



Metropolia

Nursing Interventions and Their Effectiveness in Addressing Theory of Mind Deficits in
Autism

Literature review (Scoping review)

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ABSTRACT

This bachelor's thesis studies the mental health issues often signal lifelong recurring problems in children/adolescents in autism due to their theory of mind deficits. Nursing intervention is psychosocial and is aimed at improving people's well-being and the use of cognitive-behavioral therapy, empathy and social communication skills with autism individuals. Theory of Mind affects the cognitive functions, which makes children/adolescents with autism have social deficits ([Baron-Cohen., Happé and Frith, 2014](#)). This study used a theoretical scoping framework to conduct the effectiveness of nursing intervention, including interpersonal skills, talk therapy and family-centered care, in addressing these deficits.

The outcomes seem reasonable to conclude that evidence-based interventions are efficacious and effective in autism, improving empathy, social communication, social skills and being independent socially. Family-centered care supports the reinforcement of ToM skills within daily routines, thereby promoting the consistency necessary for sustained intervention outcomes ([Weiss, J. A., Wingsiong, A., and Lunsky, Y. 2018](#)).

These results highlight the contributions of nursing interventions to quality-of-life improvements for individuals with ASD, though they also reveal gaps in long-term impact research and a lack of focus on adult populations. The study provides evidence-based recommendations for nursing professionals, caregivers, and healthcare providers to adopt strategies that enhance Theory of Mind skills and improve social functioning in individuals with Autism. These insights aim to inform more tailored nursing practices, contributing to optimized care approaches within ASD management ([Greenhalgh, T. 2014](#)).

The key objectives are to map the available evidence, assess intervention outcomes already carried out by professionals.

This thesis is a scoping review that will carefully analyze case studies and data analysis from major databases, including PubMed, CINAHL, ProQuest, and Medline.

Key words: Nursing interventions, Effectiveness, Theory of mind, Autism spectrum disorder, Social interaction, Social skills.

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1 INTRODUCTION

Autism is a challenging disability that some individuals have, which is caused by neuro-limitation or disability in the brain. This challenge makes it difficult for individuals to function properly mentally, in this case affects their ability to socialize or interact with others ([Baron-Cohen and Fletcher-Watson, 2000](#)). Individuals with autism usually find it difficult to interact and communicate socially with others, which makes them socially awkward. This makes resulting consequence of social dysfunction can be disabling ([Happé and Frith, 2014](#)).

The nursing interventions brings a unique aspect for people with autism, helping them to lay a strong foundation for them to be independent. The approaches aim to train and strengthen their social and communication skills which enables their theory of mind to be stimulated in a positive way, without them been triggered due to their deficits. The perspective-taking gives them the understanding on how to approach others, for example on how others think, feel, intentions, and desires. The causes of these social challenges are due to deficits in theory of mind. Theory of mind deficits has its' own interventions for individuals with autism, and these interventions can be carried out by trained nurses or caregivers which can be rewarding and beneficial for individuals with autism. For example, cognitive behavioral therapy, social skills training, and perspective-taking ([Fletcher-Watson and Begeer, 2011](#)) ([Fisher and Happé 2005](#)).

The purpose and aim of this study were to evaluate the benefits and effectiveness of the interventions by nurses which for these purpose social interaction and social skills program were used, and to provide evidence-based insights on improved nursing interventions in a safe environment ([Waugh and Peskin, 2015](#)).

This study used a scoping review, which addressed the outcomes. The findings were carried out by previous research to know and understand how social interaction and social skills were effective with individuals with autism. These findings will be valuable to healthcare providers, educators, and caregivers, promoting improved social interaction and overall well-being for individuals with ASD ([Greenhalgh, T. 2018](#)).

Ultimately, this study aims to bridge gaps in the literature regarding long-term impacts of nursing interventions and explore the effectiveness of these approaches in children/adolescents in ASD populations.

2 BACKGROUND AND KEY TERMS

2.1 Theory of Mind (ToM)

Theory of mind plays an important role in a human brain, which enables one to think, reason, communicate and feel emotions to oneself and with others ([Premack and Woodruff, 2017](#)). Unfortunately, individuals with autism lack theory of mind, which makes it challenging for them to feel, think, communicate and understand others perspective. The human mind has been built to communicate and socialize with others, which makes individuals with autism feel caged or in their own world, these makes psychology and neuroscientist to study the case of the interconnection between the mind and the body with individuals with autism. The function of the mind helps individuals to process information and operate mentally which gives a positive outcome of emotion, perspective and one's behavior ([Karvelis, 2018](#)).

2.2 Autism

Autism is a mental disorder which affects individuals with autism to have social interaction and social skills. This disability is challenging also with families, schools, and communities for people with autism ([Barhill and Maenner, 2012](#)). Individuals with autism have a repetitive pattern which helps them to feel safe and secure in a particular situation. Unfortunately, individuals with autism suffer from over stimulation of the sensory, which makes them to be over stimulated by bright lights, sound, and smell. In these cases, it makes them have a certain type of behavior or reaction to the situation or environment ([Barbara, C., Benedetta, N., Valeria, T., Francesca, P., Giulia, A., Giulia, A., Ivan, M. C., Stefano, P. and Liliana D. O. 2024](#)).

2.3 ToM Deficits

2.3.1 Communication Challenges

Theory of Mind deficits affects individuals' communication and social skills; they are faced with divers challenges to communicate outside their surroundings. As there are

no medications for this syndrome, however, the few medications only help reduce the symptoms of autism at that time and situation. For example, tantrums, seizures or insomnia. Individuals with autism show challenges in communication and social interaction due to the neurodevelopmental disorder, in this scenario they are not able to develop mentally which restricts their interest in communication. These challenges can persist throughout their lifetime if early interventions are not carried out. Individuals with autism struggle to interpret others' intention during communication, which makes it overwhelming for them to open to others. Due to their inability to process information, this causes hindrance of their mental growth ([Baron-Cohen, 2001](#)).

2.3.2 Empathy Challenges

The social and conspecific reliant nature of humanity has been the subject of intrigue and study. The ability to appropriately navigate complex social environment and interactions requires distinct but related cognitive and emotional capabilities. Individuals with autism have challenges to connect with their inner emotions to express kindness and feelings towards others ([Carter and Howe, 2011](#)).

2.3.3 Social Interaction Challenges

Individuals with autism encounters deficits in social interaction, including repetitive behaviors which makes them restricted or not show interest in social interactions. These challenges could be aggression towards others, this neurological disability is the foundation of social interaction and social skills in individuals with autism. The symptoms appear in the early stages in childhood, for example, body gestures and abnormality in speech ([Baron-Cohen, Leslie and Frith, 1985](#)).

This abnormality is common in humans with mental disorders which affects their ability to have social interactions. They may be perceived as aloof or socially awkward because they cannot easily relate to others' emotions or point of view. Gestures, tone of voice, and body language can easily be misunderstood, making it challenging for individuals with ASD to fit into typical social norms ([Happé and Frith, 2014](#)).

2.4 Nursing Intervention

In this context nursing intervention strategies implemented by nurses are to improve patients' outcomes, which focuses on enhancing Theory of Mind abilities through therapeutic activities, emotional support, and social skills training.

In the nursing field, providing care for individuals or children with autism presents unique challenges. Nurses must be equipped to meet their specific needs, as individuals with autism are unique. To effectively support these vulnerable groups, specialized training is essential to address both their mental and social factors holistically. Nurses should recognize that children with ASD need personalized assessments and treatment plans. A thorough nursing assessment should evaluate development delays, behavioral issues, speech, and language abilities. By conducting detailed evaluations, nurses can identify the core nursing problems and create appropriate processes, ensuring that priorities such as daily living activities, health needs, and safety are addressed. Caring for individuals with ASD requires tailored nursing interventions, and nurses can serve as change agents, educators, and advocates, playing a vital role in improving the well-being of these individuals (Eva, L. S., Kalaiselvi, D. P., Manjula, G. B, and Rasha, E. A, 2015).

2.4.1 Direct Care

Direct care allows nurses to implement individualized care plans to meet the needs of people with theory of mind deficits and individuals with autism. This involves supporting patients in recognizing and interpreting social cues, enhancing communication abilities, and providing emotional support to alleviate social anxiety. Through continuous interaction, nurses' model appropriate social behaviors and help individuals with autism navigate social interactions more effectively, fostering improved social competence and reducing isolation (Fletcher-Watson, S., and Happé, F. 2019).

2.4.2 Cognitive-Behavioral Intervention

Treatment and Education of Autistic and related Communication-handicapped Children, this program integrates cognitive approaches with structured educational strategies for individuals with ASD and related communication challenges. The

program emphasizes visually mediated learning and environmental structuring to support behavior. Its' goal is to provide continuous, life-long support tailored to each individuals' abilities, starting with assessments in areas such as imitation, perception, fine motor skills, and non-verbal cognitive performance, which guide personalized intervention ([Mesibov, G. B., Shea, V., and Schopler, E. 2005](#)).

2.4.3 Family-Centered Care (FCC)

Family-Centered Care is a recognized approach in nursing intervention, particularly in caring for individuals with developmental conditions such as autism. It involves the family as integral partners in the patients' treatment, ensuring that family members actively contribute to decision-making and care planning. In ASD care, family involvement is crucial because caregivers often understand the patients' behavior, communication methods, and triggers better than healthcare providers. Nurses collaborate with families to ensure tailored interventions that meet specific family needs, such as training parents in behavioral management, communication and techniques ([Kuo, D. Z., Houtrow, A. J., Arango, P., Kuhlthau, K. A., Simmons, J.M., and Neff, J. M. 2012](#)).

2.5 Social Interaction

Autistic individuals do engage with others and form relationships, but these connections often differ from typical social interactions. Many individuals with autism strongly wish to connect with others, share their thoughts, and feel understood. Despite this, they may struggle with social relationships because their interests and ways of interacting can seem unusual to other people. As their worldview is distinct from that of neurotypical people, they often find it challenging to navigate social norms that are usually learned in early childhood. These social expectations might not make logical sense to them, and as a result, they may unintentionally say or do things that are perceived as socially inappropriate. This disconnect can lead to increased social isolation, feelings of loneliness, and a sense of being different ([Joan and Rich, 1999](#)).

2.5.1 Child Specific Intervention

Child specific intervention is a unique skill used to improve a specific child's skills and needs, this enables the child to grow socially and improve their social skills and communication. This approach must be consistent, so the child's brain can adapt to the program or intervention. These interventions are designed to improve the child's mental well-being in communication and to be independent. The child is being assessed in their strengths and weaknesses, so the program can be used. For example, in speech therapy, teaching, reading or play therapy. Child specific intervention is crucial as it enhances individuals with autisms' communication, social skills, and learning skills, which helps them to be independent ([Odom and Strain, 1986](#)).

2.5.2 Peer Mediated Intervention

Peer-mediated intervention has been proof to be an evidence-based intervention, that has improved individuals with autism. This peer approach is used to develop the conditions with autism, by engaging in peers during social and communication environments and settings. This intervention can be used in schools or play time atmosphere, which enables individuals to be active socially and interact with their peers during play time ([Watkins, 2015](#)). Involving children with autism in this intervention promotes their mental development, by allowing mutual interactions, positive behaviors with their peers, and turn-taking in social activities. Teachers, nurses, therapists, caregivers, and parents are supportive during this intervention by giving guidance and monitoring the children's development ([Chung and Schmidt, 2012](#)). The aim of this peer intervention foresees positive friendship, learning and growth amongst the children in schools, playground, or at home, this also helps the children to be confident and be independent amongst others. Peer-mediated intervention is effective by exposing children with autism to other social environments and people, as they want to be accepted. Which makes individuals with autism mimic what other children or individuals do during play time and social gatherings. This intervention is also cost effective, as it is sustainable by using available and existing peers in this therapy or intervention ([Betz and English, 2008](#)).

2.6 Communication Approach

Effective communication strategies are essential for building connections and enhancing interaction between children with autism and their caregivers. Various approaches are used to support communication in individuals with autism, each tailored to meet their unique needs and facilitate effective engagement.

2.6.1 Floor time

Individuals with autism face diverse challenges which makes it difficult to communicate with others. Their senses can become overstimulated by sound, leading to social discomfort and challenges in interaction. Floor time is an evidence-based approach which is incorporated in schools, developed by Dr. Greenspan. This intervention motivates individuals with autism to imitate what others are doing during play time. For example, by having meaningful interactions and activities with their peers, caregivers or family members. By using this approach, individuals with autism engage and communicate freely without being fearful or awkward during floor time. Nurses, therapists or caregivers recognize children with autism face sensory and communication challenges, however, the floor time is done in a calm and safe environment to enable and motivate individuals participate, for example, adults allow the children to take the lead while they follow, such as playing with games or toys. The promotion of this floor time enhances meaningful friendship, verbal and non-verbal communication, and social skills ([Greenspan and Wieder, 1998](#)).

2.6.2 Applied Behavioral Analysis (ABA)

This therapy or intervention is used to improve the mental well-being and social skills of individuals with autism. Applied behavioral analysis is an evidence-based approach that has improved behaviors and communication to influence meaningful understanding and interactions with children. Applied behavioral analysis enables children to be active in their own environment or settings, this approach reduces triggers and anxiety in children with autism. Applied behavioral analysis is a positive

tool used to encourage and reward individuals with autism for participating, listening and doing what is asked from them. By using this therapeutic approach, it increases good behaviors, social interaction and activities which provides growth in social skills and communication. Applied behavioral analysis is also used to reduce aggression, tantrums and self-harm, as it reduces problematic triggers in children/adolescents with autism. The effectiveness of (ABA) has shown the growth in relationships, communication, social skills, and interaction amongst peers with autism ([Johnston and DeLeon, 2006](#)).

2.7 The Effectiveness of Nursing Interventions

The case surrounding effectiveness in nursing approach is by addressing Theory of Mind deficits with individuals having autism, is a short-come and presents different gaps. One of the crucial gaps is the lack of standardized, evidence-based nursing interventions specifically designed to address Theory of Mind deficits. Moreover, there are developing studies around cognitive-behavioral approach, also social skills approach in autism. Few studies have directly explored how nurses can implement these interventions effectively to target Theory of Mind specifically ([McConachie., Diggle., Fletcher-Watson and Happé, 2019](#)).

Many existing studies on ToM interventions focus on multidisciplinary approaches but do not isolate the unique contribution of nursing care. This makes it challenging to assess the specific impact of nursing interventions. Another gap is limited longitudinal research assessing the long-term outcomes of nursing-led ToM intervention, which is crucial for understanding sustained improvements in social cognition ([Happé and Frith, 2014](#)).

3 PURPOSE, AIM, AND RESEARCH QUESTIONS

Purpose

The reason of this thesis is to investigate positive effectiveness of how nursing interventions could be beneficial and effective in Theory of Mind deficits amongst individuals with autism. The study will access the present challenges facing social and communication skills such as difficulties in developing interpersonal skills which includes verbal and nonverbal communication, repetitive behaviors concerning resistance to environment change.

Aim

The study focuses on children and adolescents diagnosed with autism and aims to evaluate the impact of nursing approaches on Theory of Mind developing in individuals with autism. It also seeks to enhance social and communication skills by applying various strategies, including cognitive-behavioral therapy, social skills training, empathy development, family-centered care, and interventions targeting social cognition and interactions.

Research Questions

1. What nursing interventions are applied to explain Theory of Mind deficits in people with autism?
2. How positive and effective are these approaches in enhancing social skills and social interaction?

4 METHODOLOGY AND METHODS

Scoping review is an approach used to summarize a study; this method provides clear knowledge of impact in nursing interventions to address Theory of Mind deficits amongst individuals affected by autism. Compared with the studies, the present scoping review aims to provide a literature mapping and analyzing the research questions. The methodology in scoping review creates a clear framework and steps to provide answers to research questions. This method will use a theme to align the answers, also which meets inclusion criteria. Mapping out the answers related to the research questions will be in steps, this tool is used to provide and analyze the data in this study. Scoping review will be carried out by checking the depth of available data and studies, to provide the existing results and evidence-based answers to the topic and research questions. PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews) (Arksey and O'Malley Framework, 2005).

4.1 Data Collection Method

This literature is conducted in a scoping review, to use different sources and wide range of case studies related to the study. Focusing on the research questions and topic, this method will provide findings or outcomes related to the study. Charts, themes and tables will be used to give descriptive summary, inclusion and exclusion criteria will be summarized in tables and themes. The scoping review will provide clear concepts, gaps and information for future studies. As the topic might be broad, applying this method will help narrow down broad answers related to the study. This will cover different databases, and coverage that is relevant to the study.

4.1.1 Databases

PubMed, CINAHL, ProQuest, and Medic.

4.1.2 Search Words

("nursing interventions" OR "nursing") AND ("ToM" OR "autism) AND ("effectiveness" OR "outcome") AND ("ASD" OR "ToM deficits") AND ("social skills" OR "social interaction") AND ("nursing care" OR "family-centered care") AND ("perspective-taking skills" OR "communication skills") AND ("emotional recognition" OR "empathy") AND ("cognitive-behavioral therapy" OR "peer interaction programs").

4.2 Data Search and Selection

4.2.1 Inclusion

Peer-reviewed articles published in English is used to ensure accuracy to the research questions, high-quality studies are included, reflecting past and recent practices in nursing interventions for ASD. Focusing on nursing interventions that aim to improve ToM deficits. These interventions include interpersonal skills development, talk therapy, and family-centered care approaches ([Weiss, 2018](#)). Participants included individuals formally diagnosed with autism, ensuring the intervention's genuine relevance to the target population ([Baron-Cohen, 2000](#)). Full-text availability was prioritized in this study to ensure that all methodological details and outcomes could be thoroughly and critically evaluated.

4.2.2 Exclusion

Pharmacological-only intervention studies that focus solely on pharmacological treatments without incorporating nursing interventions are excluded. This review aims to assess non-pharmacological, nursing-led strategies that directly address ToM deficits ([Lord, 2018](#)). Non-nursing interventions studies that do not involve nursing care or focus solely on other disciplines, such as psychology or education, are excluded ([Fletcher-Watson and Happé: 2019](#)). Articles not published in English are excluded due to language limitations in the review process. The lack of full-text availability articles that are not only available as abstracts or summaries without full-text are excluded, as they do not provide sufficient data for evaluation.

4.2.3 Table 1. Inclusion and Exclusion Criteria

Category	Criteria	Authors
Inclusion	<ul style="list-style-type: none"> • Studies aimed on nursing interventions to address individuals with Theory of mind deficits. • Published in English. • Peer-reviewed articles providing full-text access. • Studies reporting outcomes related to ToM, social cognition, empathy and perspective-taking. 	Weiss (2018). Baron-Cohen. (2000).
Exclusion	<ul style="list-style-type: none"> • Studies focused solely on pharmacological interventions without nursing components. • Articles without specific outcomes related to ToM or social cognition. • Non-peer-reviewed publications or studies not available in full-text. 	Kuo (2012); McConachie and Diggle (2007).

4.3 Data Analysis Method

The important studies were selected, the following was to extract and analyze the data. The data analysis method includes a thematic synthesis of results related to the study. Identifying nursing interventions, this analysis extracted details on different types of programs used to address (ToM) deficits, various interventions involved; peer-interaction programs, social skills training and cognitive-behavioral therapy (Fletcher-Watson., Happé and Baron-Cohen, 2000). Information on the intervention approach, targeted population, and study design was coded for each article. Assessing effectiveness was used to evaluate the interventions, regarding the data outcomes related to empathy, social interactions, and perspective-taking were synthesized. These studies were categorized based on the reported improvements in these areas, with attention to include temporary and perhaps ongoing benefits (Weiss, 2018). The thematic analysis was used to highlight key trends and areas where nursing

interventions led to measurable improvements in social cognition and Theory of Mind. Summarizing themes were derived based on the intervention type, participant characteristics, and the reported effectiveness of the intervention. The key themes include family involvement, empathy development, perspective-taking skills, and enhanced social communication in reinforcing social skills (McConachie and Diggle, 2007).

4.3.1 Table 2. Overview of Data Extraction and Themes

Empathy Development	Empathy development involves nursing interventions that enhance an individuals' ability to recognize and interpret the feelings of others.	Baron-Cohen (2000: 21(1), 37-46). (Fletcher-Watson and Happé 2019: 60(9), 959-971). (Weiss et al. 2018: 22(6), 715-724).
Perspective-Taking Skills	This intervention enhanced individuals with ToM deficits to listen attentively, reason effectively, and comprehend the thoughts and conversations of others.	Happé and Frith (2014: 55(6), 553-577). Lord et al. (2018: 508-520). Weiss et al. (2018: 22(6), 715-724).
Social Interaction	This enhanced social engagement and development meaningful in social relationships, particularly during early childhood. The intervention encouraged positive social behaviors and improved interaction skills.	Kuo et al. (2012: 16(2), 297-305). Fletcher-Watson and Happé (2019: 60(9), 959-971). Weiss et al. (2018: 22(6), 715-724).
Family Involvement	Family-centered care program enhanced social interaction, strengthened family bonds and improved their confidence in social skills.	Kuo et al. (2012: 16(2), 297-305). McConachie and Diggle (2007: 13(1), 120-129). Weiss et al. (2018: 22(6), 715-724).

4.4 Validation and Reliability

The reliability of the analysis was ensured by employing several reviewers during the screening and extraction phases to minimize bias and improve consistency in data interpretation. The use of established tools, such as PRISMA-ScR overview, and replicability methodology (Tricco, 2018). Additionally, the thematic analysis ensured that findings were presented in a structured and consistent manner, providing clear insights into the effectiveness of the nursing interventions.

4.4.1 Table 3. Literature searches and results

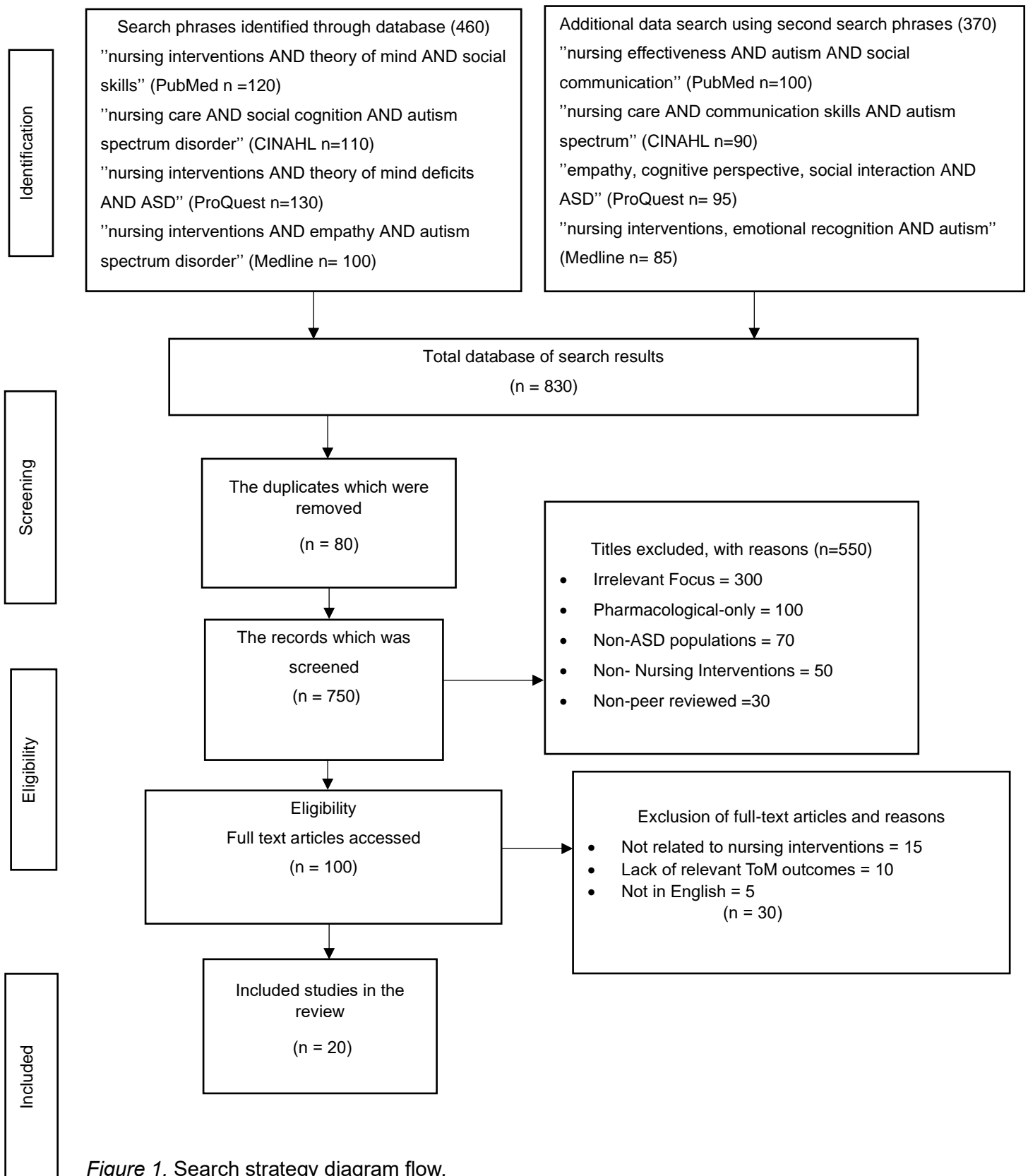


Figure 1. Search strategy diagram flow.

5 OUTCOMES

5.1 Nursing Interventions Used to Address the Deficits in Theory of Mind with Autistic Individuals

The review identified several nursing interventions that are frequently applied to address theory of mind deficiency. These interventions primarily focus on enhancing social cognition, emotional regulation, and empathy, with the aim of improving the persons' capability to understand peoples' thoughts, emotions, and perspectives.

Social skills training intervention, typically nurse-led teaches individuals how to interpret social cues, manage social interactions, and understand others' emotions through structured activities such as role-playing, peer interaction, and the use of visual aids ([Fletcher-Watson., Happé and Lord, 2018](#)). This is the most common nursing intervention used to address ToM deficits.

Cognitive approaches, this technique is used for persons with autism, which is used to regulate their emotions and better understand others' perspectives. Nurses implement Cognitive Behavioral Therapy to address emotional dysregulation, improve empathy and theory of mind. This study reflects and enhances the social cognition and empathy in autistic individuals ([Jordan, 1998](#)).

Family-Centered Care involves educating family members about (ToM) deficits and introducing them with tools to support social skill development at home. This approach emphasizes the role of caregivers in reinforcing the social cognition skills taught in clinical settings, leading to improved social interactions within the family ([McConachie., Diggle and Kuo, 2012](#)). Peer-Interaction Program intervention engage individuals with ASD in peer-based activities to practice and improve social interactions, in addition, peer-interaction program help enhance the individual to have a real-life social practice or experience ([Bauminger-Zviely and Kasari, 2012](#)).

5.2 Effectiveness of Nursing Interventions in Improving Social Interaction and Social Skills.

This thesis evaluates the effectiveness of nursing interventions. These studies consistently show positive outcomes in improved empathy and emotional recognition in individuals with ASD. In addition, the interventions helped individuals recognize and understand others' emotions, a core aspect of theory of mind (Happé., Frith and Lord, 2018). Participants displayed better ability to interpret, tone of voice, body language, and facial expressions leading to better social interaction. Several studies indicated that interventions aimed at improving verbal and non-verbal communication had moderate to significant impacts on social interaction, for example, social interaction training improved in participants' ability to engage in conversations, recognize social cues, and express emotions appropriately, leading to better social interactions overall (Fletcher-Watson., Happé and Weiss, 2018).

Individuals with ASD commonly encounter per-related communication barriers, including challenges with social emotional reciprocity, such as engaging in back-and-forth conversations. They may also struggle with both verbal and non-verbal cues. Additionally, they often face difficulties in developing, maintaining, and understanding relationships, which includes challenges with ASD frequently exhibit deficits in areas such as perspective-taking, social reasoning, and social motivation, further impacting their social interactions (Brundson., Harpe and Shulman, 2012).

The study was carried out by different participants and from different countries, example; parents with 100 children with autism from United Kingdom (UK), 50 adults with (ASD) from United Kingdom, 7 adolescents with (ASD) from Canada, 40 children from United States of America (USA), 66 children with (ASD) from Israel, 60 adolescents from Canada, 50 adolescents from United Kingdom(UK), 50 household of children impacted with autism (Jeffrey, 2018).

5.3 Themes related to research question 1

Table 4. Question 1. What nursing interventions are used to address Theory of Mind deficits in individuals with ASD

Themes related to research question 1	Study Design	Participants	Description Outcomes	Authors, Year and Country
What nursing interventions are applied to explain Theory of Mind deficits in people with autism?	Interpersonal skills	50 Adolescents and 40 Children with ASD	Individuals with autism used video modeling as part of the interventions, which improved their social skills. Nurses can incorporate this as it helps the children to interact with others socially.	Ana, D. Duenas., Bellini and Akullian (2019: 15(4), 18-33). United States (US)
	Cognitive-Behavioural Therapy (CBT)	40 Children with ASD	Individuals show a better understanding of social cues, leading to more effective social interactions. Reducing anxiety in social situations. Helping individuals relate to others more effectively.	Baron-Cohen et al. (2000: 21(1), 37-46). Canada
	Family-Centered Care	50 parents of children with ASD	Involving family members in nursing interventions, educating them on ToM deficits, and providing guidance on improving the child's social cognition and interaction at home.	Kuo et al. (2012: 16(2), 297-305). United States (US)
	Peer-Interaction Programs	66 children with ASD	This program enhanced social communication by allowing individuals to participate in social gatherings, which improved social training, which includes turn-taking, paying attention, and understanding others' feelings and thoughts.	Bauminger-Zviely et al. (2013: 17(3), 317-339). Israel

5.4 Themes related to question 2

Table 5. Question 2. How effective are these interventions in improving social interactive and social skills

Themes related to research question 2.	Study Design	Participants	Description Outcomes	Authors, Year and Country
How positive and effective are these approaches in enhancing social skills and social interaction?	Improved Empathy and Emotional Recognition	60 children with ASD	Cognitive-Behavioral Therapy interventions have been used to develop interpersonal skills and empathy with individuals related to ASD, fostering better friendships which contributes to positive academic outcomes.	Happé and Frith (2014: 55(6),553-577). United Kingdom (UK)
	Enhanced Social Communication	50 Adolescents with ASD	Nursing intervention improved both non-verbal and verbal communication in individuals with ASD by teaching them how to interpret tone of voice, body language, and facial expressions.	Fletcher-Watson and Happé (2019: 60(9), 959-971). United Kingdom (UK)
	Better Peer Interaction	50 autistic individuals	Individuals participating in cohort supported programs reveal increased willingness and ability to engage in conversations and improved social skills.	Lord et al. (2018: 508-520). United States (US)

	Increased Family Engagement in Social Skill Development	Parents of 100 children with ASD.	Family-centered care approach helped families to reinforce ToM-related social skills at home, leading to improved social interaction and communication in familiar settings.	McConachie and Diggle. (2007: 13(1), 120-129). United Kingdom (UK)
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5.5 Table 6. Data Extraction Overview (Thematic Analysis Data)

Authors, Year and Country	Study Design	Intervention Type	Participants	ToM Outcomes	Effectiveness
Baron-Cohen et al. (2000: 21(1), 37-46). United Kingdom (UK)	Randomized Controlled Trials (RCT)	Cognitive - Behavioural Therapy	40 children with ASD, ages 6-12	Improved empathy and Theory of Mind	This intervention has proven effective in enhancing social interaction, helping individuals improve their ability to engage and communicate with others.
Weiss et al. (2018: 22(6), 715-724). Canada	Case Study	Family-Centered Care	7 adolescents age 15	Enhanced perspective-taking e.g. in understanding, motivation, feelings and thoughts.	Positive impact on social skills
Fletcher-Watson and Happé. (2019: 60(9), 959-971). United Kingdom	Cohort Study	Social Skills Training	50 adults with ASD	Increased emotional recognition	Moderate improvement in theory of mind and empathy

6 Discussion

6.1 Results

The outcomes from this scoping review on nursing interventions and their effectiveness in addressing (ToM) deficits in autism individuals, delivered important depths into different interventions used in nursing to improve social interaction, social skills and empathy with autistic individuals. The scoping review discovered several nursing interventions, including interpersonal training skills, psychotherapy, peer- interaction programs, and family-centered care, each displays different levels of effectiveness.

Social skills training appeared as the most widely used intervention, particularly among younger populations, with average to significant improvements in empathy development and was able to acknowledge and interpret communal and social cues. Example, studies by (Fletcher-Watson and Lord, 2018.) highlighted the role social cognition interventions in improving the intellectual functioning of adolescents and children with ASD. These studies illustrated the major impact of structured training on improving social communication and understanding of others' perspectives. Likewise, Cognitive Behavioral Therapy-based interventions, as discussed by (Weiss, 2018.) have shown to be effective in improving emotional regulation and empathy, addressing the features of ToM deficits such as perspective-taking to imagine others' thoughts. Cognitive Behavioral Therapy has been particularly effective across age groups, providing a foundation for understanding others' emotions and responding appropriately in social situations.

Family- centered intervention, such as those applied by (McConachie and Diggle 2007.) focused on involving members of the family in therapeutic task and procedure to strengthen theory of mind skills in real-life environment. By taking caregivers as active partners, this intervention strengthened the progress of social cognition, contributing to improvements in social skills within the home, circles and community. Despite the positive outcomes reported in these studies, several gaps remain in the research (Kuo. 2012).

6.2 Validity

The validity of this scoping review was verified through an organized and transparent study approach data to extract analysis. Established frameworks, using the PRISMA-ScR and scoping to review the guidelines (Tricco, 2018.) provided methodological carefully throughout the process. The inclusions of studies from different geographic areas and setup contributed to the external validity of the outcomes, offering a wider understanding of how nursing interventions can be applied in various healthcare settings. However, this review focused on English language studies introduces possible language bias, limiting universal extension of the results and outcomes. Internal validity was maintained by ranked studies with strong methodologies, such as the (RCTs) which is same as randomized controlled trials, and well-designed group approach. This approach controlled confused variables and used validated measures for ToM, tasks such as the false belief test and the mind-reading in the eyes assessment are commonly used to ensure accurate assessment of social cognition and empathy (Happé., Frith and Fletcher-Watson, 2019).

6.3 Ethics

Ethics in this scoping review involved the use of secondary research based on previously published studies. All the included studies were taken through ethical review and followed ethical guidelines, including permission from participants when appropriate or applicable. This review process ensured to protect personal information and proper extract of sources, maintaining clarity and respect ethical research practices (Hibberd, O., Price, J., Thomas, S.H., Harris, T. and Barnard, E.B.G. 2024).

7 Conclusions

This scoping review provides a detailed study of nursing interventions that target the deficits in Theory of Mind with individuals impacted with ASD. This outcome highlights the effectiveness and approaches which includes social skills training, family-centered care, and cognitive behavioral approach in improving important social cognitive functions, including empathy, perspective-taking, and social interaction. The growth in these successes of interventions was the involvement of family members. By encouraging (ToM) in everyday contexts, family-centered care proves to be a critical element in successful interventions.

However, there remain notable gaps in the research. Researchers are still looking at carrying out further studies to see the long-term effects of the carried-out interventions from adolescents, children with autism. Much research focused on short-term outcomes, and the question of whether improvements in social cognition are sustained over time remains unanswered. Additionally, there is limited exploration of cultural factors, suggesting that future research should examine how culture impacts the success of ToM interventions (Fletcher-Watson, S., and Happé, F. 2019).

The outcomes and findings can be challenging for nursing/healthcare practitioners, particularly in the fields of mental health and new nurses. Interventions targeting social cognition are important for improving a good life for individuals with ASD, and the evidence presented can inform the development of more targeted nursing interventions and training programs. By understanding the current evidence, healthcare professionals can be better organized regarding their approaches to help improve social, emotional and communication for better and long-term outcomes (Lord, 2018).

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9 APPENDICES

9.1 Appendix 1. PICO

Elements relevant to the research questions on Nursing Interventions addressing the Deficits in Theory of Mind in autistic individuals.

Elements	Description
Population	Autistic individuals
Interventions	Nursing interventions, includes social skills training, cognitive-behavioural therapy (CBT), family-centered care, and peer-interaction programs.
Comparison	Standard care without any additional interventions.
Outcome	Improvement in theory of mind, empathy, perspective-taking, and social interaction.

9.2 Appendix 2. Inclusion and Exclusion

Criteria	Inclusion	Exclusion
Population	Individuals diagnosed with ASD	Individuals without ASD developmental disorders
Intervention	Nursing interventions focusing on social cognition, ToM, empathy, and perspective-taking/understanding	Pharmacological-only interventions without nursing components
Study Design	Peer-reviewed studies, Randomized Controlled Trial (RCT's), Cohort studies/Observation design, Systematic reviews	Non-peer-reviewed articles, grey literature/not academic standard
Language	English	Non-English publications

9.3 Appendix 3. PRISMA Flow Diagram

Stage	Description	Number of Records (n)
Identification		
PubMed	Records through PubMed	220
CINAHL	Records through CINAHL	200
ProQuest	Records through ProQuest	225
Medline	Records through Medline	185
Total Records Identified	Total records across all databases	830
Screening		
Duplicates	Records after duplicates removed (80)	750
Titles/Abstract Screening	Records screened	750
Exclusions based on title/abstract	Excluded records centered on title/abstract screening	550
Reasons for Exclusion (Title/abstract)		
Irrelevant Focus	Articles focused on topics unrelated to nursing interventions/ToM in autism	300
Pharmacological Focus	Articles focused on only pharmacological interventions	100
Non-ASD Population	Articles addressing populations not related to ASD	70
Non-Nursing Interventions	Interventions not involving nursing components	50
Non-peer-reviewed	Older studies	30
Eligibility		
Articles with Complete-Text	Assessed articles for eligibility	50
Exclusions and Grounds (Full-Text)		
Does Not Address Nursing Interventions	Articles not focused on nursing interventions	15
Lack of ToM-Related Outcomes	Articles lacking outcomes related to Theory of Mind	10
Language	Not in English	5
Included		
Studies Included	Studies included in the review	20