

# Development of a Causal Model of Perception of the COVID-19 Pandemic Based on Psychological Distress, Emotional Processing, and Self-Control with the Mediation of Psychological Well-Being in Young Adults

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### ABSTRACT

**Objective:** The objective of this research was to develop a causal model of perception of the COVID-19 pandemic based on psychological distress, emotional processing, and self-control, with the mediation of psychological well-being in young adults.

**Methods and Materials:** This study is applied in terms of its purpose, descriptive-correlational in terms of its study type, and field study in terms of data collection. The statistical population included the youth of Tabriz city. This group consists of all residents of Tabriz. The sample size was determined to be 385 individuals using convenience sampling, based on Cochran's formula (in an infinite population) (Erikson's theory considers youth age to range from 19 to 30 years). The instruments used in this study for data collection were the Perception of COVID-19 Pandemic Questionnaire, Psychological Distress Scale by Kessler et al. (2002), Emotional Processing Scale by Baker et al. (2010), Self-Control Scale by Tangney et al. (2004), and Psychological Well-Being Scale by Ryff (1989).

**Findings:** The results indicated that there is a positive and significant relationship between psychological distress and perception of the COVID-19 pandemic in young adults, whereas this relationship between emotional processing, self-control, and psychological well-being with the perception of the COVID-19 pandemic in young adults is negative and significant. Additionally, based on the research findings, it can be stated that there is a positive and significant relationship between psychological distress and perception of the COVID-19 pandemic with the mediation of psychological well-being in young adults, but there is a negative and significant relationship between emotional processing, self-control, and perception of the COVID-19 pandemic with the mediation of psychological well-being in young adults.

**Conclusion:** The results confirm the suitability of the causal model of perception of the COVID-19 pandemic based on psychological distress, emotional processing, and self-control with the mediation of psychological well-being.

**Keywords:** Perception of the COVID-19 Pandemic, Psychological Distress, Emotional Processing, Self-Control, Psychological Well-Being.

## 1. Introduction

COVID-19 has brought about significant changes in people's lives around the world. The coronavirus was first identified in Wuhan, China, in December 2019 and was initially named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) (Zhou et al., 2020). On January 30, 2020, the first cases of widespread transmission globally, especially in Europe and America, were reported, and the World Health Organization declared it a Public Health Emergency of International Concern (Bavel et al., 2020). During the early months of the COVID-19 pandemic, clear evidence around the world indicated that psychological distress had significantly increased (Fiorillo & Gorwood, 2020). Most psychological research conducted at the onset of the pandemic was influenced by extensive lockdown measures and various aspects of uncertainty (Lee, 2020). On the other hand, from a public health perspective, there was a lack of clarity on how to prevent and reduce the occurrence of widespread outbreaks and pandemics (Taylor et al., 2020). From an individual perspective, numerous states of stress, such as how to protect oneself and loved ones from infections, distress, despair, social isolation, and various emotions and fears about the future, occurred among individuals in society (Satici et al., 2021).

New evidence has shown that the COVID-19 pandemic has negative psychological effects that can be widespread and long-lasting (Zhou & Guo, 2021), causing mental and psychological distress. This issue indicates that the level of psychological distress in a population can significantly grow during a pandemic (Serafini et al., 2020). Psychological distress is used to describe a wide range of symptoms and internal life experiences that are typically worrying, confusing, or unusual. Psychological distress can potentially lead to behavioral change, negatively affect an individual's emotions, and impact their relationships with others. Distress causes disruption in psychological well-being and quality of life (Malone & Wachholtz, 2018). Recent survey studies in China showed that many respondents suffered from psychological distress during the COVID-19 pandemic (Cao et al., 2020). Psychological distress has a social aspect, and some social groups are more prone to distress than others (Fitzpatrick et al., 2020). In fact, psychological distress is used by some mental health physicians and mental health service users to describe a wide range of symptoms and internal life experiences that are typically worrying, confusing, or unusual and can potentially lead to behavioral

change, negatively affect an individual's emotions, and impact their relationships with others (Maheronnaghsh et al., 2020).

Almost every day, people face various types of hardships and stresses, sometimes encountering severe incidents like crises and disabilities, which might lead to inappropriate and negative emotional processing. While emotional pains do not emerge suddenly, when the emotional processing of an experience is incomplete, discomforts accumulate in an individual over time and may manifest as symptoms of a mental disorder or disease (Hasanzadeh et al., 2020). Emotional processing is a psychological factor that can lead to limiting distress in individuals. Emotional processing is a process by which emotional or psychological disturbances are absorbed and reduced to a level that allows the individual to continue other experiences and behaviors without disturbance (Rachman, 1980). Factors such as cognitive avoidance, lack of experience, short-term rumination, depression, and overvalued beliefs may lead to problems in emotional processing (Baker et al., 2007). It is important to note that the nature of emotional disturbance manifests differently in various disorders; individuals with anxiety react negatively to emotional situations and try to control the environment by overreacting to threatening situations (Keshavarz Afshar et al., 2022). From a psychological perspective, pandemics introduce life to uncertainty, ambiguity, and loss of control, and individuals with low psychological resilience in the face of crises typically exhibit less self-control (Mijiritsky et al., 2020). Previous studies have shown that self-control is negatively associated with negative well-being and depression (Nielsen et al., 2019) and positively associated with various indicators of positive well-being, happiness, life satisfaction, and cheerfulness (Briki, 2018). It can be expected that individuals with low self-control are unable to achieve important life goals as easily as those with high self-control, as they cannot delay short-term gratification, which may lead to lower psychological capability in them (Duckworth & Steinberg, 2015), hindering the foundation for self-control and long-term orientation in them (Vet & Verkooijen, 2017).

With the outbreak of the COVID-19 pandemic, the concept of psychological well-being has been widely used by counselors, researchers, and mental health providers for the assessment of psychological state or general psychological functioning (Tuason et al., 2021). The components of psychological well-being refer to the mental evaluation of mental health or individual life satisfaction, which can be positive (e.g., joy, cheerfulness, happiness) or

negative (e.g., depression, anxiety, stress) (López-Bueno et al., 2020). Given the serious threat of the coronavirus, it must not be overlooked that survivors and those recovered from this virus face a serious psychological threat both during the containment of this disease and after its eradication. Most existing psychological research on this emerging pandemic, mostly conducted abroad, has not been able to coherently understand the COVID-19 pandemic in psychological studies. Therefore, the primary aim of this research is to develop a causal model of perception of the COVID-19 pandemic based on psychological distress, emotional processing, and self-control with the mediation of psychological well-being in young adults. The researcher seeks to answer how the relationship between psychological distress, emotional processing, and self-control with the perception of the COVID-19 pandemic is mediated by psychological well-being in young adults.

## 2. Methods and Materials

### 2.1. Study Design and Participants

This study is applied in its aim, descriptive-correlational in its type, and field research in terms of data collection. The statistical population included the youth of Tabriz city, encompassing all residents of Tabriz. The sample size was determined to be 385 individuals using convenience sampling, based on Cochran's formula (in an infinite population) (Erikson's theory identifies the youth age range as 19 to 30 years).

### 2.2. Measures

#### 2.2.1. Perception of the COVID-19 Pandemic

For this variable, the questionnaire which includes 10 items, was used. Scoring is based on a 5-point Likert scale. Reviews indicate that this test has acceptable validity and reliability. Researchers reported a Cronbach's alpha coefficient of 0.926 for the overall test score. The reliability of this test was 0.86. Scoring of this scale is based on a 5-point Likert scale from strongly disagree to strongly agree (Burke et al., 2020; Fitzpatrick et al., 2020).

#### 2.2.2. Psychological Distress

The Psychological Distress Questionnaire was designed and created by Kessler et al. (2002) with the aim of examining and measuring mental disorders. The standard Psychological Distress Questionnaire is designed in an 11-

item form and consists of three components: educational presence, social presence, and cognitive presence. Scoring of this scale is based on a 5-point Likert scale from strongly disagree to strongly agree. In Yaghobi's study (2015), the results of factor loadings for the main factor assessment ranged from 0.65 to 0.84. Sensitivity, specificity, and the overall classification error for the best cutoff point of the Psychological Distress Questionnaire, which was 8, were 81%, 80.5%, and 16.5%, respectively. Additionally, the cutoff point with maximum sensitivity (100%) was score 1, and with maximum specificity (100%) was score 27. The Cronbach's alpha coefficient of the questionnaire was 0.93, and the test-retest reliability and Spearman-Brown coefficient were 0.91 (Takhayori et al., 2021; Zhou & Guo, 2021).

#### 2.2.3. Self-Control

The Self-Control Questionnaire by Tangney et al. (2004) consists of 10 questions and aims to measure individuals' self-control level. The validity and reliability of Tangney's Self-Control Questionnaire were calculated and confirmed in the research by Mousavi Moghadam et al. (2015). Tangney et al. (2004) confirmed the validity of this scale by evaluating its correlation with scales of academic achievement, adaptability, positive relations, and interpersonal skills. The reliability was obtained on two statistical samples using the Cronbach's alpha test as 0.83 and 0.85. Scoring of this scale is based on a 5-point Likert scale from strongly disagree to strongly agree (Bosma et al., 2019; Kordnoghiabi et al., 2019).

#### 2.2.4. Emotional Processing

The Emotional Processing Scale was developed by Baker and colleagues (2010). In this research, a 10-item version was prepared. Baker et al. examined the factorial structure of this questionnaire using exploratory factor analysis. Cronbach's alpha coefficients and test-retest reliability of this scale were reported by the test designers as 0.92 and 0.79, respectively. Scoring of this scale is based on a 5-point Likert scale from strongly disagree to strongly agree (Baker et al., 2007; Hasanzadeh et al., 2020).

#### 2.2.5. Psychological Well-Being

To measure psychological well-being, the Ryff Scale (1989) was used, and a 10-item questionnaire was employed in this research. The internal consistency of this test was

reported by Ryff using Cronbach's alpha as 0.65. Evidence related to the convergent validity of this test indicates that the six factors of psychological well-being have a positive relationship with life satisfaction and self-esteem scales, and a negative relationship with depression, belief in luck, and external control source. In the research by Abolmaali Alhosseini and Mohammadzadeh Kasgari (2016), the Cronbach's alpha coefficient for the entire scale was 0.71. Scoring of this scale is based on a 5-point Likert scale from strongly disagree to strongly agree (Holton et al., 2021; Roiantan et al., 2020).

2.3. *Data analysis*

To analyze the data, both descriptive and inferential statistics were utilized: In descriptive statistics, methods such as frequency and percentage of frequency, mean,

median, and diagrams were used. In inferential statistics, Pearson correlation coefficient tests and structural equation modeling were employed. For this purpose, SPSS22 and SMART-PLS software were used.

3. **Findings and Results**

In the descriptive statistics of the research, among the 385 participants, 158 were men (41%) and 227 were women (59%). Furthermore, among these participants, 76 were under 23 years old (19.8%), 191 were between 23 to 26 years old (49.4%), and 118 were between 26 to 30 years old (30.8%). Additionally, among the 385 participants, 68 had a bachelor's degree or less (17.7%), 77 had an associate degree (20%), 161 had a bachelor's degree (41.3%), and 79 had a master's or doctoral degree (21%).

**Table 1**

*Descriptive Statistics of Research Variables*

Variable	N	Mean	Median	Standard Deviation	Minimum	Maximum
Psychological Distress	385	2.63	2.60	0.637	1.00	4.20
Emotional Processing	385	3.11	3.60	0.930	1.00	4.40
Self-Control	385	2.89	3.13	0.772	1.28	4.19
Psychological Well-Being	385	2.45	2.50	0.629	1.00	3.83
Perception of COVID-19	385	2.63	2.80	0.747	1.00	4.20

Based on the results in Table 2, the significance level between the research variables is 0.000, which is less than

the threshold of 0.05, indicating that there is a correlation between the research variables.

**Table 2**

*Correlation of Research Variables*

Variable	Psychological Distress	Emotional Processing	Self-Control	Psychological Well-Being	Perception of COVID-19
Psychological Distress	1.000				
Emotional Processing	0.617*	1.000			
Self-Control	0.570*	0.797*	1.000		
Psychological Well-Being	0.421*	0.614*	0.567*	1.000	
Perception of COVID-19	0.404*	0.619*	0.674*	0.725*	1.000

\*p<0.01

The composite reliability and average variance extracted (AVE) for each of the items are shown in Table 3:



**Table 3**

*Overall Results from Research Constructs*

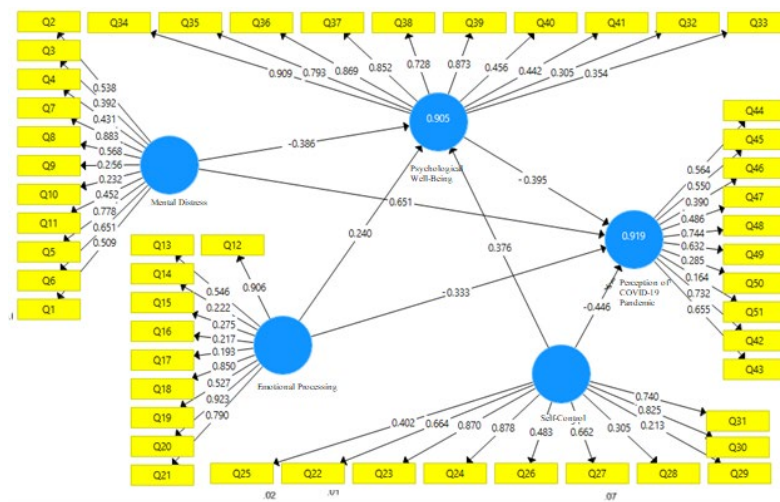
Research Variables	Average Variance Extracted	Composite Reliability	Cronbach's Alpha	R <sup>2</sup>
Psychological Distress	0.788	0.841	0.926	0.96
Emotional Processing	0.854	0.901	0.877	
Self-Control	0.857	0.904	0.879	
Perception of COVID-19	0.782	0.845	0.907	
Psychological Well-Being	0.716	0.769	0.899	

Considering Table 3, the numbers under the composite reliability column are the Dillon-Goldstein's rho values, which are acceptable if greater than 0.7. The AVE values in Table 3 should be more than 0.5. Additionally, the goodness-

of-fit (GOF) was used to select the best model, and the results showed that a fit higher than 0.36 indicates better model quality, well explained by the partial least squares method. The fit of this model is 0.418.

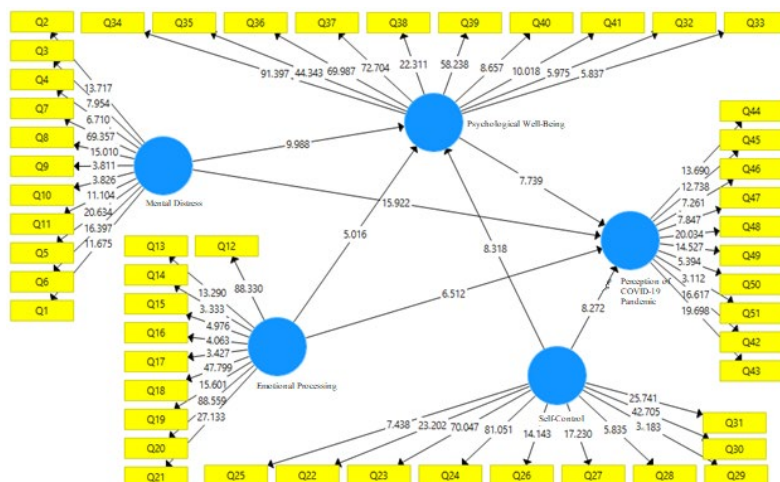
**Figure 1**

*Final Model with Standard Coefficients*



**Figure 2**

*Final Model with T-Values*



**Table 4**

*Results of t-Values and Path Coefficients of Research Variables*

Independent Variable (Influencing)	Dependent Variable (Influenced)	Mediating Variable	t-Values	Path Coefficient	Hypothesis Result
Psychological Distress	Perception of COVID-19	-	15.992	0.651	Confirmed
Emotional Processing	Perception of COVID-19	-	6.512	-0.333	Confirmed
Self-Control	Perception of COVID-19	-	8.272	-0.446	Confirmed
Psychological Well-Being	Perception of COVID-19	-	7.739	-0.395	Confirmed
Psychological Distress	Perception of COVID-19	Psychological Well-Being	9.988*7.739	-0.386*-0.395	Confirmed
Emotional Processing	Perception of COVID-19	Psychological Well-Being	5.016*7.739	0.240*-0.395	Confirmed
Self-Control	Perception of COVID-19	Psychological Well-Being	8.318*7.739	-0.376*-0.395	Confirmed

According to the figures and Table 4, the results obtained from the analysis with structural equations based on PLS are presented as follows: Considering the path analysis model using the partial least squares method, the relationship between psychological distress and perception of the COVID-19 pandemic in young adults, with a t-statistic value of 15.992 greater than 1.96 and a path coefficient of 0.651, indicates a significant and positive relationship exists between psychological distress and perception of the COVID-19 pandemic in young adults. Similarly, the relationship between emotional processing and perception of the COVID-19 pandemic in young adults, with a t-statistic value of 6.512 greater than 1.96 and a path coefficient of -0.333, indicates a significant and negative relationship exists. Likewise, the relationship between self-control and perception of the COVID-19 pandemic in young adults, with a t-statistic value of 8.272 greater than 1.96 and a path coefficient of -0.446, indicates a significant and negative relationship exists. Furthermore, the relationship between psychological well-being and perception of the COVID-19 pandemic in young adults, with a t-statistic value of 7.739 greater than 1.96 and a path coefficient of -0.395, indicates a significant and negative relationship exists. Additionally, the relationship between psychological distress and perception of the COVID-19 pandemic with the mediation of psychological well-being in young adults, with a t-statistic value of 9.988\*7.739 greater than 1.96 and a path coefficient of -0.386-0.395, indicates a significant and positive relationship exists. Similarly, the relationship between emotional processing and perception of the COVID-19 pandemic with the mediation of psychological well-being in young adults, with a t-statistic value of 5.016\*7.739 greater than 1.96 and a path coefficient of 0.240-0.395, indicates a significant and negative relationship exists. Lastly, the relationship between self-control and perception of the

COVID-19 pandemic with the mediation of psychological well-being in young adults, with a t-statistic value of 8.318\*7.739 greater than 1.96 and a path coefficient of -0.376-0.395, indicates a significant and negative relationship exists.

**4. Discussion and Conclusion**

The objective of this research was to develop a causal model of the perception of the COVID-19 pandemic based on psychological distress, emotional processing, and self-control, with the mediation of psychological well-being in young adults. According to the obtained results, the model fitting is acceptable and confirmed.

The study results reveal that there is a significant positive relationship between psychological distress and the perception of the COVID-19 pandemic in young adults. These findings are consistent with the results of studies by previous researchers (Berhili et al., 2017; Falahie, 2022; Najari et al., 2021; Pastore et al., 2017). Additionally, the results indicated a significant negative relationship between emotional processing and perception of the COVID-19 pandemic in young adults, aligning with findings from previous studies (Burke et al., 2020; Holton et al., 2021; Saremi et al., 2020). The study also found a significant negative relationship between self-control and perception of the COVID-19 pandemic in young adults, consistent with previous research (Karimi et al., 2022; Mijiritsky et al., 2020; Schnell & Krampe, 2020). Furthermore, a significant negative relationship exists between psychological well-being and perception of the COVID-19 pandemic in young adults, in line with the previous findings (Juchnowicz et al., 2021; Roientan et al., 2020). Moreover, the results showed a significant positive relationship between psychological distress and perception of the COVID-19 pandemic, mediated by psychological well-being in young adults,

consistent with previous studies (Besharat, 2008; Keshavarz Afshar et al., 2022; Tuason et al., 2021). Similarly, a significant negative relationship was found between emotional processing and perception of the COVID-19 pandemic, mediated by psychological well-being in young adults, aligning with previous findings (Burke et al., 2020; Schnell & Krampe, 2020). Finally, the results indicated a significant negative relationship between self-control and perception of the COVID-19 pandemic, mediated by psychological well-being in young adults, consistent with previous studies (Bosma et al., 2019; Kokkoris & Stavrova, 2021; Tuason et al., 2021).

By late January 2020, an increasing number of confirmed COVID-19 infection cases were identified outside of Wuhan (Burke et al., 2020), and since then, the virus has rapidly spread worldwide. Many countries have been affected by COVID-19, declared a pandemic by the World Health Organization on March 11, 2020 (Zhou & Guo, 2021). As several studies have demonstrated, psychological distress significantly increased during the COVID-19 pandemic (Mijiritsky et al., 2020). Psychological distress, including depression, anxiety, and stress, creates many psychological challenges for individuals during pandemic crises, leading to human mental incapacity to perform desired tasks in the present (Azimi & Soleimani, 2020).

On the other hand, emotional processing is a vital human ability, and deficits in emotional processing are considered cognitive diagnostic processes in psychological pathology (Lannoy et al., 2021). In some psychological disorders, one or several components of emotional processing are impaired. Such deficits occur in areas such as perception, memory, or in the expression of emotions, subsequently impairing patients' ability to perform one or more adaptive emotional functions (Hasanzadeh et al., 2020). The perception of the COVID-19 pandemic can cause psychological harm to individuals and impair their emotional processing, potentially affecting their self-control. During the pandemic, citizens are asked to exercise a high level of self-control regarding individual and social health behaviors (Zhou & Guo, 2021). Self-control is the ability to enact appropriate responses and suppress inappropriate dominant impulses, observed as an effortful process in controlling behavior (Bosma et al., 2019). Self-control is defined as the ability to modify or overcome individual internal responses and also to terminate undesirable behaviors (Hofmann et al., 2014). It is associated with many indicators of mental well-being, such as life satisfaction, happiness, self-esteem, and meaning in life (Vet & Verkooijen, 2017), and is also related to lower

levels of depression and anxiety. Longitudinal studies have shown that self-control can predict well-being and health up to 30 years later (Bowlin & Baer, 2012). Individuals with adequate self-control can show more resilience in the face of diseases and become more capable against psychological problems arising from them (Kordnoghiabi et al., 2019). It is crucial that enhancing mental health, a vital asset of a society, requires significant attention to the psychological well-being of community members; hence, the necessity of focusing on scientific research on well-being and the positive aspects of mental health has been imperative in recent years (Akbari et al., 2019). Psychological well-being is now considered a new perspective in health, especially health psychology, and as a multi-component concept, includes autonomy, positive relations with others, self-acceptance, environmental mastery, purpose in life, and personal growth (Amini et al., 2020). The COVID-19 pandemic has impacted daily life and imposed changes beyond the health domain, where continuous and long-term quarantine has stressed individuals' mental health (Camargo et al., 2022), affecting their psychological well-being and significantly reducing life quality (Serafini et al., 2020).

In summary, psychological distress, defined as negative reactions to recent life problems or stress-inducing situations, can affect long-term mental health (Roientan et al., 2020). Severe mental distress, a characteristic of psychological disorders, is associated with poorer health outcomes and increased mortality risk, regardless of the population studied and health outcome examined (Seyed Ali Tabar & Zadhan, 2023). The COVID-19 pandemic causes a wide range of psychological problems, including distress (Fiorillo & Gorwood, 2020). From a psychological perspective, pandemics create life events associated with uncertainty, ambiguity, and loss of control, known as stimuli for psychological distress, thus significantly increasing distress levels in a population during a pandemic (Serafini et al., 2020). Distress disrupts health, mental well-being, and quality of life (Malone & Wachholtz, 2018). Recent survey studies in China showed that many respondents suffered from psychological and mental distress during the COVID-19 pandemic (Cao et al., 2020). However, COVID-19-related distress is not evenly distributed across the population. Psychological distress has a social dimension, and some social groups are more prone to mental distress than others (Fitzpatrick et al., 2020). While it is widely accepted that social factors shape health inequalities and stress in a population, how various factors underlie the distribution of distress in a population during the COVID-19

pandemic largely remains unknown. We highlight three sets of factors potentially affecting different levels of psychological distress in a society, including socio-economic status, family structure, and the social policy environment.

## 5. Limitations & Suggestions

Given the importance of the research topic, it is necessary to study other dimensions of this research. Therefore, it is suggested that future studies evaluate this study on other age groups, such as middle-aged adults. It is also recommended to examine and compare the level of perception of the COVID-19 pandemic among women and men and to study the impact of individual and occupational factors on the development of psychological well-being in individuals affected by the COVID-19 pandemic.

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## Declaration of Interest

The authors of this article declared no conflict of interest.

## Ethics 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 contributed equally.

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