

The Mediating Role of Resilience on the Correlation Between Autism Symptoms and Maternal Quality of Life

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Abstract

Background: To comprehend the complex interplay between autism symptoms, family well-being, and maternal coping abilities, it is essential to delve into the relationship between these factors. This study aimed to investigate how maternal resilience influences the connection between the severity of autism symptoms and the overall quality of life (QoL) for families with autistic children.

Methods: A cross-sectional correlational study was designed to investigate the correlation between variables. The study population consisted of mothers of autistic children aged 4 to 12 years residing in Mashhad, Iran. A convenience sample of 372 mothers was recruited from rehabilitation, educational, and therapeutic centers catering to autistic individuals in Mashhad, Iran between January and March 2023. For data analysis, Pearson correlation and SEM were used, with the aid of SPSS and Amos 24.

Results: The mean score for the severity of autism symptoms was 160.26 (± 11.66). The mean resilience score was 49.98 (± 6.55). Also, the mean score for family QoL was 75.33 (± 9.81). The results showed significant direct relationships among the severity of autism symptoms, family QoL, autism symptoms, and maternal resilience in mothers of autistic children ($P=0.001$). Additionally, the study demonstrated that maternal resilience played a significant mediating role in the connection between autism symptoms and family QoL ($P=0.001$).

Conclusion: The study uncovered a negative connection between the severity of autism symptoms and family QoL, suggesting that more pronounced symptoms can negatively impact family well-being. Additionally, the study found a positive link between maternal resilience and family QoL, indicating that fostering resilience in mothers of autistic children can enhance family dynamics.

Keywords: Autism, Quality of life, Resilience, Women

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1. Introduction

Autism Spectrum Disorder (ASD) is a developmental condition marked by difficulties in communication, social interaction, and behavior (1). Boys are diagnosed with ASD more often than girls. Although early signs can appear in infancy, diagnosis usually happens between ages two and three (2). Recently, the number of ASD cases in Iran has been increasing, with estimates ranging from 6.26 to 10 cases per 10,000 people (3). Genetics is currently considered the primary cause of ASD (4). ASD significantly affects family life, causing increased anxiety, stress, isolation, and uncertainty for parents and siblings of autistic children. As a result, the quality of family life becomes a critical concern (5).

Family quality of life (QoL) is a fluid condition of well-being that is experienced collectively by families and individually by members,

incorporating elements such as family dynamics, parenting styles, and emotional health (6). It signifies a scenario where the needs of family members are fulfilled; they find joy in their relationships, and have avenues for personal development (7). Research indicated that parents of autistic children often experience elevated levels of shame, anxiety, and poorer overall health compared with parents of neurotypical children (8, 9). A primary concern for these parents is worrying about their child's future, particularly given the lifelong nature of the condition and the potential for social challenges and misunderstanding (10). Additionally, the demands of raising a child with a disability, especially for mothers, can lead to increased stress, isolation, and a weakened family bond (11). These factors contribute to the significant challenges faced by families of autistic children.

In conclusion, the severity of autism symptoms in children significantly affects family QoL (12).

These symptoms, encompassing social challenges, repetitive behaviors, and sensory sensitivities, can impose significant psychological and social stress on parents and siblings, ultimately diminishing family well-being (13). Children with autism often experience difficulties in establishing and maintaining social and emotional connections with others. They may differently process sensory information, such as sounds and smells, which can contribute to some of the behavioral symptoms associated with autism (14). When looking for early signs of autism spectrum disorder, it is essential to pay attention to developmental milestones that indicate when specific developmental skills are expected to emerge. While autism can be definitively diagnosed based on symptoms by the age of two, some definitive signs may appear even earlier (15). Similar research conducted previously (4, 7, 16) have demonstrated a negative correlation between autism symptoms and family QoL.

The intensity of autism symptoms in children is correlated with a reduction in maternal resilience (8). Resilience is a vital human attribute that empowers individuals to effectively adapt and manage stressful circumstances (17). It reflects the capacity to return to a previous state of balance or achieve a greater level of equilibrium during challenging situations, thereby promoting successful adaptation in life (18, 19). Positive adaptation can both result from resilience and act as a precursor to enhanced levels of resilience, illustrating the complexity inherent in defining and understanding resilience as a process. Mothers with high resilience are more likely to engage with their exceptional children in a reasoned and suitable manner (20). Resilience comprises two key components: the first involves encountering significant threats and challenges, while the second encompasses the ability to adapt and endure amidst various obstacles and adversities (21). Prior studies (22, 23) have consistently demonstrated a positive correlation between maternal resilience and family QoL.

Given the significant adverse impact of ASD on parents, particularly mothers, and the crucial role of family coping and adaptation in supporting the development of children with ASD, it is important to prioritize the psychological health and resilience of these caregivers. Resilience equips families with essential resources to navigate the stress and challenges involved in raising a child with ASD.

Recognizing the vital roles that mothers play in family dynamics and societal progress, along with the unique obstacles they face, underscores the necessity for targeted interventions. Therefore, the present study aimed to explore the association between the severity of autism symptoms and family QoL for mothers of children with ASD, using resilience as a mediating factor.

2. Methods

2.1. Design

A cross-sectional correlational study was designed to investigate the correlation between variables.

2.2. Participants

The study population consisted of mothers of children with autism aged 4 to 12 years. The study participants were recruited through convenience sampling technique from autism rehabilitation, educational, and therapeutic centers in Mashhad, Iran between January and March 2023. Given the number of variables and potential missing data, a sample size of 400 individuals was determined. After excluding incomplete questionnaires and outliers, 372 questionnaires were fully completed and analyzed, including 178 mothers of girls and 194 mothers of boys. The inclusion criteria for the study were a diagnosis of ASD based on the child's medical records and a diagnostic interview conducted by a psychologist, the child living with the mother, the absence of comorbid disorders, and no use of psychotropic medications such as anxiolytics and antidepressants. The exclusion criteria were withdrawal from completing the questionnaires and incomplete responses.

2.3. Procedure

Upon the approval of the Mashhad Autism Association, the study was conducted at affiliated rehabilitation, educational, and therapeutic centers. A convenience sample of 372 mothers of children with autism was selected. Potential participants were contacted via telephone to explain the objectives of the study and invite them to participate in the study. The study participants were provided with comprehensive instructions on how to complete the questionnaires, either in person or electronically, as per their preference. The

researcher was available to answer questions and provide assistance to ensure accurate completion of the questionnaires.

2.4. Research Instrument

2.4.1. The Beach Center Family Quality of Life Scale (BC-FQoLS): BC-FQoLS is a self-administered evaluation tool consisting of 25 items that assesses five key areas: family interactions, parenting practices, emotional health, physical well-being, and family support for the disabled member (24). The study participants answered each question on a five-point Likert scale, from 1 “*very dissatisfied*” to 5 “*very satisfied*.” Total scores, ranging from 25 to 125, were calculated by adding up the individual item scores. Lower scores indicate poorer family QoL, while higher scores reflect improved QoL. Rajabi and colleagues (25) adapted BC-FQoLS for use in Iran. The translated version showed excellent internal consistency (Cronbach’s $\alpha=0.93$) and content validity (CVI=0.99, CVR=1.00).

2.4.2. Gilliam Autism Rating Scale (GARS): GARS is a diagnostic tool used to identify and assess individuals with ASD. Aligned with the diagnostic criteria of the Autism Society of America (ASA) and the American Psychiatric Association (APA), as well as DSM-IV, GARS is suitable for individuals aged 3 to 22 years. It can be administered by parents or professionals in various settings, including schools and homes. In this study, the questionnaire was completed by a specialist. GARS consists of four subscales, each containing 14 items: “Stereotyped Behaviors” evaluates repetitive actions, motor abnormalities, and unusual mannerisms; “Social Communication” examines both verbal and nonverbal communication skills;

“Social Interaction” assesses the ability to engage in appropriate social exchanges and describe events; “Developmental Disorders” explores the individual’s developmental history (26). Samadi and McConkey (27) reported a Cronbach’s alpha of 0.89 for GARS, demonstrating high internal consistency. They also validated the content of GARS, achieving a CVI of 0.91 and a CVR of 0.89.

2.4.3. The Connor-Davidson Resilience Scale (CD-RISC): The scale is a self-assessment tool made up of 25 questions. Participants respond to each question on a five-point Likert scale, ranging from “strongly disagree” to “strongly agree.” The total score, which ranges from 0 to 100, represents the level of resilience. Higher scores indicate greater resilience (28). Previous research has established the strong psychometric properties of CD-RISC, including a Cronbach’s alpha of 0.78 (29). Keyhani and co-workers (29) further validated the reliability and validity of the scale, achieving a CVI of 0.97 and a CVR of 0.95.

2.5. Statistical Analyses

This study employed a mixed-methods approach, combining descriptive and inferential statistical analyses. Descriptive statistics, such as means and standard deviations, were used to describe the data. For inferential analyses, Pearson correlation coefficients and structural equation modeling were used to examine the correlation between variables. Data analyses were conducted using SPSS and AMOS version 24. Figure 1 presents the conceptual framework of the study.

3. Results

A total of 372 mothers of children with autism,

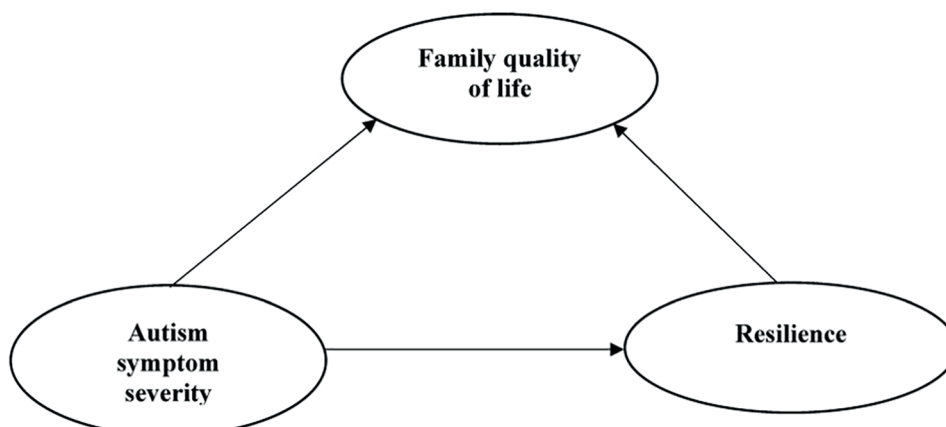


Figure 1: The figure shows the conceptual model of the research.

with a mean age of 37.21±4.19 years, participated in this study. Regarding employment status, 275 (73.92%) mothers were housewives, while 97 (26.08%) were employed. The children of the participants ranged in age from 4 to 12 years, with 164 (44.09%) children aged 4-8 and 208 (55.91%) children aged 8-12. The sample included 108 (29.03%) mothers of girls and 264 (70.97%) mothers of boys. Descriptive statistics indicated an average autism symptom severity score of 160.26 (SD=11.66), an average resilience score of 49.98 (SD=6.55), and an average family QoL score of 75.33 (SD=9.81). Correlation analysis revealed a significant positive association between resilience and family QoL (r=0.58, P<0.01). Additionally, significant negative correlations were found between autism symptom severity and both resilience (r=-0.37, P<0.001) and family QoL (r=-0.46, P<0.001) (Table 1).

Table 2 shows how well the model fits the data. The results indicated that RMSEA was 0.001, suggesting an exceptional fit for the model. Figure 2 depicts the research model created to clarify the connection between autism symptoms and family QoL, with resilience acting as a mediating factor.

Path analysis revealed significant direct and indirect effects among the study variables. Autism symptom severity had a direct negative impact on family QoL (β=-0.20, P<0.001). Additionally, autism symptom severity negatively predicted resilience (β=-0.52, P<0.001), while resilience positively predicted family QoL (β=0.60, P<0.001). Notably, the indirect effect of autism symptom severity on family QoL through resilience was also significant (β=-0.22, P<0.001) (Table 3).

Table 1: Mean, standard deviation (SD), and Pearson correlation coefficients of the variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1- Autism symptom severity	-											
2- Resilience	-0.37**	-										
3- Family QoL	-0.46**	0.58**	-									
4- Autism symptom severity: Stereotyped behaviors	0.77**	-0.36**	-0.45**	-								
5- Autism symptom severity: Social communication	0.78**	-0.38**	-0.41**	0.72**	-							
6- Autism symptom severity: Social interaction	0.71**	-0.41**	-0.39**	0.69**	0.66**	-						
7- Autism symptom severity: Developmental disorders	0.72**	-0.35**	-0.42**	0.70**	0.70**	0.59**	-					
8- Family QoL: Family interactions	-0.46**	0.55**	0.61**	-0.39**	-0.38**	-0.35**	-0.30**	-				
9- Family QoL: Parenting	-0.44**	0.49**	0.63**	-0.41**	-0.42**	-0.31**	-0.33**	0.60**	-			
10- Family QoL: Emotional well-being	-0.53**	0.53**	0.59**	-0.38**	-0.35**	-0.39**	-0.38**	0.62**	0.55**	-		
11- Family QoL: Physical well-being	-0.49**	0.51**	0.60**	-0.42**	-0.34**	-0.40**	-0.31**	0.59**	0.59**	0.59**	-	
12- Family QoL: Family support	0.51**	0.52**	0.62**	-0.36**	-0.42**	-0.37**	-0.40**	0.56**	0.54**	0.57**	0.59**	-
Mean±SD	160.26±11.66	49.98±6.55	75.33±9.81	40.06±3.60	39.70±3.88	40.36±3.65	40.14±3.88	18.06±3.39	17.93±3.24	12.14±2.29	15.17±3.37	12.03±2.32

**P<0.01; QoL: Quality of Life

Table 2: Model fit indices of the study

Fit indicators	χ ²	df	(χ ² /df)	TLI	CFI	RFI	NFI	RMSEA
Values	20.79	33	0.63	0.99	0.99	0.97	0.98	0.001

TLI: Tucker–Lewis index; CFI: Comparative Fit Index; RFI: Relative Fit Index; NFI: Normed Fit Index; RMSEA: Root Mean Square Error of Approximation

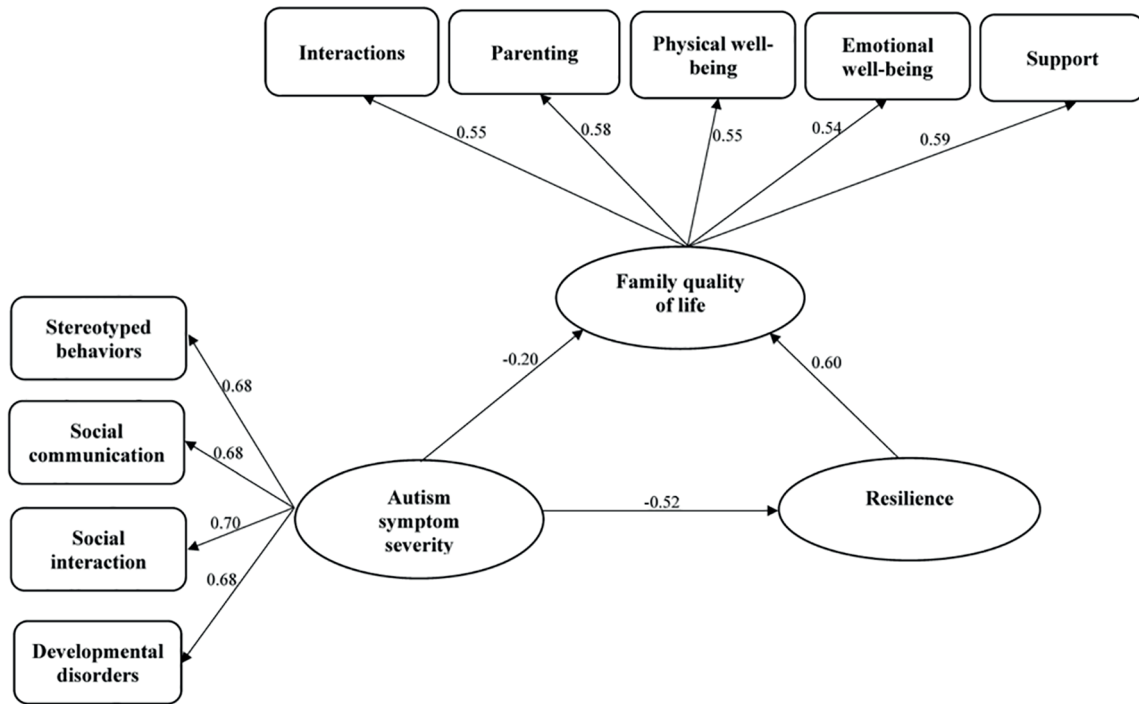


Figure 2: The figure shows the research model in standardized form.

Table 3: Path coefficients of direct and indirect associations between variables in the research model

Path	SE	t	β	P
Autism symptom severity → Family QoL	0.08	-2.50	-0.20	0.001
Autism symptom severity → Resilience	0.06	-8.67	-0.52	0.001
Resilience → Family QoL	0.10	6.00	0.60	0.001
Autism symptom severity → Family QoL through resilience	0.07	-3.14	-0.22	0.001

QoL: Quality of Life; SE: Standard Error

4. Discussion

This study explored how resilience mediates the correlation between the severity of ASD symptoms and QoL experienced by mothers of autistic children. Initial analyses revealed a negative association between ASD symptom and family QoL, consistent with previous research (6, 8). More recent studies (4, 5) have further explored the complexities of this relationship, considering factors like family support systems, cultural influences, and the impact of specific autism symptoms on family well-being. This observation can be linked to the complex nature of ASD, a neurodevelopmental disorder that is marked by impairments in social interaction, communication, and behavior. ASD impacts not just the affected individuals but also places considerable strains on their families (7). Studies have consistently demonstrated that families with children who have ASD face higher levels of stress and a lower QoL compared with families with typically developing children (5, 12).

This is likely a result of the heightened demands involved in caring for a child with intricate needs, uncertainties about the future, along with the financial and social challenges that accompany the disorder. The severity of ASD symptoms has been recognized as a significant factor affecting family QoL (11).

Research suggested that the severity of autism symptoms can significantly impact family QoL (10). Challenges like repetitive behaviors and communication difficulties may limit social opportunities and increase social isolation, leading to decreased life satisfaction, anxiety, and stress within families. Access to supportive services, such as specialized training, psychological support, and social groups, can mitigate these negative impacts by reducing the burden of care and stress (30). Ultimately, the complex relationship between autism symptoms and family QoL is influenced by factors like symptom severity, available support, and socioeconomic status. By addressing these

factors and providing appropriate support, it is possible to improve QoL in families with autistic children (4).

Additionally, a significant correlation was found between resilience and family QoL, aligning with previous research (22). ASD not only impacts individuals with the disorder but also significantly burdens their families, especially mothers. Resilience, the ability to adapt to challenging circumstances, plays a crucial role in enhancing QoL in families with autistic children (8). Mothers of autistic children often experience elevated stress and psychological distress due to caregiving challenges, behavioral issues, and uncertainty about the future (17). However, mothers with higher levels of resilience can better manage these challenges, with reduced levels of stress. Their resilience contributes to a better family QoL and enables them to approach challenges with greater adaptability (21). Research indicated that resilience not only mitigates stress but also enhances overall QoL for families (31).

Mothers with higher levels of resilience typically have a greater sense of control over their lives and can improve their own QoL and that of their families using positive coping strategies. These mothers are able to establish more positive relationships with other family members and benefit from social support and available resources (5). One important factor in increasing maternal resilience is access to supportive resources and specialized training. Doosti and colleagues (6) reported that mothers who receive social and educational support have higher resilience and report a better QoL. This support can include parent support groups, psychological counseling, and educational programs for managing children's behavior. Access to these resources can help mothers better cope with daily stressors and reduce feelings of isolation. Overall, the resilience of mothers with autism children plays a vital role in improving family QoL (5). Research suggested that increasing resilience through the provision of social support and specialized training can help mothers better cope with the challenges associated with autism and improve their family's QoL (23).

Another significant finding highlighted a notable negative correlation between autism symptoms and resilience. This outcome was consistent with previous research (32, 33). To elucidate this result,

it is important to recognize that ASD is linked to various challenges that can deeply affect families, especially mothers. Resilience, defined as the ability of mothers to handle these difficulties and adjust to tough situations, is essential for enhancing their QoL. Recent research has delved into the relationship between the severity of autism symptoms in children and maternal resilience (32, 34). A key finding was that higher severity of autism symptoms is linked to lower maternal resilience. Buchholz (34) observed that mothers of children with more severe autism symptoms tend to have reduced resilience. These mothers often face greater challenges managing their children's repetitive behaviors and communication difficulties, leading to increased stress and decreased resilience.

Beyond symptom severity, the specific type of autism symptoms can also differentially affect maternal resilience. Weiss and co-workers (35) found that repetitive and restricted behaviors in autistic children have the most detrimental impact on maternal resilience. These behaviors require constant monitoring and management, which can lead to burnout and depletion of maternal psychological resources. In contrast, social and communication difficulties in children can also impact family relationships and limit the social support available to mothers. Supportive resources and interventions also play a vital role in strengthening maternal resilience. For example, Zhao and Fu (36) demonstrated that educational and support programs that teach mothers the necessary skills to manage autism symptoms can significantly increase their resilience. These programs, in addition to reducing stress, can enhance feelings of control and empowerment in mothers, leading to improved resilience. Overall, the correlation between children's autism symptoms and maternal resilience is a complex and multidimensional one, influenced by the severity and type of symptoms as well as access to supportive and educational resources. Research suggested that targeted interventions can improve maternal resilience and, consequently, enhance the overall QoL for families (9, 11).

Furthermore, the study revealed a significant mediating effect of resilience on the relationship between autism symptom severity and family QoL. This novel finding demonstrates how resilience can mitigate the negative impact of autism symptom severity on family well-being.

Direct analyses confirmed a negative association between autism symptom severity and family QoL (11). However, the indirect pathway suggests that higher autism symptom severity can lead to lower maternal resilience, which in turn negatively affects family QoL and marital adjustment. Therefore, fostering resilience could be an effective strategy to improve QoL in families with autistic children. With strong empirical support for the proposed model, this study makes a valuable contribution to the field.

4.1. Limitations

The applicability of the study findings might be restricted due to the fact that the present study focused on mothers of children with autism in Mashhad, Iran. Although these results yield important insights regarding this particular group, care should be taken when attempting to apply them to different populations or situations. Furthermore, relying on self-report measures may lead to potential biases, such as social desirability bias, which could compromise the accuracy of the data presented. Future studies could improve the validity of the findings by including objective measures or employing triangulation methods. For researchers implementing interventions based on these findings, it is crucial to consider the following limitations: cultural context, individual variability, contextual factors, and intervention effectiveness. Researchers should carefully consider these limitations when designing and implementing interventions aimed at improving family QoL for individuals with autism.

5. Conclusions

This study illuminated the complex interplay between autism symptom severity, maternal resilience, and family QoL. A negative correlation was found between autism symptom severity and family well-being, suggesting that higher symptom severity is linked to poorer family outcomes. In contrast, resilience showed a positive correlation with family QoL, meaning that higher resilience correlates with improved family well-being. A significant contribution of this study is the identification of resilience as a key mediator between autism symptom severity and family QoL, suggesting that it plays a protective role against the adverse effects of autism on family well-being. In conclusion, the study emphasized the need to

enhance resilience among mothers of children with autism as a means to improve family QoL, as fostering resilience may alleviate the negative impacts of autism and boost the overall well-being of the family.

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Authors' Contribution

Milad Rahmati Farmad: Substantial contributions to the conception and design of the work; the acquisition, analysis, and interpretation of data for the work, drafting the work. Zahra Eftekhari Saadi: Substantial contributions to the conception and design of the work; the acquisition, analysis, and interpretation of data for the work, drafting the work and reviewing it critically for important intellectual content. Fatemeh Sadat Marashian: Substantial contributions to the design of the work, drafting the work and reviewing it critically for important intellectual content. Marzieh Talebzadeh Shoushtari: Substantial contributions to the design of the work, drafting the work and reviewing it critically for important intellectual content. Parvin Ehteshamzadeh: Substantial contributions to the design of the work, drafting the work and reviewing it critically for important intellectual content. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work, such that the questions related to the accuracy or integrity of any part of the work.

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Ethical Approval

Written informed consent was obtained from all participants. The study was approved by the Ethics Review Board of the Islamic Azad University Ahvaz Branch, Ahvaz, Iran, under the code IR.IAU.AHVZ.REC.1403.030.

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