The Effects of Health Literacy on Electronic Word of Mouth in Health Information Dissemination: The Moderating Role of Health Communication Competence

ABSTRACT

Background and Objectives: The transition to electronic communication from conventional methods has resulted in a natural shift from word-of-mouth to electronic word-of-mouth. The dynamics of electronic platforms has opened a new dimension for the society to 'responsibly' involve more in health information sharing to ensure that everyone has equal accessibility to health information. The main objective of this research was to examine the moderating effect of health communication competence on the relationship between health literacy and electronic word of mouth (e-WOM) in health information dissemination among Malaysia internet users.

Materials and Methods: This descriptive study has applied cross-sectional time horizon as it was intended to identify the relationship between health literacy and electronic word of mouth in health information sharing among Malaysia internet users. 400 samples were approached as the respondents in which each major region of Malaysia has represented by 100 respondents. The instrument was a self-administered questionnaire with 56 items, adapted from New Short-Form Health Literacy Instrument (HLS-SF12), e-WOM questionnaire and CoCo questionnaire for health communication competence items.

Results: The study has indicated Malaysia internet users have higher percentage of sufficient health literacy and its domains, compared to the Malaysia Health Literacy Survey (MHLS) 2023. The results also found that health literacy and its three domains were significantly, positively and largely related to electronic word of mouth (e-WOM) in disseminating health information. Besides, the study has discovered the moderating effects of health communication competence on the relationship between the independent and dependent variables, with a significant interaction term in between disease prevention and health communication competence.

Conclusion: Based on the study's findings, the level of health literacy among internet users was sufficiently favorable and is expected to increase from time to time. Thus, it is advisable for the public health authorities to take advantage of this whole scenario of health literacy significance in influencing e-WOM among the society, especially future has foreseen a great impact of technology advancement in sharing important health information via the convenience of internet.

Paper Type: Research Article

Keywords: e-WOM, Health Communication, Health İnformation, Health Literacy.

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Introduction

In this age of rapid technological advancement, communication and the way information is shared across the globe has been profoundly influenced where society has shifted its preferences into accepting the dynamics of communication from traditional to digital approach. This has seen significant changes in how people communicate and the smoothness in how the information flows from the sender to the receiver. A similar scenario was sketched in health industry where health communication has become significantly crucial in light of the pandemic of Covid-19 and the ongoing health crises for instance the sudden rising cases of Human Metapneumovirus (HMPV) in China. It is also noteworthy to embrace the fact that the substantial evolution of the health communication landscape has consequently been driven by global health challenges in terms of the growing need for health equity. Health equity ensures that everyone deserves an opportunity to have the best access to health care services, regardless of their status in economic, demographic and social background (1). This equity can be strengthened through sufficient health literacy whereby individuals are expected to have better ability in accessing, understanding and using health information to make autonomous decisions regarding their health matters. Besides, low health literate individuals are said to be struggling with navigating the healthcare system in a way that they will have difficulties to comprehend the instructions of the medical professionals (2) and engage in preventive care (3) which subsequently will lead to bad health outcomes.

Considering the association of e-WOM as the respective outcome of this study, health literacy may serve as one of the enabling factors for an individual to be deeply engaged in health-related discussions with individuals who are seeking health information through the internet platform. Health literacy is firstly proposed as individual's basic functional skills to access and understand health information which further evolved to include high level competencies to actively promote and maintain health among the modern society (4). According to Lee, Jin (5), health literacy can influence the access and usage of health information in which health literacy would serve as the obstacles for those with limited health literacy (6). High health literate individuals were said to be more likely to engage in health discussion in a way that they will offer well-rounded information with thoughtful exchanges as compared to low literate individuals. Specifically, they participate in question-and-answer sections, offer health related solutions and provide comprehensive details to certain medical conditions. Other than that, the aspect of credibility and trust in health information shared was evenly important to be recognized as the extensive accessibility of health information is no longer questionable in this era. Paige, Krieger (7) have indicated that a person's level of health literacy can distinguish how the person trusts in the sources of health information. Besides, with the assistance of sufficient health literacy, people would also be able to demonstrate crystal understanding of any health topics, correctly interpret the information based on the evidence and research facts, which would emphasize the trustworthiness of the

individuals. Previous study by Tam, Loureiro (8), has discovered that message source's trustworthiness can steer the consumer engagement to the electronic word of mouth. Hence, the trust earned has given the individuals greater influence over others, highlighting the prospect of sharing health information through the electronic word of mouth.

The rise of technology has also witnessed the dynamics of word of mouth from a traditional approach to an online one. The evolvement of e-WOM has seen more information transferred directly to the receiver with caution or without caution. Based on the earliest authors in e-WOM have referred it as an exchanging information process between consumers which plays a significant role in nurturing and changing their behavior as well as attitude towards respective services and products (9). This vital role has somehow diverged into two different views, negative and positive e-WOM in accordance with the message effects towards the parties involved. Though organizations and businesses are looking forward to being engaged in positive e-WOM, studies have indicated the otherwise where the consumers' decisions are more likely to be swayed by the negative e-WOM in comparison to positive e-WOM (10, 11). Consequently, these businesses' operations and growth may potentially face a significant threat due to the negative effects from the negative e-WOM. As a matter of fact, health care provision is among the most challenging and impalpable to be evaluated services where it requires service providers to have a high degree of trust from the service receivers. Subsequently, e-WOM can reflect a huge influence on patients' decision making, especially when it involves major treatment or service which requires a comprehensive comprehension of the matters involved. According to Gong, Wang (12), have found that patients may request online consultation based on the physician's numbers of positive e-WOMs obtained from the Online Health Communities (OHCs). Contrary, the numbers of negative e-WOM will affect the patients to be willing to choose which physicians who they prefer to be consulted (13).

Other than that, Covid-19 has seen how community empowerment can be different with the right health information, communicated by the right people, whereby critical preparedness and response is significant strategy in responding to the Covid-19 scenario (14). The emergence of 'infodemic' has reflected the overabundance of health information shared online where the reliability of information sources is debatable (15). Word of mouth was commonly perceived to be strongly related to communication where in the scenario of health information, a competent communicator is expected to be highly engaged in the word of mouth to ensure the health information is successfully sent to the intended audience. Health communication can be referred as the study and use of strategies of communication to influence the health related actions and decisions to improve an individual's health (16). People with good health communication competence are expected to be more empathetic with their audience as they will resonate emotionally during the electronic engagement though they cannot see to who they are talking to. The reason behind this

expectation is due to the significance of relationship and effect of emotional intelligence towards individual's communication skills (17-19). Consequently, this may enhance the possibility of others engaging more in fruitful health discussions with strangers due to the support and motivation that they gained from the shared content. As a matter of fact, Malaysia has ranked the third from the top 10 countries in the world to have citizens who spend the most time using the internet with 8 hours and 6 minutes per day (20) which has reflected how people's lives are undoubtedly influenced by the internet based on their transformation in receiving the information (Li et al., 2022). Accordingly, three objectives were formulated for this study which includes (1) To compare the level of health literacy (HL) among Malaysia Internet Users to Malaysia Health Literacy Survey (MHLS) 2023 results; (2) To identify the relationship between health literacy and electronic word of mouth (e-WOM) among Malaysia internet users and (3) To determine the moderating effects of health communication competence on the relationship between health literacy and electronic word of mouth (e-WOM).

Materials and Methods

This descriptive research has applied the cross-sectional approach where it helped to examine the relationship between the two variables in a defined population (21), which was aligned with the main objective of the study, to investigate the relationships between health literacy (health care, disease prevention and health promotion domains) and e-WOM in health information dissemination among Malaysia internet users. Other than that, quota sampling has been employed as the sampling technique in obtaining the required sample size, with 100 internet users from each major region in Peninsular Malaysia. The respective respondents were conveniently volunteered as the researchers have shared the link of the questionnaire via multiple platforms such as WhatsApp, email and other social media. Although the degree of generalizability is questionable in quota sampling, it at least ensures some degree of representativeness for all population strata (22). The 100 samples responses from each of the regions may not represent every individual but they have at least enhanced the applicability of the results to be generalized for the peninsular Malaysia. As a matter of fact, according to Hair, Black (23), this study's sample size is deemed to be adequate as it has met the required criteria of 50 to 100 respondents to ensure the appropriateness to advance to the analysis of basic regression. Furthermore, a set of self-administered questionnaires was used as the study's instrument in which it comprised of four parts, including Part A: Demographic Background, Part B: Health Literacy adapted from Duong, Aringazina (24), Part C: Health Communication Competence adapted from Farin, Schmidt (25) and Part D: Electronic Word of Mouth adapted from Wan Zulkiffli, Lu (26). This questionnaire has been validated by quantitative research expert prior to submission for ethical approval which was later approved by the UiTM Research Ethic Committee [REC/02/2023 (ST/MR/45)]. This ethical approval has recognized the importance of the researchers to pay attention to the consent and trust given by the respondents to ensure the privacy and confidentiality of the obtained data was

firmly upheld especially when the respondent's participation was on a voluntary basis. A pilot study was conducted by the researchers prior to the actual data collection in confirming the instrument's reliability which has resulted in good reliability Cronbach's Alpha scores ranging from of 0.712 to 0.919 (27). Besides, the study has used the 29 version of SPSS to accommodate researchers in analyzing the obtained data through the conduction of descriptive, simple regression and hierarchical regression analyses. These three analyses will assist the researchers in interpreting the research findings which simultaneously ensure the achievement of the research objectives.

Results

As the researchers have conveniently approached the targeted respondents online via multiple platforms, it takes approximately two months to have a commendable response rate, cumulatively 400 samples from Peninsular Malaysia major regions of central, northern, southern and east coast. The practicality of using 'required' features in google forms as the medium of questionnaire has comprehensively enabled the researchers to avoid any missing responses from the respondents. This has subsequently helped the researchers to secure all the 400 responses in a decent amount of time. The respondents' profiles were summarized in Table 1.

This research has involved 126 males and 274 females who mainly are from the age category of 18 to 30 years old with 77.5%. The respondents were dominantly bachelor's degree graduates (52.5%) who come from a household with income of less than RM4360 per month (70.3%). In fact, these demographic profiles were expected by the researchers considering that the highest usage of internet users is from the age category of 20-39 years old with 99.6% (28). This age category was commonly represented by those with bachelor's degree where their expected minimum salary is RM1700, required by Malaysia government (29).

Table 1. Demographic Profile of Respondents

Respondents' Profile		Frequency (n)	Percentage (%)
Gender	Male	126	31.5
	Female	274	68.5
Gender	18-30 years old	310	77.5
	31-40 years old	52	13
	41-50 years old	30	7.5
	51-60 years old	8	2
Highest Education	Secondary Education	47	11.8
	Diploma	120	30
	Bachelor's Degree	210	52.5
	Postgraduate	23	5.8
Household Income	Less than RM4360	281	70.3
	RM4360-RM9619	85	21.3
	RM9620 and above	34	8.5
	Total	400	100.0

As this study aimed to identify the level of health literacy among the internet users in Malaysia, a descriptive analysis was conducted. Every item for all domains of health literacy which comprised of health care, disease prevention and health promotion were transformed into mean scores which were later interpreted, applying the unified metrics by Duong et al. (2017), into three categories of limited, sufficient and excellent health literacy. Limited health literacy was represented by the scores of 0.00 till 33.00, while sufficient health literacy was represented by the scores of 33.01 till 42.00. Finally, the category of excellent health literacy was represented by the scores of 42.01 to 50.00. Table 2 was constructed to summarize the respective levels of health literacy.

Findings have demonstrated health literacy and its domains to be higher in percentage as compared to Malaysia Health Literacy Survey (MHLS) statistics. This MHLS can be considered as the benchmark for the nation's health literacy as it covered all Malaysia states and federal territories where 9758 respondents involved in the survey (30). In specifics, results have presented a higher percentage of internet users with sufficient level of health literacy and its domains of health care, disease prevention and health promotion in comparison to the MHLS (49.5%:48.5%; 60.5%:54.2%; 57.5%:53.7%; 60.3%:54.2% respectively). Though the comparisons have shown a relevant increment for the variable, but it is fair to consider the fact that this study has only covered the main regions of peninsular Malaysia, without necessarily involved all the states in the country. Nonetheless, the results were still in line with the previous findings in MHLS, indicating Malaysian adults are having sufficient overall health literacy as well as in its three domains. Besides, this crucial finding was evidently supported and integrated with the demographic profile of the respondents where young people have greater tendency to have better digital health literacy scores as they are more likely to use digital technology to help them out with health related matters (31).

Table 2. Level of Health Literacy (HL) among the Internet Users in Malaysia in Comparison to Malaysia Health Literacy Survey (MHLS) 2023

Variable (s)	Limited (Score 0 – 33) *	Sufficient (Score >33 – 42) *	Excellent (Score >42 – 50) *	Interpretation
Health Literacy	109 (27.3%)	198 (49.5%)	93 (23.3%)	Sufficient HL is higher than the MHLS (49.5%:48.5%) **
Health care	90 (22.5%)	242 (60.5%)	68 (17%)	Sufficient HC is higher than the MHLS (60.5%:54.2%) **
Disease prevention	85 (21.3%)	230 (57.5%)	85 (21.3%)	Sufficient DP is higher than the MHLS (57.5%:53.7%) **
Health promotion	55 (13.8%)	241 (60.3%)	104 (26.0%)	Sufficient HP is higher than the MHLS (60.3%:54.2%) **

*Interpreted by using unified metrics by Duong et al. (2017)

**Source: Malaysia Health Literacy Survey (MHLS) 2023

In achieving the second research objective, simple regression analyses were conducted in which the results were tabulated in Table 3. The analyses involved health literacy as the independent variable and its three domains of health care, disease prevention and health promotion. The interpretation of the results would be based on Cohen's rules of thumb which sees three categories of associations' strength starting with small association, of coefficient value less than 0.3, medium association, of coefficient value greater than 0.3 and less than 0.5 and large association, of coefficient value greater than 0.5 (32).

Results have shown that the overall health literacy and its three domains of health care, disease prevention and health promotion were demonstrated to be significantly, positively and largely related to Malaysia internet users' electronic word of mouth in health information dissemination (r=.609, p=.000; r=.552, p=.000; r=.571, p=.000; r=.559, p=.000 respectively). Hierarchically, disease prevention may serve as the domain that has the largest potential to influence the electronic word of mouth as it had the highest standardized beta value in comparison to health care and health promotion domains.

Table 3. Simple Regression Analyses between Health Literacy and e-WOM

Variables	Electronic Word of Mouth (e-WOM)	
Health Care	Standardized Beta	0.552**
	Sig.	0.000
Disease Prevention	Standardized Beta	0.571**
	Sig.	0.000
Health Promotion	Standardized Beta	0.559**
	Sig.	0.000
Health Literacy	Standardized Beta	0.609**
	Sig.	0.000

**Significant at 0.05

Lastly, a hierarchical regression analysis was conducted to investigate the moderating effect of health communication competence on the relationship between health literacy and e-WOM. Model 1 was related to the integration of independent and dependent variables, model 2 was integrating the dependent and moderating variables while model 3 reflected the interactions between independent and moderating variables. The findings were then tabulated in Table 4.

Model 1 explained 37.1% of the variance while model 2 has seen an increment of 7.7% where it 44.8% of the variance. A slight increase in R2 value with 1.1% has witnessed model 3 to explain 45.9% of the variance. Based on the R2 change values, it can be summarized that there is a weak influence of the health communication competence on the relationship between the health literacy and electronic word of mouth with a 1.1% change. Despite its weak influence, it can still significantly impact the relationship between the two main variables through its interactions.

Table 4. Hierarchical Regression Analysis

Variables		Model 1	Model 2	Model 3
Independent variables	Health care	.210	.149	-.377
	Disease prevention	.237	.184	1.417
	Health promotion	.214	.085	-.754
Moderating variable	HCC		.357	.149*
Interaction terms	Health care*HCC	-		.912
	Disease prevention*HCC			-2.107*
	Health promotion*HCC			1.506
	R2	.371	.448	.459
	R2 Change	.371	.077	.011
	F	77.873	80.182	47.502
	Sig. F Value	.000	.000	.000
	Durbin Watson	-		1.924

*Significant at 0.05

Discussion

Results from the analysis have presented a higher percentage of internet users with sufficient health literacy as compared to Malaysia Health Literacy Survey statistics, as can be referred in Table 2. Specifically, results have also shown a higher percentage of internet users with sufficient level of health care, disease prevention and health promotion in comparison to the MHLS. These comparisons are in line with the previous findings of MHLS 2019 on Malaysians' health literacy where it has discovered that the overall sufficient health literacy has seen an increment of 7.8% from 2019 to 2023 (33). In contrast, the limited health literacy was seen a decrement of 8.1% from 35.1% (2019) to 27% (2023) (33). A similar pattern can be seen in other countries around the globe such as China where people with sufficient health literacy increased from 6.48% in 2008 to 23.15% in 2020 (34). Though the study has found substantial similar findings to previous research, most of them had investigated traditional health literacy without looking at the dynamic evolvement into digital health literacy. The slight difference in the operational definition of both terms may as well seen an apparent contradictory perspective on how the respondents perceived the items in the questionnaire. Regardless, it is fair to conclude these people have sufficient level of health literacy and its domains, subsequently indicated the achievement of the first research objective.

Next, findings from regression analyses have indicated that health literacy is significantly and largely related to e-WOM (r=.609, p=.000). According to Hong, Huang (35), it was discovered that electronic health literacy (e-HL) has influenced the electronic word of mouth, signifying the support of this study's finding. As a matter of fact, its three domains of health care, disease prevention and health promotion were also found to have significant, positive and large relationships with electronic word of mouth in health information dissemination among the Malaysia internet users (r=.552, p=.000; r=.571, p=.000; r=.559, p=.000 respectively) (32). According to Diviani, van den Putte (36), an individual's ability to assess health

information from various sources is part of health literacy, which therefore mirrored its significant role in seeking online health information. In respecting the result of where disease prevention has the strongest relation to e-WOM, the indication was in line with Yang, Adnan (37) who found that TikTok users with higher health literacy are prone to share health related content within the social circles which may influence the perceptions on risks of Covid-19. Engaging to everyone's effort to reduce the effects of Covid-19, individuals are likely to take preventive measures shared on the social media platform to protect themselves from the disease (38). Henceforth, this has concluded the achievement of the respective research objective of investigating the relationships between independent and dependent variables.

Through hierarchical regression analysis, it was found that model 3 has explained 45.9% of the variance with the weak change of 1.1% from the interaction terms with health communication competence. It was also noted that there was significant moderating influence of health communication competence on the relationship between health literacy and e-WOM (β=.149, p=<.001). Moreover, the results have also indicated that the interaction between the internet user's health communication competence and e-WOM has strengthened the relationship between disease prevention (health literacy) and e-WOM (β=-2.107, p=<.001). The beta-value has suggested that the better the user's health communication competence, the lower the effect of disease prevention towards the electronic word of mouth in disseminating the health information. There are scarce studies that have studied all these three variables in a particular research which in fact, this study has closed the knowledge gap on the contributing factors of electronic word of mouth in health information dissemination. Nonetheless, this result has been expected as communication competence or skills are commonly found to be related to e-WOM. According to Gharib, Garcia-Perez (39), many practitioners and scholars have consensually considered e-WOM has one of the most influential informal communication approach between organizations and potential customers. Health care consumers are commonly talk to other patients or consumers regarding their health related experiences in the form of WOM (40). In fact, the communication skills of physician for instance listening, questioning, coaching and explaining can significantly contribute to individual's word of mouth (41). Hence, this has marked the achievement of the last research objective.

Study Limitations and Strengths: Accordingly, it is suggested for the healthcare related authorities, especially the public health, to continuously and consistently promote the importance of health literacy by organizing numerous programs on health education to instill awareness among the society. This recommendation is aligned to the 8th initiative of DLKK which highlighted the importance of 'enhancing access to health information through outreach and roadshows to targeted groups'. One of the activities suggested for this initiative is incorporating the private sector with the corporate social responsibility, in relation to the dissemination of health information to

the public (4). Besides, it would be advisable for the authorities to as well focus on nurturing the concept of responsibility and empowerment on society about sharing accurate and reliable health information through social media. Aligned with the 9th initiative of DLKK which is strengthening the community health literacy capacities through community support. Community empowerment is the limelight of the activities recommended for this initiative (4). This is due to the fact that users these days are more prone to believe everything that appear favorable for them in social media specifically related to health information, consequently assist them in making health related decisions (42). As for future studies, it is recommended to expand the targeted population to Borneo region so as to reach the whole population of Malaysia, to ensure better generalizable results on the impact of health literacy towards electronic word of mouth in Malaysia. Other than that, future researchers may apply probability sampling techniques to reduce the probability of sampling bias occurrences in approaching the targeted samples.

Conclusion

In conclusion, this study has achieved all the three research objectives with the finding of Malaysia internet users' health literacy has seen an increment from MHLS 2023 survey findings, indicating the nation is moving on the right track, in accordance with World Health Organization (WHO) vision to consistently improve health literacy to advance the nation's health outcomes (43). Besides, health literacy and its domains were found to be significantly, positively and largely related to e-WOM which is parallel to the previous study (35). Additionally, results from the hierarchical regression analysis have shown that significant moderating influence of health communication competence on the relationship between health literacy and e-WOM. Though there is scarcity in terms of past research that has investigated all the three variables in one study but multiple have seen the associations between these three variables which were in line with this study's findings (35, 44, 45). However, it is especially important to embrace the fact that Malaysians have failed to fully utilize their health literacy in making sure that the health information shared is accurate. This allegation can be clearly seen during the pandemic of Covid-19 where Malaysia is among the countries which has seen the phenomenon of infodemic with fake news increased significantly (46). Consequently, Malaysia decided to put a strong emphasis on the importance of health literacy by introducing the National Health Literacy Policy (DLKK) in 2024 under the initiative of Healthy Malaysia National Agenda (ANMS) 2020-2030, as part of the strategies in empowering the nations to have healthier lifestyle and be accountable for their own health related decision making (4).

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Consent for publication: Each author consents to the publication of the manuscript in its current form.

Ethics approval and consent to participate: The ethical approval was obtained from the UiTM Research Ethic Committee [REC/02/2023 (ST/MR/45)]. The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Participants were fully informed regarding study objectives and written/ verbal consent was obtained before the initiation of the data collection. The study was done based on voluntary basis where no sort of coercion was applied to participants in the research process. Strictest confidentiality of the data was fully maintained and collected data is used only for the research purpose.

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References

1. Centers for Medicare & Medicaid Services. Health equity: Centers for Medicare & Medicaid Services; 2024 [Available from: https://www.cms.gov/pillar/health-equity#:~:text=To%20CMS%2C%20health%20equity%20means,preferred%20language%2C%20or%20other%20factors.
2. Shahid R, Shoker M, Chu LM, Frehlick R, Ward H, Pahwa P. Impact of low health literacy on patients' health outcomes: a multicenter cohort study. BMC Health Services Research. 2022; 22(1):1148. https://doi.org/10.1186/s12913-022-08527-9 PMid: 36096793 PMCid:PMC9465902.
3. Murray M, Smith C, Behan S, Goss H. Healthy Communities Health Literacy Report 2024. Dublin: School of Health and Human Performance, Dublin City University; 2024 3rd May 2024.
4. Ministry of Health Malaysia. National Health Literacy Policy. Putrajaya: Ministry of Health Malaysia; 2024.
5. Lee HY, Jin SW, Henning-Smith C, Lee J, Lee J. Role of Health Literacy in Health-Related Information-Seeking Behavior Online: Cross-sectional Study. J Med Internet Res. 2021; 23(1):e14088. https://doi.org/10.2196/14088 PMid: 33502332 PMCid: PMC7875696.
6. Manganello J, Gerstner G, Pergolino K, Graham Y, Falisi A, Strogatz D. The Relationship of Health Literacy with Use of Digital Technology for Health Information: Implications for Public Health Practice. J Public Health Manag Pract. 2017; 23(4):380-7. https://doi.org/10.1097/PHH.0000000000000366 PMid: 26672402.
7. Paige SR, Krieger JL, Stellefson ML. The Influence of eHealth Literacy on Perceived Trust in Online Health Communication Channels and Sources. J Health Commun. 2017; 22(1):53-65 https://doi.org/10.1080/10810730.2016.1250846 PMid: 28001489 PMCid:PMC5551054.
8. Tam C, Loureiro A, Oliveira T. The individual performance outcome behind e-commerce. Internet Research. 2020; 30(2):439-62. https://doi.org/10.1108/INTR-06-2018-0262.
9. Katz E, Lazarsfeld PF. Personal influence: The part played by people in the flow of mass communications. Piscataway, NJ: Transaction Publishers; 1966.
10. Melander T, Dyrelöv F. The impact of negative ewom on brand loyalty: a qualitative study in the context of social media: Umeå School of Business and Economics; 2021.
11. Luo MM, Chien C-C, editors. Factors Affecting Negative E-WOM: A Literature Review and Merged Model. 54th Hawaii International Conference on System Sciences; HICSS '21; 2021; Kauai, HI. https://doi.org/10.24251/HICSS.2021.514.
12. Gong Y, Wang H, Xia Q, Zheng L, Shi Y. Factors that determine a Patient's willingness to physician selection in online healthcare communities: A trust theory perspective. Technology in Society. 2021; 64:101510. https://doi.org/10.1016/j.techsoc.2020.101510 PMid: 36033357 PMCid: PMC9398493.
13. Li S, Feng B, Chen M, Bell RA. Physician review websites: effects of the proportion and position of negative reviews on readers' willingness to choose the doctor. J Health Commun. 2015; 20(4):453-61 https://doi.org/10.1080/10810730.2014.977467 PMid: 25749406.
14. Reddy BV, Gupta A. Importance of effective communication during COVID-19 infodemic. J Family Med Prim Care. 2020; 9(8):3793-6. https://doi.org/10.4103/jfmpc.jfmpc_719_20 PMid: 33110769 PMCid:PMC7586512.
15. Márquez-Díaz JE. Disinformation and Fake News: The Infodemic in the Global Health Field. Computación y

Sistemas. 2024; 28(3):909-22 https://doi.org/10.13053/cys-28-3-4455.
16. Sood S, Riley AH, Obregón R. Defining Public Health Communication. In: Sood S, Riley AH, editors. Health Communication Fundamentals: Planning, Implementation, and Evaluation in Public Health. New York: Springer Publishing Company; 2023. p. 1-30. https://doi.org/10.1891/9780826173027.
17. Ghasemi SS, Olyaie N, Shami S. An investigation into the correlation between emotional intelligence and communication skills among nursing students. Indian Journal of Forensic Medicine & Toxicology. 2018; 12(3):178-83 https://doi.org/10.5958/0973-9130.2018.00155. X.
18. Amini M, Amini M, Nabiee P, Delavari S. The Relationship between Emotional Intelligence and Communication Skills in Healthcare Staff. Shiraz E-Medical Journal. 2018; 20(4):e80275 https://doi.org/10.5812/semj. 80275.
19. Gül N. Relationship between emotional intelligence and communication skills of healthcare workers. Journal of Academic Researches and Studies. 2021; 13(25):457-65. https://doi.org/10.20990/kilisiibfakademik.972072.
20. New Straits Times. Malaysia ranks 3rd in world for spending most time online. New Straits Times. 2023.
21. Wang X, Cheng Z. Cross-sectional studies: strengths, weaknesses, and recommendations. CHEST. 2020; 158(1S):S65-S71 https://doi.org/10.1016/j.chest.2020.03.012 PMid: 32658654.
22. Salkind NJ. Exploring Research. 8th ed. New Jersey: Pearson Education, Inc.; 2012.
23. Hair JF, Black WC, Babin BJ, Anderson RE. Multivariate Data Analysis. 8th ed. United Kingdom: Cengage Learning; 2018.
24. Duong TV, Aringazina A, Baisunova G, Pham TV, Pham KM, Truong TQ, et al. Measuring health literacy in Asia: Validation of the HLS-EU-Q47 survey tool in six Asian countries. Journal of epidemiology. 2017; 27(2):80-6. https://doi.org/10.1016/j.je.2016.09.005 PMid: 28142016 PMCid: PMC 5328731
25. Farin E, Schmidt E, Gramm L. Patient communication competence: Development of a German questionnaire and correlates of competent patient behavior. Patient education and counseling. 2014;94(3):342-50 https://doi.org/10.1016/j.pec.2013.11.005 PMid:24332119
26. Wan Zulkiffli WF, Lu MH, Ramlee SIF, Mat Yunoh MN, Che Aziz R. The Effectiveness of Electronic Word-Of-Mouth (eWOM) on Consumer Purchase Intention among Generation-Y. International Journal of Accounting, Finance and Business. 2017;2(6):18-26.
27. Konting MM, Kamaruddin NB, Man NA. Quality Assurance in Higher Education Institutions: Exist Survey among Universiti Putra Malaysia Graduating Students. International Education Studies. 2009;2(1):25-31. https://doi.org/10.5539/ies.v2n1p25
28. Malaysia Department of Statistics. ICT USE AND ACCESS BY INDIVIDUALS AND HOUSEHOLDS SURVEY REPORT 2023. Putrajaya: Department of Statistics, Malaysia 2024.
29. The Star. New RM1, 700 minimum wage takes effect today. The Star. 2025 1 February 2025.
30. Institute for Health Behavioural Research (IHBR). Fact Sheet Malaysia Health Literacy Survey (MHLS) 2023. Selangor, Malaysia: Institute for Health Behavioural Research; 2024.
31. De Santis KK, Jahnel T, Sina E, Wienert J, Zeeb H. Digitization and Health in Germany: Cross-sectional Nationwide Survey. JMIR Public Health Surveill. 2021; 7(11):e32951. https://doi.org/10.2196/32951 PMid: 34813493 PMCid: PMC8612128.
32. Cohen J. Statistical power analysis for the behavioral sciences (2nd ed.). Hilsdale, NJ: Lawrence Earlbaum 1988.
33. Johari MZ, Sanusi NHA, Perialathan K, Mien TYS, Ahmad M, Isa A, et al. Research Highlight: Towards Better Health Literacy Status in Malaysia. Malaysia Health Literacy Survey (MHLS 2023). Institute for Health Behavioural Research (IHBR); 2024.
34. Li, Lv X, Liang J, Dong H, Chen C. The development and progress of health literacy in China. Front Public Health. 2022; 10:1034907. https://doi.org/10.3389/fpubh.2022.1034907 PMid: 36419995 PMCid: PMC9676454.
35. Hong M, Huang X, Ge Z. Engagement of Electronic Word-of-Mouth on M-Health Platforms. Human-Centered Design, Operation and Evaluation of Mobile Communications: 5th International Conference, MOBILE 2024, Held as Part of the 26th HCI International Conference, HCII 2024, Washington, DC, USA, June 29-July 4, 2024, Proceedings, Part I; Washington DC, USA: Springer-Verlag; 2024. p. 31-44 https://doi.org/10.1007/978-3-031-60458-4_3.
36. Diviani N, van den Putte B, Giani S, van Weert JCM. Low Health Literacy and Evaluation of Online Health Information: A Systematic Review of the Literature. J Med Internet Res. 2015; 17(5):e112. https://doi.org/10.2196/jmir.4018 PMid: 25953147 PMCid:PMC4468598.
37. Yang Y, Adnan HM, Alivi MA. Predictors of health preventive behavior among university students in the post-COVID-19 era in Wuhan via TikTok journeying. Heliyon. 2024; 10(21):e39092. https://doi.org/10.1016/j.heliyon.2024.e39092 PMid: 39524767 PMCid: PMC11550071.
38. Choi DH. The multifaceted impact of social media on risk, behavior, and negative emotions during the COVID-19 outbreak in South Korea. Asian Journal of Communication. 2021; 31(5):337-54 https://doi.org/10.1080/01292986.2021.1968447.
39. Gharib RK, Garcia-Perez A, Dibb S, Iskoujina Z. Trust and reciprocity effect on electronic word-of-mouth in online review communities. Journal of Enterprise Information Management. 2020; 33(1):120-38. https://doi.org/10.1108/JEIM-03-2019-0079.
40. Soare T, Ianovici C, Gheorghe IR, Purcărea VL, Soare CM. A word-of-mouth perspective on consumers of family medicine services: a case study. Journal of Medicine and Life. 2022; 15(5):655-60 https://doi.org/10.25122/jml-2022-0098 PMid: 35815082 PMCid: PMC9262271.

41. Alexander JA, Hearld LR, Mittler JN, Harvey J. Patient-physician role relationships and patient activation among individuals with chronic illness. Health Serv Res. 2012; 47(3 Pt 1):1201-23. https://doi.org/10.1111/j.1475-6773.2011.01354.x PMid: 22098418 PMCid:PMC3423181.
42. AlMuammar SA, Noorsaeed AS, Alafif RA, Kamal YF, Daghistani GM. The Use of Internet and Social Media for Health Information and Its Consequences among the Population in Saudi Arabia. Cureus. 2021; 13(9):e18338. https://doi.org/10.7759/cureus.18338 PMid: 34722089 PMCid: PMC8551798.
43. World Health Organization. Achieving well-being: a global framework for integrating well-being into public health utilizing a health promotion approach. Geneva: World Health Organization; 2023.
44. Ishikawa H, Kiuchi T. Health literacy and health communication. BioPsychoSocial Medicine. 2010; 4(18):1-5. https://doi.org/10.1186/1751-0759-4-18 PMid: 21054840 PMCid: PMC2990724.
45. Pauli G, Martin S, Greiling D. The current state of research of word-of-mouth in the health care sector. International Review on Public and Nonprofit Marketing. 2023; 20(1):125-48. https://doi.org/10.1007/s12208-022-00334-6.
46. Balakrishnan V. COVID-19 and fake news dissemination among Malaysians - Motives and its sociodemographic correlates. International Journal of Disaster Risk Reduction. 2022; 73:102900 https://doi.org/10.1016/j.ijdrr.2022.102900.