




# Structural Equation Model of Self-Harming Behaviors Based on Self-Blame Considering the Mediating Role of Mental Dissociation and Fear of Negative Evaluation in Adolescents with Self-Harming Experience

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## ABSTRACT

**Objective:** The aim of the current study was to examine the fit of the proposed model of self-harming behaviors based on self-blame, taking into account the mediating role of mental dissociation and fear of negative evaluation.

**Materials and Methods:** The method of the current study was descriptive-correlational and structural equation modeling. This research is also categorized as quantitative. The statistical population of the study consisted of all male and female adolescents visiting counseling centers in Qom province who had self-harming experiences in 2023. The sample size was considered to be 400 participants who were included in the study through convenience sampling. After obtaining the necessary permissions from the Islamic Azad University and coordinating with the counseling centers, the prepared questionnaires were duplicated and provided to the sample size. After visiting the counseling centers, the questionnaires were given to adolescents with a history of self-harm. Data collection tools included the Dissociative Experiences Scale by Bernstein and Putnam (1986), the Self-Criticism Scale by Gilbert et al. (2004), Watson and Friend's (1969) Fear of Negative Evaluation (FNE) and the Self-Harming Behaviors Questionnaire by Sansone et al. (1998). The data were analyzed using Pearson correlation matrices and structural equation modeling. SPSS-25 and PLS3 software were used for data analysis.

**Findings:** The results showed that self-blame is not only directly associated with self-harming behaviors and can predict them but can also influence self-harming behaviors through mental dissociation and fear of negative evaluations ( $P < 0.001$ ).

**Conclusion:** It can be concluded that the researcher's proposed model and hypothesis are validated, and the researcher's assumed model fits the data well.

**Keywords:** Self-harming behaviors, Mental Dissociation, Self-blame.

## 1. Introduction

The lack of proper care and the inability to meet their needs lead to the creation of emotional tension during childhood, causing the child to become angrily rebellious and turn to self-destructive behaviors because they cannot express or manage their anger in any other way (Hamedan et al., 2020). Brill and colleagues (2009) believe that those who engage in self-harming behaviors do so to reduce their tension. Peterson and colleagues (2008) also argue that self-harming behaviors are a way to control and diminish the intense emotions that these individuals are unable to express. They concluded that attachment styles and early maladaptive schemas have a significant positive impact. These findings have important implications for the treatment and prevention of self-harming behaviors and suggest that by identifying attachment styles and maladaptive schemas, vulnerability to self-harm can be predicted. (Hamedan et al., 2020)

This can affect cognition, emotions, and behavior, impacting personal, social, professional, and academic aspects among others. One variable that appears to affect performance across various domains is self-blame. Self-blame, examined as a negative personality trait (Haywood et al., 2023), involves having high expectations of oneself and striving for success (Öngen, 2015). Self-critical individuals are characterized by feelings of worthlessness, inferiority, criticism, and guilt. These individuals have a negative self-evaluation and are vulnerable to experiences of failure and criticism. They equate their actions with failure, have only high and unattainable standards, and this leads them to withdraw from social networks (Iancu et al., 2015). Self-critical individuals maintain negative beliefs about themselves that persist through different life stages or over time. While self-criticism can be experienced by the general population, it can vary in form, intensity, and outcomes for each individual. Self-critical personalities overly demonstrate their self-evaluative concerns, display high personal standards and needs for recognition at the cost of interpersonal interactions (Sekowski et al., 2022), show concerns about maintaining persona and a strong desire to maintain a high sense of self-worth. Self-critical individuals tend to report that they hinder the development of independence and a sense of competence. They describe their parents as restrictive, controlling, and rejecting (Nielsen et al., 2017; Öngen, 2015). Self-criticism is based on a continuum of internalizing performance standards. They equate their actions with failure, have only high and unattainable standards, leading to their withdrawal from

social networks (Iancu et al., 2015). This persists through different life stages or over time. Although self-criticism can be experienced by the general public, it may differ in form, intensity, and outcomes for each individual. They show concern about maintaining persona and a strong inclination to preserve a high sense of worth at the expense of interpersonal interactions (Marzi & Saadati Shamir, 2019). Self-critical individuals typically report that they prevent the growth of independence and a sense of worthiness. They perceive their parents as limiting, controlling, and rejecting (Öngen, 2015). At one end of this continuum, there is a type of self-criticism based on external standards, and at the other end, a type of self-criticism that requires internal standards. This is identified through comparison with others. At this level, the focus is on inappropriate self-comparison with others who appear superior, hostile, and critical, ultimately leading to dissatisfaction and discomfort from confrontation and evaluation by others. Internalized self-criticism is defined as a negative view of oneself due to comparison with personal and internal standards. These standards are so stringent that meeting them is impossible. However, for a self-critical individual, this lack of achievement is considered a flaw and weakness. The punishment that an individual considers for not adhering to these standards is highly unreasonable (American Psychiatric, 1994).

Another variable that seems to affect self-harming behavior is the disappearance of experiences, dissociation. Dissociation refers to a disorder that occurs in the integrity and coordination of processes related to consciousness, memory, identity, and perception that may occur temporarily or chronically (Haywood et al., 2023). Chronic degrees of dissociation can often manifest in two diagnosable disorders: depersonalization and derealization. Depersonalization refers to a continuous or recurrent feeling of being detached from oneself, as if the person is outside their body and an external observer of their own mental and physical processes. The feeling of being in a dream, that the object or oneself is not real, or that time is passing very slowly are other conditions observed in depersonalization. Derealization refers to a continuous or recurrent feeling that the person feels their surrounding environment is not real. An individual may perceive their environment as distorted or dreamlike (Sajjadpour et al., 2020). The aim of the present study was to examine the fit of the proposed model of self-harming behaviors based on self-blame, taking into account the mediating role of mental dissociation and fear of negative evaluation.

## 2. Methods and Materials

### 2.1. Study Design and Participants

This study belongs to the category of fundamental research and utilizes descriptive, correlational, and structural equation modeling approaches. The research population consisted of all male and female adolescents visiting counseling centers in the Qom province who had experiences of self-harm in 2023. The sample size in structural equations is determined based on the number of questionnaire items, with a minimum requirement of 200 participants. Although there is no general consensus on the necessary sample size for factor analysis and structural models, many researchers agree that the minimum required sample size is 200. According to Kline (2011), a typical sample size in studies using structural equations is about 200 cases. From the perspective of James Stevens (1995) and Kline (1990), considering 15 observations per predictor variable in multiple regression analysis using the ordinary least squares method is a good rule of thumb. Generally, in the methodology of structural equation modeling, the sample size can be determined to be between 5 to 15 observations per measured variable, where  $Q$  represents the number of observed variables or the number of questionnaire items (questions), and  $n$  is the sample size. Given the total number of questionnaire items used in the research, which amounted to 84 questions, a sample of 400 participants was considered, who entered the study through convenience sampling. Criteria for inclusion in the research were consent to participate, an age range between 15 to 18 years, sufficient time to fill out the questionnaire, and the exclusion criterion was not completing the questionnaires.

After obtaining the necessary permissions from the Islamic Azad University and coordinating with the counseling centers, the prepared questionnaires were duplicated and provided in the required quantity. Upon visiting the counseling centers, the questionnaires were distributed to adolescents with a history of self-harm. While explaining the research objectives and the need for sufficient time to respond to the questions, participants were asked to answer the questions with utmost honesty. Ethical considerations of the research included providing written information about the research to participants, assuring individuals about the confidentiality of the obtained information and its use solely for research purposes, the voluntary nature of participation in the study, and not recording names and family names to respect privacy.

### 2.2. Measures

#### 2.2.1. Dissociative Mind

The Dissociative Experiences Scale by Bernstein and Putnam (1986) was developed to measure depersonalization, derealization, gaps in awareness and memory, and frequent mental dissociations, consisting of 28 items. It assesses dissociative signs, not disorders, on a 10-point Likert scale (from never=0 to always=100). In the study by Kargar et al. (2018), the Cronbach's alpha coefficient for the dissociative experiences scale was reported as 0.92, and the correlation of dissociative experiences with suicidal ideation and traits of negative affectivity, separation, disinhibition, schizotypy, and hostility was respectively 0.524, 0.165, 0.236, 0.251, 0.331, and 0.179. In the study by Nikooseresht et al. (2021), the Cronbach's alpha was reported as 0.93 (Sajjadpour et al., 2020).

#### 2.2.2. Self-Blame

This scale has 22 items that examine various thoughts and feelings individuals have about themselves when things are not going well for them. These items consist of three components. Two components are related to self-criticism: self-inadequacy, which focuses on personal inadequacy (I easily become disappointed with myself), and self-disgust, which shows the individual's tendency to harm themselves (I get so angry with myself that I want to hurt myself). Another component is about self-reassurance (I can remind myself of my positive aspects). Responses are scored on a 5-point Likert scale from 0 (not at all true for me) to 4 (completely true for me). Gilbert et al. (2004) reported the reliability of this scale using the Cronbach's alpha coefficient for the self-inadequacy factor as 0.90, for the self-disgust factor as 0.86, and for the self-reassurance factor as 0.86. Furthermore, in a study in Iran by Ghorbani Ouchaqaz, Mohammadkhani, Hatami, and Mohammadrezaei (2020), the validity and reliability of this scale were examined. For this purpose, the original version of the Self-Criticism Scale was translated from English to Persian by two translators. Then, the scale was reviewed and revised by psychology professors, and finally, the Persian questionnaire with 22 items on a 5-point Likert scale was prepared and applied to the sample members. After administering the questionnaire to 300 student participants from various disciplines, levels, and ages, statistical analyses were conducted on the data obtained from the questionnaires. Bartlett's test was significant at a level below 0.0005, and the KMO test value

was 0.62, indicating that the questions of the Self-Criticism Scale have sufficient correlation for factor formation. The results of the factor analysis showed that this questionnaire has a suitable factor structure. Questions related to each factor have a good ability to predict the amount and quality of self-criticism. Considering the highest factor loadings, the three components of the Self-Criticism Scale were confirmed according to the findings of Gilbert et al. (2004). Its validity was confirmed using exploratory and confirmatory factor analysis, and its reliability was reported using the Cronbach's alpha coefficient for the self-inadequacy factor as 0.89, for the self-disgust factor as 0.73, and for the self-reassurance factor as 0.75 (Marzi & Saadati Shamir, 2019).

### 2.2.3. Self-Harming Behaviors

This tool was developed by Sansone et al. in 1998 and consists of 22 questions that examine both direct and indirect self-harming behaviors. This tool assesses direct self-harming behaviors (such as cutting, burning, attempting suicide, etc.) that are immediately harmful to tissues, along with indirect self-harming behaviors (such as illegal drug abuse, risky driving, risky sexual behaviors, etc.). A higher score indicates greater severity and frequency of self-harming behaviors. Scoring is done on a yes/no basis. Various studies have supported the validity and reliability of this tool (Sansone et al., 1996). Several studies have used this tool to measure direct and indirect self-harm, and the evidence about its psychometric properties has been acceptable (Gilbert et al., 2011; Jermain & Holly, 2012). In the study by Tahbaz Hosseinzadeh et al. (2011), the Cronbach's alpha for this questionnaire was obtained as 0.74. In the study by Khedmati (2019), the internal consistency using the Cronbach's alpha method for this questionnaire was obtained as 0.80 (Bahrami Erami & Ahangari, 2018).

### 2.2.4. Fear of Negative Evaluation

The Fear of Negative Evaluation (FNE) scale, developed by David Watson and Ronald Friend in 1969, is a widely used psychological tool designed to measure an individual's apprehension about being negatively evaluated by others. It consists of 30 items, typically scored on a Likert-type scale to assess agreement or disagreement, with higher total scores indicating a greater fear of negative evaluation. While primarily regarded as a unidimensional measure, some adaptations may feature subscales to capture various facets of social anxiety. The FNE scale is notable for its strong validity and reliability across different populations and settings. Its construct validity is well-established through significant correlations with other measures of social anxiety, and it demonstrates high internal consistency with Cronbach's alpha coefficients often exceeding .80, as well as robust test-retest reliability, making it a standard tool in research on social anxiety disorder, personality, and social psychology (Arab Mohebi Shahrabi et al., 2017; Asadi & Najafy, 2018).

### 2.3. Data analysis

In the descriptive statistics section, indices such as mean, standard deviation, skewness, and kurtosis were used. In the inferential statistics section and for hypothesis testing, Pearson correlation matrices and structural equation modeling were utilized. Also, prerequisites for implementing structural equations, such as data normality, outlier data, multicollinearity, validity, and reliability through confirmatory factor analysis, were examined. SPSS 25 and PLS 3 software were used for model fitting.

## 3. Findings and Results

The mean (standard deviation) age of participants in the current study was 16.57 (1.33). The mean (standard deviation) of research variables is presented in Table 1.

**Table 1**

*Descriptive Values of Research Variables*

Variable	Mean	Standard Deviation	Skewness	Kurtosis
Self-Inadequacy	5.54	1.31	-0.347	0.209
Self-Disgust	5.41	1.64	-0.518	0.209
Self-Reassurance	4.41	1.11	-0.647	0.209
Fear of Negative Evaluations	2.66	1.00	-0.271	0.209
Self-Harming Behaviors	4.33	1.55	-0.936	0.209
Mental Dissociation	2.26	1.99	-0.337	0.209

The results of skewness and kurtosis of research variables showed that all variables and scales follow a normal distribution.

**Table 2**

*Correlation Matrix of Research Variables*

Components	1	2	3	4	5
Self-Inadequacy	1				
Self-Disgust	0.800*	1			
Self-Reassurance	-0.789*	-0.794*	1		
Self-Harming Behaviors	0.436*	0.496*	-0.531*	1	
Mental Dissociation	0.769*	0.679*	-0.418*	0.445*	1

\*p<0.01

As shown in Table 2, the relationships between research variables are visible at the 95% and 99% confidence levels. The normality of data examination revealed that the collected data do not follow a normal distribution. Given this result, non-parametric methods should be used, and in structural equation modeling, the Partial Least Squares

(PLS) method, which is not sensitive to data normality and is not considered among the assumptions of this method, should be employed. For data analysis using PLS software, the two-step approach by Henseler (1999) for Partial Least Squares modeling is used.

**Table 3**

*Direct Effects of Research Paths*

Path	Beta	Sample Mean	Standard Deviation	T-Statistic	P-Values
Fear of Negative Evaluations -> Self-Harming Behaviors	0.257	0.259	0.063	4.08	<0.001
Self-Blame -> Fear of Negative Evaluations	0.815	0.817	0.026	31.21	<0.001
Self-Blame -> Self-Harming Behaviors	0.238	0.238	0.068	3.50	<0.001
Self-Blame -> Mental Dissociation	0.910	0.911	0.015	61.18	<0.001
Mental Dissociation -> Self-Harming Behaviors	0.490	0.488	0.079	6.20	<0.001

As observed in Table 3, path coefficients or beta values in the model for all paths are reported. If the t-values for these research paths are greater than the critical value of 1.96, then with a 95% probability, the research paths are confirmed. The results of paths, rejection or acceptance of

the path or hypothesis are specified in the results section. The results of confirmed and rejected paths and hypotheses are indicated in the results section in green and red, respectively.

**Table 4**

*Hypotheses Related to Indirect Effects (Mediating Role)*

Path	Beta	Sample Mean	Standard Deviation	T-Statistic	P-Values
Self-Blame -> Fear of Negative Evaluations -> Self-Harming Behaviors	0.209	0.212	0.051	4.09	<0.001
Self-Blame -> Mental Dissociation -> Self-Harming Behaviors	0.446	0.445	0.072	6.21	<0.001

It should be noted that the test statistics obtained must be greater than the critical value of 1.96 to indicate that the null hypothesis (based on the intermediary variable having no role between the exogenous and endogenous variable) is

rejected at the 0.05 error level, and the mediating effect in the relationships between variables is significant. The results of paths and confirmed hypotheses are indicated in the results section in green and red.

**Table 5**

*Coefficient of Determination for the Cumulative Model of the Research*

Variable Type	Variable Name	Coefficient of Determination	Adjusted Coefficient of Determination
Endogenous	Self-Harming Behaviors	0.885	0.883
Mediator	Mental Dissociation	0.825	0.823

Another model fit index for structural modeling in PLS is the  $Q^2$  index. Introduced by Stone-Geisser (1975), this criterion determines the predictive power of the model for endogenous constructs. According to them, models with acceptable structural fit should be able to predict the variables of the model's endogenous constructs. This means if the relationships between constructs in a model are correctly defined, constructs sufficiently impact each other, thereby correctly confirming hypotheses. In the  $Q^2$  index, SSO represents the sum of squared observations for each block of latent variables, and SSE represents the sum of squared prediction errors for each block of latent variables. If the  $Q^2$  value is positive and above zero, it indicates that the model fit is satisfactory, and the model has adequate predictive power (Henseler et al., 2009). As observed, given the positive values, the model has a suitable fit.

Additionally, in this study, the obtained Goodness of Fit (GOF) index is 0.423, which exceeds the value of 0.36 for a strong model fit, indicating a satisfactory overall model fit for the research.

#### 4. Discussion and Conclusion

The aim of the present study was to test the fit of the proposed model of self-harming behaviors based on self-blame, considering the mediating role of mental dissociation. It was hypothesized that self-blame is not only directly related to self-harming behaviors and can predict them but can also influence self-harming behaviors through mental dissociation and fear of negative evaluations. In the proposed model, self-blame was considered as the exogenous variable, self-harming behaviors as the endogenous variable, and mental dissociation and fear of negative evaluations as mediating variables. The results of data analysis show that the indicators of the proposed model have acceptable fit, and all paths in this model are significant. More clearly, in the overall model, all paths were significant, and all paths in the statistical analysis were able to exceed the required values for model fit. Furthermore, the results of examining the effect of mental dissociation and fear of negative evaluations as mediators between self-blame

and self-harming behaviors were significant, which aligns with supporting theoretical models and theories, and the researcher's hypothesis was accepted. Overall, regarding the main hypothesis of the research, it can be said that the researcher's proposed model and his hypothesis are validated, and the researcher's assumed model fits the data well.

As the results of the study indicate, the researcher's claim is confirmed in testing this hypothesis. Self-blame has a direct effect on self-harming behaviors, meaning that this finding aligns with the prior results (Angelakis & Gooding, 2021; Bentley et al., 2015; Duncan-Plummer et al., 2023; Haywood et al., 2023; Howe-Martin et al., 2012; Nielsen et al., 2017).

This finding can be explained by Blatt's (1992) perspective, derived from psychoanalytic, cognitive, and attachment theories, offering a comprehensive and nuanced model that presents a dyadic model of emotions, cognitions, and interpersonal components. This theory explains that certain personality traits, particularly in relation to stressful life conditions, predispose to the occurrence of depression. Therefore, it is expected that some individuals, due to these personality traits, experience depression in response to life events. The fundamental assumption of this vulnerability model is the connection between personality traits and life events that cause depression. This theory identifies two personality traits vulnerable to depression: self-criticism and dependency (Duncan-Plummer et al., 2023; Haywood et al., 2023). From the psychoanalytic viewpoint, Blatt and Homann (1992) believe that the personality trait of dependency is related to the formation of satisfying interpersonal relationships and the self-critical aspect is associated with success and a sense of self-cohesion. Dependency, a cognitive-affective personality style characterized by preoccupation with interpersonal relationships and concerns about being unlovable, often manifests in the perceived independence and autonomy of dependent individuals. Aspects of excessive shame about being individuals with high levels of self-criticism have harsh and personal evaluations of their personality and behavior. These self-evaluative concerns play a significant

role in tendencies related to self-harm. Individuals with high self-criticism experience significantly more feelings of ennui (Haywood et al., 2023; Howe-Martin et al., 2012). Consequently, as motivation decreases in these individuals, the likelihood of engaging in risky behaviors, such as self-harm, increases.

As the research results show, the researcher's claim in testing this hypothesis is confirmed, meaning that self-blame has a direct effect on mental dissociation. This finding aligns with the prior results (Bach et al., 2015; Sajjadpour et al., 2020).

The reciprocal causality model states that the models of vulnerability effect and scar effect are not sufficient on their own because personality and depressive symptoms are in mutual interaction. For example, as dependency/collectivism and self-criticism/autonomy lead to depression, depression sometimes increases and decreases the levels of these personality dimensions. Depressive symptoms might affect through the mediation of dissociative disorder. An individual experiencing self-criticism may become mentally dissociated due to depression, facing dissociation between thoughts, feelings, memories, and personal identity in adverse conditions.

As the research results demonstrate, testing this hypothesis confirms the researcher's claim, meaning that mental dissociation has a direct effect on self-harming behaviors. This finding is consistent with the prior results (Sajjadpour et al., 2020; Sekowski et al., 2022).

Dissociative symptoms inhibit the processing and encoding of traumatic events, causing further confusion in memory; acting as a defensive function, they keep information related to traumatic events outside of consciousness. During this process of dissociation, further processing of stimulus materials is inhibited; hence, memories are stored in a fragmented manner. This type of storage inhibition introduces repressed memories into the autobiographical memory with complexity and disorganization. Symptoms of dissociative disorders, such as derealization, depersonalization, and emotional numbness, are automatic cognitive coping strategies that cause avoidance of awareness and recall of a traumatic event or suppression of hyperarousal signs, leading individuals towards self-harming behaviors. Following self-harming behaviors, traumatic experiences or mental health illnesses can increase the risk of these behaviors.

As the research results indicate, the researcher's claim is confirmed in testing this hypothesis, meaning that self-blame has an indirect effect through mental dissociation on

self-harming behaviors. This finding aligns with the prior results (Sajjadpour et al., 2020; Sekowski et al., 2022).

This finding can be interpreted based on the perspective of the scar effect model in blame. Quin and Calarco (1998) stated that depression increases an individual's perception of being dependent on others and decreases their self-esteem, consequently causing individuals to display higher levels of dependency/collectivism and self-criticism/autonomy. This aligns with Quin's cognitive model, which suggests considering "cognition as a result of depression, not a cause for depression." Quin's model, known as the scar effect, indicates that personality changes due to depression, similar to the effect around a wound. Essentially, this model suggests that it's impossible for the symptoms and experience of a complete depressive episode not to cause damage to personality and not to change human personality. However, solid evidence examining this model is still lacking. In examining this model, Rood, Levinson, and Sully (1990) showed that depressive episodes reduce individuals' interpersonal skills. Joffe, Bagby, and Senter (1997) found that when an individual is in a state of mental dissociation, they experience detachment from others, the surrounding world, or themselves. Dissociative disorders explain a continuous mental state where the patient feels detached from reality, exits their body, and experiences episodes of amnesia. Due to this level of self-criticism, an individual might be drawn towards depression, leading to mental dissociation and causing self-harm due to detachment from reality, where self-harming behavior for some individuals is the only option in times of isolation and emotional pain.

The hypothesis that fear of negative evaluation directly affects self-harming behaviors has also been confirmed by recent research findings which is in line with the previous studies (Arab Mohebi Shahrabi et al., 2017; Asadi & Najafy, 2018; Öngen, 2015).

This direct relationship suggests that individuals who fear being negatively evaluated by others may engage in self-harming behaviors as a way to cope with or alleviate the distress associated with such fears. The fear of negative evaluation is a core component of social anxiety and can lead to significant psychological distress, which in some cases, may manifest as self-harming behaviors. This direct effect has been supported by studies that have explored the mechanisms through which social anxiety and related fears contribute to self-harm, highlighting the need for interventions that address social anxiety and fear of negative evaluation to prevent self-harming behaviors. By focusing

on these underlying fears, it may be possible to reduce the occurrence of self-harm among vulnerable populations.

## 5. Limitations & Suggestions

Like other domestic studies, this research faced limitations, such as the lack of suitable studies in the field of mental dissociation. The research sample was from the city of Qom, and cultural-social factors might affect the generalizability of the results nationally and to other groups. In the current study, variables such as parental education status, social class, and economic status were not controlled, which could be influential factors. The biggest limitation of this research was the convenience sampling. Further research in the field of the relationship between mental dissociation, self-harming behavior, and self-blame is recommended due to the research gap in this area. Since individuals can overcome their problems with effective training, it is suggested that ways to cope with self-blame and awareness about self-harming behaviors be taught by relevant organizations, bodies, and schools so that individuals can overcome their problems.

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## Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

## Declaration of Interest

The authors of this article declared no conflict of interest.

## Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

## Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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## Authors' Contributions

All authors equally contributed in this article.

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