***Original Research Article***

**Coronaphobia and Poetic Justice:**

**Psychological Responses During the COVID-19 Pandemic**

**Abstract**

Coronaphobia, a term coined during the COVID-19 pandemic, refers to fear and anxiety specifically associated with COVID-19. Given the prevalence of retributive thinking, I considered whether some people who treated infected people in a discriminatory manner might have felt a sense of *poetic justice* (cause-and-retribution thinking). Therefore, this study first aims to investigate the following hypotheses: that trends in coronaphobia declined between 2020 (when the pandemic began) and 2022; that the tendency toward coronaphobia differs depending on age, gender, and whether a person is single or married; and that people who felt a sense of poetic justice towards individuals infected with COVID-19 were more likely to have coronaphobia. This study clarifies the relationship between poetic justice and coronaphobia. A survey was completed by 4783 people, once in 2020 and again in 2022. Among the respondents, the trend of coronaphobia decreased between 2020 and 2022. In addition, older respondents were less prone to coronaphobia than younger respondents. Finally, respondents with a strong sense of poetic justice regarding people infected with COVID-19 were more likely to have coronaphobia. The assessment criterion for 'poetic justice' is whether the cause of infection is attributed to the individual's actions. These results demonstrate the significant impact of concepts such as cause and effect on people’s behavior and emotions and indicate their importance in understanding individual responses in crises such as pandemics.

*Keywords*: Coronaphobia, “Poetic justice”, Pandemic, discrimination, Covid-19.

**Introduction**

**Coronaphobia**

The COVID-19 pandemic, beginning in early 2020, was an unexpected event for many people, with Japan declaring several states of emergency. High infection and mortality rates led to news reports of outbreaks worldwide, and fear of contracting COVID-19 became common among people, regardless of age and gender. Cluster infections in universities were also reported nationwide, and students at Kyoto Sangyo University, which had an on-campus cluster in March 2020, reported being discriminated against at their part-time jobs1). Many university clusters were reported on, including the incident of a cluster in the wrestling team of Nippon Sport Science University2) and that of 20 students in the rugby team of Tenri University3).

 At the onset of the COVID-19 pandemic, many individuals experienced coronaphobia—fear of the novel coronavirus (Abdelrahman, R., & Aldawash, F. M. ,2023) (Abraham, P., et.al,2020). This situation was compounded by factors such as the virus’s rapid spread, health concerns, and economic impacts, resulting in profound psychological effects on both individuals and society as a whole. Dubey et al. (2020) defined “coronaphobia” as a pervasive phenomenon throughout society, significantly affecting individuals’ mental health and social functioning. Dubey et al. (2020) suggest interventions for infected patients, healthcare providers, and others.

Sometimes, coronaphobia goes beyond the direct fear of the virus, encompassing a wide range of psychosocial aspects, including social isolation, economic anxiety, and the disruption of daily life (Kanoh, H.,2021). As a new concept, perspectives on coronaphobia differ. Table 1 summarizes the findings of the main studies on coronaphobia (Table 1).

**Review of literature**

Table 1. Research on coronaphobia

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| --- | --- |
| Name (Year) | Summary |
| Arora et al. (2020) | Coronaphobia is defined as an excessive, triggered response to fear of contracting COVID-19. This response includes excessive concern over physiological symptoms, significant stress about personal and occupational loss, increased reassurance and safety-seeking behaviors, and avoidance of public places, causing impairment in daily life. Triggers involve situations or people associated with the probability of virus contraction, such as meeting people, traveling, or going to work. |
| Wang et al. (2020) | Physiological aspect: Coronaphobia triggers a prolonged fight-or-flight response, leading to symptoms like palpitations, tremors, difficulty breathing, dizziness, changes in appetite, and sleep disturbances. |
| Chakraborty & Chatterjee (2020) | Cognitive aspect: Fear of the virus involves a preoccupation with threat-provoking adverse thoughts, such as fears of death, unemployment, or family danger due to the virus. These cognitions trigger emotional responses like sadness, guilt, and anger. |
| Steed et al. (2022) | Behavioral aspect: Individuals engage in avoidance behaviors to prevent feared consequences. Some behaviors include avoiding public transportation, touching surfaces, being in open or enclosed public places, and attending gatherings. People may fear or avoid meeting others and excessively engage in health-related safety behaviors like hand-washing. |
| Li et al. (2020) | Behavioral aspect (continued): Reassurance behaviors like constantly checking body vitals or confirming the absence of illness perpetuate fear, leading to phobia. The zoonotic origin of the virus may lead to fears of consuming exotic meat. |
| Andersen, Rambaut, Lipkin, Holmes, & Garry (2020) | Discusses the zoonotic origin of the virus, which may contribute to fears associated with contracting COVID-19, particularly from the consumption of exotic meat-based food. |
| Ozcelik, N., Yilmaz Kara, B. (2021)  | Investigates the impact of coronaphobia on smoking habits through telephonic and face-to-face interviews with patients during the outbreak, inquiring about changes in their smoking habits. |
| Lee, S. A. (2020) | Development of scales focusing on physical symptoms associated with coronaphobia, such as dizziness, sleep disturbances, and tonic immobility. |
| Kanoh, H. (2022) | Focuses on coronaphobia, emphasizing behavioral aspects, and discussing indicators of coronaphobia and the behavior of university students during the pandemic. |

In addition to the studies summarized in the table, numerous other publications have examined coronaphobia (Abdelrahman & Aldawash ,2023; Abraham et al. ,2020; Alexandrino et al., 2023; Andersen et al., 2020; Arora et al., 2020; Arpaci et al., 2022; Asmundson & Taylor, 2020a; Asmundson & Taylor, 2020b; Azoulay et al., 2021; Bakri & El-Setouhy, 2022; Barreto et al., 2022; BEŞER et al., 2023; Cao et al., 2020a; Carleton, 2016; Chakraborty & Chatterjee, 2020; Della Gatta, 2023; Dubey et al., 2020a; Enea et al., 2022; Ertem et al., 2022; Fronda & Labrague, 2022; Gökkaya et al., 2022; Goyal et al., 2020; Haleem et al., 2020a; Heidari et al., 2022; Huang & Zhao, 2020a; Huang & Zhao, 2020b; İpek Dongaz et al., 2023; Jacob et al., 2021; KARAZEYBEK et al., 2023; Kissler et al., 2020; Kulkarni et al., 2020; Lee, 2020; Li et al., 2020; Lobos-Rivera et al., 2023; Mertens et al., 2020a; Mora-Magaña et al., 2022; Naguy et al., 2020; Padovan-Neto et al., 2023; Roy et al., 2020a; Sahoo et al., 2020; Tandon, 2020a; Tandon, 2020c; TAŞPINAR et al., 2023; The Lancet, 2020; Turan et al., 2021; Understanding coronaphobia, n.d.; Vargová et al., 2023; Wang et al., 2020; Xiang et al., 2020a; Xu et al., 2023; Yadav & Sagar, 2023).

**Poetic justice (cause-and-retribution thinking)**

Next, we focused on the relationship between *poetic justice* and coronaphobia. Many expressions convey the idea of poetic justice. For example, “What goes around comes around,” “Karma,” “Get just deserts,” and “Anger punishes itself.”

The concept of poetic justice generally relies on the causal principle that “If there is a cause, a corresponding effect will occur.” This principle has a long history and is central to many religions and philosophies, including Buddhism. In Buddhism, karma is a central teaching holding that the propriety of an individual’s actions influences future outcomes. Thus, good deeds bring good results, and bad deeds bring bad results. This perspective emphasizes the idea that individuals should be responsible for their actions and that their actions shape their destinies. Religions of Indian origin, such as Hinduism and Jainism, also maintain that a person’s actions affect their karma, which leads to consequences in this life or the next. Even in Western philosophy, the law of causality is treated as a fundamental principle in ontology and ethics. From a scientific perspective, causality is foundational to inquiry regarding natural phenomena and the relationships between them. In this way, poetic justice is widely accepted from religious, philosophical, and scientific perspectives, and its history and background are wide-ranging. Thus, some people may have felt a sense of “poetic justice” by treating infected people in a discriminatory manner.

**Research Purpose and Methodology**

This research aimed to test the following three hypotheses: first, that trends in coronaphobia declined between 2020 (when the pandemic began) and 2022; second, that the tendency toward coronaphobia differs depending on age, gender, and marital status; third, that people who felt a sense of poetic justice towards individuals infected with COVID-19 were more likely to have coronaphobia. In testing these hypotheses, this study clarifies the relationship between poetic justice and coronaphobia. The results hold social implications for future pandemic preparation and response.

Previous research on coronaphobia has employed exploratory qualitative methods, particularly narrative inquiry (Ahorsu, D. K., et.al, 2020). The present study used exploratory qualitative methods. A survey was conducted. Coronaphobia was measured using the following items. The survey items in a scale were based on Ahorsu, DK, et.al, (2020), and were modified to reflect the situation of coronaphobia in Japan. Kanoh, H. (2022) was used. Answers were provided on a six-point scale.

1) When I read or heard the news about the new coronavirus, I felt anxious, dizzy, or lightheaded.

2) Thinking about the new coronavirus sometimes made me sleepless.

3) I felt like I was freezing when I thought about or received information about the new coronavirus.

4) I lost my appetite when thinking about or hearing information about the new coronavirus.

5) When I think about or hear information about the new coronavirus, I feel nauseous or have stomach pain.

6) I took my body temperature and checked to see if I was infected with the new coronavirus.

7) I looked up information about the new coronavirus on the internet.

8) I saw information about the new coronavirus on TV or in the newspaper.

9) I have talked about the new coronavirus in conversations with others or on SNS (LINE, Twitter, Facebook, etc.).

10) I have consulted a medical professional about my symptoms and confirmed whether I have been infected with the new coronavirus.

11) I think people who get infected with the new coronavirus are attributable to themselves.

We received responses from 4,873 Japanese people registered with the research company GMO to complete the survey online over two periods (January–March 2020 and January–March 2022). The number of people surveyed is shown in Tables 2 to 4. Respondents lived throughout Japan. IBM SPSS Statistics, Version 28 was used as the statistical analysis software. The analysis method was to first conduct a reliability analysis on the survey items. Next, items that were found to be consistent through the reliability analysis were added together to create an index. Correlation coefficients and t-tests were performed using this index. The analysis method involved first conducting a reliability analysis on the survey items. Subsequently, items that demonstrated internal consistency through the reliability analysis were aggregated to form an index. Using this index, correlation coefficients and paired-samples t-tests were performed.

**Table 2**

*Age*



**Table 3**

*Single/Married*



**Table 4**

*Male/Female*



**Results and discussion**

**Coronaphobia**

 We calculated Cronbach’s reliability coefficient α to measure the internal consistency of the 10 items of the coronaphobia survey. The first and second periods had α coefficients of 0.889 and 0.893, respectively, both of which indicate that the 10 items in a scale have internal consistency. The mean and standard deviation are shown in Table 5, and the correlation matrix between items is shown in Tables 6 and 7. Values with high correlation are shown in shades of red, and values with low correlation are shown in shades of blue. Although the α value was sufficiently high, looking at Table 5, items 6), 7), 8), and 9) were excluded from the total because their correlation values were low. Items 1), 2), 3), 4), 5), and 10) were added up, and the total value was used as the coronaphobia index.

**Table 5**

*Mean and Standard Deviation of 10 Items of Coronaphobia*



**Table 6**

*Correlation Matrix between Items of Coronaphobia (2020)*



**Table 7**

*Correlation Matrix between Items of Coronaphobia (2022)*



Regarding the coronaphobia index, we conducted a two-tailed t-test to examine the difference between the averages of the first and second periods. The results show that the trend of coronaphobia was lower in the second period than in the first period (*t* (4872) =8.832, *p*<.001) (Figure 1). Pearson’s correlation coefficient was *r*=.83, indicating a high correlation.

**Figure 1**

*Mean and standard deviation of 6 items of coronaphobia*



In 2020, there was a strong tendency for people to have coronaphobia, but after two years, this tendency decreased.

 Next, the subjects were divided into two age groups: 39 years or younger and 40 years or older. A one-factor analysis of variance with respect to age was performed on the results of the coronaphobia index in the first and second periods. As a result, a significant difference was obtained between the conditions (2020Year: *F* (1,4869)=44.528, *p*<.001, partial *η2*=.009) (2022Year: *F* (1,4869)=59.355, *p*<.001, partial *η2*=.012). The results show that the tendency for coronaphobia was lower in the older age group than in the younger age group (Table 8).

**Table 8**

*Mean and Standard Deviation by Age Group*



One-factor analysis of variance was also conducted for gender and single/married conditions, but no significant differences were found between the conditions (*N.S.*). The lack of significant differences based on gender and marital status may be due to shared pandemic-related experiences across these groups, reducing variability in coronaphobia levels. Future research should explore potential psychological and social factors that may influence these results.

**Poetic justice**

Next, we focused on the relationship between poetic justice and coronaphobia under the assumption that some people may have felt that infected people “got what they deserved.”

Participants were asked to respond to the following question on the six-point scale: “I think people who get infected with the new coronavirus are attributable to themselves.” A one-way analysis of variance on the poetic justice condition on the results of the coronaphobia index in 2020 and 2022 showed a significant difference between the conditions (2020Year: *F* (5, 4867) =16.432, *p*<.001, partial *η2*=.010) (2022Year: *F* (5, 4867) =16.687, *p*<.001, partial *η2*=.010). In other words, in both periods, the stronger the response to the poetic justice item, the higher the tendency for coronaphobia. (Figures 2 and 3).

**Figure 2**

*The relationship between poetic justice and coronaphobia (2020)*



**Figure** **3**

*The relationship between poetic justice and coronaphobia (2022)*

**Discussion and Conclusion**

This study analyzed changes in people’s coronaphobia throughout the first two years of the COVID-19 pandemic and the subsequent two years. In 2020, people worldwide exhibited high levels of fear about the novel coronavirus. This fear likely stemmed from the highly contagious nature of the virus, the lack of treatments or vaccinations, and its devastating impact on daily life. This fear can be referred to as “coronaphobia.”

However, after two years, coronaphobia significantly decreased. The main factors behind this change are thought to be the development and dissemination of vaccines, improved understanding of public health, and the spread of information about the virus. In addition, the implementation of effective measures by governments and health institutions may have also contributed to increasing people’s sense of security.

This study’s findings indicate the process of human psychological adaptation to the pandemic. That is, early fears were based on uncertainty and a lack of information. However, over the first two years of the pandemic, society learned how to adapt and respond to this new threat. This finding reveals important implications for developing responses to future health crises. In particular, the provision of prompt and accurate information, investment in public health, and dissemination of preventive measures are likely to reduce public fear and enable a more effective pandemic response.

Furthermore, the results of the study showed that older people were less likely to have coronaphobia than younger people. The reason for this disparity may be that older people have a greater ability to accept threats and uncertainties. Additionally, older people have more experience overcoming many difficulties and crises, which could increase their psychological resistance to new threats. Furthermore, older people may have experienced less anxiety about the virus due to their relatively higher social and economic stability.

In contrast, among younger people, uncertainty about the impact of the virus on their future careers, education, etc., may have contributed to increased coronaphobia. In particular, young people who lack an established social or economic status are likely to be more anxious about the future impact of the pandemic. These findings suggest the need for an age-specific approach to coronaphobia and measures to reduce anxiety and provide appropriate information and support, especially for young people.

 This study’s results also show that people who felt a sense of poetic justice towards individuals infected with COVID-19 were more likely to have coronaphobia. This finding suggests that these people are more sensitive to the risks and consequences of COVID-19 because they are more conscious of the consequences of their actions and tend to take the personal and social consequences of the spread of infectious diseases more seriously.

Alternatively, they may have a deep understanding of the effects their actions, especially those relevant to health and safety, have on others, which may increase their fear.

**Conclusion**

The results show that an individual’s values and beliefs significantly influence their psychological response to the pandemic. Finally, the results demonstrate the significant impact of concepts such as cause and effect on people’s behavior and emotions and indicate their importance in understanding individual responses in crises such as pandemics.

This study has several limitations. First, as self-reported data was used, responses may have been influenced by social desirability bias. Second, cultural factors that shape attitudes toward infectious diseases were not explicitly examined. Lastly, the two-year study period captures only a limited phase of the pandemic, and future research should investigate longer-term trends.

We acknowledge the sensitive nature of this topic and the potential for reinforcing stigma. Our study does not aim to judge or assign blame to individuals affected by COVID-19, but rather to understand psychological factors influencing attitudes toward the virus. We emphasize the importance of fostering empathy and support for those impacted by COVID-19 and recommend that future research further explore ways to mitigate stigma in public discourse.

**Note**

1) "Don't come part-time job" to students "Tell me your address" to Kyoto Sangyo University where clusters occur one after another (Mainichi Shimbun: April 10, 2020)

https://mainichi.jp/articles/20200410/k00/00m/040/075000c

2) Cluster outbreak in Nippon Sport Science University wrestling department A total of 20 people were infected (Asahi Shimbun: August 15, 2020)

https://www.asahi.com/articles/ASN8H66JBN8HULOB022.html

3) Over 1,000 infected people for 4 consecutive days Clustered at the university rugby club (Asahi Shimbun: August 16, 2020)

<https://www.asahi.com/articles/ASN8J7GP6N8JUTIL005.html>

4) Informed Consent

Participants provided informed consent through GMO before participating in the survey. The informed consent process included an explanation of the study’s purpose, procedures, potential risks and benefits, and the participants’ right to withdraw at any time without penalty.

5) Confidentiality and Anonymity

The data was anonymized, and participants’ personal information was not disclosed to the researchers. As a result, the researchers could not access, identify, or delete any participant data. However, participants can delete it from their own My Page.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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