IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

EXPLORING THE IMPACT OF PSYCHOTHERAPY INTERVENTION ON PSYCHOLOGICAL PARAMETERS IN ALEXITHYMIA

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Abstract: This study seeks to explore how therapy treatments affect the psychological traits linked to alexithymia in girls. A study with a quasi-experimental design was carried out, involving a group undergoing treatment and another serving as a control. The examination showed notable enhancements in various mental aspects among those who received psychotherapy after the intervention compared to those in control group. For female children with alexithymia, psychotherapy interventions resulted in significant improvements in emotional intelligence, empathy, and anxiety. These results underline the value of customized therapies in clinical settings.

Index Terms - Alexithymia, psychotherapy intervention, anxiety, empathy, emotional quotient.

I. INTRODUCTION

Alexithymia manifests as a characteristic marked by challenges in expressing and recognizing emotions, alongside an externally focused cognitive approach, stemming from an inadequacy in the neural handling of emotions. Occurrence rates fluctuate between 7% and 13% in general population samplings, but in clinical samplings, they can be multiple times greater. Studies have linked alexithymia with psychological ailments like depression, anxiety, and overall psychopathological strain, as well as with dysfunctional behaviors such as self-inflicted harm, eating disorders, and alcohol addiction (Westwood et al., 2017; Norman & Borrill, 2015). As the patient's incapacity to convey emotions could provoke an adverse response from the therapist, the alexithymia's existence might hinder psychotherapeutic interventions.

A discussion has arisen regarding whether alexithymia is a reaction influenced by the state of depression or trauma (Honkalampi et al., 2001) or a enduring characteristic of personality. However, the increasing agreement is that alexithymia is a quality exhibiting relative, rather than complete, constancy, implying that it can be altered through intervention, but individual disparities persist largely unchanged over time. Another aspect to ponder is whether the alexithymia's diminishment through treatment influences the overall well-being or health of the individual. Nevertheless, there is suggestive evidence indicating that reductions in alexithymia could be advantageous: one research revealed that diminished alexithymia post-therapy was notably linked to a decline in cardiac incidents among individuals with coronary heart disease, while another study identified a connection between decreased alexithymia and enhancements in interpersonal difficulties. Collectively, these findings indicate the potential for alexithymia to be alleviated through intervention and also imply that a decrease in alexithymia could yield positive advantages for the individual. Consequently, recognizing efficient approaches to treat alexithymia becomes a crucial focus for additional exploration (Norman et al., 2019).

It is observed that Levant and his team (Levant, 2001; Levant & Kelley, 1989; Levant & Kopecky, 1995) created a short psychoeducational remedy called Alexithymia Reduction Treatment (ART) to address common male alexithymia. More recently, to craft a manual for group therapy sessions using ART, Levant et al. (2008) built upon this earlier research. Approaches that led to notable decreases in alexithymia usually employed training focused on developing skills to enhance recognition of related emotions and bodily sensations. Moreover, they frequently included group sessions, where individuals with alexithymia could learn by watching and imitating how others express their experiences and emotions (Lumley et al., 2011). These aspects are fundamental to training programs centered around mindfulness, like mindfulness-based cognitive therapy (Teasdale et al., 2000) and mindfulness-based stress reduction (MBSR) (Kabat-Zinn et al., 1985). In these programs, through exercises intended to heighten bodily sensations awareness and to observe feelings and thoughts without judgment, participants learn to focus on the present moment. However, mindfulness-based training has proven effective in reducing psychological distress in community studies (Galante et al., 2018) and in combating anxiety, depression, and stress in clinical studies (Gotink et al., 2015; Khoury et al., 2013).

A significant number of people seeking psychiatric help, with over 32.7% in outpatient clinics and 47.3% among those admitted to hospitals, exhibit alexithymia (Todarello et al., 1995; Wise et al., 1990). As indicated by various studies linking it to unfavorable outcomes (McCallum et al., 2003; Leweke et al., 2009), this condition strongly influences the psychotherapy effectiveness. However,

there is ongoing debate about whether psychotherapy can bring about changes in alexithymia (da Silva et al., 2018; Krystal, 1979; Taylor & Bagby, 2013; Ogrodniczuk et al., 2018). After undergoing treatment, study focusing on alexithymia observed noteworthy reduction in its scores. Conversely, studies that assessed alterations in alexithymia without using interventions designed to address it directly showed inconsistent findings (Cameron et al., 2014). Overall, for individuals experiencing alexithymia, psychotherapy appeared to be beneficial. However, it predicts residual symptoms post-therapy, influences the bond between client and therapist. The individuals with alexithymia encounter challenges in expressing their emotions, often concentrating on physical symptoms. They also faced difficulty in processing emotions and participating in emotional tasks. Some conversations have taken place about the involvement of treatment, especially considering the added difficulties alexithymic clients may bring. However, it's crucial not to presume that clients with alexithymia hesitate to start treatment or lack involvement in it based on the gathered evidence. Efforts have been made to evaluate or develop therapeutic approaches for individuals experiencing alexithymia with these discoveries in mind (Nunes da Silva, 2021). Through a psychotherapeutic intervention, this study investigates the possible improvements in the individuals' psychological aspects impacted by alexithymia.

II. RESEARCH METHODOLOGY

The psychotherapy sessions were conducted by a team of 7 psychotherapists, consisting of 4 women and 3 men, with an average age of 46 years (ranging from 40 to 52 years old). These therapists possessed over 7 years of clinical and diagnostic expertise and received specialized training in the application of the Functional Psychotherapy model.

2.1 Study Design

This study used a quasi-experimental design to evaluate how psychotherapy interventions affected the psychological traits linked to female children's alexithymia. Both a control group and a treatment group were incorporated into the design (Rocco et al., 2022). The flowchart below shows the study design.

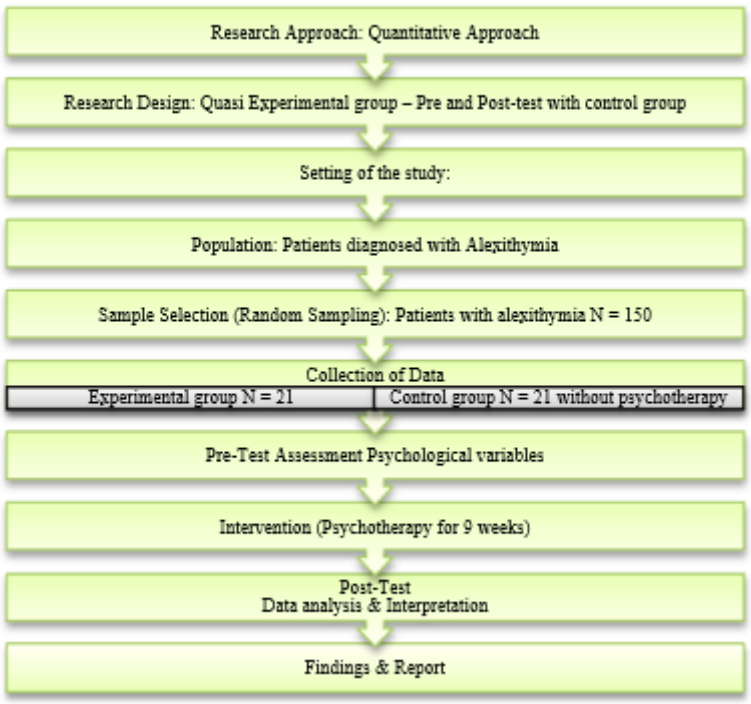

Figure 1: Flowchart of study design

2.2 Sampling

The population is split into groups according to a shared characteristic using stratified random sampling. The sample population consists of patients with alexithymia, mainly females aged 8 to 12. Initially, the CAM (alexithymia measuring scale) was used to screen 1000 patients in the Krishna district. Of them, 50 patients were diagnosed, and 42 of them agreed to take part in the study.

2.3 Data Collection

Data is gathered for this study using pre- and post-tests. This data aims to investigate changes in the patients' psychological aspects diagnosed with alexithymia following psychotherapy intervention. There are two sets of variables. Both sets include variables that are either independent or dependent. The variables under examination in this study are known as dependent variables. The following is a list of the study's independent and dependent variables.

2.4 Variables

Anxiety, empathy, and emotional quotient are the dependent variables in this study, while the psychotherapy intervention is the independent variable.

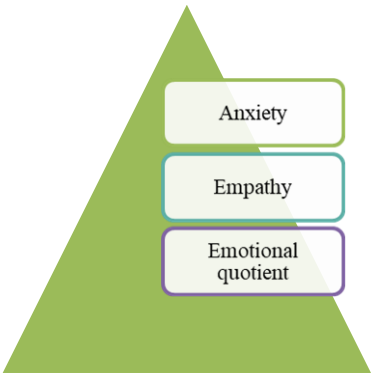

Figure 2: Psychological dependent variables

2.4.1 Psychological Variables

Measuring psychological factors directly can be difficult as they are inherent and complex. For identification, characters such as emotions, personality, abilities, and attitudes need specialized methods (Shaughnessy et al., 2000). This research study employed questionnaires to gather data on psychological factors, making it easier for participants to comprehend. The questionnaires are given both before and after psychotherapy treatment to measure changes in psychological aspects among individuals experiencing alexithymia.

1. *Empathy*: The Toronto Empathy Questionnaire (TEQ) is used to assess the level of empathy in individuals with alexithymia. TEQ is a 16-item Likert scale that has been validated and standardized, ensuring its reliability. TEQ, created by Spreng et al. (2009) measures empathic responses, which are essential for comprehending different clinical syndromes, neurological conditions, and personality disorders.
2. *Anxiety*: The Generalized Anxiety Disorder (GAD-7) questionnaire is utilized to evaluate the anxiety levels in individuals experiencing alexithymia. However, GAD-7 is a dependable and standardized tool that gauges anxiety using a 13-item scale. This tool highlights heightened anxiety levels observed in both adolescents and patients, clinically significant for comprehending childhood psychopathology (Kashani & Orvaschel, 1990).
3. *Emotional Quotient (EQ)*: The Emotional Quotient Questionnaire (EQ-i) is used to assess the emotional intelligence of people who have alexithymia. However, based on Bar-On's approach, EQ-i evaluates both emotional and social intelligence. Stress management, self-esteem, assertiveness, adaptability, empathy, self-control, reality checking, interpersonal relationships, problem-solving, and emotional self-awareness are some of the factors that make up this construct. It is a useful tool for assessing young people's and patients' emotional and social abilities (Bar-On, 2000).

The study seeks to assess alterations in emotional intelligence, anxiety, and empathy pre and post psychotherapy intervention among individuals experiencing alexithymia through the use of these instruments.

2.5 Data Analysis

The study uses a quantitative methodology and analyzes the data using the statistical analysis tool Analysis of Covariance (ANCOVA). Statistical methods such as paired t-tests, independent sample t-tests, inferential statistics, and descriptive statistics were used to assess the hypotheses using SPSS software. The range, standard deviation, and mean of continuous variables were revealed by descriptive statistics. Notably, p-values were calculated using inferential statistics, such as paired and independent sample t-tests, to evaluate the degree of hypothesis satisfaction.

III. RESULTS

In accordance with the goals of the study, a thorough analysis of the data gathered is presented in this part. The statistical technique of percentage analysis is used to provide a thorough description of the sample. To determine variable measurements and provide informal interpretations, frequency analysis is used. It is noteworthy that clear interpretations are aided by inferential statistics when contrasting groups. A comprehensive examination and the study findings' interpretation are ensured by this diverse method.

Table 3.1: Descriptive statistics for psychological variables: Pre and Post

Group Statistics					
	Group	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Pre-Anxiety	Treatment	21	3.43	1.207	.263
	Control	21	2.95	.921	.201
Post-Anxiety	Treatment	21	2.48	1.327	.290
	Control	21	2.90	.995	.217
Pre-Empathy	Treatment	21	3.38	1.431	.312
	Control	21	3.10	1.411	.308
Post-Empathy	Treatment	21	2.10	1.179	.257
	Control	21	2.81	1.436	.313
Pre-Self-Awareness	Treatment	21	3.57	1.028	.224
	Control	21	3.33	1.390	.303
Post-Self-Awareness	Treatment	21	2.00	1.000	.218
	Control	21	2.81	1.209	.264

Pre-Self-Management	Treatment	21	3.48	1.289	.281
	Control	21	2.52	1.537	.335
Post-Self-Management	Treatment	21	2.14	1.276	.278
	Control	21	2.62	1.161	.253
Pre-Social Awareness	Treatment	21	3.52	1.250	.273
	Control	21	2.81	1.365	.298
Post-Social Awareness	Treatment	21	2.29	1.271	.277
	Control	21	3.19	1.209	.264
Pre-Social Skills	Treatment	21	3.43	1.363	.297
	Control	21	3.24	1.480	.323
Post-Social Skills	Treatment	21	2.14	.727	.159
	Control	21	3.14	1.459	.318

The table above displays the standard deviation and average for the provided variables.

Table 3.2: Independent sample t-test for psychological variables: Pre and Post

Independent Samples Test										
		Levene's Test for Equality of Variances		**t-test for Equality of Means**						
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
									Lower	**Upper**
Pre-Anxiety	Equal variances assumed	4.690	.036	1.437	40	.158	.476	.331	-.193	1.146
	Equal variances not assumed			1.437	37.385	.159	.476	.331	-.195	1.147
Post-Anxiety	Equal variances assumed	6.919	.012	-1.184	40	.243	-.429	.362	-1.160	.303
	Equal variances not assumed			-1.184	37.087	.244	-.429	.362	-1.162	.305
Pre-Empathy	Equal variances assumed	.059	.809	.652	40	.518	.286	.439	-.601	1.172
	Equal variances not assumed			.652	39.992	.518	.286	.439	-.601	1.172
Post-Empathy	Equal variances assumed	2.257	.141	-1.762	40	.086	-.714	.405	-1.534	.105
	Equal variances not assumed			-1.762	38.542	.086	-.714	.405	-1.535	.106
Pre-Self-Awareness	Equal variances assumed	1.889	.177	.631	40	.532	.238	.377	-.525	1.001
	Equal variances not assumed			.631	36.838	.532	.238	.377	-.527	1.003
Post-Self-Awareness	Equal variances assumed	2.423	.127	-2.364	40	.023	-.810	.342	-1.502	-.118
	Equal variances not assumed			-2.364	38.640	.023	-.810	.342	-1.502	-.117
Pre-Self-Management	Equal variances assumed	1.591	.215	2.176	40	.036	.952	.438	.068	1.837
	Equal variances not assumed			2.176	38.825	.036	.952	.438	.067	1.838

Post-Self-Management	Equal variances assumed	.016	.899	-1.265	40	.213	-.476	.376	-1.237	.285
	Equal variances not assumed			-1.265	39.647	.213	-.476	.376	-1.237	.285
Pre-Social Awareness	Equal variances assumed	.527	.472	1.769	40	.085	.714	.404	-.102	1.530
	Equal variances not assumed			1.769	39.695	.085	.714	.404	-.102	1.531
Post-Social Awareness	Equal variances assumed	.000	1.000	-2.364	40	.023	-.905	.383	-1.678	-.131
	Equal variances not assumed			-2.364	39.902	.023	-.905	.383	-1.678	-.131
Pre-Social Skills	Equal variances assumed	.035	.852	.434	40	.667	.190	.439	-.697	1.078
	Equal variances not assumed			.434	39.731	.667	.190	.439	-.697	1.078
Post-Social Skills	Equal variances assumed	11.084	.002	-2.811	40	.008	-1.000	.356	-1.719	-.281
	Equal variances not assumed			-2.811	29.356	.009	-1.000	.356	-1.727	-.273

The independent sample t-test was utilized to compare the treatment group with the control group across various psychological variables. Results indicate that for pre-Anxiety, $t(40) = 1.437$, $p > 0.05$, and for Post-Anxiety, $t(40) = -1.184$, $p > 0.05$, suggesting no significant difference between the treatment and control groups at the 95% confidence interval. Similarly, for pre-Empathy, $t(40) = 0.652$, $p > 0.05$, and for Post-Empathy, $t(40) = -1.762$, $p > 0.05$, no significant relationship was found between the groups. However, for Self-Awareness, while pre-Self-Awareness showed $t(40) = 0.631$, $p > 0.05$, indicating no significant difference, post-Self-Awareness demonstrated $t(40) = -2.364$, $p < 0.05$, suggesting a significant relationship. Moreover, pre-Self-Management displayed $t(40) = 2.176$, $p < 0.05$, indicating a significant difference, whereas post-Self-Management showed $t(40) = -1.265$, $p > 0.05$, indicating no significant difference. For Social Awareness, pre-Social Awareness had $t(40) = 1.769$, $p > 0.05$, while post-Social Awareness had $t(40) = -2.364$, $p < 0.05$, indicating significance. Lastly, pre-Social Skills had $t(40) = 0.434$, $p > 0.05$, and post-Social Skills had $t(40) = -2.811$, $p < 0.05$, indicating significance. Therefore, significant differences were found in post-Self-Awareness, pre-Self-Management, post-Social Awareness, and post-Social Skills between the treatment and control groups.

Table 3.3: Paired sample t-test for treatment and control group: psychological variables

Paired Samples Test										
Group			**Paired Differences**					**t**	**df**	**Sig. (2-tailed)**
			Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
						Lower	**Upper**			
Treatment	Pair 1	Pre-Anxiety - Post-Anxiety	.952	1.830	.399	.120	1.785	2.385	20	.027
Control	Pair 1	Pre-Anxiety - Post-Anxiety	.048	.865	.189	-.346	.441	.252	20	.803
Treatment	Pair 1	Pre-Empathy - Post-Empathy	1.286	1.488	.325	.608	1.963	3.959	20	.001
Control	Pair 1	Pre-Empathy - Post-Empathy	.286	1.271	.277	-.293	.864	1.031	20	.315

Treatment	Pair 1	Pre-Self-Awareness - Post-Self-Awareness	1.571	1.207	.263	1.022	2.121	5.966	20	.000
Control	Pair 1	Pre-Self-Awareness - Post-Self-Awareness	.524	1.721	.376	-.260	1.307	1.395	20	.178
Treatment	Pair 1	Pre-Self-Management - Post-Self-Management	1.333	1.742	.380	.541	2.126	3.508	20	.002
Control	Pair 1	Pre-Self-Management - Post-Self-Management	-.095	1.921	.419	-.970	.779	-.227	20	.823
Treatment	Pair 1	Pre-Social Awareness - Post-Social Awareness	1.238	1.972	.430	.340	2.136	2.876	20	.009
Control	Pair 1	Pre-Social Awareness - Post-Social Awareness	-.381	1.687	.368	-1.149	.387	-1.035	20	.313
Treatment	Pair 1	Pre-Social Skills - Post-Social Skills	1.286	1.384	.302	.656	1.916	4.258	20	.000
Control	Pair 1	Pre-Social Skills - Post-Social Skills	.095	1.895	.413	-.767	.958	.230	20	.820

The paired sample tests conducted above reveal significant findings. Within the treatment group at the 95% confidence interval, comparing pre-Anxiety with post-Anxiety yielded a significant relationship, with $t(20) = 2.385$, $p < 0.05$, indicating a meaningful association between pre-Anxiety and post-Anxiety. Conversely, in the control group at the 95% confidence interval, no significant relationship was observed, with $t(20) = 0.252$, $p > 0.05$. Similarly, within the treatment group, comparing pre-Empathy with post-Empathy showed a significant relationship, with $t(20) = 3.959$, $p < 0.05$, suggesting a meaningful connection between pre-Empathy and post-Empathy. However, in the control group, no significant relationship was found, with $t(20) = 1.031$, $p > 0.05$. Moreover, within the treatment group, comparing pre-Self-Awareness with post-Self-Awareness indicated a significant relationship, with $t(20) = 5.966$, $p < 0.05$, highlighting a substantial correlation between pre-Self-Awareness and post-Self-Awareness. Conversely, in the control group, no significant relationship was evident, with $t(20) = 1.395$, $p > 0.05$. Additionally, within the treatment group, comparing pre-Self-Management with post-Self-Management revealed a significant relationship, with $t(20) = 3.508$, $p < 0.05$, demonstrating a significant link between pre-Self-Management and post-Self-Management. In contrast, in the control group, no significant relationship was present, with $t(20) = -0.227$, $p > 0.05$. Furthermore, within the treatment group, comparing pre-Social Awareness with post-Social Awareness unveiled a significant relationship, with $t(20) = 2.876$, $p < 0.05$, indicating a noteworthy association between pre-Social Awareness and post-Social Awareness. Conversely, in the control group, no significant relationship was discernible, with $t(20) = -1.035$, $p > 0.05$. Lastly, within the treatment group, comparing pre-Social Skills with post-Social Skills displayed a significant relationship, with $t(20) = 4.258$, $p < 0.05$, highlighting a meaningful connection

between pre-Social Skills and post-Social Skills. Conversely, in the control group, no significant relationship was apparent, with $t(20) = 0.230$, $p > 0.05$.

The following figure displays the scores for psychological variables measured both before (Pre) and after (Post):

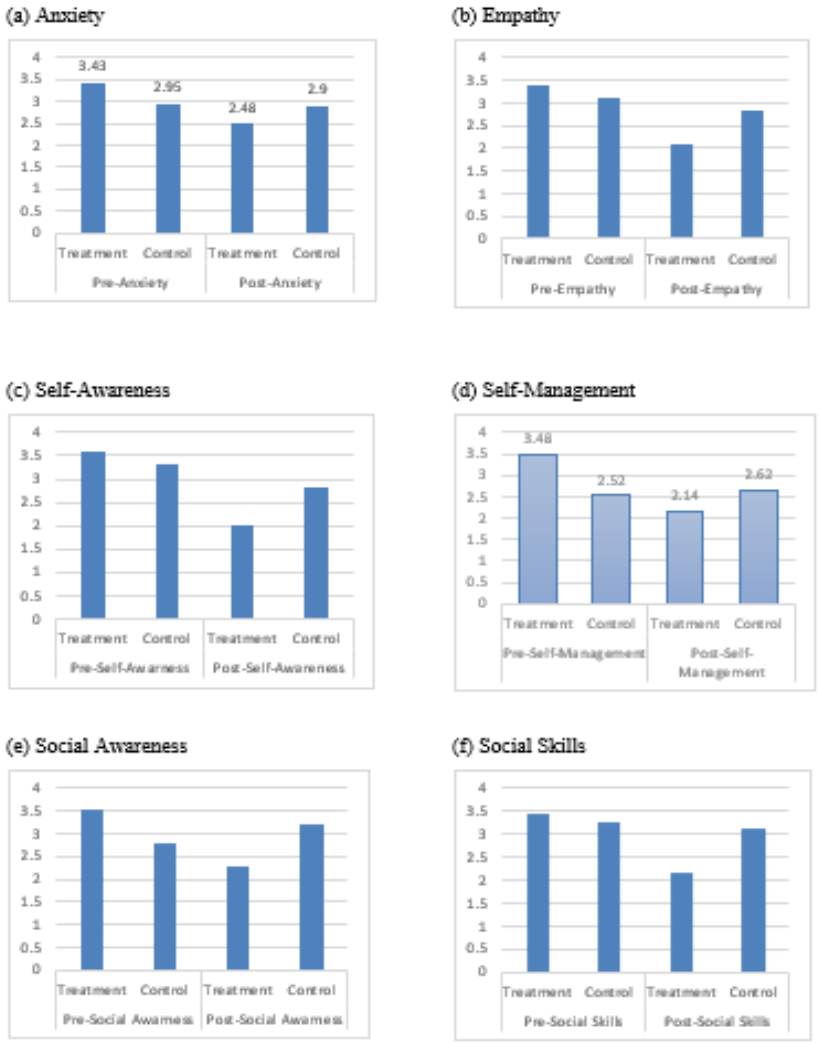

Figure 3: Mean scores for psychological variables: Pre and Post. (a) Anxiety, (b) Empathy, (c) Self-Awareness, (d) Self-Management, (e) Social Awareness, (f) Social Skills

IV. DISCUSSION

The outcomes of this study contribute to the growing body of evidence on the impact of psychotherapy treatments on psychological aspects associated with alexithymia. The present study gain valuable insights into the intervention's precise impacts on different facets of psychological health among children with alexithymia through both paired sample tests and independent sample t-tests.

The investigation aimed to examine the psychotherapy impact on distinct psychological variables. However, the independent sample t-tests indicated no notable distinctions between both the control and treatment groups concerning post-Anxiety, pre-Anxiety, post-Empathy, and pre-Empathy. Noteworthy variances were detected in pre-Self-Management, post-Self-Awareness, post-Social Skills, and post-Social Awareness. These findings imply that the psychotherapy intervention exerted a noticeable influence on psychological functioning's specific dimensions, particularly those associated with social skills, social awareness, and self-awareness.

The treatment group's paired sample tests underlined the significance of the relationships between the pre- and post-intervention measures. Nevertheless, it was discovered that there were significant correlations between pre- and post-empathy, pre- and post-anxiety, pre- and post-self-management, pre- and post-self-awareness, pre- and post-social skills, and pre- and post-social awareness. After the psychotherapy intervention, these findings demonstrate the beneficial and specific modifications in certain psychological aspects.

The study's results can be further contextualized by making connections with related studies. In this regard, Söndergaard et al. (2004) found a correlation between PTSD symptoms and alexithymia, suggesting that treating alexithymia in psychotherapy may have wider effects on people with trauma-related disorders. Furthermore, consistent with this study findings of enhanced skills and social awareness, Ogrodniczuk et al. (2012) showed that an extensive group therapy program was successful in reducing alexithymia and enhancing interpersonal functioning.

Research by Galante et al. (2018) supports the notion that therapies focusing on particular psychological criteria, like those in this current study, might improve overall well-being by showing that mindfulness training lowers distress levels in college students. According to Cameron et al. (2014)'s review, alexithymia may be somewhat modified by therapeutic interventions, which is consistent with this study findings of decreased levels of variables associated with alexithymia.

Moreover, it is imperative to take into account the consistency of alterations throughout time. Tolmunen et al. (2011) proposed that alexithymia is characterized by stability; however, this study's results, in conjunction with Beresnevaite's (2000) findings, cast doubt on this idea by showing that psychotherapy interventions can result in significant and beneficial modifications to alexithymic features.

Furthermore, the idea that focused treatments might result in significant changes in people with alexithymia is further supported by Levant et al. (2009), who saw substantial decreases in alexithymia after a psychoeducational group intervention. Furthermore, Nunes da Silva (2021) highlighted the significance of treating alexithymia in therapeutic settings and offered methods to assist clinicians in collaborating more effectively with clients who have alexithymia. The present study's results highlight the importance of these therapies in enhancing psychological health and social interaction in people experiencing alexithymia.

Overall, this study offers empirical evidence in favor of psychotherapy's efficacy in enhancing particular psychological traits linked to alexithymia. By merging the outcomes of this investigation with prior research, a valuable contribution is made to the growing understanding of alexithymia's adaptability and the possible advantages of focused psychotherapy interventions. Understanding how psychotherapy affects people with alexithymia creates opportunities for customized therapies that can improve the social functioning and psychological well-being of those who suffer from alexithymia. The longevity of these advancements and the precise processes underlying the noted modifications should be the subjects of future studies.

4.1 Limitations

It's important to acknowledge the constraints of this study. However, the sample size was rather modest, and the research concentrated on a particular demographic—girls aged 8 to 12 diagnosed with alexithymia—thus constraining the applicability of the results. Moreover, the study didn't incorporate a prolonged follow-up to gauge the enduring impact of the noted enhancements. It is observed that by incorporating more extensive and varied samples and executing follow-up evaluations to appraise the psychotherapeutic interventions' enduring repercussions on psychological factors, future investigations ought to tackle these limitations.

V. CONCLUSION

The results of the study demonstrate that the intervention made a significant difference in some aspects of the psychological well-being of the children, especially in relation to alexithymia—a disorder marked by difficulties comprehending, recognizing, and articulating emotions. The objective of the study was to mitigate symptoms associated with alexithymia in the participating children. The children's ability to recognize and express their emotions was positively impacted by the intervention, according to the results. It is observed that significant improvements were noted in the treatment group's self-management, self-awareness, social skills, and social awareness after the intervention. These results demonstrate how well the intervention addressed and lessened the children's alexithymic tendencies. However, these results highlight the possibility of using psychological therapies to treat the psychological issues related to alexithymia. Nevertheless, more investigation involving larger and more varied samples is required to confirm these results and clarify the processes behind the noted advancements.

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