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A Systematic Review of Studies on Social Skills Development for Adolescents with Autism Spectrum Disorders

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Abstract

Aim and Significance: The systematic literature review is developed as an investigation of existing and recommended evidence based social skills and strategies to adopt in improving adolescents with ASD social skills. The systematic review was developed based on the understanding that a majority of the studies have focused on children below 11 years social skills. The need to analsye and establish the age specific social skills and strategies required informed the review development. This ystematic review evaluates the available published studies on group-based social skills interventions in the United States and the realm of Canada to improve the social skills among adolescents with ASD

Methods: The systematic review developed an online search for peer reviewed articles published on the Medline, PsycINFO, Psychoarticle, Psychology and behaviour and Web of Science, through a PubMed-NCBI, an EBSCO and the Ovid databases. Key words and phrases were used to search for relevant literature. Once results were obtained, an inclusion and exclusion criteria was applied to narrow down the studies to applicable and most relevant studies.

Results and Discussion: Three categories of social skills interventions have been identified to be effective in improving social and communication skills. They are (i) the use of the PEERS, (ii) social skills training group and (iii) group skills training. The recommendation for future research should focus on comparing protocols of various social skills training in clinical settings of the real-world.

Keywords: Autism Spectrum Disorder; Asperger Syndrome; Intervention; Social Skills Training; Social Interaction; Communication; Adolescents; Peer Parents Review

Introduction

Autism Spectrum Disorder (ASD) can be defined is a complex neurological and developmental disorder. It is frequently used to describe a continuum of diagnoses that include Autistic Disorder, Asperger's Disorder or Asperger Syndrome (AS), childhood disintegrative disorder (CDD) and Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS). According to The Nature of Social Difficulties in Autism Spectrum Disorder the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), the existing impairments in social communication, social interactions deficits and restricted, repetitive, and stereotyped interests and patterns of behaviour are diagnosis

characteristics of autism spectrum disorder [1]. Statistically, a global review of ASD prevalence indicates that on a global scale, one on every 160 children has ASD. As of 2018, it was estimated that the global prevalence was estimated at 7.6 people with ASD per every 100 population base (1 in 132 people) [2].

Particular social skills deficits that are present in people with ASD often include impairments in social interaction, lack of understanding of nonverbal social cues and social cognition deficiency which means the failure to comprehend what to say or not say in a context of the social field [3]. Furtherly, abnormal speech prosody (e.g., not ending questions with a rise in pitch), rapid shifts of topics during a conversation, expressing emotions, pedantic or overly formal speech, and remaining on a preferred topic without regard to the listener and problems understanding are some of the other identified deficits in existence. Moreover, the lack of understanding on the interpretation of nonliteral languages such as metaphor and sarcasm are also present among individuals with ASD. People with the defined syndrome do not present with delayed or deviant early language development [4]. Thus, all the disorders that are in relation with deficits in the realm of social and communication skills are present in individuals with ASD; these disorders manifest themselves to isolation and lack of friendships or credible relationships [5].

A majority of the studies on ASD have predominantly focused on Children often below 12 years. The general assumption is that with management and proper therapy, once the ASD identified among children within this age category are addressed, the challenges linked to the disorder are significantly reduced among older individuals [6,7]. However, some of the limitations in this general assumption has been the late diagnosis of the ASD among children has been a major challenge globally especially in the emerging and developing countries. Current studies on the prevalence and incidences among people with ASDs indicate that the adolescents' category is a new and emerging group that needs care and focus [8]. The delayed therapies and treatment protocols for ASD among children below 12 years spills over the complications and challenges to the teen's category mainly for those between thirteen to nineteen years. The realization and need to address this special group category has necessitated the development of studies. There is a need to evaluate the applicable age-specific evidence based interventions and social skills ideal for this category.

The developed systematic review aimed at analyzing the most common and highly recommended evidence based interventions and social skills that are ideal for the teenagers with ASD related disorders in addressing their social and psychological well-being in the society.

Methods

The systematic review developed an analysis of existing secondary data. The scope of the study was on the evidence based intervention strategies and social skills in enabling high-functioning adolescents with ASD related disorders improve on their social and psychological functioning in the society. A search was developed online on the following databases Medline, PsycINFO, Psychoarticle, Psychology and behavior and Web of Science, through a PubMed-NCBI, an EBSCO and the Ovid. The search process was guided by a set of search key words and phrases as summarized below.

- "The focus on social skills and related means such as social skills or social interactions or socialization or communication or corporation."
- "The group intervention format such as group or intervention or treatment or program."
- "The focus on diagnosis of autism such as autism or ASD or autism spectrum disorder or Asperger or Asperger Syndrome or high functioning autism spectrum disorder."
- "The focus on specific group ages of people with autism disorders and their parents such as adolescents, teens, teenagers, parents, family, and caregivers."

The search strategy further expanded its search scope through analyzing the obtained systematic reviews references. The references were analysed and investigated for any relevant and directly applicable. The search strategy was bound to yield numerous studies and as such an inclusion and exclusion criteria. The inclusion criteria were on the sample and population and included had to be adolescents with ASD and aged between 9 to 19 years. This was in addition to the studies being published in the USA and Canada and published within the last one and a half decade (2005-2020) [9]. All studies had to be published in the English language and their articles available in full PDF versions. The contents of the articles were further probed and only studies that provided explicit social skills and evidence based interventions were included in the systematic review analysis. On the exclusion, the studies were excluded if they were not published within the USA or Canada regions and if they were either not in English, had no full PDF versions and were published prior to the 2005 period. The exclusion based on publication period was to ensure that only relevant and time bound interventions and social skills relevant in the current and foreseeable future context were adopted and analysed [10,11]. Other exclusion dimensions included studies whose population and sample base was not the adolescents either being for children or adults older than 19 years. Others included studies that had participants with intellectual difficulties and those that failed to include information about relevant outcomes and evidence based intervention measures. In analysing the risks of bias in the

systematic review the study applied the are Revised Cochrane risk of bias tool for randomised trials (RoB 2.0) and Risk Of Bias In Non-randomized Studies of Interventions (ROBINS-I) tool. Once the potential for study bias was established, the systematic review analsyed the study findings that fitted and passed the set out inclusion criteria.

Results

Articles Included Summary

The overall search strategy yielded a total of 2590 articles. These were all the articles that were captured using the different key words and phrase enumerated in the methodology section. Further, an additional 1013 articles were obtained through reviewing the references of the captured articles. A record for duplicates was conducted and 935 articles were removed. The next step in the results was applying the inclusion and exclusion criteria. The aspects of full versions in PDF, the publication region and timelines were applied as the study search limiters and of the remaining 2668, 69 articles fitted the criteria. Further, the articles were subjected to an analysis of their participants' ages, inclusion of adolescents with ASD but with other conditions, and those that failed to include a relevant outcome description. The PRISMA figure for the search protocol and the outcomes is as illustrated in figure 1. The systematic review analysis remained with 11 articles that fitted the inclusion criteria and thus were used as the basis for the systematic review data analysis. A summary of the studies indicates that they were developed indifferent settings as illustrated in Table 1. The diversity of the settings enabled the creation of a diversified and all perspectives recommendation on evidence based interventions and social skills. Some of the studies were developed on a clinical setting often linked to established and recognized Teaching and Referral Universities in the USA and Canada [12-18].

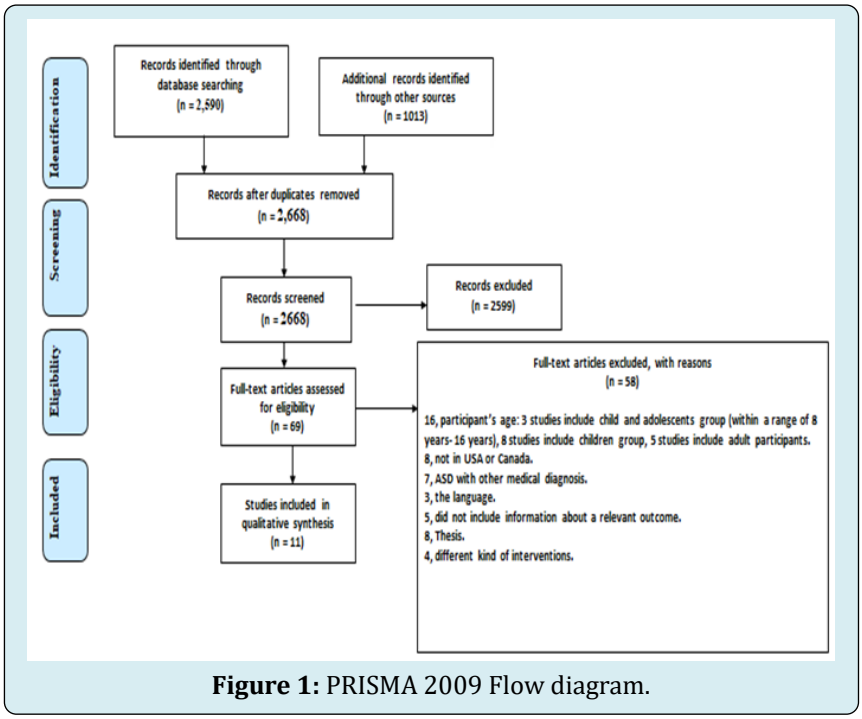

Figure 1: PRISMA 2009 Flow diagram.

Other studies with detailed investigations evaluated social skills among autistic adolescents in school settings, such as those studies conducted by Laugeson, et al. [15], Laugeson, et al. [19] and Laugeson, et al. [14]; however, there are some that have been conducted outside the realms of school, that is, a non-public school setting, such as studies of Mandelberg, et al. [16]; Tse, et al. [12]. Also, other settings were included such as at university-based children's hospital [20], university campus [5] and regional centres [19]. Furthermore, most of the studies evaluated SST group of adolescents with ASD which took place within the geographical domain of the US and Canada, according to the inclusion criteria in this review. Thus, various studies in accordance with the topic can be collected which would help to increase the validity of this paper about the effectiveness of learning SST among teens with high functioning ASD.

Type of Social Skills Interventions

Programme for the Education and Enrichment of Relational Skills (PEERS): The UCLA Programme for the Education and Enrichment of Relational Skills (PEERS)

is a range of social skills intervention and friendship improvements designed for adolescents with high functioning ASD, which essentially focuses on making friends in addition to managing peer rejection and conflict. It also includes the various cognitive-behavioural principles to help improve the social functioning of adolescents with ASDs [20]. The curriculum for UCLA PEERS' is based on the principles of Children's Friendship [21,22], with core features of PEERS adapted for teens with ASD which is inclusive of: relevant portions of the social skills curriculum, the use of parent assistance in the treatment and structural elements of the lesson format. The UCLA PEERS intervention modified the curriculum and methods of instruction and added new modules, to be more applicable for teens with high functioning ASD [19].

The PEERS treatment includes 12-14 manualized weekly sessions, with each session lasting 90 min and typically involves a parent or caregiver [13]. Table 1 provides an overview of the 14-session intervention along with the key socialization homework assignments, and the situation five years posts the conclusion of the treatment. One of the short-term plans of PEERS intervention is to have programmes which are included with parents' participation, as stated above. The purpose for the inclusion of parents is to help the adolescents generalize social skills to a more natural setting by parent social coaching, whereas the long-term aim is for adolescents to exhibit enhanced social competence within an independent use of appropriate social skills leading to the development and maintenance of meaningful relationships.

Three included studies evaluating PEERS used an RCT [5], and each of these studies included a wait-list control group. The two studies employed a quasi-experimental pre-post design in which participants were not randomly assigned to their conditions, and there was control group [14]. Additionally, all the studies investigated PEERS in adolescents between the ages of 11 to 19 years. Facilitators in these studies are licensed clinical psychologists wherein two coaches assisted the group leaders during the duration of the study, both of whom were psychology graduate students with experience conducting clinical treatment and possessed expertise in working with children and teens with autism spectrum. Also, they were trained in all aspects of the PEERS programme intervention.

Teachers and teacher aides assigned to the intervention were also trained and supervised in the study of [15]. This study had supervision in addition to consultation from the principal investigator. The treatment was delivered through a didactic instruction, fundamental social skills such as appropriate use of eye contact and voice volume, social initiation skills such as starting a conversation with somebody, getting along and interacts with others, including acknowledging other people and following directions and social response skills, such as reciprocity during conversations were taught. The study conducted by Laugeson, et al. [14] followed a similar protocol to Laugeson, et al. [19] but with two additional sessions of treatment and a follow-up period. These two additional treatment modules included training in the proper use of electronic communication, online security, procedures for handling cyber bullying, suitable use of humour, long term practices for changing bad characters and strategies for handling rumours and gossip.

A further study by Mandelberg, et al. [16] was described as a randomised complete block design. They assessed teens with ASD and collected outcome measures for treatment at three testing time points (T1, T2, and T3). T1 is pre- PEERS intervention as a baseline data which was collected for each measure upon initial entry into the study. T2 is a post-intervention test, wherein the assessment data was collected after the conclusion of treatment. While a T3 is a long-term follow-up assessment data which were collected during 1-5 years with an average of 29 months following the treatment? Therefore, teen members can consider as 'blocks' and the varying time points as 'treatments'. The protocol intervention was described thoroughly in all the seven studies.

The study conducted by Schohl, et al. [21] was the only study which was independent of UCLA, which decreases the risk of investigator bias when compared with the other studies. In this study, additionally, to licensed clinical psychologists, there was Van Hecke, one of the authors of the study who had attended an official PEERS training workshop in Los Angeles and was certified in providing PEERS treatment. Then, she returned to the site of the current study and instructed graduate students in a clinical psychology Ph.D. programme to assist with and co-lead the PEERS adolescent and caregiver groups, and undergraduate students to serve as coaches or assistants for the PEERS group intervention. All graduate students had extensive experience in research, diagnostic, and clinical practice in ASD, and all teens group leaders had at least a Master's degree in clinical psychology and had completed formal coursework in general aspects of group therapy. All adolescents and parent graduate group leaders received training via observing the certified Van Hecke's sessions. Coaches in this research helped with role-play activities, behavioural rehearsal, and behavioural management. Additionally, there was a homework review of the assignment from the previous week. The didactic lesson, which was outlined in a hand-out given to the parent group and in the context of the adolescent group's didactic lessons, they were improved by demonstrations in which the group leaders modelled the proper social skill being taught through exercises of role-playing.

Authors	Study location and its design	Number of participants and number of participants per group	Gender	Age range and mean age	Autism diagnosis and the effect size	Mean IQ range	Type of intervention	Outcome measures	Main findings
Tse, et al. [12]	Quasi-experimental pre-post designs without a control group, in Canada	46 participants m= 34 f= 12 the number of participants per group= each group enrolled 7-8 adolescents	(13 years-18 years), mean age= 14.6 years old	All ASD (AS and HFA) Effect Size: from .34 to .72	Not tested	SST group. It is adapted from 'Skills-treaming the Adolescent' by Goldstein and McGinnis (2000)	SRS, ABC and N-CBRF	Problem behaviours were decreased significantly, in addition, to increase in social competence.	Adolescents with ASD perceived more improvement in their social skills than did their parents.
Laug-eson, et al. [14]	Randomised controlled trial, in USA	33 participants m= 28 f= 5 the number of participants per group= 7 adolescents	(13 years-17 years), mean age= 14.6 years old	23 teens with HFA, 9 with ASD and 1 with PDD- NOS Effect Size: Not available	Mean verbal IQ=92	UCLA PEERS	SRS, QPQ, TASSK-4, FQS, KBIT-2 and Vineland-II	A significant variation between treatment and control regarding the increase in knowledge of social skills, the frequency of get-togethers and parent-reported social skills.	Because of the poor return rate of questionnaires, social skills improvement reported by teachers was not significant.
Gates JA, et al. [17]	Systemati and meta-analysis	Nineteen RCTS	132 (male-73, female-59)	11-19 years 14.7 years	Not tested	Group skills training	Group-based social skills interventions (GSSIs)	Interaction in group and with large number of people in teams was improved for teenagers with ASD	Social skills interventions presently appear modestly effective for youth with ASD, but may not generalize to school settings or self-reported social behaviour.
Jonsson, et al. [18]	Radomised control trial, USA	50 participants	15 females, 35 male (Aged 10-17 years)	All 50 teens with ASD (diagnosed F84.0, F84.1, F84.5, or F84.9)	Not tested	Social skills training program	Social Responsiveness Scale–Second Edition (SRS-2)	Interaction challenges/ problems were reduced significantly. Minimal/no significance correlation with learning experience and development	Results suggest added benefits of extended SSGT training, implying that service providers might reach better results by optimizing the delivery of SSGT.

Mitchel, et al. [13]	Single-case multiple baseline, in Canada	3 participants m= 1 f= 2 the number of participants per group= 3 adolescents	(15 years -19 years), mean age= 16.6 years old	2 AS, 1 HFA Effect Size: Not avail-able	Not tested	Group social skills training program adapted from "Navigating the Social World" (McAfee, 2002)	SRS, training and generalisation probes, quality of life questionnaire	Increased generalised targeted social skills across behavioural and social validity measures that were maintained through a 3-month follow-up.	Training and generalization increases were recognized for an introducing oneself skill across all three participants. High baseline training probe points for a participant one on the skill of initiating conversation with peers and problem-solving conflicts skill and Participant 2 on a skill of joining group activities obscured training effects. Generali-zation probe results are clearer for Participants 1 and 2 who showed generalization just after the trained of the target skill. Participant 3 did not demonstrate consistent skill acquisition or generalization on joining group activities skill. Skills that were acquired during group were maintained at the follow-u period of three months.
Laugeson, et al. [14]	Quasi-experimental pre-post designs with a control group, in USA	28 participants m= 23 f= 5 the number of participants per group= 8-10 adolescent	(12 years-17 years), mean age= 14.6 years old	All high functioning ASD Effect Size: Not avail-able	verbal IQ >70	UCLA PEERS Program	SSRS, SRS, QPQ, TASSK-R, KBIT-2 and Vineland-II	Findings show that the intervention resulted in overall improvement in social skills as reported by parents and teachers on a standardized measure of social skills (SSRS).	Present findings from this study are very encouraging, unique and important for a number of reasons. First one, the study demonstrates the use of an effective treatment for an underserved population, high- functioning adolescents with ASD, with core deficiencies in their social skills. Second, this study is unlike most of the existing studies with social skills training interventions, it utilized a parent-assisted manualized intervention designed to improve the friendship skills of teens with ASD. Third, this study also unlike many previous studies in an assessed change in social competence at a 14-week follow-up assessment, in order to establish successful maintenance of treatment gains.

Laug-eson, et al. [15]	Quasi-experimental pre-post designs with a control group, in USA	73 participants m= 64 f= 9 the number of participants per group= Treatment group n= 40 Active treatment control group n=33	(12 years -14 years), mean age= 13 years old	All high functioning ASD Effect Size: was low, no speci-fic range was record-ed	Not tested	UCLA PEERS	SSRS, SRS, QPQ, SAS, FQS, PHS-2 and TASSK	In comparison to an active treatment control group (Coucouvanis, 2005), teen participants in the treatment group who were receiving the PEERS intervention, demonstrated overall improvement in social responsive-ness on the SRS (Constantino, 2005) as stated by their teachers on a standardized measure of social skills functioning, especially in the areas of improved social motivation, social awareness, social communication and reduced autistic characteristic.	However, there was significant decreasing in social anxiety as reported by parents in the Treatment Group in comparison to parents in the Active Treatment Control Group. Due to the small portion of the sample in a Treatment Group (n = 17), that revealed significant differences in social anxiety occurred.
Mandelberg, et al. [16]	Randomised complete block design study (no control), in USA	82 participants m= 43 f= 10 the number of participants per group= Participants who completed T3 assessments (n=53), Non-completers (n=29)	(12 years-18 years), mean age= 14.4 years old	All high function-ing ASD Effect Size: Not avail-able	verbal IQ >70	UCLA PEERS	SCQ, SSRS, SRS, QPQ, TASSK, FII, KBIT-2 and Vineland-II	Treatment gains maintained on SRS and SSRS, as well as the frequency of interactions between friends and social skills knowledge.	The findings presented in this study are encouraging and consequential, suggesting that the PEERS parent-assisted, manualized method of SST appears to lead to long-term sustained benefits 1–5 years following treatment. Decreased behaviours disorders and improved overall social skills, social responsiveness, social skills knowledge and frequency of peer communications are maintained over time, suggesting durability of treatment effects.

Schohl, et al. [21]	Randomised controlled trial, in USA	58 participants m= 47 f= 11 the number of participants per group= EXP; n=29- WL; n=29	(11 years-16 years), mean age= 13.65 years old	All ASD Effect Size: Not avail-able	Mean verbal IQ=100	UCLA PEERS intervention	TASSK, QSQ, FQS, SIAS, SRS, SSRS	Compared with controls, the significant improvement and increase in get-togethers, higher ratings of meaningful friendship skills, fewer stated problem behaviours (included items relating to aggressive acts, poor temper control, sadness, anxiety, fidgeting and impulsive act) and lower social anxiety symptoms. Instead, learning and practicing social skills may produce a sense of confidence and comfort for autistic adolescents in social situations, perhaps counteracting their social anxiety.	Further extension of previous findings was that the experimental treatment group significantly decreased in their levels of ASD symptoms per parent report specifically, on the SRS scales, as compared to the waitlist control group, from pre- treatment to post-PEERS treatment.
Dolan, et al. [5]	Randomised controlled trial, in USA	58 participants m= 53 f= 5 the number of participants per group= EXP; n=28- WL; n=30	(11 years -16 years), mean age= 13.16 years old to 13.64 years old	All ASD Effect Size: was low, no range was record-ed	Not tested	PEERS Program (The CASS paradigm was used to code the live interactions).	CASS, TASSK and PEERS	The finding of this study suggests PEERS program not only targets the improvements in social skill knowledge base but also promotes social skill implementation and performance.	However, the degree of this improvement on the all the CASS domain did not reveal significant differences between the groups.

N Lordo, et at. [20]	Mixed design, in USA	16 participants No available the number of participants per group= 13 adolescents	(12 years -17 years), Adolescents who were diagnosed with ASD by medical professionals using established criteria had mean range = 15.07 years old, and adolescents with TD had mean range = 15.57 years old.	All high functioning ASD Effect Size: was mode-rate, no speci-fic range was record-ed	IQ[3]70	PEERS Program	WASI-II, FSIQ-2, NEPSY-II, ERICA, PANAS-C, BASC-2, PANAS-C-P, ABAS-II and GARS-3	The PEERS social skills intervention led to improvements in social and emotional functioning in adolescents with autism spectrum.	In this mixed design study, TD adolescents were assessed at a single time point while adolescents with ASD were assessed at pre- and post-PEERS treatment. Results according to: -Positive and Negative Affect; parental report about the positive and the negative affect of adolescents was significantly different between adolescent groups, with parents reporting lower levels of positive affect and higher levels of negative affect in adolescents with ASD relative to their TD peers, yet, comparisons between parent ratings before and after participation in the PEERS program treatment did not yield differences in positive or negative effect. Contrary to these results, teens with ASD did not demonstrate significant differences in self-reported negative affect on the PANAS-C relative to their TD peers, also, adolescents with ASD did not exhibit differences in self-reported positive or negative affect after participation in the PEERS treatment. -Emotion Regulation; adolescents with ASD did not demonstrate significant variations in self-reported emotion regulation abilities as measured by the ERICA relative to TD peers. -Broad Behavioural Assessment; parent reported that adolescents with ASD have a significantly changed from their TD peers on all BASC-2 composites and subscales. -ASD Symptomatology; adolescents with ASD significantly differed from their TD peers on all GARS subscales (including repetitive behaviour, social interaction, social communication, emotional responses, cognitive style and maladaptive speech).

Table 1: Characteristics of included studies using SST groups in teens with ASD.

The study pursued by N Lordo, et al. [20] used mixed design to examine the effectiveness of the PEERS programme as a social skills treatment. Adolescents with ASD were assessed at two-time points, before receiving the PEERS treatment and post the PEERS treatment. Multiple homework assignments were reviewed by N Lordo, et al. [20] in every group session. They also reviewed the adolescent didactic lessons, modelling appropriate behaviour and role-playing. Developing quality peer relationships and remediating social isolation, for examples conversational skills, understanding social cues, and handling socially appropriate active and behavioural responses to friend rejection and/ or bullying was investigated during the course of the study conducted by N Lordo, et al. in 2016 [20].

The seven studies used different measures to assess treatment outcome in social skills training interventions. All those studies used the Social Skills Rating System (SSRS) to evaluate the cooperation of adolescent, statement, self-control and social responsibility except the study which was conducted by Dolan, et al. [5]. The SSRS formed by parents, caregivers and teacher participants were also reviewed in studies. An improvement in adolescent's social skills knowledge during the PEERS interventions, such as measured by the Test of Adolescent Social Skills Knowledge [22], were found in all studies with PEERS treatment study. This suggests that PEERS intervention is successful in improving the specific social skills knowledge of teens with ASD. The TASSK is the criterion-referenced measure that is developed to assess changes in the treatment associated with information for adolescents about the specific social skills taught during the programme of PEERS intervention. It contains skills acquired by the adolescents about the formulation of relationships and making friends. The test took approximate 5 minutes to be concluded and was included in statements that were related to the didactic lessons wherein the adolescents were asked to choose the best alternative among the presented answers. The themes for the questions were acquired from key elements of each of the didactic lessons.

Furthermore, the administration of the Social Responsiveness Scale was included in three of those seven studies which conducted by Laugeson, et al. [14]; Laugeson, et al. [15] and Mandelberg, et al. [16]. It is used for measuring the severity of autism spectrum symptoms as they occur in natural social settings. Studies by Laugeson, et al. 19] and Schohl, et al. [21] had an assessment on the quality of friendship by using the SST measure. Only Laugeson, et al. [19] discovered a significant time-condition interaction, which was due to a decrease from the controls' scores. Mandelberg, et al. [16] also evaluated post-intervention improvements in friendship and observed an increase in the number of get-togethers organised with friends after PEERS, which was maintained during the follow-up period after the conclusion of the social skill intervention programs.

Social Skills Training Group

A study by Tse, et al. [12] evaluated a Social Skills Training (SST) Group which consisted of sessions lasting for approximately one hour, weekly for 12 weeks. This study by Tse, et al. [12] stated social skills were covered in the groups such as; "*Awareness and expression of feelings Making eye contact*, *Recognition of non-verbal communication Politeness*, *Introducing oneself to others Listening to others*, *Starting a conversation Maintaining a conversation*, *Ending a conversation*, *Making small talk*, *Negotiating with others Responding to teasing and bullying Hygiene Dining Etiquette Dating Etiquette".* The group consisted a mixture of psycho-education and experiential techniques that taught social skills and included the elements of role-playing and didactic. The content of the group that has many of such exercises used to teach new skills adapted from the book which was based on 'Skillstreaming the Adolescent' by Goldstein, et al. (2000). According to this book of Skill streaming the Adolescent, there are many exercises that can be used to teach new social skills, apart from role-playing and didactic elements. Additionally, various other skills training manuals are available.

The study was quasi-experimental pre-post designs without a control group and participants had a mean age of 14.6 years. The SST group led by the social worker and psychologist was working with teenagers in the setting of psychiatric units. For one group, there was a psychiatric resident as the third co-leader. Two hours per week for each clinician for 14 weeks was required by the group leader, and included assessments, planning and preparation, group time and feedback sessions. Mix psycho-education and experiential exercises were used. Also, participants' parents were asked to complete three questionnaires post- and pre-the 12-week group: the Social Responsiveness Scale, the Aberrant Behaviour Checklist. The authors noted small but significant improvements in social competence, as measured by the SRS and N-CBRF-PS. Also, as measured by ABC, there was notable reduction in problem behaviours of the individuals with developmental disabilities.

A further study was developed by Jonsson, Olsson, Coco, Gorling, Flygare, Rade, Chen, Berggren [18]. It targeted participants aged above 10 years but below 17 years. This is a category within which teenagers fall within. The study had a sample base of 50 teenagers with ASD with 15 females and 35 male teenagers. The primary outcome tool for the study was the Responsiveness Scale-Second edition (SRS-2) rated by parents and blinded teachers for the respondent included in the clinical trial. The analysis was longitudinal

with assessment developed at baseline and a follow-up done after 3 months with the application of social skills training. The analysis established that the parents rating on social skills had a higher score post treatment as compared to the baseline scores. However, the teachers and other secondary outcomes did not reach statistical significance. The findings were a demonstration that the social training skills were mainly focused on enhancing and promoting the teenagers social skills. Unfortunately they have a low impact and significance on their learning capabilities and functionality. Nevertheless, since they enhanced their social wellbeing, the strategy was considered as successful and valuable.

Discussion

Based on the systematic review analysis, a number of themes and strategies emerge. The outcomes indicate a positive correlation between the adoption of the follow intervention strategies and a positive outlook on adolescents with ASDS social and psychological well-being. Results from this review show crucial themes and trends that transcend beyond the basic social skills group intervention. Also, all of the research included in this review report a positive benefit to the participants. There are different alternative group social skills strategies applicable as illustrated in the study analysis. They include the use of PEERS intervention. Although among children the PEERS strategies were applied to enhance development stages such as playing, the application among adolescents was mainly in promoting communication skills. It was established that through social skills training strategies, the adolescents reported higher communications ability [5,16]. The dimensions of communication facilitated were improved confidence, elimination of self-doubts, and the creation of a friendly communication context.

The social skills training and group social skills training strategies are evidenced as having positive outcomes. The gains and outcomes merits are both at a personal level and at the third party level, the parents. The need to examine a personal level satisfaction and outcomes evaluation is to evaluate if the strategies have an impact on the adolescents with ASD s confidence and self-efficacy in terms of relating and communicating with others socially. Equally, the need for including the teachers and parents' response is to view the improvements in the context of interactions between adolescents with ASDS and those without the disorder related with this condition [15,18,20]. Findings from the study analysis exhibited significant improvement on both, the parent and reported SRS Social Communication and Social Motivation treatment subscales, which assessed strong social skills, such as the ability to relate smoothly with friends in social situations and increase the general motivation for social interaction, such as self-confidence, avoidance. Regarding the clinical significance, however, only one participant demonstrated a positive change in social motivation, and nine of the fifteen participants showcased reliable change from baseline to endpoint on the Social Communication subscale, which assessed the motoric aspects of reciprocal social behavior. Also, this intervention appeared helpful for some of the adolescent participants based on parent-reported surveys [5,17]. Examples of positive social support component are errorless teaching, developing a nurturing and fun environment, clear social rules, reinforcing positive behaviours and various trainers to practice skills. The age-appropriate motivators' component is age-appropriate initiation strategies. Natural social support and an orchestrating peer involvement are the components of both. This new technique shows significant improvement, decreased social disorders and post-treatment maintenance for SST intervention.

A significant portion of literature has focused on the evaluation of UCLA PEERS programme. The quality of these studies was perceived to be more informed than those who evaluated different interventions. Additionally, the majority of studies which examined the effectiveness of UCLA PEERS programme, signify improvements in social cooperation, social skills knowledge, learning, and friendship quality. Training groups were evaluated in the study conducted by Tse, et al. [12], the findings posit that SST group interventions vary according to their effectiveness in improving and developing the social and communication skills of teenagers with ASD. The most compelling evidence for the intervention of SST originates from the PEERS research, which also suggests that improvements in social and communication skills of autistic adolescents can lead to improvements in their wider psychosocial factors, such as friendships and mental health.

Implications and Study Limitations

The developed systematic review analysis has the benefits and implications on literature, research and clinical practice in handling adolescents with ASD related disorders. The main findings are on the strategies applicable in improving the adolescents' social skills and integration with peers. The practice implications are on the emphasis on adopting the Peers based social group strategies as a basis of promoting peer learning. On research and literature, it paves way for the development of additional studies on the context. It is evident that there is a literature gap on studies targeting the adolescent category, thus creating a feasible basis for formulating future reviews and studies hypothesis on adolescents with ASD social and psychological well-being evidence based improvement and enhancement strategies.

On Limitations, despite evidence of the benefits of social and communication skills interventions for adolescents with

ASD, there are significant limitations to the current evidence base. While the authors conducted an extensive search of the literature available on SST interventions for adolescents with ASD and HFA in the United State and Canada, only nine studies were found. Due to the limited number of the studies on autistic adolescents, the current study was a systematic review, not the meta-analysis research. As a consequence, clear measures of effect size for various types of social skills interventions are not available. Effect sizes should also be perceived with caution, particularly for studies with limited sample size, which was an element of the majority of the studies reviewed for the current study. Additionally, the samples in included research studies were a mostly Caucasian male, which makes the findings less generalised to diverse sample. Therefore, in future studies, a larger, more diverse sample including females should be examined.

Conclusion

The systematic review pursued the current study analyzed nine studies that involved adolescents with ASD, aged between 11 and 19, in order to determine the social skills concerns for this population and the respective interventions that are required for autistic adolescents to acquire these skills. These interventions were focused to improve the social skills and to help them to maintain and formulate relationships with friends. According to the studies reviewed, adolescents with autism spectrum disorders honed their social skills with the help of programs that included instruction, instant feedback and participation by the parents. In summary, the findings demonstrated that adolescents have unique needs as opposed to the children below 10 years and adults of 20 years and above. The findings demonstrated the role played by social groups and the prevailing support systems. Adolescents who had a supportive social framework including parents, teachers, and peers had a higher improvement and positive outcome on all the examined reviews. Based on the obtained findings, this systematic review concludes that future research studies should be developed on the topic. They should focus on comparing protocols of various social skills training in clinical settings of the real-world.

Conflict of Interest

There is no conflict of Interest

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Ethical Approval

There is no ethical approval required

References

1. American Psychiatric Association. (2013) Diagnostic and Statistical Manual of Mental Disorder. 5th (edn.), Arlington: American Psychiatric Publishing.

2. Poovathinal SA, Anitha A, Thomas R, Kaniamattam M, Melempatt N, et al. (2018) Global Prevalence of Autism: A Mini-Review. SciFed Journal of Autism 2(1).

3. Laushey K, Heflin L (2000) Enhancing Social Skills of Kindergarten Children with Autism Through the Training of Multiple Peers as Tutors. Journal of Autism and Developmental Disorders 30(3): 183-193.

4. American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders: DSM-IV-TR 4th (Edn.), Washington, DC.

5. Dolan B, Van Hecke A, Carson A, Karst J, Stevens S, et al. (2016) Brief Report: Assessment of Intervention Effects on In Vivo Peer Interactions in Adolescents with Autism Spectrum Disorder (ASD). Journal of Autism and Developmental Disorders 46(6): 2251-2259.

6. Yuan SNV, IP HHS (2018) Using virtual reality to train emotional and social skills in children with autism spectrum disorder. London journal of primary care 10(4): 110-112.

7. Chu SY, Mohd Normal SNSAB, McConnell GE, Tan JS, Joginder Singh SKD (2020) Challenges faced by parents of children with autism spectrum disorder in Malaysia. Speech Language and Hearing 23(4): 221-231.

8. Sritharan B, Koola MM (2019) Barriers faced by immigrant families of children with autism: A program to address the challenges. Asian journal of psychiatry 39: 53-57.

9. Boland A, Cherry G, Dickson R (2017) Doing a systematic review: A student's guide.

10. Moller AM, Myles PS (2016) What makes a good systematic review and meta-analysis?. BJA 114(4): 428-430.

11. Munn Z, Peters MD, Stern C, Tufanaru C, McArthur A, et al. (2018) Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approaches. BMC medical research methodology 18(1): 143.

12. Tse J, Strulovitch J, Tagalakis V, Meng L, Fombonne E (2007) Social skills training for adolescents with Asperger syndrome and high-functioning autism. Journal of Autism and Developmental Disorders 37(10):

1960-196.

13. Mitchel K, Regehr K, Reaume J, Feldman M (2010) Group social skills training for adolescents with Asperger syndrome or high functioning autism. Journal of Developmental Disabilities 16(2): 52-62.

14. Laugeson EA, Frankel F, Gantman A, Dillon AR, Mogil C (2012) Evidence-based social skills training for adolescents with autism spectrum disorders: the UCLA PEERS program. Journal of Autism and Developmental Disorders 42(6): 1025-1036.

15. Laugeson E, Ellingsen R, Sanderson J, Tucci L, Bates S (2014) The ABC's of Teaching Social Skills to Adolescents with Autism Spectrum Disorder in the Classroom: The UCLA PEERS ® Program. Journal of Autism and Developmental Disorders 44(9): 2244-2256.

16. Mandelberg J, Laugeson EA, Cunningham TD, Ellingsen R, Bates S, et al. (2014) Long-term treatment outcomes for parent-assisted social skills training for adolescents with autism spectrum disorders: the UCLA PEERS program. Journal of Mental Health Research in Intellectual Disabilities 7(1): 45-73.

17. Gates JA, Kang E, Lerner MD (2017) Efficacy of group social skills interventions for youth with autism spectrum disorder: A systematic review and meta-analysis. Clinical Psychology Review 52: 164-181.

18. Jonsson U, Olsson NC, Coco C, Görling A, Flygare O, et al. (2019) Long-term social skills group training for children and adolescents with autism spectrum disorder: a randomized controlled trial. European child & adolescent psychiatry 28(2): 189-201.

19. Laugeson EA, Frankel F, Mogil C, Dillon AR (2009) Parent-assisted social skills training to improve friendships in teens with autism spectrum disorders. Journal of Autism and Developmental Disorders 39(4): 596-606.

20. Lordo DN, Bertolin M, Sudikoff EL, Keith C, Braddock B, et al. (2016) Parents Perceive Improvements in Socio-emotional Functioning in Adolescents with ASD Following Social Skills Treatment. Journal of Autism and Developmental Disorders 47(1): 203-214.

21. Schohl KA, Van Hecke AV, Carson AM, Dolan B, Karst J, et al. (2014) A replication and extension of the PEERS intervention: examining effects on social skills and social anxiety in adolescents with autism spectrum disorders. Journal of Autism and Developmental Disorders 44(3): 532-545.

22. Laugeson EA, Frankel F (2006) Test of adolescent social skills knowledge. Available from UCLA Parenting and Children's Friendship Program, 300 Medical Plaza, Los Angeles.