Perceived Risk of COVID-19 Among Students Using RIKA Assessment Risk Factors

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Abstract

As the COVID-19 pandemic impacted millions of people worldwide, it is vital to know the factors that may affect the risk to an individual. The epidemic of COVID-19 posed a significant threat to public health. This study aimed to assess the risk perception of COVID19 among students in the Philippines during the quarantine period and to investigate the risk factors associated with it. This study used an online survey to encourage college students from various parts of the Philippines' National Capital Region to participate. The study comprised a total of 100 college students. The risk factors affecting the students' perception of COVID-19 risk were determined using the RIKA risk assessment tool. Health, behavior, exposure, and social policy were all considered risk factors. The link between the risk factors and the perceived risk of COVID-19 was investigated using correlation analysis. The study revealed that exposure risk factors had a minor association with the perceived risk of COVID-19 among students. In addition, it was also found that health risk factors had an association with behavioral, exposure, and social policy risk factors. In contrast, behavioral risk factors are associated with exposure and social policy. Hence, because of COVID-19's high infectivity and opacity, it's critical to raise risk perception among college students through various forms of health education, with particular emphasis dedicated to some high-risk individuals.

Keywords
COVID-19, RIKA Risk Assessment, students

1. Introduction

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)-caused coronavirus disease 2019 (COVID-19) outbreak appears to have started in Wuhan, China, in December 2019 (Chen et al., 2020). As a result, it has spread rapidly both within and outside China (Giovanetti et al., 2020). It has evolved into a unique, worldwide public health issue as the COVID-19 pandemic impacted millions of people worldwide. It is essential to know the factors that may affect an individual.

As the number of people dying from the virus climbs worldwide, it's more important than ever to grasp the infection's perceived risk. People's subjective evaluation and judgment of hazards to which they may be exposed, in terms of severity, features, and management, is known as risk perception. Individual, societal, cultural, and contextual factors all influence it, and it is founded on experiences, beliefs, attitudes, judgments, misunderstandings, and sentiments (Cori et al., 2020). Fear and anxiety are heightened because of risk perception, prompting preventive behavior. People with high-risk perceptions are more likely to undertake protective health behaviors, which minimizes the risk of infection (Dryhurst et al., 2020; de Bruin & Bennett, 2020).

At the individual, local, and worldwide levels, risk perception is critical in determining the extent of community understanding of the pandemic's severity and readiness to participate in the implementation of health-prevention measures. There is a research gap regarding the degree of risk perception in reaction to health pandemics in different societies, particularly among students. Colleges and universities are among the most dynamic groups, with high mobility and sociability. They are youthful, healthy, and show just minor symptoms after becoming infected with a highly contagious virus and quickly passed from one person to another (Tadese et al., 2021). Furthermore, determining the level of awareness of the COVID-19 pandemic among students, their intentions and abilities to

implement preventive measures, and their sense of self-efficacy in implementing recommended measures are all baseline levels of information that must be gathered during scientific research to determine how best to optimize community awareness through scientific interventions, media releases, and government channels.

1.1 Objectives

The coronavirus disease 2019 (COVID-19) epidemic posed a significant threat to public health. This study aimed to assess COVID-19 risk perception among college students in the Philippines during the quarantine and investigate relevant factors associated with the perceived risk based on the RIKA risk assessment tool.

2. Literature Review

Risk assessment is a crucial step in disaster risk reduction because it permits information to be used to determine appropriate preventive and mitigation strategies. Hazard, exposure, and vulnerability assessments are three key approaches for catastrophe risk assessment. In the fields of health, safety, and the environment, risk assessment is also commonly employed. It entails assessing current susceptibility, the imminent hazard, existing exposure, and current preventative capabilities. Risk models define the aspects that must be considered when evaluating risk and the relationships between them, resulting in a kind of template for risk assessors to utilize in their assessments. Individual risk for specific diseases has been assessed using health risk assessment methods.

A study by Shaw et al. (2020) emphasized the importance of a thorough risk assessment that considers elements such as health risk, governance, exposure, and citizen behavior. To manage this public health emergency, a coordinated strategy for disaster risk governance is required to boost the community-level response. Risk assessment is typically left to science, technology, academics, and policymakers. Risk communication is used to make the risk assessment available to the general population.

According to Schroder (2020), a formal risk assessment approach examines a pathogen's many characteristics and how it interacts with humans and the environment. Risk assessments are prevalent in research settings, but they're also crucial in public health to determine the risks a newly emerging disease poses to the general public. Emerging disease risks should be assessed the same way as new compounds created in therapeutic development. The foundation of biological risk assessment is based on several well-defined factors, including the pathogen, the human, and the context or environment, all of which influence policy decision-making processes, including healthcare decisions in the public health domain.

The WHO published guidelines concerning the pandemic readiness, which stated that the failure to generate an effective plan would result in social and economic disruption, lower production levels, and shortages of supplies. Some industries are most likely to be vulnerable, considering the economic consequences of the outbreak. Risk assessment utilizes biological research approach that involves pathogen, environment, humans, and healthcare decisions. The different factors contributing to its adverse effect were explained, such as characteristics of pathogen risk groups, transmissibility, fatality ratio, and administrative controls. The study concluded that constant surveillance is essential for detecting diseases, isolation, and contact tracing since it would be helpful in other emerging diseases (Schroder, 2020). Some studies have developed tools that help assess the risk of COVID-19. The study area focused on the outbreak outside China, which indicated the key parameters such as cases in mainland China, travel frequencies and restrictions, and measure controls. After assessing the risks based on the growth of cases in different regions, travel restrictions are the most beneficial way to reduce the risk (Boldog et al., 2020).

Risk awareness is the recommended way to slow down the transmission of the disease. Effective risk assessment plays a significant role in controlling the outbreak alongside the assessment tools developed to track down patients and diagnose a possible health condition. The RIKA Assessment tool that focuses on tracking and detection consists of four key parameters: health, behavior, exposure, and social policy. The data gathered using the tool were utilized to analyze contributing factors in COVID19 management. Assessing the risks is essential in risk reduction since it analyzes the situation that would contribute to better decision-making and planning of preventive measures (Chatterjee et al., 2020).

3. Methods

This study aimed to determine the perceived risk among the students during the pandemic. To provide data and achieve the study's objectives, the researchers prepared a questionnaire to gather some information regarding the

perceived risk of students for COVID-19 based on the RIKA Risk Assessment tool. RIKA India has developed a novel risk assessment tool beyond symptom detection and patient tracking. The risk factors that were considered in the study are categorized as follows: (a) health, (b) exposure, (c) behavior, and (d) social policy. Each of these four categories has sub-factors that help analyze the overall risk more comprehensively and present it to the user more quickly (Chatterjee et al., 2020). In addition, the data on perceived risk was gathered using the COVID-19 Risk Perception survey questionnaire. This questionnaire was created based on reviewing the literature on COVID-19 risk perception assessments and other infectious illnesses. The questionnaire was evaluated psychometrically and determined to be a valid and reliable tool before data collection. The alpha coefficients of Cronbach's alpha for the dimensions ranged from 0.69 to 0.79, indicating that the questionnaire's internal consistency was adequate.

The obtained data were coded and entered into the SPSS version 25 statistical tool for analysis after each questionnaire was checked for completeness and consistency. Descriptive statistics were used to measure the participants' risk perceptions and baseline characteristics. Correlation analysis with a 95 percent confidence interval was used to determine the strength of the link between the risk factors and perceived risk for COVID-19, and the goodness-of-fit was used to test model fitness. A 0.05 p-value was declared as the significance level.

5. Results and Discussion

Based on the result of the data gathering, a total of 200 participants responded to the questionnaire. Accordingly, most (60%) of the respondents were 18 - 22 years old, followed by 22 years and above age groups, accounting for (62%). In terms of gender, the majority (89%) of the survey respondents were male. Concerning the educational level, all of the respondents were college degree students.

5.1. Perceived Risk Measure

Based on the COVID-19 perceived risk survey result, as shown in Table 1, the majority of the study participants feel that they are at risk of COVID-19 (x=3.5). They worry that their family members might get COVID-19 (x=4.26), they think their health will be severely affected if they get infected with COVID-19 (x=3.63), and they feel disturbed when they think about COVID-19 (x=3.96), they believe there is a stigma related to COVID-19 (x=3.91), and they fear going to hospital due to COVID-19 (x=3.19).

Table 1. Summary of COVID-19 Perceived Risk Measure

Items	Mean	Std. Dev.	Range	Agreement
I feel that I am at risk of getting COVID-19	3.57	1.14	1-5	agree
I worry that my family member might get COVID-19.	4.26	1.16	1-5	agree
I think that my health will be severely affected if I get infected with COVID- 19.	3.63	1.24	1-5	agree
I feel disturbed when I think about coronavirus disease.	3.96	1.21	1-5	agree
I think that there is a stigma related to COVID-19.	3.91	0.95	1-5	agree
Fear of going to hospital due to COVID-19	3.19	1.24	1-5	agree
I am afraid to contact people with flu symptoms	4.00	0.82	2-5	agree
If I get infected with coronavirus, I think I cannot manage my daily activities.	3.93	1.12	1-5	agree

As shown in Figure 1, it was revealed that the highest item in the perceived risk of COVID-19 is worrying that a family member might get COVID-19. According to Psychologist Jessica Borelli, many families are afraid that they or their family members will develop severe symptoms, and some become ill and need to be admitted to the hospital. Regardless of the severity of their disease, they must all figure out how to safely confine themselves, warn others, and deal with their anxiety, dread, depression, and guilt. When families under quarantine must abruptly modify their regular routines and family duties, it can be exceedingly stressful. Some people must relocate their living quarters, sort out childcare or other family responsibilities, and determine whether or not they can continue working.

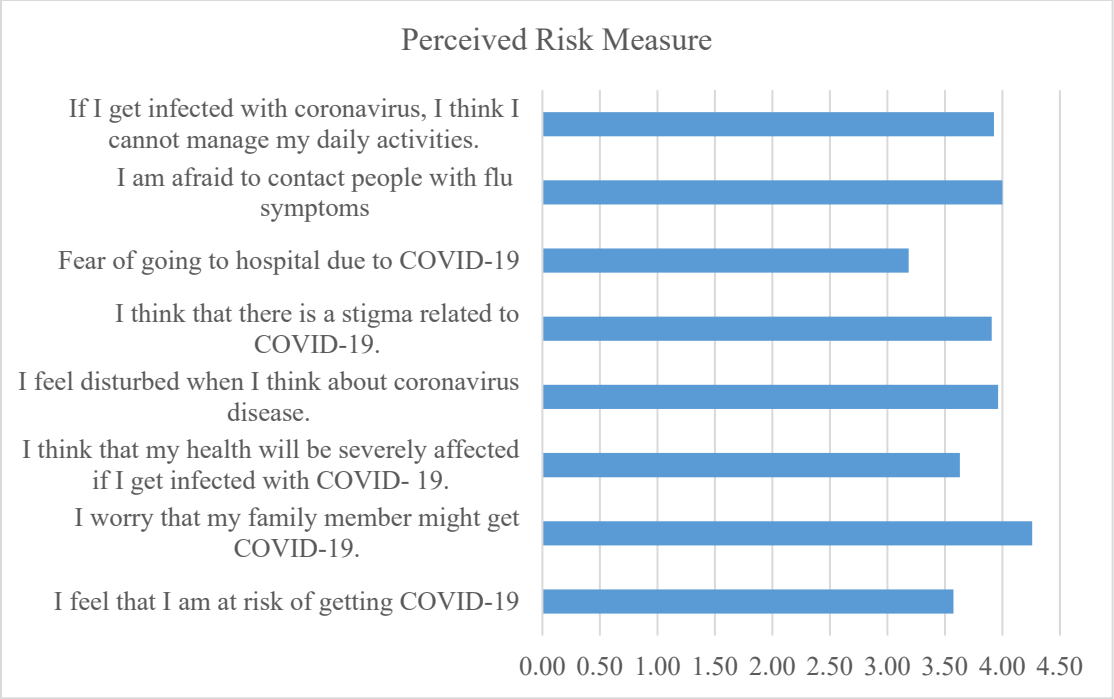

Figure 1. Level of Perceived Risk

5.2. Risk Assessment using RIKA Tool

Based on the result of the RIKA assessment tool, as shown in Table 2, it was found that for health factors, most of the respondents agree that they are at risk of COVID-19 because of their age and lifestyle; however, in terms of comorbidities, they had less risk since the age range of the respondents are the younger generation. Physical activity, sedentary behavior, sleep quality, nutrition quality, alcohol use, and smoking status were all included in the lifestyle indices based on health guidelines and best practice recommendations (Ahmadi et al., 2021). Thus, improvements in lifestyle risk factors and adherence to public health standards or best practice recommendations could be utilized as a supplement to reduce infectious illness mortality.

In terms of exposure factors, most of the respondents felt at risk for COVID-19 because they lived in a highly populated residential area and had a history of travel and mass gathering. As proposed by Acuto (2020), building types have a direct impact on the probability of pandemic transmission. Informal communities and communal housing are the most vulnerable. High-rise residences also result in a greater concentration of people in a smaller space.

Regarding behavioral factors, respondents felt they had less risk for COVID-19 since they use face masks, wash and sanitize hands regularly, and avoid social distancing. A recent study in Germany found that requiring people to adhere to minimum safety protocols like wearing face masks, hand sanitizing, and following social distancing resulted in a more effective, fair, and socially responsible strategy to reduce the risk of infection for COVID-19 (Betsch et al., 2021). However, most of the respondents still felt anxious because of the presence of COVID-19. This states that there is more anxiety within high-risk category people followed by medium and low-risk categories.

For the social policy, most respondents believed they are at risk for COVID-19 due to their lack of trust in the government, the ineffectiveness of lockdown, and poor community compliance with COVID-19 protocols. According to OECD (2020), COVID-19-related health outcomes may be influenced by public trust. COVID-19-related death rates are more significant in several nations where governments are less trusted. While numerous elements are at play, such as health and social system capacity, deprivation levels, and so on, it could indicate that governments with low levels of trust may have trouble implementing containment measures and ensuring that their

populations comply with public health policies. These governments may be less likely to benefit from any increase in trust caused by the crisis in the future.

Table 2. Summary of RIKA Assessment Tool

Factor	Item	Mean	Std. Dev.	Range	Agreement
Health	Age	2.87	1.04	1-5	agree
	Comorbidities	2.41	1.22	1-5	disagree
	Lifestyle	2.65	1.50	1-5	agree
Exposure	Highly populated residential Area	2.94	1.13	1-5	agree
	Mass gathering and travel history	2.74	1.27	1-5	agree
Behavioral	Seldom use of face mask	1.59	1.05	1-5	disagree
	Seldom hand washing	1.70	1.10	1-5	disagree
	Seldom sanitizing	1.67	0.97	1-5	disagree
	Does not practice social distancing	2.04	1.22	1-5	disagree
	Anxiety	3.57	1.22	1-5	agree
Social Policy	Lack of gov't trust	3.87	1.08	1-5	agree
	Ineffectiveness of lockdown	3.78	1.09	1-5	agree
	Poor community compliance with COVID-19 protocols	3.72	1.20	1-5	agree

5.3. Correlation Analysis

As shown in Table 3, the correlation analysis proved that the risk factor that had a significant association with the perceived risk of COVID-19 among students is the exposure risk factor ($r=0.294$, $p=0.002$). Understanding exposure hazards is essential for public education and lifesaving. Our findings shed light on exposure hazards and demonstrate that the danger of exposure affects COVID-19 transmission susceptibility. The necessity to continue focusing efforts on COVID-19 prevention and mitigation techniques and address the disparities more completely in illness risks by social groups such as students that the COVID-19 pandemic has exposed is undeniable.

In addition, it was also proved to have a significant association between health risk and behavioral risk factors ($r=0.222$, $p=0.021$) and health risk and exposure risk factors ($r=0.399$, $p<0.001$). According to Wood et al. (2021), behavioral risk factors play a crucial impact on the likelihood of developing infectious diseases like COVID-19 and experiencing more severe results. The prevention of infectious diseases is most likely to succeed if it includes preventing non-infectious disease-related behavioral risk factors. These findings are crucial for understanding the hazards associated with COVID-19, and they come at a critical moment, given the COVID-19 pandemic and the need for future pandemic preparedness upgrades. Work to create resilience against any current or future epidemics and pandemics should include addressing behavioral risk factors.

It was also found in the present study an association between behavioral risk and social policy risk factors ($r=0.258$, $p=007$). As seen in SARS, Cheng and Ng (2006) emphasize the relevance of social behavior in contributing to the risk of catching the disease. As a result, a weak link between individual behavior and compliance with social policies indicates a governance and implementation gap. This means that a greater level of community awareness is required. Because culture and citizen behavior play such a prominent role in pandemic response (Tashiro & Shaw, 2020), decision-makers must develop tailored intervention policies to instill risk-averse behavior and enhance community compliance with social policy measures.

Table 3. Summary of Correlation Analysis

Factors	Pearson correlation (r)	p-value	95% CI for p	Remarks	Level of association
Health factor → perceived risk for COVID-19	0.115	0.236	-0.076, 0.298	not significant	no association
Behavioral factor → perceived risk for COVID-19	-0.01	0.915	-0.199, 0.179	not significant	no association
Exposure factor → perceived risk for COVID-19	0.294	0.002	0.111, 0.457	significant	minor association
Social policy factors → perceived risk for COVID-19	0.085	0.379	-0.105, 0.270	not significant	no association
Health factor → behavioral	0.222	0.021	0.034, 0.394	significant	minor association
Health factor → exposure	0.399	<0.001	0.227, 0.547	significant	moderate association
Health factor → social policy	-0.025	0.795	-0.213, 0.164	not significant	no association
Behavioral factor → exposure	0.133	0.169	-0.057, 0.314	not significant	no association
Behavioral factor → social policy	0.258	0.007	0.073, 0.426	significant	minor association
Exposure factor → social policy	-0.053	0.583	-0.240, 0.137	not significant	no association

6. Conclusion

During the COVID-19 pandemic, strategies to encourage the adoption of preventive behaviors should emphasize raising risk perception and demonstrating the effectiveness of the behavioral actions taken to reduce risk. Health education programs customized to specific sociodemographic groups are critical for boosting the adoption of outbreak prevention measures by raising public awareness, perceptions, and attitudes.

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