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A study on the intervention of positive discipline on parenting self-efficacy and subjective well-being among Chinese parents

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Abstract

Background: In contemporary China, parenting is characterized by high stress and authoritarian practices, leading to negative impacts on self-efficacy and well-being. Positive Discipline provides an alternative to improve family dynamics that is more in harmony with Chinese culture. The positive discipline method is appropriate for the Chinese culture owing to its focus on self-discipline and high academic achievement. The idea of positive discipline in recent years has emerged as a new effective positive parenting approach supporting both kind and firm parenting styles, contributing positively to child development.

Aim: This study examines the impact of Positive Discipline on self-efficacy and subjective wellness of Chinese parents, focusing on culturally responsive psychological interventions.

Methodology: A six-week quasi-experimental intervention with 62 parents from Fujian Province, China, utilised the validated Subjective Well-being Scale and the brief-parental-self-efficacy-scale-interactive. Data was analysed quantitatively through SPSS pre- and post-intervention by analysing the two variables self-efficacy and well-being.

Results: Parents reported improved parenting self-efficacy, increased subjective well-being, therefore, a reduced stress post-intervention. There was a strong correlation showing the efficacy of the intervention in ensuring parental well-being in promoting a sense of parenting efficacy and subjective well-being.

Conclusion: Positive Discipline nurtures self-efficacy in parenting and psychological well-being among Chinese parents. This would empower the parents to adopt a modern parenting style in Chinese society and adapt to the current

parenting pressure. Incorporating PD into family support services might reduce parenting stress and improve emotional health.

Keywords: Positive Discipline; Parenting Self-Efficacy; Chinese Parents; Subjective Well-being

1. Introduction

Parenting has evolved over the years, and today, it remains a process that is continuously changing. It is important to note that parenting affects both the child's development and the family's overall well-being. In recent years, the idea of positive discipline (PD) as a new effective positive parenting approach which supports both kind and firm parenting style has been accepted (Straus & Stewart, 1999: Durrant, 2016). This kind of approach is beneficial for the development of a child's self-esteem (supportive) as well as his or her motivation to achieve desired outcomes (non-punitive approach). This PD method is more appropriate for the Chinese culture as it predominantly focuses on enforcing self-discipline and high academic achievement (Chao, 1994). However, there is a lack of information on how positive discipline is understood to affect the self-efficacy and subjective well-being of Chinese parents.

Parenting efficacy demonstrates the capacity of the mother or father to determine how well a child develops and how a certain child behaves (Bandura et al., 1999). Higher self-efficacy is linked to positive attendance toward children, effective parenting skills, and lowered parental tension (Jones & Prinz, 2005). Conversly, low self-efficacy brings along greater parental anxiety paired with frustration and negative responses towards the children (Coleman and Karraker, 1998). Considering the focus on Confucian values of discipline and authority in Chinese parenting, positive discipline can be seen as an avenue for better parent-child relationships, but challenges to parental confidence may also be present (Xu et al., 2009). This study aims to fill these gaps by measuring the effect of a positive discipline intervention on parenting self-efficacy and subjective well-being among Chinese parents. Moreover, studies suggest that modern Chinese parenting is also influenced by intense and fast-changing challenges driven by technological progress, high academic pressures, and changes in family structures (Lan et al., 2019). Digital technology has become omnipresent, offering opportunities for learning as well as posing significant risks. The transformation has also revolutionized the world of parenting, for instance, parents now have the additional responsibility of overseeing digital activity alongside encouraging

digital literacy competencies and emotional resiliency among children (Mascheroni et al., 2018; Rice & Ortiz, 2021). Many Chinese mothers lack effective parenting methods, resulting in poor self-efficacy and burnout. Studies emphasize escalating issues of children's increased exposure to objectionable content, bullying, and social isolation attributed to excessive screen use (Odgers et al., 2020). Therefore, the parents are required to be adequately prepared.

Additionally, academic stress has been growing stronger in China's highly competitive educational system. The academic stress is enhanced by a deeply ingrained social perception that scholastic achievement is directly related to future wealth (Liu et al., 2022; Wu et al., 2022). It forces many parents to spend heavily on extracurricular coaching and strict school routines, making a significant contribution to parental anxiety. Additionally, in the context of government efforts like the "Double Reduction" policy aimed at relieving such pressures, long-standing cultural norms result in a never-ending cycle of stress and increased anxiety among families (Chen et al., 2022). These existing evidences show that pressure is responsible for psychological issues in children such as depression, anxiety, and low self-esteem. Thus, parental strain is enhanced through pressure, which further distorts family dynamics.

Moreover, changing family forms aggravate these modern parenting issues. Based on the seventh national population census, the average family size in China fell dramatically, from 3.10 persons in 2010 to 2.62 persons in 2020 (anbound.com, n.d). Additionally, accelerated urbanisation and economic development in China have altered the traditional multi-generational families into smaller nuclear family's demographic transition lowers intergenerational support and communal caregiving. This demographic transition lowers intergenerational support and communal caregiving. On the other hand, the reduced presence of extended family caregiving systems leaves parents with excessive loads (Dong & Rao, 2023; Zhu & Zhou, 2022). Such changes increase the burden on parents to handle familial tasks and childcare on their own, also affecting their parenting self-efficacy and overall well-being.

Within this context, embracing effective parenting approaches becomes important. Positive Discipline (PD) offers a useful alternative to authoritarian or permissive parenting. PD is based on Adlerian theory, stressing respect, compassion, positive communication, and democratic problem-solving (Durrant, 2016). It is a non-punitive and non-indulgent strategy that can support children's healthy living practices and increase mothers' parenting self-efficacy. Thereby, this approach specifically targets the special requirements being experienced by parents in China today.

Evidence confirms that Positive Discipline-trained parents express lower stress, increased parenting efficacy, and increased subjective well-being (Apaydın, 2022; Estiningsih et al., 2022). Subsequently, effective parenting approaches, marked by responsiveness, warmth, and equitable discipline, are essential not only for promoting children's healthy emotional and social growth.

Parenting in modern Chinese society is heavily founded by traditional values, cultural expectations, and fast socio-economic transitions. The heritage of policy experiences like the one-child policy, coupled with high academic pressures and urbanisation, imposes distinct stressors on parents, constructing parenting roles and practices (Feng, 2021). These elements are responsible for heightened parental stress and the demand for ethnically appropriate interventions. Here, PD can emphasizes respectful yet firm parenting which can counter these situational challenges by fostering peaceful parent-child relationships in this unique cultural context.

PD is also capable of developing efficient parenting approaches. PD enhances more harmonious family relations, lowers conflict levels between parents and children, and imparts basic life skills like emotional regulation, resilience, and cooperative problem-solving (Chen et al., 2022). Parents can best handle challenges, ensuring increased psychological and emotional well-being across generations. Such consequences are particularly relevant considering China's rapidly evolving socio-cultural landscape and the multi-dimensional demands of modern families. Moreover, in the Chinese context, parenting styles are shaped by Confucian ethical values requiring obedience and tight discipline (Du, 2022). These cultural norms encourage obedience and discipline as foundational to child-rearing, often resulting in authoritarian parenting styles. On the other hand, well-being is an area of increasing concern in the context of parenting. It is a multidimensional concept that includes life satisfaction, positive affect, and low levels of distress (Diener, 1984). Research shows that effective parenting, characterized by warmth and consistency, is positively associated with parental well-being (Kawamoto et al., 2016). Nonetheless, there is little evidence to suggest that use of positive discipline markedly improves SWB for parents in China, who, as a rule, suffer from high child-rearing pressure (Satrio et al., 2023). Subsequently, PD offers a balanced alternative by fostering respect and cooperation while maintaining parental authority, requiring careful adaptation to align with Confucian expectations. Thereby, there is a need to understand the intervention of PD in the Chinese cultural context. Thus, the study aims to examine the impact of PD on parenting self-efficacy and subjective well-being among Chinese parents.

To further study the impact substantially, the study is guided by the following objective

RO: To examine the effect of Positive Discipline on subjective well-being and self-efficacy among Chinese parents.

This study would be significant in filling gaps in knowledge by presenting empirical evidence of Positive Discipline's impact on promoting parenting self-efficacy and subjective well-being in Chinese parents. It would enrich current literature by providing Positive Discipline in the specific socio-cultural Chinese setting, making an important contribution to cross-cultural parenting research. Most importantly, it would aid in designing culturally sensitive parenting training programs, which may have the added effect of increasing parental confidence. Subsequently, it would decrease stress and strengthen family relationships. Thus, this study would promote a paradigm shift towards healthier, more positive, democratic parenting in China

2. Literature Review

2.1. Psychological and Emotional Well-being of Parents using Positive Discipline

Positive discipline (PD) is focused on promoting children's healthy development, but also developing parents' emotional and psychological well-being. In contrast to punitive strategies, PD employs discipline from the standpoints of reverence, solving issues, and controlling emotions. This in turn, can positively impact parents' stress coping, emotional well-being, and overall subjective well-being (Lanjekar et al., 2022). Increased emotion regulation along with diminished parental strain is one of the benefits of PD for the parents and caretakers. Parents who practice PD report lesser cases of burnout or parental frustration because they feel in control of their discipline compared to those who practice other (Greene et al., 2015). PD lowers the guilt or anger parents may harbor due to ineffective discipline and encourages constructive emotional interactions (Gershoff et al., 2018). The other important dimension is parents' built positive feelings towards their children which improves parental well-being.

Evidence indicates that when parents apply PD, they are positively attached with their children which decreases the level of anxiety and emotional exhaustion associated with parenting (Durrant, 2013). Non-punitive, respectful discipline puts parents in a positive reinforcement cycle where they feel competent and fulfilled in their parenting (Siegel et al., 2014). Moreover, it has been noted that PD interventions are associated with

long-term mental health benefits with parents showing higher self-efficacy, lower stress, and greater life satisfaction (Shin et al., 2021). PD interventions protect parents from potential mental health difficulties by giving them effective strategies to manage discipline problems, making it an effective approach for improving parental mental health.

2.2. Parenting Stress and Self-Efficacy

Parenting styles may have a direct impact on the self-efficacy of parents. Parenting stress has negative impacts on parental emotional well-being, evoking anxiety, depression, and burnout, resulting in less responsive and more punitive parenting styles (Neece et al., 2012). Multiple factors moderate parenting stress, such as socioeconomic status (SES), marital status, and number of children (Hoff & Laursen, 2019; Spinelli et al., 2021; Teng et al., 2018). Thereby, children who are exposed to high parental stress levels exhibit greater rates of emotional issues, poor academic performance, and compromised social competence. Similarly, lower SES families are under greater stress owing to fewer resources and access to social support services. Such stress is further exacerbated by factors such as the number of children also affects stress, with multiple-child families (Craig & Churchill, 2018). Thus, parents face stress due to various factors in their environment.

Furthermore, existing research also indicates strong positive associations between increased PSE and supportive, responsive, and stable parenting patterns (Glatz & Buchanan, 2015). Low self-efficacy is associated with inconsistency, reduced parent-child involvement, and greater behavioral and emotional difficulty in children (Alaçam, 2015; Jiang et al., 2023). Parents with higher self-efficacy are more involved in positive interactions, promoting enhanced social-emotional development, greater self-esteem, and improved academic performance in children. Within this context, Positive Discipline interventions are particularly effective in strengthening parents' self-efficacy through skill-building for everyday practices.

2.3. Adaptation of PD in the Chinese Cultural Context

Recent research points to the effective implementation of Positive Discipline (PD) in Chinese cultural settings. Liu et al. (2024) discovered that PD had a profound impact on Chinese mothers' parenting self-efficacy, leading to long-term positive behavioural change. The adaptations involved the integration of PD philosophy with Chinese respect for authority and academic success, indicating PD's cultural adaptability and efficacy in urban Chinese families. It highlighted emotional warmth along with structure, in

keeping with collectivist values and filial obligations. Thereby, the family entail adjustments and adaptation of PD techniques into collectivist ideals, academic priorities, and cultural norms. On the contrary, Fatima et al. (2022) suggested that traditional discipline methods negatively affected rural Chinese early development, promoting PD-based practices that focus on non-aversive, respectful parenting as acceptable cultural alternatives that promote child cognitive and emotional outcomes in Chinese families. However, these studies show the potential of PD in cultural responsiveness and effectiveness within Chinese culture.

2.4. Gaps in Existing Research

Despite the potential of PD, there are significant gap in research within the Chinese context. Firstly, current research is largely based on short-term follow-up, which constrains knowledge about long-term effectiveness (Liu et al., 2024). Moreover, despite the evidence of PD from global studies, there are limited studies in the Chinese context. Therefore, further rigorous, longitudinal, culturally contextualized research is important to fully assess long-term implications and generalizability of PD interventions for parenting self-efficacy and subjective well-being in Chinese parenting environments.

2.5. Theoretical Framework

This study was guided by the Adlerian Psychology along with Baumrind's Parenting Style Typology and Bandura's Social Cognitive Theory that explain the relationship between positive discipline, parenting self-efficacy, and subjective well-being (SWB) of Chinese parents. Figure 1 shows the theoretical framework.

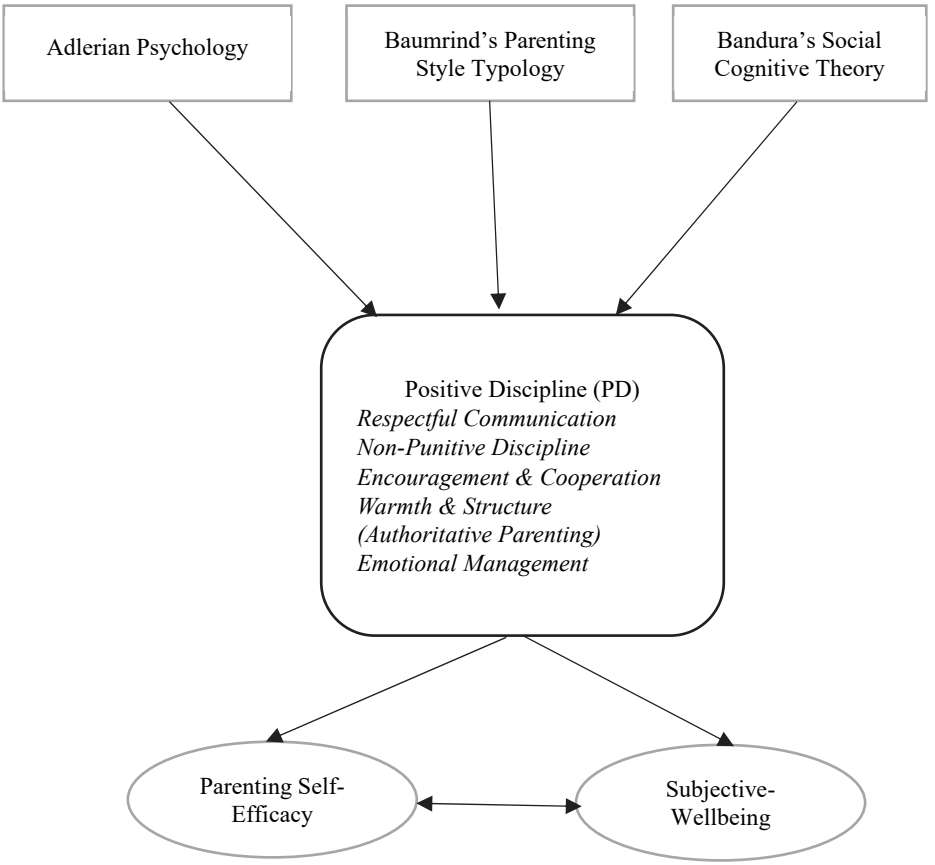

Figure 1 - Theoretical Framework (self)

Together this emphasizes on the aspect of positive and authoritative parenting along with parental self-efficacy and its effects on child and family functioning. Social interest is defined as the ability to understand and concern oneself with other individuals. According to Dr. Alfred Adler (1930), an individual's actions aim to achieve a certain goal. From this perspective, discipline must be respectful and cooperative at the same time not punishing yet strict (Tekyi-Arhin, 2024). Adlerian principles stress discipline through use of encouragement rather than punishment for children's misbehaviour, which is considered to be a form of seeking belongingness and recognition in the family (Dreikurs, 1953). Positive discipline is integrative within Adlerian psychology because it advocates respectful communication with children and logical discipline instead of punitive discipline. Unlike authoritarian or domineering discipline, which

bases itself on excessive control or permissive parenting that lacks control, positive discipline allows for a balance or blend of punishment and care resulting in the child learning self-discipline, social responsibility, and problem-solving (Nelsen, 2006). In the context of Chinese culture, where authoritarian parenting has been rampant, positive discipline depicts a more balanced approach that is structured yet emotionally secure and respectful.

Diana Baumrind's parenting typology (Baumrind, 1967) grouped parenting practices into four types: authoritative, authoritarian, permissive, and neglectful, each of which influence the development of children in different ways. Authoritative parenting, which encompasses high affection and high control, is associated with children's self-sufficiency, healthy emotions, and achievement in school. On the other hand, authoritarian parenting, marked by excessive control and lack of empathy, tends to result in excessive compliance, greater stress, and lower emotional well-being (Estlein, 2016). Permissive parenting is likely to yield deficient self-control among children, whereas neglectful parenting has been shown to be associated with negative child outcomes. Baumrind's model is helpful to hypothesize the impact of different styles on parenting and child outcomes. Positive discipline is clearly associated with authoritative parenting because it sets rules and expectations on the children while offering compassion and respect. This is particularly true in China where authoritarian parenting is giving way to more adaptive, authoritative parenting. The application of PD programs is expected to assist parents in shifting to more authoritative styles, thus increasing both self-efficacy in parenting and subjective well-being.

Albert Bandura's Social Cognitive Theory (1986, 2001) argues that human behaviour is the result of the interplay of personal, behavioural, and environmental influences. In regard to parenting, parenting self-efficacy (PSE) – the perception of one's capabilities to effectively use the required skills to raise a child – is one of the most important aspects of self-determined factors of parenting behaviour (Jones & Prinz, 2005). Bandura stated that self-efficacy was dependent on four key sources: mastery experiences, vicarious experiences, verbal persuasion, and emotional and physiological states.

In order to strengthen self-efficacy, parents need to successfully cope with challenges and overcome obstacles. Positive discipline provides parents with competent, practical techniques that further enhance their confidence. Seeing other parents using PD successfully helps reinforce the attitude that they can also use those methods. Support from colleagues, parenting tutors, or other specialists can guarantee parents' adherence to PD. Furthermore, non-punitive discipline reduces parenting stress, which in turn enhances self-regulation and emotional well-being. Coleman & Karraker (1998) noted that authoritative PSE is associated with parenting practices which foster children's emotional

well-being, academic achievement, and holistic development. The specific context of cultural Chinese parenting with its high societal pressure and academic expectation means that PD intervention to strengthen PSE allows parents to use effective, emotionally supportive parenting. Positive discipline, along with Adlerian psychology, Baumrind's parenting typology, and Bandura's social cognitive theory offers great insight within the scope of positive discipline interventions aimed at improving parenting self-efficacy and subjective well-being of Chinese parents.

The potential of PD interventions is embedded in this framework as shown in the figure. They seek to effect change in parenting by shifting from punitive discipline to firm but respectful discipline, from authoritarianism to authoritative parenting, which builds parental self-efficacy and, consequently, better parenting and parent well-being. Using these theories, the study seeks to offer details information about how the Chinese culture can positively integrate discipline to achieve more favourable psychological results for parents and children.

3. Materials and Methods

3.1. Research Design

This study followed an experimental research design to assess the effectiveness of PD. An intervention program for parents was designed for six weeks on PD based on the outlines by Nelsen and Lott (2017). Subsequently, a survey was conducted to assess the impact on the parenting self-efficacy and subjective well-being in Chinese parents. The research design was ideal for this study as the measurement of intervention effects in real-world contexts, particularly where random assignment is not feasible or ethical (Cook et al., 1979). On the other hand, a cross-sectional design was not appropriate for this study since it gave an insight into data at one point in time after the interventions was undertaken. Therefore, a pre-test and post-test was conducted to measure the well-being of the parents. Subsequently, the parental efficacy was measured after the intervention. Thus, the design ensured capturing the change in parenting self-efficacy and subjective well-being after the intervention.

3.2. Participants

This study included parents of 6-12-year-old children from Fujian

Province. The number of participants included was 68 based on the number of parents who agreed to join the program. Additionally, Fujian province was selected as it reflects varied socioeconomic statuses and family compositions common in modern Chinese society (Ma et al., 2023). It allowed for greater generalizability and ecological validity. Additionally, the specific age group of 6-12 years was selected as middle childhood is a developmentally pivotal period during which parenting practices heavily influence children's emotional, social, and academic abilities (Glowiak & Mayfield, 2016). These ensured that the study was focused.

The participants were recruited through purposive sampling. The inclusion criteria included:

- parents between 25-45 years of age (no gender specification was made).
- Having at least one child in the specified age range (6-12 years old). The number of children per family was was not controlled in the analyses due to the sample size limitation.
- Participation in the six-week intervention program.

On the other hand, exclusion criteria included:

- parents with diagnosed psychiatric disorders
- serious chronic diseases
- participating in other parental training programs
- Parents who did not complete the program.

Ethical issues were followed during the study by discussing to ensure research integrity and participants' well-being. Informed written consent was obtained with clear specification of the research purposes, methods, voluntary participation, confidentiality guarantee, and right to withdraw without loss. Additionally, confidentiality was ensured through anonymization of data using codes for the participants, safe storage, and exclusive access.

3.3. Intervention Design

Duration: Six weeks

The intervention design is presented in Table 1.

Table 1 - 6 Week Positive Discipline Parenting Class Outline

Week	Topic	Objectives	Weekly Practice
1	Introduction	Establish rapport, trust, and collaboration. Introduce participants to the fundamental principles of Positive Discipline. Encourage participants' reflections on their current parenting styles.	Introducing the group is an icebreaker. Mini-lecture: Positive discipline theory and parenting styles (Baumrind's framework). Interactive exercise: Talking about parenting difficulties in a group setting. Assignment: Writing reflectively in a journal about one's own parenting struggles. Choose a PD Tool Card for inspiration.
2	Building Mutual Respect	Recognize the value of respect for one another in parent-child relationships. Determine particular tactics to serve as an example of polite conversation.	• Kind and Firm • 4 R's of Punishment • Five Criteria & PD NO NOs • Understanding the Brain • Positive Time Out
3	Emotional Management	Give parents the tools they need to properly control their own emotions. Teach kids how to recognize and effectively express their feelings.	• Belief Behind the Behavior • Not your Job to Make your Children Happy • Four R's of Recovery from Mistakes • Mistaken Goal Chart Introduction • Fighting & the 3 Bs • PHPPSS

4	Encouragement and Positive Reinforcement	Explain the distinction between encouragement and praise. Create plans to increase kids' intrinsic motivation and sense of self.	• Recognize how you may encourage misconduct. • Hold family gatherings. • Work with your child to make a routine chart.
5	Problem-Solving and Collaborative Decision Making	Present cooperative methods for resolving parenting issues. Boost parents' self-assurance in cooperative dispute settlement.	• Prior to correction, don't forget to establish a connection. • With your child, make a wheel of choice. • Set an example for your children. • Wheel of Choice; • Encouragement vs. Praise; • Thermometer Demo; • Don't Talk Back
6	Effective Limit-Setting and Discipline Strategies	Create techniques for setting limits that are polite but forceful. Positive discipline techniques should be used in place of punitive ones.	• Take note of your role in disputes. Make use of affirmations that empower • See practice errors as teaching moments. • Enabling versus Empowering

3.4. Measurement Instruments

This study used two well-established scales: Subjective Well-being Scale and brief-parental-self-efficacy-scale-interactive.

- Brief parental self-efficacy scale (BPSES): It is a 10-item questionnaire assessing parents' self-efficacy in addressing their children's behavior (corc.uk.net, n.d). Based on its short length and psychometric properties, the scale was ideally placed for multiple measures in intervention research, demonstrating changes in parental confidence and skill following intervention with accuracy. The BPSES proved to have good internal consistency (Cronbach's $\alpha = 0.81$) and strong construct validity, predicting both parenting behaviors and child outcomes successfully.
- Subjective Well-being Scale: The Subjective Well-Being (SWB) Scale is a psychological instrument used to capture a person's emotional well-being which incorporates an individual's satisfaction with life, positive

emotions, and negativity in emotion (i.e. low negative emotions). SWB is multidimensional framework that incorporates both thinking and feeling aspects of well-being. It contains key elements such as satisfaction with life and the presence of positive affect (joy, contentment), and negative emotions like anxiety or sadness (Diener, 1984). In psychological research, the scale is popular in evaluating mental and emotional health, as well as examining correlates of well-being like family relations, social support, and personal perceptions of success and happiness.

For the purposes of this study, the SWB scale was employed to analyze the emotional and psychological effects of the Positive Discipline (PD intervention) on Chinese parents. The scale captures how parents evaluate their well-being over the course of the intervention, including their emotional resilience, stress levels, and overall life satisfaction during the intervention. The SWB scale is appropriate for this research because it encompasses the cognitive component of well-being (the evaluation of life by the parents) and the emotional component (day-to-day feelings), thus capturing the psychological returns of PD in parenting. The goal of this research was to explore how modifications in parenting approaches, particularly the adoption of positive discipline, might enhance psychological well-being and alleviate emotional strain for the parents. Thus, the SWB scale was designed to assess the extent to which PD interventions affect parental mental health relative to life satisfaction and emotional wellness.

3.5. Data Collection and Analysis

Data collection consisted of intensive measurements to ensure intervention efficacy could be measured reliably. After the 6-week Positive Discipline training intervention, participants received post-intervention measurements using the Subjective Well-being Scale and brief-parental-self-efficacy-scale-interactiveassessment instruments. This uniform measure strategy enabled valid comparisons and limited measurement bias (Bonate, 2000). Subsequently, reliability test, correlation and regression was undertaken to understand whether the influence of PD made any impact. Data analyses were performed with SPSS version 26 to guarantee methodological transparency and replicability.

4. Results

After exclusion of dropouts and invalid responses, finally 62 records or participants have been included for the data analysis. Within the participants

53.23% are Female, that indicates a marginally higher number of female. The age of 46.77% participants are within 36-40 years, and 38.71% participants are 31 to 35 years old. It indicates that the participants are mostly 31 to 40 years old. The mean age of the children of the participants is 9.39 years which ranged from 6 to 12 years.

Table 4.1 - Demographic Background of Participants

		Count	N %
Gender	Male	29	46.77%
	Female	33	53.23%
Age	25-30 years	2	3.23%
	31-35 years	24	38.71%
	36-40 years	29	46.77%
	41-45 years	7	11.29%

Figure 4.1 - Histogram of Age of the Child of the Participants

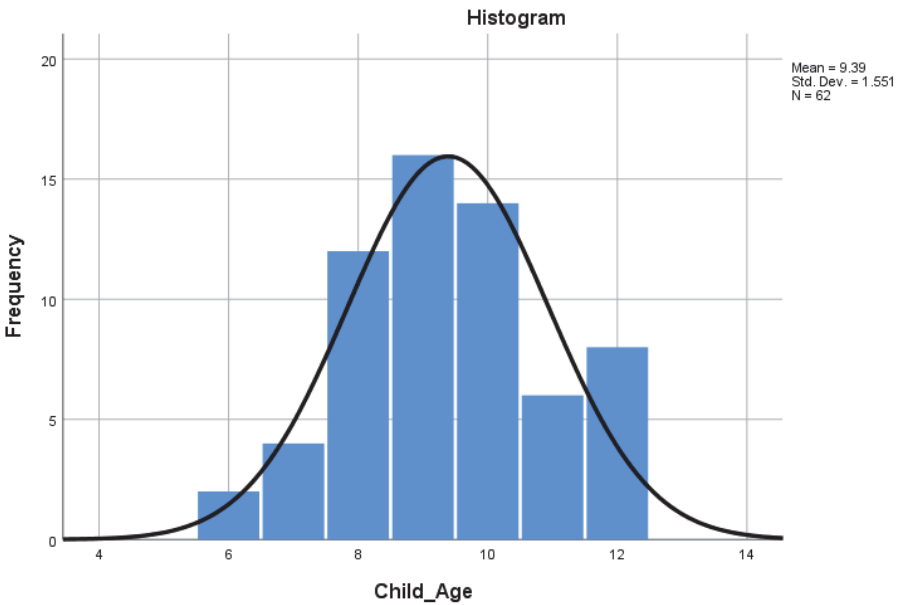

Table 4.2 - Sampling Adequacy Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.862
Bartlett's Test of Sphericity	Approx. Chi-Square	1106.355
	Sig.	0.000

According to the KMO coefficient that is 0.862, it is higher than the threshold of 0.6, which depicts an adequate number of sample size to formulate the scales for BPSES and SWB. The Bartlett's Test showed that the dataset is significantly valid ($p < 0.05$) to develop a model. For reliability and validity test the exploratory factor analysis has been done with Varimax Rotation and Principle Component Extraction considering the questionnaire of pre-test, since in post-test same questionnaire has been used. The Table 4.3, showed that the validity both BPSES scale (AVE = 0.855 > 0.5) and SWB scale (AVE = 0.711 > 0.5) is significantly valid. The reliability of both of these scales are very high as per their composite reliability values. The high factor loadings indicated that each chosen items are strongly contributed to develop the intended scale.

Table 4.3 - Factor Analysis, Validity and Reliability Test

	Factor Loadings			
	BPSES	SWBS	AVE	CR
BPSES1-PRE		0.941	0.855	0.967
BPSES2-PRE		0.895		
BPSES3-PRE		0.918		
BPSES4-PRE		0.925		
BPSES5-PRE		0.944		
SWBS1-PRE	0.981		0.711	0.967
SWBS2-PRE	0.889			
SWBS3-PRE	0.863			
SWBS4-PRE	0.817			
SWBS5-PRE	0.854			
SWBS6-PRE	0.888			
SWBS7-PRE	0.753			
SWBS8-PRE	0.772			
SWBS9-PRE	0.769			
SWBS10-PRE	0.842			
SWBS11-PRE	0.784			
SWBS12-PRE	0.881			

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 3 iterations.

As per Table 4.4, it can be seen that BPSES and SWB at pre-test are not significantly correlated, whereas at post-test, there is a significant positive correlation between PSE and SWB (r = 0.283). It shows that after the intervention, the Parent Self-Efficacy and Subjective Well-Being became associated with each other. Which indicates that the intervention has a significant influence on creating a positive association between these two factors.

Table 4.4 - Correlation between Measures

		Correlation	Sig.
Pair 1	BPSES-PRE & SWBS-PRE	0.091	0.484
Pair 2	BPSES-POST & SWBS-POST	0.283	0.026
Pair 3	BPSES-PRE & BPSES-POST	0.684	0.000
Pair 4	SWBS-PRE & SWBS-POST	0.804	0.000

As per the descriptive results at Table 4.5, the PSE at pre-test (3.029 ± 1.113) is notably lower than BPSE post-test (3.413 ± 1.394) and the SWB is notably higher in post-test (4.003 ± 1.016) than pre-test (3.167 ± 0.978).

Table 4.5 - Descriptive Statistics of Measures

	Mean	SD	Min	Q1(25%)	Median	Q3(75%)	Max
BPSES-Pre	3.029	1.113	1	2.2	3.05	4	5
BPSES-Post	3.413	1.394	1	1.95	3.5	4.8	5
SWBS-Pre	3.167	0.978	1.08	2.646	3.125	3.917	4.83
SWBS-Post	4.003	1.016	1.25	3.250	4.092	4.917	5

The results of the paired sample T-test in Table 4.6 showed that both PSE ($t = -2.936$, $p < 0.05$) and SWB ($t = -10.53$, $p < 0.05$) have significantly increased from pre-test to post-test. However, the increment in Subjective Well-being is significantly higher than the increment in Parental Self-Efficacy due to the intervention. It has been found that in the pre-test stage there is no significant difference in Subjective Well-being and Parental Self-Efficacy, whereas in the post-test there is a significant difference ($t = -3.151$, $p < 0.05$) where Subjective Well-being Is significantly higher than Parental Self-Efficacy.

Therefore, the intervention caused significant increment in both Parental Self-Efficacy and Subjective Well-being, whereas the intervention more strongly increased Subjective Well-being than Parental Self-Efficacy. Besides, the intervention also developed an association between Parental Self-Efficacy and Subjective Well-being.

Table 4.6 - Paired Sample T-test of Measures

		Mean	SD	SE	95%CI	t	Sig. (2-tailed)
Pair 1	BPSEST1 - SWBST1	-0.138	1.414	0.180	[-0.497,0.221]	-0.766	0.446
Pair 2	BPSEST2 - SWBST2	-0.590	1.474	0.187	[-0.964,-0.215]	-3.151	0.003
Pair 3	BPSEST1 - BPSEST2	-0.384	1.030	0.131	[-0.645,-0.122]	-2.936	0.005
Pair 4	SWBST1 - SWBST2	-0.836	0.625	0.079	[-0.995,-0.677]	-10.53	0.000

Note: Obs = 62; Degree of Freedom foreach pair = 61

5. Discussion

5.1. Discussion on Efficacy of PD and Subjective Well-being

The current research sought to assess the efficacy of Positive Discipline (PD) in improving parenting self-efficacy and well-being among Chinese parents. The results showed that the intervention facilitated healthier parent-child relationships and better parental well-being. Post-intervention scores indicated that participants reported moderate to low levels of stress, implying that PD enabled parents to better regulate their emotional reactions and everyday parenting responsibilities. This is consistent with the core objective of PD: to promote respectful and organized family relationships without relying on punitive control (Nelsen & Lott, 2017). This is highlighted by the statistically significant negative correlation between stress and parenting self-efficacy, showing the increased parenting ability confidence promoted by decreased emotional load. As with many parents, PD's respectful and ordered approach based on ingrained traditions of severe discipline and study emphasis was also added advantage. The results highlighted the intricate interaction of Chinese cultural influences and PD's acceptance and success.

The evaluation of subjective well-being (SWB) shows substantial enhancement in parental emotional well-being after the implementation of the Positive Discipline (PD) intervention. Participating parents appeared to experience an increase in overall well-being, indicating that their emotional distress and life satisfaction were positively affected after PD program participation. This change is indicative of the broader psychosocial effects of PD which non-punitive discipline, emotion regulation, and respectful language encourage, regarding parent-child relationships and the emotional burden on parents. Increasing SWB illustrates that the PD approach appears

to create a healthier emotional state among parents by alleviating parenting strain and enhancing parenting self-efficacy. This data reinforces the claim that effective strategies such as PD not only improve parenting skills but significantly enhance parental psychological well-being. Also, the positive relationship of SWB with parenting self-efficacy shows that greater confidence a parent has in facing parenting tasks is related to better emotional wellbeing. On the other hand, the negative relationship with parenting stress underlines the need to alleviate stress for improving psychological health – well-being paradox. Thus, this assessment highlights the role of PD in not only changing parenting styles but improving parental well-being.

5.2. Discussion on PD and Self-efficacy of Chinese Parents

Additionally, highly significant parenting self-efficacy after the intervention aligned with Bandura's Social Cognitive Theory. Self-efficacy is the key determinant of human motivation and action (Bandura, 2001). The results highlight the boost brought about by the PD intervention. Subsequently, it accounts for parents' faith in influencing their children's behaviour in a positive manner, which consequently would account for their heightened psychological resilience and reduced stress. For parents, strong self-efficacy enhances the probability of employing effective, consistent, and positive practices even in the presence of stress, which promotes improved child and family outcomes. Bandura pointed out that self-efficacy is established through mastery experiences, observing others, social persuasion, and interpreting one's emotional state (Bandura, 2001). Thereby, it would make the parents sensitive to PD intervention. The findings also align with the Family Systems Theory, whereby perspective is gained by the relation of parenting style to self-efficacy and stress, describing how changes within an individual parent are related to broader family function (Rothbaum et al., 2002). Thus, intervention of PD aids the Chinese parents in gaining a perspective, which in turn helps them in overcoming the stress.

Most importantly, the findings in the Chinese culture context align with previous studies. Liu et al. (2024) stated that PD had a significant positive impact on parenting self-efficacy and emotional resilience among Chinese mothers. Similarly, Fatima et al. (2022) indicated that non-punitive discipline strategies in rural China were linked to improved emotional and cognitive development in children. These studies are consistent with the efficacy of PD across various Chinese settings. Other international research has also reported the same advantages. While the study measured parental well-being, the role of parenting style must be considered as well. For instance, studies has shown that increased parental self-efficacy predicted

reduced parenting stress in different cultural contexts (Boruszak-Kiziukiewicz & Kmita, 2020; Goodman et al., 2022; Rothbaum et al., 2002; Witkowski, 2017). While Gallitto (2021) highlighted that PD programs enhanced both parenting confidence and child behaviour outcomes. While these studies support the current findings, they pave the way for developing practical implications in the Chinese cultural context.

One of the most important aspects of this study dealt with the boundaries of positive discipline in a Chinese cultural framework, along with its surrounding parenting practices. It includes the "culture of being Chinese," and also filial piety and education. While positive discipline ensures compliance and respect, it does not conform to an authoritarian or overly strict style of discipline, which is a hallmark of Chinese parenting practices. The results showed that self-efficacy after PD intervention had also improved. Such changes can be explained through changes in the parental behaviour that is often brought by positive discipline. For example, letting the children speak and using positive discipline encouraged better compliance with fewer behaviour problems. Opposed to Chinese strict parenting practices, PD entails combining warmth and structure, providing emotional safety and compliance.

However, Chinese parents may face cultural mobility challenges. For some parents, fully embracing positive discipline might be difficult due to parental norms and pressure to parent high-achievers. As stated in earlier research, Chinese parents have tremendous stress of their children's education, which further makes them rely on punitive discipline (Lan et al., 2019). These issues can be more effectively dealt with in the future by developing non-punitive disciplinary interventions that also incorporate Chinese cultural aspects. Moreover, parents tend to be more concerned and active participants in the children's education at school which translates to more tangible decisions by practitioners in policies or parenting programs. Therefore, further Parenting Workshops, Community and Primary Care Based Clinics, Multi-Family Therapy Programs could be some comprehensive approaches that support Chinese parents in implementing positive discipline. Community-based and workshop programs can help in ameliorating the gap between modern and traditional parenting practices.

5.3. Discussion on Practical Implications

The practical implications encompass parents. Firstly, not only should programs instruct in parenting skills but also offer support and encouragement of an emotional kind to make sure parents internalize their capability for effective management of children. These would be based on

the significant predictive link between self-efficacy and low stress. Secondly, culturally sensitive PD workshops that abide by traditional family structures without promoting disrespect or egalitarianism could mediate between Western models and Chinese cultural norms. Thus, training programs should specifically teach authoritative parenting styles, combining responsiveness with clear boundaries. Lastly, public health and education policymakers in China need to explore incorporating PD programs into family support programs at schools or community health program initiatives.

6. Conclusion

This study examined the efficacy of Positive Discipline (PD) in promoting positive parenting efficacy and wellbeing among Chinese parents. Based on Bandura's Social Cognitive Theory, Adlerian theory informing PD, and Family Systems Theory, the research offered empirical data substantiating the interrelatedness between parenting confidence, behavior, and emotional well-being. The results showed that parents in the PD intervention reported low to moderate levels of parenting stress, high levels of parenting self-efficacy, and a stronger inclination toward authoritative parenting.

The results from the subjective well-being assessment showed PD can bring about emotional well-being among the parents. Such results emphasize the life-changing effect of PD on both parental behavior and mindset, further strengthening its relevance in Chinese family settings. Within the context of modern Chinese society, high academic pressures, shifting family structures, and dwindling traditional support systems, PD offers a useful model. It facilitates harmonious, respectful parent-child relationships without undermining authority or discipline. Contrary to authoritarian practices traditionally prevalent in Chinese families, PD helps equip parents with measures to develop emotional control, mutual responsibility, and respect, thus leading to domestic harmony and child well-being.

In practice, the recommendations would be incorporating PD programs into school-community collaborations, parenting courses, and social service programs. Additionally, government and policy agencies might look into making PD training part of family wellness programs, particularly in urban areas where parenting stress tends to be amplified. Subsequently, teachers and mental health practitioners can embrace PD as a fundamental component of parenting education to assist in mitigating parental burnout and enhancing parent-child relationships. Providing ongoing assistance and direction to parents can strengthen their parenting confidence and ensure long-term

intervention success. Future study should focus on how group treatments may effectively incorporate healthy habits into middle childhood routines.

7. Limitations

Though the study found strong implications of PD, there could be significant limitations. The study did not include a control group, whereby, there is a lack of comparison group questions the possibility of whether external factors would have affected the results. Second, the research was based solely on self-report measures, which are vulnerable to social desirability and recall bias. Additionally, the period for intervention was only six weeks which could be relatively short, thereby it could have fail to produce the desired change. Therefore, further research is warranted in this context. For future studies, longitudinal designs are suggested to evaluate the long-term sustainability of PD effects. Additionally, qualitative approaches would add depth by ascertaining parents' lived experiences and cultural meanings of PD. Additional investigations of father involvement, co-parenting impacts, and rural-urban contrasts would further enhance the knowledge base.

Data Availability Statement

The data required for understanding the study is presented within the paper. Further inquiries can be made for disclosure of data.

Author Contributions

The author is solely responsible for data collection, analysis and draft.

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Conflict of Interest

The research was done without any commercial or financial links that may lead to a conflict of interest.

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Appendix

*********Questionnaire for Pre-test and Post-test intervention**********

1. What is your gender?

- Male
- Female

2. Select your age group from below:

- 25 to 30
- 31 to 35
- 36 to 40
- 41 to 45

3. What is the age of the child who are within the age range of 6 to 12 years?

……..

Brief parental Self Efficacy Scale:

4. Even though I may not always manage it, I know what I need to do with my child.

Strongly Disagree Disagree Neutral Agree Strongly Agree

5. I am able to do the things that will improve my child's behaviour.

Strongly Disagree Disagree Neutral Agree Strongly Agree

6. I can make an important difference to my child.

Strongly Disagree Disagree Neutral Agree Strongly Agree

7. In most situations I know what I should do to ensure my child behaves.

Strongly Disagree Disagree Neutral Agree Strongly Agree

8. The things I do make a difference to my child's behaviour.

Strongly Disagree Disagree Neutral Agree Strongly Agree

GHQ Subjective Well-Being Questionnaire:

9. Been able to concentrate on whatever you are doing

Strongly Disagree Disagree Neutral Agree Strongly Agree

10. Lost much sleep over worry

Strongly Disagree Disagree Neutral Agree Strongly Agree

11. Felt that you are playing a useful part in things

Strongly Disagree Disagree Neutral Agree Strongly Agree

12. Felt capable of making decisions about things

Strongly Disagree Disagree Neutral Agree Strongly Agree

13. Felt constantly under strain

Strongly Disagree Disagree Neutral Agree Strongly Agree

14. Felt you could not overcome your difficulties

Strongly Disagree Disagree Neutral Agree Strongly Agree

15. Been able to enjoy your normal 2 day-to-day activities

Strongly Disagree Disagree Neutral Agree Strongly Agree

16. Been able to face up to your problems

Strongly Disagree Disagree Neutral Agree Strongly Agree

17. Been feeling unhappy and depressed

Strongly Disagree Disagree Neutral Agree Strongly Agree

18. Been losing confidence in yourself

Strongly Disagree Disagree Neutral Agree Strongly Agree

19. Been thinking of yourself as a worthless person

Strongly Disagree Disagree Neutral Agree Strongly Agree

20. Been feeling reasonably happy all things considered

Strongly Disagree Disagree Neutral Agree Strongly Agree

Oltre la pandemia da COVID-19: uno studio qualitativo sull'esperienza delle neomamme

Beyond the COVID-19 pandemic: A qualitative study on the experience of new mothers

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Abstract

The global COVID-19 pandemic has drastically reshaped our society, imposing quarantine and social restrictions and posing serious threats to physical and mental health, particularly for vulnerable groups, including pregnant women. This study aims to explore the transition to parenthood experiences of new mothers who lived conception and pregnancy during the pandemic in order to outline possible support and care pathways based on needs that were particularly evident during the emergency. The study uses a qualitative approach and includes 40 women who were interviewed in the hospital 24-48 hours after delivery. The interviews were recorded and transcribed verbatim. The transcripts were subjected to thematic analysis. Six themes were developed with related sub-themes: "Emotional experiences",

"Changes before and after pregnancy", "Resources", "Difficulties", "Consequences of the COVID-19 pandemic", and "Expectations for the future".
Some women's experiences appeared to be universal and typical of motherhood, while others were specific and contextualized within the pandemic scenario. Carrying a pregnancy to term and giving birth to a child encompasses a range of experiences, including those that are unplanned, as they depend on the context. The fear of not being able to cope physically and psychologically is part of the normative growth process; however, the pandemic has specifically shaped this experience. Healthcare providers should pay attention to women's experiences of pregnancy and childbirth during the pandemic in order to identify postpartum needs and possible strategies for improving current care practices.

Keywords: pregnancy, childbirth, COVID-19, qualitative study, thematic analysis

Riassunto

La pandemia globale di COVID-19 ha rimodellato drasticamente la nostra società, imponendo quarantene e restrizioni sociali e ha minacciato gravemente la salute fisica e psicologica, soprattutto dei segmenti di popolazione a rischio, tra cui le donne in gravidanza. Questo studio si propone di esplorare l'esperienza di transizione alla genitorialità tra le neomamme che hanno vissuto il concepimento e la gestazione durante la pandemia, al fine di delineare possibili percorsi di sostegno e cura a partire dai bisogni che durante l'emergenza sanitaria sono emersi in modo particolarmente evidente. Lo studio applica un approccio qualitativo e comprende 40 donne, intervistate durante il ricovero ospedaliero 24-48 ore dopo il parto. Le interviste sono state registrate e trascritte testualmente. È stata eseguita l'analisi tematica dei trascritti tramite software NVivo. Sono stati individuati sei temi, con relativi sottotemi: "Esperienze emotive", "Cambiamenti pre-post gravidanza", "Risorse", "Limiti e difficoltà", "Cambiamenti pre-post pandemia" e "Aspettative per il futuro".
Alcuni vissuti riportati dalle donne sono sembrati essere universali, essendo tipici dell'esperienza di maternità, mentre altri sono stati specifici e contestualizzati nello scenario pandemico. Portare a termine una gravidanza e dare alla luce un bambino abbraccia l'intera gamma di esperienze, comprese quelle non pianificate in quanto dipendenti dal contesto. La paura di non farcela fisicamente e psicologicamente fa parte del processo di crescita normativo, tuttavia la pandemia ha plasmato in modo specifico questa esperienza. Gli operatori sanitari dovrebbero prestare attenzione alle esperienze delle donne che hanno affrontato la gravidanza e il parto durante la pandemia al fine di identificare i bisogni delle puerpere e delineare possibili prospettive per il miglioramento dell'attuale presa in carico.

Parole chiave: gravidanza, parto, COVID-19, studio qualitativo, analisi tematica

Introduzione

La pandemia di COronaVIrus Disease-19 (COVID-19) ha gravemente minacciato la salute fisica e psicologica, nonché il benessere relazionale e sociale, in una misura senza precedenti nella storia degli ultimi decenni (Arora et al., 2022). Numerosi studi hanno ampiamente evidenziato l'impatto negativo della pandemia sul benessere psicologico, rilevando un'alta prevalenza di sintomatologia ansiosa, depressiva e stress post-traumatico nella popolazione generale (Aydin et al., 2021). Le conseguenze della pandemia sono risultate particolarmente evidenti nei segmenti di popolazione più esposti a rischio, come le donne durante il periodo del puerperio (Linden et al., 2022; Chaves et al., 2022; Cameron et al., 2020; Molgora & Accordini, 2020). È ampiamente noto che la gravidanza, il parto e il periodo postnatale rappresentino momenti particolarmente complessi nella vita dei futuri genitori. Sebbene questi eventi siano definiti come normativi, poiché prevedibili e oggi spesso pianificati, essi implicano profonde trasformazioni sia a livello individuale, con la ridefinizione della propria identità e del proprio ruolo, sia sul piano relazionale, data la rinegoziazione della relazione con il partner (Cowan et al., 1985; Cigoli & Molgora, 2014; Lawrence et al., 2008). Quando la transizione alla genitorialità avviene in condizioni straordinarie, in concomitanza di eventi non ordinari, questo scenario diventa ancora più complesso.

La pandemia di COVID-19 ha esacerbato gli elementi di criticità che frequentemente caratterizzano il processo di transizione alla genitorialità, dimostrandosi esiziale e rischiosa per il benessere fisico, psicologico e sociale dei futuri e dei neogenitori (Fan et al., 2021; Mariño-Narvaez et al., 2021) e amplificando la quota di incertezza e imprevedibilità che fisiologicamente caratterizza questa fase della vita (Anderson et al., 2021). In molti paesi, e soprattutto in Italia, a causa dell'elevata trasmissione del virus, sono stati introdotti piani di intervento emergenziali e misure restrittive, come il confinamento domiciliare e il distanziamento sociale, che hanno avuto un impatto notevole su questa popolazione sia a livello pratico che emotivo. Il sistema sanitario italiano in tempi ridotti ha dovuto riadattarsi e pianificare azioni tempestive per rispondere alla crescente domanda; ciò ha comportato un drastico cambiamento nell'assistenza medica e una riduzione dell'attività ambulatoriale, compresa quella in area ginecologica e ostetrica. Nei periodi di lockdown le visite di controllo e di monitoraggio delle puerpere sono state ridotte e l'accesso ai servizi è stato limitato. Allo stesso tempo, alcune donne hanno evitato l'accesso ai contesti sanitari per timore di contrarre l'infezione e per i potenziali rischi per la propria salute e quella del nascituro (Rossetto et al., 2021; Widiasih et al., 2021).

Le misure emergenziali hanno, inoltre, imposto l'esclusione dei padri dai reparti e dalle visite di controllo durante i nove mesi di gravidanza, precludendo loro la possibilità di assistere alla nascita dei propri figli. Queste misure emergenziali hanno contribuito a ridurre e/o alterare le reti di supporto formale e informale (Coxon et al., 2020; Stampini et al., 2021). Tuttavia, in letteratura è stato ampiamente dimostrato come il supporto, sia pratico che emotivo, percepito nel periodo perinatale rappresenti un fattore protettivo per il benessere delle neo-madri e dei loro figli, oltre che per la qualità delle relazioni all'interno dell'intero sistema familiare (Bedaso et al., 2021; Corno et al., 2022; Molgora et al., 2022a).

Sebbene ad oggi la fase emergenziale relativa al virus sia stata ufficialmente dichiarata conclusa, la pandemia ha messo in luce i bisogni delle puerpere, nonché le mancanze e i limiti dell'assistenza clinica. In questo scenario, l'obiettivo del presente studio è quello di esplorare l'esperienza soggettiva delle donne che hanno vissuto la gravidanza e il parto in un periodo in cui la pandemia era ancora in espansione, al fine di delineare possibili percorsi di sostegno e cura a partire dai bisogni che durante l'emergenza sanitaria sono emersi in modo particolarmente evidente.

Metodo

Partecipanti

La ricerca ha coinvolto donne degenti presso il reparto di ostetricia a seguito del parto. Nello specifico, sono state incluse donne 1) con un'età ≥ 18 anni; 2) con gravidanza e parto fisiologici, senza complicazioni mediche specifiche e gravi per la donna e/o per il feto/neonato; 3) in grado di parlare e comprendere l'italiano. Ogni donna, previa compilazione del modulo di consenso informato, ha compilato un questionario al fine della raccolta dei dati sociodemografici, delle informazioni medico-ostetriche relative alla gravidanza e al parto, e dei dati relativi al COVID-19. Successivamente, le partecipanti sono state intervistate da un membro del gruppo di ricerca 24/48 ore dopo il parto. La raccolta dei dati si è svolta tra febbraio e aprile 2022. Le interviste sono state condotte in presenza, presso il reparto di ostetricia di un'azienda ospedaliera lombarda, da ricercatori privi di relazioni con le pazienti che potessero influenzare il processo e i risultati. Il campione finale, di convenienza, è composto da 40 donne, con un'età media di 34,23 anni (Deviazione Standard [DS] = 5,1; range 20-43); il 62,5% delle donne era primipara. Per quanto riguarda le informazioni relative all'infezione da COVID-19, il 52,5% delle madri ha dichiarato di non aver contratto

l'infezione, l'87,5% ha riferito che una persona vicina aveva avuto il COVID-19, e nel 12,5% dei casi vi è stata la perdita di un proprio caro a causa del virus.

Strumenti

Ogni partecipante è stata coinvolta individualmente in un'intervista semi-strutturata, la cui traccia è stata creata ad hoc. L'intervista si è focalizzata sull'esperienza delle neomamme, dal momento del concepimento a quello del parto, al fine di esplorare le loro esperienze emotive, le difficoltà incontrate, gli elementi di risorsa, così come le prospettive future, anche in termini di aspettative. Ogni intervista ha avuto una durata di circa 30 minuti. Il testo dell'intervista semi-strutturata è riportato nella Tabella 1. Le interviste sono state audio-registrate e trascritte *verbatim*.

Tab. 1 – Traccia dell'intervista

1. Viviamo in un momento storico carico di complessità, poiché il COVID-19 ha sconvolto molte delle nostre certezze. Cosa l'ha spinta a diventare madre proprio ora?
*Come si è sentita quando ha scoperto di essere incinta? **
Qual è stata la sua più grande paura? Cosa le ha dato forza e speranza?
2. Secondo lei, l'esperienza della gravidanza l'ha cambiata come donna?
Se sì: in che modo si sente diversa?
Se ripensa agli ultimi mesi, nelle varie fasi della gravidanza (dal concepimento al parto) le sue esperienze sono state diverse?
3. La sua gravidanza si è svolta come si aspettava?
Se sì/se no: è successo qualcosa di diverso/imprevisto/imprevedibile?
Avendo avuto altri figli, nella sua esperienza personale ha riscontrato differenze a causa della pandemia?
4. Secondo lei, è cambiato qualcosa nel modo in cui viene ricevuta l'assistenza ospedaliera durante la gravidanza a causa del COVID-19?
Ha percepito maggiori ostacoli all'accesso alle cure? Ha mai fatto visite o controlli a distanza?
5. Le è stato offerto un supporto psicologico durante la gravidanza?
Se non le è stato offerto: Avendo avuto l'opportunità, le sarebbe piaciuto riceverlo?
Se sì/Se no: per quale motivo?
6. C'è una persona che le è stata particolarmente utile durante la gravidanza?
Questa persona l'ha accompagnata durante le visite in ospedale? Se no, perché non l'ha accompagnata? (Non voleva o non poteva farlo, ecc.).
Che cosa ha significato per lei l'aiuto/il sostegno di questa persona?

7. In molti contesti clinici, partner e visitatori non hanno potuto partecipare agli appuntamenti e alle ecografie. È successo anche a lei?
Se sì/Se no: come si è sentita?
8. Ci sono stati momenti particolarmente difficili da affrontare?
Quando pensa agli ultimi mesi, le viene in mente un episodio specifico particolarmente complesso? Come l'ha affrontato? Come si è sentita?
9. Ci sono state esperienze positive?
Provi a ripensare a una situazione specifica con una connotazione particolarmente positiva. Come l'ha affrontato? Come si è sentita?
10. In che modo ha partecipato al corso pre-parto?
Se online: Fare il corso pre-parto online è stato un fattore di incertezza e di maggiore preoccupazione?
11. Il momento del travaglio e del parto è forse il più atteso e temuto. Ripensando a quei momenti, come si è sentita?
Ha avuto paura? Quali emozioni ha provato quando ha potuto finalmente stringere il suo bambino tra le braccia?
12. L'ostetrica esercita generalmente un ruolo chiave di supporto e assistenza, anche durante le prime cure del neonato. Nella sua esperienza, questa figura è stata un punto di riferimento a cui rivolgere domande e dubbi?
Ha ricevuto consigli utili dall'ostetrica?
13. In seguito a quanto mi ha raccontato sulla sua esperienza di madre, quali sono le sue aspettative per il futuro?
Quali sono le sue più grandi paure? Quali sono le sue speranze più forti?
Come si immagina tra un anno?
14. Si è mai sentita spaventata dalla possibilità di contrarre la COVID-19 e di conseguenza di causare danni al suo bambino?
Ha mai avuto paura di contrarre il virus andando in ospedale?
Si è mai trovata a limitare le uscite a causa della gravidanza?

Analisi

La metodologia applicata ha consentito ai ricercatori di esplorare l'integrità e l'unicità dell'esperienza individuale, acquisendo una comprensione articolata ed approfondita del vissuto e del significato soggettivo attribuito da ogni partecipante. Le trascrizioni *verbatim* sono state anonimizzate e analizzate mediante il software di analisi testuale NVivo (QSR International). Seguendo una logica combinata di tipo top-down e bottom-up, sono stati identificati e organizzati temi e sotto-temi per aree di significato e contenuto.

Nello specifico, sono stati definiti alcuni codici a partire dalla letteratura di riferimento sul tema (considerando dunque sia la delicata fase della transizione alla maternità, sia la specifica situazione emergenziale legata al contesto pandemico); al contempo, altri codici e sotto-codici sono stati estratti direttamente dal materiale testuale, seguendo una logica di tipo *grouded-theory*. Le interviste sono state analizzate da due ricercatori in modo indipendente; eventuali discrepanze nel processo di codifica sono state discusse alla presenza di un terzo ricercatore (supervisore del progetto) al fine di trovare un accordo. Il software NVivo ha inoltre permesso il calcolo della frequenza di questi temi. All'interno del corpus testuale, sono stati identificati i temi più significativi al fine di organizzare e identificare i contenuti di maggiore rilevanza e caratterizzanti l'esperienza delle partecipanti. Ogni tema è stato elaborato a partire da gruppi di parole-chiave che hanno consentito una descrizione approfondita. Ogni tema è stato analizzato individualmente per identificare elementi trasversali e differenziali nelle narrazioni delle neo-madri.

Etica

Lo studio è stato condotto in conformità ai principi della Dichiarazione di Helsinki. Le procedure sono state approvate dal Comitato Etico dell'ospedale coinvolto (protocollo OSMAMI-11/01/2022-0001074-U). Tutte le partecipanti hanno fornito il consenso informato prima di prendere parte allo studio.

Risultati

L'analisi tematica eseguita ha permesso l'individuazione di sei temi, ciascuno composto da sotto-temi specifici (si veda Tab. 2). Di seguito la descrizione di ogni tema individuato.

Tab. 2 – Il sistema di codifica

Temi	Sotto-temi
Le esperienze emotive	Positive Felicità Tranquillità Sorpresa Sollievo Gioia Negative Paura

	Preoccupazione Ansia Panico Rabbia Tristezza Isolamento
Cambiamenti pre-post gravidanza	Cambiamenti fisici Cambiamenti psicologici Esami e controlli clinici
Risorse	Esterne Familiari Operatori sanitari Interne Lavoro
I limiti e le difficoltà	Fisiche Psicologiche Mancanza di informazioni Assenza di supporto psicologico
Cambiamenti pre-post pandemia	Assenza del padre Assistenza clinica Condivisione con le altre madri Corso pre-parto Isolamento
Futuro	Aspettative Preoccupazioni Speranza

Esperienze emotive

Il primo tema emerso esplora l'esperienza emotiva delle partecipanti. La paura è risultata essere l'emozione più citata (58% delle verbalizzazioni) ed è stata associata a diversi momenti: il periodo della gravidanza, il parto e anche il post-parto. Le paure più frequenti hanno incluso: la paura di perdere il bambino durante la gravidanza; la paura di contrarre il COVID-19, associata anche ad una forte preoccupazione di arrecare danno al feto in caso di infezione da SARS-CoV-2 (20%); la paura del parto in sé rispetto al dolore ad esso associato e al non essere in grado di partorire; la paura di non essere all'altezza del ruolo di madre, soprattutto in un momento storico così critico e difficile. È, inoltre, emersa una paura significativa relativa al nuovo ruolo di madre: molte donne hanno riportato il timore di non essere sufficientemente pronte per svolgere tale ruolo e affrontare le sfide e le responsabilità

ad esso associate. Alcune paure sono sembrate essere universali, essendo tipiche dell'esperienza di maternità.

«*Avevo paura che la gravidanza non continuasse soprattutto nei primi periodi, soprattutto perché soffrivo tanto di nausea ed è stato proprio debilitante per me fisicamente, in più toglievo tempo all'altra mia figlia non stando bene. Quindi questa era la mia più grande paura, di dover poi ricominciare tutto da capo, stare ancora male*» (F24)

Mentre altre sono state specifiche e contestualizzate nello scenario pandemico.

«*Allora onestamente fino ad un paio di mesi fa non avevo paura del COVID-19… poi con quello che sto sentendo ultimamente soprattutto sugli effetti post malattia...non è tanto contrarre una malattia che lì per lì probabilmente per noi vaccinati e sui bimbi non sta dando effetti pesantissimi durante i giorni della malattia. È più il dopo, perché percepisco tanta incertezza su quello che la malattia possa lasciare o non lasciare. Questo mi ha un po' spaventata e ci ha portato poi a creare una bolla, perché quella è la paura più grande, che ci siano effetti che ad oggi non vediamo e che queste nuovi varianti o in generale il Covid possono lasciare… mi riferisco all'altra figlia, ok che è una bimba in salute, e a questa ancora di più, perché è addirittura piccola e appena arrivata. Quindi sì, un po' ho paura*» (F2)

Le donne hanno riportato altre emozioni, come l'ansia (13%), emersa principalmente in riferimento all'infezione, al vaccino durante la gravidanza e ai contatti sociali nel periodo post-parto; la solitudine (6%), legata all'assenza del partner durante le visite, il parto e l'iter ospedaliero; il panico (2%), espresso da alcune madri, per esempio in relazione alla scoperta della gravidanza (inattesa), così come alle notizie sull'andamento delle infezioni.

Nonostante questo vissuto negativo, nelle interviste sono emerse anche diverse emozioni positive, principalmente la felicità (48%). Due momenti dell'esperienza sono risultati le principali fonte di emozioni positive: la scoperta della gravidanza e la nascita. In aggiunta, sono emerse anche altre emozioni positive, come la tranquillità (29%), caratterizzante soprattutto i mesi centrali della gravidanza; la gioia per la nascita (15%); lo stupore per il concepimento (5%); e il sollievo (3%) per l'assenza di complicazioni e/o per la risoluzione di problemi emersi durante la gravidanza e/o il parto.

Cambiamenti pre-post gravidanza

Le donne hanno riportato numerosi cambiamenti conseguenti alla gravidanza e al parto, affermando di essersi sentite e sentirsi cambiate sia a livello fisico che psicologico. A livello fisico, le partecipanti hanno riferito di avere vissuto i cambiamenti del corpo in modo contrastante. Sebbene tali cambiamenti siano stati percepiti come funzionali alla crescita e alla salute del feto,

essi hanno anche impattato sulla forma fisica e la forza, influenzando conseguentemente la rappresentazione di sé. Inoltre, l'insorgenza di alcune patologie causate dalla gravidanza ha reso più complesso il processo di accettazione di tali cambiamenti. A livello psicologico, i cambiamenti sono stati descritti come pervasivi in molteplici ambiti della vita; in particolare, emerge un riferimento ricorrente relativo all'assunzione del nuovo ruolo di "madre" e delle responsabilità ad esso associate. Inoltre, alcune donne hanno evidenziato che la nascita del figlio ha promosso una maggiore consapevolezza con la rivalutazione delle priorità personali. Con la gravidanza, l'obiettivo principale è diventato focalizzato sulla famiglia, orientando le risorse cognitive e comportamentali in tale direzione.

«La gravidanza mi ha aiutata a rallentare molto e a essere più paziente, più tranquilla: prima lavoravo parecchio e invece l'arrivo della prima figlia e sicuramente ancora di più adesso con la seconda…mi ha insegnato a cambiare un po' le priorità e a prendere dei ritmi sani per le vere cose importanti» (F2)

Allo stesso tempo, la gravidanza ha introdotto cambiamenti più complessi da gestire. Tra questi, le donne hanno riportato le difficoltà legate agli esami di controllo da effettuare, le incertezze rispetto agli esiti diagnostici, le decisioni da assumere in situazioni complesse e le patologie della madre o del feto che sono sorte e/o sono state scoperte nel periodo gestazionale (es. diabete gestazionale).

Risorse

Questo tema include tutte le risorse, interne e esterne, e le competenze cognitive, emotive ed esperienziali che hanno aiutato le donne ad affrontare le difficoltà durante la transizione alla genitorialità. Tra le risorse esterne, tutte le donne hanno incluso il supporto familiare, sottolineando l'importanza di avere avuto almeno una figura di riferimento nella propria famiglia (ad esempio, marito, partner, fratelli/sorelle, genitori), su cui hanno potuto contare per ogni esigenza (66% delle verbalizzazioni). Il supporto del partner è stato fondamentale per molte donne, le quali hanno descritto la sua presenza come il coronamento di un progetto familiare congiunto. Per molte partecipanti, la transizione alla genitorialità è stato un processo intrapreso insieme e in ogni cui fase deve essere mantenuta la condivisione.

Il supporto è emerso anche in occasione di molteplici esperienze (15%) extrafamiliari, che hanno restituito motivazione e conferme alla neo-madre. In particolare, le visite medico-ostetriche sono state identificate come

momenti fondamentali, soprattutto se è stato garantito il supporto del personale sanitario.

«*L'ostetrica è stato il mio punto di riferimento, mi ha proprio detto 'Forza!'. (...) lei mi ha dato forza perché sapevo che era una persona che sapeva quello che stava facendo, quindi mi sono affidata completamente a lei e mi ha aiutato molto*» (F15)

Le donne hanno poi identificato risorse personali (12%), riferite principalmente a fattori della personalità, come la determinazione e l'ottimismo, su cui hanno sentito di poter fare affidamento. Sul piano delle risorse sociali (7%), le partecipanti hanno identificato non solo il supporto della rete sociale, ma anche i contesti di appartenenza, come quello lavorativo. Alcune donne hanno sottolineato l'importanza di poter continuare a svolgere la propria professione durante la gravidanza, intrepretando tale mantenimento come un elemento di stabilità nell'insieme dei cambiamenti identitari e familiari.

Limiti e difficoltà

Le interviste hanno messo in luce anche le difficoltà affrontate nella transizione alla genitorialità. Le maggiori difficoltà sono state legate a problemi fisici (41% delle verbalizzazioni), come le complicanze relative alla gravidanza (es. nausea, ipertensione) e al parto (es. conseguenze del parto cesareo, disturbi post-partum). Altre difficoltà sono state relative al contesto (34%), soprattutto a causa della situazione pandemica. Le difficoltà psicologiche (9%) sono state principalmente legate alla solitudine, per lo più causata dell'impossibilità di vedere i familiari.

«*Forse c'erano magari due o tre giorni di fila che ero giù di morale, probabilmente anche perché non vedevo mia mamma da mesi, o mia sorella, o mio papà, e la sola presenza in videochiamata non bastava. Diciamo che erano momenti di solitudine…*» (F36)

Le donne hanno riportato difficoltà anche inerenti alla presa in carico clinica, evidenziando una carenza di informazioni (9%), che ha accentuato la situazione di incertezza rispetto agli effetti del COVID-19 sia per sé che per il proprio figlio. Alla luce di tali difficoltà, alcune donne (7%) hanno espresso il bisogno di un sostegno psicologico per superare in maniera ottimale i momenti di scoraggiamento; tuttavia, spesso tale necessità non ha trovato risposta in un intervento professionale.

Cambiamenti pre-post pandemia

Il cambiamento pandemico maggiormente evidenziato è stato quello relativo all'assenza del padre (49% dei resoconti) sia durante le visite, sia nei giorni di degenza in ospedale. Le norme emergenziali hanno limitato l'accesso ai reparti, per cui molti padri non hanno potuto assistere alla nascita del proprio figlio e non hanno potuto supportare la partner durante il parto, ovvero il momento spesso più complesso e più temuto. L'assenza del padre è stata vissuta come l'interruzione di un percorso iniziato in due, ma terminato individualmente. Sebbene incluso nel progetto familiare, il padre è stato percepito come escluso dalla concretizzazione di tale progetto.

«*Per esempio adesso in reparto il fatto di non avere il mio compagno qua per me è brutto. Quando ieri io ho scoperto che lui non poteva rimanere con me… (…) a me è preso un colpo… questo per me è stato bruttissimo e ho pensato tipo stanotte di non riuscire a fare tutto perché ero stanchissima dal parto. Queste cose sicuramente sono cose non piacevoli per niente*» (F43)

Un secondo cambiamento causato dalla pandemia riguarda la qualità del supporto offerto dal personale medico (41%). Nello specifico, le donne hanno presentato prospettive divergenti: alcune hanno riportato un grado inferiore di qualità assistenziale, attribuita alla mancanza di preparazione e informazione rispetto alla condizione virologica, in particolare per la gestione dei vaccini e delle infezioni. Altre partecipanti non hanno percepito particolari cambiamenti, mentre altre hanno riportato un miglioramento dell'assistenza, spiegando che i numeri limitati e le attività ambulatoriali ridotte hanno consentito agli operatori sanitari di dedicare maggiore attenzione alle partorienti.

Tra i cambiamenti post-pandemici, è stata inclusa anche la questione relativa alla condivisione con le altre madri (10%). Con il progredire della pandemia, il corso preparto è stato convertito in un corso online. Sebbene mantenuto, il corso ha così acquisito un nuovo setting, il quale, secondo le partecipanti, ha limitato i momenti di dialogo e confronto. Sono stati riportati numerosi elementi di difficoltà, ad esempio il numero elevato di partecipanti, le interruzioni tecniche, la minor frequenza degli incontri, ecc. Alcune donne hanno così scelto di non frequentare il corso online, sottostimandone l'utilità.

Infine, le norme restrittive hanno obbligato le donne a limitare le uscite; questo ha contribuito ad incrementare la sensazione di isolamento (51% delle verbalizzazioni), come visto precedentemente. Le donne hanno poi riportato di aver modificato le proprie abitudini al fine di aderire alle norme, nonché in risposta al senso di paura e di pericolo legato alla contrazione del virus.

Aspettative per il futuro

Tutte le partecipanti hanno espresso il desiderio di costruire e alimentare un nuovo nucleo familiare, cercando un equilibrio tra la struttura preesistente e quella introdotta dalla nascita del figlio. Tra le sfide prioritarie del futuro, numerose donne hanno inserito la gestione sufficientemente adeguata del nucleo familiare. A tal riguardo, alcune hanno riportato la speranza di riuscire a integrare i diversi ruoli che compongono la loro identità: il ruolo di donna, il ruolo di moglie e il nuovo ruolo di madre. Inoltre, è emerso anche il desiderio di approfondire la conoscenza del proprio figlio, una figura "in divenire" nei nove mesi di gravidanza e con cui ora costruire una relazione.

Accanto a ciò, i racconti delle donne hanno evidenziato le paure per l'ignoto e per gli eventi incontrollabili, le preoccupazioni per eventuali eventi avversi e per un contesto sociale ritenuto potenzialmente inadeguato per accogliere la nuova vita.

«*Io non mi aspetto cose incredibili, crescere i figli in modo naturale, crescerli bene in modo che diventino delle persone responsabili in questo mondo (...). Poi non è detto che ce la farò perché tu li cresci ma poi loro prendono la strada che vogliono, però io ho imparato dai miei genitori delle cose che al momento sembrano delle regole rigide ma che poi sono cose che capisci crescendo e ritengo che l'essere una persona civile in questa società sia anche legato a questo. Quindi ti direi l'aspettativa di una sana normalità*» (F7)

Discussione

L'11 marzo 2020 l'Organizzazione Mondiale della Sanità (OMS) ha dichiarato l'inizio della pandemia globale a causa della diffusione del virus SARS-CoV-2. L'Italia è stato il primo Paese europeo in cui il virus si è diffuso su vasta scala (OMS, 2020). Nonostante attualmente la fase emergenziale sia stata ufficialmente dichiarata conclusa, l'esperienza delle puerpere durante la pandemia merita ancora attenzione, in particolare riguardo rispetto ai bisogni, ai vissuti e ai limiti dell'assistenza clinica, al fine di promuovere una cultura della cura che possa sempre più e sempre meglio rispondere alle esigenze specifiche di questa delicata fase della vita delle donne e delle loro famiglie, che la pandemia ha ben messo in luce.

I dati raccolti evidenziano il vissuto emotivo emerso nelle diverse fasi della transizione alla genitorialità. Alcuni vissuti possono essere descritti come universali, essendo aspetti caratterizzanti l'esperienza di maternità, mentre altri possono essere categorizzati come specifici in quanto legati allo scenario pandemico. I primi aspetti trasversali e universali comprendono le

paure e le ansie per la propria salute e quella del nascituro, così come le preoccupazioni per i cambiamenti nel nucleo familiare e la nuova gestione della propria quotidianità. La transizione alla genitorialità comprende infatti un ampio spettro di esperienze, da quelle "meravigliose" a quelle "scomode" (Choi et al., 2005). Sebbene la rappresentazione comune di gravidanza sia spesso denotata da un'ottica principalmente positiva, priva di sentimenti di insoddisfazione o disagio, essa comprende anche criticità e sfide, che aumentano il rischio di malessere psicologico. La consapevolezza rispetto a questa duplice dimensione della transizione è necessaria affinché le donne possano ridurre le aspettative irrealistiche (Choi et al., 2005).

La transizione alla genitorialità rappresenta dunque un processo particolarmente complesso, che può essere ulteriormente complicato da fattori sociali e contestuali. Eventi straordinari e imprevedibili, come in questo caso l'emergenza sanitaria globale (ma si pensi anche, ad esempio, alle situazioni di conflitto etnico-religioso), possono influenzare il vissuto dei futuri genitori ed avere un impatto notevole sul loro benessere psico-fisico. Il contesto pandemico ha infatti acuito il vissuto di vulnerabilità: le emozioni negative sono risultate più frequenti rispetto a quelle positive e in rilevante crescita rispetto al periodo pre-pandemico (Molgora & Accordini, 2020). Se infatti rileviamo come le due emozioni più citate nelle interviste siano state la paura e la felicità, dobbiamo tuttavia notare che la paura è emersa 112 volte nelle trascrizioni, mentre la felicità è apparsa (soltanto) 69 volte.

In particolare, tra le emozioni connesse al pericolo virologico, sono emerse il timore per l'infezione dal virus con danni per sé e per il nascituro, il sentimento di incertezza per gli esiti della pandemia e diffusi sentimenti di solitudine. Le interviste hanno dunque evidenziato l'influenza del contesto, mostrando come i fattori di stress esterni possano aumentare la vulnerabilità percepita: questi risultati sono coerenti con gli studi precedenti, come quello di Lebel e colleghi (2021), i quali hanno dimostrato un aumento di malessere psicologico (e.g., sintomi depressivi e ansiosi) tra le donne in gravidanza durante la pandemia, con un conseguente calo del benessere materno e fetale.

Oltre agli aspetti emotivi, lo studio ha individuato alcuni elementi fondamentali che meritano particolare attenzione ai fini dell'attuale gestione clinica delle donne durante la gestazione, il parto e il periodo post-partum. Un primo aspetto fondamentale è relativo al supporto del partner durante il percorso di cura. A causa delle restrizioni ospedaliere, molte donne hanno vissuto individualmente alcune esperienze cruciali e/o critiche, come le visite, la prima ecografia, la scoperta del sesso del nascituro, il travaglio e la degenza ospedaliera. Le donne hanno espresso a più riprese un forte bisogno rispetto alla presenza del partner e hanno riportato sentimenti di abbandono e solitudine, sottolineando l'importanza del supporto reciproco in un

processo così complesso. La transizione alla genitorialità è stata rappresentata come un processo iniziato congiuntamente, ma poi concretizzato individualmente; il padre, incluso nei progetti di genitorialità, è stato poi escluso nelle fasi più significative di tale percorso. Sebbene durante la pandemia l'esclusione del partner sia stata una necessità, dobbiamo però notare come non di rado, anche ad oggi, l'attenzione ospedaliera sia spesso focalizzata unicamente o principalmente sulla donna. Dai dati di questo studio emerge invece non solo l'importanza, ma potremmo dire la necessità, di garantire in modo costante e continuativo il coinvolgimento di entrambi i partner durante l'intero processo.

A causa dell'aumento delle infezioni e in linea con le normative introdotte nazionalmente, le donne hanno modificato le proprie abitudini, hanno limitato le uscite, hanno evitato i luoghi affollati, hanno ridotto i contatti con amici e familiari e hanno vissuto isolate per evitare il rischio di infezione, soprattutto in prossimità del parto. Questi cambiamenti hanno incrementato il senso di isolamento di numerose donne, sentimento emerso in diversi studi condotti in epoca pandemica (e.g., Mortazavi e Ghardashi, 2021). La pandemia ha dunque evidenziato in modo particolarmente significativo il ruolo del supporto, ben noto in letteratura, mettendo in luce le conseguenze negative dovute alla sua riduzione e/o mancanza. Nello specifico, si è evidenziato il ruolo cruciale del supporto proveniente dalla rete amicale e dei pari per migliorare il benessere psicologico, non solo in termini di riduzione di sintomatologia clinica (ansia e depressione), ma anche di incremento della qualità della vita (Corno et al., 2022). È però opportuno sottolineare come le donne abbiano anche riportato di aver apprezzato i momenti di riservatezza nel nucleo familiare più ristretto, soprattutto dopo il parto (data, per esempio, l'assenza dei parenti in reparto). Tale risultato suggerisce come il supporto, che dunque non riguarda solo il partner (figura sicuramente cruciale), ma anche la rete familiare, amicale e, più in generale, dei pari, debba essere bilanciato, evitando sia l'eccessivo isolamento, sia l'invasione eccessiva dei confini familiari.

Un ulteriore aspetto relativo al supporto riguarda la rete formale. In questo scenario pandemico e di isolamento, le relazioni tra operatori sanitari e pazienti hanno svolto un ruolo ancor più cruciale. La prospettiva delle donne è stata divergente: alcune donne non hanno percepito cambiamenti della qualità assistenza con la pandemia, altre hanno notato un peggioramento soprattutto per la carenza informativa e per le incertezze mediche (per esempio, relative ai vaccini in gravidanza), mentre altre hanno percepito una maggiore disponibilità, favorita dal numero ridotto di pazienti e visitatori in reparto. Nonostante le diverse prospettive, la comunicazione, le relazioni con gli operatori sanitari e l'informazione dei pazienti si sono rivelate

elementi fondamentali, soprattutto durante il parto. In particolare, il ruolo delle ostetriche è stato fondamentale per molte partecipanti in quanto ha colmato, se pur parzialmente, l'assenza del partner durante il parto.

Un altro aspetto sanitario che ha subito cambiamenti è quello relativo ai corsi preparto. A causa della pandemia, i corsi sono stati convertiti in sessioni da remoto. La maggior parte delle donne ha sottolineato l'importanza di garantire un'occasione per creare un gruppo con altre madri, per confrontarsi e condividere l'esperienza della gravidanza. Ai fini della realizzazione attuale dei corsi, è utile considerare i fattori che le donne hanno percepito come limitanti, quali il numero elevato di partecipanti, che ha ostacolato la possibilità di dialogo, e il numero limitato di sessioni con poca attenzione alle tecniche di respirazione o alle posizioni raccomandate da assumere durante il parto.

Sempre relativamente alla rete formale, le donne hanno riportato il bisogno di un intervento psicologico che però, nonostante le difficoltà e il malessere manifestato, è risultato insufficiente. Infatti, un terzo delle puerpere ha dichiarato di aver avuto bisogno di supporto psicologico, ma di non averlo mai ricevuto. In ambito ostetrico la figura dello psicologo risulta quindi ancora scarsamente integrata all'interno del team multidisciplinare. Ne deriva il rischio che nell'assistenza postnatale il malessere psicologico delle madri venga sottovalutato e riceva una considerazione marginale rispetto agli aspetti fisici. Il ruolo psicologico è rilevante non solo per affrontare la sintomatologia ansiosa o depressiva spesso presentata dalle donne partorienti (Molgora et al., 2022b), ma anche per gestire i cambiamenti identitari e familiari. Le donne dello studio, infatti, hanno manifestato preoccupazioni rispetto al futuro, soprattutto per la gestione delle nuove attività e per l'integrazione della vita precedente alla gravidanza e la vita successiva alla nascita del figlio. Inoltre, esplorando le aspettative relative al futuro, alcune donne hanno sottolineato una forte preoccupazione rispetto ai cambiamenti del nucleo familiare, soprattutto per l'integrazione della figura del figlio in un nucleo già esistente.

Durante la pandemia sono emersi con particolare evidenza alcuni bisogni che, seppur esacerbati dal contesto emergenziale, dovrebbero essere considerati per l'istituzione di buone prassi nell'assistenza sanitaria ordinaria (ovvero, anche a pandemia conclusa), poiché trasversali al periodo di transizione. Ad esempio, le donne intervistate hanno sottolineato il fondamentale ruolo del partner, ancora oggi spesso poco coinvolto. Attualmente ci sono ancora corsi pre-parto che non prevedono il coinvolgimento di entrambi i futuri genitori, o, al più, contemplano la presenza del futuro padre solo in un numero limitato di incontri circoscritti a specifiche tematiche, come se la gran parte delle questioni fosse di interesse o di dominio

esclusivamente della donna-madre. Tuttavia, come mostrato dai risultati, la partecipazione anche dei partner si rivela essenziale nella transizione alla genitorialità, non solo dal punto di vista informativo, ma anche relazionale, psicologico ed emotivo.

Un ulteriore aspetto critico da considerare riguarda la carenza di informazioni, considerate essenziali dalle donne per affrontare adeguatamente il parto. Rispetto a questo tema, le partecipanti hanno ampiamente evidenziato il ruolo del supporto formale e della relativa comunicazione. È necessario, dunque, che gli operatori siano adeguatamente formati con corsi specifici, focalizzati sul benessere psicologico delle puerpere e sulla comunicazione medico-paziente, che si dimostra essenziale soprattutto in condizioni complesse e di fragilità medica e/o psicologica.

Questo studio presenta alcune limitazioni. La natura qualitativa e il campionamento teorico di convenienza adottato non consentono la generalizzazione dei risultati. Non è stato possibile aggiungere misurazioni specifiche relative al benessere psicologico individuale e relazionale delle partecipanti, le quali avrebbero consentito di offrire una visione più ampia e avrebbero arricchito i risultati delle interviste. Tuttavia, l'approccio qualitativo ha permesso di esplorare e comprendere a fondo l'esperienza delle puerpere.

Un altro limite è l'esclusione delle donne con un quadro clinico critico. I risultati, infatti, riflettono solo l'esperienza di puerpere con condizioni mediche aderenti ai parametri di normalità. Infine, un'ulteriore limitazione dello studio è costituita dal focus esclusivo sulle donne. Dal momento che gli uomini hanno vissuto l'esperienza con l'esclusione da molteplici momenti che hanno definito la transizione alla genitorialità, anche il loro vissuto dovrebbe essere esplorato.

Alla luce di queste considerazioni, studi futuri dovrebbero considerare situazioni cliniche più complesse ed effettuare confronti tra sottogruppi (ad esempio, primipare versus multipare), così da adattare l'intervento clinico ai bisogni percepiti.

Conclusioni

La pandemia ha offerto utili riflessioni per migliorare l'assistenza clinica alle donne durante la gestazione, il parto e il post-parto. Sebbene siano trascorsi quasi cinque anni da quando l'OMS ha dichiarato l'inizio della pandemia globale di COVID-19 e, ad oggi, il periodo di emergenza sanitaria viene considerato concluso/chiuso, questi risultati potrebbero fornire indicazioni utili ai professionisti della salute che attualmente si confrontano con le

donne in gravidanza al fine di implementare interventi di supporto adeguati alle loro necessità, che la pandemia ha messo in luce in modo particolarmente marcato. Facciamo riferimento in particolare, alla possibilità di favorire, ad esempio durante i corsi preparto, che dovrebbero includere entrambi i partner (e non essere rivolti esclusivamente o quasi alla donna), informazioni adeguate sulle emozioni e la loro gestione. Inoltre, un aspetto centrale da trattare è quello del supporto, considerando sia le diverse fonti sia lo scambio dinamico tra supporto richiesto e supporto ricevuto.

Infine, questo studio ha offerto ulteriori conferme rispetto al ruolo cruciale dei fattori contestuali, i quali modellano e influenzano l'esperienza vissuta dai futuri genitori.

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Research on the socio-psychological adaptation of students with disabilities in higher education institutions

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Abstract

This study aimed to explore the characteristics of the adaptation process for students with disabilities and identify factors influencing the effectiveness of their adaptation. The research was conducted at the Kyrgyz National University "J. Balasagyn" and the Kyrgyz State Technical University "I. Razzakov" from September 2023 to March 2024. The study involved 120 students with various forms of disabilities, studying in different courses and departments. The methodology included a comprehensive approach using psychodiagnostic methods, questionnaires, and structured interviews. Data analysis revealed that 68% of respondents experience difficulties in interacting with their peers. The universities involved in the study are ready to interact with students with disabilities; However, 72% of participants pointed out the insufficient accessibility of the educational environment, which complicates their social and academic adaptation. Additionally, 45% of respondents reported issues with self-esteem and confidence, which negatively affects their social activity and academic performance. A correlation was found between the level of

socio-psychological adaptation and the availability of specialised support programmes at universities. Students who had access to psychological support and participated in social integration programmes demonstrated higher adaptation scores (30% higher) compared to those without such support. The research indicates that addressing the socio-psychological adaptation of this group of students requires a comprehensive approach aimed at improving their integration into the educational environment.

Keywords: interpersonal communication, coping mechanisms, accessibility of the environment, academic integration, professional development

Introduction

The social and psychological adaptation of students with disabilities in higher education is becoming increasingly relevant in the context of the development of inclusive education. This issue is particularly important for Kyrgyzstan, where inclusive practices in higher educational institutions are still in the early stages. Social and psychological adaptation is a key factor determining the successful integration of students with disabilities into the educational environment and their subsequent professional development.

Inclusive education, as an approach that ensures access to quality education for all students regardless of their physical, mental, intellectual, or other characteristics, has become a topic of active discussion in the academic community of Kyrgyzstan. Like many other post-Soviet countries, Kyrgyzstan's transition to an inclusive education model faces several challenges, stemming both from the historical legacy of segregated education for people with disabilities and from current economic and social difficulties. Karabalaeva and Tokbergenova (2019) note that the development of inclusive education in the country encounters several problems, including insufficient teacher training and weak technical infrastructure in educational institutions. The insufficient readiness of educators to work with a diverse student population can lead to misunderstandings of the special educational needs of students with disabilities, hindering their integration into academic and social life (Smolinska et al., 2024; Angjelkoska and Stankovska, 2014).

A review of the literature shows that several researchers have studied the social and psychological adaptation of students with disabilities. Skuratovskaya (2020) examined the psycho-pedagogical aspects of integrating people with disabilities into the educational environment, emphasizing the importance of individual approaches and psychological support. The study demonstrates that successful adaptation depends not only on physical accessibility but also on creating a favorable psychological

climate. Karabalaeva and Niyazova (2019) highlighted the importance of the psychological readiness of all participants in the educational process for inclusive education. This indicates the need to study both the individual characteristics of adaptation and the influence of the social environment of the university on this process. Borkoev and Alimbekov (2019) studied the adaptation of students with disabilities in Kyrgyz universities, focusing on the need for special learning conditions. Their work emphasized the importance of an individual approach to each student with a disability, considering their specific conditions and educational needs.

According to data from the Ministry of Education and Science of the Kyrgyz Republic ("Program for the development of inclusive education" – 2019), in 2023, only 15% of universities in the country had special support programmed for students with disabilities, highlighting the need for further development of inclusive practices in higher education. Lipka et al. (2020) developed a methodology for assessing the adaptation of students with disabilities, which includes measuring three key parameters: academic performance, social interactions, and emotional state compared to a control group. The developed methodology allows for tracking academic performance dynamics in key subjects, analyzing the frequency and quality of social contacts with classmates and teachers, as well as measuring anxiety levels and satisfaction with the learning process. The proposed system uses quantitative indicators to assess social adaptation, including the time spent on academic tasks, the number of initiated social contacts throughout the day, participation in group projects, and extracurricular activities. The methodology also includes regular monitoring of emotional states through structured questionnaires and self-assessment scales.

Fernández-Batanero et al. (2022) developed a model for assessing the accessibility of higher education, encompassing physical (infrastructure), informational (learning materials), and social (relationships between teachers and students) aspects. The model involves evaluating the architectural accessibility of classrooms, including the availability of ramps, elevators, specialized restrooms, and ergonomic furniture. The informational component considers the availability of learning materials in various formats – audio, large print, Braille, and electronic versions with zoom capabilities. The social aspect includes the analysis of communication practices between teachers and students, the availability of support services, and professional development programs for faculty to work with different categories of students. Kokhan et al. (2023) developed a methodology for analyzing the adaptation of students with special needs, using both quantitative and qualitative indicators. The methodology includes structured interviews, psychometric tests, and behavioral observations in various academic

situations. Quantitative indicators cover the frequency of class attendance, academic performance levels, and the number of social interactions. Qualitative parameters include the analysis of emotional states, communication patterns with teachers and peers, and participation in group work. Special attention is given to evaluating psychological adaptation through measuring anxiety levels, self-esteem, and motivation to learn. Tools for social integration allow tracking student involvement in academic life, participation in extracurricular activities, and the development of sustainable social connections (Ahmeti and Stankovska, 2023; Kim and Chung, 2024).

An analysis of existing research has identified several gaps in the study of social and psychological adaptation for students with disabilities in Kyrgyz universities, including the specifics of adaptation processes for different types of disabilities, the impact of specific university environments on adaptation success, the effectiveness of existing support programs, the role of social interactions in adaptation, the influence of cultural and social stereotypes, and the economic aspects of implementing inclusive practices. The aim is to comprehensively examine the characteristics of the social and psychological adaptation of students with disabilities in Kyrgyz higher education institutions and develop recommendations for optimizing this process. The research questions which we addressed are:

1. What are the main barriers to successful social and psychological adaptation?
2. How does the educational environment of specific universities impact adaptation?
3. How effective are the existing support programs?
4. What factors contribute to successful adaptation?
5. What strategies can enhance the effectiveness of adaptation?

The research hypothesis suggests that the effectiveness of adaptation depends on critical factors, including individual characteristics, features of the educational environment, the availability of specialized support programs, and the readiness of faculty for inclusive education. Creating an inclusive university culture will improve adaptation and academic performance.

Theoretical Overview

Contemporary research on the adaptation of students with disabilities in higher education institutions covers several areas, each addressing different aspects of the issue and offering potential solutions. These areas include methodological approaches to inclusive education, the study of adaptation

mechanisms, analysis of institutional factors, and psychological aspects influencing the success of adaptation.

The first area of research focuses on the methodological aspects of inclusive education. Various ways to organize the inclusive educational process and emphasize the importance of creating an accessible and comfortable learning environment for students with disabilities have been suggested. For example, Shpigelman et al. (2021) developed a support concept that includes not only accessibility to the educational environment but also measures to combat the stigma of students with disabilities. In turn, Zaki and Ismail (2021) propose looking at inclusion from the perspective of educators, highlighting the importance of their readiness and competence. Bartolo et al. (2023) created a methodology aimed at studying the needs of students with disabilities, allowing for a more accurate identification of their needs and adaptation of the educational process. Algolaylat et al. (2023) proposed the use of case studies to examine the barriers to inclusion, highlighting the importance of context-specific analyses that reveal the unique challenges faced by students with disabilities. Their work suggests that, by focusing on real-life examples, educators can gain deeper insights into the systemic and individual obstacles that impede the integration of these students into the educational environment. This approach not only enhances our understanding of the barriers but also informs the development of targeted interventions.

In a similar vein, Edwards et al. (2022) introduced the concept of universal design in education, which emphasizes the necessity of creating learning environments that are accessible to all students, regardless of their abilities or disabilities. Universal design seeks to remove architectural, technological, and pedagogical barriers by considering the needs of diverse learners from the outset, rather than making adjustments later. This approach fosters inclusivity by advocating for flexible teaching methods, accessible materials, and multiple means of engagement.

Together, these studies underscore two critical dimensions of inclusive education: the need for a comprehensive understanding of specific barriers through case studies, and the importance of proactively designing educational spaces that accommodate all learners. While case studies provide valuable context, universal design offers a broad framework for ensuring that these insights are translated into actionable, systemic changes.

The second area of research focuses on studying the adaptation mechanisms that help students with disabilities successfully adapt to the academic environment. Blasco (2014) analysed the possibilities of culturally inclusive pedagogy, which takes into account the diversity of students and helps them integrate into the learning process. Herrick et al. (2020)

highlighted the effectiveness of mentoring programs for supporting students with disabilities in college, emphasizing the importance of guidance and mentoring. Parpottas et al. (2023) investigated the relationship between students' adaptation and their academic performance, showing that successful adaptation contributes to better academic results.

Bilopolyi and Skladanovska (2021) proposed a comprehensive model designed to optimize the adaptation of students to higher education. Their model focuses on the development of both cognitive and emotional support mechanisms, integrating academic, psychological, and social aspects of adaptation. By identifying key factors that influence students' transition to university life, such as social integration, academic preparedness, and emotional resilience, their work provides a framework that can be utilized to tailor adaptation programs for students with disabilities. This approach emphasizes the importance of not only academic support but also social and emotional development, which are critical for students with disabilities who often face additional barriers to inclusion in higher education settings.

Verbovyi and Kushniruk (2020) introduced a system for analyzing professional adaptation, which aims to facilitate the smooth transition of students from education to professional environments. This system highlights the role of vocational skills, career counseling, and workplace readiness programs in preparing students with disabilities for life beyond academia. Their approach stresses the need for higher education institutions to collaborate with employers, ensuring that students with disabilities are adequately prepared for the professional world and have access to necessary accommodations and support networks.

These studies illustrate the multidimensional nature of student adaptation. Bilopolyi and Skladanovska's (2021) model provides an educational framework focused on the academic and emotional aspects of adaptation, while Verbovyi and Kushniruk (2020) system complements this by addressing the transition to professional life. Both approaches underline the importance of a holistic, integrated strategy to support students with disabilities, emphasizing the need for inclusive educational practices that span both academic and professional domains.

The third area of research is focused on studying institutional factors and evaluating the effectiveness of inclusive programs. Moriña et al. (2020) studied the factors that help such students overcome difficulties and succeed in their studies. Their work highlighted the importance of social support, a positive educational environment, and the availability of resources that help students cope with the challenges related to their disabilities. The study also noted that resilience is not only an individual trait but also a result of favorable external conditions that support students' academic and personal

development. Portela Escandón and Alvarez Enciso (2023) introduced a set of criteria designed to assess inclusion in educational institutions, emphasizing the need for a comprehensive framework that not only measures accessibility but also evaluates the broader institutional commitment to fostering an inclusive environment. Their criteria address several dimensions, including physical access, curriculum adaptability, and the availability of support services for students with disabilities. This approach is crucial for providing a clear, measurable way to track progress in implementing inclusive practices across different educational settings, ensuring that policies do not remain theoretical but translate into tangible outcomes for students.

Naidoo (2021) explored the role of information technology in bridging the gap of educational inequality, particularly for students with disabilities. By highlighting the transformative potential of digital resources, Naidoo argued that technology can significantly level the playing field, offering students personalized learning experiences that cater to their individual needs. Digital tools such as screen readers, voice recognition software, and adaptive learning platforms can not only enhance accessibility but also provide students with disabilities more control over their learning process, empowering them to overcome traditional barriers posed by in-person instruction and rigid curricula.

The fourth area of research studies the psychological aspects of adaptation for students with disabilities. Scholars examined the impact of various psychological factors on successful adaptation and propose methods for their assessment. For example, Ambati (2015) analyzed coping strategies employed by students and Eskandari et al. (2021) developed a methodology to assess the levels of depression and social competence among students with disabilities. Ismailova (2024) explored the interaction between pedagogical and psychological aspects of inclusion, focusing on the influence of educators on students' psychological state.

Kungurtseva (2021) proposed a novel methodology for studying the adaptation of students with visual impairments, focusing on the interplay between environmental, psychological, and social factors that influence the adjustment process. By developing a framework that specifically addresses the unique challenges faced by visually impaired students, Kungurtseva highlighted the importance of tailored educational strategies that not only accommodate sensory impairments but also promote self-efficacy and resilience. This methodology offers valuable insights into how educational institutions can create environments that not only support the academic progress of students with visual impairments but also foster their psychological well-being and social integration.

Terletska and Chistyakova (2020) took a broader approach, examining the relationship between personal characteristics and adaptation in students with disabilities. They emphasized how traits such as self-esteem, emotional regulation, and personal motivation significantly impact how students with disabilities adjust to the educational environment. Their work underscores the need for individualized support plans that address these personal attributes, suggesting that students who exhibit higher levels of self-confidence and emotional resilience are better equipped to cope with the challenges of higher education. Their findings contribute to understanding the psychological factors that facilitate successful adaptation and highlight the importance of developing comprehensive support systems that nurture these personal characteristics.

In parallel, AlTarawneh (2022) and Aljbri et al. (2023) advanced approaches for assessing the psychological adaptation and social competence of students with disabilities, offering robust frameworks for evaluating students' ability to navigate the social and academic demands of university life. AlTarawneh's work specifically focused on the development of social competencies, such as communication skills and peer relationships, which are critical for integration into both academic and social settings. Aljbri et al. (2023) extended this by exploring the role of psychological adaptation indicating that students who utilize effective coping mechanisms tend to experience better academic outcomes and higher levels of satisfaction with their educational experiences.

Based on the analysis of the presented studies, several problematic areas were identified that require further attention. Firstly, many adaptation methodologies are not sufficiently universal and are only applicable in specific contexts, making them less suitable for use in various cultural and regional contexts. The lack of consideration for regional and cultural factors limits the practical use of the developed methodologies. Secondly, the economic aspect of implementing support programs for students with disabilities remains under-researched, which complicates their implementation in practice. Thirdly, the studies primarily use short-term methodologies that do not allow for the assessment of their long-term effectiveness. Issues related to digital inequality and the insufficient technical training of staff also remain under-addressed and require additional solutions.

It is also worth noting that most of the research in this field has been conducted in countries with well-developed systems for supporting students with disabilities, while the implementation of inclusive programs in other regions, such as Central Asia, faces numerous specific challenges. To develop more effective support measures for students with disabilities in

Kyrgyzstan and other Central Asian countries, local educational system features, as well as cultural and socio-economic factors, need to be considered. This requires further research to identify the specific needs of students with disabilities in this region and adapt existing methodologies to local conditions. Such research will help identify specific problems and needs of students with disabilities and determine the most effective adaptation strategies, taking into account available resources.

Materials and Methods

The research was conducted from September 2023 to February 2024 at two universities in Kyrgyzstan: the Kyrgyz National University named after J. Balasagyn (KNU) and the Kyrgyz State Technical University named after I. Razzakov (KSTU). These institutions were selected due to their leading positions in the country's higher education system and their existing support programs for students with disabilities. To assess the social and methodological support for students with disabilities, a sample of 20 experts was formed, including faculty members, psychological services staff, and representatives of the administration of both universities. The criteria for selecting experts included at least two years of experience in inclusive education and direct interaction with students with special educational needs. The expert group evaluated the effectiveness of support programs using developed scales and questionnaires, which provided a comprehensive picture of the current problems and opportunities for improving the inclusive environment.

The study initially included 120 students with disabilities from two universities (68 from KNU and 52 from KSTU) in their first to fourth years across various faculties. The inclusion criteria were official disability status, full-time study mode, and ages between 18 and 25 years. Students studying part-time or on academic leave were excluded from the sample.

From this broader pool, a smaller sample of 30 participants was selected using stratified random sampling to ensure that each disability type, year of study, and specialty was represented proportionally. This small sample was specifically used for a subset of analyses (e.g., factor analysis and in-depth case studies) where a more focused group was required to explore specific patterns in greater detail. Stratification ensured that the sample was representative of the overall diversity in the student population, particularly in terms of disability type (e.g., musculoskeletal disorders, visual impairments, hearing impairments), as well as other factors like year of study and specialty.

The overall sample of 120 students was used for the majority of the statistical analyses, where a larger sample size was necessary to ensure statistical power and to allow for more generalizable findings across the full population of students with disabilities at the two universities. The use of both the full sample (N = 120) and the smaller stratified sample (N = 30) in different analyses was determined by the specific aims of each analysis – larger sample sizes were used for broader generalizations, while the smaller sample was selected to provide deeper insights into specific factors influencing adaptation.

The distribution of participants by disability type was as follows: musculoskeletal disorders – 42 students (35%), visual impairments – 38 students (31.7%), hearing impairments – 28 students (23.3%), and other types of disability – 12 students (10%). The gender distribution was: 63 women (52.5%) and 57 men (47.5%).

According to the methodology for diagnosing socio-psychological adaptation by Rogers and Diamond the methodology contains 101 statements, with each of the 120 students providing answers on a 7-point scale as shown in Table 1. Klepsch et al. (2017) demonstrated that cognitive load can be accurately measured using 7-point scales, which offer high internal consistency and reliability. These scales are particularly effective for evaluating different types of cognitive load, such as internal, secondary, and auxiliary load. The use of a 7-point scale is a common practice in psychodiagnostics, making it easier to compare results across various studies.

Table 1 - Distribution of responses according to the methodology scale

Score	*Numbers of responses*	*Interpretation*
7	1458	Strongly agree
6	1782	Agree
5	2124	Mostly agree
4	2856	Neutral
3	1968	Mostly disagree
2	1134	Disagree
1	386	Strongly disagree

Table 1 presents the distribution of responses on the 7-point scale used in the Rogers and Diamond methodology for diagnosing socio-psychological adaptation. This scale allows respondents to express the degree of agreement or disagreement with the statements, which is essential for assessing the levels of adaptation among students. While the high percentage of positive responses (60.6%) indicates a moderate level of adaptation, the mean score was not computed in this section. This is because the focus was on presenting

the distribution of responses to illustrate the range of agreement across participants. In contrast, for subsequent scales, mean scores were computed to summarize the overall trend more succinctly, particularly when evaluating coping strategies and social support, where calculating an overall average score was more meaningful for interpreting the data. This data presents the distribution of responses on the scale of the Rogers and Diamond method for diagnosing socio-psychological adaptation. The high percentage of positive responses (60.6%) indicates a moderate level of adaptation among the study participants.

Specific barriers were then analyzed through a survey in Table 2 on the basis of the answer of 120 respondents. Students identified various barriers on a 5-point scale (1 – not a problem, 5 – serious problem).

Table 2 - Survey results on barriers

Barrier	*Average score*	*% marked as a serious problem (4-5 points)*
Physical accessibility of the environment	4.2	72%
Interaction with classmates	3.9	68%
Self-esteem issues	3.6	45%
Learning difficulties	3.4	42%
Communication with professors	3.1	38%

Table 2 revealed that the most significant barriers in the educational process are physical accessibility of the environment and interaction with classmates. This trend may be explained by insufficient adaptation of educational institutions' infrastructure and difficulties with social integration. These results highlight the need for improvements in infrastructure and social support programs. Notably, communication with professors is assessed as the least problematic barrier, which may indicate a relatively high level of professional preparation of the teaching staff in working with students.

Table 3 presents the assessment of physical accessibility at KNU and KSTU as evaluated by both students and experts. This compares the ratings given by students and experts for various components of the university environment, including the accessibility of entrances, navigation within buildings, classroom equipment, and sanitary facilities. The scores reflect the perceived adequacy of these components in supporting the mobility and overall accessibility of students with disabilities. The ratings were collected through surveys conducted with both students and experts, with students

providing their assessments based on personal experiences and experts evaluating accessibility based on professional criteria.

Table 3 - Assessment of physical accessibility (P)

Environment component	*KNU*		*KSTU*	
	Students	Experts	Students	Experts
Accessibility of entrances	7.2	7.4	7.6	7.8
Navigation within buildings	6.4	6.8	6.9	7.2
Classroom equipment	6.2	6.6	6.8	7.1
Sanitary facilities	6.5	6.9	7	7.3

The study was approved by the ethical committees of KNU and KSTU. All participants were informed about the study's purpose and procedures, signed consent forms, and their participation was voluntary, with guarantees of anonymity and confidentiality. The experts involved in the study included faculty members, staff from psychological services, and administrative representatives from both universities. These experts were asked to assess the effectiveness of existing support programs for students with disabilities and to provide feedback on the inclusivity of the educational environment. They completed surveys evaluating various aspects of the support systems, including physical accessibility, availability of resources, and the readiness of faculty to accommodate students' needs.

The students were asked to complete the questionnaires themselves. The distribution of the questionnaires was conducted both online and in paper format, depending on the participants' accessibility needs. The online version of the questionnaire was adapted for students with visual impairments by providing audio options. Each participant was given sufficient time to fill out the questionnaire (approximately 60-90 minutes). The questions were designed to assess socio-psychological adaptation, coping strategies, perceived social support, and satisfaction with the learning conditions at the university.

For the Rogers and Diamond socio-psychological adaptation diagnostic test (adapted by Osnitsky), participants were asked to respond to 101 statements using a 7-point scale. The Lazarus Coping Strategies Questionnaire (adapted by Kryukova, Kuftyak, Zamishlyaeva) was used to assess coping mechanisms by asking students to rate their use of specific strategies on a 5-point scale. The MSPSS (adapted by Yaltonsky and Sirota)

was used to evaluate perceived social support, with students indicating the level of support they felt they received from family, friends, and significant others, using a 7-point scale. Additionally, students filled out an individual questionnaire assessing their satisfaction with the learning conditions, which focused on accessibility, classroom conditions, and faculty responsiveness, rated on a 5-point scale.

To assess the effectiveness of the proposed support strategies, an Index of Potential Efficiency (IES) was calculated based on expert evaluations of each strategy across three main criteria: economic efficiency, organizational complexity, and time costs. Each criterion was rated by experts on a 10-point scale, where 10 represented the highest level of effectiveness, and 0 indicated the lowest. The evaluation criteria were carefully defined, and a set of proposals (questions) was formulated to help experts justify their assessments and assign appropriate scores.

The experts assigned importance to each criterion using the same 10-point scale, where 10 denoted the most significant criterion and 0 the least significant. This method allowed for a weighted evaluation of each strategy, providing a comprehensive overview of their potential effectiveness based on the expert opinions (Table 4).

Table 4 - Expert evaluation of strategies

Criterion	*Psychological support*	*Tutor support*	*Environmental adaptation*
Economic efficiency (E)	8.2	7.8	6.9
Organizational complexity (C)	6.4	7.2	5.8
Time costs (T)	7.1	6.8	6.2

The study was conducted in three stages:

1. Preparatory stage (September-October 2023): development of tools, obtaining ethical approvals, and forming the sample.
2. Main stage (November 2023-January 2024): conducting psychological assessments and surveys. Participants filled out online questionnaires on an adapted platform, including audio versions for students with visual impairments. The average time for completing the surveys was 60-90 minutes.
3. Final stage (February 2024): data processing and analysis.

Statistical analysis methods used included descriptive statistics for characterizing the sample and analyzing the distribution, the Student's t-test for comparing means of independent samples, correlation analysis (Pearson's correlation coefficient) to identify relationships between

variables, factor analysis to determine the structure of factors affecting adaptation, and regression analysis to assess the impact of various factors on adaptation indicators. Statistical significance was established at the level of $p < 0.05$.

In the study, the following mathematical methods and formulas were used. The adaptation index (AI) was calculated using the formula:

$$IA = (A / (A + B)) \times 100, \quad 1)$$

where A – number of positive responses; B – number of negative responses.

The Accessibility Index (ID) was used to evaluate the educational environment of universities:

$$ID = (P \times W + I \times V) / (W + V), \quad 3)$$

where P – physical accessibility rating; I – informational accessibility rating; W – weight of physical accessibility (0.6); V – weight of informational accessibility (0.4).

The Support Program Effectiveness Coefficient (EPS) was computed as follows:

$$EPS = (S \times \alpha + P \times \beta + M \times \gamma) / (\alpha + \beta + \gamma), \quad 4)$$

where S – social support rating; P – psychological support rating; M – methodological support rating; $\alpha = 0.4$, $\beta = 0.35$, $\gamma = 0.25$.

The Index of Potential Effectiveness of Strategies (IES) was computed as follows:

$$IES = (E \times W + C \times V + T \times U) / (W + V + U), \quad 7)$$

where E – economic efficiency; C – organizational complexity; T – time costs; W = 0.5, V = 0.3, U = 0.2.

Results

Analysis of barriers to socio-psychological adaptation

The analysis identified key barriers hindering the socio-psychological

adaptation of students with disabilities, grouped into physical, psychological, social, and institutional challenges. It also highlighted opportunities for improving inclusive programs. Physical barriers were identified as significant, with many students facing difficulties with accessibility such as inadequate ramps, narrow doorways, and inaccessible classrooms. To improve adaptation, universities must enhance the accessibility of all campus facilities. Psychological barriers included issues like low self-esteem, anxiety, and social isolation. Students often feel excluded due to stigma or lack of faculty awareness. Training for faculty on inclusive teaching practices and expanding mental health support services would address these concerns.

Social barriers pointed to the challenge of social integration, with students feeling isolated from peer groups and extracurricular activities. Promoting social inclusion through peer mentorship programs and disability-awareness campaigns would foster a more supportive environment (Povidaichyk and Bartosh, 2025; Mambetakunov and Akylbekova, 2025). Institutional barriers were found in the form of insufficient resources and inconsistent policies. Clear communication of available support services and consistent implementation of inclusive policies are essential (Haitembu and Mbongo, 2024; Syzdykov et al., 2025). Opportunities for improvement were also identified. These included providing faculty training on inclusive pedagogy, upgrading physical infrastructure to ensure full accessibility, promoting peer support programs, expanding academic support services for students with disabilities, and launching awareness campaigns to reduce stigma and foster inclusivity.

Recommendations to improve inclusive programs include improving physical accessibility across all university facilities, providing faculty training on inclusive teaching methods, enhancing social support networks and peer mentoring, expanding psychological support services, and strengthening institutional policies and resource allocation for disability support. To calculate the adaptation index (AI) using formula (1), the responses were grouped: positive responses (A): scores 5-7 = 5364; negative responses (B): scores 1-3 = 3488; neutral responses: score 4 = 2856.

$$IA = (5364 / (5364 + 3488)) \times 100 = (5364 / 8852) \times 100;$$
$$IA = 0.606 \times 100 = 60.6\%.$$

The negative indicates an inverse relationship between adaptation level and number of barriers: the higher the adaptation level, the fewer barriers students report. This condition corresponds to the statistical significance coefficient: $r = -0.724$ ($p < 0.05$).

The negative correlation suggests that the more students feel integrated into the academic and social spheres, the less they perceive obstacles in their path. This highlights the importance of fostering an inclusive environment where students with disabilities can thrive. The correlation also indicates that improving aspects such as social support, access to resources, and physical accessibility can directly enhance students' adaptation and reduce the barriers they experience. By addressing these barriers comprehensively, universities can significantly improve the adaptation process for students with disabilities. Effective programs should not only target academic performance but also focus on creating a supportive and inclusive social environment (Bendo et al., 2025; Dahan and Keller, 2025). These findings underline the need for continued efforts in enhancing accessibility and inclusivity in higher education, ensuring that students with disabilities are able to fully participate in university life without the limitations imposed by physical, social, or institutional barriers.

Influence of the educational environment

A comparative analysis of physical accessibility assessments of the two universities (KNU and KSTU) (Table 3) revealed that, overall, KSTU has higher accessibility ratings across all environment components compared to KNU, both in student and expert assessments. Scores range from 6.2 to 7.8 on the 10-point scale, indicating a good but insufficient level of accessibility, leaving room for further improvements.

Table 5 - Assessment of informational accessibility (I)

Component	*KNU*		*KSTU*	
	Students	Experts	Students	Experts
Availability of study materials	5.8	6.2	6.3	6.7
Educational technology	5.6	5.9	6.1	6.4
Website and information systems	5.7	6.1	6.2	6.6

Analysis of data on informational accessibility (Table 5) showed lower ratings compared to physical environment accessibility. KSTU demonstrated higher ratings across all components of informational accessibility compared to KNU. The highest ratings were for the availability of study materials, while educational technology received the lowest ratings. There is a consistent trend where experts rate the components higher than students, with an average difference of 0.3-0.4 points. The overall score range of 5.6 to 6.7

indicates an average level of informational accessibility at both universities, pointing to the need for significant modernization of the information infrastructure, particularly in terms of technical equipment and information systems development. Calculations of the accessibility index (ID) show that KGUT (6.88) has higher accessibility than KNU (6.44). This confirms KSTU's overall advantage in providing conditions for support, which aligns with higher scores on other indicators.

Effectiveness of support programs

In evaluating the effectiveness of the support programs for students with disabilities, it is essential to consider both the perceived adequacy and impact of the services provided. By examining the feedback on social, psychological, and methodological support, we can identify areas where the current systems are meeting student needs and where improvements are necessary. The following analysis highlights key trends in the students' experiences with these support services, offering insight into the effectiveness of existing programs at KNU and KSTU.

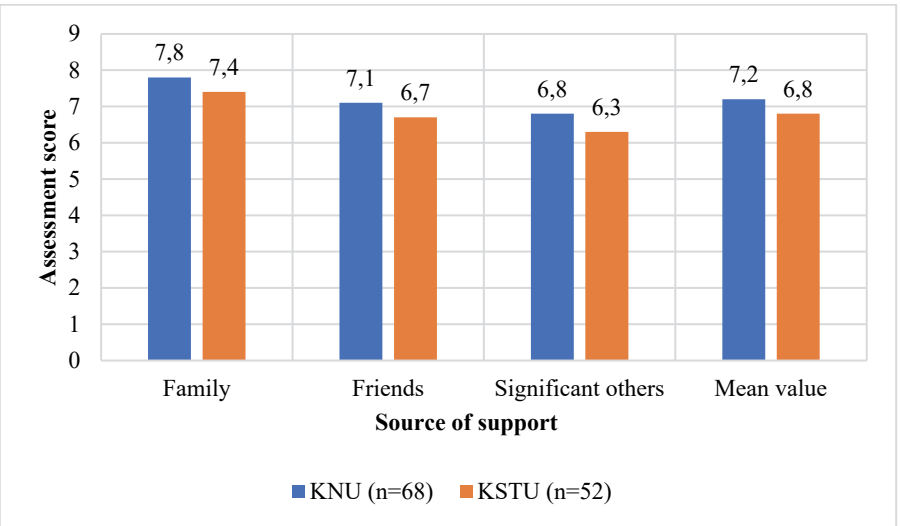

Figure 1 - Evaluation of Social Support (S) according to MSPSS

Figure 1 presents the distribution of scores for the Multidimensional Scale of Perceived Social Support (MSPSS), which assesses the perceived level of social support across three key dimensions: support from family, friends, and significant others. The scale used to gather these responses is a 10-point

Likert scale, where a score of 10 represents the highest level of perceived support, and a score of 0 indicates no support.

The distribution of scores shown in the figure provides insight into how students perceive the availability of social support. A higher concentration of scores at the upper end of the scale (scores 8-10) suggests that most students feel they receive a significant level of support from their social networks. This is particularly important as higher perceived social support has been linked to better adaptation outcomes, including increased resilience and academic success, especially for students with disabilities.

Notably, the figure also shows some variation in responses, with a smaller proportion of students reporting lower levels of support (scores 1-4). This indicates that there are students who may feel isolated or lack the necessary support to cope effectively with the challenges they face in higher education. This variation highlights the potential need for universities to enhance or create targeted social support interventions for students who report lower perceived support.

Table 6 - Evaluation of psychological support (P) according to the author's survey

Type of Support	*KNU (n=68)*	*KSTU (n=52)*
Individual consultations	6.8	7.2
Group sessions	6.4	6.8
Crisis support	6.3	6.7
Average score	6.5	6.9

Analysis of data from Table 6 on psychological support in the two universities revealed the following: KSTU showed higher ratings across all types of psychological support compared to KNU, with an average score of 6.9 versus 6.5, respectively. Individual consultations were the highest rated, which may indicate the priority of a personalized approach in providing psychological support to students. Group sessions and crisis support received slightly lower ratings, ranging from 6.3 to 6.8. This distribution suggests a sufficient, but not optimal, level of psychological support, and the 0.4-point difference between universities may indicate a more effective organization of the psychological services at KSTU.

The data analysis in Figure 2 regarding methodological support reveals that it received the lowest ratings compared to other aspects of the educational environment. KSTU showed higher ratings across all components of methodological support. Both universities rated the adaptation of materials the highest, while tutoring support received the lowest ratings. The overall scores, ranging from 5.7 to 6.4, indicate that methodological support is insufficient at both universities, signaling the need for significant improvements, particularly in tutoring systems and technical

assistance. The 0.4-point difference between the universities suggests that KSTU may have a more organized approach to providing methodological support.

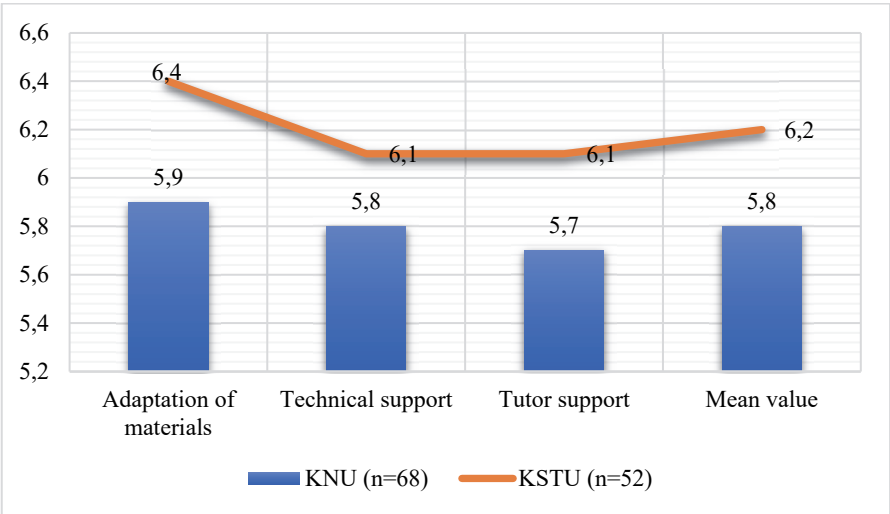

Figure 2 - Assessment of methodological support (M)

Additional EPS calculations confirm this trend: the overall index for KSTU (6.685) was higher than that for KNU (6.605). This indicates slightly greater overall support efficiency at KSTU, although the difference remains minor.

Factors of successful adaptation

To identify key factors affecting adaptation, the Lazarus Coping Strategies Questionnaire and a custom survey were used. The Lazarus questionnaire, which evaluates various coping strategies employed by students when facing stress, includes several subscales such as problem-focused coping, emotion-focused coping, and avoidance coping. The custom survey, developed specifically for this study, assessed factors like social support, psychological readiness, environmental accessibility, and academic support.

Factor analysis was conducted using the principal component method, with four key variables identified: social support, psychological readiness, environmental accessibility, and academic support. This analysis helped to determine the relative significance of each factor in influencing students' adaptation and identify areas for potential improvement in support programs.

Before conducting the factor analysis, a correlation matrix was generated to assess the relationships between the key variables: social support, psychological readiness, environmental accessibility, and academic support. The matrix revealed significant correlations, providing insights into how these variables interact with each other. This preliminary analysis helped guide the subsequent factor analysis by highlighting the strength and direction of these relationships.

The following correlation matrix was computed based on a subsample of 30 students, selected to represent a more focused group for analyzing specific patterns in adaptation. This smaller sample was chosen to ensure detailed analysis and to limit potential variability in the data, allowing for more refined insights into the relationships between the key variables. The full sample of 120 students was used for broader statistical analyses, while the smaller subsample of 30 provided a more manageable dataset for this specific part of the analysis. (Table 7).

Table 7 - Correlation matrix

Variable	*Social support*	*Psychological readiness*	*Environmental accessibility*	*Academic support*
Social support	1.00	0.73	0.74	0.75
Psychological readiness	0.73	1.00	0.90	0.90
Environmental accessibility	0.74	0.90	1.00	0.90

The results of the factor analysis, guided by the correlation matrix, highlight the significant relationships between key factors influencing students' adaptation. The strong correlations observed between social support, psychological readiness, environmental accessibility, and academic support demonstrate that these factors are deeply interconnected in the adaptation process. Specifically, students who report higher levels of social support and psychological readiness tend to have greater access to supportive academic environments, which in turn positively impacts their overall adaptation.

Strategies for enhancing adaptation efficiency

The evaluation of strategies aimed at improving adaptation efficiency was conducted with the participation of 20 experts. They analysed current support programmes and assigned scores based on three criteria: economic efficiency, organisational complexity, and time costs. Economic efficiency reflected the profitability of the strategy considering the expected costs;

organisational complexity indicated potential administrative and organisational barriers; time costs measured the duration required for strategy implementation.

To obtain a comprehensive assessment of the strategies, weighting coefficients were applied to reflect the relative importance of each criterion. The coefficient for economic efficiency (0.5) was given the highest weight, as it directly impacts the cost-effectiveness and long-term sustainability of support programs. Economic efficiency is crucial for ensuring that resources are used optimally to achieve the desired outcomes for students with disabilities (Ketners et al., 2024; Lailieva et al., 2025).

The organizational complexity (0.3) was assigned a moderate weight because the effectiveness of support programs also depends on how well they are integrated into the existing university structure. While essential, organizational complexity is secondary to the direct financial implications of the programs. The time costs (0.2) were given the lowest weight, as they represent the operational demands and duration required for implementing support programs. While time is an important factor, it is considered less critical compared to the immediate financial and organizational aspects. These coefficients were chosen to prioritize the factors that have the most significant and immediate impact on the success and feasibility of the support strategies, ensuring a balanced evaluation of each program's efficiency, complexity, and implementation timeline.

The final Index of Potential Efficiency (IES) was calculated based on these weights and scores assigned to each strategy on a 10-point scale, where 10 represented the highest efficiency and 0 the lowest. The evaluation criteria for the objects of expertise were determined, and proposals (questions) were formulated to clarify these criteria for the experts, enabling them to justify their assessments. Each respondent assigned importance to each selected criterion using a 10-point scale, where 10 represented the most significant criterion and 0 the least significant (Table 7).

The results of the expert evaluation of the strategies are presented in Table 7. The evaluation showed significant variation in the ratings for each of the three strategies across the different criteria: economic efficiency, organizational complexity, and time costs. Psychological support received the highest average scores, particularly for economic efficiency, where it scored 8.2, indicating that experts perceived this strategy as the most cost-effective. Tutor support followed closely, with an average score of 7.8 for economic efficiency, while environmental adaptation scored the lowest in this category at 6.9. This suggests that psychological support is considered the most financially viable, though it may involve substantial organizational effort.

Regarding organizational complexity, tutor support received the highest rating at 7.2, indicating it may be easier to implement and manage compared to the other two strategies. Psychological support scored 6.4, suggesting that while it is highly effective economically, it requires more organizational coordination. For time costs, psychological support again scored the highest at 7.1, showing it is considered the most efficient in terms of time required for implementation. Environmental adaptation, however, received the lowest score of 6.2, indicating that it may require more extensive efforts, leading to higher time costs.

The Index of Potential Efficiency (IES) was calculated by applying weighted coefficients: 0.5 for economic efficiency, 0.3 for organizational complexity, and 0.2 for time costs. The final IES values for each strategy were as follows: psychological support scored 6.685, tutor support scored 6.495, and environmental adaptation scored 6.175. These values reflect the overall potential efficiency of each strategy, with psychological support being deemed the most efficient according to expert evaluations. The IES values suggest that while psychological support is the most cost-effective, there is still room for improvement in environmental adaptation, which received the lowest scores across several criteria.

To test the hypothesis, multiple regression analysis was conducted based on the entire sample (n = 120) using Table 8 and formula (9).

Table 8 - Descriptive statistics of variables

Variable	*Mean*	*Std. deviation*	*Min.*	*Max.*
Y	60.6	12.4	32.5	88.7
X_1	6.8	1.6	3.2	9.4
X_2	6.66	1.4	3.8	9.1
X_3	6.645	1.3	3.5	9.2

The obtained adaptation index of 60.6% indicates significant difficulties faced by students, aligning with the findings of Karabalaeva and Tokbergenova (2019), which highlight systemic issues in the organisation of inclusive education in the country.

In addition, a multiple regression analysis was conducted using the full sample of 120 students to test the hypothesis regarding the relationship between the strategies and students' adaptation outcomes. The regression model, using the IES as the dependent variable and the ratings for each strategy as independent variables, yielded significant results, with: $\beta_0 = 24.32$ (SE = 3.18, t = 7.65, $p < 0.001$); $\beta_1 = 0.42$ (SE = 0.08, t = 5.25, $p < 0.001$); $\beta_2 = 0.38$ (SE = 0.07, t = 5.43, $p < 0.001$); $\beta_3 = 0.35$ (SE = 0.06, t = 5.83, $p < 0.001$); $R^2 = 0.724$ ($F = 42.8$, $p < 0.001$).

The regression analysis confirmed the significance of the support strategies in predicting students' adaptation outcomes. The high R2 value (0.724) indicates that the model explains a substantial portion of the variance in adaptation, with psychological support showing the strongest effect. The positive coefficients for psychological readiness, environmental accessibility, and academic support further suggest that these factors play a crucial role in improving students' adaptation to university life. These findings highlight the importance of prioritizing these strategies to enhance overall student outcomes.

Discussion

The results of the correlation analysis highlighted significant relationships between the key variables of social support, psychological readiness, environmental accessibility, and academic support. The strong positive correlations between these variables suggest that students who feel more supported socially and have higher psychological readiness tend to report better access to a supportive academic environment and greater overall adaptation. These findings align with existing literature, which emphasizes the interconnectedness of social, emotional, and academic support in the adaptation process of students with disabilities.

Following the correlation analysis, factor analysis was conducted to identify the relative significance of these key factors in influencing adaptation. The factor analysis reinforced the importance of social support and psychological readiness, as they emerged as significant contributors to students' adaptation. Environmental accessibility and academic support also played vital roles, though with somewhat lesser influence, indicating that while important, these factors may not be as strongly related to adaptation as the psychological and social components.

The results from the multiple regression analysis provided further evidence of the predictive power of the support strategies. The regression model showed that the strategies, particularly psychological support, had a strong positive impact on adaptation outcomes, with significant β coefficients for psychological readiness and social support. The R^2 value of 0.724 suggests that the model explains a large portion of the variance in adaptation, confirming the significance of these support strategies. The findings underscore the need to focus on enhancing both social support networks and psychological readiness to improve adaptation outcomes for students with disabilities.

The study demonstrated a strong negative correlation between the level of adaptation of students with disabilities (SWD) and the number of barriers they face. This result aligns with the findings of international researchers such as Lipka et al. (2020), Dudar (2024), who established a similar relationship between the accessibility of the educational environment and the success of adaptation among SWD. However, unlike their study, this analysis revealed a more significant influence of social factors in Kyrgyzstani universities, likely due to the cultural characteristics of the region, where collectivist values and social support play a substantial role in adaptation.

A comparative analysis of the two largest universities in Kyrgyzstan – the Kyrgyz State Technical University (KSTU) and the Kyrgyz National University (KNU) – showed differences in the accessibility of the educational environment. These observations partially correlate with studies by Ismailova (2024) and Kungurtseva (2021), which emphasized the importance of high-quality technical equipment in educational institutions for students with disabilities. In countries with well-developed infrastructure, this issue is addressed more effectively, whereas in developing countries such as Kyrgyzstan, specific socio-economic and cultural barriers must be considered. Low levels of funding and technical resources place additional pressure on universities and students, limiting opportunities for improving the inclusive environment (Podra et al., 2020; Rexhepi, 2023).

The effectiveness of support programs provided by KSTU and KNU was found to be almost identical. These findings partially contradict the conclusions of Zaki and Ismail (2021), who noted in their research that differences in the effectiveness of support programs between technical and classical universities could be significant. This may indicate that in the context of Kyrgyzstani universities, social and cultural characteristics outweigh institutional differences, necessitating consideration of the local context when developing adaptation programs. Further research aimed at examining differences between university types could help better understand how these programs can be optimized for SWD.

The distinction among physical accessibility of the environment, social support, psychological assistance, and academic support confirms the multidimensional nature of SWD adaptation, aligning with the findings of Kokhan et al. (2023) on the complex hierarchy of factors influencing adaptation in Central Asian universities. The analysis of Kyrgyzstani universities revealed that social support has a higher factor load, highlighting the importance of social factors in the adaptation process. In Kokhan et al.'s study, physical accessibility was the primary factor. However, in the Kyrgyzstani context, factors such as family and community ties often play a

more significant role, underscoring the need for a comprehensive approach to adaptation that considers regional characteristics.

The lack of psychological counselling availability emerged as one of the significant issues identified in the study: only 45% of respondents reported the availability of such services at universities. This finding aligns with the conclusions of Edwards et al. (2022), Bokshyts and Kamenska (2024) who emphasized the necessity of psychological support for SWD, particularly in the context of academic workload and social isolation. However, Kyrgyzstani universities often face resource constraints, complicating the organization of systematic psychological support. These findings indicate the need for specialized programs that incorporate both international experience and the economic and cultural realities of Kyrgyzstan.

The analysis revealed that digital inequality also represents a significant barrier to the adaptation of SWD in Kyrgyzstani higher education institutions. Unlike the study by Naidoo (2021), which focused on technological aspects and the accessibility of digital tools for students, this investigation found that socio-economic factors significantly influence SWD's access to digital resources. Economic difficulties faced by families often prevent them from purchasing necessary equipment and accessing high-quality internet (Sultanbayeva et al., 2013; Sultanbaeva et al., 2015). This creates additional challenges for SWD, as they cannot fully utilize digital learning resources, which in turn limits their academic performance and social integration.

The organization of tutoring support in Kyrgyzstani universities also requires consideration of cultural and social characteristics. While studies by Verbovyi and Kushniruk (2020) emphasized the need for an individualized approach in tutoring support, the Kyrgyzstani context demands adaptation of this practice to traditional cultural norms, which play a crucial role in the educational process. Local students are often more dependent on the opinions and support of elders, suggesting the importance of community and family involvement in tutoring support. Implementing this model in Kyrgyzstani universities could significantly enhance the social adaptation of students. The analysis showed that the main obstacles to the social adaptation of SWD are physical accessibility, social barriers, and psychological difficulties. These findings support studies by Karabalaeva and Tokbergenova (2019), who also emphasized the importance of social and academic integration of SWD. Thus, the uniqueness of this study lies in its comprehensive analysis of adaptation factors, taking into account the cultural context and limited resources of the region.

Based on the findings, several strategies can be proposed to enhance the effectiveness of adaptation programs in Kyrgyzstani universities. First,

psychological support for students should be strengthened through regular individual counselling and the creation of support groups. Such initiatives could help reduce stress levels and increase students' self-esteem, which, as shown in studies by Zaki and Ismail (2021), significantly influences adaptation success. Second, it is essential to develop tutoring programs adapted to local cultural characteristics to provide more personalized assistance to students in the learning process.

Additionally, efforts should be made to improve the physical and informational accessibility of the educational environment. Infrastructure development, including the installation of specialized equipment, can significantly enhance the academic and social integration of SWD (Lungu and Silistraru, 2021; Bayalieva and Satybekova, 2025). This requirement aligns with the conclusions of Ismailova (2024) and Kungurtseva (2021), who highlighted that technical equipment in educational institutions is a crucial factor for successful adaptation. However, given funding constraints, Kyrgyzstani universities face the challenge of seeking partnerships with international organizations that could assist in infrastructure improvement.

The results, indicating the significant impact of economic constraints and low levels of digital accessibility, correspond with the findings of Bilopolyi and Skladanovska (2021), who noted that limited access to digital resources reduces students' academic performance in developing countries. In Eastern European countries, according to their data, the impact of economic factors is partially mitigated by government support programs, distinguishing them from the Kyrgyzstani context.

Correlation analysis, indicating a direct relationship between an increasing number of barriers and a decline in adaptation levels, aligns with the findings of AlTarawneh (2022), suggesting that an increase in obstacles leads to a deterioration in the social adaptation of visually impaired students. In the Kyrgyzstani context, physical barriers have a dominant influence, whereas AlTarawneh's works focuses on the importance of the information environment.

The availability of psychological support, reported by only 45% of respondents, confirms the conclusions of Ambati (2015) on the need for systematic psychological assistance to enhance academic integration. However, while Ambati's study focuses on developing individual strategies for overcoming barriers, this analysis emphasizes the role of financial and cultural constraints in organizing such support. Comparing international studies helps identify that key barriers and approaches to overcoming them vary depending on regional characteristics. In the Kyrgyz Republic, physical and economic constraints predominate, necessitating the adaptation of global recommendations to the local context.

Conclusions

The conducted analysis revealed that the most significant barriers to the social adaptation of students with special educational needs are the physical accessibility of the environment and psychological issues related to self-esteem and communication. The study also identified that the most effective strategies for enhancing adaptation are psychological support and tutor assistance, both of which demonstrated a high Index of Potential Efficiency (IES).

The conducted research allowed for determining the current level of adaptation of students with disabilities in higher education institutions in Kyrgyzstan, which stands at 60.6%. This figure indicates substantial opportunities for improving the inclusive education system. A comparative analysis of universities revealed differences in the accessibility of the educational environment between KSTU and KNU, with comparable effectiveness of support programs. The study identified four key components of successful adaptation, where social support demonstrated the highest factor loading. Regression analysis confirmed the significance of all examined factors, substantiating the need for a comprehensive approach to student support.

Based on the conducted study, the following recommendations were proposed. According to the study results, psychological support for students should be strengthened, including regular consultations and the creation of group sessions. A crucial area is the development of tutor programs aimed at continuous student support. Modernization of the educational environment is required, with an emphasis on enhancing physical and informational accessibility. When planning the educational process, individual student characteristics should be considered. These measures will help reduce barriers and improve the quality of student adaptation in educational institutions.

A strong negative correlation between the number of barriers and the level of adaptation was identified, highlighting the need for a priority focus on eliminating existing obstacles in the educational environment. This observation indicates the necessity of developing unified standards for educational accessibility and a systematic approach to student support. Based on this data, it is recommended to introduce a system for regular monitoring of the accessibility of the educational environment and develop professional development programs for faculty members.

The obtained results can serve as a foundation for developing a comprehensive strategy for advancing inclusive education in higher education institutions in Kyrgyzstan. Implementing the proposed

recommendations will enhance the effectiveness of existing support programs and improve the quality of education for students with disabilities. It is important to acknowledge the limitations of the conducted study, which are related to the geographic localization of the sample and the lack of long-term observations. Additionally, the use of self-reports as a data collection method may affect the accuracy of results due to social desirability bias in responses. Further research in this area will contribute to the creation of a more inclusive and accessible higher education system in the country. An important direction for further development is the creation of an inter-university system for experience exchange and a unified database of best practices for student adaptation, allowing for their further scaling. To improve future research outcomes, it is recommended to use mixed-method research approaches and develop specialized assessment tools for different categories of students with disabilities.

Despite the significance of the study results, it also has certain limitations. Firstly, the geographic localization of the sample limits the ability to generalize the findings to the entire country, as only two universities were examined. Secondly, the use of self-reports as a data collection method may affect result accuracy, as respondents might modify their answers towards social desirability. Future research should apply mixed-method approaches, integrating both qualitative and quantitative data, as well as develop specialized assessment tools for different categories of students with disabilities. This will contribute to creating a more inclusive and accessible higher education system tailored to the needs of all students, including those with disabilities.

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Utilizzo di dispositivi digitali in bambini con autismo: stato dell'arte e indagine conoscitiva

Use of digital devices in children with autism: State of the art and survey

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Abstract

New generations are growing up in an increasingly digital world, where technological devices and virtual environments are a part of everyday life. This digital reality impacts all families, including those of children and adolescents with Autism Spectrum Disorder (ASD). The present study investigates the use of digital devices, particularly tablets and smartphones, by children and adolescents with ASD through an analysis of the current literature and a survey conducted on a large sample of Italian subjects. We aimed to explore the implications and challenges related to the use of these tools through an online questionnaire administered to parents. The results showed a significant prevalence of device use among children with ASD,

with 94.5% of participants using at least one device. Despite the benefits reported in the literature, parents noted several critical issues, such as device dependence, social isolation, and behavioral problems. The relationship between the time of use and these problems suggests the importance of a well-balanced and supervised approach to technology use to maximize both educational and therapeutic benefits while minimizing associated risks. In this regard, we emphasize the significance of developing guidelines for the use of digital devices by children with ASD.

Keywords: Autism Spectrum Disorder, Digital devices, Tablet, Problematic device use.

Riassunto

Le nuove generazioni crescono in un mondo sempre più digitale, in cui strumenti tecnologici e ambienti virtuali sono ormai parte integrante della quotidianità. Questa realtà digitale ha un impatto su tutte le famiglie, incluse quelle di bambini e ragazzi con Disturbo dello Spettro Autistico (ASD). Il presente studio esplora l'utilizzo dei dispositivi digitali, in particolare *tablet* e *smartphone*, da parte di bambini e adolescenti con ASD, attraverso un'analisi della letteratura esistente e un'indagine condotta su un ampio campione di soggetti italiani. Si sono volute indagare le implicazioni e le problematiche legate all'uso di questi strumenti tramite un questionario *online* somministrato ai genitori. I risultati evidenziano una prevalenza significativa nell'utilizzo di *device* tra i bambini con ASD, con il 94,5% dei partecipanti che fa uso di almeno un dispositivo. Nonostante i benefici riscontrati in letteratura, i genitori hanno segnalato diverse criticità come la dipendenza dai dispositivi, l'isolamento sociale e i problemi comportamentali. La relazione tra tempo di utilizzo e problematiche emerse suggerisce la necessità di un approccio equilibrato e monitorato nell'uso delle tecnologie al fine di massimizzare i benefici educativi e terapeutici, minimizzando i rischi associati. A tal proposito si sottolinea quindi l'importanza di sviluppare linee guida per l'uso dei dispositivi nei bambini con ASD.

Parole chiave: Disturbo dello Spettro Autistico, Dispositivi digitali, Tablet, Uso problematico dei *device*.

1. Introduzione

Le nuove generazioni nascono e crescono immerse in una realtà fatta di strumenti digitali e ambienti virtuali. Ad oggi, tale realtà coinvolge tutte le famiglie, comprese quelle di bambini e ragazzi con Disturbo dello Spettro dell'Autismo (ASD). Negli ultimi anni, diversi studi hanno approfondito le modalità di utilizzo dei *device* dei bambini con autismo, con una particolare attenzione alla frequenza e agli scopi d'uso. Di particolare interesse è lo

studio condotto da Westby (2021), che indaga l'esposizione dei bambini agli schermi, inclusi quelli di *smartphone* e *tablet*, esplorando le differenze tra soggetti a sviluppo normotipico e soggetti con ASD. Secondo quanto riportato dall'autore, i bambini con ASD tendono a trascorrere più tempo davanti agli schermi rispetto ai coetanei e, anche in caso di tempi di esposizione inferiori, sono maggiormente propensi a manifestare forme di dipendenza. Inoltre, l'esposizione sembrerebbe più precoce nei bambini con ASD rispetto ai bambini a sviluppo normotipico. Anche per quanto riguarda le modalità e gli scopi di utilizzo, si possono osservare differenze tra i due gruppi: i bambini con ASD tendono ad utilizzare i *device* prevalentemente per attività solitarie (es. guardare video) e meno per attività interattive e sociali. In aggiunta, sebbene i genitori di questi bambini siano spesso consapevoli dei rischi legati all'esposizione eccessiva a schermi e *monitor*, non è infrequente che gli stessi ricorrano a tali strumenti per tranquillizzare i propri figli e per avere una pausa rispetto all'impegno necessario per la loro cura.

L'elevata esposizione agli schermi e alle attività ad essi correlate preoccupa in quanto renderebbe il bambino indisponibile rispetto a forme di apprendimento alternative e maggiormente sociali. Inoltre, è bene ricordare che molti sintomi del Disturbo dello Spettro dell'Autismo, come le difficoltà di autoregolazione o la presenza di comportamenti ripetitivi/ossessivi, sono in qualche modo sovrapponibili a quelli legati all'eccessiva esposizione ai dispositivi elettronici, osservabili anche in bambini a sviluppo tipico. Pertanto, la combinazione di questi due fattori è in grado di incrementare esponenzialmente la sintomatologia manifestata dai bambini con ASD. Rispetto a quest'ultimo punto, è di particolare interesse la rassegna della letteratura condotta da Slobodin e colleghi (2019), dove si evidenzia che i bambini con ASD sono esposti più precocemente e per più tempo agli schermi, sia rispetto a bambini a sviluppo tipico, sia rispetto ad altri gruppi clinici. Oltre a ciò, questi bambini sarebbero più inclini alla fruizione di contenuti per adulti e meno all'utilizzo dei social *network* o di applicazioni adatte alla loro età. Secondo l'autore, il tempo prolungato trascorso davanti agli schermi limiterebbe sia le opportunità di apprendimento più appropriate alla crescita sia le interazioni sociali, fondamentali per lo sviluppo di linguaggio, comunicazione e competenze socio-emotive. Per di più, alcuni aspetti legati all'uso dei *device*, come la codifica rapida e parallela di numerose informazioni, sembrerebbero ostacolare la capacità dei bambini di elaborare situazioni sociali e psicologiche, che richiederebbero invece maggiore tempo e riflessione.

Di contro, rispetto a quanto appena esposto, numerosi studi hanno approfondito le modalità di utilizzo "*positive*" dei *tablet* da parte dei bambini con ASD in differenti contesti. King e colleghi (2017) riferiscono, per esempio, come si possa trarre particolare beneficio dall'utilizzo di questi strumenti

in ambito scolastico: tali *device* possono essere usati come strumento di apprendimento per visionare video didattici, per suggerire comportamenti da adottare in ambito scolastico (*videomodeling*), come ausilio alla comunicazione (CAA) o come strumenti per potenziare l'apprendimento attraverso applicazioni specifiche. Allo stesso modo, Kagohara e colleghi (2013), sottolineano come tali strumenti, in particolare nell'ambito scolastico, possano essere importanti ausili per il miglioramento delle competenze didattiche, comunicative, ricettive e di transizione dei bambini. Infine, anche Gwynette e colleghi (2018), esplorando in modo più ampio i contesti di utilizzo di iPad e *tablet* nei bambini con ASD, riportano tra gli obiettivi e i vantaggi più comuni di questi *device* il miglioramento e lo sviluppo delle competenze comunicative, il potenziamento delle competenze sociali attraverso *training*, la riduzione dei comportamenti problema, l'apprendimento di competenze accademiche e il miglioramento del funzionamento adattivo.

In conclusione, appare evidente l'importanza di affiancare all'utilizzo dei *device* un'adeguata consapevolezza delle potenzialità e dei rischi ad esso legati, nonché la conoscenza delle strategie necessarie per prevenire e gestire le eventuali problematicità.

Alla luce di quanto finora riportato, il presente lavoro si pone l'obiettivo di descrivere i benefici e, soprattutto, le criticità legate all'utilizzo di un tipo specifico di *device* digitale, i *tablet*, tramite due approcci: (a) un'analisi delle informazioni emergenti dalla letteratura attualmente disponibile e (b) un'indagine conoscitiva volta ad mostrare le modalità di utilizzo di questi *device* e le problematicità apparentemente ad esse legate, secondo quanto riferito da un campione di genitori di bambini e adolescenti italiani con diagnosi di ASD.

2. Materiali e Metodi

2.1. Analisi della letteratura

Gli strumenti tecnologici ad oggi a disposizione sono molteplici e la scelta di un determinato *device* da parte di un genitore può essere guidata da molteplici fattori. Indipendentemente dall'utenza considerata, i *tablet*, a differenza di altri dispositivi, hanno diversi vantaggi come le dimensioni ridotte, l'elevato numero di applicazioni disponibili e l'ampia gamma di dispositivi in commercio. Entrando nello specifico per i bambini con diagnosi di ASD, i *tablet* possono offrire numerosi vantaggi, grazie alla vasta gamma di applicazioni personalizzabili che si adattano quindi alle caratteristiche

dello specifico bambino e che possono anche essere modificate nel corso del tempo in funzione dei suoi cambiamenti (Fletcher-Watson, 2014; Kasari et al., 2018). I *tablet* permettono anche di modulare gli stimoli sensoriali, come la luminosità e il volume, rispondendo alle esigenze specifiche dei bambini con difficoltà sensoriali (APA, 2022). Il *design* accattivante ed interattivo stimola, inoltre, il coinvolgimento e riduce la distraibilità (McCorkle, 2012; Ok e Kim, 2017; Strickroth et al., 2020), mentre la modalità *touchscreen* facilita l'interazione, soprattutto per chi ha difficoltà motorie (Lloyd et al., 2013). Le *app* presenti sui *tablet* favoriscono un apprendimento sistematico e prevedibile, migliorando l'autonomia del bambino e riducendone la frustrazione (Gomot and Wicker, 2012; Van de Cruys et al., 2014; Cooper et al., 2020). Infine, le difficoltà relazionali e comunicative tipicamente legate alla diagnosi di ASD (APA, 2022) possono essere almeno in parte superate grazie alle potenzialità comunicative del dispositivo, favorendo la comunicazione e lo sviluppo di abilità sociali ed offrendo alternative all'interazione diretta (Lorah et al., 2013).

Nonostante i vantaggi appena descritti, la letteratura evidenzia anche diverse problematiche e criticità legate all'utilizzo dei *tablet*, sia per il bambino a sviluppo tipico sia per il bambino con autismo. In particolare, dato che i bambini con ASD mostrano comportamenti ristretti, ripetitivi e stereotipati (APA, 2022), questi ultimi potrebbero rafforzarsi tanto da divenire un'ossessione rispetto ad una specifica applicazione o nei confronti del dispositivo stesso, creando un certo grado di dipendenza (Engelhardt et al., 2017). Inoltre, se da una parte possiamo osservare una facilitazione delle relazioni grazie allo svolgimento di attività *online*, d'altro canto occorre sottolineare come queste relazioni non prevedano alcune componenti tipiche delle interazioni reali (come il contatto visivo, l'analisi del linguaggio corporeo, ecc.), le quali, già altamente compromesse nei soggetti con autismo, potrebbero risentire di un'ulteriore limitazione (Westby, 2021). Per di più, le interazioni che avvengono *online* (più di quelle reali) possono esporre il bambino al rischio di imbattersi in 'predatori' o di essere vittima di bullismo (Hu et al., 2019).

Come riportato da diversi studi, l'uso eccessivo di questo tipo di dispositivi potrebbe comportare difficoltà di auto-regolazione e di processamento delle innumerevoli informazioni sensoriali fornite, a causa di un'esposizione maggiore a sovraccarichi sensoriali (es. luci intermittenti, rumori forti, etc.), che potrebbero indurre reazioni negative nel bambino autistico (Baker et al., 2018; Kushki et al., 2013; Radesky et al., 2014; Wallenius et al., 2010). Inoltre, l'eccessiva esposizione agli schermi può aumentare il rischio di sintomi ansiosi e depressivi (Twenge e Campbell, 2018) e rischio maggiore per i bambini con ASD in quanto più inclini a sviluppare ansia e comportamenti

ossessivi (Westby, 2021). Alcuni studi riportano anche che l'uso eccessivo dei dispositivi con schermo nelle ore serali può danneggiare la qualità del sonno, riducendone la durata e causando una difficoltà nella fase di addormentamento (Bacil et al., 2024; Green et al., 2017).

L'incremento del tempo trascorso davanti agli schermi, *tablet* compresi, corrisponde ad una riduzione del tempo trascorso in altre tipologie di attività importanti per lo sviluppo e l'apprendimento ed espone al rischio di una frammentazione delle capacità attentive del bambino (Ra et al., 2018; Tamana et al., 2019), di un rallentamento nello sviluppo linguistico come conseguenza della ridotta interazione faccia a faccia (Alamri et al., 2023), di ritardi nello sviluppo sensomotorio e di minori competenze di processamento sensoriale (Rowan, 2013). Inoltre, la letteratura evidenzia che i bambini che usano tali *device* sono meno inclini a impegnarsi in attività ricreative, fatto che comporta una maggiore sedentarietà, una conseguente riduzione della forza muscolare (Nakshine et al., 2022) ed un generale peggioramento dello stato di salute (Bacil et al., 2024).

2.2. Indagine conoscitiva

A completamento del quadro emerso dalla letteratura, è stata condotta un'indagine conoscitiva su un campione di famiglie italiane, volta a comprendere le problematiche legate all'utilizzo dei dispositivi, nello specifico di *tablet* e *smartphone*, in bambini con diagnosi di ASD.

2.2.1. Campione

Il campione era composto da 201 famiglie di bambini italiani, tra i 3 e i 14 anni, con diagnosi di ASD, in carico all'IRCCS 'E. Medea' – Ass.ne La Nostra Famiglia di Bosisio Parini (LC), che avevano precedentemente intrapreso o che stavano effettuando percorsi di assessment, diagnostici o riabilitativi.

2.2.2. Procedura

Le famiglie sono state inizialmente contattate telefonicamente per presentare il progetto e richiedere la disponibilità a partecipare all'indagine. In caso di esito positivo, è stato raccolto l'indirizzo *email* per inviare il documento di presentazione del progetto e il *link* al Modulo Google per la compilazione del questionario in forma anonima.

2.2.3. Strumenti

Il questionario è stato redatto da psicologi clinici e terapisti della neuro- e psico-motricità dell'età evolutiva esperti in autismo e nuove tecnologie. Il questionario è composto da 20 *item*, organizzati in 3 principali aree tematiche:

1. *Domande introduttive*: sezione volta a raccogliere le informazioni sociodemografiche (età, genere, scolarità, etc.) e le informazioni rispetto alla diagnosi del bambino (tipo di diagnosi, codiagnosi, livello di sviluppo linguistico, etc.);
2. *Utilizzo dei dispositivi*: sezione finalizzata a raccogliere le informazioni sulla tipologia di dispositivo (*tablet* e *smartphone*) e le modalità di utilizzo da parte del bambino (frequenza d'uso, modalità di utilizzo, scopo d'utilizzo, etc.);
3. *Problematiche legate all'utilizzo dei dispositivi*, sezione volta ad approfondire le problematiche che, secondo il punto di vista del genitore, sono conseguenza dell'utilizzo del *device*. Al genitore viene chiesto di valutare presenza/assenza di un elenco di potenziali problemi e di inserire eventuali difficoltà riscontrate e non presenti nell'elenco.

2.2.4. Analisi dei dati

Sono state condotte delle analisi statistiche preliminari per portare alla luce eventuali correlazioni tra le variabili raccolte. In particolare, le variabili sociodemografiche e cliniche sono state messe in relazione con tutte quelle relative alla tecnologia, alle attività svolte con essa e alle problematiche segnalate. Le relazioni emerse, se significative da un punto di vista statistico e clinico, sono state successivamente indagate con analisi più specifiche selezionate in funzione delle caratteristiche delle variabili coinvolte. Quando possibile, sono stati utilizzati test parametrici (eventualmente a seguito della normalizzazione della variabile), in caso contrario, si è proceduto con l'utilizzo dei corrispettivi test non parametrici.

3. Risultati

3.1. Statistiche descrittive: variabili sociodemografiche e cliniche

La Tabella 1 riporta le statistiche descrittive del campione.

Tab. 1 – Caratteristiche cliniche e sociodemografiche del campione

Caratteristiche sociodemografiche	
N	201
Maschi (n %)	171 (85,1%)
Età (M ± ds)	6,89 ± 3,18
Caratteristiche cliniche	
Diagnosi (n %)	
ASD	165 (82,1%)
AS/HFA	34 (16,9%)
DGS-NAS	2 (1,0%)
Funzionamento Cognitivo (n %)	
In norma	149 (74,1%)
Ritardo lieve	28 (13,9%)
Ritardo moderato	12 (6,0%)
Ritardo grave	11 (5,5%)
Codiagnosi	
Presente (n %)	38 (18,9%)
Livello Linguistico (n %)	
Lallazione/Sillabe isolate	26 (12,9%)
Parole Singole	20 (10,0%)
Frasi semplici	14 (7,0%)
Frasi brevi	40 (19,9%)
Frasi complesse	47 (23,4%)
Linguaggio fluente	54 (26,9%)

Note: ASD = Disturbo dello Spettro Autistico; AS = Sindrome di Asperger; HFA = Autismo ad Alto Funzionamento; DGS-NAS = Disturbo Generalizzato dello Sviluppo NAS.

Il campione era composto da 201 soggetti (85,1% maschi) di età compresa tra i 3 e i 14 anni (M = 6,89; *ds* = 3,18). Solo un soggetto non frequentava la scuola. I restanti 200 erano così distribuiti nei vari cicli scolastici: 7 (3,5%) Asilo Nido/Sezione Primavera; 89 (44,5%) Scuola dell'Infanzia; 72 (36,0%) Scuola Primaria di I grado; 32 (16%) Scuola Secondaria di I Grado.

Dal punto di vista clinico, la diagnosi principale era di Disturbo dello Spettro Autistico per 165 soggetti (82,1%), Sindrome di Asperger o Autismo ad Alto Funzionamento per 34 soggetti (16,9%) e Disturbo Generalizzato dello Sviluppo NAS (DGS-NAS) per 2 soggetti (1,0%). Cinquantadue bambini (25,9%) presentavano una disabilità intellettiva così classificata: 28 Lieve (14,0%); 12 Moderato (6,0%); 11 Grave (5,5%). Per un bambino quest'ultima informazione non era specificata. Inoltre, 38 soggetti (18,9%) presentavano almeno una codiagnosi in ambito neuropsichiatrico infantile. Il numero di codiagnosi, quando presenti, variava nel campione da 1 (15,4%) a 3 (1,5%).

Infine, dal punto di vista linguistico, tutti i soggetti presentavano un grado almeno minimo di avviamento del linguaggio. Dal punto di vista qualitativo,

lo sviluppo linguistico veniva così descritto: lallazione e produzione di sillabe isolate (N = 26; 12,9%); parole singole (es. "biscotto"), anche se non correttamente pronunciate (N=20; 10,0%); frasi semplici di due parole (es. "mamma biscotto") (N = 14; 7,0%); frasi brevi (es. "mamma voglio un biscotto") (N = 40; 19,9%); frasi complesse (es. "mamma quando arriviamo a casa posso avere un biscotto?") (N = 47; 23,4%); linguaggio fluente, paragonabile a quello di un adulto (N = 54; 26,9%).

3.2. Statistiche descrittive: utilizzo dei dispositivi

In base alle informazioni riferite dai genitori, il 94,5% dei bambini (N=190) utilizzava un dispositivo *touchscreen*. Per i restanti 11 bambini che non utilizzavano *device*, i genitori non hanno dovuto compilare la restante parte del questionario e non rientrano, per tale ragione, nelle analisi successive. In Tabella 2 sono riportati i dati relativi all'uso dei *device*.

Tab. 2 – Utilizzo dei device

• Utilizzo dei *device*	
• Tipo di dispositivi utilizzati (n %)	
• Smartphone	57 (30,0%)
• Tablet	30 (15,8%)
• Entrambi	103 (54,2%)
• Tempo medio giornaliero di utilizzo	
• Meno di 20 minuti	38 (20,0%)
• Da 20 a 40 minuti	30 (20,0%)
• Da 40 a 60 minuti	26 (13,2%)
• Da 1 a 2 ore	44 (23,2%)
• Da 2 a 4 ore	27 (14,2%)
• Più di 4 ore	18 (9,5%)
• Autonomia nell'utilizzo (n %)	
• Autonomo	121 (63,7%)
• Sempre supportato	18 (9,5%)
• Entrambe	51 (26,8%)
• Uso sociale (n %)	
• Uso solitario	124 (65,3%)
• Uso con i pari	11 (5,8%)
• Entrambe	55 (28,9%)

Come riportato, il 27,6% (N = 16) del campione utilizzava uno *smartphone*, il 17,2% (N = 10) il *tablet* e il 55,2% (N = 32) entrambi i dispositivi. Il tempo medio di utilizzo dei *device* variava da meno di 20 minuti

(N = 38; 20%) a più di 4 ore (N = 18; 9,5%) al giorno. Rispetto all'autonomia nell'utilizzo dei *device*, il 63,7% dei genitori dichiarava che il proprio figlio era completamente autonomo nella gestione dello strumento mentre il 9,5% dei genitori indicava che il figlio necessitava sempre del supporto da parte di un adulto e il 26,8% che, in base al tipo di attività svolta, il bambino poteva risultare talvolta autonomo e talvolta necessitare di aiuto esterno.

Infine, rispetto all'utilizzo sociale dei dispositivi, il 5,8% dei bambini usava i *device* con i propri pari, il 28,9% sia con i pari che per attività individuali mentre il 65,3% dei bambini svolgeva esclusivamente attività solitarie. La Tabella 3 riporta le statistiche relative al tipo di attività svolte dai bambini sui dispositivi ordinate per frequenza e il numero medio di attività differenti svolte.

Tab. 3 – Attività svolte sui dispositive

Attività svolte sui dispositivi	
Tipo di attività svolte (n %)	
Guardare video (per es. su Youtube)	159 (83,7%)
Ludiche (giochi e app)	136 (71,6%)
Fare foto e video	51 (26,8%)
Ascoltare musica	49 (25,8%)
Fare videochiamate	37 (19,5%)
Attività didattiche	26 (13,7%)
Navigare in internet	19 (10,0%)
Terapia/Riabilitazione	19 (10,0%)
Mandare messaggi e email	10 (5,3%)
Comunicare con app per la CAA	7 (3,7%)
Leggere libri	6 (3,2%)
Usare social media (Instagram, Facebook, ecc.)	4 (2,1%)
Fare acquisti *online*	2 (1,1%)
Guardare foto e video presenti sul *device*	1 (0,5%)
Numero di attività svolte (M ± ds)	2,78 ± 1,52

3.3. Statistiche descrittive: problematiche legate all'utilizzo dei dispositivi

In Tabella 4 è riportato un elenco dei problemi segnalati dai genitori come possibili conseguenze dell'utilizzo dei *device*, ordinati per frequenza, e il numero medio di problemi riferiti.

Tab. 4 – Problematiche legate all'uso dei dispositive

Problematiche legate all'uso dei dispositivi	
Problema segnalato (n %)	
Richiesta sempre maggiore di prolungamento dei tempi di utilizzo	107 (56,3%)
Rifiuto di rispettare i tempi di utilizzo e/o presenza comportamenti problema quando viene richiesta l'interruzione del gioco e se viene disturbato/a durante l'utilizzo	84 (44,2%)
Difficoltà nel tollerare l'attesa per poter accedere all'utilizzo del dispositivo	62 (32,6%)
Propensione verso un utilizzo esclusivo del dispositivo, a discapito di altre attività ludiche e del coinvolgimento in attività didattiche e domestiche	58 (30,5%)
Disattenzione al contesto (durante l'utilizzo non percepisce gli stimoli provenienti dall'ambiente esterno, come il genitore/operatore che gli parla)	54 (28,4%)
Riduzione significativa del tempo dedicato ad altri giochi e attività	42 (22,1%)
Aumento dell'iperattività	34 (17,9%)
Difficoltà nel tollerare i tempi di attesa durante l'utilizzo dei dispositivi	32 (16,8%)
Utilizzo del dispositivo per autostimolazione sensoriale (audio/visiva)	31 (16,3%)
Aumento del nervosismo	31 (16,3%)
Comparsa di ecolalia (immediata e/o differita) con ripetizione decontestualizzata di frasi ascoltate nel gioco	27 (14,2%)
Ossessione per un gioco (vuole giocare sempre con la stessa app, parla sempre di quel gioco, ricerca video in cui si parla di quel gioco, ecc.)	26 (13,7%)
Interessi sempre più ristretti, rigidi e ripetitivi	26 (13,7%)
Esclusività del dispositivo come rinforzatore, con conseguenti difficoltà quando questo non è presente	24 (12,6%)
Emulazione di comportamenti inappropriati osservati nel gioco	23 (12,1%)
Progressiva riduzione del tempo dedicato ad attività all'aperto	21 (11,1%)
Rottura e/o frequente danneggiamento accidentale del dispositivo	21 (11,1%)
Incremento e/o comparsa di comportamenti ossessivi	21 (11,1%)
Aumento delle stereotipie presenti e/o comparsa di nuove stereotipie	18 (9,5%)
Utilizzo edazione del dispositivo/gioco/attività	15 (7,9%)
Comparsa di reazioni aggressive presumibilmente correlate all'utilizzo del dispositivo (durante il gioco)	12 (6,3%)
Progressivo e sempre edazion isolamento sociale con riduzione delle interazioni	12 (6,3%)
Aumento dell'ansia	10 (5,3%)
Comparsa o incremento di disturbi del sonno	10 (5,3%)
Utilizzo edazione ate delle applicazioni (con modalità non attinenti al loro scopo)	9 (4,7%)
Insorgenza di comportamenti problema in reazione ad alcune caratteristiche delle applicazioni (per es. ripetizione compulsiva di risposte inesatte per ottenere il feedback sensoriale accattivante correlato all'errore)	9 (4,7%)
Incapacità di distinguere tra amicizie reali e contatti *online*, con sovrainvestimento su questi ultimi	8 (4,2%)
Acquisto accidentale di giochi/applicazioni senza l'autorizzazione dell'adulto	8 (4,2%)
Rottura e/o frequente danneggiamento intenzionale del dispositivo	8 (4,2%)
Sviluppo del gioco-non sul dispositivo-inappropriato all'età (sembra meno capace di giocare con i giochi appropriati alla sua età rispetto ai coetanei)	7 (3,7%)

Acquisto intenzionale di giochi/applicazioni o di elementi di un gioco/applicazione (livelli, vite, energia, gettoni, ecc.) senza l'autorizzazione dell'adulto	6 (3,2%)
Accesso e utilizzo di applicazioni "inadeguate" già presenti sul tablet o scaricate dallo store	2 (1,1%)
Esposizione a situazioni di rischio (condivide informazioni private o materiale inappropriato, rischiando che vengano diffusi o di divenire oggetto di prese in giro e bullismo)	2 (1,1%)
Dipendenza dai social media (Facebook, Instagram, ecc.)	1 (0,5%)
Comparsa di intense reazioni di fastidio in risposta allo stimolo sensoriale (rumori/luci) proveniente dal dispositivo	1 (0,5%)
Nessuna problematica da segnalare	16 (8,4%)
Numero di problematiche riferite (M ± ds)	4,62 ± 3,36

3.4. Relazioni tra le variabili rilevate: utilizzo dei dispositivi

Le variabili legate all'utilizzo della tecnologia sono state messe in relazione con quelle sociodemografiche e cliniche. Di seguito i risultati significativi:

- È presente una differenza statisticamente significativa (t = -3,824, df = 14,89, p = 0,002) per la variabile età tra i bambini che utilizzano i dispositivi (M = 7,00) e coloro che non li utilizzano (M = 4,91).
- C'è un effetto statisticamente significativo dell'età sul tempo di utilizzo dei *device* (F (5,184) = 5,429, p < 0,001). Più nel dettaglio, il test di Bonferroni mostra differenze significative tra chi usa i *device* meno di 20 minuti e chi li utilizza per più di un'ora (p < 0,010), con età significativamente inferiore nel primo caso (M = 5,34) rispetto al secondo (M > 7,00).
- C'è una relazione significativa tra autonomia di utilizzo e tipo di diagnosi: χ^2 (4, N = 190) = 11,768, p-esatto = 0,019, con i soggetti con ASD e HFA che tendono ad essere più autonomi nell'utilizzo rispetto ai soggetti con DGS-NAS.
- Le variabili età e numero di attività correlano in modo significativo (r = 0,221, p = 0,002). All'aumentare dell'età corrisponde un aumento delle attività svolte con i *device* e viceversa.

3.5. Relazioni tra le variabili rilevate: problematiche legate all'utilizzo dei dispositivi

Le problematiche potenzialmente correlate all'utilizzo dei *device* sono state messe in relazione alle variabili sociodemografiche e cliniche. Di seguito i risultati significativi:

- Le variabili età e numero di problemi segnalati correlano in modo significativo (r = 0,165, p = 0,023). All'aumentare dell'età corrisponde un aumento delle problematiche derivate dall'utilizzo dei *device*.
- C'è una relazione statisticamente significativa tra il numero di problemi segnalati e il numero di diagnosi (F(3,186) = 5,111, p = 0,002). Più nel dettaglio, il test di Bonferroni mostra differenze significative tra chi presenta 1 o 2 diagnosi e chi, invece, ne presenta 3 (rispettivamente, p = 0,009 e p = 0,007) con un numero maggiore di problematiche in questo ultimo caso.
- C'è una relazione statisticamente significativa tra l'uso autonomo e il numero di problemi presentati (F(2,187) = 4,408, p = 0,013). In particolare, l'analisi dei test *post hoc* mostra che i soggetti che utilizzano i *device* esclusivamente con i genitori presentano meno problemi di chi utilizza i dispositivi in modo autonomo.
- Il numero di attività correla positivamente con il numero di problemi (r = 0,161, p = 0,026).

4. Discussione

Il presente studio ha esplorato l'utilizzo dei dispositivi tecnologici, in particolare *tablet* e *smartphone*, da parte di bambini con ASD, indagando nello specifico le possibili implicazioni e problematiche, riportate dai genitori, associate all'uso di questi dispositivi. I risultati ottenuti, integrati con le evidenze attualmente presenti in letteratura, offrono spunti significativi per comprendere al meglio i benefici e le criticità derivanti dall'impiego di questi strumenti tecnologici, evidenziando anche le modalità con cui questi *device* siano in grado influenzare l'apprendimento, la comunicazione e le dinamiche sociali dei bambini con ASD. In particolare, l'indagine condotta ha considerato un campione di 201 soggetti di età compresa tra i 3 e i 14 anni con diagnosi di ASD, sindrome di Asperger o autismo ad alto funzionamento e disturbo generalizzato dello sviluppo NAS. Le informazioni sono state raccolte tramite la compilazione di un questionario *online* da parte dei genitori.

Dall'indagine, un primo risultato emerso è l'alta prevalenza di utilizzo dei dispositivi tra i bambini con ASD: più del 90% delle famiglie coinvolte ha dichiarato che il figlio utilizza almeno un *device*, con una distribuzione che evidenzia un impiego diffuso di *smartphone* (27,6%), *tablet* (17,2%) e nella metà dei casi (55,2%) di entrambi i dispositivi, confermando così i dati già presenti in letteratura (Fletcher-Watson, 2014; Kasari et al., 2018). Rispetto

a ciò, la gravità della diagnosi non incide sulla possibilità o meno di utilizzare i *device*, confermando l'alto grado di intuitività e accessibilità degli stessi.

Considerando il nostro campione, l'unico fattore che è associato all'utilizzo dei dispositivi è l'età: si osserva un maggior utilizzo dei *device* nei soggetti con età media più elevata. Per di più, l'età sembra influenzare anche il tempo di utilizzo dei dispositivi, riscontrando tempi inferiori per i bambini più piccoli. Rispetto all'attuale indagine, solo un quarto delle famiglie eccede il limite di tempo di 2 ore al giorno suggerito nel *Position Statement* dei pediatri italiani per i bambini al di sotto degli 8 anni (Bozzola et al., 2018), e di queste meno della metà ha effettivamente un figlio al di sotto dell'età indicata. Per quanto riguarda invece la fascia di età tra i 2 e i 5 anni, il medesimo documento suggerisce un tempo massimo di utilizzo del dispositivo elettronico di un'ora. Rispetto a questo dato, considerando il presente campione, si segnala che il 30% dei bambini ha un utilizzo superiore ai 60 minuti consigliati.

La tipologia di dispositivo utilizzato non è associata a nessuna delle variabili prese in esame.

Per quanto riguarda, invece, l'autonomia nell'utilizzo dei *device*, questa è in relazione esclusivamente con il tipo di diagnosi: i soggetti con diagnosi di DGS-NAS tendono ad essere meno autonomi rispetto ai bambini con ASD o con diagnosi di autismo ad alto funzionamento. Questo dato è in linea con quanto affermato da Kasari e colleghi (2018), che suggeriscono che i bambini con diagnosi di ASD più grave o con comorbidità cognitive possono necessitare di maggiore supporto nell'interazione con la tecnologia (Kasari et al., 2018). Inoltre tale risultato è coerente con il fatto che la diagnosi di DGS-NAS è generalmente assegnata a bambini di età inferiore, suggerendo come sia importante che tali bambini siano affiancati e supportati dagli adulti nell'utilizzo dei dispositivi per massimizzare i benefici.

L'utilizzo sociale o meno dei dispositivi non è influenzato da nessuna delle variabili prese in esame.

All'aumentare dell'età corrisponde un aumento delle attività svolte con i *device*. In generale, emerge molto chiaramente che la maggioranza dei bambini e dei ragazzi utilizza questi strumenti con finalità ludiche-ricreative e per la visione di video, in particolare su Youtube. Tuttavia, colpisce che solo una percentuale molto bassa di soggetti ricorra all'utilizzo di questi strumenti come ausilio per la didattica o nell'ambito dei percorsi di terapia. Questo suggerisce quanto il pieno potenziale dei dispositivi tecnologici, pur essendo oggi accessibili a tutti, non sia ancora stato pienamente recepito, soprattutto in ambito formativo, educativo e riabilitativo. Appare inoltre ancora più evidente se si considera che quasi tutti i soggetti mostrano un buon grado di autonomia nell'utilizzo dei dispositivi e delle applicazioni, autonomia che

lascia intuire che attività riabilitative e didattiche, se adeguatamente sviluppate, potrebbero essere svolte da remoto con solo un monitoraggio parziale da parte del genitore, senza la necessità di un suo attivo e continuo coinvolgimento.

Rispetto alle problematiche associate all'uso dei dispositivi, si è osservato che all'aumentare dell'età corrisponde anche un aumento dei problemi segnalati dai genitori, suggerendo quindi che l'aumento di tali problematiche sia strettamente connesso al maggiore utilizzo e al maggior numero di attività svolte con il dispositivo. Inoltre, il numero di difficoltà riportate aumenta in particolar modo per i bambini con diagnosi multiple: la complessità clinica è quindi in grado di influenzare negativamente l'esperienza dell'uso dei dispositivi. Questa osservazione conferma la necessità di un approccio terapeutico integrato che consideri non solo l'uso della tecnologia, ma anche le difficoltà aggiuntive derivanti dalla comorbidità (Cooper et al., 2020).

Infine, è emersa una relazione tra l'autonomia nell'uso dei dispositivi e le problematiche riferite: i soggetti che utilizzano i *device* esclusivamente con i genitori presentano meno problemi rispetto a coloro che li utilizzano in autonomia. Questo sottolinea l'importanza di un utilizzo dapprima guidato e successivamente supervisionato e regolamentato da parte dell'adulto. Il supporto di un adulto è fondamentale per gestire e bilanciare il tempo trascorso sui dispositivi, assicurando così che l'uso di questi rappresenti un'opportunità di apprendimento, anziché un elemento che possa inasprire le difficoltà relazionali e comportamentali dei bambini con ASD.

Nonostante i risultati promettenti riscontrati attraverso la nostra indagine, il presente studio presenta alcuni limiti. La natura trasversale dell'indagine non consente, infatti, di esaminare in modo esaustivo gli effetti a lungo termine legati all'uso dei dispositivi nei bambini con ASD. Inoltre, l'affidamento esclusivo alle informazioni soggettive fornite dai genitori può comportare un *bias* nella valutazione del comportamento del bambino, soprattutto per quanto riguarda l'autonomia nell'uso e le problematiche correlate.

I risultati di questo studio hanno diverse implicazioni importanti per la pratica clinica e educativa. Innanzitutto, l'uso della tecnologia dovrebbe essere considerato come un complemento agli interventi tradizionali, piuttosto che un sostituto. Inoltre, sebbene i dispositivi *touchscreen* possano offrire opportunità di apprendimento personalizzate e stimolanti, è essenziale che l'uso della tecnologia sia monitorato attentamente per evitare effetti negativi come la dipendenza, l'isolamento sociale e il sovraccarico sensoriale. Per di più, l'adattamento dei contenuti e delle modalità d'uso dei dispositivi in base alle esigenze individuali dei bambini è fondamentale per ottimizzare i benefici. Infine, i risultati offrono importanti spunti per lo sviluppo di linee di riferimento che possano orientare i genitori di bambini con ASD, sia nelle

modalità di utilizzo dei *tablet*, sia nella gestione delle eventuali problematiche legate all'utilizzo dei *device* stessi.

5. Conclusione

Il presente studio ha voluto indagare gli effetti positivi, le problematiche e le possibili strategie legate all'utilizzo dei *device* nei bambini con ASD. La rassegnae della letteratura condotta dimostra che i *tablet* sono degli strumenti che, in funzione di differenti caratteristiche specifiche di ogni soggetto, possano facilitare i percorsi di apprendimento e l'acquisizione di abilità in differenti ambiti. In aggiunta, i risultati suggeriscono che, nonostante la varietà di diagnosi e il differente grado di funzionamento, la maggior parte dei bambini con ASD utilizza regolarmente dispositivi *touchscreen*, sottolineando come tali strumenti siano largamente accessibili e le cui modalità di uso siano facilmente comprensibili. D'altro canto emergono chiaramente, sia dalla letteratura che dalla nostra indagine, le numerose problematicità e gli effetti potenzialmente negativi legati all'utilizzo dei *device* che, tuttavia, non devono indurre al non utilizzo. Si evidenzia, invece, l'importanza di una maggiore conoscenza di questi strumenti da parte dei genitori, così come la necessità di dare loro adeguate indicazioni e suggerimenti per l'utilizzo della tecnologia.

Stante, quindi, l'enorme diffusione dei dispositivi e l'elevato grado di utilizzo da parte dei bambini con diagnosi di ASD, stupisce che ad oggi non siano ancora state sviluppate delle linee guida specifiche che possano guidare i genitori di bambini autistici nella modalità di utilizzo dei *tablet* e nella gestione di eventuali problematiche connesse. È fondamentale sostenere il genitore nella quotidiana sfida di trovare un giusto equilibrio tra un uso benefico ed un uso potenzialmente problematico di un dispositivo elettronico, sfida già difficile per un qualsiasi genitore e che rischia di esserlo ancora di più per un genitore di un bambino con ASD, soprattutto in assenza di indicazioni e strategie che lo supportino.

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Testing a rhythm-based intervention for dysarthria: Evidence from two case studies

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Abstract

Dysarthria is characterized by disruptions in motor control necessary for producing speech and other verbal sounds. These motor impairments often extend to reading, impacting both speed and accuracy due to the articulatory challenges inherent in speech production. Most dysarthria treatments traditionally focus on improving oral production. However, a novel approach involves targeting anticipatory processes through rhythmic stimulation combined with verbal fluency exercises. In this study, a remote intervention was delivered via an online platform, incorporating rhythm-based reading exercises for two patients (A and B) diagnosed with dysarthria. Following a two-week period of daily intervention, patients were assessed on reading and language fluency. Both patients showed considerable improvements in reading skills. Additionally, Patient B exhibited improvements in functions commonly impaired in dysarthria, including respiratory and articulatory abilities. In conclusion, this remote rhythm-based intervention resulted in notable enhancements in reading and language parameters in dysarthria. These preliminary findings suggest that this approach holds promise and warrants further investigation in future studies on dysarthria.

Keywords: dysarthria, language fluency, rehabilitation, reading, rhythm, music therapy

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Introduction

Dysarthria is a clinical condition characterized by speech disorders of neurological base which reflect abnormalities in the strength, speed, range, steadiness, tone, or accuracy of movements required for breathing, phonatory, resonatory, articulatory, or prosodic aspects of speech production (Duffy, 2013). Dysarthria can arise from acquired neurological disorders (e.g., Parkinson's disease (PD), acute ischemic stroke, amyotrophic lateral sclerosis (ALS)) and is caused by lesions in various locations (Darley et al., 1969). Although a common feature is a decreased speech intelligibility, the clinical manifestation may vary greatly and several dysarthria types have been described based on salient features (i.e., flaccid, spastic, hypokinetic, hyperkinetic, ataxic, and mixed) (Duffy, 2013). Traditional language treatments for dysarthria addresses communication skills through speech therapy, providing strategies, and optionally assistive communication support (Chiaramonte & Vecchio, 2020).

Process-based alternative treatments include the use of musical and / or rhythmic strategies for the facilitation of speech in various motor speech disorders, dysarthria included. Instead of focusing rehabilitation on the direct practice of impaired skills, as in traditional methods, process-based alternative treatments aim to modulate and stimulate the cognitive and motor processes underlying articulatory and vocal abilities. For example, rhythmic and musical training provide multisensory stimulation, engage alternative neural networks, facilitate prosodic modulation, and, by increasing motivation and emotional involvement, contribute to more solid and lasting learning (Magee et al., 2017). Zumbansen and Tremblay (2019) conducted a systematic review on the effect of Melodic Intonation Therapy (MIT) – a music-based technique for oral language production recovery – focusing on motor-speech impairments. Results revealed that music-based interventions are indeed effective in significantly improving the quality of speech in patients with motor-speech disorders, thus suggesting that rhythmic-cued and melodic activities facilitate the effective stimulation of the motor-speech system.

In this regard, Mainka and Mallien (2014) designed the Rhythmic Speech Cueing (RSC), an intervention protocol aimed at improving several speech parameters, such as articulatory rate, pause, time, and intelligibility of speech in patients with fluency disorders. In RCS, patients are presented with a metronome pulsed signal or a rhythmic pattern to acoustically cueing their speech production. In the rehabilitation procedure, the rhythmic stimulation serves as a stable time anchor to which the patients try to adjust their speech, with pulse regularity leading to better coordination of the articulatory muscles by facilitating a more accurate motor anticipation during speaking.

Furthermore, the tempo of the rhythmic stimulation is set to slow down syllable duration during speech production, an effective strategy to improve articulation in dysarthric patients, as suggested by other dysarthria studies (e.g., Stahl et al., 2011; Mainka & Mallien, 2014). The RSC has been shown to be effective in patients with various types of dysarthria, such as hypokinetic ataxic, spastic, and mixed, improving intelligibility, sharpness of articulation, and speech fluency. The treatment does not vary by dysarthria type, but hypokinetic dysarthria (e.g., in Parkinson's) requires more frequent sessions than other types.

Another music-based intervention for speech fluency was developed by Kim and Jo (2013), namely, the Accent-based Music Speech Protocol. The training protocol consists in facilitating the production of accentuated melodic chanting through slow and exaggerated oral articulatory movements, following a regulated timing of inhaling and exhaling. Empirical evidence showed that the protocol leads to improvements in voice intensity and in a better coordination of the respiratory and vocalization movements in post-stroke patients with mixed dysarthria.

As a result of the articulatory disfunctions, reading skills are typically negatively impacted in dysarthria. Given the established results of rhythm-based intervention on speech articulation fluency, embedding the rhythmic activities in written verbal material appear to be a feasible and promising approach for dysarthria intervention. To do that, a rhythm-based intervention that was originally designed for improving reading skills in dyslexia, the Rhythmic Reading Training (RRT; Cancer et al., 2016), was selected. As RSC (Mainka & Mallien, 2014), RRT relies on the facilitatory effect of the rhythmic stimulation, which provides a regular structure that helps patients organize temporal cues of speech sounds. Similarly to Accent-based Music Speech Protocol (Kim & Jo, 2013), RRT is administered daily for 10 days, over the course of two weeks.

The primary aim of this multiple case-study is to investigate whether RRT is feasible and effective in improving the reading intelligibility (Mackenzie & Lowit, 2012, Lowit et al., 2023) in dysarthric patients. As a secondary aim, the study investigated whether a training addressing reading processes leads to amelioration in articulatory sharpness, breathing, phonation, diadochokinesis, and prosody of oral speech.

Methods

Participants

Two patients with dysarthria were selected among the patients with a

diagnosis of dysarthria who had completed a speech therapy rehabilitation at the Neurorehabilitation Unit of the Fondazione Poliambulanza Hospital in Brescia, Italy. Specifically, patients were recruited by meeting the following inclusion criteria: absence of history of neuropsychological or psychiatric disorders preceding the diagnosis; age less than 80 years; absence of hearing deficits; time elapsed since the acute event ≥ 6 months. Participation was voluntary. Both patients provided their informed consent to participate in the study prior to enrollment. The study was approved by the Ethics Committee of the Università Cattolica del Sacro Cuore in Milan, Italy (approval code: 22-19) and by the Fondazione Poliambulanza Hospital's General Management (approval code: 13-07-20) and it was conducted according to the standards of the Helsinki Declaration (World Medical Association, 2013).

Patient A. The patient, a 47-year-old man, in 2015 was diagnosed with large B-cell lymphoma with subsequent autotransplant complicated by encephalitis. Ataxia of the march and cognitive deficits were reported. In 2017 he was hospitalized for cerebellar syndrome, dysarthria, and dysphagia and received the diagnosis with progressive multifocal leukoencephalopathy associated with a cerebellar syndrome JC virus-related. The focal event was dated June 2017. In 2020 the patient was diagnosed with dysarthria characterized by high/clavicular respiration in phonation and diaphragmatic respiration at rest; nasal quality of voice; loss of articulatory clarity as speed and complexity of movements increases; altered diadochokinesis; normal prosody and intelligibility. Therefore, he received speech and language rehabilitation program during the first semester of 2020. Patient A did not have other linguistic deficits, was right-handed, reported having normal hearing and corrected-to-normal vision. He had a normal cognitive level and he did not have any brain injuries.

Patient B. The patient, a 33-years-old woman, suffered the outcomes of traumatic brain injury. The focal event occurred in 2014 and caused a hemorrhage that involved the left temporo-frontal and fronto-parietal areas and the right frontal area. The patient was diagnosed with non-fluent aphasia and dysarthria. In 2019 she received the last speech and language rehabilitation treatment. The linguistic functions mostly compromised were oral expression and oral comprehension (especially for longer and complex sentences; Token test: 26/36). Oral communication was influenced by articulatory difficulties and agrammatism. She was right-handed and has normal hearing and corrected-to-normal vision. The cognitive level was

normal (Raven test: 34/36; MMSE: 27/30; LCF: 8). Patient B did not have any other brain injuries.

Training intervention

The RRT is a computerized, rhythm-based intervention program which integrates reading exercises with rhythmic stimulation that gradually increases in speed, providing a temporal structure to help readers better organize the timing of speech sounds. The software comprises several reading exercises categorized into three sections: "Syllables", "Words", and "Pseudo-words".

In the "Syllables" section, exercises focus on training rapid syllable recognition. The "Words" and "Pseudo-words" sections include exercises that challenge patients to read words and pseudo-words of varying lengths. All reading tasks are synchronized with a customizable rhythmic accompaniment, which can be adjusted in speed according to the reader's individual characteristics. The RRT also allows for increasing levels of difficulty within the same exercise by offering various speed settings for the rhythmic component. Patients are instructed to read each stimulus – whether syllables, words, pseudo-words – in synchrony with the rhythmic beat. Additionally, each stimulus can be highlighted by a colored visual mask at the precise moment it should be read, creating a multimodal stimulation experience that combines visual (color changes) and auditory (rhythmic beat) cues in synchronization. The visual cue is recommended in the initial phases of training to support synchronization during reading; In later stages, the therapist discontinues it once the participant can accurately align their reading with the beat without visual assistance. The difficulty of the exercises also escalates with the complexity of the verbal stimuli (e.g., syllables with more complex orthography, longer words, or pseudo-words) and through a gradual reduction in font size. This structured approach aims to enhance reading skills by engaging both auditory and visual processing in a coordinated manner.

The training was previously tested in rehabilitation programs of 10-20 sessions, supervised by experienced practitioners, aimed at children, adolescents, and adults with developmental dyslexia (Bonacina et al., 2015; Cancer, Monti & Antonietti, 2016; Cancer et al., 2016; 2017; 2019; 2020; 2021; 2022; 2023). The effectiveness of the intervention is confirmed by several experimental controlled studies with a test-training-retest design, which showed significant reading skills improvement, compared to spontaneous reading development (Bonacina et al., 2015) and to alternative validated treatments (Cancer et al., 2020; 2023). In a recent pilot study, the

training was applied to patients with post-stroke aphasia, showing its feasibility and acceptability in acquired language disorders (Cancer et al., 2025).

Assessment measures

The pre- and post-training assessment included measures of language, reading, and verbal memory. Reading, language, and verbal memory skills were assessed using the VALS test battery ("Assessment of reading and writing difficulties in adulthood" [Valutazione delle difficoltà di lettura e scrittura in età adulta]; George &Pech-Georgel, 2017). Specifically, spelling, rapid automatized naming, text, word, and pseudo-word reading, forward digit span, backwards digit span subtests were administered. Patients were additionally tested with a specific test for language fluency, namely, "Dysarthria assessment profile" ([Profilo di valutazione della disartria]; Robertson, 1982; Fussi & Cantagallo, 1997), which includes scores for respiratory function, phonatory function, diadochokinesis, articulatory function and prosodic aspects. This test provides two therapy outcome measure (TOM) scores: (1) level of impairment and (2) level of disability. Finally, participants answered, after each training session, to five self-report questions on the training experience (three 5-point Likert scales: "difficult", "boring", "how much they liked it") and assessment of achieved progress (two 10-point Likert scales: "progress in reading" and "progress in language fluency").

Procedure

The study consisted of a test-treatment-retest procedure. In the pre-training and post-training testing sessions, participants completed the battery of tests (average completion time: 2 hours). Following the pre-training testing session, both patients received 10 training sessions, one per day from Monday to Friday, over the course of two weeks. The training sessions were of 30 minutes each and were supervised by a specialized speech therapist.
The sessions were personalized based on the patient's needs and relied on baseline reading skills assessed in the pre-training phase. All sessions involved training at the three different levels of reading: syllables, words, and non-words. In the initial sessions, equal time was typically allocated to each level (10 minutes). As the treatment progressed, the therapist could determine whether it was appropriate to reduce the time spent on syllable reading and increase the time dedicated to word and non-word reading. To

gradually increase the tempo of the rhythmic accompaniment, the therapist monitored reading accuracy, advancing to a faster tempo in the next trial only if accuracy reached 95%.
At the end of each training session, patients answered the questions of the self-report assessment questionnaire.

Participants were tested and treated remotely through a video-conference software (Skype), which supports screen sharing.

Results

Pre- and post-training performance in the primary (reading, language) and secondary outcome (spelling, verbal memory) measures were compared for each patient.

Additionally, self-report measures on training experience and on perceived improvement over the course of the 10 training sessions were analyzed for each patient.

Patient A

Patient A's pre- and post-RRT test scores are reported in Tab. 1. The patient improved in almost all skill domains directly and indirectly trained by RRT, with the only exception of text reading speed. Patient A also improved in domains not directly trained by the intervention program (e.g., digit span).

In the Dysarthria assessment profile assessment, patient A obtained a score of 4 (mild dysarthria) on both the impairment and disability TOM scales in the pre-RRT phase, representing an intelligible oral expression most of the times. After RRT, the scores remained unchanged, therefore suggesting that 10 RRT sessions did not have a significant impact on respiratory, phonatory, articulatory prosody, or diadochokinesis functions.

As for the self-report evaluation (see Tab. 2), the trends for the perceived improvements in reading and speech fluency was rather stable, with a tendency to report high improvement scores in both parameters. The trends for the 3 questions investigating judgements on the proposed exercises were more variable, with a tendency to consider the activities less difficult and boring by the end of the 10-session training and a stable high level of reported pleasantness.

Tab. 1- *Patient A's test scores from the VALS battery pre- and post-RRT intervention program*

Test measure	Pre RRT (t0)	Post RRT (t6)
Words reading accuracy (correct items)	19/20	20/20
Words reading speed (syllable/second)	3.36	3.50
Pseudo-words reading accuracy (correct items)	11/20	18/20
Pseudo-words reading speed (syllable/second)	1.70	2.43
Text reading accuracy (errors)	19	6.5
Text reading speed (syllable/second)	4.16	3.64
Spelling accuracy (correct items)	2/10	9/10
Spelling speed (seconds)	124	119
Rapid automized naming accuracy (errors)	0	0
Rapid automized naming speed (seconds)	50	53
Digit span forward (correct items)	6/8	8/8
Digit span backwards (correct items)	3/6	6/6

Tab. 2 - *Patient A's training experience (5-point Likert) and perceived improvement (10-point Likert) self-report measures over the course of 10 training sessions*

	Training experience			Perceived improvement	
Session	Difficult	Boring	Liked	Reading	Speech fluency
1	4	2	4	6	5
2	1	4	2	6	6
3	2	2	3	6	6
4	2	2	4	6	6
5	2	2	3	6	6
6	2	2	4	6	6
7	3	2	4	7	6
8	3	3	3	6	6
9	2	2	4	6	6
10	2	2	4	6	6

Patient B

Patient B's pre- and post-RRT test scores are reported in Tab. 3. The patient improved in several test domains directly and indirectly trained by RRT. Most of the improvements were related to the accuracy parameter, however text reading speed was significant improved.

Tab. 3 - *Patient B's test scores from the VALS battery pre- and post-RRT intervention program*

Test measure	Pre RRT (t0)	Post RRT (t6)
Words reading accuracy (correct items)	15/20	18/20
Words reading speed (syllable/second)	1.17	0.90
Pseudo-words reading accuracy (correct items)	9/20	15/20
Pseudo-words reading speed (syllable/second)	0.87	0.51
Text reading accuracy (errors)	87.5	38.5
Text reading speed (syllable/second)	1.15	1.20
Spelling accuracy (correct items)	Not applicable	Not applicable
Spelling speed (seconds)	Not applicable	Not applicable
Rapid automized naming accuracy (errors)	1	0
Rapid automized naming speed (seconds)	121	130
Digit span forward (correct items)	0/8	0/8
Digit span backwards (correct items)	0/6	0/6

Tab. 4 - *Patient B's training experience (5-point Likert) and perceived improvement (10-point Likert) self-report measures over the course of 10 training sessions*

	Training experience			Perceived improvement	
Session	Difficult	Boring	Liked	Reading	Speech fluency
1	3	1	5	10	10
2	4	1	5	10	9
3	3	1	5	10	9
4	3	1	5	10	9
5	4	1	5	10	9
6	4	1	5	10	10
7	3	1	5	10	10
8	4	1	5	10	9
9	4	1	5	10	9
10	3	1	5	10	10

In the Dysarthria profile assessment, patient B obtained a score of 3 (mild/moderate dysarthria) on the impairment scale and a score of 4 on the disability scale in the pre-RRT phase. After RRT, while the disability scores remained unchanged, patient B scored 4 (mild dysarthria) in the impairment scale, suggesting a significant improvement in speech fluency parameters, specifically respiratory and articulatory functions.

Considering the self-report assessment (see Tab. 4), patient B reported to perceive a high level of improvement in both reading and speech fluency after each training session. No score variation was observed for the experience judgments, in which patient B reported to always have liked the activities and to consider them not boring at all, and rather difficult.

Discussion

Results presented in this study showed that RRT is a feasible intervention for improving language fluency, as well as intelligibility in both speech and reading, in individuals with dysarthria. By "reading intelligibility" we refer to the intelligibility of speech during reading as a parameter that directly influences the listener's oral comprehension (Mackenzie & Lowit, 2012, Lowit et al., 2023).

Patient A demonstrated significant benefits from RRT, particularly in reading-related tasks. Notably, there was an improvement in reading speed and accuracy for words, as well as in the speed and accuracy for pseudo-words. Additionally, text reading accuracy improved markedly. However, it is important to note that text reading speed decreased by the end of the training. This decline in speed may be attributed to the nature of the RRT exercises, which primarily focused on reading words and pseudo-words, rather than continuous text. Despite the reduction in text reading speed, Patient A achieved a substantial reduction in text reading errors (from 19 to 6.5), indicating improved reading precision, likely facilitated by a more deliberate pace. Other significant improvements in Patient A included enhanced speed and accuracy in spelling tasks, as well as an increased number of items correctly recalled in both forward and backward digit span tests. However, Patient A did not show improvement in respiratory, phonatory, diadochokinetic, articulatory, and prosodic functions. In fact, the patient's dysarthria severity, as measured by the Dysarthria assessment profile, shifted from mild to mild/moderate by the end of the training.

Patient B also exhibited significant improvements following RRT, particularly in reading accuracy for words, pseudo-words, and text. Although there was a reduction in reading speed for words and pseudo-words, text reading improved in both speed and accuracy, which was a surprising and favorable outcome. Additionally, Patient B demonstrated a reduction in errors on the rapid automatized naming task and the rhythmic pattern discrimination test. Importantly, Patient B also showed significant improvements in respiratory and articulatory functions, with dysarthria severity improving from mild/moderate to mild by the end of the training.

This suggests that RRT may have broader therapeutic potential beyond reading tasks, albeit cautiously.

Self-reported outcomes provided additional insights into the patient's perceived communicative function. Patient A perceived moderate improvements in both reading and speech fluency, which only partially aligned with the objective data. While his reading improvements were substantial, his speech fluency did not show a corresponding significant enhancement. The feedback from the training difficulty questions was valuable for adjusting RRT parameters in subsequent sessions. Conversely, Patient B reported remarkable perceived improvements in both reading and speech fluency. Although these subjective ratings were highly positive, quantitative data suggested there was still room for further improvement. Nonetheless, the patient's positive feedback regarding the training's pleasantness, non-monotony, and challenging yet achievable difficulty levels was encouraging.

These findings suggest that RRT may exert a positive influence on reading and language parameters in patients with dysarthria, and thus underscore its potential as a targeted intervention for speech fluency in patients with dysarthria, with variability in outcomes that warrant further investigation. Although it is clear that the different outcomes may be due to the distinct clinical characteristics of dysarthria in the two patients, other factors may also come into play. The clinical histories of the two patients were very different, both in terms of the number of acute brain events they experienced and the time interval between these events and the start of the rehabilitation training. Another factor that plays a fundamental role in determining rehabilitation-related changes is the patient's interest and motivation toward the proposed training (Colombi et al., in press). The two patients, in fact, showed different levels of satisfaction and interest in the treatment provided.

This rehabilitation approach can be framed within the ICF (International Classification of Functioning, Disability and Health; Della Sanità, 2002) model, as it addresses not only impairments in body functions (e.g., phonological and articulatory processes) but also activity limitations (e.g., reading skills) and participation restrictions (e.g., communication and social interaction). The training is personalized to individual needs, adaptable to different environments (also remote settings) and includes self-report measures, aligning with the ICF's biopsychosocial and person-centered approach.

Conclusion

In conclusion, this case-study showed that Patient B demonstrated

improvement in intelligibility across both reading tasks (in terms of speed and accuracy) and spontaneous speech, while Patient A exhibited improvements exclusively in reading intelligibility. Clarity during spontaneous oral production, however, involves additional cognitive processes, including reasoning processing and the engagement of motor areas, which may also impact overall communication effectiveness.

From the observations of these two cases, we can hypothesize that RRT could be effective in enhancing reading-specific intelligibility but may not significantly improve overall speech intelligibility. It is important to note that both patients had previously undergone rehabilitation targeting oral production intelligibility, which may explain the lack of further significant improvements as measured by the assessment tools utilized in this study. It is possible to hypothesize that, to generalize reading-related speech intelligibility to spontaneous speech production, it would be beneficial to incorporate the repetition of words and short phrases (as in MIT), supported by a rhythmic and melodic base.

To better understand the broader efficacy of RRT, particularly in terms of its impact on overall intelligibility, it is recommended that this intervention be applied to a larger clinical sample. This would help determine whether the observed improvements in reading intelligibility are consistently replicable across a wider population of patients.

Among the limitations of this study is the lack of information regarding the type of dysarthria in the two patients. Regrettably, in both cases, the specific type of dysarthria was not described, as the clinicians who diagnosed the patients prior to their enrollment in our research did not make a distinction. Future studies could take into account the differences in the modifiability of reading abilities and verbal communication functions after RRT treatment based on dysarthria subtype.

Finally, it would be important to include pre- and post-treatment measures assessing the impact of communicative effort on quality of life, in order to capture more comprehensively the functional relevance of the intervention.

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