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Jargons in Immunisation Brochures and Its Influence on Students' Vaccination Intention

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Abstract

This qualitative study identifies the in the Ministry of Health's National COVID-19 Immunisation Programme brochure and explores the influence of the jargons on university students' vaccination intentions. Through content analysis, key jargon terms were identified and categorised based on Halliday's Systemic Functional Linguistics, specifically the ideational metafunction. Following this, semi-structured interviews with three university students revealed varying levels of comprehension regarding technical terms and their influence on vaccination decisions. Findings also indicate that while the brochure conveys essential scientific information, its complex language may hinder understanding, emphasising the need for clearer communication to foster vaccine acceptance. This study also highlights the importance of accessible health messaging in promoting public health initiatives.

Keywords: *jargon, systemic functional linguistics, vaccination, health communication*

Introduction

In late 2019, the global community was unprepared for the sudden outbreak of COVID-19, which originated in Wuhan, China. The World Health Organisation (WHO) acted quickly, assembling scientists from around the world to accelerate vaccine research and development. By early May 2021, several COVID-19 vaccines were made available, and at the same time marking a historic achievement in vaccine science and public health (Thanh Le et al., 2020). This unprecedented situation underscored the critical role of vaccination in controlling infectious diseases and safeguarding public health. Vaccination campaigns become an essential instrument in the fight against the virus and to communicate with the public about the importance of vaccination.

An important strand of the vaccination campaign is the realisation of the National COVID-19 Immunisation Programme which is an important strategy formed by the government in ensuring all Malaysians are vaccinated from the COVID-19 virus. However, effectively conveying scientific and health-related information to the public is challenging, particularly when technical jargon is involved in the information. In many cases, the use of jargon can obscure important information, thus this will lead to confusion and potentially influencing people's decisions about vaccinations (Eckles & Aral, 2021). Furthermore, when health in-

formation is not easily understood, it can increase the existing disparities in health literacy among individuals who do not have a background in the medical field.

Moreover, one major barrier to vaccine acceptance is vaccine hesitancy, which has been identified as a significant public health challenge by the World Health Organisation (WHO). Vaccine hesitancy can be influenced by a variety of factors as reported in the literature. These include misinformation, distrust in the healthcare system, and a lack of understanding of vaccine-related information (Ye & Shi, 2023). It is noted that health communication by authority plays a key role in addressing these issues, but the complexity of scientific language or technical jargon often hinders its effectiveness. In particular, younger populations, such as university students, may struggle to understand certain jargon used in official health materials such as brochures, and this will lead to lower vaccination intentions among them (Eyer, 2021).

Due to this, despite the growing body of research on vaccine hesitancy, there has been little attention paid to how specific linguistic features, such as jargon, in public health materials impact vaccination decisions, particularly among university students. This gap in literature is relevant in the context of the Ministry of Health's National COVID-19 Immunisation Programme brochure, which plays a key role in disseminating vaccine information to the public. Moreover, understanding how the language is used in this brochure influences university students' vaccination intentions is important for improving the effectiveness of future health communication strategies.

Therefore, this study aims to address this gap by analysing the impact of jargon identified in the Ministry of Health's National COVID-19 Immunisation Programme brochure on university students' vaccination intentions. Specifically, this study seeks to identify the jargon present in this brochure and how it influences university students' vaccination intentions. Thus, this study hopes to contribute to more effective health communication strategies that can encourage greater vaccine uptake among them.

Literature Review

Vaccination Intention

Understanding vaccination intention is a critical component of public health efforts, especially in the context of ongoing COVID-19 virus. Studies have consistently highlighted the significance of clear communication in enhancing vaccination intentions. For instance, Sherman et al. (2020) conducted research in the UK that revealed a strong correlation between clear messaging about vaccine efficacy and increased willingness to vaccinate. Their findings emphasised that when individuals receive straightforward information about the benefits and safety of vaccines, then they are more likely to accept the vaccination. Similarly, Graupensperger et al. (2021) focuses on college students and found that transparency in communication regarding vaccine safety plays an important role in reducing hesitancy. Their research also demonstrated that detailed ex-

planations of vaccine development processes significantly bolster students' confidence in receiving vaccinations.

Misinformation has also emerged as another critical factor influencing vaccination intentions. For instance, a study by Ruiz and Bell (2021) explored the landscape of vaccine hesitancy in the United States and identified misinformation as a significant barrier to vaccine acceptance. Their study indicated that individuals exposed to conflicting information or myths surrounding vaccines exhibited a lower intent to vaccinate. This finding underscores the necessity for public health campaigns to address misinformation directly and provide accurate, evidence-based information to counteract these false narratives.

In the Malaysian context, a study by Syed Alwi et al. (2021) highlights valuable insights into how language and communication influence public perceptions of vaccination. Their study revealed that while there was a general receptivity towards the COVID-19 vaccine, complex medical terminology often hindered understanding. The participants of this study expressed confusion over technical jargon, which then negatively impacted their confidence in vaccination decisions. Furthermore, this also aligns with the findings of Evans et al. (2017), who argue that the use of specialised language without an adequate explanation can create barriers to effective communication, particularly among individuals without a specific background.

Thus, these previous studies on vaccination intention indicate a clear need for effective communication strategies tailored to the target audience. For instance, the current study focuses on the jargon used in the National COVID-19 Immunisation Programme brochure. By examining how this technical language affects university students' understanding and their intentions regarding vaccination, this study aims to address a significant gap in the literature.

The Use of Brochures in Malaysia's Healthcare

In the complex field of healthcare communication, brochures play a crucial role in delivering important information, especially in Malaysia's diverse society. These printed materials not only present the health-related facts, they also embody a crucial link between medical knowledge and societal norms, expectations, and traditional healthcare beliefs (Mårtensson et al., 2020). Despite the rise of digital media, brochures remain significant in Malaysia, effectively reaching a broad spectrum of the population across various ethnic and linguistic backgrounds and differing levels of digital literacy. This accessibility also makes brochures invaluable, serving as readily available, portable, and trusted sources of information (Sokey, Adjei & Ankrah, 2018).

Additionally, during the COVID-19 pandemic, the relevance of brochures has notably increased, becoming key tools for disseminating knowledge and promoting vaccination efforts. The Ministry of Health has also adeptly utilised these traditional communication mediums to address vaccine hesitancy and dispel

myths, strategically distributing brochures in healthcare centres, community gatherings, and religious venues. By providing scientifically sound advice that resonates with the community's cultural and religious sensibilities, these brochures also effectively counteract any misinformation. What makes these brochures unique is not only their content but also the careful way the language is used. The National COVID-19 Immunisation Programme brochure carefully chooses words, by using the specific terms and quotes from respected figures in order to strike a balance between scientific accuracy and cultural sensitivity.

Jargon in the National Immunisation Programme Brochures

The complex dynamics between specialised medical terminology in COVID-19 vaccine and its influence on people's willingness to get vaccinated reveal significant insights. For instance, the National COVID-19 Immunisation Programme brochure from the Ministry of Health (MoH) serves as a prime example, introducing terms such as "viral vector" and "mRNA vaccine". While these terms are accurate in the scientific and health fields, they may not resonate with the general public without further simplification. This is because while jargon is necessary to convey accurate medical information, it will often create barriers for those without a specialised background (Paasche-Orlow et al., 2020). Thus, this can lead to confusion, lower the people's trust in health communications, and reduce their vaccination intent as well (Kim & Kreps, 2020).

Furthermore, simplifying the complex terms in health brochures has been shown to improve public comprehension and engagement. For instance, research by Obregon and Waisbord (2021) highlights how health communication that integrates layman's language can bridge the knowledge gap between the scientific experts and general population. In the Malaysian context, incorporating local dialects or culturally resonant language in the Ministry of Health's brochures can further ensure that key messages reach a broader audience, especially in a country with diverse ethnic and linguistic groups (Lee & Nguyen, 2017).

In addition, the impact of jargon is also particularly notable among university students, who are often literate but not specialised in any of the medical terms. For instance, a study by Cha et al. (2022) found that younger individuals and students can struggle with understanding technical health information, which can negatively influence their health behaviour, including their vaccine uptake. This also underlines how important it is to carefully balance scientific accuracy with clarity and simplicity in health communication materials (Nagler et al., 2020).

Therefore, the role of jargon in the Ministry of Health's vaccination brochures is a critical factor to consider when aiming to foster better public health outcomes. By using clear, simplified language and culturally relevant communication strategies, these brochures can play a pivotal role in encouraging informed decision-making as well as increasing the vaccination rates in Malaysia.

Theoretical Framework: Halliday's Systemic Functional Linguistics

To analyse the jargon used in the Ministry of Health's National COVID-19 Immunisation Programme brochure, this study draws on Halliday's Systemic Functional Linguistics (SFL) theory, particularly focusing on the ideational metafunction. SFL asserts that language is a resource for making meaning, and the ideational metafunction specifically examines how language represents ideas and conveys meaning about the world (Halliday & Matthiessen, 2014). In health communication, understanding how specialised terminology shapes public perceptions is crucial, as jargon can either facilitate or hinder comprehension. By applying this theory, the study will assess how the Ministry of Health's National COVID-19 Immunisation Programme brochure utilises specific jargon to communicate complex health concepts effectively, thus directly linking to the research question regarding its impact on university students' vaccination intentions. This approach not only enhances the understanding of the language used in health communication but also sheds light on how such language impacts individuals' health decisions.

Methodology

This qualitative study aimed to explore the influence of the jargon used in the Ministry of Health's National COVID-19 Immunisation Programme brochure on university students' vaccination intention. The methodology also comprised two primary phases: (1) the identification of jargon and (2) content analysis of university students' perceptions of the jargon through interview.

Data Collection

The first phase involved a content analysis of the National COVID-19 Immunisation Programme brochure, sourced from the Ministry of Health's official website. The brochure, consisting of 26 pages, was thoroughly examined to identify the key jargon terms that were related to vaccination technology as well as medical science. Next, the identified jargon included terms such as "mRNA", "viral vector", and "pathogens", which then were categorised into relevant themes based on Halliday's Systemic Functional Linguistics (SFL) theory, specifically focusing on the ideational metafunction. This approach facilitated an understanding of how these terms represent specific concepts and processes (Halliday & Matthiessen, 2014).

For the second phase of this study, purposive sampling was employed to select three university students from Universiti Teknologi MARA (UiTM) Shah Alam, representing different courses and varying proficiency levels in English, as indicated by their Malaysian University English Test (MUET) scores. This approach ensured diverse perspectives on the comprehension of the jargon identified in the National COVID-19 Immunisation Programme brochure. While the sample size is limited, it was deemed sufficient for obtaining in-depth qualitative insights that reflect diverse perspectives on jargon comprehension within the university student population (Guest et al., 2006; Cresswell, 2014).

Semi-structured interviews were conducted with each of the participants to gather qualitative data regarding their perceptions of the jargon used in the brochure. Each interview lasted approximately not more than 30 minutes and was audio-recorded with participants' consent. Furthermore, the participants were asked open-ended questions about their understanding of the brochure's content, specific jargon terms, and how these terms influenced their attitudes towards vaccination. This method allowed for an in-depth exploration of the participants' thoughts and feelings regarding the jargon in the brochure (Creswell, 2014).

The audio recordings of the interviews were then transcribed and analysed using Atlas.ti software. The analysis involved coding the responses to identify recurring themes related to the participants' understanding of jargon and its influence on their vaccination intention. Each jargon term was categorised based on its perceived clarity and relevance, as well as its impact on the participants' confidence in the vaccination process.

Ethical approval was obtained from the relevant institutional review board. Participants were also informed about the study's purpose, and consent was secured prior to the participation. In addition, their anonymity was ensured throughout the study, with the pseudonyms assigned to protect their identities.

Findings

Research Question 1: To identify the jargon present in the National COVID-19 Immunisation Programme brochure

The National COVID-19 Immunisation Programme brochure includes various scientific and technical terms. A detailed content analysis revealed twelve (12) key jargon terms in the brochure. These jargon terms were then categorised into three groups: Medical Science, Vaccine Technology, and Scientific Processes and Data. This categorisation helps to illustrate the different levels of technical language used within the brochure. The table below provides a summary of the jargon identified, including the frequency of occurrence for each term. By understanding how frequently these terms appear, the complexity of the information being communicated in the brochure to the readers can be determined.

Table 1: Identified Jargons in the National COVID-19 Immunisation Programme Brochure

Jargon	Category	Frequency
Antigens	Medical Science	1
Viral vector	Vaccine Technology	6
RNA genetic sequencing	Vaccine Technology	1
Protein sub-unit	Vaccine Technology	1
Pathogens	Medical Science	1
SARS-CoV-2	Medical Science	1
Inactivated virus	Vaccine Technology	2
mRNA	Vaccine Technology	5

Deactivating virus	Vaccine Technology	1
Synthetically produced	Scientific Processes and Data	1
Epidemiology of the disease	Public Health	1
Geo-Big Data information	Scientific Processes and Data	1

This analysis is grounded in Halliday's Systemic Functional Linguistics (SFL), particularly the ideational metafunction, which focuses on how language represents ideas, processes, and experiences (Halliday & Matthiessen, 2014). In the context of this study, the National COVID-19 Immunisation Programme brochure utilises technical jargon to convey essential scientific concepts related to vaccination.

For instance, terms like "viral vector" and "mRNA" were frequently mentioned but also lacked further clarification in the brochure. These terms represent crucial aspects of vaccine technology, but their specialised nature may create barriers for readers that are unfamiliar with such terms. According to Evans et al. (2017), the use of complex scientific terms without an adequate explanation can hinder public comprehension, particularly among those without a science background.

Furthermore, the ideational metafunction explains that while brochure successfully represents scientific processes, it may not be fully effective in communicating these processes to its target audience. The absence of simpler explanations or analogies creates a communication gap, thus limiting the reader's ability to engage with such material. As stated by Rudd (2018), public health communication is most effective when the technical language is also balanced with accessibility, ensuring that critical information is conveyed clearly. Thus, while the brochure excels in representing accurate scientific information, the frequent use of jargon, but without any definitions or clarifications in the side, may pose challenges for understanding. This will potentially affect the reader's confidence in the vaccine, leading to confusion and vaccine hesitancy.

Research Question 2: To analyse the influence of identified jargon in the National COVID-19 Immunisation Programme brochure on university students' vaccination intentions

To explore the influence of jargon on vaccination intentions, three participants from a Malaysian public university were interviewed. Table 2 summarises the participants' demographic backgrounds:

Table 2: Participants Demographics and Jargon Perception in Vaccination Intentions

Participant	**Course**	**MUET Band**	**Key Jargon Issues**	**Vaccination Intention**
Participant A	English	Band 4	Confusion with "pathogens", "RNA genetic sequencing"	Confident, but sought clarification on the terms in the brochure
Participant B	Bahasa Melayu	Band 3	Unfamiliar with "synthetically produced", "mRNA"	Hesitant due to the unfamiliar brochure in the brochure
Participant C	Bahasa Arab	Band 4	Partial understanding of "viral vector"	Willing to vaccinate but recommended simpler terms

Key Themes from the Interviews

Understanding of Brochure Content

All the participants recognised the brochure's intention to inform the public about COVID-19 and the vaccination process. However, their ability to articulate specific details varied. For instance, Participant A summarised the content but expressed uncertainty about specific terms, thus reflecting a superficial understanding. This variation suggests that while the National COVID-19 Immunisation Programme brochure serves its primary purpose, the technical language employed may hinder their deeper comprehension of the brochure.

Perception of Jargon

The participants struggled with specific jargon, such as "synthetically produced" and "RNA genetic sequencing". For instance, Participant B stated, "*It's confusing because I've never heard of it before*," thus indicating the challenges posed by technical terminology. To elaborate, Halliday's Systemic Functional Linguistics (SFL) framework, particularly the ideational metafunction, illustrates that when jargon is used without an adequate simplification, it fails to represent concepts effectively for readers, leading to confusion and disengagement (Halliday & Matthiessen, 2014).

Influence of Jargon on Vaccination Intentions

The presence of unfamiliar jargons in the National COVID-19 Immunisation Programme brochure contributed to hesitancy among the participants. For instance, Participant A stated, "*It makes me think twice about getting the booster*," thus highlighting how technical terms can create doubt as well as uncertainty. This also aligns with the findings by McCoy et al. (2020), which suggest that understanding complex terminology is crucial for informed decision-making regarding vaccinations.

Desire for Simplified Explanations

Across all the interviews, participants had expressed a strong desire for clearer explanations of the jargon mentioned in the National COVID-19 Immunisation Programme brochure. For instance, Participant C stated, "*If they could add more explanations to the jargon, it would be helpful*." This feedback underscores the need for health communication to prioritise accessibility and clarity as underlined by Rudd (2018) that simplifying medical language enhances the public understanding and engagement, suggesting that the inclusion of layman-friendly explanations could improve the effectiveness of the brochure.

Discussions and Conclusion

The first research objective focuses on identifying the jargon present in the National COVID-19 Immunisation Programme brochure. The findings show that the National COVID-19 Immunisation Programme brochure contains complex jargon, including terms like "viral vector", "pathogens", and "RNA genetic sequencing". From Halliday's Systemic Functional Linguistics (SFL) perspective, these terms align with ideational metafunction, which is concerned with representing processes and experiences in the world (Halliday & Matthiessen, 2014). The use of such technical terms reflects the Ministry of Health's attempt to communicate detailed scientific processes to the public. However, this complexity also raises questions about accessibility of the readers in understanding the intended message.

The high frequency of terms such as "viral vector" and "mRNA" suggests that the National COVID-19 Immunisation Programme brochure prioritises in conveying accurate vaccine technology. Both terms are central to understanding the types of vaccines used, however, the lack of explanation for these terms in the brochure limits its effectiveness in communicating with readers that are not from science or health background. This aligns with studies by Evans et al. (2017) and Syed Alwi et al. (2021), which argue that excessive technical language in health communication can alienate the general public, especially those with lower health literacy. From Halliday's Systemic Functional Linguistics (SFL) viewpoint, this means that while language in the brochure is effective at representing scientific knowledge, it fails to consider the experiential context of the general public, who may not have the background knowledge to fully understand these terms. This limitation emphasises the importance of aligning scientific terminology with the linguistic and experiential capacities of the readers. Thus, by providing the simplified explanations or even analogies, the brochure could fulfil its ideational function while also enhancing its accessibility.

The second research objective aims to analyse the influence of the identified jargons in the National COVID-19 Immunisation Programme brochure on university students' vaccination intention. The interviews with the three participants revealed that unfamiliar jargon had a mixed effect on their vaccination intentions. From Halliday's Systemic Functional Linguistics (SFL) perspective, the experiential meaning of the jargon was not successfully conveyed to the participants, thus creating a gap in understanding. For instance, Participant B, expressed confusion over terms like "synthetically produced" and "mRNA", which contributed to hesitation about getting a booster shot for COVID-19. This aligns with research by McCoy et al. (2020), which highlights that technical language can lead to disengagement and mistrust, especially in health communication.

However, despite this confusion, some participants also indicated willingness to vaccinate, thus suggesting that trust in government recommendations still plays a vital role in their decision-making process. For instance, Participant C mentioned, "*Even though I don't understand all the terms, I'll still follow the government's advice*," thus reflecting an underlying confidence in institutional authority. This finding un-

derscores the importance of combining technical language with accessible explanations to enhance the reader's understanding and reduce vaccine hesitancy.

Overall, this study highlights the significant role that jargon plays in shaping the university students' understanding and intentions regarding vaccination. While the National COVID-19 Immunisation Programme brochure provides essential scientific information, the complexity of its language may hinder effective communication. Thus, by focusing on simplifying the jargon and providing contextual explanations, it could improve comprehension for the readers. This will encourage greater vaccine uptake among the university students.

Future research should consider expanding the scope of this study by examining how different demographic groups, such as older adults or individuals with varying educational backgrounds, respond to health communication materials containing jargon. Additionally, exploring effective strategies for simplifying technical language in health brochures could also enhance the public understanding. Longitudinal studies assessing changes in vaccination intentions in response to an evolving public health messaging would also provide valuable insights into how communication can be tailored to improve the engagement and compliance with vaccination programs.

Author contributions

The main author led the data collection and analysis as well as the primary writing of this article. The second and third authors played an important role in cross-checking the interview questions and data analysis to assure reliability. The fourth author is responsible for editing and proofreading the manuscript.

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Data availability statement

The brochure analysed in this paper is publicly available. However, results of analyses conducted during the study are not available for public access.

Conflicts of interest

The authors declare that there are no conflicts of interest concerning this publication. All authors have disclosed any potential conflicts, and no financial or personal relationships could have influenced the research.

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