal with everyday difficulties, including constipation, eating, sleeping, and government rules. Pediatricians can support families in managing these symptoms. (Hyman et al. 2020.)

In order to effectively treat Autism Spectrum Disorder (ASD), early identification and intervention are essential. Research indicates that these actions can significantly improve symptoms and developmental outcomes over the long term. Children as young as 2 years old can occasionally be diagnosed with Autism Spectrum Disorder (ASD), and early intervention programs are crucial for sup-

porting these kids. These programs frequently include a variety of services, such as family education, speech therapy, treatments for hearing impairment, physical therapy, and nutrition. As the brain of toddlers is more flexible during this time, early interventions are most effective when started at or before preschool age, around 2 or 3 years old. (NICHD, n.d.)

The early intervention for Autism Spectrum Disorder (ASD) is greatly aided by nurses and other health professionals. Families looking for assistance and direction frequently start by contacting them. Assisting with early screening and diagnosis, educating families about the symptoms of Autism Spectrum Disorder (ASD), and putting them in touch with resources and experts are all services provided by nurses. They also provide families with emotional support as they navigate the difficult process of participating in Autism Spectrum Disorder (ASD) intervention programs. They play a key role in ensuring that children with Autism Spectrum Disorder (ASD) receive timely therapies, developing vital life skills like communication and social interaction during their formative years, and supporting the effectiveness of early intervention initiatives. (Sunfield, 2022.)

Person-centered care. The concept of person-centered care, which has been frequently discussed in psychological studies since the early 1960s and is continually developing, becomes crucial in the treatment of autistic individuals. By understanding this concept and practicing it with nurses and caregivers, it is possible to assess how matching interventions and support services with individual strengths, needs, and preferences can lead to more effective outcomes and increased overall well-being. (SCIE, n.d.)

According to the Social Care Institute for Excellence (SCIE, n.d.), personalization involves considering care and support services in terms of the person's abilities, preferences, and desires. With this approach, the individual is placed at the center of assessing their needs and making decisions about how to live their lives. This requires a significant transformation in the social care of adults to prioritize individual needs and choices. The personalization agenda is mainly regarded as an advantage for people with Autism Spectrum Disorder (ASD) and their families. It gives them a greater degree of control over their lives, enhancing the quality of their lives. However, because of the complex limitations and criteria for eligibility, the assessment process might be challenging for individuals with Autism Spectrum Disorder (ASD). They should be able to participate in the assessment process more easily, and employees who participate in the assessment ought to receive training in autism awareness. Employing personal assistants or providers that are suited to a person's demands might be advantageous because it enables them to choose staff members with specialized abilities and personalities suitable for working with those with Autism Spectrum Disorder (ASD). (SCIE, n.d.)

Family support programs. Health professionals have a key role in assisting families and providing care to individuals with autism. Families with kids with autism confront extremely particular challenges. These challenges result from the complex nature of Autism Spectrum Disorder (ASD), which also causes trouble with social interaction, repetitive behaviors in young kids, and communication difficulties. Families with a child with Autism Spectrum Disorder (ASD) frequently have to invest a lot of time and effort in caring for them, sometimes at the expense of their personal and

professional lives. Due to financial concerns, worries about a kid's future, a lack of social support, and increased caregiving responsibilities, particularly among mothers, families with children with Autism Spectrum Disorder (ASD) frequently experience parenting stress. It highlights the value of hope, peer support, and social support as strategies that minimize this distress and assist families in coping with the demands of Autism Spectrum Disorder (ASD). (Bonfim et al. 2023.)

One of the most important considerations that needs to be taken into consideration is getting to know various support groups from the healthcare workers of the treatment department in order to provide the families of autistic children with relevant information and training. Local advocacy groups and national advocacy organizations, such as Autism Speaks and the Autism Society, as well as those serving the larger community of children with special health needs such as Family Voices and Parent to Parent, all have an important role to play. a part in delivering valuable information to families and a sense of support during their journey. (Hyman et al. 2020.) In addition, other supports that can be delivered by health workers to families of children with autism, such as emotional support from health workers, connecting to resources, encouraging early interventions, coping strategies, etc, can be considered very valuable examples of family support programs (Gomes Paulyane, Lima Leonardo, Bueno Mayza, Araújo Liubiana, & Souza Nathan 2015).

4 THE PURPOSE AND AIMS OF THE STUDY

The purpose of this study was to conduct recent information on Autism Spectrum Disorder (ASD) to enhance the understanding of social and healthcare workers. The aim is to clarify the main points of Autism Spectrum Disorder (ASD) to social and healthcare workers in order to provide compassionate care for individuals with Autism Spectrum Disorder (ASD).

To achieve the purpose, the authors have set research questions. Research questions are following;

1. What are the recent advancements and key aspects of Autism Spectrum Disorder (ASD)?
2. How can care for individuals with Autism Spectrum Disorder (ASD) be developed?

5 IMPLEMENTATION

5.1 Literature review

The method of this study is a literature review. A literature review is "the comprehensive study and interpretation of literature that relates to a particular topic," according to Aveyard (2014). All health and social care workers have access to an expanding body of literature, therefore it is impossible to expect them to read and absorb everything there is to know about any one topic. A professional duty to stay up to date on new research and breakthroughs that impact their practice is placed on all those working in the health and social care sectors to prevent providing outdated care. (Aveyard 2014.)

Knowing the goal of a literature review gives the review's subject and helps make it clearer what the writers are focusing on. The goals and purpose are taken into consideration when formulating the research questions. The pertinent sources must be examined and studied in order to find the answers. To acquire new information, a comprehensive literature search and analysis are also beneficial. Analysis is followed by synthesis. When constructing a synthesis, data from the research articles is combined. In the last section, known as the conclusion, the writers consider and summarize the results in relation to the review issue, the research questions, and the findings. (Coughlan & Cronin 2021.)

The research methodology was put into practice by looking for theoretical data on autism and how caring for individuals with Autism Spectrum Disorder (ASD) can be developed. We read several articles on the topic. The study questions were chosen and set by the writers. The writers chose research papers and extracted the information required to address the research questions after forming the research questions. (Figure 1.)

A qualitative research method was used in the study. Qualitative research is described as a practice, a paradigm, an approach, or a group of techniques. Definition Qualitative research is an interpretative approach to data gathering and analysis that is interested in the meanings people give to their social world experiences and how they make sense of them. Both qualitative methods of data collection and qualitative methods of analysis are included in qualitative research, which collects verbal and visual descriptive forms of data and explains them using text-based, interpretive analytical techniques. (Pope & Mays (Eds.). 2020.)

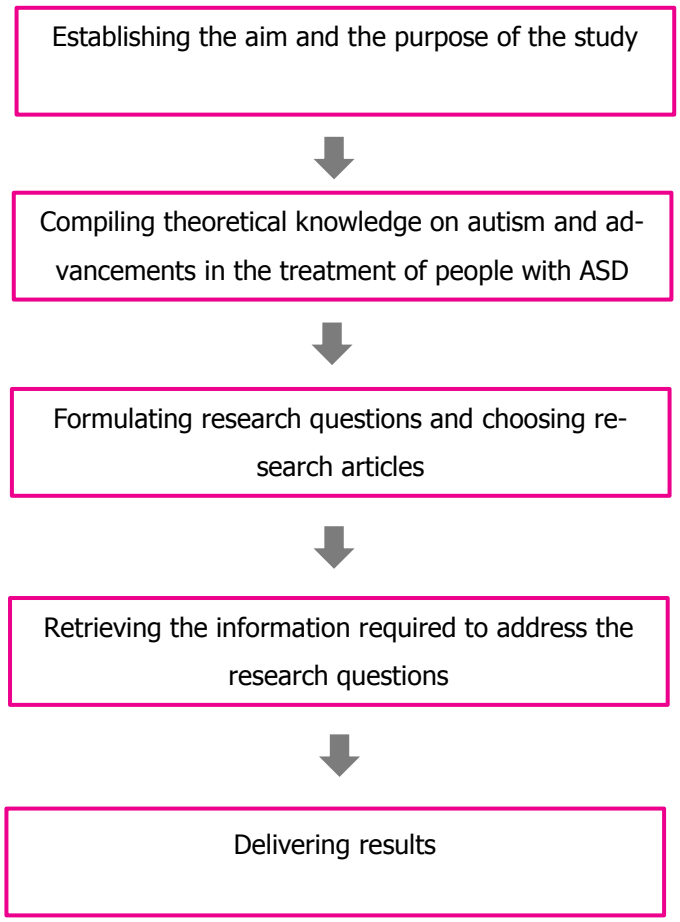

FIGURE 1. Steps of research implementation

5.2 Data collection

Data collection is the procedure of acquiring and measuring information on relevant variables in a predetermined, systematic way that enables one to respond to specified research questions, test hypotheses, and assess results. All academic disciplines use data collection as an essential part of their research. The aim of any data collection is to gather high-quality evidence, which can then be used to conduct extensive data analysis and create a solid case for answering a given question. (Kabir 2016.) There are ways to locate sources, including using a paper form or online databases at any university or college library website. Such databases can be searched using a conventional Boolean search procedure to obtain the search results. This usually refers to academic journals, articles, and e-books that the library either subscribes to or does not, and it is becoming more common knowledge that reports are readily available in digital format for immediate download. (Denney 2013.)

Data for this study has been collected through the databases PubMed, Cinahl complete and Science Direct. One of the most well-known databases with articles on health-related subjects is Cinahl Complete. (Teesside University s.a.). Initially, biomedicine, health-related domains, and allied topics like chemical sciences and bioengineering provide the data found in PubMed. (National Center for Biotechnology Information 2022). A dependable resource, ScienceDirect provides access to a large selection of excellent scholarly publications. (Elsevier s.a.). Access to these databases was

obtained from the Savonia UAS library. The search included evidence-based articles, research, and scientific reviews. The authors also consulted a librarian about the use of different search words from the Savonia University of Applied Science library. Search keywords carried out the first stage of the data search strategy in both databases. The keywords are ((((("Autism Spectrum Disorder"[Mesh]) AND "Asperger Syndrome"[Mesh]) AND "Health Personnel"[Mesh])) OR "Nurses"[Mesh]

Inclusion criteria for review are studies published in the English language related to research questions that focus on interventions, solutions, and other management level interventions for social and healthcare professionals, particularly nurses and nursing students, published from 2008 to present, Abstracts are available, as are full free text, peer-reviewed articles. Exclusion criteria for review are studies that are not related to the research topic, published before 2007, written in other languages than English, articles without abstracts, not research articles, articles that charge for reading, and not peered articles (Table 2.)

In Cinahl Ultimate, a combination of ("Autism Spectrum Disorder" OR "Autistic Disorder" OR "Asperger Syndrome" OR "Rett Syndrome") AND ("Health Personnel" OR "Nurses") was used. The initial number of results was 818 articles. After adding criteria including years, availability of full-text, peer-reviewed articles, and English language, 299 articles appeared. ten articles were chosen by titles, and after reading abstracts, two (n=2) were chosen.

In PubMed, 1,114 articles appeared with a combination of ("Autism Spectrum Disorder"[Mesh] OR "Autistic Disorder"[Mesh] OR "Asperger Syndrome"[Mesh] OR "Rett Syndrome"[Mesh]) AND ("Health Personnel"[Mesh] OR "Nurses"[Mesh]). After setting criteria including English language, years, free full text availability, full text availability and availability of abstracts, 390 articles appeared. The authors chose ten by titles. After reading the abstract, eight articles (n=8) were chosen.

In ScienceDirect, a combination of ("Autism Spectrum Disorder" OR "Autistic Disorder" OR "Asperger Syndrome" OR "Rett Syndrome") AND ("Health Personnel" OR "Nurses") was used. Initially 2,682 results came out. After setting years, full text and research articles, 759 articles appeared. Seven articles were chosen by titles, after reading the abstract, two articles (n=2) were chosen. (Figure 2.)

After the process of screening, twelve articles (N=12) were chosen for the analysis. The chosen articles are presented in appendix 1.

TABLE 2. Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
• Related to the research topic • Published from 2007 to present • Written in English • Abstracts are available • Research articles • Full free text • Peer-reviewed articles	• Not Related to the research topic • Published before 2007 • Written in other languages • Articles without Abstracts • Not research articles • Articles which does not have Full free text • Not Peer-reviewed articles

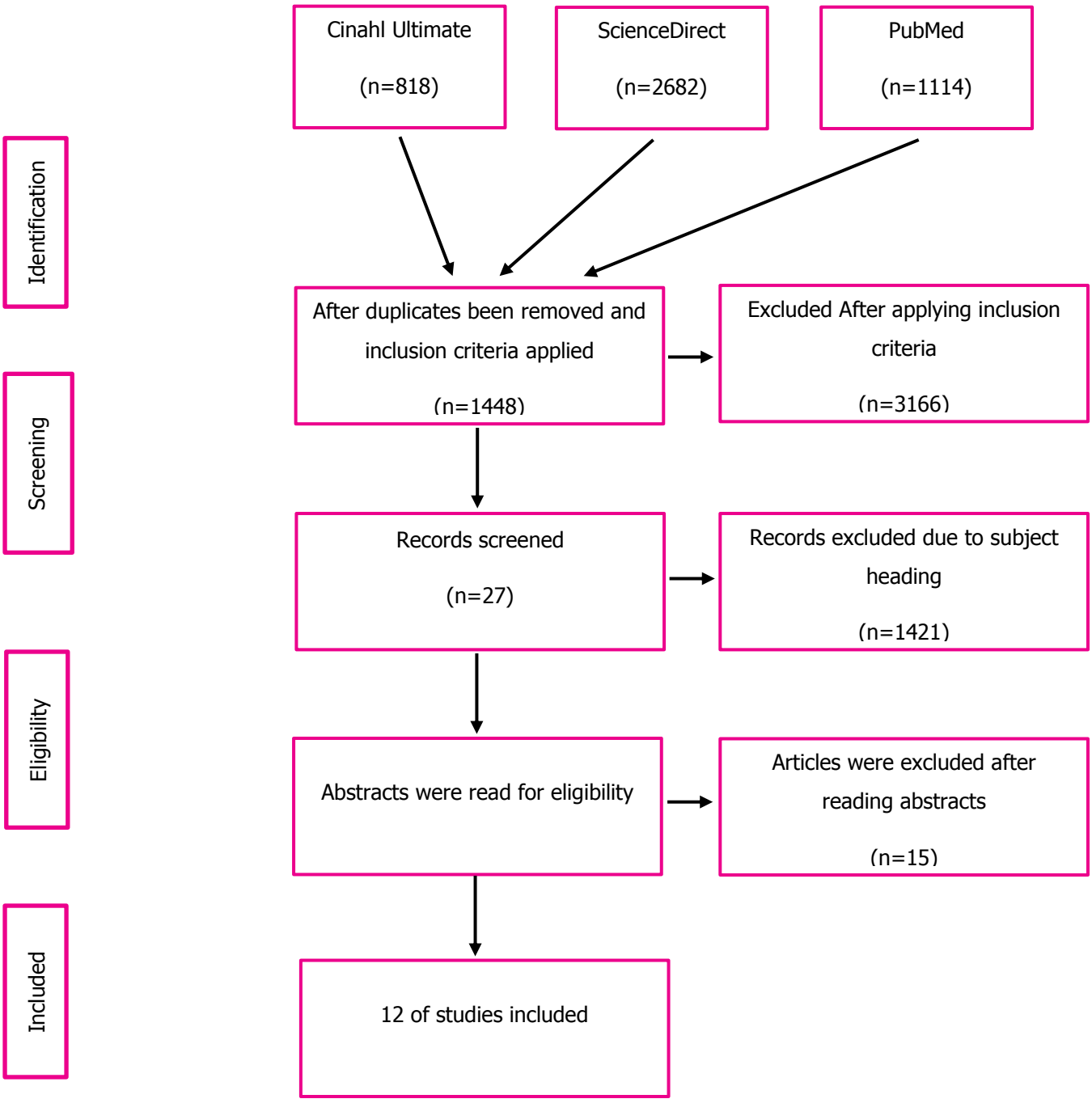

FIGURE 2. Process of the article selection

5.3 Data analysis

There are numerous methods for analyzing qualitative data. One technique for qualitative research is content analysis. Both the analysis of various data sets and the study of sensitive information can be done rather successfully using this strategy. Researchers can now objectively and methodically characterize research phenomena or events through content analysis. It is important to note that while content analysis findings can describe something, they cannot explain it. The method of data analysis can be either deductive or inductive, contingent upon the research questions posed. (Kyngäs, Mikkonen & Kääriäinen 2020.)

The authors made the decision to analyze the data using inductive content analysis. Concepts and categories can be created by inductive content analysis. When there is a lack of cohesive knowledge regarding the subject under study, content analysis might be useful. As per the following steps, a basic inductive content analysis is carried out. These include condensing data, organizing data into groups, and creating categories that can be applied to answer research questions. (Kyngäs, Mikkonen & Kääriäinen 2020.)

Prior to beginning the inductive content analysis, the writers took the initial step of becoming acquainted with the collected data. After choosing a sentence to analyze as a unit, the writers began their actual examination of the topic. We read the original sentences in their entirety. These sentences were eventually categorized into generic categories. Subsequently, the generic categories were merged into main categories. (Figure 3.) Research questions which have been stated helped authors to identify the sentences and, therefore, reduce the data. (Table 3.) In total authors extracted 40 original sentences (n=40), nine generic categories (n=9) and seven main categories (n=7).

FIGURE 3. Content analysis process

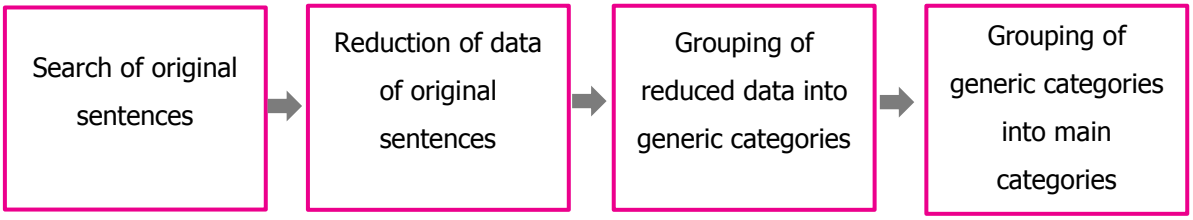

TABLE 3. Example of data analysis

Original Sentences	Data Reduction	Generic Category	Main Category
Variable levels of symptom severity in two core domains: (i) deficits in social communication and social interaction; (ii) restricted repetitive behaviours, interests, and activities. If this second domain is absent, the condition is classified as Social Communication disorder. As in DSM-5, ICD-11 groups autism symptoms into two core domains: (i) persistent deficits in the ability to initiate and sustain reciprocal social interaction and social communication, and (ii) a range of restricted, repetitive, and inflexible patterns of behaviour and interests. Deficits must be sufficiently severe to cause impairment in personal, family, social, educational, occupational, or other important areas of functioning. (Fuentes et al. 2021.)	Core Domains of Autism Spectrum Disorder (ASD) Symptoms Autism Spectrum Disorder (ASD) Classification DSM-5 and ICD-11 Classification Severity and Impairment	Autism Spectrum Disorder (ASD) Symptom Domains and Classification	Symptoms and characteristics of Autism Spectrum Disorder (ASD)

6 RESULTS

6.1 Recent advancements and key aspects of Autism Spectrum Disorder (ASD)

Symptoms and characteristics of Autism Spectrum Disorder (ASD). All sources agree that there are fundamental characteristics of Autism Spectrum Disorder (ASD). Deficits in social interaction as well as restricted, repetitive behaviors are included in these characteristics. These fundamental characteristics apply to a wide range of people, regardless of their social status, race, or cultural heritage. (Miller et al. 2017; Lord et al. 2018; Tromans & Adams 2018; Bejarano-Martín et al. 2020; Fuentes et al. 2021;Díaz-Agea et al. 2022;Jingyi et al. 2022.) Detailed descriptions of the symptoms associated with restricted and repetitive behaviors are provided by Fuentes et al. (2021). These symptoms include motor motions, adherence to routines, ritualized activities, stereotyped or repetitive speech, and severely restricted interests. Two core Autism Spectrum Disorder (ASD) domains, deficits in social communication and social interaction and confined repetitive behaviors, interests, and activities, are highlighted by Fuentes et al. (2021) and Miller et al. (2017) as having varying degrees of symptom severity. If the second domain is absent, social communication disorder could be the appropriate classification. Furthermore, Happé & Ronald (2008) mentions that the twin investigations indicate that social skills variation, communicative competence, and repetitive and constrained behaviors and interests are significantly independent both phenotypically and genetically.

Miller et al. (2017) emphasize the significance of sensory processing, pointing out that sensory processing difficulties affect 5% to 16.5% of the general population, with a higher frequency in clinical populations such as Autism Spectrum Disorder (ASD). For the purpose of understanding and reacting to everyday sensory events, sensory processing is essential. Díaz-Agea et al. (2022) and Bejarano-Martín et al. (2020) address the possibility that people with Autism Spectrum Disorder (ASD) may be more susceptible to a range of clinical, autoimmune, cardiovascular, neurological, and gastrointestinal issues. Although symptoms of Autism Spectrum Disorder (ASD) can be identified before the age of 18 months, diagnosis may take longer in some cases.

Diagnosis of Autism Spectrum Disorder (ASD). The DSM-5 criteria for Autism Spectrum Disorder (ASD) diagnosis are discussed by Lord et al. (2018) and Fuentes et al. (2021), who highlight restricted and repetitive behaviors in addition to chronic difficulties in social communication and interaction. These diagnostic criteria, which center on challenges with establishing and sustaining social contacts, issues with nonverbal communication, and particular restricted and repetitive behaviors, are critical. Furthermore, Lord et al. (2018) and Fuentes et al. (2021) emphasize that the diagnosis of Autism Spectrum Disorder (ASD) is based on behavioral observation of the individual because there is a lack of trustworthy biomarkers. This emphasizes how crucial it is to evaluate behavior in light of social communication and sensory-motor activities. Autism Spectrum Disorder (ASD) is diagnosable by a number of specialists, such as psychologists, psychiatrists, and pediatricians. A thorough diagnosis preferably incorporates information from several disciplines. According

to Lord et al. (2018), the availability of standardized diagnostic tools is crucial for evaluation. Examples of these tools are the Autism Diagnostic Observation Schedule (ADOS) and the Screening Tool for Autism in Toddlers and Young Children (STAT).

The increased recognition of undiagnosed females with autism is highlighted. Estimates of the male-to-female ratio in autism vary, however, it is acknowledged that many girls with autism get misdiagnosed for a variety of reasons. (Fuentes et al. 2021). Bejarano-Martín et al. (2020) discuss the difficulties and worries parents have, such as the necessity for professional support for young children with Autism Spectrum Disorder (ASD) and delays in addressing initial concerns.

Treatment options for Autism Spectrum Disorder (ASD). According to Fuentes et al. (2021), risperidone and aripiprazole have Food and Drug Administration (FDA) approval in the United States for the treatment of agitation and irritability in autistic people. When alternative treatments are ineffective or have unacceptable side effects, haloperidol is approved in Europe for treating severe aggression in children and adolescents while Spyridon et al. (2022) address drugs that have been looked at in randomized controlled trials for related symptoms of autism. These include methylphenidate, atomoxetine, clonidine, and guanfacine for symptoms of attention-deficit hyperactivity disorder (ADHD), melatonin for sleep disturbances; and aripiprazole, risperidone, and haloperidol for irritability. Moreover, according to Fuentes et al. (2021), a Melatonin medication with extended release has been approved in Europe to treat autism-related insomnia. Some autistic children's hyperactivity has been reported to be effectively managed with guanfacine and methylphenidate.

The numerous ways that drugs affect distinct features of autism are also highlighted. Antipsychotics such as risperidone and aripiprazole, for instance, have moderate to significant benefits on lowering symptoms of ADHD and irritability but less of an effect on social-communication problems and repetitive behaviors. Similarly, drugs for ADHD such as guanfacine and atomoxetine help with symptoms but not social-communication problems. There is still uncertainty over the effectiveness of dietary supplements. While trends have been seen for supplements like carnosine, folic acid, and probiotics, omega-3 fatty acids have demonstrated potential to help with social-communication issues. (Spyridon et al. 2022.)

In addition, Fuentes et al. (2021) provide additional detail about the applications of behavioral interventions such parent-focused behavioral management programs, naturalistic developmental behavioral interventions, and applied behavior analysis (ABA). Use to manage behavioral issues with people with autism in educational and other contexts. To encourage learning in a more naturalistic setting, include behavioral methods. affordable, evidence-based guidance on behavioral management for families.

Prevalence and epidemiology of Autism Spectrum Disorder (ASD). Estimates of the prevalence of Autism Spectrum Disorder (ASD) worldwide indicate variations based on gender and geographic location. A more recent assessment found that the prevalence of Autism Spectrum Disorder (ASD) in wealthy countries is 1.5%, although a 2012 review commissioned by the World Health

Organization (WHO) assessed the prevalence globally at about 1%. The United States has experienced a notable plateauing of rises in prevalence estimates, which can be attributed to greater awareness, services, and inclusion of milder cases without intellectual disability. The need for improved diagnostic procedures is highlighted by the fact that only two thorough investigations of adult Autism Spectrum Disorder (ASD) epidemiology—both conducted in the UK—provided estimates of less than 1%. (Lord et al. 2018.)

Globally, the prevalence of autism has increased significantly over the last 40 years by 20–30 times, with males more likely than girls to have Autism Spectrum Disorder (ASD) by three to five times. There is a notable variation in the prevalence, ranging from 1.4/10,000 children in the Arabian Peninsula to 185/10,000 children in Asian communities. Sweden has the highest incidence, while Croatia has the lowest. (Jarmolowska et al. 2019.) Furthermore, a study conducted in 2022 highlights the importance of economic considerations by indicating that Autism Spectrum Disorder (ASD) is more common in men and that its incidence is higher in developing nations than in industrialized ones. There are regional differences, and the Americas are more prevalent than Asia or Europe. These differences may be attributed to differences in research techniques and diagnostic standards. (Jingyi et al. 2022.)

Additionally, epidemiological estimates differ greatly; estimates of the prevalence of Autism Spectrum Disorder (ASD) have increased over time, from approximately 0.04% in the 1970s to 1-2% at present. The disparities in case definitions and diagnostic criteria, as well as different sample techniques and processes, all contribute to these variances. The WHO assessed the global prevalence of autism at roughly 0.6% in 2012, taking into consideration these factors as well as the absence of data from many regions of the world. More recent estimates, however, point to an even higher prevalence, surpassing 3% in certain studies. (Fuentes et al. 2021.)

Genetic and environmental factors associated with Autism Spectrum Disorder (ASD). Some of the aspects of Autism Spectrum Disorder (ASD) that are discussed in the texts by Lord et al. (2018) and Fuentes et al. (2021) include the interaction between hereditary and environmental factors. Both sources agree that genetic factors play a significant role in Autism Spectrum Disorder (ASD) and that a significant amount of the risk is inherited. Lord et al. (2018) stress the need for genetic testing in children diagnosed with Autism Spectrum Disorder (ASD), and Fuentes et al. (2021) highlight the several genes linked to autism, illuminating the complex inherited nature of the condition. Linkage studies with diagnosed autism samples have provided in direct evidence that distinct genetic areas maybe be linked to different categories within the autistic trait. Almost every chromosome has been implicated in the numerous linkage studies have been done for autism that have been diagnosed. (Happé & Ronald 2008.)

Another recurring issue in both texts is heritability. Sibling studies are cited by Lord et al. (2018) to show the probability of Autism Spectrum Disorder (ASD) occurring in subsequent children after the diagnosis of an older sibling with Autism Spectrum Disorder (ASD). The genetic component of Autism Spectrum Disorder (ASD) is further highlighted by Fuentes et al. (2021), who indicate that the recurrence risk in families with autistic children increases with the number of affected siblings.

There are environmental factors as well. Lord et al. (2018) explore prenatal and perinatal factors that may contribute to Autism Spectrum Disorder (ASD), including mother age and medication use. Additionally, they draw attention to particular circumstances, such as exposure to valproic acid, and ailments, such as preterm birth and low birthweight. In contrast, Fuentes et al. (2021) suggest that genetics mainly shapes the autism spectrum and shifts the attention to genetic problems and the significance of genetic abnormalities in Autism Spectrum Disorder (ASD).

Furthermore, the texts differ in how they address genetic variants. Lord et al. (2018) explore the significance of genomic copy-number variants and rare genetic disorders, emphasizing their possible involvement in certain Autism Spectrum Disorder (ASD) patients. Fuentes et al. (2021), in contrast, highlight the multifaceted nature of genetic contributions to Autism Spectrum Disorder (ASD) and call attention to the complex genetic landscape of Autism Spectrum Disorder (ASD), where genetic components are frequently characterized by de novo, rare, heterozygous mutations and copy-number variations. (Figure 4.)

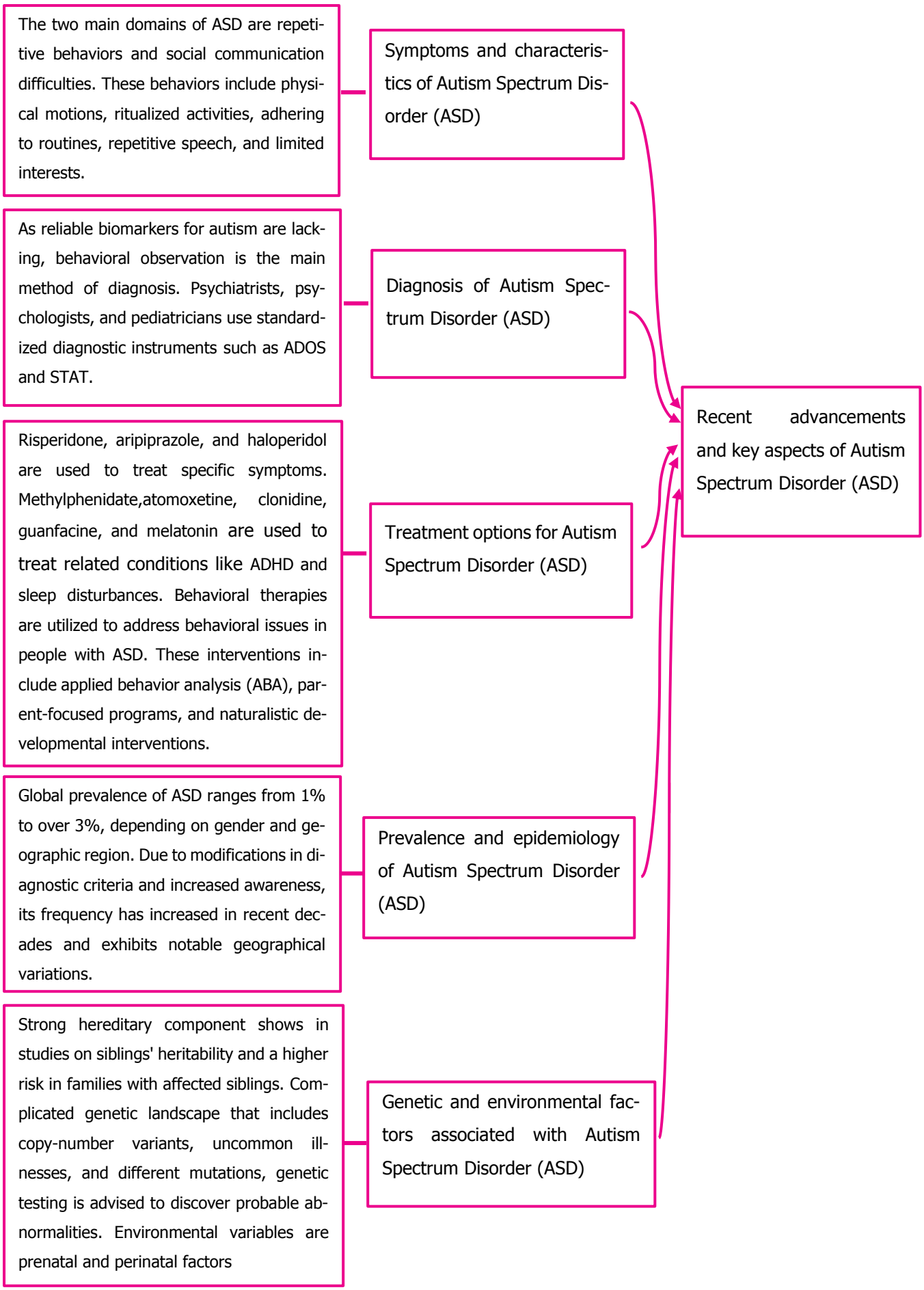

FIGURE 4. Recent advancements and key aspects of Autism Spectrum Disorder (ASD)

6.2 Ways of developing care for individuals with Autism Spectrum Disorder (ASD)

Early Identification and early intervention programs. When discussing Autism Spectrum Disorder (ASD), both works by Lord et al. (2018) and Fuentes et al. (2021) have numerous important things in common. First and foremost, they both emphasize how crucial an early diagnosis is for people with Autism Spectrum Disorder (ASD). Lord et al. (2018) stress the need of making an early diagnosis of Autism Spectrum Disorder (ASD) and point out that this can be done by a variety of specialists, including pediatricians, psychiatrists, or psychologists. Similar concerns parents often have about their child's development by the age of 18 to 24 months are emphasized by Fuentes et al. (2021), underlining the crucial necessity for early detection.

Additionally, the use of diagnostic tools in the analysis of Autism Spectrum Disorder (ASD) is included in both publications. Lord et al. (2018) emphasize the use of standardized diagnostic tools like the Autism Diagnostic Observation Schedule (ADOS). On the other hand, Fuentes et al. (2021) go into detail on the numerous screening tools used for Autism Spectrum Disorder (ASD) early detection. In the process of diagnosis, these tools are essential. Additionally, the difficulties of early diagnosis are acknowledged in both works. According to Lord et al. (2018), some kids, such those without language problems or those who fit a particular demographic, might be diagnosed much later. Similar to this, Fuentes et al. (2021) underline that not all autistic children receive a positive test result, emphasizing the difficulties of early detection.

The topic of screening tools adds another distinction. While Fuentes et al. (2021) offers a broader perspective by presenting a range of screening instruments for early detection, Lord et al. (2018) focuses specifically on specific diagnostic tools like ADOS. Fuentes et al. (2021) also explores environmental and familial risk factors for autism, providing a more thorough understanding of the disorder. Lord et al. (2018) do not go into this degree of depth.

Family support programs for families of individuals with Autism Spectrum Disorder (ASD). One major issue covered in both articles is how Autism Spectrum Disorder (ASD) affects families. They emphasize how having a child with ASD affects family relations profoundly and often causes all family members to experience elevated stress. As a result, parents must learn coping mechanisms to get through the difficulties of parenting an Autism Spectrum Disorder (ASD) child. In order to adjust to the new reality that Autism Spectrum Disorder (ASD) presents, this is crucial. The issue of social isolation keeps coming up. (Gomes et al. 2015; Bonfim et al. 2023.) While Bonfim et al. (2023) allude to the difficulties of social isolation, Gomes et al. (2015) highlight that certain Autism Spectrum Disorder (ASD) manifestations can cause family marginalization with regard to social life.

When it comes to support tactics, Bonfim et al. (2023) provide a more thorough perspective, promoting a range of support systems like peer and social support as well as encouraging hope in order to reduce stress and enhance family well-being in general. In their introduction to the idea of secondary and tertiary care, Bonfim et al. (2023) highlight the value of conversation circles and establish a welcoming atmosphere for families. Bejarano-Martín et al. (2020) have brought attention to the role played by sociodemographic characteristics, which include a tendency for families

with greater socioeconomic position and higher parental educational levels to identify their children with Autism Spectrum Disorder (ASD) earlier.

Role of healthcare professionals in caring for individuals with Autism Spectrum Disorder (ASD). When comparing the two articles, there are many similarities and differences. The need for therapy for those with Autism Spectrum Disorder (ASD) is acknowledged by both (Fuentes et al. 2021; Daz-Agea et al. 2022). While Díaz-Agea et al. (2022) stress the significance of appropriate communication and experience in healthcare settings as being necessary for offering therapy to people with ASD, Fuentes et al. investigate the efficacy of social skill programs. The importance of tailored care is also emphasized in both volumes. By emphasizing the necessity for specific clinical diagnosis and therapy for those with ASD, Fuentes et al. are expressing the notion that each patient requires a unique approach to care. Díaz-Agea et al. (2022) pointed out that this concept is especially important in healthcare settings.

However, there are notable differences between the two articles. Fuentes et al. 2021 specifically address the efficacy of social skill programs and inaccurate information about ASD in their main discussion of therapies and ways to improve social skills in people with ASD. Díaz-Agea et al. (2022), on the other hand, focus on clinical inadequacies in healthcare settings, talking about the knowledge, emotions, and communication of healthcare workers as well as the conduct of parents in clinical circumstances. This shift in emphasis demonstrates the various viewpoints and considerations regarding ASD and its management in social and medical contexts. (Figure 5.)

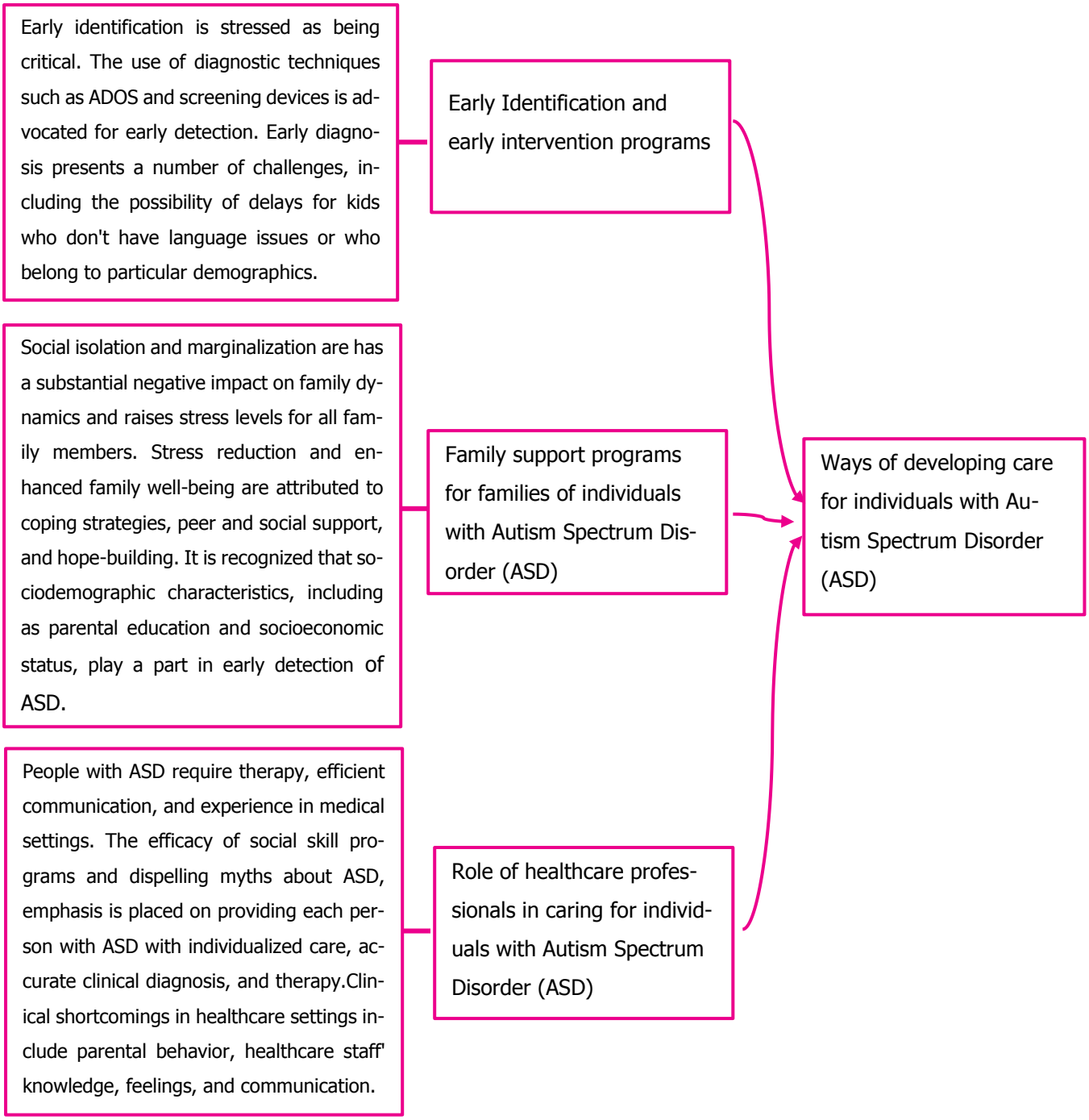

FIGURE 5. Ways of developing care for individuals with Autism Spectrum Disorder (ASD)

7 CONCLUSION

7.1 Consideration of the results

The literature discusses several important aspects of autism spectrum disorder (ASD). Moilanen et al. (2012); Miller et al. (2017); Lord et al. (2018) and Fuentes et al. (2021) all agree on the fundamental traits of ASD, which include social communication deficits and the presence of restricted repetitive behaviors. Furthermore, Miller et al. (2017) and Fuentes et al. (2021) stress the importance of sensory sensitivity in ASD, highlighting the fact that each person interprets sensory stimuli differently. Fuentes et al. also share this point of view (2021). When it comes to the development of ASD diagnosis, Faroy et al. (2016) explore the move from the DSM-IV to the DSM-5, which combined several pervasive developmental disorders into one ASD spectrum. This is in line with the views of Lord et al. (2018) and Fuentes et al. (2021).

Nonetheless, disparities occur with regard to prevalence estimations: Lord et al. (2018) propose a global prevalence of approximately 1%, whereas Fuentes et al. (2021) report estimates that surpass 3% in some investigations, highlighting the heterogeneity in prevalence evaluations. Another area of disagreement is gender disparities. While Lord et al. (2018) stress the fluctuating male-to-female ratio and the misdiagnosis of females with autism, Jarmolowska et al. (2019) highlight considerable gender variations in ASD prevalence, which primarily impact male adolescents. The National Research Council (2001) recommends a combination of behavioral intervention, communication training, and educational programming for ASD treatment, while Fuentes et al. (2021) investigate the use of pharmaceutical treatments like aripiprazole and risperidone. Finally, both Fuentes et al. (2021) and Lord et al. (2018) address the influence of genetic and environmental factors. Lord et al. (2018) emphasize genetic variables, whereas Fuentes et al. (2021) emphasize the complex nature of genetic contributions, including copy-number variations and de novo mutations. Nevertheless, their areas of attention are different.

The study of Autism Spectrum Disorder (ASD) has synthesized theoretical insights and empirical findings, which highlight the critical role that early identification and intervention programs perform. The theoretical basis emphasizes the fundamental heterogeneity of ASD, highlighting the wide range of characteristics and expressions that people with ASD might exhibit. The importance of primary care physicians in identifying children who require early interventions is further highlighted by this (Mandell et al., 2005; Zwaigenbaum et al., 2014). In addition to these observations, the data study highlights the importance of prompt diagnosis and the proper use of diagnostic tools, noting the challenges associated with early detection due to characteristics such as hereditary and environmental risks (Lord et al., 2018; Fuentes et al., 2021).

The study also highlights the significance of family support programs in helping families with children who have been diagnosed with ASD. The theoretical framework highlights the importance of belief, peer support, and social support while noting the problems these families encounter, such as difficulty with social contacts and caregiving responsibilities (Bonfim et al., 2023; Gomes et al., 2015). This is supported by the analyzed data, which highlights the significant effects of having an

ASD child on family dynamics and the necessity of coping mechanisms and a range of support networks, such as peer and social support, to minimize the stress related to providing care (Bonfim et al., 2023; Gomes et al., 2015).

Additionally, nurses in particular are recognized from both theoretical and practical perspectives as playing a crucial role in the care of individuals with ASD. Their relevance in early screening, diagnosis, and support of early intervention initiatives is highlighted by the theoretical foundation (Sunfield, 2022). This is further supported by the examined data, which highlights the significance of therapy and individualized care for people with ASD as well as the necessity of experience and effective communication in healthcare settings (Fuentes et al., 2021; Díaz-Agea et al., 2022). When taken as a whole, these observations highlight the diverse strategy required to address all aspects of ASD and offer people and their families the best possible support.

7.2 Ethicalness and reliability

The ethical guidelines for the research were followed when conducting this review of the literature. The authors planned the study steps consistently. The writers dutifully adhered to acceptable study conduct, documenting, showcasing, and obtaining research findings. (Finnish Advisory Board on Research Integrity, TENK 2012.) The authors only used professional databases. The research provided twelve (n=12) articles, which were selected. As mentioned at the outset of the research, every article included has undergone peer review and has been published during the past fifteen years (2008–2023). The search criteria have been documented by the authors, along with an open description of the research process flow. The Savonia University of Applied Sciences rules were followed for marking the citations and references, ensuring accurate marking of all the publications reviewed.

The authors of the thesis have consulted the Rectors' Conference of the Finnish University of Applied Sciences Arene for recommendations and ethical principles for students (2020). According to the authors, given the topic of the study, there were no conflicts of interest. The authors became familiar with the ethical principles. All required paperwork was signed, and the assigned lecturer provided the authors with professional supervision during the thesis implementation. Regular meetings were also arranged. The four plagiarism detection checks were performed on the thesis using Turnitin. The authors granted permission to make the thesis publicly available.

With regard to the reliability of the thesis findings, precise documentation is required. Materials must be available in adequate quantities, but ultimately, quality matters more than quantity. Research materials are the only source used for interpretation and results. (Kananen 2011.) The thesis was implemented in stages. Writers should identify a few variables that might have impacted the thesis's excellence. Twelve articles were selected based on search terms and phrases that were discussed with the librarian. The authors added a few more search terms after realizing that several articles had not turned up with the first search.

Additionally, research publications that were accessible in full text to Savonia UAS students were chosen, which may have led to the omission of certain articles. Twelve articles (N=12) have been

analyzed by the writers, and three (N=3) from The United States of America, one (N=1) from Poland, one (N=1) from Spain and The United Kingdom, two (N=2) from Brazil, two (N=2) from Europe, one (N=1) from China, and one (N=1) from Spain. As a result, the thesis's conclusions may not be applicable elsewhere in the world. More findings from research done in Europe, particularly in Finland, would be fascinating; however, the data search was restricted by inclusion criteria based only on the English language.

7.3 Professional growth

For both authors, accomplishing this thesis was a critical turning point in their academic careers and provided them the chance to explore the details of research and literature review for the first time. The learning process was substantial, requiring time and dedication in order to gain a deeper comprehension of the material.

Throughout the process, we improved our abilities in several areas. As we studied through the vast amount of material and developed our critical evaluation and analysis skills, critical thinking was essential to our growth. Over the course of the thesis, academic writing also received careful attention, leading to a significant improvement. While our ability to analyze data increased, it also improved our ability to interpret and communicate information more clearly.

By utilizing the most recent research on Autism care and expanding our understanding of the condition's characteristics and symptoms, this study venture helped to clarify the nuances of Autism care. This information is going to be an enormous asset in our upcoming career path, which is devoted to becoming nurses. We learned how to divide work effectively, improved crucial time management skills, and identified our individual abilities that complemented one another.Our strategy demonstrated flexibility as we were able to arrange frequent face-to-face and virtual meetings, utilizing technological tools like Zoom to facilitate smooth cooperation.

In conclusion, the process of writing our thesis has greatly aided in both our professional and personal development. It has improved our capacity for critical thought, strengthened our research skills, and given us a greater comprehension of the subject we have selected. Undoubtedly, the knowledge and abilities we have gained from this endeavor will be crucial in determining our success as we progress in our profession.

7.4 Applicability and development ideas

The literature on Autism Spectrum Disorder (ASD) presents a comprehensive understanding of the core characteristics and complexities associated with this condition. Studies conducted by Moilanen, Lord, Miller, and Fuentes have highlighted the defining traits of ASD, such as restricted repetitive behaviors and difficulties with social communication. Additionally, given that each individual interprets sensory stimuli variously, the significance of sensory sensitivity in ASD has been emphasized. (Moilanen et al. 2012; Miller et al. 2017; Lord et al. 2018; Fuentes et al. 2021.) These realizations set the stage for the development of successful diagnostic and intervention programs.

Applying the research findings to practical settings, early identification, and intervention programs emerge as an essential focus. The primary care physician's role is essential when it comes to identifying children who need early interventions. They must identify patients as soon as possible and use diagnostic tools appropriately. To improve outcomes for individuals with ASD, however, early diagnosis challenges—such as genetic and environmental risks—must be addressed (Zwaigenbaum et al. 2014; Mandell et al. 2005; Lord et al. 2018; Fuentes et al. 2021.)

Future programs ought to give special attention to helping individuals with ASD enhance their social skills. Programs developing structured social skills that include communication techniques and role-playing have the potential to be highly effective. The goal of these programs is to give individuals the confidence to establish and preserve social interactions, which is an essential part of their overall development. One way to help individuals with ASD effectively navigate social interactions is to invest in the development and implementation of creative social skills programs. These kinds of programs can make a big difference in their overall health and social integration.

The future of ASD interventions can greatly benefit from technology-assisted learning. Interactive software and apps designed to assist with regulating behavior, communication, and learning objectives have shown to be quite successful. Customizing these resources to each person's unique requirements and interests is significant. For individuals with ASD, this method can offer a personalized and interesting learning experience that increases accessibility and engagement of education and skill development. Future research and development in this technologically advanced field should continue.

Occupational therapy is still an essential aspect of managing ASD. To address sensory sensitivity, future development concepts must involve the establishment of sensory-friendly areas in homes and schools. Furthermore, providing sensory integration therapy as a component of occupational therapy programs can help individuals experiencing ASD effectively manage sensory issues. Another major area of concentration is giving young children the possibility to participate in everyday routines and activities that promote independence. These programs ought to be expanded in the future to guarantee everyone with ASD can live more satisfying lives by learning basic life skills in order to manage their sensory input.

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APPENDIX 1. PRESENTATION OF THE SELECTED ARTICLES

The list is presented in the alphabetical order of authors' surnames.

No	Authors, title, country & year of publishing	Purpose	Participants	Study design	Main findings
01	Bejarano-Martín Á, Canal-Bedia R, Magán-Maganto M, Fernández-Álvarez C, Cilleros-Martín MV, Sánchez-Gómez MC, García-Primo P, Rose-Sweeney M, Boilson A, Linertová R, Roeyers H, Van der Paelt S, Schendel D, Warberg C, Cramer S, Narzisi A, Muratori F, Scattoni ML, Moilanen I, Yliherva A, Saemundsen E, Loa Jónsdóttir S, Efrim-Budisteanu M, Arghir A, Papuc SM, Vicente A, Rasga C, Rogé B, Guillon Q, Baduel S, Kafka JX, Poustka L, Kothgassner OD, Kawa R, Pisula E, Sellers T, Posada de la Paz M. Early Detection, Diagnosis and Intervention Services for Young Children with Autism Spectrum Disorder in the European Union (ASDEU): Family and Professional Perspectives. Europe,2020.	The thesis aimed to examine the features of children with autism spectrum disorder (ASD) identification, diagnosis, and intervention services. It aimed to contrast and compare the general level of satisfaction expressed by 760 professionals and 1223 families who provide care for children with ASD.	An online survey compiled and analyzed data from 2032 respondents across 14 European countries. (60.9% were parents; 39.1% professionals) (N=2032)	Cross sectional study	Children with autism spectrum disorder (ASD) are receiving therapies that have been praised by families and experts in the field. The study's children were younger and experienced fewer service delays. In contrast to professionals, families reported lower satisfaction, longer delays, and older child ages. A higher level of satisfaction was associated with early diagnosis and detection. The study emphasized the requirement of collaborative experts and the critical role that parents play in early ASD screening. To improve family happiness and well-being, it suggested lowering service delays through early ASD-specific identification programs.

02	Bonfim Tassia de Arruda, Giacon-Arruda Bianca, Galera Sueli , Teston Elen, Nascimento Francisneide, & Marcheti Maria. Assistance to families of children with Autism Spectrum Disorders: Perceptions of the multiprofessional team. Brazil,2023.	To compile the various levels of care that medical professionals have given to families of children with autism spectrum disorders.	The study was based on the Family-Centered Care philosophical theoretical framework. (N=22)	A qualitative study created in collaboration with 22 professionals from three multidisciplinary teams within the Health Care Network of a municipality in the Brazilian state of Mato Grosso do Sul.	The results demonstrate actions focused on particular circumstances, particularly the needs and demands resulting from the child's care and unusual behavior. A family's invisibility as a care unit and the shortcomings of multi professional care are demonstrated by factors that influence family care, such as work overload and a lack of professional experience.
03	Díaz-Agea José Luis, Macías-Martínez Natalia, Leal-Costa César, Girón-Poves Gema, García-Méndez Juan Antonio, & Jiménez-Ruiz Ismael. What can be improved in learning to care for people with autism? A qualitative study based on clinical nursing simulation. Spain,2022.	This study aimed to determine the primary error patterns made by fourth-year nursing students during simulated clinical practice using scenarios involving the care of individuals with autism spectrum disorder (ASD).	A standardized patient with an ASD diagnosis served as the model for the 23 groups of nursing students. (N=23)	A retrospective longitudinal qualitative study was performed	The study found several mistake patterns associated with providing care for people with autism spectrum disorder (ASD), which were divided into five subcategories and one primary weakness. ASD ignorance, overstimulation, poor information collection from caregivers, disregarding the child's feelings and interests, and excessive verbal communication were among the common mistakes. The study highlights the importance of better preparing students to care for people with ASD and indicates that clinical

					simulation can improve hands-on learning in this setting.
04	Fuentes Joaquin, Hervás Amaia, Howlin Patricia, & (ESCAP ASD Working Party) ESCAP practice guidance for autism: a summary of evidence-based recommendations for diagnosis and treatment Spain and The United Kingdom, 2021	This document's main objectives are to provide clinicians and educators with evidence-based guidance on the fundamental and minimal standards for best practices in the evaluation and treatment of autistic individuals of all ages, as well as to spread information that can be implemented for use in routine clinical practice throughout Europe.	The authors and specialists who worked on creating the Practice Guidance document about the diagnosis and care of autistic individuals in Europe are the participants in this thesis. In particular, the initial author (J.F.) worked as the ESCAP Autism Field Advisor, and the article was created by a working group designated by ESCAP consisting of three specialists (J.F., A.H., and P.H.).	Narrative review-Practice Guidance document	While DSM-5 and ICD-11 seek to standardize autism diagnosis, each patient's course of treatment must be unique. Validation of autism detection measures is necessary, particularly for underprivileged populations. Autism-friendly environments should be created through interventions involving multiple sectors. Autistic people should be coached by professionals. Few trials indicate that therapies need to be supported by science, guided by professionals, and consistent with societal norms. Concentrate on providing unmet needs assistance to individuals impacted by autism globally.
05	Gomes Paulyane, Lima Leonardo, Bueno Mayza, Araújo Liubiana, & Souza Nathan. Autism in Brazil: a systematic review of family challenges and coping strategies	To discuss the difficulties Brazilian families raising children with autism spectrum disorder (ASD) face and the coping mechanisms they use.	Systematic review of articles released up to September 2013.	Systematic review	According to the literature, one of the biggest problems that families—especially mothers—face is parental emotional overload. Delays in receiving a diagnosis, managing the diagnosis and accompa-

	Brazil,2015.				nying symptoms, and having limited access to social and medical resources were the primary sources of stress. Information sharing between impacted families and the use of an integrated healthcare network to support patients and their families were the most common coping mechanisms identified.
06	Happé Francesca, & Ronald Angelica. The 'fractionable autism triad': a review of evidence from behavioural, genetic, cognitive and neural research United Kingdom, 2008	The thesis suggests that the triad impairments associated with autism may be controlled by mainly distinct genes and cognitive processes, challenging the popular belief that these characteristics are linked and have a common source. The implications of this "fractionable" technique for the diagnosis of autism and future avenues for research are examined.	Researchers conducting the review	Literature review	The primary conclusions of this research point to the possibility that autism is a collection of fractionable traits and cognitive deficits rather than a single, cohesive illness. Although social interaction, communication, and RRBIs—the three elements of the autism triad—are frequently observed in tandem, they can also happen separately. According to the study, more investigation into these fractionable features is warranted because doing so could raise fresh issues and suggest new lines of inquiry with important implications for both theory and practice.

07	Jarmołowska Beata, Bukało Marta, Fiedorowicz Ewa, Cieślińska Anna, Kordulewska Natalia, Moszyńska Małgorzata, Świątecki Aleksander, & Kostyra Elżbieta. Role of Milk-Derived Opioid Peptides and Proline Dipeptidyl Peptidase-4 in Autism Spectrum Disorders. The United States of America, 2019	The aim of this research is to examine how the exogenous substrate β-casomorphin-7 (BCM7), which is catalyzed by the enzyme proline dipeptidyl peptidase-4 (DPPIV), contributes to the development of autism. The study's specific objectives are to measure the levels of DPPIV and BCM7 in serum and urine, evaluate the expression of the levels of DPPIV and BCM7 in serum and urine, evaluate the expression of the DPPIV gene in peripheral blood mononuclear cells (PBMC) of children with autism and those without, and investigate any possible connections between these variables and the onset of autism.	Study was done with children who has ASD and healthy children. (N=137)	Experimental and observational study	The study looked into the possible connection between proline dipeptidyl peptidase-4 (DPPIV) and opioid peptides, particularly β-casomorphin-7 (BCM7), and autism. 51 children in good health and 86 children with autism had their serum and urine BCM7 and DPPIV concentrations tested. Due to study limitations, additional research is required. However, the results showed considerably greater levels of BCM7 and DPPIV in the autistic group, suggesting a potential relationship to autism etiology.

08	Jingyi Wang, Bin Ma , Jingjing Wang, Zeyi Zhang, & Ou Chen. Global prevalence of autism spectrum disorder and its gastrointestinal symptoms: A systematic review and meta-analysis. China,2022.	In order to evaluate the global prevalence of Autism Spectrum Disorder (ASD) and its correlation with gastrointestinal (GI) symptoms, this thesis does a systematic review and meta-analysis. In addition, it looks at regional differences and gender differences in the frequency of ASD. The goal is to provide vital epidemiological data that will guide healthcare decisions and treatment plans for ASD and associated comorbidities.	A total of 126 articles were included in the thesis; 51 of them reported the prevalence of ASD, and 75 of them offered information on the prevalence of GI symptoms in people with ASD.	A systematic review and meta-analysis.	According to this study, there are 98 cases of ASD for every 10,000 people worldwide, and GI symptoms are significantly more common in ASD (48.67%). It notes regional variations, especially in emerging nations, and gender discrepancies favoring men. The study highlights the need for continued research to address the impact of ASD and associated comorbidities on public health, emphasizing early detection and improvements to healthcare policies.
09	Lord Catherine, Elsabbagh Mayada, Baird Gillian, & Veenstra-Vanderweele Jeremy. Autism Spectrum Disorder United Kingdom,2018	The purpose of this study is to negotiate the complexity of autism spectrum disorder (ASD), recognizing advancements in providing assistance for individuals while highlighting ongoing issues such as the need for better services	Total of 138 articles have been used	Literature review	The study gives caregivers comfort in knowing that over the past 50 years, there have been notable advancements in the lives of people with autism spectrum disorder (ASD). It underlines the need of concentrating on people who are dealing with significant obstacles, the power of science and public

		and therapies for adults with ASD. It emphasizes the value of individualized care that takes genetics and neurology into account, as well as the role that clinicians play in providing prompt assistance and correct information during life transitions and changes in family dynamics.			policy to bring about constructive change, and the critical role that doctors play in offering assistance and knowledge to improve the quality of life for people with ASD.
10	Miller Lucy Jane, Schoen Sarah, Mulligan Shelley, & Sullivan Jillian. Identification of Sensory Processing and Integration Symptom Clusters: A Preliminary Study. The United States of America, 2017	Information from this study can be used to classify children with sensory processing issues who don't fit into the criteria for other clinical diagnoses. Both inside and outside the occupational therapy field, this work helps to improve the clarity of communication when describing children who struggle with sensory processing.	A nonexperimental design was used involving data extraction from the records of 252 children with SPD. (N=252)	An exploratory nonexperimental design	The data revealed three distinct cluster groups: High SC with SOR, High SUR with SOR, and High SOR only. Every group performed poorly in a number of adaptive behavior domains. Among the groups, there were differences in atypical behaviors related to attention and social-emotional functioning.

11	Spyridon Siafis, Oğulcan Çıray, Hui Wu, Johannes Schneider-Thoma, Irene Bighelli, Marc Krause, Alessandro Rodolico, Anna Ceraso, Giacomo Deste, Maximilian Huhn, David Fraguas, Antonia San José Cáceres, Dimitris Mavridis, Tony Charman, Declan G Murphy, Mara Parellada, Celso Arango, & Stefan Leucht. Pharmacological and dietary-supplement treatments for autism spectrum disorder: a systematic review and network meta-analysis. Europe,2022	The effects of dietary supplements and pharmaceuticals on ASD patients were examined in this network meta-analysis.	Data from 18 randomized controlled trials (RCTs) with 1,104 adult participants and 125 RCTs with 7,450 child and adolescent participants were evaluated for this investigation. (N=8554)	Systematic review and network meta-analysis Randomized controlled trials (RCT), that have been published in at least seven different databases, including ClinicalTrials.gov, EMBASE, MEDLINE, PsycINFO, WHO-ICTRP, CENTRAL, and PubMed.	Certain medications may alleviate primary symptoms, though this is probably secondary to the relief of comorbidities. Since there is insufficient data to recommend routine medication prescription for the core symptoms, it is not recommended to treat them for anything other than core symptoms.
12	Tromans Samuel, & Adams Clive. Autism Spectrum Disorder: A Comprehensive Survey of Randomized Controlled Trials. Journal of Autism and Developmental Disorders	An review of the data from randomized controlled trials (RCTs) of treatment therapies for autism spectrum disorders was the purpose of this study. The study sought to compile the RCT data that has been available in this area.	The study comprised 529 randomized controlled trials in all. These RCTs have 49 individuals in mean sample size, with a standard deviation of 50. With a median of 36 and a mean of 40,	Systematic review A comprehensive survey of randomized controlled trials	This study's primary finding is that, since 2008, the number of randomized controlled trials (RCTs) using therapeutic therapies for autism spectrum disorders (ASD) has significantly increased. Nevertheless, the mean number of participants in these trials was 49, and most of

	United Kingdom,2018		the trial sample sizes ranged greatly from 1 to 479 participants.		them had tiny sample sizes. In order to perform larger trials and provide higher-quality data that is more applicable to clinical practice, research groups must collaborate. The analysis also shows that the most often examined intervention in these RCTs was antipsychotic therapy.