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Media Literacy and Behavioral Change on Vaccination Issue in Malaysia

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Abstract
Vaccination is a hotly discussed topic that has been around for a long time. Part of this is because many people, particularly parents, have false beliefs about vaccinations and avoid vaccinating their children. If this kind of speculation keeps getting worse, it could pose serious risks to public health. Assumptions about what constitutes reality and what constitutes rumor are spreading like wildfire through the media, especially the Internet, and may be to blame. Therefore, they need to have knowledge of vaccination, which can be received through numerous sources such as the internet, television, radio, newspapers, books, and others. This research aims to measure parents' familiarity with and comfort using various forms of media and their habits around their online searches for data related to childhood vaccinations. The primary tool for data collection in this study was a questionnaire, making quantitative research methodologies the backbone of this investigation. The survey used questions taken from earlier research. Parents with children aged one day to fifteen in five regions of Malaysia accounted for 396 of the study's respondents. Partial Least Squares Structural Equation Modelling (PLS-SEM), used in this study, is a method for analyzing hypothesis models, testing and correlating all media literacy constructs, knowledge, and behavior change among parents in Malaysia. All correlations were statistically significant, and the results suggest that just two media literacy characteristics genuinely influence change in Malaysian parents. In sum, this research contributes to a deeper comprehension of media literacy. It may provide a tipping point for parents in Malaysia, allowing them to have a deeper awareness of a specific topic and its impact on the shift in parenting practices in that country.

Keywords: Behavorial change; Internet; Media literacy; Social Media; Vaccination.

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Introduction

Media literacy is usually defined as the ability to use, understand, and make content in different situations. Literacy in the media is an umbrella term encompassing various subdomains, including news and health media literacy. Media literacy has traditionally been associated with critically analyzing news, advertising, and mass media entertainment. On the other hand, health media literacy has historically been associated with making positive choices about topics such as nutrition, exercise, and substance abuse. Regarding the media-literacy requirements of older people, the significance of health media literacy has been emphasized. This is because older people constitute a significant prospective customer group for various health technology, information, and services.

There is no such thing as an identity that remains the same across time. The growth phases that adults go through are similar to those that children go through. Everyone develops in their unique ways, and as a result, so does their perception of who they are. The most crucial aspect of media literacy is realizing that the meaning of a message depends on both the sender's intentions and the receiver's interpretation. When we send and receive messages, our actions are affected by how we interpret them. For instance, when a message is broadcast worldwide via social media, various parents interpret it differently. The parents' reactions will change because of this. It is the message's content that has an effect on the parent and leads to a change in their actions. How we interact with one another is changing, and this can be observed and

utilized in everyday life. A person who is media literate can read, write, speak, listen, think critically, and use a variety of media to share and spread ideas (Cropley, 2019).

The vaccination program that is part of immunization protection is essential for preventing the spread of illness among vulnerable populations, including children and people with compromised immune systems. However, there has been a significant rise in the number of nations throughout the globe, including Malaysia, reporting infectious illnesses. This may be happening partly because of the growth of some organizations or movements that do not believe in the effectiveness of vaccinations. It was found that numerous studies have shown that the prevalence of people's belief in infectious illness conspiracy theories is inversely related to their vaccination rates. Vaccination skepticism based on paranoid beliefs about vaccine safety has increased. Notably, many questions have yet to be resolved (Yang, Luo, & Jia, 2021). In a different study, despite vaccination's proven effectiveness in lowering the incidence and prevalence of illness in industrialized nations, it has been largely ignored in the developing world due to ignorance, misinformation, and cultural beliefs (Ogbonna, 2017).

Vaccine hesitancy has emerged on a worldwide scale during the last several decades, and it has been determined that the worries and misunderstandings that people have about the safety and efficacy of vaccines are essential contributors to the under-utilization of vaccines (Mukhtar, Kadir, Noor, & Mohammad, 2022). On the other hand, information gaps, such as infection and vaccination ignorance and vaccine-opposing disinformation, contribute to non-vaccination. Motivational barriers include negative attitudes about vaccination (based on negative beliefs about the outcomes of vaccination, which are often the result of inaccurate information from anti-vaccine groups) and lack of social support from significant others for vaccination (Zimet, Rosberger, Fisher, Perez, & Stupiansky, 2013).

Refusal to vaccinate was attributed to factors like exposure to anti-vaccine propaganda, a history of an adverse event following immunization (AEFI), a sense of religious prohibition, the conviction that the use of traditional complementary and alternative medicine (TCAM) is safer, a trust in pseudoscience, and the existence of anti-vaccine conspiracy theories. It was discovered that the interaction of social, cultural, and religious views on the perception of religious prohibition, pseudoscience beliefs, and the usage of TCAM influences vaccination rejection. Five overarching themes emerged from the health professionals' discussions of strategies to address vaccine hesitancy: creating an electronic vaccination registry, expanding public awareness initiatives, sharing the results of AEFI with the public, educating frontline healthcare providers, and restricting the spread of anti-vaccine information on social media (Wong, Wong, & Bakar, 2020).

The media floods us with so much data that we cannot ignore it. Many people need help finding what they need online because of the variety of available resources (Potter, 2016). Accessing information is a significant challenge for consumers in this century for various reasons. The vast majority of community members will only gain their ability to make informed decisions if they obtain relevant information. Because of the proliferation of mass media in the 21st century, there are no longer any obstacles to gaining access to information. Information can be obtained from various sources, including radio, television, and the Internet. Massive amounts of information and knowledge are constantly flowing over the Internet in today's society; this information is generated not just in conventional ways but also by all different types of users becoming producers, which may lead to falsehoods and disinformation (Pérez-Escoda, Pedrero-Esteban, Rubio-Romero, & Jiménez-Narros, 2021).

In addition, media literacy can be defined as the capability to evaluate and choose among the various messages presented in the media, whether those messages come from print or electronic sources. The Cognitive Model of Media Literacy highlights four components that are used to affect media literacy. These four factors are as follows: knowledge structure, motivated decisions, information processing tools, and information processing task flow (Potter, 2016). This research is vital in gaining access to new knowledge, so it is an essential step. It can discover new, previously unknown things, generating fresh perspectives and altering conventional ways of thinking.

This study utilized Media Literacy Theory because the elements in the structure of knowledge, motivated decisions, processing tools, and the flow of information processing activities are used in media literacy variables such as obtaining, evaluating, analyzing, and sharing information. This theory was selected because of its close relationship to the other theories considered until the formation of questionnaires for constructs to access, evaluate, analyze, and share information that influences the decision to make behavioral changes, whether those changes are positive or negative. The gap for this research should not only be seen from the viewpoint of parents in Malaysia; it should be expanded to include a much more comprehensive range of the country's population.

Methods

In this study, researchers primarily used a fully quantitative method called the survey method, which involved giving people a questionnaire to fill out. Catalina (2010) says that the purpose of the statistical information in the findings is to help the researchers make comparisons and then analyze the phenomena of a study. The researchers wanted to conduct multiple-stage cluster sampling because the number of respondents was too large. This involved several samplings at four levels: the level between zones, the level between states, the level between districts, and the level between hospital or clinic areas. The researchers wanted to do this because the number of respondents was too large. This is because the region has been identified as having respondents who are typical of the intended subject, have access to access online facilities, and have a sufficient internet connection speed for receiving information specifically concerning health.

The subject of study was selected based on the study's relevance, suitability, and requirements. A total of 396 respondents were selected by sampling aimed at the population to be used as the subject of the study. Researchers have determined the appropriate respondents in the study by specific criteria focusing on the target group (Cropley, 2019). The questioned criterion requires the respondent to be a parent of a child aged one day to 15 years who resides in urban or rural settings

The urban and rural regions of certain zones and states across Malaysia are the primary focus of this research. The researchers intended to do multiple-stage cluster sampling since the number of respondents was too great. This included various samples being taken at four levels: the Interzone, state, district, and hospital or clinic locations.

This is because the BCG vaccine, given to infants from the age of 1 day, is gradually phased out at age 15 when the Tetanus Toxoid Booster Dose is administered. Bacillus Calmette-Guerin is an abbreviation for "BCG." It is contaminated with bovine tuberculosis bacteria or mycobacterium bovis. The modified germ is too feeble to cause illness, yet it nevertheless prompts the immune system to begin protecting the infant from tuberculosis. The vaccine was administered shortly after delivery as part of the Malaysian Immunization Programmes. At the same time, the additional dose of tetanus toxoid for booster shots is intended to protect against braces. Individuals will be immune to the disease after receiving three doses of the vaccine, as stated by the WHO. These parents are likely folks who frequently look for health information, particularly about vaccinations, on the internet.

Result and Discussion

There were 396 respondents, and the analysis focused on 218 female respondents (55.1%). This demonstrates that mothers are likelier than fathers to look for their children's well-being. Compared to fathers, mothers tend to be more concerned about the well-being of their offspring. The remaining 178 male respondents account for 44.9% of the total.

She has a motherly personality and is highly concerned about her family. In addition, the mother will watch out for her family's well-being and ensure everyone stays well and safe. Elbur, M. Yousif, A. Albarraq, and M. Abdallah (2014) reports that when comparing moms and fathers, mothers better understand their children's immunization schedules. A higher degree of education has been linked in prior research to increased vaccination knowledge (Krishna , Zulkefli, Said & Mahmud, 2019).

This may be related to the fact that having a higher level of education enables one to have better contact with the providers of health care and reduces the likelihood of acquiring trust in and receiving incorrect information regarding vaccines (Tauil, Sato, & Waldman, 2016). Parents in Malaysia typically look for information about childhood vaccinations using personal electronic devices such as computers, laptops, tablets, and smartphones. Table 1 reveals that 359 individuals possess cell phones, 169 have laptops, 131 have PCs, and 104 have tablets. This would imply that all respondents can access the internet regardless of where they are by utilizing either a prepaid or postpaid internet plan or a wifi internet plan. In general, every one of the responders possesses internet access.

Table 1. Search Pattern for Vaccination

Item	No. of Respondents (n = 396)	Percentage (%)
Gender		
Male	178	44.9
Female	218	55.1
Computer		
Yes	127	32.1

Item	No. of Respondents (n = 396)	Percentage (%)
No	269	67.9
Laptop		
Yes	167	42.2
No	229	57.8
Tablet		
Yes	103	26.0
No	293	74.0
Smart Phone		
Yes	355	89.6
No	41	10.4
Internet Ownership		
Yes	396	100
No	0	0
Most Frequent Devices		
Computer	40	10.1
Laptop	63	15.9
Tablet	59	14.9
Smart Phone	234	59.1
Internet Plan		
Prepaid	226	57.1
Postpaid	107	27.0
Free Wifi	63	15.9
Average search for information		
1 Time	100	25.0
2 Times	38	9.5
3 Times	45	11.3
4 Times	69	17.3
More than 4 Times	148	37.0
Location		
House	126	31.8
Office	120	30.3
On the Go	103	26.0
Others	47	11.9
Time		
Morning	232	58.6
Afternoon	54	13.6
Evening	59	14.9
Night	51	12.9
Information Type		
General Knowledge	82	20.7
Vaccination Types	50	12.6
Procedure	46	11.6
Vaccination Benefit	49	12.4
Vaccination Effect	60	15.2
Vaccination Issue and Controversy	109	27.5

In addition, researchers looked at the frequency of media literacy over a week. Due to the findings in Table 2, the vast majority of respondents (169 persons, or 42.7% of the total respondents) used the internet for two to almost three hours. This included accessing the internet. Despite this, 43 persons, or 10.9% of the total, could access the internet in less than 59 minutes. This demonstrates why access is such a vital component of acquiring media literacy. Moreover, it is not confined to any particular source, which is the first step toward media literacy (Potter, 2010).

Analyzing data is the second step. For an average of 3.0 hours, 183 participants (46.2%) analyzed vaccination data. This demonstrates that analysis is a lengthy process. Evaluating is the third step. Fewer

than 59 minutes was the median time responders spent evaluating vaccination information. Because the respondent has spent a significant amount of time evaluating the information, it may become evident that the evaluation they have provided is excessively superficial. Either a favorable or unfavorable aspect was considered for this evaluation. Most of the respondents, 155 individuals (39.1%), spent between one hour and 59 minutes discussing vaccine information with other individuals. Internet users have trouble and cannot get on the internet because they do not know enough about certain things (Adams & Bonk, 1995). So, the Internet is used to find what people are looking for. If someone is looking for the correct information, they have a better idea of what they are looking for, especially regarding vaccinations.

Access is the most fundamental need for acquiring any source of information, particularly one about one's health. The degrees of accessibility to various forms of media are broken out below in Table 4.4. The assertion that the respondent can utilize tools on the Internet using the display or bar menu has a mean value of 3.28 and a standard deviation of 1.313. This is the statement that recorded the highest mean value. This is a fundamental ability, and in a broad sense, everyone has it.

This demonstrates that most parents believe that access to the Internet is necessary for informational purposes. They prefer to use the internet since it is simple to input terms on either Google or Yahoo. This is one of the reasons why they want to do so.

Table 2. Percent, Mean, and Standard Deviation Distribution for Accessing Activity (n=396)

Item	Percentage (%)					Mean	SD
	1	2	3	4	5		
Q1	13.1	16.7	19.7	30.6	19.9	3.28	1.313
Q2	14.6	18.4	15.2	29.0	22.7	3.27	1.379
Q3	11.4	19.2	21.7	21.0	16.0	3.25	1.279
Q4	12.6	18.7	22.2	26.8	19.7	3.22	1.305
Q5	12.1	24.5	14.4	27.3	21.7	3.22	1.352
Q6	17.2	16.4	16.2	30.1	20.2	3.20	1.338
Q7	14.9	19.7	17.7	26.8	21.0	3.19	1.366
Total						3.23	1.333

(Note: 1=Strongly disagree, 2=Disagree, 3=Quite Agree, 4=Agree, 5=Strongly Agree)

Despite this, respondents reported a low mean score of 3.19 and a standard deviation of 1.366 when asked about their proficiency in using the internet for activities such as uploading and downloading pictures, altering pictures and videos, and so on (Q7). As a direct consequence of these results, most respondents need help uploading or downloading videos or images rapidly. There are also because certain parties block them, or, to put it another way, they need to register themselves beforehand before using their website. Some people cannot successfully download or upload photos and videos because they either need the necessary abilities or their internet limits are too low.

According to Malamud et al. (2019) findings, a person's cognitive ness and capacity to skills are relevant factors in determining whether they have internet access. Therefore, one's cognitive abilities consist of mental activities such as thinking, reading, learning, remembering, focusing, etc. A lack of understanding about anything is the root cause of the difficulties and restrictions that internet users face while trying to use the internet (Adams & Bonk, 1995). Therefore, as a solution, the internet is used in information gathering. If someone is seeking false information, they already have a preconceived notion of what they are looking for, particularly regarding vaccines.

Analyze

Table 4 demonstrates that respondents could assess information found on the internet by comparing vaccination information from one source to another (Q1). This comparison demonstrated the highest mean value of 3.28, with a standard deviation of 1.298. Because respondents are so concerned with determining the reliability of the data, accessing and analyzing it takes a significant amount of their time. For instance, when they access information on government websites and personal blogs where it is not known who the authors are, this gives them more confidence in what they read and allows them to analyze what they read more effectively on government websites such as the Ministry of Health Malaysia (MOH) than on personal blogs. According to (Campbell, 2000), the quality of the information found on the Internet may vary significantly from one source to another, resulting in both good and bad aspects of the information. The next time it occurs, readers often need to be more accurate, which leads to misconceptions and wrong information.

Table 3. Percent, Mean, and Standard Deviation Distribution for Analyzing Activity (n=396)

Item	Percentage (%)					Mean	SD
	1	2	3	4	5		
Q1	12.1	17.9	19.9	30.3	19.7	3.28	1.298
Q2	11.1	18.2	23.7	28.3	18.7	3.25	1.264
Q3	11.9	18.7	22.0	28.5	18.9	3.24	1.285
Q4	12.6	17.9	21.7	28.3	19.4	3.24	1.301
Q5	12.9	18.2	21.5	28.0	19.4	3.23	1.306
Q6	10.6	27.3	14.6	26.3	21.2	3.20	1.331
Q7	14.9	19.2	17.7	28.3	19.9	3.19	1.355
Total						3.23	1.306

(Note: 1=Strongly disagree, 2=Disagree, 3=Quite Agree, 4=Agree, 5=Strongly Agree)

The respondents can choose to use a resource that is credible and extensive (Zafer, Kumtepe & Saykili, 2021). Even though the respondents came from various backgrounds and had varying levels of prior vaccination experience, they could all draw comparisons about vaccination material found on the internet according to their knowledge. The mean was the lowest possible at 3.19, while the standard deviation was the lowest possible at 1.355. The overall mean score for the amount of media literacy required for analysis is 3.23, while the standard deviation is 1.306.

Evaluate

The following six statements pertain to the degree of measuring media literacy and are shown in Table 5. Respondents can reject vaccination information, which will result in recording the greatest possible mean value of 3.27 and a standard deviation of 1.288 (Q1). This demonstrates that the responder carefully considers the repercussions and drawbacks that may result from the rejection before making any choice. This will engage not only himself but also the people around him and will affect them. Each respondent provides a unique perspective on the evaluation.

Table 4. Percent, Mean, and Standard Deviation Distribution for Evaluating Activity (n=396)

Item	Percentage (%)					Mean	SD
	1	2	3	4	5		
Q1	11.9	18.2	20.5	30.3	19.2	3.27	1.288
Q2	14.9	19.7	15.4	30.6	19.4	3.20	1.357
Q3	10.9	27.0	14.6	26.0	21.5	3.20	1.337
Q4	15.7	18.2	17.7	28.0	20.5	3.19	1.369
Q5	14.4	19.7	18.7	27.8	19.4	3.18	1.342
Q6	17.4	18.7	14.4	31.6	17.9	3.14	1.379
Total						3.20	1.345

(Note: 1=Strongly disagree, 2=Disagree, 3=Quite Agree, 4=Agree, 5=Strongly Agree)

Respondents who could distinguish between accurate and fraudulent information received the lowest mean score (3.14). This is due to the widespread credibility of the reported news. Some writers provide testimonial evidence or fabricated scientific proof of vaccination to sway the reader's opinion. There are, in fact, people who distort reality and who know just a fraction of the truth.

According to Brandth (1996), information obtained from various search engines conveys a distinct perception. While Kovacs et al. (1994) emphasized the need to analyze any information received on the Internet and were advised not to believe everything found, they also emphasized the need to seek the truth, including the author's background and the author's ability to provide authentic or otherwise credible information. The overall mean score for media literacy required to analyze content is 3.20, and the standard deviation is 1.345.

Share

The distribution of respondents according to the degree to which they shared information with others is shown in Table 6. The respondents that do not share, comment on, or like inauthentic, ethical, and integrity-related vaccine material distributed by other Internet users had the highest mean value, which was 3.15, with a standard deviation of 1.294. People who took the survey want to avoid putting themselves in danger by distributing information that is still questionable and unauthentic unless it comes from a reliable source on a simple website.

Table 5. Percent, Mean, and Standard Deviation Distribution for Sharing Activity (n=396)

Item	Percentage (%)					Mean	SD
	1	2	3	4	5		
Q1	13.9	16.9	27.5	23.2	18.4	3.15	1.294
Q2	13.9	19.2	27.0	22.5	17.4	3.10	1.298
Q3	14.9	18.2	27.5	23.2	16.2	3.08	1.286
Q4	15.9	18.9	25.3	21.0	18.9	3.08	1.338
Q5	15.7	19.2	25.8	21.7	17.7	3.07	1.320
Q6	16.9	18.7	24.2	22.0	18.2	3.06	1.346
Q7	16.2	21.5	22.5	20.5	19.4	3.06	1.358
Q8	16.9	19.2	25.0	20.2	18.7	3.05	1.349
Q9	16.2	19.7	26.8	20.2	17.2	3.03	1.318
Q10	16.7	18.9	27.3	20.5	16.7	3.02	1.316
Q11	15.7	19.9	27.5	22.2	14.6	3.00	1.280
Q12	17.4	20.5	25.8	19.4	16.9	2.98	1.333
Total			3.06				1.320

(Note: 1=Strongly disagree, 2=Disagree, 3=Quite Agree, 4=Agree, 5=Strongly Agree)

While information, news, or articles about vaccinations on the Internet increased respondents' tendency to engage in vaccination activities (attending health talks on vaccinations, campaigns, and conferences recorded the lowest mean value of 2.98 with a standard deviation of 1.333), most respondents were silent audiences. Steffens et al. (2019) stated that respondents are very obsessed with vaccination issues but need to be more active in activities to share information, comments, and likes. They are easily influenced and do not consist of criteria that are easy to share with others.

Table 6. Category of the Scoring Scale by variable

Item / Activity	Mean (Score)		
	Low	Average	High
Access (3.08)	0.00 – 1.67	1.68 – 3.34	3.35 – 5.00
Analyze (3.08)	0.00 – 1.67	1.68 – 3.34	3.35 – 5.00
Evaluate (3.04)	0.00 – 1.67	1.68 – 3.34	3.35 – 5.00
Share (3.06)	0.00 – 1.67	1.68 – 3.34	3.35 – 5.00

Fritch & Cromwell (2001) stated that anyone can publish material on the Internet. It does not censor or limit the sharing of information in any way, including sharing ideas, views, alerts, experiences, and any other kind of information. Researchers favor the idea that everyone should be able to communicate only truthful and reliable information. This is because the responders who use the internet are people in critical need of knowledge in critical circumstances and in urgent need of answers. The mean for analyzing media literacy is 3.06, and the standard deviation is 1.320. In conclusion, accessing, analyzing, evaluating, and sharing information is moderate.

Discussion

People are susceptible to experiencing both good and bad consequences due to the messages they get from the media. The end goal of media literacy is to cultivate consumers of media messages who are knowledgeable and engaged (Cho et al., 2022). In summary, the purpose of this research was to investigate a new topic, which was the knowledge of vaccination, as well as how an individual uses media literacy and how this, in turn, impacts the creation of behavior. A person's stance on vaccination, whether in favor of it or against it, has implications not just for the individual but also for society and the natural world (Katsaros & Tsirikas, 2022).

Promoting group action to stop the spread of viruses requires effective communication more than anything else. Literacy in health-related topics, behaviors, and social norms is critical to public health interventions across various demographic groups. Support on both the economic and social fronts is required if individuals can continue living at home while also maintaining their livelihoods. In addition, knowledge of how communities react to containment measures is vital in stopping current and future pandemics throughout the globe (Aung et al., 2021).

The findings of this study add to a more in-depth knowledge of the role that media literacy plays as an essential component in increasing vaccination awareness among parents. It can cause a tipping point in Malaysia by addressing the gaps in media literacy, allowing parents to build a better-educated view on

vaccines and their consequences for parenting practices. In other words, it can make a difference. Interventions designed to improve the media literacy abilities of parents have the potential to play a crucial role in combating misinformation and establishing a better public dialogue around vaccines as the relevance of media literacy grows in importance in the digital age.

It is vital to provide parents with the required skills to properly traverse the vast information terrain in light of the media's prevalent erroneous ideas and rumors. This is because of the widespread nature of the problem. This research highlights the significance of media literacy in boosting vaccination knowledge and behavior change among mothers and fathers in Malaysia. It acts as a stepping stone for future interventions and educational programs to empower parents with correct knowledge by giving insights into the elements that influence parental attitudes and acting as a source of information. Promoting media literacy may produce a culture that prioritizes evidence-based decision-making and protects public health.

Conclusion

In conclusion, media literacy influences parental attitudes and behavior toward children's vaccines in Malaysia. Media literacy affects parents' knowledge and behavior change. This study helps promote vaccine knowledge by identifying media literacy traits that influence parental decision-making.

This research has far-reaching effects. Media literacy may help parents fight vaccination myths. Parents may make educated choices based on scientific data and professional advice by learning to analyze media sources critically. This study promotes media literacy to help Malaysian parents understand vaccination problems and their effects. Policymakers, healthcare professionals, and educators should design focused programs to equip parents to manage the complicated media ecosystem. Media literacy among parents may promote evidence-based decision-making, public health, and a more educated and responsible approach to children's vaccines.

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