

## Motivation for Risk Information Seeking among Hospital Employees in the Context of COVID-19 Pandemic: An Organisational Perspective

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### ABSTRACT

The outbreak of novel infectious diseases like COVID-19 elicits widespread uncertainty and fear, prompting individuals to seek information from various media channels to protect themselves and their loved ones. However, the factors that motivate hospital employees, who serve as the frontliners in combating the COVID-19 pandemic, to seek COVID-19-related information are still far from understood. Guided by the Risk Information Seeking and Processing (RISP) model, this study aimed to examine the motivational factors that drive hospital employees' risk information-seeking behaviour within the Malaysian context. Through analysis of a proportionate stratified sample size of hospital employees ( $N=407$ ), this study revealed that information needs, current knowledge, and organisational norms significantly influence hospital employees' intention to seek risk information. These findings contribute to the theoretical development of the RISP model by highlighting the importance of information needs as a prominent factor and underscoring the valuable role of organisational norms in shaping hospital employees' risk information-seeking behaviour within hospital settings. From a practical standpoint, our findings offer valuable insights that can inform communication strategies and enhance organisational support in healthcare environments, particularly in risk management. By considering our results, healthcare institutions can improve their preparedness for future pandemics and strengthen risk communication within Malaysia's healthcare system. Furthermore, this study extends the application of the RISP model and related work within the COVID-19 pandemic, providing pertinent knowledge on risk communication within the healthcare sector.

**Keywords:** *COVID-19, hospital employees, Risk Information Seeking and Processing Model, risk information seeking, pandemic preparedness.*

### INTRODUCTION

Risk communication has been extensively studied as a subfield of communication, focusing on industrial, environmental, and health hazards (Clair et al., 2021; Choo, 2017; Yang et al., 2014). Risk information seeking is central to this subfield, which explores why individuals seek and obtain relevant risk information to inform their decision-making (Griffin et al., 2008; Huurne & Gutteling, 2008; McComas, 2006). Concerns and uncertainties about this novel disease are on the rise among the general population during public health emergencies such as the COVID-19 pandemic. However, accessing accurate and reliable information about COVID-19 is difficult due to the abundance of available information, which is frequently contradictory. Like many worldwide, Malaysian citizens have demonstrated a heightened

interest in seeking information during crises, as evidenced by increased Google searches related to protective consumables such as masks and hand sanitizer (Lim et al., 2020). Furthermore, research indicates that Malaysians utilise various sources for information, such as television, Internet news portals, social media platforms like WHO, Instagram, and Twitter, and messaging apps like WhatsApp, indicating preferences across different demographic groups (Mohamad et al., 2020; Budd et al., 2020; Srivastava et al., 2020). This behaviour of seeking health information serves as a coping strategy for Malaysians to adapt to changes in lifestyle, thereby contributing to increased community well-being during crises (Cheah et al., 2023). As frontliners, hospital employees not only protect the public's health but also grapple with heightened levels of uncertainty, fear, anxiety, and vulnerability (Shaukat et al., 2020; Shreffler et al., 2020). Therefore, timely and accurate information is crucial for reducing uncertainty (Tandoc & Lee, 2022) and enabling hospital employees to manage health crises effectively (Bento et al., 2020; Garfin et al., 2020). Empowering hospital employees to seek accurate and current information is of utmost importance for reshaping their mindset, attitudes, and behaviours in consonance with public health policies, mitigating risks, and assuming responsibility for activities related to COVID-19.

While the importance of risk information seeking as a motivator for healthy behaviours is clear, research on its determinants yields conflicting results. Some studies have shown that when an individual is dissatisfied with their current risk information, they are more likely to seek additional information and put more effort into finding relevant sources to better manage the risk (Griffin et al., 1999; Huurne & Gutteling, 2008; Li et al., 2017). However, other studies have found that information needs are not related to risky information seeking (Kahlor, 2010; Kellens et al., 2012). This inconsistency was also reported in a recent COVID-19 risk information-seeking and sharing study that examined the relationship between information insufficiency in the context of an "infodemic" and risk information-seeking intention (Yang et al., 2021). The mixed findings regarding risk information-seeking motivators suggest the need to analyse the underlying mechanisms. Previous studies have identified various individual and social factors that may contribute to risk information-seeking intention, such as risk judgment (Griffin et al., 2004), information needs (Alaszewski, 2005; Johnson, 2005), and perceived social pressure (Huurne et al., 2009). However, much is unknown about what motivates individuals to seek information in the era of a fast-evolving global pandemic and infodemic, especially from an organisational perspective (Zhou, 2021; Shen et al., 2022).

It is critical to examine this for several reasons. First, healthcare providers today engage diverse stakeholders in the healthcare delivery system (Babiker et al., 2014; Jiang & Lam, 2021). The alignment of goals and visions is paramount in establishing a shared interest and coordinated actions that lead to delivering quality and safe healthcare services to the public during the pandemic (Babiker et al., 2014). Consequently, investigating the effects of social norms in an organisational context becomes important when predicting information-seeking behaviours. It is worth noting that while previous empirical studies primarily focused on intrapersonal or interpersonal factors (Kriyantono et al., 2023), contextual factors influencing health beliefs and prevention behaviours within an organisational setting have been largely overlooked. Social-ecological models acknowledge the interplay between individuals and their environments that ultimately impact health outcomes (Sallis et al., 2008). Second, past research found that poor organisational risk communication can lead to rumour-mongering and miscommunication among internal stakeholders, such as employees

(Fern-Bank, 2007). Thus, focusing only on external stakeholders may overlook the significance of risk communication with internal stakeholders, especially hospital employees, during a crisis. As frontliners, hospital employees are critical in responding to infectious disease outbreaks, such as the COVID-19 pandemic. The ability of the Malaysian healthcare system to effectively handle the pandemic largely depends on the capability and willingness of hospital employees to work through the crisis (Ives et al., 2009).

Consequently, this study aims to examine the association between organisational factors and hospital employees' risk information-seeking while considering the unique context of Malaysia. Additionally, most previous research on this topic has been conducted in developed countries like the United States and China, with limited empirical evidence from Malaysia, a Southeast Asian country. Hence, researching the risk communication of new infectious diseases in Southeast Asia is crucial, as the region's tropical climate may exacerbate infectious disease situations (Coker et al., 2011). The findings of this study carry significant theoretical implications as they contribute to a more nuanced understanding of the interplay between organisational norms and other motivational factors in information seeking. Specifically, this research delves into whether organisational norms hold a more significant influence over individuals' motivation to seek information compared to other factors. By investigating this relationship, the study sheds light on the complex dynamics that shape information-seeking behaviours within organisational contexts. Moreover, from a practical standpoint, the insights gained from this study offer valuable guidance for healthcare settings in their efforts to enhance internal stakeholder communication and preparedness before the occurrence of a crisis. By comprehending the intricate factors that impact information-seeking behaviours, healthcare organisations can proactively establish mechanisms and resources that facilitate effective and timely dissemination of information to internal stakeholders. Such preparations can significantly contribute to managing crises, ensuring that all relevant individuals are well-informed and equipped to respond appropriately.

This study, guided by the Risk Information Seeking and Processing (RISP) model, investigates the core determinants influencing hospital employees' intention to seek risk information. The findings offer theoretical insights by unravelling a more intricate understanding of how organizational norms shape hospital employees' risk information-seeking behaviour amidst a public health emergency, such as the COVID-19 pandemic. From a practical standpoint, comprehending these underlying drivers and mechanisms of risk information seeking among hospital employees can aid public health scholars and practitioners in implementing evidence-based interventions to better support the healthcare workforce during crises. Ultimately, this can enhance future preparedness, response strategies, and overall patient care outcomes.

## LITERATURE REVIEW

### *Theoretical Framework: The RISP Model*

Although numerous theories explain information-seeking behaviour, the Risk Information Seeking and Processing (RISP) model (Griffin et al., 1999) offers a sound theoretical framework for understanding key factors driving risk information-seeking behaviour, particularly in the context of public health emergencies. The model was initially proposed to identify the cognitive and socio-psychological variables that account for individuals' information-seeking and processing related to a certain health or environmental hazard, such as participating in a cancer clinical trial (Yang et al., 2010) or eating contaminated fish from

the Great Lakes (Griffin et al., 2004). Some of the concepts in the model were mainly adapted from social psychology theoretical models such as the Heuristic-Systematic Processing Model (HSM) (Eagly & Chaiken, 1993) and the Theory of Planned Behaviour (TPB) (Ajzen, 1991). The framework has been widely employed as a guiding framework for numerous empirical studies in the field of risk communication research to elucidate the mechanisms underlying information-seeking behaviour.

A core concept within the RISP model is information insufficiency, which reflects individuals' perception of lacking adequate knowledge to address a risk situation. This concept is primarily rooted in the Heuristic-Systematic Processing (HSM) Model's sufficiency principle, which states that individuals strive for a "sufficient" level of confidence in achieving their processing goals (Eagly & Chaiken, 1993). Previous studies have demonstrated that when faced with information insufficiency, individuals are motivated to seek out relevant information to fulfil their information needs and achieve a satisfactory level of confidence in their understanding of the risk (Griffin et al., 2008; Huurne & Gutteling, 2008; Huurne et al., 2009). In the healthcare context, hospital employees are particularly prone to information-seeking behaviour due to the critical nature of their work. The absence of adequate information in a hospital setting can lead to medical errors, especially as frontline workers often experience elevated levels of work stress and possess diverse information needs related to patient care (Liverman et al., 1997).

Another key concept highlighted by the RISP model is informational subjective norms, which refer to the influence of social norms and expectations on individuals' evaluation of their information needs (Griffin et al., 2013). Individuals compare their abilities with others and desire social approval and liking (Eagly & Chaiken, 1993). This effect is even more remarkable when important others are knowledgeable about a risky topic (Huurne et al., 2009). Recent research on the COVID-19 pandemic has underscored the significant role of interpersonal relationships and normative expectations in shaping individuals' information-seeking behaviour (Ford et al., 2022). However, the RISP model mainly focuses on informational subjective norms derived from the theory of planned behavior, and there is limited research on the influence of different normative concepts and contextual attributes in the context of information seeking (Smith et al., 2012; Chung & Rimal, 2016). Additionally, there is limited research on the relationship between organisational norms and healthcare workers' risk information seeking (Real, 2010). Considering organisational norms in the context of hospital employees is crucial, as studies have shown that work environment conditions can affect employees' behaviours (Nguyen et al., 2015; Tham et al., 2022). Thus, understanding the relationship between organisational norms and hospital employees' information-seeking behaviour in this empirical study could provide valuable insights.

In response to this gap in the literature to look from an organisational perspective, our study extends the theoretical framework of the RISP model by introducing four new direct motivators of information seeking, particularly from the perspective of organisational norms. Building upon previous studies (Griffin et al., 2012; Huurne & Gutteling, 2008; Yang & Kahlor, 2013), we proposed organisational norms as a key factor influencing healthcare workers' information-seeking behaviour. By incorporating organisational norms alongside information needs, current knowledge, risk perception, and affective responses, our study aims to provide a comprehensive understanding of the complex dynamics driving information-seeking behaviour among hospital employees during public health emergencies.

### *Risk Information Seeking Behaviour*

Information seeking can be considered the process of selecting information channels and making choices to attend to specific messages to achieve informational goals (Cho, 2014; Mazlan et al., 2021). It is a purposeful communication behaviour driven by the need to resolve uncertainty and satisfy goals (Ford, 2004; Wilson, 2000). That is consistent with the information-seeking theory (Atkin, 1972), which posits that individuals in nature need to pursue a satisfying amount of certainty about topics in their environment. In alignment with the Uncertainty Reduction Theory, when individuals perceive high levels of uncertainty, they tend to engage in more information-seeking behaviour to reduce uncertainty (Berger & Calabrese, 1975). For example, a report showed that parents actively seek information following a positive newborn screening for a disease like cystic fibrosis (Dillard & Carson, 2005).

Risk information seeking in the communication literature recognises that individuals look for information concerning a risk topic or event when they feel threatened by a potential risk and are unsure how to respond (Yang et al., 2014). Increased risk information seeking can promote positive outcomes by helping the public increase awareness, reduce uncertainty and panic, and improve prevention (Lep et al., 2020; Yang et al., 2014). Hospital employees can reduce their risk of infection by seeking relevant information about pandemics like COVID-19. Although studies in communication, particularly in the subfields of health and risk communication, have shown that seeking behaviours are complex and contingently driven, previous literature on information seeking has always assumed that one's perceived knowledge gap is the inevitable outcome of information seeking (Robson & Robinson, 2013). In other words, most individuals would likely seek more information when there is a perceived gap in their knowledge on a particular subject. Nevertheless, the circumstances they face would also limit their actual information-seeking behaviours.

### *Organisational Norms*

In general, norms are defined as individuals' perceptions of social referents' behaviours and approval of those behaviours (Rimal & Lapinski, 2015). In the RISP model, informational subjective norms represent an individual's perception of their social surroundings, whether or not other people expect them to know about the specific risk, and their inclination to respond to social pressures that they should gain sufficient knowledge to adjust their behaviours in the risk situation (Yang et al., 2014). Individuals compare their abilities with others and desire social approval and liking (Eagly & Chaiken, 1993). For example, an individual's social network, such as their family members and friends, would influence their assessment of their knowledge regarding a risk through their interactions to have common topics and gain social approval. While previous studies have examined the direct and indirect influences of informational subjective norms on information seeking (Griffin et al., 2012; Kahlor, 2010), the model primarily focuses on one normative judgement and neglects other normative concepts that may have diverse influences on behaviour (Smith et al., 2012; Zhuang, 2023). The effect of social norms on behaviour has been widely established, with subjective norms, descriptive norms, and injunctive norms being discussed in the literature (Fishbein & Ajzen, 1975; Rimal & Real, 2003). However, the RISP model mainly focuses on informational subjective norms derived from the theory of planned behaviour, and there is limited research on the influence of different normative concepts in the context of information seeking (Smith et al., 2012). It is important to consider organisational norms in

the context of hospital employees, as they operate within a community that influences their behaviours. Studies have shown that work environment conditions can affect employees' behaviours (Nguyen et al., 2015; Tham et al., 2022). Hospital employees' information behaviours can be influenced by their interactions with important people in their work environment, such as supervisors and colleagues (Falcione & Wilson, 1988; Janmaimool, 2017; Tham et al., 2022). The expectations of the hospital, patients, top management, physicians, and other healthcare professionals can shape hospital employees' perceptions of the knowledge they need to possess, thus motivating them to seek additional information in alignment with organisational norms. Therefore, we propose the following hypothesis:

**H1.** There is a positive association between organisational norms and intended risk information seeking among hospital employees.

### *Information Needs*

The core concept of the RISP model is that an individual will seek additional information when they perceive a gap between their existing risk knowledge and the amount of needed information to make informed decisions when faced with a risk situation. Information needs or information insufficiency is primarily developed from the HSM's sufficiency principle, which states that "individuals strive for a 'sufficient' level of confidence in achieving their processing goals" (Eagly & Chaiken, 1993). It is posited that individuals are motivated to maintain accurate beliefs about a risky issue. Previous studies confirmed the relationship between information insufficiency and information seeking robustly (Yang et al., 2014); however, other studies have failed to demonstrate this outcome (Kahlor, 2010; Yang et al., 2021). For instance, when a risk topic becomes relevant and essential to an individual, it will prompt their desire for more information to aid their decision-making process (Alaszewski, 2005). However, an individual's need for additional information may lack urgency in different risk contexts. That might be the lack of association between information needs and seeking intention about a specific risk situation (Kahlor, 2010). In the case of the COVID-19 pandemic, hospital employees, being on the frontlines, face high levels of work-related stress and have diverse information needs related to patient care, education, and research (Liverman et al., 1997; Maggio et al., 2014). As a vulnerable group in the pandemic, hospital employees greatly value information to cope with their work and protect themselves and their patients. Thus, they will likely need information, which drives their intention to seek relevant information. In light of prior literature, we, therefore, put forward the following hypothesis:

**H2.** There is a positive association between information needs and intended risk information seeking among hospital employees.

### *Current Knowledge*

Current knowledge in the RISP model refers to an individual's perceived existing knowledge about a specific risk topic. While previous studies have shown that current knowledge as part of information insufficiency in the RISP model directly affects intentions to seek additional information (Huurne & Gutteling, 2008; Kahlor et al., 2006), the association between current knowledge and other model concepts is not well-established (Kahlor, 2010). It is important to note that current knowledge is an independent variable that influences information-seeking behaviour (Huurne & Gutteling, 2008; Kahlor, 2010; Kellens et al., 2012). In the context of

hospital employees, those with a higher perception of current knowledge are expected to have a greater intention to seek risk information (Huurne & Gutteling, 2008). Therefore, we propose the following hypothesis:

**H3.** There is a positive association between current knowledge and intended risk information seeking among hospital employees.

#### *Perceived Risk and Affective Responses*

Perceived risk represents individuals' subjective judgements of the vulnerability of risk and the severity of its potential consequences (Griffin et al., 1999), while affective responses relate to the emotional reactions experienced in response to the nature or consequences of the risk (Li et al., 2017; Yang & Kahlor, 2013). Individuals may perceive risk differently, influencing their responses to a given danger (Griffin et al., 1999). When individuals perceive a risk associated with negative emotions such as worry, anxiety or fear, they are more likely to seek information to alleviate these negative feelings (Noh et al., 2016). For instance, an individual's perceived cancer risk was positively associated with their negative emotions toward the disease (Hovick et al., 2014). Previous research has demonstrated that perceived risk is a powerful predictor in times of emergency, positively influencing information needs and facilitating risk information-seeking behaviour (Huurne & Gutteling, 2008; Kellens et al., 2012; Zhou, 2021). Similarly, affective responses have a positive relationship with information-seeking behaviour (Kahlor, 2007; Yang & Kahlor, 2013). In the context of the COVID-19 pandemic, hospital employees are likely to perceive higher risk levels, experience negative emotions related to the disease, and seek information to reduce the perceived threat. Consistent with past research, we, therefore, propose the following hypotheses:

**H4.** There is a positive association between perceived risk and intended risk information seeking among hospital employees.

**H5.** There is a positive association between affective response and intended risk information seeking among hospital employees.

## METHODS

### *Procedures and Sampling*

A proportionate stratified sampling method was employed in this study. A survey pre-test was conducted to assess the validity and quality of the measurement items, followed by a pilot test to evaluate the instrument's reliability and to familiarize ourselves with the survey procedure and the time required for questionnaire completion. Based on the results of these tests, necessary modifications were made to the survey instrument. In the main study, data were collected online and in person during the early stage of the COVID-19 pandemic. With the assistance of the hospital's clinical research department and staff from other departments, such as nursing and administration, a weblink to the online questionnaire was disseminated through email and specific WhatsApp work groups to hospital employees, comprising five groups: doctors, nurses and midwives, allied health professionals, managers and administrative officers, and staff from support, biomedical, information technology, food and beverages as well as cleaners and security guards at both Sunway Medical Centre (Sunway City) and Sunway Medical Centre Velocity. A hospital employee delivers care and services to the sick and ailing either directly as doctors and nurses or indirectly as aides,

helpers, laboratory technicians, or even medical waste handlers (Joseph & Joseph, 2016). The selection and categorization of hospital employees are to ensure the inclusion of a diverse range of roles in our study. The final sample consists of 253 hospital employees from Sunway Medical Centre and 154 hospital employees from Sunway Medical Centre Velocity; a total of 407 hospital employees participated in this study and were valid for analyses.

In this study, the average age was 32.60 (SD = 8.441). Of the respondents, 86 were male (21.1%) and 321 were female (78.9%). The distribution by ethnic background was: Malay (43.7%), Chinese (32.4%), Indian (16.5%) and other (7.4%). The hospital employees were divided into five categories: doctor (9.6%), nurse and midwife (43.7%), allied health professional (21.4%), CEO, manager, administration officer (9.8%), staff from support, biomedical, information technology, food and beverages, cleaner and security guard (14.7%). All study procedures were approved by the Institutional Review Board and Ethics Committee. (034/2020/IND/ER).

Table 1: Demographic profile

Demographic Categories		Frequency	Percentage (%)
<b>Ethnicity</b>	Malay		
	Chinese	132	32.4
	Indian	67	16.5
	Other	30	7.4
<b>Gender</b>	Male	86	21.1
	Female	321	78.9
<b>Age</b>	Mean		32.60
	Std. Deviation		8.241
<b>Marital Status</b>	Single	193	47.4
	Married	203	49.9
	Other	11	2.7
<b>Occupation</b>	Doctor	39	9.6
	Nurse and midwives	178	43.7
	Allied health professional	87	21.4
	CEO, manager, administration officer	40	9.8
	Cleaners, Support, Biomed, IT, F&B, security guard	60	14.7
<b>Nationality</b>	Malaysian	396	97.3
	Non-Malaysian	6	1.5
<b>Education Level</b>	Primary school	7	1.7
	Secondary school	50	12.3
	Diploma, A-level, Pre-University, Foundation	174	42.8
	Bachelor Degree	115	28.3
	Master Degree	45	11.1
	PhD	5	1.2
	Other	7	1.7

Source: Primary Data

### Measurement

*Intended risk information-seeking* was measured by five items, adapted from Kellens et al. (2012), which were used to assess their information-seeking intention: (1) "I intend to search for more information on the possible consequences of contracting COVID-19."; (2) "I intend to search for more information on the measures that the government is employing to cope with the COVID-19 pandemic."; (3) "I intend to search for more information on how to prevent the spread of COVID-19."; (4) "I intend to learn more about COVID-19 when the people around me discuss the topic."; and (5) "I regularly check to see if there is any new information about COVID-19." Responses were scored on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree) and averaged to create a composite score ( $M = 5.99$ ,  $SD = 0.85$ ,  $\alpha = .91$ ).

*Organisational norms* were measured by four items, adapted from Ford and Stephen (2018) and Huurne et al. (2009). Respondents were asked to identify the degree to which they agree with the following statements: (1) "It is expected of me that I know about COVID-19 risks;" (2) "My employer or superior expects me to know about COVID-19 risks;" (3) "My manager or colleagues who are important to me think I should stay on top of information about the topic;" and (4) "The opinion of my colleagues around me is very important to me." Responses were scored on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree) and averaged to create a composite score ( $M = 6.03$ ,  $SD = 0.81$ ,  $\alpha = .84$ ).

*Information needs* were measured by two items, adapted from Huurne et al. (2009). Respondents were asked to identify the degree to which they need to know about COVID-19. They were required to indicate to what extent they agree with the following statements: "I need a lot of information to estimate the COVID-19 risks I am exposed to"; "I need to know everything about the COVID-19 situation in my surroundings." Responses were scored on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree) and averaged to create a composite score. The higher score represented, the more information is needed ( $M = 5.96$ ,  $SD = 1.08$ ,  $\alpha = .83$ ).

*Current knowledge* was measured by four items, adapted from Li et al. (2017). Respondents were asked to identify the degree to which they agreed with the following statements: (1) "I know a lot about how to prevent myself and others from COVID-19 infection;" (2) "I know a lot about the symptoms or health effects of COVID-19;" (3) "I know a lot about the COVID-19 situation in Malaysia;" and (4) "I know a lot about when I should test for COVID-19." Responses were scored on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree) and averaged to create a scale ( $M = 5.87$ ,  $SD = 0.87$ ,  $\alpha = .90$ ).

*Perceived risk* was measured by three items, adapted from Brewer et al. (2004) and Weinstein (2000). Respondents were asked to indicate their agreement to which they perceived their likelihood of contracting COVID-19 and the degree of severe consequences: (1) "I think that COVID-19 is a very dangerous disease to me;" (2) "I think that I am in a high chance of getting COVID-19 anytime;" and (3) "I think that it is very serious if the spread of COVID-19 happens in the hospital." Responses were scored on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree) and averaged ( $M = 5.98$ ,  $SD = 0.99$ ,  $\alpha = .67$ ). Although an alpha value of 0.6 – 0.7 indicates an acceptable level of reliability (Taber, 2018; Ursachi et al., 2015), we checked the validity more closely through an exploratory factor analysis (principal components analysis). The results revealed that only one factor was extracted (eigenvalue = 1.85, variance explained = 61.71%).

*Affective responses* were measured by three items, adapted from Huurne et al. (2009). Respondents were asked whether they felt afraid, worried, anxious and angry about COVID-19. They were required to indicate to what extent they agree with the following statements: (1) "I am afraid that I will get COVID-19;" (2) "I feel anxious when COVID-19 cases increase in Malaysia;" and (3) "I feel angry when the people around me do not wear masks or follow SOPs." Responses were scored on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree) and averaged to create a composite score ( $M = 5.90$ ,  $SD = 1.19$ ,  $\alpha = .84$ ).

### Statistical Analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS), version 25. The hierarchical ordinary least squares (OLS) linear regression was used to test the research hypotheses. Each variable was entered into the model for this method, and its value was assessed based on the likelihood ratio estimates. If the variable made a significant contribution to the model, it was retained, and vice-versa (Chua, 2009). A  $p$ -value of  $< .05$  was considered statistically significant for all analyses.

## RESULTS

### *Bivariate Correlation between Variables Analysis*

Before hypothesis testing, this study performed a zero-order correlation analysis to examine the relationships between study variables (See Table 2). The analysis showed a strong positive relationship between intended risk information seeking and information needs ( $r=0.76$ ,  $p<0.1$ ). Besides that, organisational norms ( $r=0.59$ ,  $p<0.1$ ), current knowledge ( $r=0.51$ ,  $p<0.1$ ), perceived risk ( $r=0.48$ ,  $p<0.1$ ) and affective responses ( $r=0.44$ ,  $p<0.1$ ) had a moderate positive relationship with intended risk information seeking.

Table 2: Correlation results of the study variables

Variables	1	2	3	4	5	6
1- Intended risk information seeking	-					
2- Information needs	.76**	-				
3- Current knowledge	.51**	.47**	-			
4- Perceived risk	.48**	.56**	.38**	-		
5- Affective responses	.44**	.52**	.28**	.72**	-	
6- Organisational norms	.59**	.54**	.61**	.53**	.50**	-

\*\* $p < .01$

### *Hypothesis Testing*

A hierarchical ordinal least squares analysis was performed to identify the best predictor(s) for risk information seeking intention (Table 3). Demographic variables were controlled and entered in block one, while main study variables were entered in block two. Overall, demographic variables accounted for a small amount of variance (2.5%), and only the relationship between ethnicity and risk information seeking was significant ( $\beta = -.115$ ,  $p < .05$ ).

When the theoretical variables were added in the second block, the scores contributed 60.8% additional variance in risk information seeking intention. After controlling the demographic variables, organisational norms ( $\beta = .211$ ,  $p < .05$ ), information needs ( $\beta = .48$ ,  $p < .05$ ), and current knowledge ( $\beta = .103$ ,  $p < .05$ ) positively related to risk information seeking intention. Therefore, H1 – H3 were supported.

H4 postulated that perceived risk was positively associated with intended risk information seeking among hospital employees. As shown in Table 3, perceived risk did not significantly associate with risk information seeking intention ( $\beta = -.002, p > .05$ ). Therefore, H4 was not supported.

H5 hypothesised a positive association between affective responses and intended risk information seeking among hospital employees. As shown in Table 3, affective responses did not significantly affect intended risk information seeking ( $\beta = -.001, p > .05$ ). Therefore, H5 was not supported.

Table 3: Demographic and information behaviour factors as predictors of intention to seek risk information

	Block 1			Block 2		
	$\beta$	(SE)	t	$\beta$	(SE)	t
Gender	-.062	.105	-1.217	.028	.066	.880
Ethnic	-.116*	.050	-2.315	.006	.032	.177
Age	.034	.005	.674	-.015	.003	-.469
Education	-.070	.041	-1.393	-.007	.026	-.218
Information needs				.612***	.032	15.175
Current knowledge				.105**	.039	2.664
Perceived risk				-.002	.041	-.037
Affective responses				-.002	.034	-.039
Organisational norms				.204***	.045	4.649
$R^2$		.025			.634	
$\Delta R^2$		.025			.608	
F		2.624			131.954	
F change		2.624			131.954	

\* $P < 0.05$ . \*\* $P < 0.01$ . \*\*\*  $P < 0.001$

## DISCUSSION

Information seeking behaviour is a critical aspect of risk communication studies. This study aimed to investigate factors influencing risk information seeking intention in the Malaysian healthcare setting. Additionally, this study contributes to understanding risk information seeking intention in public health crises by incorporating organisational norms in hospitals from an organisational perspective. The findings of this study provide valuable references for health communication researchers and practitioners in understanding the role of organisational factors in influencing risk communication during the COVID-19 pandemic in a healthcare setting. Several key findings are discussed below.

One key finding of this study is that information need is a strong factor that is positively related to intended risk information seeking. This result aligns with the core tenet of the RISP model, which states that information needs motivate information seeking through various channels (Griffin et al., 1999). It is particularly true as individuals are motivated to engage in tasks to achieve desired judgemental confidence and reduce uncertainty feelings (Eagly & Chaiken 1993). When hospital employees perceive a lack of information about COVID-19 concerning their work situations, they are more likely to seek relevant information actively. This is particularly true for frontline hospital employees who are responsible for managing a high number of patients in a high-pressure environment. Many of these employees have been assigned new tasks and placed in unfamiliar settings (Billings et al., 2021), which increases the need for information to assist in decision making. The finding of a significant positive relationship between information needs and intended risk information seeking in this study supports previous studies (Yang et al., 2014; Huurne, 2008; Griffin et al.,

2004; Kellens et al., 2012; Kahlor et al., 2006) and diverges from certain prior studies (Kahlor, 2010; Yang et al., 2021).

This study also identified that organisational norms as a significant factor positively associated with risk information seeking intention. The finding aligns with the RISP model, specifically the concept of informational subjective norms, which suggests that individuals are inclined to respond to social pressure or expectations to acquire sufficient information to deal with risky situations (Dunwoody & Griffin, 2015). The finding underscores the critical role of organisational culture in facilitating information seeking among hospital employees in healthcare settings during public health emergencies like COVID-19. This explanation closely aligns with injunctive norms, which refer to what others think one ought to do (Chung & Rimal, 2016). Strong injunctive and subjective norms within an organization lead hospital employees to perceive expectations or pressure from superiors or colleagues to possess knowledge and responsibility during public health emergencies, thereby motivating them to seek risk and safety information to enhance their job performance. This finding is consistent with prior studies (Li & Zheng, 2022; Griffin et al., 2008; Griffin et al., 2004). When hospital employees feel pressure or expectations from superiors or colleagues to be knowledgeable and responsible during the COVID-19 pandemic, they are more likely to seek risk and safety information to better perform their job roles. Additionally, this finding supports previous research highlighting the role of team behavioural norms in promoting staff behaviour change (Parsons et al., 2007). The shared values and vision within a hospital create expectations for staff behaviour, which are reflected in team norms. For instance, nurses were expected to assist patients, be competent and fulfil their roles, be responsive and be team players.

Another critical finding demonstrated that current knowledge is a factor that needs attention as well. Consistent with previous research (Kahlor, 2007; Kellens et al., 2012), this study demonstrates that the current knowledge of hospital employees directly influences their intention to seek risk information during the COVID-19 pandemic. That is, hospital employees perceived their knowledge as important in their work, prompting them to engage in more effortful information seeking to improve their existing knowledge of risks. Therefore, strategies are needed to address hospital employees' current knowledge and promote higher risk awareness to motivate them to stay updated with relevant information.

On the other hand, the results indicated that perceived risk and affective responses did not show a significant relationship with the intention to seek risk information. One plausible explanation is rooted in experiential and socio-cultural differences. Research indicates that perceptions of COVID-19 risk vary significantly across different countries (Dryhurst et al., 2020). Notably, Malaysians exhibit relatively low-risk perceptions of COVID-19, with a substantial proportion of respondents considering COVID-19 to be non-threatening (World Health Organization, 2020). This diminished perception of risk may result in attenuated negative affective responses among individuals. Furthermore, the lack of a significant relationship might also be linked to the absence of information needs as a mediating factor in the study. Previous research suggests that perceived risk plays a crucial role during emergencies, positively influencing individuals' information needs and subsequently promoting risk information-seeking behavior (Hurne & Gutteling, 2008; Kellens et al., 2012; Zhou, 2021). However, if individuals do not perceive a pressing need for information due to factors such as information overload leading to mental stress, they may be less inclined to actively seek out risk information. In summary, the non-significant relationship observed between perceived risk, affective responses, and the intention to seek

risk information among hospital employees during the COVID-19 pandemic may be attributed to both the relatively low-risk perceptions among Malaysians and the absence of perceived information needs as a mediator in the study. These findings underscore the complex interplay of individual, cultural, and situational factors in shaping risk perception and information-seeking behavior during crises.

Overall, this study emphasises the importance of understanding the factors that influence risk information seeking intention in the healthcare setting during public health crises, such as the COVID-19 pandemic. The findings highlight the role of information needs, organisational norms, and current knowledge in motivating healthcare workers to seek relevant risk information actively. Furthermore, the study identifies a need for risk communication programmes that address contextual factors, such as organisational context, to comprehensively understand how they impact risk information seeking behaviours and improve the quality of healthcare during crises. However, further research is needed to explore other potential factors that may influence risk information seeking intention and the effectiveness of different communication strategies in promoting risk awareness and information seeking behaviours.

#### LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

There are three major limitations of this study. First, the cross-sectional survey design fails to demonstrate the changes in risk perceptions during the COVID-19 pandemic. This research was carried out during the Conditional Movement Control Order (CMCO) period when the pandemic was in a better situation, and the public and hospital employees may already be familiar with the virus. Of note, it may affect the outcome of risk information seeking. Future research should focus on different stages or points of time as the pandemic unfolds. This is important for the policymaker and risk communicator to re-adjust the strategy to inform the public and workers for better risk management. Second, the data were collected only from two private hospitals in Malaysia. This might limit the generalisability of our findings to other healthcare settings. For instance, private hospitals' healthcare settings and facilities differ from public hospitals in many aspects, such as the number of staff and management during the crisis. Therefore, future research can focus on public and private hospitals for better results. Third, the study only examines the direct relationships between the study variables. Further studies should look into mediation and moderation analyses for a fuller picture of the situation. Ignoring mediating effects may bias the interpretation of the results when a variable has no direct effect on the dependent variable.

Despite these limitations, there are several implications for this study. First, the findings highlight the importance of organisational norms, which is also the contribution of this study, found to positively impact hospital employees' risk information seeking in a hospital. Future research could further explore alternative normative concepts or different contextual attributes to better understand their diverse impacts on risk communication behaviours within similar organisational contexts. Notably, communication and organisational support in a work environment play a critical role in risk management. In response, the study suggests that the hospital or any organisation improve on the downward communication in an organisation, as it can be an important approach in risk communication for the employees to follow instructions during a crisis. If done correctly, downward communication can create a climate of transparency and openness, and the employees will most likely be more confident to face the risk together. It is important to encourage co-

workers to communicate regularly to ensure everyone in the organisation shares the same viewpoint. This is particularly important for hospital employees to achieve the common goal of serving the community in times of high risk. Furthermore, the risk messages should be tailored to fit organisational context rather than adopting a generic approach. This underscores the importance of considering various factors when devising communication strategies to maximise positive responses to public health emergencies.

Second, the concept of information needs is the most substantial factor associated with risk information seeking in this study. This result suggests that organisations should increase the hospital employees' health literacy and curiosity about the disease by organising more training or departmental meeting for their employees. Hospital employees come from various educational backgrounds and have different job roles. It is crucial to provide sufficient training for all employees according to their needs, as they might encounter different challenges. This study extends the RISP model by incorporating organisational context shed new light on understanding communication behaviours. Finally, researchers are encouraged to explore other organisational contexts or factors that can help explain better the impact on risk communication.

#### CONCLUSION

By conducting the research at hospitals in Malaysia, our findings extend the research on the RISP model and health risk communication in the context of the COVID-19 pandemic. The study highlights the essential roles of information needs, organisational norms, and current knowledge in predicting risk information seeking intention among hospital employees, laying the foundation for future research on risk communication and management in Malaysia's healthcare setting. Our study contributes to understanding the organisational norms factor, which positively impacts hospital employees' risk information seeking in the context of hospitals. The findings can serve as baseline information for other healthcare facilities to refer to and use as vital guidance to improve communication and organisational support in a healthcare environment for risk management and pandemic preparedness. This provides valuable insights into risk communication knowledge in Malaysia's healthcare system and expands on applying the RISP model and related work in the COVID-19 pandemic perspectives. Importantly, the implications of this research extend beyond the specific healthcare context and hold relevance for the broader fields of health communication and corporate communication. The study's findings contribute to the existing body of literature within these domains, offering insights into the intricate relationships between organisational norms, motivation, and information seeking. By enriching our understanding of these dynamics, the research strengthens the theoretical foundations and practical applications of health communication and corporate communication, advancing knowledge in these vital areas.

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## REFERENCES

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Atkin, C. K. (1972). Anticipated communication and mass media information-seeking. *The Public Opinion Quarterly*, 36(2), 188–99.
- Babiker, A., Hussein, M. E., Nemri, A. A., Frayh, A. A., Juryyan, N. A., Faki, M. O., Assiri, A., Saadi, M. A., Shaikh, F., & Zamil, F. A. (2014). Health care professional development: working as a team to improve patient care. *Sudanese Journal of Paediatrics*, 14(2), 9–16.
- Bento, A. I., Nguyen, T., Wing, C., Lozano-Rojas, F., Ahn, Y. Y., & Simon, K. (2020). Evidence from internet search data shows information-seeking responses to news of local COVID-19 cases. *Proceedings of the National Academy of Sciences of the United States of America*, 117(21), 11220–11222. <https://doi.org/10.1073/pnas.2005335117>
- Berger, C. R., & Calabrese, R. J. (1975). Some explorations in initial interaction and beyond: Toward a developmental theory of interpersonal communication. *Human Communication Research*, 1, 99–112.
- Billings, J., Seif, N. A., Hegarty, S., Ondruskova, T., Soulios, E., Bloomfield, M., & Greene, T. (2021). What support do frontline workers want? A qualitative study of health and social care workers' experiences and views of psychosocial support during the COVID-19 pandemic. *PLoS One*, 16(9), e0256454. <https://doi.org/gngxsx>
- Brewer, N. T., Weinstein, N. D., Cuite, C. L., & Herrington, J. E. (2004). Risk perceptions and their relation to risk behavior. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*, 27(2), 125–130. <https://doi.org/b99f37>
- Budd, J., Miller, B. S., Manning, E. M., McKendry, R. A., Lampos, V., Cox, I. J., Zhuang, M., Edelstein, M., Rees, G., Emery, V. C., Stevens, M. M., Keegan, N., Short, M. J., Pillay, D., Manley, E., Heymann, D., & Johnson, A. M. (2020). Digital technologies in the public-health response to COVID-19. *Nature Medicine*, 26, 1183-1192. <https://doi.org/ghkftf>
- Cheah, P. K., Jalloh, M. B., Cheah, P. K., Ongkili, D., Schneiders, M. L., Osterrieder, A., Peerawaranun, P., Waithira, N., Davies, A., Mukaka, M., & Cheah, P. Y. (2023). Experiences, coping strategies and perspectives of people in Malaysia during the COVID-19 pandemic. *BMC Public Health*, 23, 1085. <https://doi.org/m5w9>
- Cho, J. (2014). Impacts of information-providers' perceived cultural backgrounds on information-seeking behaviors: investigation of American employees' information-seeking behaviors in a Korean multinational corporation in the US. *International Journal of Intercultural Relations*, 14, 66-79. <https://doi.org/gjmch9>
- Choo, C. W. (2017). Seeking and avoiding information in a risky world. *Information Research*, 22(3), 765. <http://InformationR.net/ir/22-3/paper765.html>
- Chua, Y. P. (2009). *Advanced research statistics: Regression test, factor analysis and SEM analysis*. McGraw-Hill Education.
- Chung, A., & Rimal, R. N. (2016). Social norms: A review. *Review of Communication Research*, 4, 1-28. <https://doi.org/10.12840/issn.2255-4165.2016.04.01.008>
- Clair, A. S., Finn, F., & Haegeli, P. (2021). Where the rubber of the RISP model meets the road: Contextualizing risk information seeking and processing with an avalanche bulletin user typology. *International Journal of Disaster Risk Reduction*, 66, 102626. <https://doi.org/10.1016/j.ijdrr.2021.102626>

- Coker, R. J., Hunter, B. M., Rudge, J. W., Liverani, M., & Hanvoravongchai, P. (2011). Emerging infectious diseases in Southeast Asia: Regional challenges to control. *Lancet*, 377, 599–609. [https://doi.org/10.1016/S0140-6736\(10\)62004-1](https://doi.org/10.1016/S0140-6736(10)62004-1)
- Dillard, J. P., & Carson, C. L. (2005). Uncertainty management following a positive newborn screening for cystic fibrosis. *Journal of Health Communication*, 10(1), 57–76. <https://doi.org/10.1080/10810730590904580>
- Dryhurst, S., Schneider, C. R., Kerr, J., Freeman, L. J. A., Recchia, G., van der Bles, A. M., Spiegelhalter, D., & van der Linden, S. (2020). Risk perceptions of COVID-19 around the world. *Journal of Risk Research*, 23(7-8), 995-1006. <https://doi.org/gg4j58>
- Dunwoody, S., & Griffin, R. J. (2015). Risk information seeking and processing model. In H. Cho, T. Reimer & K. A. McComas (Eds.), *SAGE handbook of risk communication* (Chap. 7, pp. 102-117). SAGE. <https://doi.org/10.4135/9781483387918>
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Harcourt Brace Jovanovich College Publishers.
- Falcione, R. L., & Wilson, C. E. (1988). *Handbook of organizational communication*. Ablex.
- Fern-Banks, K. (2007). *Crisis communication: A case book approach*. Lawrence Erlbaum Associates.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behaviour: An introduction to theory and research*. Addison-Wesley.
- Ford, J. L., & Stephens, K. K. (2018). Pairing organizational and individual factors to improve employees' risk responsiveness. *Management Communication Quarterly*, 32(4), 504-533. <http://doi.org/10.1177/0893318918774418>
- Ford, J. L., Douglas, M., & Barrett, A. K. (2022). The role of pandemic fatigue in seeking and avoiding information on COVID-19 among young adults. *Health Communication*, 1–14. <https://doi.org/10.1080/10410236.2022.2069211>
- Ford, N. (2004). Modeling cognitive processes in information seeking: From popper to pask. *Journal of the American Society for Information Science and Technology*, 55(9), 769-782. <https://doi.org.10.1002/asi.20021>
- Garfin, D. R., Silver, R. C., & Holman, E. A. (2020). The novel coronavirus (COVID-2019) outbreak: Amplification of public health consequences by media exposure. *Health Psychology*, 39(5), 355–357. <https://doi.org/10.1037/hea0000875>
- Griffin, P., McGaw, B., & Care, E. (Eds.). (2012). *Assessment and teaching of 21st Century skills*. Springer Cham.
- Griffin, R. J., Dunwoody, S., & Neuwirth, K. (1999). Proposed model of the relationship of risk information seeking and processing to the development of preventive behaviors. *Environmental Research*, 80(2), S230–S245. <https://doi.org/cfcr6k>
- Griffin, R. J., Dunwoody, S., & Yang, J. Z. (2013). Linking risk messages to information seeking and processing. *Communication Yearbook*, 36(1), 323–362. <https://doi.org/gm5jzi>
- Griffin, R. J., Neuwirth, K., Dunwoody, S., & Giese, J. (2004). Information sufficiency and risk communication, *Media Psychology*, 6(1), 23-61.
- Griffin, R. J., Yang, Z., Huurne, E. T., Boerner, F., Ortiz, S., & Dunwoody, S. (2008). After the flood: Anger, attribution, and the seeking of information. *Science Communication*, 29(3), 285–315. <https://doi.org/10.1177/1075547007312309>
- Hovick, T., Elmore, R., Dahlgren, D., Fuhlendorf, S., & Engle, D. (2014). Evidence of negative effects of anthropogenic structures on wildlife: A review of grouse survival and behaviour. *Journal of Applied Ecology*, 51(6), 1680-1689. <https://doi.org/f6r3n5>

- Huurne, E. T., & Gutteling, J. (2008). Information needs and risk perception as predictors of risk information seeking. *Journal of Risk Research*, 11(7), 847-862.
- Huurne, E. T., Griffin, R. J., & Gutteling, J. (2009). Risk information seeking among U.S. and Dutch residents. An application of the model of risk information seeking and processing. *Science Communication*, 31(2), 215-237. <https://doi.org/bgc8vp>
- Ives, J., Greenfield, S., Parry, J. M., Draper, H., Gratus, C., Petts, J. I., Sorell, T., & Wilson, S. (2009). Healthcare workers' attitudes to working during pandemic influenza: A qualitative study. *BMC Public Health*, 9, 56. <https://doi.org/10.1186/1471-2458-9-56>
- Janmaimool, P. (2017). The role of descriptive social norms, organisational norms and personal norms in explaining solid waste management behaviours in workplaces. *Journal of Organizational Change Management*, 30(2), 184-198.
- Jiang, S., & Lam, C. (2021). Linking nonverbal rapport to health outcome: Testing an organizational pathway model. *Health Communication*, 38(3), 1-10. <https://doi.org/10.1080/10410236.2021.1957244>
- Johnson, B. B. (2005). Testing and expanding a model of cognitive processing of risk information. *Risk Analysis: An Official Publication of the Society for Risk Analysis*, 25(3), 631-650. <https://doi.org/10.1111/j.1539-6924.2005.00609.x>
- Joseph, B & Joseph M. (2016). The health of the healthcare workers. *Indian Journal of Occupational and Environmental Medicine*, 20(2), 71-72. <https://doi.org/gg2n6p>
- Kahlor, L. (2010). PRISM: A planned risk information seeking model. *Health Communication*, 25(4), 345-56. <https://doi.org/10.1080/10410231003775172>
- Kahlor, L. A. (2007). An augmented risk information seeking model: The case of global warming. *Media Psychology*, 10(3), 414-435. <https://doi.org/dg36th>
- Kahlor, L., Dunwoody, S., Griffin, R. J., & Neuwirth, K. (2006). Seeking and processing information about impersonal risk. *Science Communication*, 28(2), 163-194. <https://doi.org/10.1177/1075547006293916>
- Kellens, W., Zaalberg, R., Maeyer, P. D. (2012). The informed society: An analysis of the public's information-seeking behavior regarding coastal flood risks. *Risk Analysis*, 32(8), 1369-1381. <https://doi.org/10.1111/j.1539-6924.2011.01743.x>
- Kriyantono, R., Kasim, A., Safitri, R., Adila, I., Prasetya, A. B., Febriani, N., Asmara Dewi, W. W., Saleh, A. M., & Said, M. F. (2023). Is social media the top priority for seeking and sharing information about COVID-19 among Indonesian students? *Jurnal Komunikasi: Malaysian Journal of Communication*, 39(1), 144-165. <https://doi.org/ksdd>
- Lep, Ž., Babnik, K., & Hacin Beyazoglu, K. (2020). Emotional responses and self-protective behavior within days of the COVID-19 outbreak: The promoting role of information credibility. *Frontiers in Psychology*, 11, 1846. <https://doi.org/gpgmcv>
- Li, J., & Zheng, H. (2022). Online information seeking and disease prevention intent during COVID-19 outbreak. *Journalism & Mass Communication Quarterly*, 99(1), 69-88. <https://doi.org/10.1177/1077699020961518>
- Li, S., Zhai, G., Zhou, S., Fan, C., Wu, Y., & Ren, C. (2017). Insight into the earthquake risk information seeking behavior of the victims: Evidence from Songyuan, China. *International Journal of Environmental Research and Public Health*, 14(3), 267. <https://doi.org/10.3390/ijerph14030267>
- Lim, J. L., Ong, C. Y., Xie, B., & Low, L. L. (2020). Estimating information seeking-behaviour of public in Malaysia during COVID-19 by using Google Trends. *The Malaysian Journal of Medical Sciences: MJMS*, 27(5), 202-204. <https://doi.org/m5xb>

- Liverman C. T., Ingalls, C. E., Fulco, C. E., & Kipen, H. M. (1997). *Toxicology and environmental health information resources: The role of the National Library of Medicine*. National Academies Pres.
- Maggio, L. A., Cate, O. T., Moorhead, L. L., van Stiphout, F., Kramer, B. M., Ter Braak, E., Posley, K., Irby, D., & O'Brien, B. C. (2014). Characterizing physicians' information needs at the point of care. *Perspectives on Medical Education*, 3(5), 332–342. <https://doi.org/m5xc>
- Mazlan, A., & Adzharuddin, N. A., Omar, S. Z., & Tamam, E. (2021). Online health information seeking behavior of non-communicable disease (NCD) among government employees in Putrajaya, Malaysia. *Jurnal Komunikasi: Malaysian Journal of Communication*, 37, 419-433. <https://doi.org/10.17576/JKMJC-2021-3701-24>
- McComas, K. A. (2006). Defining moments in risk communication research: 1996–2005. *Journal of Health Communication*, 11, 75–91.
- Mohamad, E., Tham, J. S., Ayub, S. H., Hamzah, M. R., Hashim, H., Azlan, A. A. (2020) Relationship between COVID-19 information sources and attitudes in battling the pandemic among the Malaysian public: Cross-sectional survey study. *Journal of Medical Internet Research*, 22(11), e23922. <https://www.jmir.org/2020/11/e23922>
- Nguyen, P. D., Dang, C. X., & Nguyen, L. D. (2015). Would better earning, work environment, and promotion opportunity increase employee performance? An investigation in State and other sectors in Vietnam. *Public Organization Review*, 15, 565-579. <https://doi.org/10.1007/s11115-014-0289-4>
- Noh, G. Y., Lee, S. Y., & Choi, J. (2016). Exploring factors influencing smokers' information seeking for smoking cessation. *Journal of Health Communication*, 21(8), 845–854. <https://doi.org/10.1080/10810730.2016.1177140>
- Parsons, S., Harding, G., Breen, A., Foster, N., Pincus, T., Vogel, S., & Underwood, M. (2007). The influence of patients' and primary care practitioners' beliefs and expectations about chronic musculoskeletal pain on the process of care: A systematic review of qualitative studies. *The Clinical Journal of Pain*, 23(1), 91–98. <https://doi.org/dq9dhj>
- Real, K. (2010). Health-related organizational communication: A general platform for interdisciplinary research. *Management Communication Quarterly*, 24(3), 457–464. <https://doi.org/10.1177/0893318910370270>
- Rimal, R. N., & Lapinski, M. K. (2015). A re-explication of social norms, ten years later. *Communication Theory*, 25, 393-409. <https://doi.org/10.1111/comt.12080>
- Rimal, R. N., & Real, K. (2003). Understanding the influence of perceived norms on behaviours. *Communication Theory*, 13(2), 184-203. <https://doi.org/10.1093/ct/13.2.184>
- Robson, A., & Robinson, L. (2013). Building on models of information behaviour: Linking information seeking and communication. *Journal of Documentation*, 69, 169-193.
- Sallis, J. F., Owen, N., & Fisher, E. B. (2008). *Ecological models of health behavior*. Jossey-Bass.
- Shaukat, N., Ali, D. M., & Razzak, J. (2020). Physical and mental health impacts of COVID-19 on healthcare workers: A scoping review. *International Journal of Emergency Medicine*, 13(40), 1-8. <https://doi.org/10.1186/s12245-020-00299-5>
- Shen, Z., Zhong, Z., Xie, J., Zhang, Q., & Li, S. (2022). The effects of information-seeking behaviors on risk perception during the COVID-19 pandemic: A cross-sectional correlational survey. *Psychology Research and Behavior Management*, 15, 1707-1719. <https://doi.org/10.2147/PRBM.S368537>

- Shreffler, J., Petrey, J., & Huecker, M. (2020). The impact of COVID-19 on healthcare worker wellness: A scoping review. *The Western Journal of Emergency Medicine*, 21(5), 1059–1066. <https://doi.org/10.5811/westjem.2020.7.48684>
- Smith, J. R., Louis, W. R., Terry, D. J., Greenaway, K. H., Clarke, M. R., & Cheng, X. (2012). Congruent or conflicted? The impact of injunctive and descriptive norms on environmental intentions. *Journal of Environmental Psychology*, 32(4), 353–361. <http://doi.org/10.1016/j.jenvp.2012.06.001>
- Srivastava, K. C., Shrivastava, D., Chhabra, K. G., Naqvi, W. M., & Sahu, A. (2020). Facade of media and social media during covid-19: A review. *International Journal of Research in Pharmaceutical Sciences*, 11, 142-149. <https://doi.org/gng24g>
- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273-1296. <https://doi.org/10.1007/s11165-016-9602-2>
- Tandoc, E. C., & Lee, J. C. B. (2022). When viruses and misinformation spread: How young Singaporeans navigated uncertainty in the early stages of the COVID-19 outbreak. *New Media & Society*, 24(3), 778–796. <https://doi.org/10.1177/1461444820968212>
- Tham, J. S., Ali, A. A. M., & Zhang, T. (2022). Predicting the role of organisational listening and job resources in job engagement. *Jurnal Komunikasi: Malaysian Journal of Communication*, 38(2), 107-126. <https://doi.org/10.17576/JKMJC-2022-3802-07>
- Ursachi, G., Horodnic, I., & Zait, A. (2015). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *Procedia Economics and Finance*, 20, 679–686. [https://doi.org/10.1016/S2212-5671\(15\)00123-9](https://doi.org/10.1016/S2212-5671(15)00123-9)
- Weinstein, N. D. (2000). Perceived probability, perceived severity, and health-protective behavior. *Health Psychology*, 19(1), 65–74. <https://doi.org/dx42b7>
- Wilson, T. D. (2000). Human information behavior. *Informing Science*, 3(2), 49-56.
- World Health Organization. (2020). COVID-19: Community perceptions in Malaysia. <https://communityengagementhub.org/wp-content/uploads/sites/2/2022/03/MRCS-Covid-19-Perception-Survey-Report-Round-1.pdf>
- Yang, Z. J., & Kahlor, L., (2013). What, me worry? The role of affect in information seeking and avoidance. *Science Communication*, 35, 189-212. <https://doi.org/gjd764>
- Yang, Z. J., Aloe, A. M., & Feeley, T. H. (2014). Risk information seeking and processing model: A meta-analysis. *Journal of Communication*, 64(1), 20–41. <https://doi.org/f57jj5>
- Yang, Z. J., Liu, Z., & Wong, C. S. J. (2021). Information seeking and information sharing during the COVID-19 pandemic. *Communication Quarterly*, 70(1), 1-21. <https://doi.org/m5xd>
- Yang, Z. J., McComas, K. A., Gay, G., & Leonard, J. P., Dannenberg, A. J., & Dillon, H. (2010). Motivation for health information seeking and processing about clinical trial enrollment. *Health Communication*, 25, 423-36. <https://doi.org/cqizvs>
- Zhou, S. (2021). Impact of perceived risk on epidemic information seeking during the outbreak of COVID-19 in China. *Journal of Risk Research*, 24(3-4), 477-491. <https://doi.org/m5xf>
- Zhuang, J. (2023). Whose norms to follow? Effects of social norm specificity on Black Americans' intention to receive COVID-19 vaccines. *Health Communication*, 38(11), 2350–2358. <https://doi.org/10.1080/10410236.2022.2069212>