



## The Role of Rumination in Linking Virtual Social Networks and Parent-Child Relations to Gender Dysphoria in Adolescent Girls

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### Abstract

**Introduction:** Adolescent girls increasingly engage with virtual social networks, which, alongside parent-child relationships, may influence their psychological well-being, particularly regarding gender identity. This study examines how social media and parent-child relationships affect gender dysphoria in adolescent girls, with rumination as a mediator.

**Methods:** Using a descriptive correlational design, this study explored relationships among gender dysphoria, negative virtual social network effects, parent-child relationship quality, and rumination in 316 adolescent females aged 13–18, selected via multi-stage cluster random sampling in 2024. Data were collected using the Gender Identity/Gender Dysphoria Questionnaire, Parent-Child Relationship Scale, Virtual Social Network Addiction Questionnaire, and Rumination Response Scale. Structural Equation Modeling (SEM), conducted with AMOS, tested the hypothesized relationships among variables. Model fit was assessed using the Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA), indicating good model fit.

**Results:** Parent-child relationship quality negatively correlated with rumination ( $\beta=-0.56$ ,  $P<0.001$ ) and gender dysphoria ( $\beta=-0.36$ ,  $P<0.001$ ). Negative social media effects positively correlated with rumination ( $\beta=0.27$ ,  $P<0.001$ ) and gender dysphoria ( $\beta=0.09$ ,  $P<0.001$ ). Rumination positively correlated with gender dysphoria ( $\beta=0.53$ ,  $P<0.001$ ) and mediated the relationships between parent-child relationship quality ( $\beta=-0.29$ ,  $P<0.001$ ) and negative social media effects ( $\beta=0.14$ ,  $P<0.001$ ) with gender dysphoria.

**Conclusion:** Positive parent-child relationships and negative social media experiences influence gender dysphoria in adolescent girls, mediated by rumination. Interventions using cognitive-behavioral approaches, such as mindfulness and rumination-focused therapy, alongside family therapy and digital literacy workshops, may promote healthier family dynamics and safer online engagement.

**Keywords:** Social media, Rumination, Parent-child relations, Gender dysphoria, Mental health

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### Introduction

Adolescence represents a critical developmental phase marked by significant physical, psychological, and social changes (1). This period is shaped by a range of sociocultural influences, including emerging technologies, evolving lifestyles, peer dynamics, the quest for social acceptance, and engagement in exploratory or risk-taking behaviors (2). Central to this stage is the exploration and formation of identity, with gender identity—a core aspect of self-concept reflecting an individual's internalized sense of being male or female—profoundly influencing

cognitive, affective, and behavioral patterns (3). The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) categorizes gender-related conditions into sexual dysfunctions, gender dysphoria, and paraphilic disorders, with “gender dysphoria” replacing the earlier “gender identity disorder” (4). Diagnostic criteria for gender dysphoria include strong cross-gender identification, expressed through behaviors such as adopting opposite-sex attire and mannerisms, a persistent desire to belong to the opposite sex, discomfort with one's own genitalia, and pursuit of gender transition (5). This condition arises from a complex interplay

of biological, familial, psychological, and social factors (6).

From a social constructivist perspective, parental relationships play a pivotal role in the etiology of gender dysphoria, emphasizing postnatal influences over prenatal factors in shaping gendered identity (7). This framework highlights the child's interaction with parental values and attitudes as a key determinant of gender belonging. Psychological and functional family challenges are often linked to gender dysphoria (8). The parent-child relationship provides an initial foundation for security and affection, fostering interpersonal communication skills and emotional bonds (9). Open communication with parents serves as a protective factor for adolescent mental health (10). Familial and social factors, including role-modeling, gender-specific roles, and imitative behaviors, contribute to gender dissatisfaction (11). While parental styles, emerging from dynamic parent-child interactions, significantly influence rumination in adolescents, the specific behaviors that mitigate or exacerbate this risk remain underexplored (12, 13).

The adverse effects of virtual social networks also contribute to gender dysphoria. Social health, vital for younger generations, is increasingly influenced by social media, driving multifaceted societal shifts (14). Virtual platforms have transformed interpersonal communication, transcending traditional boundaries of gender and class, and enabling new identity constructions (15). However, they often reduce social cohesion and acceptance, fostering alienation (16). While offering benefits, these platforms pose risks, particularly for youth, due to their pervasive impact on leisure and social dynamics (17). Social comparison on virtual networks can trigger envy, inadequacy, and self-dissatisfaction (18), contributing to psychological and social pathologies (19). Studies indicate that social media influences identity formation and fluidity, potentially exacerbating gender dysphoria (20). Amirbeik and Babaie (21) found a positive correlation between gender schemas on social media and gender identity, with significant effects on women but not men, and an inverse relationship between social media engagement and feminine identity acceptance.

Gender dysphoria's affective challenges often lead to maladaptive coping, with rumination—a repetitive, passive focus on negative emotions

and experiences—being prominent (22, 23). The stressful psychosocial experiences of individuals with gender dysphoria, including violence and social rejection, heighten risks for rumination, anxiety, and depression (24). The current investigation aimed to assess whether rumination mediates the relationships between parent-child relationship quality, the adverse effects of virtual social networks, and gender dysphoria among adolescent girls.

## Methods

This study employed a descriptive correlational design with structural equation modeling to examine the relationships among the variables of interest within a sample of 316 female adolescents aged 13 to 18 years residing in Ahvaz, Iran (2024). The study population encompassed all female students attending secondary schools across the four educational districts of Ahvaz. The sample size of 316 was determined using Cochran's formula for finite populations (25), calculated based on a 95% confidence level, a 5% margin of error, and an anticipated effect size informed by prior research in adolescent mental health. Participant recruitment involved a multi-stage cluster random sampling technique. Initially, two educational districts were randomly selected, followed by the random selection of secondary schools within these districts and subsequently, the random selection of intact classrooms. Out of 342 adolescents initially approached, 316 completed the study, resulting in a response rate of 92%. Inclusion criteria required participants to have no diagnosed psychological or sensory-motor disorders and to demonstrate consistent school attendance. Exclusion criteria included incomplete data submission or refusal to participate in the study.

This study adhered to ethical guidelines and principles. Prior to data collection, ethical approval was granted by the [IR.IAU.AHVAZ.REC.1403.388] ethics committee. Informed consent was obtained through written agreements from all participating adolescents and their legal guardians after providing a detailed explanation of the study's objectives, procedures, potential risks and benefits, and their right to withdraw at any time without consequence. Consent forms were distributed and collected at school-based information sessions led by trained research staff. Throughout the study, the confidentiality

and anonymity of participants were rigorously maintained; collected data were securely stored and analyzed in a manner that prevented the identification of individual respondents.

### *Instruments*

Gender dysphoria was assessed using the 27-item questionnaire developed by de Deogracias et al. (26), employing a five-point Likert scale (1 = 'always', 5 = 'never'). The instrument comprises four subscales: Gender Identity Doubt and Physical Change (16 items), Social Pressure (5 items), Behavioral Manifestations (3 items), and Subjective Index of Dissatisfaction (3 items). The questionnaire's face, content, and construct validity have been previously established (27). Reliability, as measured by Cronbach's alpha, demonstrated strong internal consistency, with coefficients of 0.96 for Gender Identity Doubt and Physical Change, 0.71 for Social Pressure, 0.77 for Behavioral Manifestations, 0.70 for Subjective Index of Dissatisfaction, and 0.93 for the overall scale.

The Parent-Child Relationship Scale (PCRS), developed by Fine et al. (28), consists of 24 items designed to assess the quality of parent-child relationships. The PCRS includes two forms: one for the child's relationship with the mother and another for the father, using a 7-point Likert scale for scoring. Items 9, 13, and 14 are reverse-scored. Scores are summed and divided by the number of items per factor to calculate the mean for each subscale, with the total score derived by summing the subscale means. Scores range from 24 to 168, where 24-48 indicates a weak relationship, 48-96 a moderate one, and above 96 a strong relationship. The Persian version of the PCRS, validated by Isanejad et al. (29), demonstrated reliability in Iranian populations. In the present study, a Cronbach's  $\alpha$  of 0.84 was found, confirming acceptable reliability within this sample.

The Virtual Social Network Addiction Questionnaire, designed to assess the negative impacts of virtual social networks, consists of 15 closed-ended items. These items are categorized into four subscales: the dissemination of rumors, anti-religious propaganda, privacy infringement, and adverse behavioral effects. Responses are recorded on a five-point Likert scale, ranging from "strongly agree" (5) to "strongly disagree" (1). The total score is computed by summing the

responses across all 15 items, yielding a possible range of 15 to 75 (30). Example items include "I feel anxious when I cannot access social media" and "I have shared personal information that I later regretted." The Persian version of the questionnaire, validated and deemed reliable by Torkian et al. (30) with a Cronbach's alpha of 0.88, was utilized in this study, achieving a Cronbach's  $\alpha$  of 0.79, indicating acceptable reliability within this specific sample.

Rumination styles in response to negative affect were assessed using the 22-item Rumination Response Scale (RRS) (31). This self-report instrument, employing a four-point Likert scale, measures rumination across three subscales: reflection, brooding, and depression. Although previous research reported high internal consistency (Cronbach's  $\alpha = 0.90$ ) (32), the current study yielded a Cronbach's  $\alpha$  of 0.81, indicating acceptable reliability for this sample.

### *Statistical Analyses*

The collected data were analyzed using both descriptive and inferential statistical techniques. Descriptive statistics, including means and standard deviations, were initially calculated to characterize the sample. Subsequently, Pearson's correlation coefficients were employed to examine bivariate relationships between the study variables. Finally, structural equation modeling (SEM) was utilized to test the hypothesized model. The adequacy of the model's fit to the data was evaluated using several fit indices, including the chi-square ratio ( $\chi^2/df$ ), the Goodness of Fit Index (GFI), the Adjusted Goodness of Fit Index (AGFI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). Preliminary data processing was conducted using SPSS version 27.0, and the SEM analyses were performed with AMOS version 24.0.

### *Results*

The study sample consisted of 316 adolescent girls, with a mean age of 15.97 years ( $SD=1.74$ ). Participants were distributed across secondary education levels, with 31.6% ( $n=100$ ) in the first cycle and 68.4% ( $n=216$ ) in the second cycle.

Table 1 presents the descriptive statistics, including means and standard deviations, as well as the skewness and kurtosis values for the study variables. The skewness and kurtosis values, detailed in Table 1, fell within the acceptable

**Table 1:** Descriptive statistics of study variables

Variables	Mean	SD	Skewness	Kurtosis
Parent-child relationship - relationship with father	112.74	14.89	0.06	-0.57
Parent-child relationship - relationship with mother	123.45	13.80	0.43	-1.04
Negative effects of social media - rumor promotion	8.17	2.69	0.04	-0.87
Negative effects of social media - anti-religious propaganda	10.40	3.13	-0.18	-0.90
Negative effects of social media - privacy violation	7.39	2.27	0.19	-1.32
Negative effects of social media - negative behavioral effects	15.21	3.80	-0.08	-0.17
Rumination - expression	12.49	2.82	-0.26	0.98
Rumination - brooding	11.98	2.64	0.18	-0.52
Rumination - depression	25.79	5.48	0.79	0.67
Gender dysphoria - gender identity doubt	21.19	5.58	-0.21	-0.19
Gender dysphoria - social pressure	8.20	2.03	-0.44	-0.10
Gender dysphoria - behavioral manifestations	5.60	1.94	-0.53	-1.03
Gender dysphoria - subjective index of dissatisfaction	6.28	2.40	-0.13	-0.19

**Table 2:** Means, standard deviations, skewness, kurtosis, and correlation coefficients of research variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1- Parent-child relationship - relationship with father	1												
2- Parent-child relationship - relationship with mother	0.68**	1											
3- Negative effects of social media - rumor promotion	-0.12*	-0.19**	1										
4- Negative effects of social media - anti-religious propaganda	-0.13*	-0.18**	0.48**	1									
5- Negative effects of social media - privacy violation	-0.27**	-0.22**	0.42**	0.60**	1								
6- Negative effects of social media - negative behavioral effects	-0.15*	-0.18**	0.54**	0.46**	0.67**	1							
7- Rumination - expression	-0.46**	-0.43**	0.23**	0.28**	0.21**	0.30**	1						
8- Rumination - brooding	-0.41**	-0.32**	0.28**	0.19**	0.28**	0.34**	0.54**	1					
9- Rumination - depression	-0.50**	-0.38**	0.31**	0.25**	0.29**	0.39**	0.57**	0.61**	1				
10- Gender dysphoria - gender identity doubt	-0.54**	-0.39**	0.28**	0.26**	0.26**	0.31**	0.43**	0.49**	0.31**	1			
11- Gender dysphoria - social pressure	-0.51**	-0.44**	0.30**	0.23**	0.29**	0.36**	0.50**	0.46**	0.27**	0.64**	1		
12- Gender dysphoria - behavioral manifestations	-0.52**	-0.41**	0.31**	0.27**	0.31**	0.33**	0.39**	0.46**	0.30**	0.61**	0.58**	1	
13- Gender dysphoria - subjective index of dissatisfaction	-0.43**	-0.39**	0.40**	0.33**	0.29**	0.35**	0.27**	0.51**	0.36**	0.55**	0.63**	0.67**	1

\*\*P<0.01; \*P<0.05

range of  $\pm 2$ , suggesting that the assumption of normality was adequately met for the variables. Table 2 displays the bivariate correlations among the study variables. Notably, significant correlations were observed between all pairs of variables.

The goodness-of-fit indices for the hypothesized

structural model, presented in Table 3, indicate a strong fit to the data. The chi-square statistic ( $\chi^2$ ) was 95.49 (df=59,  $\chi^2/df=1.62$ ), falling within the acceptable range. The Goodness-of-Fit Index (GFI=0.96) and Adjusted Goodness-of-Fit Index (AGFI=0.93) both exceeded the recommended threshold of 0.90.

**Table 3:** Fit indices of the research model

Fit indicators	$\chi^2$	df	( $\chi^2$ /df)	GFI	AGFI	CFI	RMSEA
Model	95.49	59	1.62	0.96	0.93	0.99	0.04
Acceptable range	-	-	1 to 3	>0.90	>0.90	>0.90	<0.08

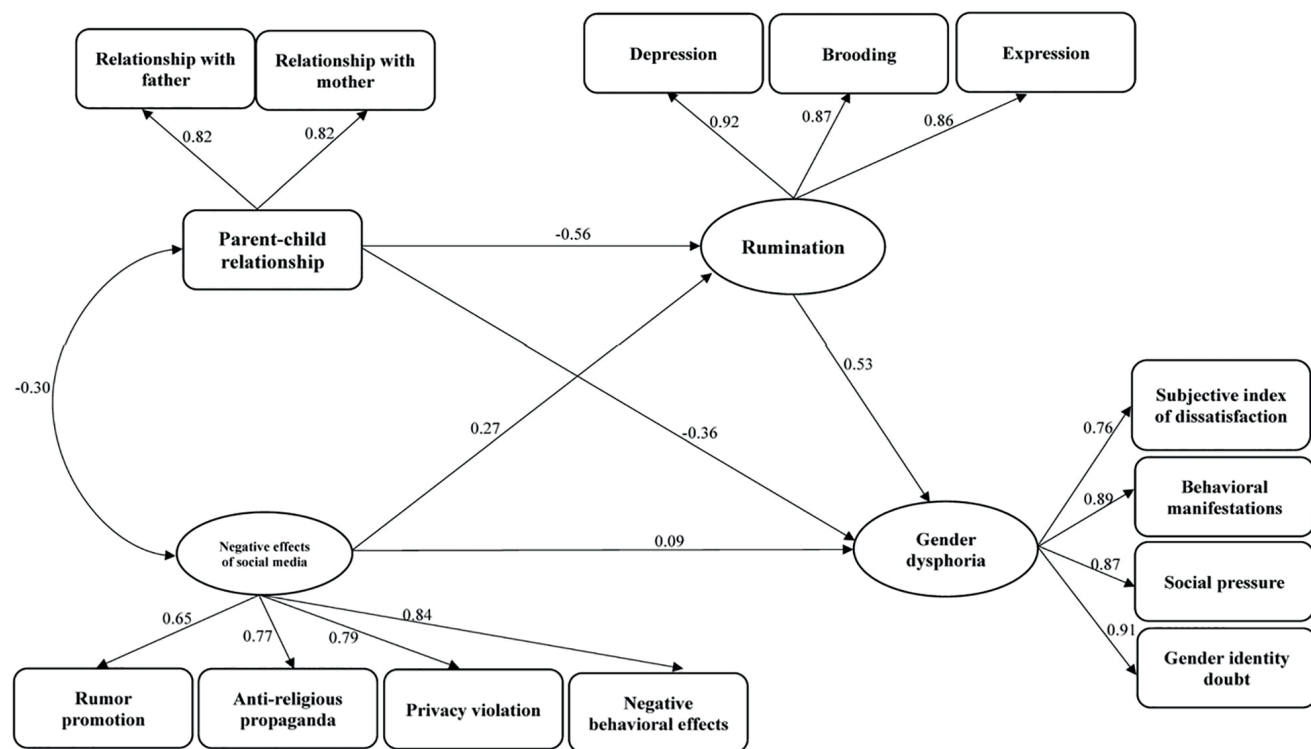
**Table 4:** Direct and indirect path in the research model

Paths	$\beta$	P
Negative effects of social media → Rumination	0.27	0.001
Parent-child relationship → Rumination	-0.56	0.001
Rumination → Gender dysphoria	0.53	0.001
Negative effects of social media → Gender dysphoria	0.09	0.110
Parent-child relationship → Gender dysphoria	-0.36	0.001
Negative effects of social media → Gender dysphoria through rumination	0.14	0.001
Parent-child relationship → Gender dysphoria through rumination	-0.29	0.001

Similarly, the Comparative Fit Index (CFI=0.99) surpassed the recommended value of 0.90, further supporting the model’s adequacy. The Root Mean Square Error of Approximation (RMSEA=0.04) was below the cutoff of 0.08, indicating a close fit to the population covariance matrix.

Table 4 presents the standardized path coefficients ( $\beta$ ) and their significance levels for the hypothesized relationships between negative social media effects, parent-child relationship quality, rumination, and gender dysphoria in adolescent girls. The results indicate that both negative social media effects ( $\beta=0.27$ ,  $P=0.001$ ) and parent-child relationship quality ( $\beta=-$

$0.56$ ,  $P=0.001$ ) were significantly associated with rumination. Rumination, in turn, was significantly and positively related to gender dysphoria ( $\beta=0.53$ ,  $P=0.001$ ). While the direct effect of negative social media effects on gender dysphoria was not statistically significant ( $\beta=0.09$ ,  $P=0.110$ ), parent-child relationship quality exhibited a significant negative association with gender dysphoria ( $\beta=-0.36$ ,  $P=0.001$ ). Furthermore, both negative social media effects and parent-child relationship quality exerted significant indirect effects on gender dysphoria through rumination, with standardized indirect effects of 0.14 ( $P=0.001$ ) and  $-0.29$  ( $P=0.001$ ),



**Figure 1:** The mediating role of rumination in the relationship between virtual social networks and parent-child relationship with gender dysphoria

respectively. These findings highlight the mediating role of rumination in the relationship between social media and family dynamics and its impact on gender dysphoria in adolescent girls. Figure 1 shows the research model

### Discussion

This study examined the mediating role of rumination in the association between parent-child relationship quality, negative virtual social network influences, and gender dysphoria among adolescent girls. This study found a significant negative association between parent-child relationship quality and gender dysphoria, and a significant positive association between negative virtual social network effects and gender dysphoria in adolescent girls. These results align with previous research by Amirbeik and Babaie (21), and Jangi Sangani and Razavi (33).

In interpreting these results, it is evident that adolescence represents a critical period of psychological development, with adolescent well-being significantly impacting overall life success (2). Difficulties adapting to the myriad changes inherent in this developmental stage can lead to profound distress. Identity formation is a central task of adolescence, and within this process, gender identity emerges as a fundamental component of self-concept, encompassing an individual's internalized understanding of oneself as male or female (14).

From a social constructionist perspective, familial and social factors, such as role-playing, modeling, and culturally-bound gender roles, contribute to the development of gender dissatisfaction (8). This perspective posits that the acquisition of gender identity is predominantly shaped by postnatal experiences, particularly interactions between the child and parental figures, whose values and attitudes profoundly influence the child's sense of belonging to a particular gender. Consequently, psychological and functional difficulties within the family system are often implicated in the emergence of gender dysphoria (7).

The ability of adolescents to openly communicate their concerns with their parents has been identified as a protective factor for mental health (11). Moreover, research examining the role of parent-child relationships in predicting gender dissatisfaction among transgender individuals has revealed that a

disrupted or dysfunctional parent-child dynamic can significantly contribute to the development of gender dysphoria (34).

Moreover, virtual social networks, as a key social factor influencing role modeling and gender expectations, can contribute significantly to the development of gender dissatisfaction. While offering numerous benefits, these platforms also present risks that can negatively impact young people, adolescents, families, and society as a whole (17). The inherent social comparison facilitated by virtual social networks can evoke feelings of envy, inadequacy, and diminished self-worth (15). Social networks exert a multifaceted influence on various aspects of individuals' lives, impacting both social and personal domains. In the psychological realm, they contribute to identity fluidity and play a formative role in shaping identity, potentially exacerbating maladaptive gender-related tendencies, such as gender dysphoria (21).

This study revealed a significant positive association between rumination and gender dysphoria. Additionally, there was a significant negative indirect effect of parent-child relationship quality on gender dysphoria, mediated by rumination, and a significant positive indirect effect of negative virtual social network influences on gender dysphoria, also mediated by rumination. These findings converge with previous research by Silva et al. (34), and Johnson and Whisman (35).

Rumination, characterized by a persistent and repetitive focus on negative thoughts, can amplify negative emotions such as sadness, anxiety, and depression, thus compromising mental health and overall well-being (35). Unlike adaptive cognitive processing, which facilitates learning and growth, rumination is a maladaptive process that exacerbates distress rather than promoting problem-solving (23).

Research by Castro et al. (36) demonstrated that parental behaviors marked by criticism, rejection, and control were positively associated with the development of rumination in adolescents, whereas authoritative parenting styles were linked to lower levels of rumination. Furthermore, Amirbeik and Babaie (21), found a positive relationship between the internalization of gender schemas prevalent on virtual social networks and gender identity in both men and women. They also observed a significant positive

association between gender socialization through the portrayal of gender roles on social media and gender identity among women, although this relationship was not observed in men. These findings suggest that increased exposure to virtual social media may be associated with decreased acceptance of feminine gender identity, but this effect may not apply to men.

A comprehensive understanding of the detrimental effects of rumination, its role in exacerbating negative emotions, and its interplay with social media and family dynamics can inform the development of effective prevention and intervention strategies for gender dysphoria. Such efforts can contribute to enhancing the well-being of adolescents and mitigating the psychological and social costs associated with this condition.

The focus on female adolescents residing in Ahvaz, Iran, represents a limitation that may restrict the generalizability of the findings to other populations, including male adolescents or individuals from diverse cultural backgrounds. Additionally, the reliance on self-report questionnaires to assess virtual social network effects, rather than objective measures of social media usage (e.g., tracking hours of use or frequency of engagement), could introduce potential biases and should be considered when interpreting the results.

### Conclusion

This study provides empirical evidence supporting the interconnectedness of parent-child relationship quality, negative virtual social network influences, rumination, and gender dysphoria in adolescent girls. The significant negative correlations between parent-child relationship quality and both rumination and gender dysphoria underscore the protective role of positive familial relationships in mitigating psychological distress related to gender identity. Conversely, the observed positive correlations between negative social media effects, rumination, and gender dysphoria suggest that exposure to adverse online content may exacerbate both maladaptive cognitive processes and feelings of gender incongruence. Critically, the mediating role of rumination highlights its potential as a key psychological mechanism through which both parental relationships and social media experiences influence gender dysphoria. This finding suggests that interventions targeting

rumination may be beneficial in reducing gender dysphoria among adolescent girls, particularly those experiencing strained parent-child relationships or high exposure to negative social media content.

### Ethical Approval

This study was conducted in accordance with the ethical guidelines and received approval from the Ethical Committee of Islamic Azad University, Ahvaz Branch (code: IR.IAU.AHVAZ.REC.1403.388).

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### Conflict of Interest

There are no conflicts of interest.

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