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# Attachment styles and reflective functioning of mothers with autistic children: The mediating role of mindfulness empowerment

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***Abstract***

**Introduction:** This study investigated the mediating roles of mindfulness empowerment in the relationship between attachment styles and reflective functioning in mothers of autistic children.

**Materials and Methods:** In the present study, participants included 200 mothers whose children were diagnosed with autism spectrum disorder (ASD) in the academic year 2020, in Mashhad, Iran. The children's age range was between 3 and 14 years. Mothers filled out the Five Facet Mindfulness Questionnaire (FFMQ), Experience in Close Relationships Revised Questionnaire (ECRQ), and Parental Reflective Functioning Questionnaire (PRFQ). We analyzed the data using structural equation modeling and AMOS version 26.0.

**Results:** The results showed that anxious attachment directly affected mindfulness empowerment and mothers' reflective functioning. However, avoidant attachment only directly affected mindfulness empowerment, but its effect on reflective functioning was insignificant. In addition, both anxious and avoidant attachment had an indirect effect on mothers' reflective functioning through mindfulness empowerment.

**Conclusion:** The findings highlight the important role of mindfulness empowerment in maternal reflective functioning. Therefore, mindfulness empowerment should be considered in addition to attachment styles to promote the reflective functioning of autistic children's mothers.

**Keywords:** Autism spectrum disorder, Child development, Mindfulness, Parent-child relations

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## Introduction

Autism Spectrum Disorder (ASD) is one of the most common disorders in childhood (1). It manifests as difficulties with social interaction, communication, and repetitive and stereotyped behaviors (2). Most children diagnosed with ASD have problems with executive functions (3), theory of mind (4), verbal abilities (5),

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understanding and regulating emotions, understanding and showing appropriate facial expressions (6), ability to regulate attention, attraction, and interest in human relations (7). Therefore, it is often difficult for their mothers to appreciate children's body language and facial expressions (5); this group of mothers often faces more difficulties in understanding their children's mental states compared to mothers of normal children with special needs (8). These difficulties can also weaken the developmental functioning of ASD children's families (9,10).

Slade asserts that children diagnosed with ASD need more maternal reflective functioning than their normal peers. Maternal reflective functioning is a capacity that helps the mother put herself in the place of her child, mentalize the child's mental experiences, and regulate the emotions of the child and her own in a non-defensive way without either being overwhelmed by her feelings or suppressing them. This helps ASD children understand their internal world better and process social information more easily (11,12). Optimal reflective functioning in a mother-child relationship is affected by difficulties due to the child's impairments. Thus, the mothers of autistic children need to spend more time and effort understanding and reflecting on their children's mental states (8).

The interventions based on reflective functioning have revealed that reflective functioning in the relationship between mothers and children with special needs is associated with difficulties caused by the children's impairments (12). This is of greater importance for the mothers of autistic children because normal children can adapt to their mothers' limited capacities and make up for the lack of parental support. In contrast, autistic children deviate from development due to their impairments (13). The findings of Slade et al. show that although maternal reflective functioning is often considered a stable trait, it can be influenced by several factors, such as mothers' childhood experiences and attachment style (11). Mothers' attachment influences their capacity to understand their children's mental states and create a secure and responsive environment (14).

According to Syrjänen et al.s' study, mothers with insecure attachment in childhood cannot understand their children's mental needs to respond to them properly. The reason is that the ability to understand the children's mental states or reflective functioning is influenced by the mother-child attachment, which plays a mediating role in the transgenerational transmission and justifies the gap in the transmission of mothers' attachment to the children (15).

According to Slade et al., mothers' poor reflective functioning is caused by inappropriate experiences of mentalization and their attachment to their parents in childhood (11). Vismara et al.'s findings showed that mothers' early experiences of attachment affect their cognitive capacities, such as memory and attention, as well as their behavior with the children (16). In this regard, Luyten et al. believe that although mothers with insecure attachment can have a high maternal reflective functioning, they may have a much lower maternal reflective functioning than their counterparts with secure attachment (17). Mikulincer and Shaver conceptualized two dimensions of attachment (anxiety and avoidance) for parents in adulthood based on the function of the attachment system in close relationships (18). There are two types of insecure attachment: anxious and avoidant. The first is associated with fear of abandonment and rejection, while the second is discomfort in close and intimate relationships. According to Nijssens et al., mothers' anxious and avoidant attachment affect parenting stress through reflective functioning (19). Fathi et al. showed that mothers' anxious attachment and avoidant attachment could weaken functional-emotional development in children with asthma by influencing their mothers' reflective functioning (20).

Also, there is a significant relationship between mothers' attachment style and mindfulness empowerment. Mindfulness is the ability to be fully aware of our experiences in the present moment in a specific, purposeful, and judgment-free manner. Through mindfulness, mothers can concentrate on the present and what is happening rather than paying attention to children's problematic behaviors and parenting stress and harm (21). Mindfulness prevents people from drowning in thoughts related to relationship problems, increases their ability to respond constructively, and improves their ability to maintain attention and focus. (23). It also prevents pre-mentalization, the cycle of negative and unrealistic thoughts (22), and restores impaired

or lost mentalization capacity (24). Walsh et al. showed that a high level of anxious attachment is associated with a low level of mindfulness, and mothers with low mindfulness are drowned in their anxieties and create less optimal care environments in which the clues provided by children are not read or misread. Therefore, mindfulness can affect the mothers' reflective function (25). Therefore, the present study aimed to investigate the role of mindfulness empowerment in the relationship between attachment styles (i.e., anxiety and avoidance) and the reflective function of autistic children's mothers.

## Materials and Methods

The participants were mothers of children diagnosed with autism spectrum disorder in the academic year 2020. Mothers were recruited from various places, including ASD parent groups, disability schools, and educational centers in Mashhad, Iran. Mothers were selected through purposive and snowball sampling methods. The recruiting resulted in an initial sample of 377 mothers of children with ASD. From the initial sample, 177 were excluded because mothers did not meet the following inclusion criteria. The inclusion criteria included having a child with autism spectrum disorder diagnosed by a psychiatrist and clinical psychologist, being cooperative, having willingness, having ability to use virtual communication, and having time. Therefore, the final sample consisted of 200 mothers of children with ASD, this sample size is appropriate based on structural equation modeling rules.

Research instruments

*A) Five Facet Mindfulness Questionnaire:* Mothers' mindfulness empowerment was measured using the Bauer Mindfulness Questionnaire, which consists of 39 items organized into five categories: 1- observing, 2- acting with awareness, 3- non-judging of inner experience, 4- describing, and 5- non-reactivity to inner experience. The mothers rated their answers on a five-point Likert- scale (ranging from 1= never or very rarely to 5= often or always). The internal consistency of the subscales was acceptable and the alpha coefficient for being non-reactive was 0.75, describing 0.91, observing 0.83, acting with awareness 0.87, and being non-judgmental was calculated as 0.87 (26). In Iran, Ahmadvand, Heydarinasab, and Shairi translated this questionnaire into Persian and validated it on a non-clinical sample. The alpha coefficient ranged from 0.75 in the non-reactive factor to 0.91 in the descriptive factor. Cronbach's alpha was 0.83 for the total questionnaire (27).

*B) Experience in Close Relationships Scale (ECR-S):* The ECR-S is a 36-item self-report questionnaire to assess attachment security in adult relationships in two subscales that measure anxious attachment (18 items) and avoidance attachment (18 items). The subjects rated their responses on a seven-degree Likert system (1= strongly agree to 7= strongly disagree). The higher score, indicates the higher levels of attachment (28). In Fairchild and Finney's study, each of the scales for anxiety and avoidance had a high internal consistency. Cronbach's alpha coefficient for the anxiety subscale was 0.92, and this value for the avoidance subscale was 0.93 (29). Karamiboldaji et al. calculated the Cronbach's alpha for the Persian version ($\alpha$= 0.90 for anxious attachment subscale, $\alpha$= 0.93 for the avoidance attachment subscale, and $\alpha$= 0.91 for the total scale) (30).

*C) Parental Reflective Functioning Questionnaire (PRFQ):* This is an 18-item questionnaire and respondents rated their answers on a 7-point Likert scale (strongly agree to strongly disagree). Luyten et al. identified three dimensions within the questionnaire: Pre-mentalizing, Certainty about mental state, and Interest and curiosity. Cronbach's alpha for the three dimensions ranged between 0.70 (pre-mentalizing) and 0.82 (certainty about mental state) (17). In Iran, Mousawi and Bahrami translated and validated this tool on a sample of mothers. They concluded that the internal consistency was appropriate (Cronbach's alpha was between 0.68 and 0.70 for the three factors and Cronbach's alpha was 0.68 for the total questionnaire) (31).

*D) Gilliam Autism Rating Scale (GARS):* It was designed to measure individuals aged 3 to 22 years on the autism spectrum. Parents, caregivers, teachers, and other professionals completed it. The GARS consists of 56 items organized into four scales: 1- stereotyped behaviors, 2- communication, 3- social interactions, and 4- developmental disturbances. The participant rated the 4-point Likert scale (0= never observed to 3= frequently observed) (32). In Iran, Minaei and Nazeri translated this scale into Persian and validated it for people with autism. They concluded the appropriate internal

consistency (Cronbach's alpha= 0.95 for the total scale) (33). In the first stage, formal permissions were obtained from the Khorasan Razavi Exceptional Education Organization and the Department of Welfare to ensure no ethical problems. In the second stage, the mothers were informed about the nature and purpose of the research. We invited the mothers to participate in the study through special schools and educational centers' social networks like WhatsApp, Telegram, and E-mail. In the third stage, we sent the questionnaires to mothers through social networks and E-mail. They answered them at home. Before analysis, we screened the data and outliers (data above or below Z score 3). The normality of the data was also evaluated by skewness and kurtosis within the range of ±2. The distribution of all the variables was normal, and no outliers were identified. After screening the data, we used the Pearson correlation coefficient test to examine the relationships between the variables (Table 1).

We used Structural Equation Modeling (SEM) within the Analysis of Moment Structure (AMOS, version 26.0) program to analyze the responses. To verify the goodness of fit of the model, indices of the Chi-square/df ratio ($\chi 2/df \leq 3$); the Comparative Fit Index (CFI$\geq$ 0.95), the Goodness of Fit Index (GFI$\geq$ 0.95); the Root Mean Square Error of Approximation (RMSEA$\leq$ 0.05); and the Incremental Fitness Index (IFI$\geq$ 0.95) were used. The significance of the mediating role was examined with the bootstrapping method.

## Results

The mothers' age range was from 20 to 55 years (Mean= 33.20, SD= 5.12), and most had a higher education than a diploma (84.5%). The number of children in the family ranged from 2 (56%) to three or more children (15.5%). The mothers live mostly in towns (95.5%). Based on income, education, and place of residence, the economic status level of participants was middle.

Most of the ASD participants were boys (82%) and aged between 3 and 14 years (Mean= 7.2, SD= 2.1). All children had been diagnosed with autism spectrum disorder by a specialist team. One hundred and ninety-eight (74%) children were diagnosed with moderate ASD, and fifty-two (26%) with severe autism.

Correlations among attachment style, reflective functioning, and mindfulness empowerment were calculated using Pearson's r (Table 1). Based on the findings, there was a significant negative association between anxious and avoidant attachment styles with the mindfulness score and reflective functioning score ($P< 0.01$). In addition, we found a positive association between mindfulness score and reflective functioning score and its domains ($P< 0.01$).

**Table 1.** Correlations, and the descriptive indices of attachment style, mindfulness, and reflective functioning

| Variables | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Attachment style | | | | | | | | | | | | | |
| 1. Anxiety | 3.64 | 1.03 | | | | | | | | | | | |
| 2. Avoidance | 2.83 | 0.80 | 0.64** | | | | | | | | | | |
| Mindfulness | | | | | | | | | | | | | |
| 3. Observe | 28.64 | 6.17 | -0.33** | -0.35** | | | | | | | | | |
| 4. Act with awareness | 26.10 | 4.76 | -0.57** | -0.50** | 0.60** | | | | | | | | |
| 5. Non-judging | 23.41 | 4.06 | -0.39** | -0.40** | 0.51** | 0.58** | | | | | | | |
| 6. Describe | 23.55 | 3.83 | -0.49** | -0.50** | 0.56** | 0.59** | 0.52** | | | | | | |
| 7. Non-reactivity | 20.90 | 4.44 | -0.35** | -0.31** | 0.59** | 0.53** | 0.52** | 0.54** | | | | | |
| 8. Total | 122.61 | 18.74 | -0.52** | -0.51** | 0.85** | 0.83** | 0.76** | 0.78** | 0.79** | | | | |
| Reflective functioning | | | | | | | | | | | | | |
| 9. Pre-mentalizing | 17.44 | 6.32 | 0.58** | 0.42** | -0.34** | -0.49** | -0.39** | -0.38** | -0.33** | -0.48** | | | |
| 10. Certainty | 26.11 | 7.59 | -0.41** | -0.31** | 0.12 | 0.28** | 0.23** | 0.32** | 0.26** | 0.28** | -0.52** | | |
| 11. Interest and curiosity | 28.59 | 4.43 | -0.35** | -0.24** | 0.18* | 0.23** | 0.12 | 0.17* | 0.13 | 0.21** | -0.53** | 0.48** | |
| 12. Total | 85.21 | 15.15 | -0.55** | -0.40** | 0.25** | 0.41** | 0.31** | 0.36** | 0.30** | 0.40** | -0.83** | 0.86** | 0.75** |

*$P< 0.05$, **$P< 0.01$

Measurement model one included two latent factors: mindfulness, reflective functioning, and eight observed variables. The initial measurement model did not fit well with the data ($\chi2$= 64.835, df= 31, *P*< 0.001, $\chi2$/df= 2.091, CFI= 0.961, GFI= 0.942, IFI= 0.961, RMSEA= 0.074). According to the modification index, two error terms, mi, mindfulness, and reflective functioning, were allowed to be correlated. Other results showed no significant relationship between avoidant attachment and reflective functioning (*P*> 0.05). Accordingly, this path was eliminated, and covariance between errors was established.

The results then showed that the modified model was a good fit for the data ($\chi2$= 50.001, df= 30, *P*< 0.012, $\chi2$/df= 1.667, CFI= 0.977, GFI= 0.954, IFI= 0.977, RMSEA= 0.05). All factor loadings of the indicators of the latent variables were reliable and were in the range between 0.56 for the interest and curiosity in mental states and -0.92 for pre-mentalizing (*P*< 0.002), which indicates that all the latent factors were well represented by their respective indicators.

In addition, all the correlations between the latent variables were significant in conceptually expected ways (*P*< 0.001).

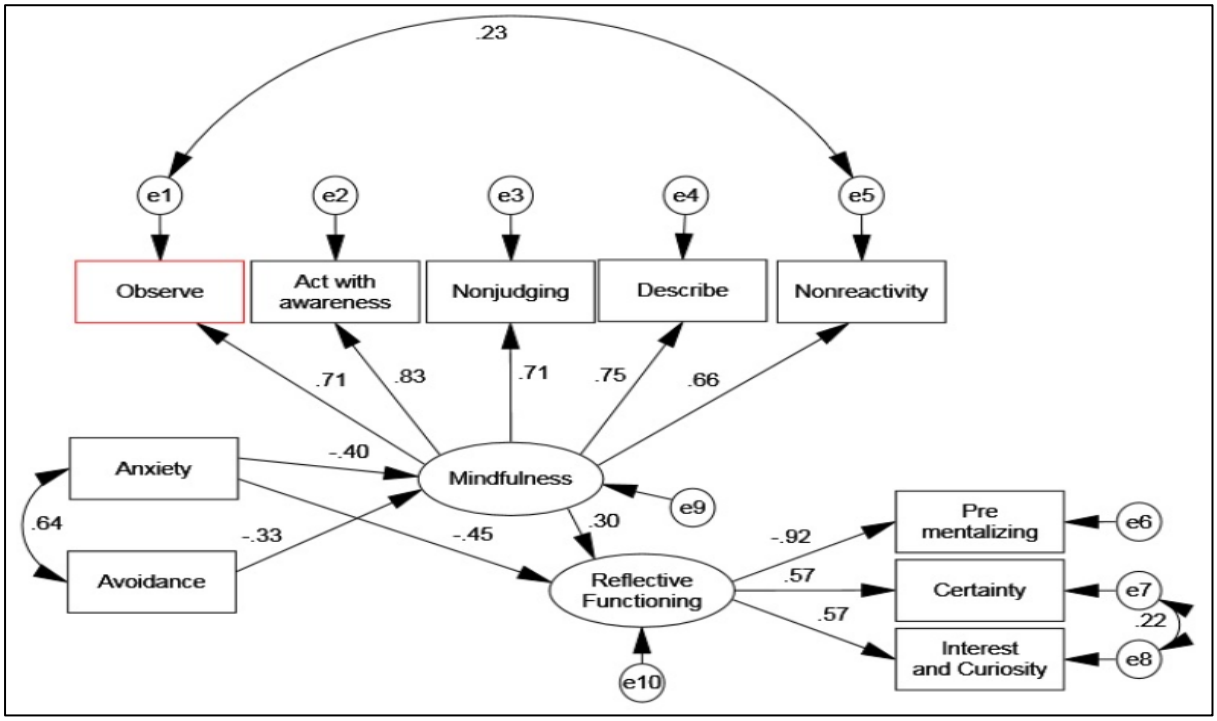


**Figure 1.** Path model analysis output

Structural model of experiences in close relationships, mindfulness, and mother's reflective functioning

The results of the mediational model test indicated that the model fits well with the data. The direct path coefficients from anxious attachment to mindfulness (β= -0.40, *P*< 0.001) and reflective functioning (β= -0.45, *P*= 0.001) were significant. Other results presented significant direct path coefficients from avoidance attachment to mindfulness (β= -0.33, *P*< 0.001). The results of the indirect effect analysis using the bootstrap estimation procedure showed that the coefficients of an indirect path from anxiety attachment to reflective functioning through mindfulness were significant (β= -0.121, *P*< 0.001, 95% CI [-0.227 to -0.047]). The indirect effects of avoidant attachment on reflective functioning through mindfulness were significant (β= -0.098, *P*< 0.001, 95% CI [-0.184 to -0.035]). The Sobel test results for the anxious attachment (Z= -2.609, SE= 0.009) and avoidant attachment (Z= -2.449, SE= 0.014) support the significance of this partial mediation at the 0.01 level. Therefore, mindfulness partially mediated the relationships between attachment styles and reflective functioning. Finally, anxious and avoidant attachment accounted for 44% of the variance in mindfulness, and anxiety, avoidance, and mindfulness together accounted for 46% of the variance in reflective functioning.

## Discussion

The present study investigated the role of mindfulness empowerment as a factor related to attachment style and mothers' reflective functioning. The results showed significant relationships among the dimensions of attachment, mindfulness, and reflective functioning of autistic children's mothers. Apart from the direct relationship between anxious attachment and reflective functioning, anxious and avoidant attachment styles affected the reflective functioning of the mothers of autistic children through mindfulness. Despite distinct results for the types of anxious and avoidant attachment, anxious attachment played a more important role than avoidant attachment. Therefore, in line with the findings of previous studies, the results of this study showed that a high degree of anxiety and avoidance attachment is directly associated with serious impairment in the reflective functioning of autistic children's mothers. Nijssens et al. and Leavitt et al. showed that mothers with insecure attachment had poor reflective functioning (19,34). Syrjänen et al. found that mothers with less secure attachment were more likely to have a poor understanding of their children's mental state (15). Gershy and Gray concluded that mothers with poor abilities in mentalizing their children often get angry at them when showing problematic behaviors (35). In explaining the mentioned results, attachment is not the only theory of a child's development but the theory of development throughout life. Studies have consistently proven the relationship between attachment and the behavioral, emotional, and cognitive consequences that occur in subsequent development periods. Indeed, attachment patterns tend to be stable and will affect adulthood emotional relationships, including parenting behaviors (15).

Therefore, mothers' insecure attachment and worries can influence maternal reflective functioning, thus justifying low reflective functioning. Slade showed mothers' low capacity for reflective functioning is associated with resistant, conflicting, and insecure attachment (11). According to Mikulincer and Shaver, mothers with anxious attachment often fail to recognize the signals related to their children's needs and anxiety symptoms. This, in turn, negatively affects the mother's sensitivity in responding to the child (18). In line with the researchers' prediction, the findings of the present study confirmed the significant relationship between mothers' attachment and mindfulness (36,37). Roters and Book showed that receiving sensitive and responsive care and forming secure attachments in childhood improves the capacity required for mindfulness (38). In contrast, insecure attachment correlates with low mindfulness (36). According to Duncan et al. those mothers who do not ruminate on the negative experiences of their childhood are more mindful so that they can be here and now (39). Such mothers can describe and name feelings, act consciously, and perform activities in the present with conscious attention. In contrast, in interactions with children, the level of mindfulness is low among insecurely attached mothers who fret about their needs and are concerned about their interaction with others (anxious attachment) or strive for their emotional distance from others (avoidant attachment), show low sensitivity and respond to their children's needs (40).

The results also showed that, in the explanation of reflective functioning based on the variables of anxious and avoidant attachment, mindfulness plays an effective role in the form of a mediating variable. It can be justified that avoidant attachment is associated with suppression strategies; avoidant attached mothers who have learned to maintain an emotional distance from others to support themselves experience an avoidance-tendency conflict when confronted with their children's needs. On the one hand, caring for a child requires a mindful method in which the mother should activate the behavioral care system for sensitive and responsive care. On the other hand, an avoidant mother tends to keep her attachment system inactivated to maintain her distance from the child (41). Thus, insecurely attached mothers who concentrate on their needs and maintain a distance from their children have low mindfulness in their interactions, which reduces sensitivity and responses to children's needs and quality of care (42). Mindfulness causes more open and non-judgmental awareness of the child's behaviors and reduces over-interpretation and overreaction to the child. In their extensive review, Rayan and Ahmad showed that since these mothers experience more negative attitudes, thoughts, and feelings toward their normal children, mindfulness is a key issue in the upbringing of children with special needs,

and mindfulness interventions are effective in reducing the stress of such children's mothers (41). Rather than personalizing their negative parenting experiences or blaming themselves, mindful mothers can keep a distance from those experiences. They observe and describe them, wait before any negative reaction, liberate themselves from automatic negative thoughts, and concentrate on the present moment. This allows them to effectively control and regulate their negative emotions and tensions and choose a logical way to deal with the situation. These parents can teach their children how to raise awareness of their emotions and regulate them. This, in turn, increases the child's skills and adjustment and reduces their behavioral problems (43).

Despite the fit of the proposed model, this study has several limitations regarding factors affecting the reflective functioning of mothers with autistic children. In generalizing the results to future research, such factors should be taken into consideration. First, the sample of this study was recruited from a small urban community. Future studies need to be carried out on a larger statistical population. Second, theorists of attachment believe that attachment styles cannot be well evaluated using self-report questionnaires because desirable social responses may interfere with the internal representations of attachment relationships. However, the self-report questionnaire was used in this study due to the prevalence of the COVID-19 pandemic. Third, only the role of mindfulness was investigated in this study, and other affective variables, such as the mother's responsiveness and intimacy, were not measured. Future research can examine the causal relationship between the reflective functioning of mothers with autistic children and its consequences on the children's behavior. Moreover, this study was a cross-sectional study. Future researchers need to investigate the effect of mothers' attachment on their reflective functioning and autistic children's behavioral problems over time.

## Conclusion

Therefore, the present findings indicated that insecure attachment directly reduces reflective functioning and indirectly increases mothers' vulnerability to being beset by their worries, resulting in misunderstandings of their own and children's behavior. The quality of the relationship between mothers and children with autism is influenced by the failures of mothers in their early life, as well as their concerns in this relationship. Therefore, parenting education and paying attention to the psychological needs of mothers are effective in improving the effectiveness and durability of parenting education.

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**Conflict of Interests**

The authors declare no conflict of interest.

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**Ethical Considerations**

The project was approved by the Research Ethics Committees of the Ferdowsi University of Mashhad. Participation in the study was voluntary, and all participants signed an informed consent form before participation.

**Code of Ethics**

IR.UM.REC.1400.169

**Authors' Contributions**

First author: Data gathering, statistical analysis, drafting of the manuscript, and final edition. The second and third authors: The concept and design, supervise the research process, and write the final version of the manuscript.

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