

## **VACCINE HESITANCY: WHAT ARE THE INFLUENTIAL FACTORS AND HOW DOES HEALTHCARE ORGANIZATIONAL BEHAVIOR PLAY A ROLE?**

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### **ABSTRACT**

Vaccine hesitancy is long-standing healthcare issue, which has come to the forefront during the COVID-19 pandemic. It is a complex issue which requires an in-depth review of the factors that influence the decision to not vaccinate. These factors include cultural influences, an individual's attitudes and perceptions towards illnesses and healthcare, as well as cognitive biases that may occur. Understanding these influences, in addition to concepts in organizational behavior in healthcare, such as decision-making processes, motivational concepts and communication, will enable healthcare practitioners and public health officials, develop more effective methods in approaching those individuals who are vaccine hesitant.

### **Introduction**

The World Health Organization declared COVID-19 a global pandemic on March 11, 2020. Multiple vaccines were approved and rolled out by the end of the year [1]. In a year defined by social isolation, economic losses, and widespread shutdowns, the arrival of a vaccine was a cause for optimism and a potential return to normal living. To date, 75% of Canadians have chosen to get fully vaccinated [2]. However, since the beginning of Canada's vaccine roll-out, there has

been significant attention and dialogue around individuals who chose not to vaccinate. People range from the vaccine-hesitant, who want more information and research before deciding, to those in the anti-vaccine movement who reject vaccines outright and dismiss the pandemic as a conspiracy [3,4].

Organizational Behaviour (OB) is the study of human behaviour within organizations. Although traditionally associated with business and management, OB offers essential insights for addressing healthcare challenges - especially vaccine-hesitancy. This paper examines vaccine hesitancy through the lens of organizational behaviour, and proposes novel interventions grounded in OB concepts.

### **Cultural Diversity and Influences**

Vaccine-hesitancy is a complex issue requiring complex solutions. Finding appropriate solutions requires the understanding of the reasons why people choose not to vaccinate. The hesitancy to accept vaccination can be viewed as a human behaviour that is influenced by cultural values and diversity. Vaccine hesitancy, and vaccine acceptance for that matter, have both been reviewed in scientific publications and historical documents discussing older existing vaccines and current articles focused on COVID-19 vaccination.

Similarly, in health care, understanding organizational behavior is essential, as people with diverse backgrounds and cultural values must work collaboratively to provide optimized quality care to an equally diverse population [5]. In 2012, the World Health Organization (WHO) - Strategic Advisory Group of Experts (SAGE) Working Group on Vaccine Hesitancy developed a model to categorize factors that influenced the acceptance of a vaccine into three groups: i. contextual, ii. individual and group, and iii. vaccine/vaccination-specific influences [6].

The contextual group included diversity and cultural influences such as religion, gender socioeconomic and geographic barriers [6]. In Canada, 40 experts from various healthcare fields met to hold workshops and summarize the cultural and religious roots of vaccine hesitancy from a Canadian context. The contextual model generated from this review also held that historical, political, and sociocultural context was influential in individual decision-making about vaccination acceptance [7]. Goldenberg (2021) proffered that vaccine hesitancy in the west had a social, cultural, and historical context [8]. According to comprehensive social science research, vaccine hesitancy is part of the broader social-cultural context. Many factors, such as past healthcare service experiences, family history and local vaccination cultures, all influence the ultimate decision to vaccinate or not [7].

Local cultural approaches to vaccination can be strong in communities where shared beliefs regarding disease causes, diagnosis and treatment differ from those of the medical community [7]. Specific communities may have little confidence in the efficacy of modern medicine and put more emphasis on holistic or preventative medicine. According to Goldberg, public concern regarding vaccines is value-driven and reflects cultural anxieties that need to be addressed by scientists [8]. Distrust of the healthcare system is well documented globally and is often due to structural racism. As an example, the medical establishment in the United States has historically discriminated against and exploited Black Americans. The same mistrust of the healthcare system based on systemic racism has also occurred in Canada. A Statistics Canada article stated that only 56% of black people in Canada are vaccinated [9].

Organizational behaviour can offer several recommendations to address vaccine-hesitancy stemming from cultural factors. Primarily, health care organizations need to recruit, retain, and manage a diverse workforce in order to provide culturally appropriate care and improve access to care for racial/ethnic minorities. In addition, a diverse workforce ensures that the staff that provide vaccine information and vaccine rollout represent the patient population they serve.

Cultural differences between providers and patients affects the provider-patient relationship. A 2002 study by the Institute of Medicine, titled *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*, documented significant variation in the rates of medical procedures by race, even when factors such as insurance status, income, age and severity of conditions were controlled [10].

Ensuring cultural competency for all vaccine education and rollout staff would provide another opportunity to address vaccine hesitancy. Cultural and linguistic competence means that professionals have a set of behaviours and attitudes that enable positive interactions in cross-cultural situations [11]. This cultural competence would ensure that the vaccine message reaches all culturally diverse populations in a meaningful way.

Trust between experts and the public, especially between patients and healthcare providers, is essential when introducing a new vaccine. Lane and colleagues (2018) stated that certain areas need to be worked on to strengthen trust in vaccines, such as appropriate health care provider-patient encounters [12]. The 2017 Assessment Report of the Global Vaccine Action Plan recommended that all vaccine programs include community engagement and trust-building in their rollout plans [12]. The recommendation highlighted the importance of considering cultural diversity when addressing vaccine hesitancy.

### **Attitude, Perception and Motivation**

In addition to the many cultural issues influencing vaccine hesitancy, an individual's attitude, perception and motivation may also play essential roles in understanding and addressing vaccine-hesitancy. Vaccine-hesitancy can be analyzed at three different levels. Social perception is how an individual views others and how others perceive that individual [11] Individual/social influences, contextual influences, vaccine and vaccination-specific issues all play a role. It is also necessary to consider other influential factors such as complacency, convenience, and confidence. High complacency implies that public involvement is low because complacent individuals do not feel threatened by vaccine specific diseases. Low convenience emerges when attitudes are not strongly against or in favor of vaccination. In this instance, vaccination is not important enough to actively overcome barriers, such as lack of access, cost, or travel time. People decline vaccination in order to avoid these barriers. Strong negative attitudes towards vaccination usually drive a lack of confidence. Misconceptions about vaccine efficacy and safety are strongly correlated with hesitation and skeptics are drawn to membership in social groups associated with the anti-vaccination movement [13].

The Theory of Planned Behavior (TPB) is a psychological theory also relevant to vaccine hesitancy. TPB describes health behavior as a function of the behavioral intention to show a specific behavior. Behavioral intention is a function of an individual's negative or positive evaluation of behavior and its outcome, the perceived behavioral control (PBC), the perceived ability to perform a behavior and the subjective norm (perceived social pressure of significant others). Social norms distinguish between injunctive norms (i.e. what others think one should do) and descriptive norms (i.e. what others do). In the TPB, subjective norms are injunctive norms, defined as the product of what others think one should do and one's motivation to comply with these beliefs. For example, when individuals perceive low pressure by others to receive their vaccinations, uptake is lower than when the social pressure to vaccinate is high. The descriptive norm, the belief about what others do, was related to higher uptake [14].

The theory's predictive power improves further with the addition of risk perception, past behavior, knowledge and experience into the theoretical model [15]. Clearly, having a negative attitude towards the vaccine is a significant barrier to vaccine uptake. Moreover, individuals who do not believe in the effectiveness of the vaccine show lower vaccine uptake. Additionally, a lack of trust in authorities was reported to hinder immunization [16].

Risk perception is an important concept as perceiving low risk of the disease presents a barrier to vaccine uptake. An Australian study found that the two most stated reasons for not accepting the vaccine included i. "situation is not serious enough" and ii. "I am not at risk". Low risk perception is frequently identified as a significant barrier, such as the perceived low likelihood of getting the disease and low severity. Cognitive and affective risk perceptions regarding the

vaccine are also a barrier to vaccination. Specifically, a higher perceived risk of vaccine adverse events decreases vaccine uptake [17].

The social benefit of vaccination is often used as an ethical argument for healthcare workers to get vaccinated. Individuals who do not acknowledge the social benefit of the vaccine are less likely to become vaccinated. When healthcare personnel lacked the belief that getting vaccinated protects patients or relatives, vaccine uptake was lower. The perception that there is low risk of transmitting the disease to others also decreases vaccine uptake [18].

Past behavior can be a predictor of future behavior. For example, individuals vaccinated against influenza in previous seasons showed higher vaccine uptake in all risk groups. This finding mirrors the results of systematic reviews that have repeatedly identified past behavior as a strong predictor of influenza vaccine acceptance [19].

According to Protection Motivation Theory (PMT) perceived severity and vulnerability determine individuals' motivation to adopt protective behaviors. Perceived high severity, high vulnerability, high response efficacy, high self-efficacy and low response costs contributed to high motivation to have the vaccination for influenza during the 2009 pandemic [20]. Increasing individuals' perceived severity of COVID-19 may be an effective way to enhance motivation to have a COVID-19 vaccination. However, exposure to images of illness and news of fear may intensify anxiety and result in maladaptive behaviors, such as dismissal or denial, owing to the individuals lacking the confidence to respond to the threat directly [21].

Some of the recommendations targeted to attitude, perception, and motivation include behaviorally informed messaging designed to amplify individuals' desire to get vaccinated and traditional information interventions to correct the misconceptions that drive vaccine hesitancy. In addition, increased awareness and knowledge about the disease and the vaccine may positively affect coping appraisals in PMT of self and response efficacy to have COVID-19 vaccination, which can increase motivation towards the vaccine.

### **Cognitive Biases**

It is without a doubt that vaccine-hesitancy is a multifaceted and deeply complex issue. The decision to not vaccinate can be addressed by the cultural and social aspects, as well as the perceptions and attitudes that influence decision-making. Additionally, cognitive biases play a critical role in vaccine communication and understanding the decision-making process.

Many people will use heuristics to shorten the decision-making process [22]. While heuristics may be helpful in many situations, there can also be influential factors leading to systematic

errors and biases. Understanding how cognitive limitations, heuristics and their consequent biases influence vaccine-hesitancy is crucial to developing more effective communication and educational tools to achieve the common goal of improved vaccination.

Numerous studies have reported that the most common reason for vaccine-hesitancy is a lack of information regarding vaccinations, their benefits and their safety [12, 23,24]. The internet has become the main source of health-related information, including expert, peer-reviewed scientific information and unfortunately, narratives or anecdotes of unknown validity. However, the degree by which information is gathered, processed and interpreted may be impacted by cognitive biases. The most common cognitive biases include confirmation bias, affect bias, omission bias and optimism bias.

When faced with making decisions regarding vaccinations, individuals may seek information in the form of anecdotes and narratives. Compared to objective risk estimates, which are scientific and often difficult to interpret, narratives will often provide information on an individual's experience. These experiences may evoke an emotional response. The resultant affect bias may affect judgments regarding the benefit/risk ratio of the vaccine [22]. This is the case when rare adverse events associated with vaccines are highlighted on the news or in social media. These events can trigger emotions, such as fear, and may be easily recalled during the decision-making process. Additionally, studies have reported that the frequency and the number of narratives were critical variables in influencing the judgements made about the risk of adverse events following vaccination [22].

The ease with which health information can be accessed online brings the potential for confirmation bias. Interest has shifted the frequency of medical or scientific information to unsourced information on a topic, including platforms for sharing narratives and anecdotes. As a result, individuals with preconceived beliefs will generate hypotheses regarding vaccinations. When a hypothesis is developed on relatively weak or ambiguous data, it will interfere with the acceptance of superior data. As a result, the data may not be treated objectively and may be ignored. Confirmation bias occurs when there is a tendency to look for evidence that supports or "confirms" the hypothesis rather than looking for disconfirming evidence to refute it [25].

In the case of vaccine-hesitant individuals, there is a belief that the vaccine is more dangerous than the disease itself. Expanding on this preconceived belief, individuals will tend to read supporting information as opposed to conflicting information. These individuals will associate with like-minded individuals, participate on-line and join anti-vaccination groups. Furthermore, people will tend to spend more time and energy on familiar information and less time and energy on new unbiased information. Meppelink et al, reported that in a study of 480 individuals,



parents preferred the headers of messages that were consistent with their beliefs and rated the information that was consistent with their belief as more credible and valuable [26]. The internet and social media will generate confirmation bias through the unilateral presentation of certain viewpoints, particularly in forums supported by anti-vaccination groups [27,28]. Confounded further by search engine algorithms that filter a user's internet experiences based on prior searches, an individual's future search results will have similar anti-vaccination information highlighted [29]. Furthermore, vaccine-skeptic individuals may lack the ability to assess online medical information critically. For example, in a study of 34 undecided students presented with 40 websites containing varying degrees of factual medical information about vaccinations, 59% of those in the study believed that all of the websites contained accurate data when, in reality, only 18/40 were accurate [29]. Thus, the information confounded by confirmation bias will undoubtedly result in other cognitive biases, thereby influencing the decision-making process.

Individuals may also move towards inaction when faced with the information (or misinformation) of potential adverse events related to vaccines. In the case of omission bias, inaction is preferred over any action due to fear of being held directly responsible for the outcome [25]. Vaccine-hesitant individuals will consider vaccination as an act of commission. Thus, when the vaccine's adverse effects are considered to be significantly worse than those from the disease itself, many may prefer to avoid the act of commission. A study by Luz et al. (2020) demonstrated omission bias amongst many vaccine-hesitant parents who were willing to accept the significantly worse outcome from an influenza infection than from its vaccines [22].

Omission bias also operates via the heuristic of anticipatory regret [30]. In a study of 114 patients where the impact of the disease and the perceived vaccine risks were compared, alongside the perception of anticipated regret from vaccinating or not; more individuals reported feelings of regret and responsibility if harm occurred as a result of an act of commission. The anticipated regret of any harm from vaccination was highly correlated with the act of not vaccinating [31]. Finally, ambiguity bias will also perpetuate omission bias. As individuals tend to opt for a known risk over an unknown risk, people will prefer a known risk from a disease rather than a more ambiguous risk of a vaccine for the same disease. When the ambiguity about the outcome of vaccination increases, there is a greater tendency towards omission rather than commission [30,31].

Finally, as vaccine-hesitant individuals are influenced by anticipatory regret and ambiguity biases, there may be a tendency to underestimate the severity of the disease. This optimism bias occurs when individuals consider themselves at low risk of the disease, as exemplified during the COVID-19 pandemic, or are strong enough to fight the effects of the disease [30]. These heuristics and cognitive biases are influential in the vaccine-hesitant decision-making process.

In order to respond to the differing needs and concerns of particular regions, the WHO recommends that each country develop an understanding of vaccine hesitancy on an ongoing basis [31]. Understanding and addressing these issues can enable public health officials and the healthcare sector to establish more effective communications and education programs regarding the effectiveness and the safety of vaccinations, thus improving vaccine trust and acceptance.

### **Decision Making**

In addition to understanding the aforementioned contributing factors, organizational behaviour concepts and decision-making theories can help us understand vaccine-hesitancy. Current studies enable us to theorize a direct relationship between various decision-making styles and vaccine hesitancy, thereby enabling viable solutions to be formulated.

The rational approach to decision-making focuses on the availability of adequate time and resources to facilitate a structured, thought-out process. In contrast, the bounded rationality approach illustrates individuals' cognitive limitations, leading to suboptimal decision-making conditions [11]. One of these suboptimal conditions is incorrect or has a lack of information. Existing studies indicate that individuals may digress and misstep into heuristic cognitive flaws that encourage vaccine misconceptions when they have partial information [32]. To illustrate, the impact of misinformation is more potent among populations with lower health literacy. Kricorian et al. (2013) found that individuals expressing vaccine hesitancy and challenges understanding scientific information were more inclined to agree with vaccine myths and were less trustworthy of scientific sources [33].

Intuitive decision-making is characterized by one's professional judgment based on past experiences instead of explicit logical reasoning [11]. This type of decision-making is more likely when there is a limit of facts and many options seem available. Research indicates that intuitive decision-making is positively correlated with the likelihood that an individual is more vaccine hesitant [34].

Through recognizing the mechanics behind the OB concepts of decision making, it is possible to formulate recommendations to alleviate vaccine hesitancy. For example, OB decision-making theories indicate that Consultative II (CII) may be suited for environments where a manager or leader needs decision acceptance (the decision to vaccinate), but followers are likely to disagree [11]. Although this strategy seems counterintuitive; it does reflect on a macro scale. CII alone is not a complete solution, however, it should be used in parallel with other strategies.

Providing correct information to individuals may allow for better rational decision-making. Martinelli &Veltri (2021) argue that depicting accurate COVID-19 vaccine information in a



manner that is accessible and understandable by individuals from a variety of socioeconomic backgrounds would help to improve vaccine knowledge and improve health literacy [34]. However, it is essential to note that having enough information alone is not adequate for individuals to make correct decisions [35]. Research also indicates that some attempts to correct misinformation about vaccines may backfire and thus reinforce the belief that vaccines are harmful and thus increasing vaccine hesitancy [36]. It is therefore evident that a blanket strategy will not be effective.

It is critical to correctly address vaccine hesitancy by adapting communication strategies and creating tailored messages that account for individual and demographic cognitive characteristics and affective concerns [34]. Concerning countering the availability bias, Hendrix et al. (2014) suggest that communication should be as personal and nominal as possible regarding the risks and benefits to the individual and the risks of the specific diseases [37]. No one specific decision-making concept should be utilized in silo to mitigate vaccine hesitancy. As diverse as populations are, so should the combinations of communication and information accessibility be. The risk of not adhering to these principles is the unintentional outcome of reinforcing the anti-vaccine sentiment.

### **Communication**

Anti-vaccine and vaccine hesitant groups are abundant and reflect the uncertainty and anxiety surrounding current vaccine recommendations and mandates. The most significant contributor to vaccine hesitancy is poor communication about the pandemic, COVID-19, and the risks and benefits of vaccination [23].

Communication is one of the most considerable challenges facing leaders, managers, and policy-makers. Effective communication requires that information passes between sender and receiver. By extension, the receiver has absorbed the intended message [11]. David Berlo's Sender-Message-Channel-Receiver (SMCR) communication model outlines communication as a process wherein the sender encodes a message passed through a channel to the Receiver. Notably, the sender and receiver exist within a given environment of culture and human experiences that impacts communication and alteration to any one of these communication elements will impact the effectiveness of the exchange [11]. The final step in this communication pathway is that feedback is generated from the receiver and sent back to the sender to confirm the message's intent and understanding. In the absence of a formal avenue for feedback and a communication channel that allows for delivery and receipt of feedback, informal feedback can emerge and is prone to adopt a negative intonation [11].

The directionality of communication must also be considered. Directionality can be top-down or bottom-up (from policymakers to the public or vice versa), horizontal (across individuals within the same hierarchical camp), or diagonal (transcending hierarchy). The directionality of communication is particularly crucial as this dictates the availability of feedback [11]. In a situation where communication occurs in a top-down fashion only, by definition, feedback is not going from the receiver to the sender. Multiple barriers may prevent effective communication. Factors such as the presence of a hierarchical structure and managerial philosophy and the use of unclear terminology [11] are essential for considering vaccine-hesitancy. These barriers can stifle the free flow of thoughts and ideas between groups resulting in frustration and miscommunication.

In working to overcome widespread vaccine hesitancy and the polarizing and divisive nature of the vaccinate vs non-vaccinate position, effective communication principles can be implemented to facilitate open discourse and ultimately affect positive change. Using the SMCR model, each element of this communication pathway can be altered or optimized to improve communication about vaccination. Hornsey and colleagues (2018) demonstrated the importance of a well-thought-out message. Many groups mistakenly focus messages on evidence and the debunking of vaccine-related myths. However, the study showed that focusing on motivations for vaccine procurement was a more compelling message to convey. The study suggested that a strategic communication approach wherein the message focuses on positive motivations for vaccination is one that would likely prove beneficial concerning population vaccination rates [38] .

The channel for conveying messages regarding vaccination at present is unidirectional and top-down through mass emails from health care organizations, media presentations, and written publications. While these channels allow for detailed data distribution, they do not allow for nonverbal communication and do not elicit feedback from the recipient for clarification of messaging [11] (Borkowski & Meese, 2021). For this reason, these channels of communication can function as a barrier to effective communication. Negative communication occurs without a feedback mechanism, encouraging the propagation of informal and potentially incorrect information.

Resolving issues of vaccine hesitancy with an emphasis on communication holds the potential to function as a powerful tool if appropriately employed. In order to optimize communication, it is important that a strategic communication methodology focus on motivations for positive vaccine-procurement behavior rather than on evidence and debunking of myths. Optimal communication in this setting should also employ multiple channels to gain the advantages of transfer of rich data with simultaneous facilitation of top-down and bottom-up communication and eliciting feedback and message clarification. For example, this could take the form of town

hall meetings, small group meetings with experts, and allowing for easy access to direct discussions with policymakers or their representatives. Cultural and institutional barriers to communication should also be alleviated, issues such as the use of complex terminologies, hierarchy, and managerial philosophy that might prohibit free exchange of ideas and feedback must be removed to allow for effective delivery and receipt of information. In addition, one must consider the sender and the receiver in the context in which they live and work and, by extension, consider potential barriers to communication [12] (Lane et al., 2018). Lastly, this communication must be boundary-spanning, providing the means of communication to extend beyond health care organizations or divisions to reach all members of the public as this is a global pandemic that impacts all individuals equally.

### **Conclusion**

Vaccine-hesitancy is a complex issue requiring complex solutions. Many factors influence vaccine-hesitancy, including culture, prior experiences with the medical establishment, an individual's attitudes, perception and cognitive biases. Understanding these motivating factors is crucial in establishing trust and acceptance of vaccinations. Furthermore, by understanding concepts in organizational behavior and how these impact decision-making processes it is possible to formulate recommendations to alleviate vaccine hesitancy and improve communication. By adapting communication strategies, messages can be tailored to account for an individual's culture, experiences, perceptions and biases. In doing so, communication will be more effective and the goal of achieving the common goal of vaccination may be possible.

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