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Effectiveness of strengthening resilience training program on parents of children with autism spectrum disorder

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Abstract

Background: Beginning early in life, autism spectrum disorder (ASD) is considering a neurodevelopmental disorder that has a significant impact on both parents and children. Parents of children with autism frequently experience mental health distributes, characterized by increased stress, anxiety, and depression as well as decreased resilience.

Aim: The purpose of this study is to assess how parents of children with autism spectrum disorder respond to a more robust resilience training program.

Research design: Using a quasi-experimental research design was the practice.

Sample: fifty parents of children with autism spectrum disorder were participated.

Setting: The children's and adolescents' outpatient clinic at Minia Hospital which treats addiction and mental health issues served as the study's site.

Tools: In the process of gathering data, two tools were handled; I: parents' and child's demographic data, II: Connor-Davidson Resilience Scale.

Results: It was discovered that both at the follow-up and after the training program was implemented, the mean score of total resilience increased. The parents' age at the post-test and their overall resilience differed in statistically significant ways.

Conclusion: Research has shown that parents of children with autism spectrum disorder become more resilient when they participate in a resilience training program.

Recommendations: Programs for ongoing health education and counseling on how to manage children with autism should be available to parents.

Keywords: Autism spectrum disorder, parents, resilience.

Introduction

Communication impairments, social interaction issues, and repetitive behaviors are hallmarks of Autism Spectrum Disorder (ASD), a neurological developmental disorder American Psychiatric Association, (2019) [5]. Furthermore, the disorder known as ASD typically manifests in early childhood, before the age of three, and can persist throughout an individual's lifetime. The onset of ASD is typically identified in early development, though some children may show symptoms during the first 24 months of life or later Alhuzimi, (2024) [4]. According to epidemiological studies, the prevalence of ASD has significantly increased recently, with boys receiving diagnoses four to five times more frequently than girls. Nonetheless, girls diagnosed with autistic disorders tend to exhibit more pronounced cases of intellectual disability Nguyen *et al*. (2023) [38]. Additionally, according to Oomen (2023) [39], in the United States, autism spectrum disorder is currently the second most prevalent developmental disability among children. In the US, approximately one out of every 44 eight-year-old children has ASD, according to the Centers for Disease Control and Prevention (2021) [14]. Global estimates indicate that roughly 1 in 100 individuals are diagnosed with autism. However, disparities in prevalence data may arise due to delayed diagnoses and barriers to accessing services Zeidan, (2022) [47].

The ability to cope with stress and carry on with daily activities even be in front of hardships, trauma, and adversity is known as resilience. Additionally, resilience takes into account how parents of autistic children handle vulnerable situations and becomes crucial when dealing with adverse circumstances in the home, at school, and in social settings Ekas, & Raffertry, (2020) [18]. According to the American Psychological Association (2021) [6], self-awareness, self-care, creative thinking, and keeping a larger perspective are the essential elements of resilience.

On the other hand, bringing up a child with ASD comes with special difficulties, psychological, emotional, social, and financial stressors, and can negatively impact parental well-being Papadopoulos, (2021) [40]. Furthermore, in the midst of these difficulties related to raising a child with ASD, recognizing protective factors like social support, acceptance, mindfulness, self-care, engagement, control, religious beliefs, and spirituality influences positive outcomes. By reducing adverse reactions and the impact of these risk factors, these factors can increase resilience and help parents achieve better results. Aithal, *et al*. (2020) [2].

The objective of the resilience training program is to help parents of children with ASD develop their resilience. Additionally, it is done to help the parents overcome family crises and concentrate on their strengths. Also, it has been discovered that parents' management of communication issues in children with autism is influenced by resilience building Serlin, (2020) [43]. Resilience training program includes coping skills and techniques for increasing resilience in parents as positive coping Zauszniewski *et al*. (2021) [46]. Psychiatric nurses can serve as effective care providers for children with ASD, educators for family members, and counselors for individuals regarding autism. Additionally, the nurse contributes significantly to building the resilience of parents with ASD children by assisting them in understanding ASD symptoms, treatment choices, and anticipated as well as possible outcomes. The nurse also offers support to these families and identifies areas where their children have unmet needs. Furthermore, they instruct families on resilience training programs to manage their children's challenges and reducing the adverse effects of these issues Sena *et al*. (2022) [42].

Significance of the study

Recent epidemiological studies indicate a rising incidence of ASD globally related to the 2012 global incidence report, 62 out of every 10,000 children were diagnosed with autism Andy, (2024) [7]. In Arab countries, the prevalence is estimated to be between 1. 4 to 29 per 10,000 persons, and there aren't many studies on how common autism is in developing countries. The prevalence of autism in Saudi Arabia is slightly greater than the figures reported in developed countries, with an estimated rate of 2. 51% and boys to girl's ratio of 3:1. Fombonne, (2020) [20]. The prevalence of ASD in Assiut Governorate in Egypt was noted to be higher in males (72. 3%) compared to females (27. 7%) Gamal *et al*. (2013) [21]. In the meantime, it was reported that 5.4% of 1000 children in Egypt's Sharkia Governorate had ASD Mohammed, *et al*. (2021) [33].

Furthermore, the significant prevalence of autism suggests that parents of autistic children endure greater parenting stress, depression, frustration, and trauma compared to those whose children do not have autism and often find it difficult to articulate these feelings in various situations. Additionally, resilience has been recognized as an essential concept for enhancing mental health and imparting strategies for these parents to cultivate resilience in high-stress circumstances and sustain their wellbeing. A limited number of studies in this field are focusing on this population. Thus, this research will be structured to intensify the resilience of parents have children of ASD.

Aim of the study

The purpose of this study is to assess how parents of children with autism spectrum disorder respond to a more robust resilience training program.

Subjects and Methods

Research hypothesis

Following the implementation of the program, parents who receive strengthening resilience training will demonstrate a greater degree of resilience.

Setting

The study was research at the Outpatient Clinic for Children and Adolescents at Minia Hospital for Psychiatric Health and Addiction Treatment. This clinic operates under the auspices of the Ministry of Health and is open to patients from 9 AM to 2 PM, Monday through Wednesday. Located in Minia City, the hospital is a two-story facility. The first floor houses the pharmacy, the women's inpatient unit, and the outpatient clinics, while the second floor accommodates the unit of men's inpatient, the addiction treatment center, administrative offices, and the nursing station. Serving the Minia Governorate and its nine districts, the hospital provides care with a total capacity of 53 beds for both male and female patients.

Subjects

A convenient sample of 50 parents of children with autism was included in the study. The number of subjects is estimated by the Isaac and Michael (1995) [27] formula which is computed as (N = n x 30/100) in which (N = Sample size) and (N = sum of the autistic children who were treated for mental health and addiction at Minia Hospital in the prior year which equals 166 autistic children).

$$N = \frac{166 \times 30}{100}$$

Inclusion Criteria

- After an expert evaluation using the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) as the diagnostic standard, the parents of the child, who was between the ages of six and twelve, were diagnosed with ASD.
- The parents had lived with the child for at least six months.
- The parent consented to take part in the program.
- Both gender

Exclusion Criteria

- Mentally challenged parents.
- Parents who have participated in structured parenting programs in the past or present (to better aware the influence of the current program).
- The study would not include children with conduct, oppositional and deviant behavior, ADHD, or mental retardation.

Tools of gathering data

Data would be gathered through utilizing the following tools

First tool: Demographic questionnaire
The researchers developed this questionnaire to gather personal information about the parents and their children of ASD, including age, employment status, and sex, educational attainment as well as the age, sex, and school level of the children under study.

Second tool: Connor-Davidson Resilience Scale (CD-RISC)
This scale was designed by Connor & Davidson, (2003) [15] which counted one of the most common instruments to assess resilience among caregiver. It is a self-applied tool of 25 items. According to the original study, there were five factors on the scale.: Includes (one) describing the notion of personal competence, high standards, and tenacity (eight items); (two) relating to trust in one's instincts, tolerance to negative affect and the strengthening effects of stress (seven items); (three) relating to the positive acceptance of change and secure relationships (five items), (four) refers to control (thee items); and (five) concerns spiritual influences (two items). The scale was classified into five-point likert scale (zero for not at all true to four for true nearly all the time). According to the following, the total score goes from zero to one hundred, where higher scores indicate higher levels of resilience and lower scores indicate lower levels of resilience: (low level resilience = 0-33), (moderate level of resilience =34-66 =), and (high level of resilience 67-100).

Validity of the study tools
Five professionals with expertise in psychiatric mental health nursing evaluated the research tools' validity. Before being examined by the five experts, the researcher translated the scales' statements, which were then carefully examined for comprehensiveness, item sequencing, clarity, relevance, format, applicability, and length. Small adjustments have been made, such as rewording some sentences in response to expert advice.

Reliability
Using Cronbach's alpha coefficients test, the internal consistency of the Connor-Davidson Resilience Scale was determined to be 0.935, indicating good reliability.

The training Program
The training program had been executed by undertaking the subsequent phases
1. Assessment phase
The aim of this phase was assessed resilience among parents and communication skills of their ASD children. Once offering a detailed discussion about the nature and aim of the study, every parent was personally interviewed to gather the important data. According to the results of the assessment in this phase, the program and media was prepared by the researcher in the shape of teaching methods such as lectures and discussion which reviewed by supervisors. Media that was used include visual materials such as posters, personal laptop, videos and booklets.

2. Planning (Preparatory phase)
The program's strategy, session's number, duration, teaching techniques, and supporting media were all designed during the planning phase. Additionally, the suitability of the program's facilities and the teaching environment was examined. The program comprised a variety of teaching methods, including lectures, group discussions, parents experience sharing, photographs, posters, and role playing. The program consisted of 10 sessions, held twice a week. Each session lasted 45 to 60 minutes, depending on how much explanation was needed. The teaching sessions were conducted in the specialist's room at the selected hospital.

3. Implementation of the program
The participants were classified into 10 subgroups, with each subgroup consisting of five participants to encourage active interaction. The same training program was administered to all subgroups of parents. The researcher greeted the parents at the beginning of each session and got their permission to share in the study. In order to guarantee clarity and comprehension, the researcher then went over the purpose and subject matter of the session. Throughout the training program, a variety of instructional techniques were employed, including group discussions, modeling, the use of booklets, and role-playing. To enhance engagement and motivation, the researcher utilized different reinforcement strategies, such as offering small rewards like sweets and other items for the children, as well as providing moral support through words of praise and encouragement. These efforts were aimed at motivating parents to actively participate during the sessions and effectively practice the skills being taught.
At the conclusion of each session, the researcher provided a summary of the session's content, addressed any questions from the parents, and informed them about the timing of the next session. Additionally, homework assignments related to the session were given to the parents to reinforce learning. After completing the program with one subgroup, it was subsequently implemented with the next group of five parents, continuing this process until all ten subgroups had participated. Each session began with feedback on the previous session and a discussion of the planned activities. The topics were introduced gradually and concisely, using simple and clear language to ensure understanding. Mutual interactions, continuous repetitions, and reinforcement were emphasized throughout the sessions to enhance comprehension and retention. The dynamics of group interaction were closely observed and documented during each session to monitor engagement and progress.

The subsequent sessions would cover the training program:
Session 1: Includes introduction about the program (goal, session's duration, session place, content, and the group rules were determined).

Session 2: This session provided a brief introduction to ASD. Key topics included the concept of ASD, its potential causes, and associated risk factors.

Session 3: Give a brief overview of the symptoms and indicators of autism spectrum disorder and include images and videos to help illustrate them.

Session 4: General overview about psychological resilience,

types of resilience and characteristics of resilient parents. Also, the parents determine the ways of increasing resilience.

Session 5: Includes introduction about adaptive coping style and factors that influence of choosing coping styles. Also, the parents determine how to face the stressful situation in a positive manner.

Session 6: This session includes applying the effective problem-solving skills that help the parents to deal with problems and stressful experiences of their autistic children.

Session 7: It aims to practice practicing deep breathing and meditation exercise.

4. Evaluation of the program:
The program was evaluated three times using the same study tools. The first evaluation was conducted before the implementation of the program (pretest). The second evaluation took place after the program's completion (posttest), approximately two weeks later. The third evaluation occurred three months after the program's implementation (follow-up test). This multi-stage assessment was designed to verify the program's immediate impact and future long-term effectiveness

Pilot Study
A pilot of this research was conducted to assess the completeness, clarity, applicability, and time required to complete each section of the research tools. Data were gathered from five parents, representing 10% of the size sample. The findings of the pilot study were utilized to validate the data analysis and statistical methods outlined in the research. No change was made to the study tools depend on the pilot study findings. Therefore, the sample used for the pilot study was included as part of the main study sample.

Ethical considerations
Ethical approval was initially obtained in writing from the Ethical Committee (REC202326B) of Minia University's Faculty of Nursing. A formal request for authorization to conduct the study in the previous hospital to secure their cooperation and approval. Before participating, parents were provided with a comprehensive discussion of the study's nature and objectives. Written consent was obtained from them after ensuring they understood the details. Parents were informed that their parents were entirely voluntary as well as that they had the right to withdraw from the research at any period without providing justification. Moreover, every parent was assured of the confidentiality of their information throughout the study.

Statistical Analysis
The collected data was analyzed and arranged into tables using SPSS (version 28). The mean and SD were the numerical representations of the data. The quantitative data were presented as percentages and frequencies. When comparing the means of more than two variables in quantitative data, the ANOVA test was utilized, while the t-test was employed to compare the means of just two variables. The Friedman test, which compares more than two percentages, is another non-parametric method for figuring out whether samples are from the same distribution. It can be used to compare more than two independent samples of the same or different sizes. Pearson correlation analysis was also used to examine the relationships between various numerical variables. A probability (p-value) of less than 0.05 was considered significant, and a p-value of less than 0.001 was considered highly significant.

Results

Table 1: Frequency distribution of the demographic characteristics of the studied parents (N=50).

Elements	N=50	
	No	%
Age		
▪ 20-30 year	5	10.0
▪ 31-41 year	33	66.0
▪ 42-55 year	12	24.0
Mean ± SD	37.180± 3.456	
Sex		
▪ Male	20	40.0
▪ Female	30	60.0
Level of education		
▪ Read and write	5	10.0
▪ Secondary school	27	54.0
▪ University	18	36.0
Marital status		
▪ Married	47	94.0
▪ Divorce	3	6.0
Employment status		
▪ Worked	27	54.0
▪ Not Worked	23	46.0
Residence		
▪ Rural	31	62.0
▪ Urban	19	38.0

Table 1 establishes that 60% of the parents in the study were female, and slightly over two-thirds (66%) were between the ages of 31 and 41. Furthermore, over half of them (54%) were employed and had completed secondary school. Furthermore, 62% of the parents in the study reside in rural areas, and the bulk of them (94%) are married.

Table 2: Frequency distribution of the demographic characteristics of autism spectrum disorder children (n=50).

Items	N=50	
	NO	%
▪ **Age**		
▪ 6-8 year	38	76.0
▪ 9-12 year	12	24.0
Mean ± SD	7.280± 1.023	
Sex		
▪ Male	43	86.0
▪ Female	7	14.0
School Grade		
▪ Grade one	35	70.0
▪ Grade two	5	10.0
▪ Grade three	2	4.0
▪ Grade four	3	6.0
▪ First grade of preparatory	5	10.0

Table 2 demonstrates that, more than three quarters 76% of ASD children were in the age group between 6 to 8 years, while 86% of them are males. Concerning school grade, about 70% of the ASD children were in grade one of primary school, while (10%) of them were in first grade of preparatory school.

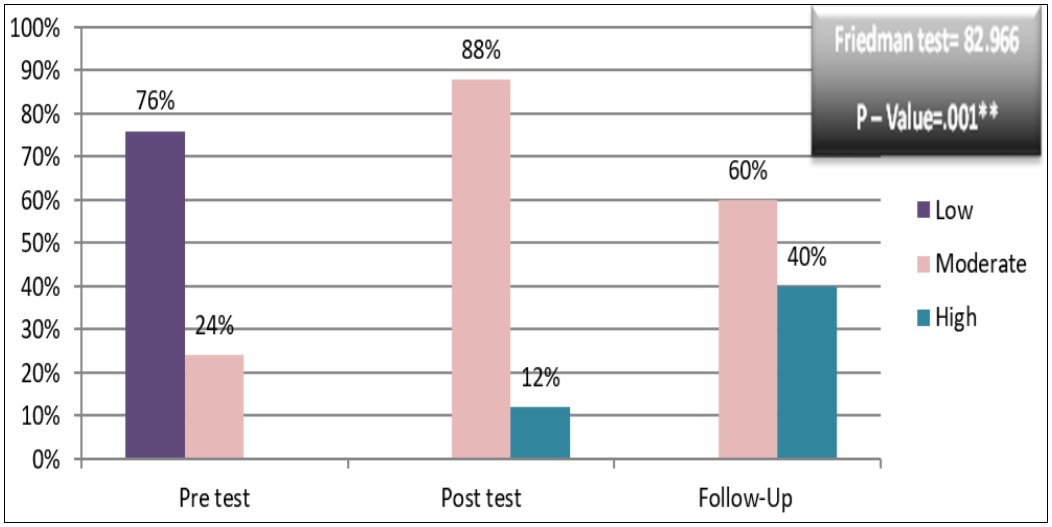

Fig 1: Total resilience among the studied parents at pre-post-test and follow-up (N=50).

Figure (1) illustrates that, the pre-test revealed that roughly 76% of the parents in the study had low resilience and 24% had moderate resilience. Immediately post-test, it was seen that 88% of the parents in the study had a moderate level of resilience, while at follow-up this percent decreased to 60%.

Table (3): Variance differences of total resilience as well as their factors among the studied parents at pre-post-test and follow-up (N=50)

Items	Pre-test	Post-test	Follow-Up	ANOVA	
	Mean ± SD	Mean ± SD	Mean ± SD	F	P
Personnel competence	10.18±3.45	18.34±3.31	2.74±23.74	229.239	0.001**
Tolerance of negative effect and strengthening against stress	8.38±3.17	15.90±3.73	19.76±2.83	156.656	0.001**
Positive acceptance of change	5.82±2.30	9.66±2.82	12.04± 2.43	76.974	0.001**
Self-control	3.50±1.44	5.54±1.47	6.80±1.94	51.613	0.001**
Spiritual influences	2.420±.94	3.40±1.38	4.20±1.70	20.850	0.001**
Total resilience	30.30±10.67	52.840±111	66.54±10.2	146.936	0.001**

**: highly significant difference (p-value ≤ 0.001) No significant difference (p-value < 0.05) *: Significant difference (p-value ≤ 0.05)

Table 3 demonstrates that the differences between the pre-posttest and follow-up in terms of total resilience and all of its factors were highly statistically significant with (p-value 0.001) ** In addition, at the pre-test, the highest mean score was related to the personnel competence factor with M±SD (10.18±3.45), while they are increased at post-test to

(18.34±3.31) and follow-up to (23.74±2.74)**.** Regarding the total resilience, mean score was (30.3±10.67) at the pre-test, while they are increased at post-test to (52.8±11.11) and (66.5±10.20) at the follow-up.

Table 4: Relation between demographic characteristics of the studied parents regarding Conner-Davidson resilience scale (N=50).

The demographic characteristics	Pre-test			Post-test			Follow up		
	Mean ±SD	Anova test	P-Value	Mean ± SD	Anova test	P-Value	Mean ± SD	Anova test	P-Value
Age / years									
20-30 years	26.60±15.01	.853	(.432NS)	66.00±12.30	5.113	(.010*)	71.40±7.23	2.703	(.077NS)
31-41 years	29.72±9.32			50.39± 8.94			64.21±9.42		
42-55 years	33.41±12.45			54.08±12.80			70.91±11.78		
Marital status									
Married	29.91±10.58	.535	(.589NS)	52.59±11.08	.374	(.690NS)	66.40±10.22	.734	(.486NS)
Divorce	28.00±0.00			48.00± 0.00			60.00± 0.00		
Educational level									
Read and write	31.80±10.89	.134	(.865NS)	55.40± 8.79	.145	(.865NS)	66.60± 8.38	1.052	(.357NS)
Secondary School	30.66±10.89	...134……1		52.66±10.88	.145		68.33±10.28		(.3((.57NS)
University	29.33±10.83	3413 (.875NS)		52.38±12.43	145(.865NS)		63.83±10.4		(.357NS)

Table 4, shows that there are significant relations between parent's resilience mean score and their age at post-test at p-value (.010*). Moreover, the age group 20-30 had the highest mean score during post and follow up test with M±SD was (66.00±12.30, 71.40±7.23) respectively. Also, it was detected that the highest mean score of resilience was among married parents which was (29.91±10.58) at pre-test compared to (52.59±11.08) and (66.40±10.22) at post-test and follow-up respectively.

Table 4 (cont

The demographic characteristics	Pretest			Posttest			Follow up		
	Mean ± SD	T-Test	P-Value	Mean ± SD	T-Test	P-Value	Mean ± SD	T-Test	P-Value
Sex									
Male	31.15±9.71	44.456.651NS)	(.651NS)	52.05±11.14	.407	(.686NS)	66.30±10.94	.134	(.894NS)
Female	29.73±11.40			53.36±11.25			66.70±9.87		
Residence									
Rural	28.58±10.36	1.471	(.148NS)	52.77± 9.49	.053	(.958NS)	67.80±9.49	1.124	(.267NS)
Urban	33.10±10.86			52.94±13.63			64.47±66.54		
Employment status									
Worked	31.59±10.13	.926	.359NS	52.33±12.47	.346	(.731NS)	65.29±10.79	.932	(.356NS)
Not worked	28.78±11.32			53.43± 9.52			68.00±9.49		

Table 4 demonstrates that there is no significant relation among parent's resilience mean score and their gender, residence as well as their employment status. Concerning the highest mean score of resilience was among females during post and follow up test with M±SD (53.36±11.25, 66.70±9.87) respectively. Regarding residence, it was viewed that the highest mean score of resilience was among parents live in urban area with M±SD (33.10±10.86) at the pre-test and (52.94±13.63) at the post-test. While, the highest mean scores of resilience were among worked parents with M±SD (31.59±10.13) at the pre-test.

Discussion

Parents are seen as important stakeholders in autism intervention services and are expected to actively participate in their child's overall care. Furthermore, the caregiving responsibilities associated with children with ASD seem to result in negative health effects for parents, heightened parenting stress, decreased resilience among parents, an escalation in behavioral issues with their children, and increasing financial pressures when contrasted with parents of typically developing children Lobo, &Black, (2021) [30]. Thus, the purpose of the current study was to evaluate how a resilience training program might benefit parents of ASD children.

More than three-quarters of the parents in the actual study had low resilience in the pretest, and less than one-quarter had moderate resilience, according to the study's findings (Figure 1). Parents of autistic children who face many obstacles may recognize this outcome. These obstacles include communication issues, handling tough behaviors, teaching fundamental life skills, protecting their child from harm, locating suitable treatment, and overcoming the cost of paying for services. Parents report higher stress levels and generally reduced resilience as a result of overcoming these difficulties that come with rearing ASD child. This finding is in line with Mumford (2023) [35] and Tajalli *et al*. (2022) [43], who discovered that one-third of parents of children with ASD showed moderate to high resilience, whereas two-thirds had low resilience. The majority of the parents had a moderate to high level of resilience, according to Lubelski (2024) [31], which was in contrast to this conclusion.

Moreover, the actual study results indicated that, at the posttest the largest part of the participating parents exhibited a moderate level of resilience, and at the follow-up two-thirds of them maintained this moderate level of resilience (Figure 1). This might be associated with the resilience training program, which enhances parents' ability to learn effective coping mechanisms, thereby enabling them to

exert greater control over specific events. Furthermore, the program facilitates parents' development of stress awareness and management techniques. Parents who are able to interpret situations positively tend to embrace adjustment and adaptation, fostering a sense of peace in the present moment. As a result, parents of autistic children who feel in control often experience a heightened sense of empowerment, increased confidence, and reduced stress, all of which contribute to improved resilience. Laura *et al*. (2021) [28] support this conclusion. According to post-test and follow-up evaluations, most families with autistic children exhibited a moderate degree of resilience after putting an intervention program into place (Gunty, 2020) [28]. Regarding factors of the resilience scale, the present study findings demonstrated that the highest mean score was related to the personnel competence factor at pre, posttest and at follow up (Table 3). At the pre-test, the results might be influenced by the fact that most of the participants are educated. This suggests that parents with higher education levels may have a better understanding of the diagnosis, which could lead to increased hope regarding their child's health and a stronger sense of their own abilities. Additionally, the beneficial effects of the resilience training program may have contributed to the parents' increased acceptance of change at the post-test and follow-up, and their religious beliefs may have also contributed to their more positive acceptance of the diagnosis. This outcome is consistent with the findings of Abd Latif (2023) [1], Yaacob *et al*. (2022) [44], and Ng (2022) [36], who reported that the section on personnel competency and positive acceptance of change had the highest mean score. However, according to Seeridaram & Rashid (2023) [40], personnel competency had the lowest mean score.

Concerning the total mean score of resilience, the results of the actual study presented that, at pre-test, the total mean score of resilience was at a low level (Table 3). This could be attributed to the fact that difficulties in communicating and building social relationships of children with autism has been negatively connected with quality of life of parents', generating a sense of dissatisfaction within the family due to the lack of effective communication. This outcome is consistent with the findings of Mojdeh (2022) [34] and Bekhet (2022) [8], who observed that the overall mean score for resilience was low.

Concerning the total of resilience at post-test and follow-up, the finding of the existent study discovered that, the total mean score of resilience among the studied parent was increased at post-test and follow up (Table 3). This might be attributed to the beneficial impact of the resilience training program, which enhances the resilience of the studied participants by teaching parents' meditation and deep breathing techniques. Furthermore, it aids parents in acquiring problem-solving abilities, coping strategies, and emotional expression, thereby increasing their likelihood of achieving their goals and meeting the requirements and responsibilities of their autistic children. Berkel *et al*. (2023) [9], who discovered that the study participants shown greater gains in resilience following the integrated intervention program, corroborate this finding. According to a study by Zohreh (2023) [47], family resilience scores for autistic children, both immediately following the intervention and at a two-month follow-up, the intervention group performed noticeably better than the control group.

The results of this study showed that the total mean score of resilience and the resilience factors varied statistically significantly between pre-posttests and follow-up (Table 3). From the perspective of the researcher, this result might be due to the positive influence of resilience training program. Before the program the parent hadn't enough knowledge and skills about resilience. In addition, the post-program results may be linked to changes in parents' understanding of resilience, its components, and the factors that influence their performance in resilience following the implementation of the training program.

Bradford *et al*. (2020) [10], who investigated the influence of fostering resilience in stress intervention interference for parents with ASD children, support this finding by stating that, following the educational intervention, there was a notable improvement in the resilience of the parents' overall scores. In a similar vein, Liu *et al*. (2022) [29] found a significant statistically variation between the pre-test and the overall mean resilience score. Furthermore, research participants shown a notable increasing resilience when comparing to the control group, according to Alay & Kaçan (2024) [3].

The results of this study showed a significant relation between parents' age at the post-test stage and their mean resilience scores. In particular, parents between the ages of 20 and 30 had the highest mean resilience score in both the post-test and follow-up periods (Table 4). This implies that parents in this age range are probably mature enough to assume the duties of providing their children with appropriate care. Additionally, they appear to possess the experience needed to address their children's challenges positively by seeking assistance and support from health professionals and other families. These results align with those reported by Lobo & Black (2021) [30], Brennan *et al*. (2021) [11], and El Sawy (2019) [19], who also identified a significant relation between parents' resilience levels and their age.

The findings of the current study designate that married parents reported the highest average resilience scores. This could be attributed to the emotional support they receive from their spouses, as well as their ability to develop or enhance relationships with friends and extended family members. These factors contribute to building resilience among married parents. In contrast, divorced individuals often experience disruptions in friendships, reduced confidence, and lower levels of emotional support. However, this finding contradicts Ha's (2023) [24] research, which revealed that although divorced individuals have less confidence, they tend to exhibit higher levels of resilience. Additionally, the results differ from those of Cangara *et al*. (2023) [13], whose study in Indonesia found that single parents had the highest mean resilience scores.

Regarding the relation between the sex of the studied parents and resilience, the current study found that females exhibited the highest mean resilience scores during both the post-intervention and follow-up phases (Table 4). This suggests that mothers are better equipped to manage the responsibilities associated with caring for their children, especially during early childhood. The strong emotional bonds between mothers and their children also facilitate smoother interactions compared to those with fathers. Additionally, the perceived weight of responsibility borne by mothers may enhance their resilience, reflecting

traditional gender roles where women often assume the role of primary caregiver. However, this finding contrasts with the results reported by Mikels *et al*. (2022) [32], Easterbrooks *et al*. (2021) [16], and Hag *et al*. (2019) [25], who found that male parents demonstrated higher mean resilience scores than females.

Concerning the relation between parents' place of residence and their resilience, the current study revealed that parents residing in urban areas had the highest mean resilience scores (Table 5). This could be attributed to the availability of essential services in urban settings, along with better access to healthcare and educational resources, which are critical factors influencing well-being and enhancing psychological resilience. These findings align with those of Hassan *et al*. (2020) [26], who also reported higher resilience scores among participants living in urban areas during both pretest and follow-up assessments. However, this result contrasts with the findings of Gavidia *et al*. (2023) [22], who observed that rural participants demonstrated significantly higher resilience levels compared to their urban counterparts.

Regarding the relation between employment status and parents' resilience, the study found that working parents had the highest mean resilience scores at the pre-test stage. This could be explained by the fact that employed parents are often better able to utilize available resources for their children's needs compared to unemployed parents, who may experience higher levels of stress and lower resilience, largely due to financial challenges. This finding is consistent with the research of Eilertsen *et al*. (2021) [17] and Campbell *et al*. (2020) [12], who highlighted that parents' income significantly accounted for approximately 11% of the variance in resilience levels.

Conclusion

The results of the present study decided that both at the follow-up and immediately after the implementation of the resilience training program, the mean scores of total resilience increased.

Recommendations

- Programs for ongoing health education and counseling for the management of children with ASD should be introduced for parents.
- Future research should identify therapy approaches and methods to enhance the psychological well-being of parents of children with ASD.
- To improve parents' awareness, coping mechanisms, and comprehension of ASD, psycho-educational programs should be developed for parents of children with ASD.

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