The Relation Between Social Media Dependency On Cancer Awareness and Screening Behaviour Amongst B40 Population in Malaysia

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ABSTRACT

Social media has become a significant information source and its pervasive accessibility has transformed traditional health communication practices into health education, promotion, and behaviour change interventions. Individuals can develop a reliance on specific media platforms if they fulfil their information needs, and thus the need for cancer information. Unfortunately, low-income groups are often associated with lower cancer awareness and screening participation. However, social media has been proven to be advantageous in generating health messages to the targeted audience. Therefore, by adopting the Media Dependency Theory (MDT), this study aimed to investigate the relationship between social media in terms of social media dependency, perceived social media usefulness, social media trust towards cancer awareness and screening behaviour amongst the B40 population in Malaysia. The levels of cancer awareness amongst the B40 population will also be assessed. This study used purposive sampling to select participants from the B40 population in Klang Valley and obtain relevant information for the study objective. The data obtained were analysed by using descriptive statistics and inferential analysis. Findings revealed that all independent variables had a significant relation with cancer awareness and screening behaviour of the B40 population. This study was significant in understanding the use of social media in healthcare to increase cancer awareness and promote behaviour change amongst the population. The UITM Committee had approved ethical approval for ethics to conduct this study.

Keywords: *B40 population, cancer awareness, media dependency, screening behaviour, social media*

INTRODUCTION

Cancer is one of the most prevalent health challenges worldwide, affecting millions of lives each year. Cancer is the uncontrolled growth and spread of abnormal cells which develop into forms and affect almost every part of the human body (World Health Organization, 2022). Cancer burdens continue to rise throughout the world and are spurred by factors like lifestyle changes, ageing populations and environmental exposures. Additionally, the World Health Organization (2020) estimated 10 million cancer deaths and 19.3 million newly diagnosed cancer cases in 2020, making it the most predominant cause of illness and death worldwide.

In Malaysia, cancer poses a growing public health concern, mirroring global trends. As per studies, cancer has become the fourth leading cause of death in Malaysia (Md Yusof & Wan Ishak, 2023). The country also witnessed cancer cases rising over the years, owing to factors like demographic shifts, urbanisation and lifestyle changes (Ab Manan et al., 2019). Despite Malaysia's advancements in cancer prevention, diagnosis and treatment, challenges remain as inaccessibility to adequate healthcare persists, especially in rural and underserved regions. Also, Malaysians still lack knowledge, awareness and screening participation, especially the B40 community which is struggling to achieve socioeconomic and health equality (Shahar et al., 2019). Lower-income groups such as the B40 community are also associated with poor cancer screening perceptions amongst the general population in Malaysia (Shah et al., 2020).

Additionally, lower screening participation is associated with poor cancer awareness. This is a concern because limited awareness of cancer screening and preventive strategies contributes to late-stage diagnosis and poorer patient outcomes. This poses substantial obstacles to public health and infrastructure in Malaysia. Nowadays, although most individuals possess some understanding of cancer, their perception of cancer remains poor. Therefore, providing care at the earliest possible stage, like early diagnosis, improves cancer outcomes, making it a significant public health strategy in all settings (World Health Organization, 2023).

In addition, Malaysia's efforts to reduce the cancer burden include preventative methods, early detection programmes, treatment modalities and support services. The Malaysian Government, healthcare providers, non-governmental organisations and the commercial sector have conducted several programmes to improve awareness, including social media interventions. Some relevant research studies have revealed the benefits of social media platforms in healthcare communication (Al-Dmour et al., 2020). While there is growing evidence suggesting a link between social media and cancer awareness, the need for more comprehensive studies to elucidate social media effectiveness towards cancer awareness remains.

Furthermore, more research is needed to determine social media trust that influences cancer awareness and screening behaviour on social media due to the prevalence of misinformation, confusion and complex health beliefs. Besides, the widespread of various cancer-related content on social media raises concerns about the quality, accuracy and credibility of cancer-related information. People utilise the social media to obtain medical information (Al-Dmour et al., 2020). Also, patients use the Internet to seek health and cancer-related information (Van Uden-Kraan et al., 2020). Social media platforms also enable peer-to-peer interaction and information exchange, which might impact people's attitudes and behaviours. According to Al-Dmour et al. (2020), social media allows information exchange among groups and individuals on various topics and issues, including members of minority groups who may lack access to alternative information sources. Therefore, additional study is required to investigate the relationship between social media and its usefulness and trust in shaping cancer awareness and screening behaviour among the B40 social media users.

Apart from that, most studies in Malaysia were generally focused on a particular type of cancer. Consequently, an understanding of awareness levels regarding common cancer risks is lacking (Schliemann et al., 2020). There is a need to investigate and understand awareness levels in tailoring health promotion interventions to reduce cancer incidence and improve early detection outcomes (Koo et al., 2020). Studies are needed to identify the perceived social media usefulness in assessing cancer-related information on social media amongst marginalised and disadvantaged groups to develop strategies for addressing health disparities via online cancer communication.

Therefore, this study aims to deepen our understanding of the social media prevalence of cancer, especially for cancer awareness and screening behaviour. By explicitly focusing on the social media users in the B40 community who reside at Klang Valley, the study aims to explore the relations between cancer awareness and screening behaviour through social media dependency, perceived social media usefulness and trust. Ultimately, the study results will enrich insights into the levels of cancer awareness via B40 population use of social media and screening participation. This information will be invaluable to universities, healthcare organisations and policymakers who are dedicated to implementing strategic interventions to increase cancer awareness and cancer screening participation in Malaysia.

The study objectives include:

1) To analyse the level of cancer awareness amongst the B40 population

2) To determine the relation between social media (social media dependency, perceived social media usefulness, social media trust), cancer awareness and screening behaviour of the B40 population.

LITERATURE REVIEW

Health Communication in Social Media

Health communication encompasses various disciplines in research and practical applications, employing communication theories, strategies and creative approaches to advocate for behaviours, policies and practices that influence individuals' and communities' health and welfare (Society for Health Communication, 2017). It focuses on disseminating health-related information, messages and interventions to individuals, communities as well as populations. Moreover, health communication involves exchanging information, ideas, and experiences to influence attitudes, beliefs, behaviours and decision-making that relate to health and healthcare. It can alternatively be described as a mutual information exchange which utilise a shared set of signs and behaviours (Schiavo, 2011).

Health communication campaigns typically function under the premise of the hierarchy of effects model (HOE), which suggests that exposure to a campaign leads to subsequent actions or behaviours, such as a change in attitude or beliefs (Kite et al., 2023). Nevertheless, it faces criticism because the assumption fails to encompass the complete impact of a campaign, necessitating consideration of indirect influences on behavioural change (Hornik & Yanovitzky, 2003, as cited in Kite et al., 2023).
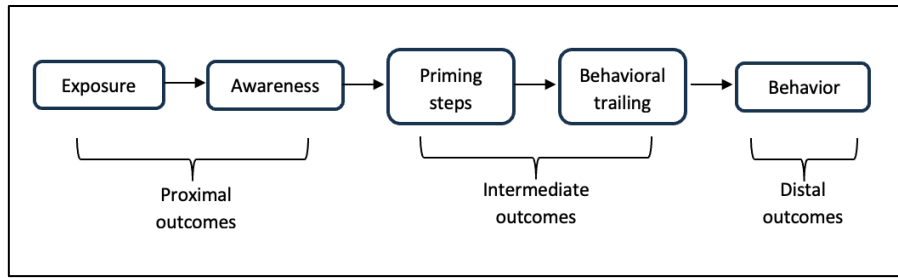
Figure 1: Typical Hierarchy of Effect Model in a Health Campaign

HOE commonly relates to old media campaigns like television. However, social media has grown substantially regarding health communication (Willoughby & Noar, 2022). Moreover, social media has shifted the way healthcare services are delivered. Nowadays, most people can easily exchange information and communicate through networking sites and search engines made possible by the Internet and smart devices (Norbert, 2022). Therefore, allowing patients to communicate and interact with their doctors online can save them time and costs.

The HOE model is one of the theories used in health communication studies to assess the campaign effects from exposure to behaviour change. However, other theories, like Media Dependency Theory by Ball-Rokeach and DeFleur (1970) can also be used in healthcare.

Media Dependency Theory (MDT)Media Dependency Theory (MDT) is applied to understand how the media influences peoples' attitudes, behaviours and outcomes regarding health. This theory was first introduced by Ball-Rokeach and DeFleur (1976) to explain the relationship between individuals, media and culture (Nawi et al., 2020). It was the extended theory of uses and gratification theory which presents a more accurate theory of society's dependence on media. Media dependency refers to how individuals depend on the media to gather information about education, politics, entertainment and culture (Ma et al., 2023). MDT posits that individuals and communities rely on media sources to fulfil their health information needs, mainly when other sources are inaccessible or insufficient. For instance, poor communication between patients and doctors drives individuals to search for additional information, leading to the widespread practice of seeking online health information (Wong & Cheung, 2019). Also, users become increasingly reliant on media as it consistently meets their needs, thereby amplifying the significance of media. To explain this phenomenon, Sandra Ball-Rokeach and Melvin DeFleur introduced the media dependency theory, which addresses the effects of media on audiences and society.
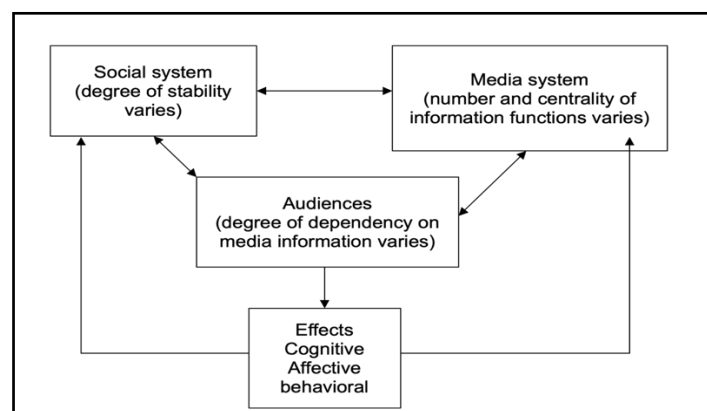

Figure 2: Media Dependency Theory Model

Figure 2 revealed that the media dependency model identifies a set of mass-media effects resulting from individuals' dependence on the media, which refer to the "Ambiguity, Attitude Formation, Agenda Setting, Enlargement of Belief, and the Promotion and Preservation of Values" of the Cognitive Effects (Hassan, 2020). Affective Effects can refer to anxiety, fear and increased or decreased feelings of morale and alienation. Meanwhile, behavioural effects are the behaviours of an individual as a result of exposure to something, which may be positive (activation) or negative (deactivation). In the context of social media dependency towards cancer awareness and screening behaviour, the variables audience, cognitive and behavioural effect were applied to explain how the study's population depended on social media to seek cancer information, which is likely to affect their cancer awareness and screening intention.

Social Media Dependency Towards Cancer Awareness and Screening Behaviour

MDT describes how the media has become an important knowledge system (Nawi et al., 2020). In the context of social media use towards cancer, social media dependency in cancer communication refers to the extent to which individuals affected by cancer rely on social media platforms to access information, seek support, and engage with communities. For instance, non-patients and patients use the media to access information regarding cancer, its preventive measures and diagnostic procedures (Jo et al., 2019). MDT suggests that as people become more dependent on media, the influence of media on their perceptions and behaviours become stronger (Nawi et al., 2020). To illustrate, people use social media during health crises, such as COVID-19, to share information and discuss issues like risk perception, service quality, quarantine, and media coverage (Yu et al., 2020). The prevalence use of social media especially post-pandemic highlighted its significant role that can be leveraged, especially for cancer education. Patients proactively seek health information on social media to potentially improve their health literacy (Chiang, 2020). Also, patients use social media to seek information about diseases, treatments, support groups, and emotional support, and share personal health stories (Gupta et al., 2020). Individuals often turn to social media to find information about cancer symptoms, treatment options, clinical trials, and healthcare providers.

Social media dependency is a crucial variable in media dependency theory, especially in the context of cancer communication. It highlights how individuals rely on social media for information, support, and advocacy related to cancer. People often seek information shortly after a diagnosis and throughout their treatment journey (Van Uden-Kraan et al., 2020). This reliance stems from the need for health information that is current, precise and relevant to facilitate informed decision-making concerning health behaviours, treatments and preventive measures. Therefore, dependency on social media as a cancer information source can affect cancer awareness and screening behaviour amongst its users. In particular, health communication messages disseminated via media can shape perceptions about health risks, preventative actions, treatments and healthcare providers. In this study, it is assumed that social media dependency has a positive relationship with cancer awareness and screening behaviour amongst the B40 population in Malaysia.

H1: Social Media Dependency is positively correlated with Cancer Awareness and Screening Behaviour amongst the B40 population in Malaysia.

Perceived Social Media Usefulness Towards Cancer Awareness and Screening Behaviour

MDT posits that the more a person depends on media to fulfil their needs, the more influence media will have on their beliefs and behaviours. In the context of social media usefulness, derived from perceived usefulness in the theory of the Technology Acceptance Model (TAM), the intention to use certain technology is influenced by the perceived usefulness (AlQudah et al., 2021). The study integrates media dependency theory to further explain the extent of B40 population relies on social media for seeking cancer information and its influence on their cancer awareness and screening

behaviour. MDT describes the degree of dependency on media information varies (audience). The dependency might increase if the B40 population perceived social media to be useful in providing the cancer information they needed. For instance, social media is useful in offering cancer information by allowing patients to access communities, and expert opinions, and promoting health-related conversations (Stiles & Mynard, 2021). The perception that social media can fulfil the B40's needs for information can influence their level of dependency on social media, hence, contributing to their increase in cancer knowledge.

Moreover, MDT is employed to explain the usefulness of social media via population dependency in seeking cancer information. MDT predicts a correlation between media dependence and the influence of the media, but each person uses the media in different ways (Ball-Rokeach & DeFleur, 1976). Media is often perceived as useful for providing timely, relevant, and accurate information to help individuals understand and navigate the world. When individuals perceive media as highly useful, their dependency on it increases. The perceived usefulness of social media influences people's intention to use it and spread information about health promotion (Alsisi et al., 2020). This heightened dependency makes them more susceptible to media messages, shaping their attitudes, beliefs, and behaviours. The increased information diffusion on social media due to factors like engagement with the contents makes social media helpful for seeking cancer information (Wang et al., 2019). High perceived usefulness can lead to specific behaviours, such as increased media consumption, reliance on media for decision-making, and the adoption of behaviours or attitudes promoted by media. Hence, perceived usefulness is a fundamental aspect of Media Dependency Theory, shaping how individuals interact with media and the extent to which media can influence their lives. In this study, it is hypothesised that the perceived usefulness of social media will positively affect cancer awareness and screening behaviour amongst the B40 population in Malaysia.

H2: Perceived Usefulness of Social Media is positively correlated with Cancer Awareness and Screening Behaviour amongst the B40 population in Malaysia.

Social Media Trust Towards Cancer Awareness and Screening Behaviour

The media can influence cognitive effects by shaping a community's belief system (Nawi et al., 2020). Social media can provide information on the latest news, documentaries, and advertising topics, which can earn public trust. People's reliance on social media for cancer purposes can be motivated by the trust they have in social media in its ability to provide accurate and reasonable amounts of cancer information. During pandemics, people trust information from social media, with the most influential sources being healthcare professionals, personal contacts, and government organizations (Nabi et al., 2023). The adoption and willingness to share health information on social media are primarily influenced by the credibility of the source (Jin et al., 2021). This highlighted how individuals tend to rely more on media channels perceived as credible and trustworthy for health information.

In the case of a high level of uncertainty, it is in the media that most people usually trust to understand the environment in which they live and make decisions regarding that environment (Ferreira & Borges, 2020). Similarly, in these situations, the media's influence is often amplified. Credibility and trust in health information play a significant role in the media dependency theory. Different media sources possess various levels of credibility and trustworthiness, impacting people's reliance on them for health information. For instance, the information on social media regarding cancer often contradicts expert opinions (Johnson et al., 2022). In contrast, credible sources can prevent the perception of misinformation by employing transparency and providing up-to-date information regularly (Kington et al., 2021). Also, there is a higher tendency to trust information disseminated by governments or health organisations than by individual sources (Trivedi et al., 2020). Therefore, social media trust plays a significant role in shaping people's intention to depend on social media for cancer purposes. In this study, social media trust is hypothesised to have a positive relationship with cancer awareness and screening behaviour amongst the B40 population in Malaysia.

H3: Social Media Trust is positively correlated with Cancer Awareness and Screening Behaviour amongst the B40 population in Malaysia.

Cancer Awareness and Screening Participation

Understanding cancer is crucial for identifying early symptoms and encouraging proactive health behaviour, such as participating in cancer screenings. Essentially, knowledge of possible health complications is necessary for engaging in health-promoting behaviours (Bhatti et al., 2024). Besides, cancer is prevalent in developing and developed nations, yet public awareness remains low (Sahu et al., 2020). This leads to poor screening uptake in which people are not participating and thus leads to late screening. The challenges arise due to shortcomings in screening, including poor acknowledgement of symptoms, low awareness of available social support and advice, limited financial resources for screening facilities and adverse influences from family members (Ong & Mohd Khalib, 2021). Being afraid of the disease and some who decide not to face its reality also leads them to avoid cancer screening. Consequently, insufficient knowledge of cancer symptoms, poor family support and societal perceptions have become barriers to early detection among many Malaysians (Paramasivam et al., 2022).

Moreover, there are substantial gaps in awareness about cancer risk factors in Malaysia (Schliemann et al., 2020). Findings from breast cancer and colorectal cancer studies conducted in Malaysia revealed a low understanding and knowledge of early symptoms of both cancers, which call for an urgent strategic programme to raise cancer awareness and screening at the national and regional levels (Bahagian Kawalan Penyakit, Kementerian Kesihatan Malaysia, 2017). As a result, lack of awareness adds to delayed reporting of cancer cases to healthcare facilities in India (Bhatti et al., 2024). Lack of understanding of signs and symptoms as well as insufficient health-seeking behaviour amongst the public are reasons why more than half of cancers were diagnosed at advanced stages (Sahu et al., 2020). Therefore, lack of awareness, financial restraint, myths and superstitions, which often coexist, are attributed to cancer screening barriers (Bhatti et al., 2024).

Social Media in Communicating Cancer Awareness and Screening Behaviour

Communication campaigns using social media are increasingly popular and widely known platforms to effectively influence the knowledge and behaviour of a population. For instance, previous studies proved that social media influenced smoking cessation interventions (Luo et al., 2020). Social media has rapidly grown in different services, especially by healthcare providers and the general population to communicate information regarding cancer, highlighting its inherent advantages among its users (Qin et al., 2021). Also, social media allow users to exchange health-related information, promote health promotion, establish relations between healthcare practitioners and patients and correct the misconception of cancer stigma almost concurrently (Kanchan & Gaidhane, 2023). For instance, a previous study found that the respondents' social media use increased after their cancer diagnosis (Stage et al., 2020), highlighting the increase in social media dependency. Consequently, this could indicate dependency on social media for cancer-related purposes.

Furthermore, health communication is common when vital information must be quickly communicated. To guarantee the delivery of messages, it is necessary to use a more comprehensive range of media and be even more convincing to the target audience (Al-Dmour et al., 2020). For instance, social media users may automatically gain the most up-to-date health information by following the accounts of healthcare professionals, major news outlets, medical associations and other health information disseminators (Huo et al., 2019). Besides, the type of available information seen on social media regarding a disease could influence health behaviour participation (Llavona-Ortiz et al., 2022). Also, those who use health communication in social media to exchange medical information with a healthcare professional may attain more knowledge and rational views about cancer prevention than those who do not (Stage et al., 2020). Therefore, it is significant to perceive social media as useful and

successful in providing cancer information to their users. In this case, the B40 population perceived the usefulness of social media in providing an in-depth understanding of their dependency on using social media for cancer-related purposes.

On top of that, while social media is an effective tool for increasing cancer awareness, it requires attention to address possible issues such as misinformation. To illustrate, health misinformation poses a severe threat to public health due to its impact on awareness and screening in general (Swire-Thompson & Lazer, 2020). For this reason, fighting misinformation has become a critical factor in public health (Johnson et al., 2022). Consequently, efforts should be made to ensure that the information is accurate and credible to encourage healthy cancer prevention and screening practices. Therefore, trust in social media as a credible information source is significant for this study to understand its dependency amongst B40 social media users.

RESEARCH FRAMEWORK

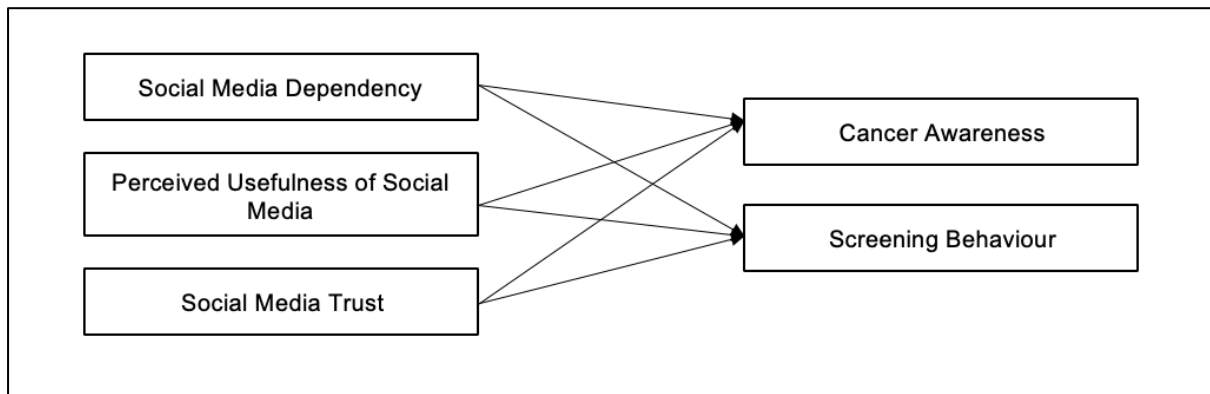The research framework developed in this study is illustrated in Figure 3

Figure 3: Research Framework

METHODS

This study employs a survey questionnaire approach to collect data on the relation of social media on cancer awareness and screening behaviour amongst the B40 population in Malaysia. A purposive sampling technique was utilised to select the sample for this study. This non-probability sampling method was chosen to ensure that participants fit the inclusion criteria of i) Klang Valley-based social media users and ii) households with net monthly income of less than RM4850, were included. The selection criteria were tailored to align with the B40 community as a target group. Based on the Bukhari Sample Size Calculator (2020) and Krejie and Morgan (1970), a sample of 384 was recommended for a study population of more than 100,000. Also, an effect size of 0.2 was obtained from the sample study with 80% power of influence at 0.05 significance, indicating that 394 samples adequately represent the sample study. The survey questionnaire was distributed online to several cancer support groups on Facebook such as Cancer Fighter Malaysia and the National Cancer Society of Malaysia, with 400 responses collected over eight weeks. The questionnaire involved closed-ended questions designed to assess the B40's social media usage for cancer-related purposes towards their cancer awareness and screening behaviour. Data analysis was conducted using descriptive and inferential statistics to identify the levels and correlations between social media, cancer awareness and screening behaviour.

Table 1: Sections in the Questionnaire

No.	Section	Description	Number of items

1	Section A	Demographic	8
2	Section B	Social Media Use (Social Media Dependency, Perceived Usefulness, Social Media Trust)	14
3	Section C	Cancer Awareness (Dependent variable I)	12
4	Section D	Screening Behaviour (Dependent variable II)	16

DATA ANALYSIS AND FINDINGS

Statistical Package for the Social Science (SPSS) version 28.0 was used to look at the data on how the independent variables and dependent variables were related to each other. A five-point Likert Scale was employed to measure the dataset of each item ranging from Strongly Agree (5) to Strongly Disagree (1). Classification of the class interval was used to evaluate the level of social media dependency, perceived usefulness of social media, social media trust and the level of cancer awareness through categorical data namely, low, moderate and high. A correlation was used to test relationships. A Spearman rank correlation was used to look at the relationships between social media dependency, perceived usefulness of social media, and social media trust that affect cancer awareness and screening behaviour of the B40 population. Table 2 summarises the mean value and class level for social media dependency, perceived usefulness of social media, trust (independent variables), cancer awareness and screening behaviour (dependent variables).

Table 2: Summary of Mean Value and Level of Class

Items		Mean	Std. Dev	
IV 1: Social Media Dependency				**Level of SMD**
1	I depend on SM to get information about cancer.	3.91	1.03	High (22.4%)
2	I depend on SM to seek healthcare insurance coverage.	3.86	1.09	**Moderate**
3	I depend on SM to find information on cancer support groups.	3.68	0.91	**(54.8%)**
4	I depend on SM to search information about consequences of cancer	3.36	0.97	Low
5	I depend on SM to get information about cancer treatment	3.30	0.93	(22.8%)
IV 2: Perceived Usefulness of Social Media				**Level of PSU**
1	It is effective to seek cancer information on social media	3.75	0.88	High
2	It is easy to seek cancer information on social media	3.75	0.90	(40.8%)
3	Social media increase my cancer knowledge	3.65	0.88	**Moderate**
4	I can get cancer information via social media quickly	3.62	0.87	**(55.8%)**
				Low (3.4%)
IV 3: Social Media Trust				**Level of SMT**
1	I trust cancer information on social media.	3.88	0.94	High (25.5%)
2	I trust social media as a source of cancer information.	3.84	0.97	**Moderate**
3	I trust cancer information in social media although it is hard to understand.	3.72	1.20	**(56.5%)**
4	I am confident in the accuracy of cancer information I found on social media.	3.59	0.89	Low (18%)
5	I trust cancer information in social media although it is not detailed enough.	3.57	0.87	
DV 1: Cancer Awareness				**Level of CA**
1	People with cancer can expect to continue with normal daily activities.	4.12	0.80	High (11.2%)
2	Going to the doctor as quickly as possible after noticing a symptom of cancer could increase the chances of surviving	4.12	0.87	**Moderate**
3	There are things I can do to reduce my risk of developing cancer.	4.07	0.64	**(53.8%)**
4	Exposure to unprotected sun increases a person's chance of developing cancer.	3.90	0.93	Low (35%)
5	Cancer can often be cured.	3.88	0.92	
6	Drinking alcohol increases a person's chance of developing cancer	3.86	0.74	
7	Having a close relative with cancer increases a person's chance of developing cancer.	3.86	0.92	

8	I want to know if I have cancer.	3.86	0.85
9	Being older increases a person's chance of developing cancer.	3.76	0.84
10	Being overweight increases a person's chance of developing cancer.	3.69	0.88
11	Smoking tobacco products increase a person's chance of developing cancer.	3.66	0.94
12	Exposure to another person's smoking increases a person's chance of developing cancer.	3.55	0.79
DV 2 : Screening Behaviour			
1	Cancer screening is important to get a better health.	4.25	0.85
2	The decision to cancer screening is up to me.	4.19	0.71
3	I like to screen for cancer the next 3 months.	3.96	0.92
4	Most people want me to screen for cancer.	3.90	0.89
5	Most people approve for me to screen for cancer.	3.90	0.95
6	It is embarrassing to get screened for cancer.	3.84	1.15
7	I want to screen for cancer in the next 3 months	3.75	1.00
8	Cancer screening is painful.	3.74	0.91
9	My family thinks I should have a regular cancer screening.	3.71	0.86
10	My partner approval my screening for cancer	3.68	0.94
11	I will be screened for cancer in the next 3 months	3.65	1.05
12	Getting screened for cancer makes me worry	3.60	1.02
13	I intended to be screened for cancer within the next 3 months.	3.58	0.99
14	I have a transportation cost problem to the health facility for screening	3.55	1.06
15	Cancer screening is a pleasant experience.	3.54	1.09
16	I have no time to screen for cancer	3.39	1.05

Reliability Result

Cronbach's alpha coefficient evaluates the internal consistency or reliability of survey items. Table 3 shows the Cronbach's Alpha for all variables in this study. The variable with the highest alpha value is the perceived usefulness of social media, which has a value of 0.718, indicating the scale is reliable and has acceptable internal consistency. Meanwhile, the other alpha values include social media dependency (0.686), social media trust (0.716), cancer awareness (0.656), and screening behaviour (0.699). According to Abdul Aziz et al. (2022), Cronbach's alpha values of 0.65 to 0.79 are interpreted as satisfied and the item can be used. All the variables are in the range of the respective alpha values, hence, the scale of reliability for this data is considered reliable.

Table 3: Reliability Analysis

Variable	Number of items	Alpha
Social Media Dependency	5	0.686
Perceived Usefulness of Social Media	4	0.718
Social Media Trust	5	0.716
Cancer Awareness	12	0.656
Screening Behaviour	16	0.699

Level of Cancer Awareness

Based on Table 4, the majority of the B40 population recorded moderate cancer awareness (53.8%), followed by those with low cancer awareness (35%). Only 11.2% of the population possessed high cancer awareness. The findings suggested that the B40 population had moderate levels of cancer awareness, indicating that the B40 individuals may have some understanding of cancer but lack comprehensive knowledge or a proactive attitude towards prevention and early detection. They might recognise common cancer risks such as smoking, poor diet, and others, but not proactively engage in

reducing cancer risks. The finding was consistent with a study by Lee et al. (2021), in which most of the participants possessed moderate cancer awareness.

Moreover, Schliemann et al. (2020) claimed cancer awareness in Malaysia is comparatively inadequate. Considering that only a minority of the B40 population possessed high cancer awareness, it highlights that cancer awareness in Malaysia, especially amongst the B40 population, was still far from satisfactory. The B40 population possessed some understanding of cancer, its risk factors and preventive measures, but their understanding is not exhaustive. In other words, they might have a basic understanding and additional information might increase their awareness significantly.

Table 4: Level of Cancer Awareness Among B40 Population

Cancer Awareness	Frequency	Percentage (%)
High	45	11.2
Moderate	215	53.8
Low	140	35.0
Total	**400**	**100**

Relationship Between Social Media Dependency and Cancer Awareness Among B40 Population

Table 5 indicates a moderate positive relation between social media dependency and cancer awareness amongst the B40 population. The Spearman rank correlation analysis revealed a statistically significant positive relation between social media dependency and cancer awareness (r = 0.438, $p <$ 0.001). The correlation value of 0.438 indicated a moderate positive relation between social media dependency levels and cancer awareness amongst the B40 population. The findings suggested that the B40 population who reported higher dependency on social media tended to report higher levels of cancer awareness. In other words, as the dependency on social media increased, cancer awareness also increased amongst the B40 population. The finding indicated a moderate relation between cancer awareness and social media dependency, which might happen because people depended on other sources before social media when they sought cancer information. This statement was supported by Braun et al. (2019), in which cancer patients predominantly relied on their oncologists for information sources although social media is significantly useful for cancer information. Therefore, it explains the findings of the current study.

Table 5: Relationship between Social Media Dependency and Cancer Awareness among B40 Population

Variable	Cancer Awareness	
Social Media Dependency	R-value	P value
	0.438	0.001

**. Correlation is significant at the 0.01 level (2-tailed)

Relationship Between Perceived Usefulness of Social Media and Cancer Awareness Among B40 Population

Table 6 indicates a weak relation between perceived social media usefulness and cancer awareness amongst the B40 population. The Spearman rank correlation analysis revealed a statistically significant relation between social media dependency and cancer awareness (r = 0.393, $p <$ 0.001). The correlation value of 0.393 revealed a weak relation between social media dependency and cancer awareness. The weak relation might be that while some people perceive social media as useful for gaining cancer information, however barriers like misinformation can decrease their reliance on social media in terms of its usefulness in providing accurate cancer information. The B40's cancer awareness

based on their perceived usefulness of social media may be weak due to the quality and type of information available on social media. For instance, Johnson et al. (2022) stated that cancer treatment information on social media contains 32.5% misinformation and 30.5% harmful information. This could decrease the perceived usefulness of social media in providing accurate cancer information, which as a result decreases the levels of cancer awareness amongst the B40 population.

Table 6: Relationship between Perceived Social Media Usefulness and Cancer Awareness among B40 Population

Variable	Cancer Awareness	
Perceived Usefulness of Social Media	R-value	P value
	0.393	0.001

**. Correlation is significant at the 0.01 level (2-tailed)

Relationship Between Social Media Trust and Cancer Awareness Among B40 Population

Table 7 indicates a moderate positive relation between social media trust and cancer awareness amongst the B40 population. The Spearman rank correlation analysis revealed a statistically significant positive relation between social media dependency and cancer awareness ($r = 0.544$, $p < 0.001$). The correlation value of 0.544 revealed a moderate positive relation between social media dependency and cancer awareness, indicating that as trust in social media increases, cancer awareness tends to increase to a moderate degree. While this is not a strong relationship, it indicates a meaningful association. Trustworthy information on social media can enhance awareness, but individuals may also rely on other sources like healthcare providers, traditional media, and educational programs. Sacca et al. (2021) supported this statement as people trust doctors more than the internet for cancer-related information, with less confidence in seeking cancer information leading to higher trust in both sources.

Table 7: Relationship between Social Media Trust and Cancer Awareness among B40 Population

Variable	Cancer Awareness	
Social Media Trust	R-value	P value
	0.544	0.001

**. Correlation is significant at the 0.01 level (2-tailed)

Relationship Between Social Media Dependency and Screening Behaviour Among B40 Population

Table 8 indicates a moderate positive relation between social media dependency and screening behaviour amongst the B40 population. The Spearman rank correlation analysis revealed a statistically significant positive relation between social media dependency and screening behaviour ($r = 0.444$, $p < 0.001$). The correlation value of 0.444 revealed a moderate positive relation between social media dependency and screening behaviour amongst the B40 population. This finding indicated that B40 participants who reported high dependency on social media tended to be engaged in cancer screening behaviour as well. Stiles and Mynard (2021) supported this statement as social media can help promote health-related information, guide conversations about cancer screening, and improve health-related behaviours among patients.

Table 8: Relationship between Social Media Dependency and Screening Behaviour among B40 Population

Variable	Screening Behaviour	
Social Media Dependency	R-value	P value
	0.444	0.001

**. Correlation is significant at the 0.01 level (2-tailed)

Relationship Between Perceived Social Media Usefulness and Screening Behaviour Among B40 Population

Table 9 indicates a weak relation between perceived social media usefulness and cancer awareness amongst the B40 population. The Spearman rank correlation analysis revealed a statistically significant relation between social media dependency and screening behaviour (r = 0.306, p < 0.001). The correlation value of 0.306 revealed a weak relation between the perceived social media usefulness and cancer awareness. These findings suggested that B40 participants perceived social media as less effective in promoting or encouraging cancer screening behaviour. This statement was supported by Fielden and Holch (2022), in which social media promoted a positive attitude towards cervical cancer but did not directly influence the intention to attend cervical cancer screening. Therefore, social media was perceived as less helpful in encouraging change in screening behaviour.

Table 9: Relationship between Perceived Usefulness of Social Media and Screening Behaviour among B40 Population

Variable	Screening Behaviour	
Perceived Usefulness of Social Media	R-value	P value
	0.306	0.001

**. Correlation is significant at the 0.01 level (2-tailed)

Relationship Between Social Media Trust and Screening Behaviour Among B40 Population

Table 10 indicates a moderate relation between social media trust and screening behaviour amongst the B40 population. The Spearman rank correlation analysis revealed a statistically significant moderate positive relation between social media dependency and screening behaviour (r = 0.678, p < 0.001). The correlation value of 0.678 revealed a moderate positive relation between social media trust and screening behaviour. This finding suggested that despite a positive relation in trust, it was not strong enough to motivate the B40 participants to participate in cancer screening significantly. This happened most likely due to psychological factors that influenced the intent to participate in cancer screening. Shah et al. (2020) revealed that low levels of income, alongside factors like family history with cancer, prior attendance at cancer screening, and cancer awareness, determined poor cancer screening perceptions among the population.

Table 10: Relationship between Social Media Trust and Screening Behaviour among B40 Population

Variable	Screening Behaviour	
Social Media Trust	R-value	P value
	0.678	0.001

**. Correlation is significant at the 0.01 level (2-tailed)

Hypothesis Results

Based on the results in Table 11, social media dependency, perceived usefulness of social media, and social media trust are significant at the 0.05 significance level. There is a significant relationship between social media dependency, perceived usefulness of social media, social media trust

and cancer awareness and screening behaviour amongst the B40 population in Malaysia. Therefore, the study rejects the null hypothesis.

Table 11: Hypothesis Results

Variable	Significant Level	Result
Social Media Dependency	0.001 (p < 0.05)	Reject null hypothesis
Perceived Usefulness of Social Media	0.001 (p < 0.05)	Reject null hypothesis
Social Media Trust	0.001 (p < 0.05)	Reject null hypothesis

DISCUSSION

This study investigates the relation between social media towards cancer awareness and screening behaviour amongst the B40 population in Malaysia. Findings showed that most B40 individuals are aware of cancer risk factors and possess a positive attitude towards cancer. The research also found a substantial correlation between cancer awareness and screening behaviour and all three variables, including social media dependency, perceived usefulness of social media, and social media trust.

The present study indicated that all variables, social media dependency, perceived usefulness of social media and social media trust are statistically significant towards cancer awareness and screening behaviour. The results were consistent with data obtained by He and Li (2021) whereby media exposure influences cancer information-seeking and social media exposure encourages people to seek cancer-related information. Cho and Tian (2023) also supported these findings as media use for breast cancer information is positively associated with attitudes towards screening intentions. In contrast, Qin et al. (2021) found social media does not improve screening behaviour, although it can potentially be leveraged to promote cancer screening awareness. Ball-Rokeach and DeFleur (1976) claimed that people develop a dependency on media if can serve their needs for information and satisfy their goals.

Besides, the variable perceived usefulness of social media had a weak relation to cancer awareness and screening behaviour. These findings suggest that the relation between the perceived usefulness of social media, cancer awareness and screening behaviour are related, however, they are not strong. The findings from McCord and Hamid (2023) stated that cancer-related tweets can contain misinformation, which can decrease people's social media usage for seeking cancer information. Exposure to inaccurate cancer-related information on social media may negatively affect knowledge, attitudes, and behaviour (Chou et al., 2020). The weak relation between the perceived usefulness of social media on cancer awareness and screening behaviour might happen because of barriers like misinformation and inaccurate data that can decrease their reliance on social media even more. This is supported by Kim et al. (2023) whereby exposure to HPV misinformation on social media increases the likelihood of seeking health information from professional health websites. The B40 individuals are more likely to rely on seeking cancer information from their doctors compared to social media due to these barriers, which can be associated with the weak relation towards their cancer awareness and screening behaviours.

In addition, this study was able to demonstrate that trust in social media correlated with cancer awareness and screening behaviour. Although the relation between trust, cancer awareness, and screening behaviour was moderate, it signifies there was a noticeable association between these variables, but other factors also played a significant role in influencing the relationship. The finding from Sacca et al. (2021) found that people trust doctors more than the Internet for cancer-related information. Braun et al. (2019) stated that cancer patients trust their oncologists most often for information, with social media being a secondary source. The current findings can be explained through the previous literature in which suggests that having other sources apart from social media, can decrease

their reliance towards using social media for cancer purposes. As a result, as trust in social media decreases, their cancer awareness and screening behaviour decrease as well.

CONCLUSION

In conclusion, the Media Dependency Theory (MDT) provides a valuable framework for understanding social media use in increasing cancer awareness and screening behaviour. Key findings indicated that social media dependency and social media trust play a significant but not exclusive role in increasing cancer awareness and screening behaviour, meanwhile, the perceived usefulness of social media has a limited role in influencing cancer awareness and screening behaviours. Social media dependency, perceived usefulness and trust in social media as a cancer information source can influence the levels of cancer awareness and screening behaviour among users. This study found that all variables had a significant relation with the B40 population's cancer awareness and screening behaviour. Although the relationship was not relatively strong for all variables, social media can be leveraged to increase cancer awareness and screening behaviour. Additionally, ensuring effective cancer communication and combating misinformation can increase the reliance on social media users on social media to seek cancer information. Therefore, public health officials and medical practitioners should enforce strategic cancer intervention by leveraging social media to communicate cancer messages and promote screening participation amongst the population. The findings of this study also provide insight and valuable information on social media use among the B40 population for cancer-related purposes. Future research is recommended to conduct longitudinal studies and employ a mixed method approach to effectively gauge the changes in cancer awareness and screening behaviour amongst the B40 population over a while. This approach will allow researchers to better understand the relations between social media dependency, perceived usefulness of social media, social media trust, cancer awareness and screening behaviour. This could involve collaboration with community organisations, healthcare providers or other stakeholders to ensure a more inclusive population representation in future studies.

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AUTHORS' CONTRIBUTION

Abdul Halit E.N. conceived and carried out the study and took the lead in writing the manuscript. Abdul Aziz A. reviewed and contributed to the literature review. Mohamed A. helped with reviewing and supervision. All authors provided critical feedback and helped shape the research, analysis, and manuscript.

CONFLICT OF INTEREST DECLARATION

We certify that the article is the original work of the authors and co-authors. The article has yet to receive prior publication and is not under consideration for publication elsewhere. This

research/manuscript has not been submitted for publication, nor has it been published in whole or in part elsewhere. We testify that all Authors have contributed significantly to the work, validity and legitimacy of the data and its interpretation for submission to Jurnal Intelek.

REFERENCES

Abdul Aziz, A., Abdullah, Z., & Mohd Nor, A. (2022). Quantitative data analysis in communication research (2nd ed.)

Ab Manan, A., Basri, H., Kaur, N., Abd Rahman, S. Z., Amir, P. N., Ali, N., Raman, S., Bahtiar, B., Mustafa, N., Saffinas, S., Othman, R., Othman, N. A., & Abdul Aziz, A. (Eds.). (2019). *Malaysia national cancer registry report 2012-2016.* Ministry of Health Malaysia. https://nci.moh.gov.my/images/Laporan/MNCR_2012-2016_FINAL_PUBLISHED_2019.pdf

Al-Dmour, H., Masa'deh, R., Salman, A., Abuhashesh, M., & Al-Dmour, R. (2020). Influence of social media platforms on public health protection against the covid-19 pandemic via the mediating effects of public health awareness and behavioral changes: integrated model. *Journal of Medical Internet Research*, *22*(8), e19996. https://doi.org/10.2196/19996

Alsisi, E. A., Al-Ashaab, A., & Abualfaraa, W. A. (2020). The development of a smart health awareness message framework based on the use of social media: quantitative study. *Journal of Medical Internet Research*, *22*(7), e16212. https://doi.org/10.2196/16212

Bahagian Kawalan Penyakit, Kementerian Kesihatan Malaysia. (2017). *Early detection of common cancers and referral pathways: module for health care providers.* BKPKKM. https://www.google.com.my/books/edition/MYCDCGP_Early_Detection_Of_Common_Cancer/s76CDwAAQBAJ?hl=en&gbpv=0

Bhatti, Z., Laghari, M., Khan, A. H., Talpur, B. A., & Sulaiman, S. A. S. (2024). Assessment of osteoporosis knowledge and its determinants among tuberculosis patients in tertiary care hospital malaysia: a prospective study. *Journal of Clinical Tuberculosis and Other Mycobacterial Diseases*, *34*, 100416. https://doi.org/10.1016/j.jctube.2024.100416

Braun, L. A., Zomorodbakhsch, B., Keinki, C., & Huebner, J. (2019). Information needs, communication and usage of social media by cancer patients and their relatives. *Journal of Cancer Research and Clinical Oncology*, *145*(7), 1865–1875. https://doi.org/10.1007/s00432-019-02929-9

Chen, J., & Wang, Y. (2021). Social media use for health purposes: Systematic review. *JMIR. Journal of Medical Internet Research/Journal of Medical Internet Research*, *23*(5), e17917. https://doi.org/10.2196/17917

Chiang, A. L. (2020). Social media and medicine. *Nature Reviews Gastroenterology & Hepatology*, *17*(5), 256–257. https://doi.org/10.1038/s41575-020-0289-5

Cho, S. J., & Tian, Y. (2023). Celebrity identification and reasoned action: An integrative model of the relationship between media use and breast cancer screening intention. *Health Communication*, 1–10. https://doi.org/10.1080/10410236.2023.2258308

Chou, W. S., Trivedi, N., Peterson, E., Gaysynsky, A., Krakow, M., & Vraga, E. (2020). How do social media users process cancer prevention messages on facebook? An eye-tracking study. *Patient Education and Counseling*, *103*(6), 1161–1167. https://doi.org/10.1016/j.pec.2020.01.013

Ferreira, G. B., & Borges, S. (2020). Media and misinformation in times of covid-19: How people informed themselves in the days following the Portuguese declaration of the state of emergency. *Journalism and Media*, *1*(1), 108–121. https://doi.org/10.3390/journalmedia1010008

Fielden, N., & Holch, P. (2022). 'Exploring the influence of social media influencers on intention to attend cervical screening in the uk: Utilising the theory of planned behaviour.' *Cancer Control*, *29*, 107327482210794. https://doi.org/10.1177/10732748221079480

Gupta, P., Khan, A., & Kumar, A. (2020). Social media use by patients in health care: a scoping review. *International Journal of Healthcare Management*, *15*(2), 121–131. https://doi.org/10.1080/20479700.2020.1860563

He, R., & Li, Y. (2021). Media exposure, cancer beliefs, and cancer-related information-seeking or avoidance behavior patterns in China. *International Journal of Environmental Research and Public Health/International Journal of Environmental Research and Public Health*, *18*(6), 3130. https://doi.org/10.3390/ijerph18063130

Huo, J., Desai, R., Hong, Y., Turner, K., Mainous, A. G., & Bian, J. (2019). Use of social media in health communication: findings from the health information national trends survey 2013, 2014, and 2017. *Cancer Control*, *26*(1), 107327481984144. https://doi.org/10.1177/1073274819841442

Jin, X., Yin, M., Zhou, Z., & Yu, X. (2021). The differential effects of trusting beliefs on social media users' willingness to adopt and share health knowledge. *Information Processing & Management*, *58*(1), 102413. https://doi.org/10.1016/j.ipm.2020.102413

Jo, H. S., Park, K., & Jung, S. M. (2019). A scoping review of consumer needs for cancer information. *Patient Education and Counseling*, *102*(7), 1237–1250. https://doi.org/10.1016/j.pec.2019.02.004

Johnson, S. B., Parsons, M., Dorff, T., Moran, M. S., Ward, J. H., Cohen, S. A., Akerley, W., Bauman, J., Hubbard, J., Spratt, D. E., Bylund, C. L., Swire-Thompson, B., Onega, T., Scherer, L. D., Tward, J., & Fagerlin, A. (2021). Cancer misinformation and harmful information on facebook and other social media: a brief report. *Journal of the National Cancer Institute*, *114*(7), 1036–1039. https://doi.org/10.1093/jnci/djab141

Kanchan, S., & Gaidhane, A. (2023). Social media role and its impact on public health: A narrative review. *Curēus*. https://doi.org/10.7759/cureus.33737

Kim, L., Hong, Y., Abrar, S., & FitzGerald, C. A. (2023). Relationships between social media use, exposure to vaccine misinformation and online health information seeking behaviour. *Journal of Creative Communications/Journal of Creative Communications*, *18*(2), 199–213. https://doi.org/10.1177/09732586231166111

Kington, R. S., Arnesen, S., Chou, W. S., Curry, S. J., Lazer, D., & Villarruel, A. M. (2021). Identifying credible sources of health information in social media: Principles and attributes. *NAM Perspectives*. https://doi.org/10.31478/202107a

Kite, J., Chan, L., MacKay, K., Corbett, L., Reyes-Marcelino, G., Nguyen, B., Bellew, W., & Freeman, B. (2023). A model of social media effects in public health communication campaigns: Systematic review. *JMIR. Journal of Medical Internet Research/Journal of Medical Internet Research*, *25*, e46345. https://doi.org/10.2196/46345

Koo, M. M., Swann, R., McPhail, S., Abel, G. A., Elliss-Brookes, L., Rubin, G. P., & Lyratzopoulos, G. (2020). Presenting symptoms of cancer and stage at diagnosis: Evidence from a cross-sectional, population-based study. *Lancet Oncology/Lancet. Oncology*, *21*(1), 73–79. https://doi.org/10.1016/s1470-2045(19)30595-9

Lee, W. N., Ong, C. P., Khamis, A. S. M., Singaram, N., & Lee, S. H. (2021). Breast cancer awareness and knowledge assessment among men and women in malaysia. *Journal of Public Health (Germany)*, *30*(7). https://doi.org/10.1007/s10389-021-01509-x

Llavona-Ortiz, J. Y., Spanos, K. E., Kraschnewski, J. L., D'Souza, G., Myrick, J. G., Sznajder, K. K., & Calo, W. A. (2022). Associations between human papillomavirus vaccine decisions and exposure to vaccine information in social media. *Cancer Control*, *29*, 107327482211384. https://doi.org/10.1177/10732748221138404

Luo, T., Li, Williams, D., Phillippi, S., Yu, Q., Kantrow, S., Kao, Y., Celestin, M., Lin, W., & Tseng, T. (2020). Using social media for smoking cessation interventions: A systematic review. *Perspectives in Public Health*, *141*(1), 50–63. https://doi.org/10.1177/1757913920906845

Ma, M., Raza, S., Yousaf, M., Zaman, U., & Jin, Q. (2023). Investigating the psychological, social, cultural, and religious predictors of covid-19 vaccine uptake intention in digital age: a media dependency theory perspective. *Vaccines*, *11*(8), 1338. https://doi.org/10.3390/vaccines11081338

McCord, M., & Hamid, F. (2023). Medical relevancy of cancer-related tweets and its relation to misinformation. *The International FLAIRS Conference Proceedings*, *36*(1). https://doi.org/10.32473/flairs.36.133364

Md Yusof, M., & Wan Ishak, W. Z. (2023, January 4). Cancer in my community: Addressing increasing cancer cases in malaysia. Cancer.Net. Retrieved April 10, 2023, from https://www.cancer.net/blog/2022-02/cancer-my-community-addressing-increasing-cancer-cases-malaysia

Nabi, M. N. U., Zohora, F. T., & Misbauddin, S. (2023). Social media links with social capital to trust in healthcare facilities: Empirical evidence from bangladesh. *Library Hi Tech*, *41*(1), 210–228. https://doi.org/10.1108/lht-09-2022-0443

Nawi, N. W. M., Alsagoff, S. A., Osman, M. N., & Abdullah, Z. (2020). New media use among youth in malaysia: A media dependency theory perspective. *PalArch's Journal of Archaeology of Egypt/Egyptology*, *17*(9), 3097 - 3112. Retrieved from https://archives.palarch.nl/index.php/jae/article/view/4329

Norbert, G. (2022, March 14). Communication in the internet era: Social media above all? GiLE. https://www.gile-edu.org/articles/communication-in-the-internet-era-social-media-above-all/

Ong, W., & Mohd Khalib, A. (2021). White paper - cancer care challenges, gaps and opportunities in Malaysia. *Pharmaceutical Association of Malaysia (PhAMA)*. https://www.phama.org.my/newsmaster.cfm?&menuid=115&action=view&retrieveid=47

Paramasivam, D., Schliemann, D., Dahlui, M., Donnelly, M., & Su, T. T. (2022). Breast and colorectal cancer awareness in malaysians and barriers towards screening: A systematic review. *medRxiv (Cold Spring Harbor Laboratory)*. https://doi.org/10.1101/2022.02.21.22271312

Qin, L., Zhang, X., Wu, A., Miser, J. S., Liu, Y., Hsu, J. C., Shia, B., & Ye, L. (2021). Association between social media use and cancer screening awareness and behavior for people without a cancer diagnosis: Matched cohort study. *JMIR. Journal of Medical Internet Research/Journal of Medical Internet Research*, *23*(8), e26395. https://doi.org/10.2196/26395

Sacca, L., Maroun, V., & Khoury, M. (2021). Predictor of high trust and the role of confidence levels in seeking cancer-related information. *Informatics for Health & Social Care*, *47*(1), 53–61. https://doi.org/10.1080/17538157.2021.1925676

Sahu, D. P., Subba, S. H., & Giri, P. P. (2020). Cancer awareness and attitude towards cancer screening in india: A narrative review. *Journal of Family Medicine and Primary Care*, *9*(5), 2214. https://doi.org/10.4103/jfmpc.jfmpc_145_20

Schiavo, R. (2011). *Health communication: From theory to practice*. John Wiley & Sons.

Schliemann, D., Ismail, R., Donnelly, M., Cardwell, C. R., & Su, T. T. (2020). Cancer symptom and risk factor awareness in malaysia: Findings from a nationwide cross-sectional study. *BMC Public Health*, *20*(1), 464. https://doi.org/10.1186/s12889-020-08581-0

Shah, S. A., Mahmood, M. I., & Ahmad, N. (2020). Low socioeconomic status associated with poor cancer screening perceptions in Malaysia: Analysis of determinant of health among general population. *Asian Pacific Journal of Cancer Prevention*, *21*(11), 3137–3144. https://doi.org/10.31557/APJCP.2020.21.11.3137

Shahar, S., Lau, H., Puteh, S. E. W., Amara, S., & Razak, N. A. (2019). Health, access and nutritional issues among low-income population in Malaysia: Introductory note. *BMC Public Health*, *19*(S4), 552. https://doi.org/10.1186/s12889-019-6852-8

Society for Health Communication. (2017). *Health communication*. https://www.societyforhealthcommunication.org/health-communication

Stage, C., Hvidtfeldt, K., & Klastrup, L. (2020). Vital media: The affective and temporal dynamics of young cancer patients' social media practices. *Social Media + Society*, *6*(2), 205630512092476. https://doi.org/10.1177/2056305120924760

Stiles, B. M., & Mynard, J. N. (2021). Social media and your cancer patient. *Seminars in Thoracic and Cardiovascular Surgery*, *33*(2), 517–521. https://doi.org/10.1053/j.semtcvs.2020.12.014

Swire-Thompson, B., & Lazer, D. (2020). Public health and online misinformation: Challenges and recommendations. *Annual Review of Public Health*, *41*(1), 433–451. https://doi.org/10.1146/annurev-publhealth-040119-094127

Trivedi, N., Krakow, M., Hyatt Hawkins, K., Peterson, E. B., & Chou, W.-Y. S. (2020). "Well, the message is from the institute of something": Exploring source trust of cancer-related messages on simulated facebook posts. *Frontiers in Communication*, *5*. https://doi.org/10.3389/fcomm.2020.00012

Van Uden-Kraan, C. F., Jansen, F., Lissenberg-Witte, B. I., Eerenstein, S. E. J., Leemans, C. R., & Leeuw, I. M. V. (2019). Health-related and cancer-related internet use by patients treated with total laryngectomy. *Supportive Care in Cancer*, *28*(1), 131–140. https://doi.org/10.1007/s00520-019-04757-6

Wang, X., Chen, L., Shi, J., & Peng, T. (2019). What makes cancer information viral on social media? *Computers in Human Behavior*, *93*, 149–156. https://doi.org/10.1016/j.chb.2018.12.024

Willoughby, J. F., & Noar, S. M. (2022). Fifteen years after a 10-year retrospective: The state of health mass mediated campaigns. *Journal of Health Communication*, *27*(6), 362–374. https://doi.org/10.1080/10810730.2022.2110627

Wong, D. K., & Cheung, M. (2019). Online health information seeking and ehealth literacy among patients attending a primary care clinic in Hong Kong: A cross-sectional survey. *JMIR. Journal of Medical Internet Research/Journal of Medical Internet Research*, *21*(3), e10831. https://doi.org/10.2196/10831

World Health Organization. (2022). Cancer. https://www.who.int/news-room/fact-sheets/detail/cancer

World Health Organization. (2020). Latest global cancer data: Cancer burden rises to 19.3 million new cases and 10.0 million cancer deaths in 2020 [Press release]. https://www.iarc.who.int/wp-content/uploads/2020/12/pr292_E.pdf

World Health Organization. (2023). *Promoting cancer early diagnosis*. Retrieved April 6, 2022, from https://www.who.int/activities/promoting-cancer-early-diagnosis

Yu, M., Li, Z., Yu, Z., He, J., & Zhou, J. (2020b). Communication related health crisis on social media: A case of covid-19 outbreak. *Current Issues in Tourism*, *24*(19), 2699–2705. https://doi.org/10.1080/13683500.2020.1752632