Message Strategies in Cervical Cancer Campaign Posters by the Ministry of Health Malaysia

NOOR SAHILA MOHAMED SULAIMAN
SHAMSIAH ABD KADIR*
Universiti Kebangsaan Malaysia

ABSTRACT

Cervical cancer is a serious global health problem and continues to be a leading cause of death among women. In Malaysia, although awareness about cervical cancer is increasing, there remains a significant need to improve public understanding of available prevention measures and treatments. To raise public awareness about the importance of early prevention and treatment of cervical cancer, the Ministry of Health Malaysia (MOH) has launched various awareness programs, including posters as a health communication medium. The lack of effective message strategies used by the MOH as interventions in disease prevention efforts within health awareness campaigns is a significant concern in effecting changes in health behaviour. Therefore, this study was conducted to analyse the level of audience engagement and the forms of strategic message used in cervical cancer campaign posters by the MOH based on the Extended Parallel Process Model (EPPM) theory. Therefore, a quantitative content analysis was used to analyse 16 cervical cancer campaign posters from 2016 to 2023. The study findings indicate that the level of audience engagement showed a positive response of 4,754. Henceforth, for message strategies, "educate about risk" and "educate about solutions" were the most frequently used strategies and applied in the campaign posters, with frequencies of 50% and 31.3%, respectively. This study has achieved all set objectives, and the results from this study can be used as a guide for future researchers and the government in efforts to change people's behaviour towards the threat of cervical cancer.

Keywords: *Cervical cancer, pap smear, EPPM, campaign posters, health communication.*

INTRODUCTION

Cervical cancer poses a serious health threat to women worldwide, including in Malaysia. As the third most common cancer affecting young women in this country, it has recorded alarming mortality rates. According to the World Health Organization (WHO), in 2023, cervical cancer remains a significant global health concern, with an estimated 650,000 new cases and 350,000 deaths reported worldwide (WHO, 2024). Although cervical cancer can be prevented through screening tests such as Pap smears and HPV vaccination, the level of awareness and participation of women in these preventive measures remains low. In Malaysia, recent data shows that only 24.6% of eligible women undergo regular pap smear tests, still significantly below the WHO target of 70% (Ministry of Health Malaysia, 2023). A recent multi-centre study across Southeast Asian universities revealed that awareness levels have improved but remain concerning, with 67.3% of female students aware of cervical cancer, while only 52.1% understood the importance of pap smear testing as an early screening method (Sukrong et al., 2024).

This phenomenon reflects the lack of knowledge and awareness about cervical cancer risks and their importance among women. A study by Khoo et al. (2021) found that women avoid screening due to fear, embarrassment, or lack of awareness. While health

communication is crucial for raising awareness and changing public behaviour, Happer et al. (2013) emphasize the media's vital role in informing the public about matters where they lack knowledge or experience. Digital posters by the Ministry of Health Malaysia (MOH) serve as effective tools for cervical cancer communication. They can reach broader audiences via social media, provide updated medical information, and facilitate interactive engagement. The visual and accessible nature of these digital materials makes complex medical concepts more comprehensible to diverse audiences with varying health literacy levels, particularly in addressing sensitive health topics like cervical cancer (Idris et al., 2021).

Media plays a pivotal role in health advocacy, particularly in driving public health campaigns and policy changes. Recent studies have shown that strategic media advocacy has been instrumental in shaping health policies and public opinion regarding critical health issues (Townsend et al., 2023). In the context of cervical cancer prevention, media advocacy has successfully influenced healthcare policies through both traditional and digital platforms. For instance, Malaysia's media advocacy efforts have been crucial in promoting the national HPV vaccination program for school-going girls, which has achieved over 80% coverage since its implementation in 2010 (Balqis-Ali et al., 2024). The success of recent campaigns like #CervicalCancerAware demonstrates how social media advocacy can effectively mobilize community support and address cultural barriers, particularly in Malaysia's multicultural context, where campaigns must navigate various cultural sensitivities while maintaining clear health communication (Schliemann et al., 2019). Through targeted messaging and culturally sensitive communication strategies, these media campaigns have helped normalize discussions about cervical health and encourage preventive healthcare practices among diverse communities.

However, the effectiveness of message strategies in these posters still needs to be studied in more depth. According to Nurul Asyiqin and Shamsiah (2023), posters displayed by MOH have a less strategic message delivery style to attract public interest in making health behaviour changes. Idris et al. (2021) also emphasise that producing good posters can convey messages effectively and easily to the public. Therefore, this study aims to analyse the level of public engagement with cervical cancer campaign posters issued by MOH, as well as examine the message strategies and use of health images in these posters. By understanding the effectiveness of these communication strategies, this study can devise better approaches to raise awareness and encourage behavioural changes in the context of cervical cancer prevention in Malaysia. This research addresses a critical gap identified by Mohamad Hafifi et al. (2017), who noted the limited studies on media-based preventive interventions in Malaysia's public health awareness campaigns, particularly in understanding how communication strategies can effectively drive behavioural change

Literature Review

Health Campaigns by Media

Communication campaigns are generally defined as intentional attempts to inform or influence behaviour in a large audience within a specified period using an organized set of communication activities and featuring an array of mediated messages in various channels, generally to produce non-commercial benefits to individuals and society (Atkin & Rice, 2012). According to Meade et al. (2019), health communication campaigns have made important contributions to global public health progress. They are often considered critical in broad intervention efforts such as cancer. Therefore, this study finds that communication campaigns

are important to influence audience behaviour and practices in health education, especially in raising awareness about cervical cancer.

Health communication campaigns operate through several key approaches. Health education interventions increase knowledge and understanding of health issues to promote informed decision-making and behavioural change (Sharma, 2021). Separately, social marketing programs apply commercial marketing strategies to influence voluntary behaviour for social good, often incorporating psychological and behavioural theories to promote health practices (Hastings & Domegan, 2023). Within these broader frameworks, visual health communication has emerged as a specialized field that uses visual elements to convey health information effectively, making complex medical concepts more accessible to diverse audiences (Kite et al., 2023). These three approaches often work in concert with health campaigns, particularly in the digital age, where visual elements can enhance both educational and marketing efforts.

According to Zoller and Kline (2008), health is the arrangement of communication processes and messages around health issues. Communication involves conveying health message perspectives to the involved community. According to Happer et al. (2013), communication plays an important role in providing information to the public about what is happening, especially in aspects where society does not have knowledge or experience regarding a particular matter.

Media Advocacy in Health Communication

Media advocacy in health communication serves as a strategic tool for promoting public health objectives and influencing policy decisions. Research has shown that effective media advocacy combines strategic communication with community action to create an environment conducive to policy change and public health improvement (Jackson et al., 2021). In healthcare settings, media advocacy has proven particularly effective in promoting preventive health behaviours, with studies showing that well-designed media campaigns can increase health screening participation rates by up to 40% among target populations (Sunguya et al., 2016). This is especially relevant for cervical cancer prevention, where media advocacy has been instrumental in addressing barriers to screening and vaccination.

The evolution of digital platforms has transformed health media advocacy, creating new opportunities for engagement and message dissemination. Social media campaigns have significantly impacted health promotion, with studies showing that interactive digital campaigns achieve 60% higher engagement rates than traditional media approaches (Backholer et al., 2021). For example, in Southeast Asian countries, social media health campaigns have successfully increased cervical cancer screening awareness among younger women through culturally tailored content and community engagement strategies (Mohsin et al., 2023). These findings underscore the importance of integrating traditional and digital media advocacy approaches in health communication campaigns.

Poster Campaigns

According to Idris et al. (2021), poster is a communication medium for public relations and advertising that is often used by the public and functions as a notification, announcement, and advertisement to promote a program or activity. The illustration or design of a poster is often closely related to the theme of the program and activities to attract people's attention and convey messages clearly, quickly, and effectively. Posters are inexpensive to produce and

are seen by many people (Barrett, 2010). To this day, we can still see that posters are still relevant because the Ministry of Health uses digital posters as a medium to convey information.

A poster display is a communication medium used to convey a message accompanied by an impact on the audience who sees it. According to the analysis of 72 posters from four countries, namely the United States, Britain, Australia, and Malaysia by Rosli (2017), she found that there are six important elements in the design of effective health campaign poster works such as; i) the use of bright colours; ii) having background space; iii) placing a title; iv) visual imagery with vector style; v) A1 scale poster size, and vi) sans serif font type. All these elements will help create a quality poster with a more effective message or information delivery (Rosli, 2017). Therefore, this study used the Extended Parallel Process Model (EPPM) to look at the public's response to the message strategy conveyed in cervical cancer campaign posters issued by the MOH.

Cervical Cancer in Malaysia
Cervical cancer ranks as the third most common cancer among Malaysian women, following ovarian and breast cancer. The high incidence is largely attributed to insufficient knowledge about the disease's risks and prevention methods (Rabiatul, 2023). According to HPV Information Centre (2023), 1,740 new cases were diagnosed in Malaysia, resulting in 991 deaths. The risk increases significantly for women over 30 years old, with Human Papillomavirus (HPV) being the primary contributing factor. HPV can be transmitted through sexual activity, and risk factors include promiscuous sexual behaviour, smoking, family history of cervical cancer, long-term use of oral contraceptives, and low immunity (Rabiatul, 2023).

Early detection is crucial in preventing and treating cervical cancer. However, the disease often presents no obvious symptoms in its early stages, leading many women to overlook potential risks. Key symptoms to watch for include unusual vaginal discharge or bleeding, lower back or abdominal pain, and pain during intercourse (Rabiatul, 2023). To combat this issue, Malaysia offers HPV vaccination to female adolescents at the school level. Additionally, sexually active women are advised to undergo regular pap smear tests every three years. Preventive measures such as practising safe sex, avoiding early sexual debut, and maintaining a healthy lifestyle are also crucial in reducing the risk of cervical cancer among Malaysian women.

Extended Parallel Process Model (EPPM)
The Extended Parallel Process Model (EPPM), developed by Kim Witte in 1992, is a framework used to understand how individuals respond to fear-inducing messages and potentially change their behaviour. The model is based on Leventhal's Protection Motivation Theory (PMT) and Roger's Persuasive Fear Appeals research, focusing on the function of fear in message processing. EPPM posits that threat perception initiates and motivates message processing; the greater the perceived threat, the more attention the message receives. Key components of the model include fear, threat, effectiveness, and outcomes (Worthington, 2021).

EPPM suggests that behaviour change is possible by altering an individual's perception of danger and the effectiveness of proposed solutions. The model emphasizes the importance of involvement in persuasion, noting that when the perception of threat is low, people are less motivated to process the message, viewing it as irrelevant or trivial (Johnson & Eagly, 1989; Petty & Cacioppo, 1986). EPPM has been extensively tested across various health-

related topics, including skin cancer, HIV/AIDS prevention, teenage pregnancy, and breast cancer, using diverse research methods such as experiments, focus groups, and surveys. This wide application demonstrates the model's versatility and relevance in understanding health communication strategies and their impact on behaviour change.

Figure 1 shows the research framework used in this study for message strategies in cervical cancer campaign posters in Malaysia. The figure shows that the independent variables are four categories of message strategies based on EPPM theory, and the dependent variable is the cervical cancer campaign in MOH posters.
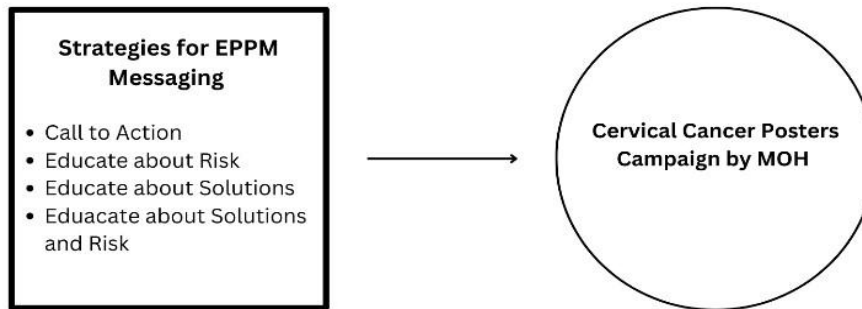
Figure 1: Research framework for message strategies in cervical cancer campaign posters by MOH

METHODOLOGY

The research design is crucial to ensure that research goals are achieved and research questions are addressed satisfactorily. Therefore, this study aims to examine the effectiveness of message strategies in digital posters used by the MOH in raising awareness and addressing the increase of cervical cancer in Malaysia.

To collect and analyse data, this study employs a quantitative content analysis on 38 posters. It involves three phases of research such as 'Phase 1: Identification of audience engagement levels towards MOH's cervical cancer posters', 'Phase 2: Identification of health message strategies in MOH's cervical cancer poster campaigns', and 'Phase 3: Analysis of the use of images and health message strategies in MOH's cervical cancer poster campaigns'. Before entering these research phases, this study will explain several sub-topics involved in achieving the predetermined research objectives.

Research Sampling

For this study, the researchers used the purposive sampling technique, which refers to the process of selecting samples carefully and strategically to achieve the set research goals (Latifah & Mohamad Khairuddin, 2019). Therefore, this study focused on cervical cancer health campaign posters uploaded on MOH's official website, infosihat.gov.my and MOH's Facebook, Instagram, and X applications. A total of 38 posters were collected from these mediums. In the study, the researchers examine the content of the selected posters and conduct analysis based on the EPPM model to identify the message strategies used in each poster that has been disseminated to the public.

Coding Book

In this study, the coding book refers to a set of guidelines or systems used to interpret data collected throughout the study. Also, the coding book typically includes a list of codes or categories added to the collected data and facilitates the researcher in identifying,

categorising, and translating this information. The research process becomes more organised and systematic using a codebook. This can increase the reliability of the study as the data analysis process can be monitored and reviewed more carefully. The coding book list is adapted from the study by Nurul Asyiqin and Shamsiah (2023) regarding *Message Strategies in Diabetes Campaign Posters in Malaysia*.

Coding Sheet

This study uses a coding sheet to collect research data for analysis. The coding sheet consists of a set of questions developed by the researchers. The purpose of the coding sheet is to serve as a tool to ensure the coding process is orderly and uniform. Moreover, the coding sheet for this study is also adapted from the study by Nurul Asyiqin and Shamsiah (2023). Figure 2 shows an example of a portion of the Coding Sheet used.

Figure 2: Example of the coding sheets sample used in this study

Research Process

As outlined in Figure 3, this study involves three phases, all of which are crucial to ensure that the research can be analysed accurately and efficiently and achieve the objectives set at the beginning of the research process.
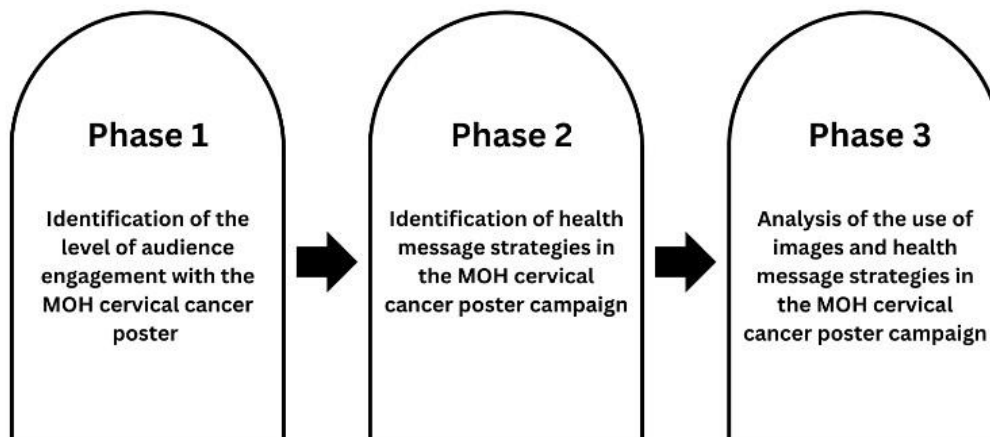
Figure 3: Research phases

Phase 1: Data Collection

In this first phase, the researchers began the data collection process. This process is to identify the level of audience engagement with cervical cancer health posters by MOH on five media platforms: the infosihat.gov.my website, MOH's official Facebook, MOH's X application, Myhealth Portal's official Facebook, and the National Cancer Institute's official Facebook. In this phase, the work of searching and collecting posters uses keyword searches such as "Cervical Cancer", "uterine cancer", "pap smear", "screening test", and "HPV" on all five platforms. After completing the collection process using the predetermined keywords, the researchers will identify the total audience engagement with the posters displayed by MOH.

Phase 2: Instrument Development

In the second phase, the researchers examine the health message strategies used by the MOH in the display of digital cervical cancer posters using the Extended Parallel Process Model (EPPM). This model explains how rational considerations (efficacy beliefs) and emotional reactions (fear of health threats) determine an individual's behaviour. In this study's second phase, the researchers analyse each poster collected in Phase 1. Based on the EPPM model, the researchers focus on four message strategies in forming instruments adapted from the study by Nurul Asyiqin and Shamsiah (2023). Based on EPPM, the researchers focus on four message strategies, as stated below.

   i. Call to Action: It refers to messages aimed at encouraging people to take precautionary steps and protective actions to reduce threats.

   ii. Educate About Solutions: It refers to messages aimed at educating people about steps to manage cervical cancer.

   iii. Educate About Risks: It refers to messages aimed at educating people about the risks if they have cervical cancer.

   iv. Educate About Solutions and Risks: It refers to messages that educate about management steps and risks if one has cervical cancer.

Phase 3: Data Analysis

In this final phase, the researchers analyse the form of image usage and health message strategies used in cervical cancer campaign posters by the MOH using SPSS software. The collected data consists of poster content involving descriptive analysis and cross-tabulation.

After data collection, each point will undergo a data-cleaning process. Unsuitable and duplicate posters will be removed from the data set. Upon careful examination of the importance of data analysis, it is acknowledged that processes related to qualitative data analysis are connected with data collection, data reduction, data presentation, and research findings conclusion. Indirectly, it can assist in decision-making, pattern and trend detection, and the discovery of observations that can stimulate innovation and progress.

Reliability and Inter-Coder Validity Test
Before conducting the research data analysis, the researchers carried out a reliability test. This helps the researchers identify the feasibility level of the study to be conducted while increasing the validity of the research instrument. This study performed the reliability test together with evaluator two or inter-coder, who analysed 10% of the research data.

RESULTS AND DISCUSSION

Primary Data Analysis
The original data collected by the researchers consisted of 38 posters. After performing the data cleaning process, 17 posters were identified as unsuitable for use in the study, and there were five duplicate posters. After the data cleaning process was completed, only 16 posters could be used for the analysis. Next, to conduct the inter-coder reliability test, this study selected 10% of the posters used for analysis. Thus, this 10% encompasses two posters used for the purpose of inter-coder reliability.

Descriptive Analysis
The descriptive analysis of cervical cancer health campaign posters shows the data collected in this study, which involved findings on the types of platforms, poster dates, campaign length, and methods of uploading posters.

Table 1: Types of platforms

Type of Platform	Frequency	Percentage %
MOH's *Facebook*	6	37.5
info.sihat.gov.my website	5	31.3
National Cancer Institute *Facebook*	3	18.8
Facebook Myhealth Portal	1	6.3
Official MOH *X*	1	6.3

Table 1 shows the types of platforms used in this study to collect posters related to the cervical cancer campaign. The five platforms are: the Official MOH Facebook page with six posters (37.5%), the infosihat.gov.my website with five posters (31.3%), the National Cancer Institute Facebook page with three posters (18.8%), the Myhealth Portal Facebook page with one poster (6.3%), and the Official MOH X (formerly Twitter) account with one poster (6.3%).

Identification of Audience Engagement Levels Towards Cervical Cancer Campaign Posters by the Ministry of Health
This section explains in more detail the total audience engagement with digital posters of the cervical cancer health campaign by the Ministry of Health Malaysia (MOH). The research findings for engagement levels are as follows:

Table 2: Audience engagement

	Positive Responds	Negative Responds	Shares	Comments
Total	4,754	0	1,916	137
N=16				**100.0%**

Table 2 shows the total audience engagement obtained from five sources: the Official MOH Facebook page, the infosihat.gov.my website, the National Cancer Institute Facebook page, the Myhealth Portal Facebook page, and the Official MOH X (formerly Twitter) account. The number of audiences who responded positively to the cervical cancer posters totalled 4,754, while no one responded negatively to the released posters. As for poster sharing, 1,916 people shared or distributed MOH posters on their personal Facebook pages, and 137 people left comments on MOH's posters. Figure 4 shows examples of posters with the highest audience engagement levels.

Based on these findings, the researchers discovered that audiences enjoy sharing information on social media platforms. According to Srikar et al. (2020), social media is used as a medium for information transfer. However, the information disseminated through social media should consider the responsibility of educating and leading society towards goodness and away from wrongdoing (Abbas et al., 2019). Therefore, sharing this digital poster display can increase the audience's awareness of the cervical cancer awareness campaign.

Figure 4: Examples of posters with the highest audience engagement
Source: Facebook MOH Facebook page

Identification of Health Message Strategies in Cervical Cancer Campaign Posters by the Ministry of Health Malaysia

To identify the health message strategies used by the MOH, the main messages and secondary messages in digital posters of the cervical cancer health campaign were analysed using descriptive frequency analysis. Therefore, Table 3 shows the frequency of message strategies in main and secondary messages.

Table 3: Total frequency of message strategies in main and secondary messages

Message Strategy	Main Message (Yes)	Supplementary Message (Yes)
Educate About Risk	8 (50.0%)	4 (25.0%)
Call to Action	5 (31.3%)	3 (18.8%)
Others	1 (6.3%)	1 (6.3%)
Educate on Solution	0 (0.0%)	6 (37.5%)
N=16		**100.0%**

Educate About Solutions
The "educate about solutions" message strategy refers to posters that explain the steps to manage cervical cancer. The findings show that there was no "educate about solutions" message strategy in the main messages, but there was a frequency of six (33.3%) in the secondary messages. Figure 5 below shows an example of a poster with the "educate about solutions" message strategy.

Figure 5: Example of a poster with the "call to action" message strategy
Source: infosihat.gov.my website

The solution-focused messages were communicated through both textual and visual elements. For instance, as shown in Figure 5, the posters presented step-by-step guides for preventive measures, including visual diagrams of the pap smear procedure, vaccination schedules, and early detection methods. The solutions were typically presented using informative graphics, numbered lists, or flow charts to make the information easily digestible. Icons and symbols were used to represent different prevention methods while supporting text provided detailed explanations of each solution. Using medical illustrations and simplified diagrams helped demystify medical procedures like pap smear tests, making them appear more approachable to the target audience.

Educate About Risks

The "educate about risks" message strategy refers to messages that explain the risks of having cervical cancer. Table 3 shows that the frequency of this strategy in both main and secondary messages is eight (50.0%), which is the highest frequency compared to other message strategies in the main messages. For secondary messages, the frequency of this message strategy is four (25.0%). Figure 6 below shows an example of a poster with the "educate about risks" message strategy.

Figure 6: Example of posters with the "educate about risks" message strategy
Source: MOH Facebook and National Cancer Institute Official Facebook

The risk education strategy manifested through both stark visual representations and clear textual warnings. As illustrated in Figure 6, posters employed medical imagery showing the progression of cervical cancer and statistics on mortality rates and risk factors. The visual elements included anatomical diagrams highlighting affected areas, warning signs depicted through red colour coding, and icons representing various risk factors. Semiotically, these posters used universal danger symbols, such as exclamation marks and warning signs, to emphasize the severity of the risks. Text elements included factual statements about cancer progression, mortality rates, and explicit descriptions of symptoms, often presented in a severity hierarchy to emphasise early detection's importance.

Educate about Solutions and Risks

The "educate about solutions and risks" message strategy refers to messages that explain the steps to manage and the risks of having cervical cancer. Table 3 shows that the "educate about solutions and risks" message strategy has the same frequency in both main and secondary messages, which is two (12.5%). Figure 7 below shows an example of a poster with the "educate about solutions and risks" message strategy.

Figure 7: Example of posters with the "educate about solutions and risks" message strategy
Source: infosihat.gov.my website and Official National Cancer Institute website

The "educate about solutions and risks" message strategy demonstrated a balanced approach by presenting threats and their corresponding preventive measures simultaneously. As shown in Figure 7, these posters employed a dual-panel or split-screen design technique. On one side, they depicted the risks through medical illustrations of cervical cancer progression and warning signs, while the opposing side presented solution-oriented content such as screening procedures and prevention methods.

For example, one poster showed the risk factors of HPV infection alongside immediate actionable steps for prevention, using contrasting colours to differentiate between risks (often in red or warning colours) and solutions (in calming blues or greens). The semiotic elements included both cautionary symbols for risks and positive checkmarks or arrows for solutions, creating a visual narrative that moved from problem identification to problem-solving. Text elements were carefully balanced, with risk statistics or warning signs immediately followed by empowering messages about prevention and treatment options. This dual presentation strategy was particularly effective in health screening and pap smear awareness posters, where the consequences of delayed screening were shown alongside the benefits and simplicity of regular testing.

Call to Action
The "call to action" message strategy refers to messages that are in the form of a call to act to prevent and undergo health screenings for cervical cancer. The findings in Table 3 show a frequency of five (31.3%) in main messages and three (18.8%) in secondary messages. Figure 8 below shows an example of a poster with the "call to action" message strategy.

Figure 8: Example of a poster with the "call to action" message strategy
Source: Myhealth Portal Facebook

The "call to action" message strategy was evident through specific directive elements in the posters. For example, in the posters focused on HPV prevention (Figure 8), direct phrases such as "Get Your HPV Vaccination Now" and "Schedule Your Screening Today" were prominently displayed, often accompanied by actionable information like clinic locations or contact numbers. These elements were typically presented in imperative language and highlighted through contrasting colours or larger text sizes to draw attention and prompt immediate action from viewers. The visual elements supporting these calls to action included arrows pointing to action steps, highlighted phone numbers, and icons directing to healthcare facilities.

Nine categories of messages are analysed based on the posters issued by MOH (Ministry of Health Malaysia). Table 4 shows the frequency findings of message strategies in the main message categories used in MOH's posters.

Table 4: Main message categories

Message Category /Message Strategy	Call to Action	Educate about Solution	Educate about Risk	Educate about Solutions & Risk	Others	Total
Healthy Lifestyle	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)
Health Screening	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)
Health Treatment	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (100.0%)
Health Education	1 (20.0%)	0 (0.0%)	3 (60.0%)	0 (0.0%)	1 (20.0%)	5 (100.0%)
Cervical Cancer	0 (0.0%)	0 (0.0%)	3 (100.0%)	0 (0.0%)	0 (0.0%)	3 (100.0%)
Sexual Activity	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)
Pap smear	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)
HPV Prevention	4 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (100.0%)

For the "call to action" message strategy, the "HPV prevention" category has the highest frequency compared to other categories, with four (100%). The "educate about risks" strategy shows the categories "cervical cancer" and "health education" as having the highest frequency values compared to other categories, with frequencies of three (100%) and three (60%), respectively. Additionally, the "educate about solutions and risks" message strategy shows the categories "health screening" and "pap smear" as having the same highest frequency count of one (100%) each. However, there are no highest values for the "educate about solutions" message strategy, as all categories show a frequency count of zero.

Table 5: Secondary message categories

Message Category /Message Strategy	Call to Action	Educate about Solution	Educate about Risk	Educate about Solutions & Risk	Others	Total
Healthy Lifestyle	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Health Screening	2 (33.3%)	2 (33.3%)	0 (0.0%)	2 (33.3%)	0 (0.0%)	6 (100%)
Health Treatment	0 (0.0%)	3 (100%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (100%)
Health Education	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (100%)
Cervical Cancer	0 (0.0%)	0 (0.0%)	2 (66.7%)	0 (0.0%)	1 (33.3%)	3 (100%)
Sexual Activity	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100%)
Pap smear	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100%)	0 (0.0%)	1 (100%)
HPV Prevention	4 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (100%)
Cervical Cancer Symptoms	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100%)

Table 5 shows the frequency findings of message strategies used in the secondary message categories based on the posters displayed by MOH. According to this table, the category with the highest frequency compared to other categories for the "call to action" message strategy is "health screening". This can be seen with the highest frequency value of two (33.3%). Next, for the "educate about solutions" message strategy, the highest frequency is in the "health treatment" category, with a frequency of three (100%). Furthermore, for the "educate about risks" message strategy, the "cervical cancer" category has two (66.7%), which is the highest frequency compared to other categories. Finally, the category with the highest frequency value for the "educate about solutions and risks" message strategy is "health screening" with two (33.3%).

The researchers of this study can see that both message categories are interconnected in educating the public about the threats and dangers of cervical cancer. This is because a low education status will result in a very weak level of knowledge to understand cervical cancer issues and will influence attitudes towards cervical cancer screening among women (Roland et al., 2016). For example, the findings from posters displaying messages such as "7 Facts About Cervical Cancer" and "Factors That Increase the Risk of Cervical Cancer" have clearly shown the "educate about risks" message strategy regarding "cervical cancer" and "health education". Directly, this observed strategy aims to educate the public about the importance of health education and the risks of cervical cancer.

Moreover, the main message strategy for "educate about solutions and risks" is divided into two main message categories, namely "health screening" and "pap smear", which show the same frequency. These two are related to each other because one of the tests or health screenings for cervical cancer is the pap smear test. This is explained in a study by Riaz et al. (2020) that the level of knowledge is still low among female students, but their attitudes and perceptions are optimal regarding the implications of cervical cancer infection and its prevention through pap smears. Therefore, the "educate about solutions and risks" message strategy can educate women about the steps to prevent cervical cancer and the risks of this disease.

Forms of Image Usage by MOH in Cervical Cancer Campaign Posters
This section explains in more detail the forms of image usage and health message strategies in cervical cancer campaign posters by the MOH.

Table 6: Main images aligned with main messages

	Frequency	Percentage (%)
Parallel	13	81.3
Not Parallel	3	18.8
N=16		**100%**

Table 6 shows the frequency findings of images from 16 analysed posters that align with the main messages in cervical cancer campaign posters. Posters that align with the main message show a frequency of 13 (81.3%) and three (18.8%) frequencies for those that do not support the main message of the poster.

Analysis of Image Usage Forms and Health Message Strategies Used in Cervical Cancer Campaign Posters by the MOH
This section will describe the total frequency findings of message strategies in main images and secondary images of digital posters for the cervical cancer health campaign by the MOH.

Table 7: Total frequency of message strategies in main and secondary images

Message Strategy	Main Image	Supplementary Message
Educate about Risk	5 (31.3%)	5 (31.3%)
Others	5 (31.3%)	5 (31.3%)
Educate about Risk & Solution	3 (18.8%)	2 (12.5%)
Call to Action	3 (18.8%)	2 (12.5%)
Educate about Solution	0 (0.0%)	2 (12.5%)
N=16		**100.0%**

Table 7 shows the frequency of message strategies in main and secondary images. Based on the table, the "educate about risks" message strategy for main images has the highest frequency value compared to other strategies, which is five (31.3%), with secondary images also having a frequency of five (31.3%). Next, there are five (31.3%) main and secondary images occurrences where the message strategy cannot be determined. Then, for the "educate about solutions" strategy, there is no frequency for main images, but there are two (12.5%) secondary images. The "call to action" strategy has a frequency of three (18.8%) for main images and two (12.5%) for secondary images. Finally, for the "educate about

solutions and risks" message strategy, there are only three (18.8%) occurrences of main images, while there are two (12.5%) for secondary images.

The study findings show that the "educate about risks" message strategy in the main images has the highest frequency compared to other message strategies. This can be further supported by a previous study by Kotowski et al. (2011), who emphasised that elements of threat and effectiveness need to be incorporated into messages. Additionally, the threat element should be convincing to convey the message to the public, especially women, that the disease can happen to anyone. For example, the poster image displaying a woman's cervix infected with the HPV virus (analysed in this study) is one of the images that applies the "educate about risks" message strategy.

Table 8: Main image categories

Message Category/ Message Strategy	Call to Action	Educate about Solution	Educate about Risk	Educate about Solutions & Risk	Others	Total
Healthy Lifestyle	2 (66.7 %)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (33.3%)	3 (100.0%)
Health Screening	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)
Health Treatment	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Health Education	1 (25.0%)	0 (0.0%)	1 (25.0%)	1 (25.0%)	1 (25.0%)	4 (100.0%)
Cervical Cancer	0 (0.0%)	0 (0.0%)	4 (100.0%)	0 (0.0%)	0 (0.0%)	4 (100.0%)
Sexual Activity	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)
Pap smear	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
HPV Prevention	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Awareness	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (100.0%)	3 (100.0%)

Table 9: Secondary image categories

Message Category /Message Strategy	Call to Action	Educate about Solution	Educate about Risk	Educate about Solutions & Risk	Others	Total
Healthy Lifestyle	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100%)
Health Screening	1 (33.3%)	0 (0.0%)	1 (33.3%)	0 (0.0%)	0 (0.0%)	2 (100%)
Health Treatment	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Health Education	0 (0.0%)	0 (0.0%)	1 (100%)	0 (0.0%)	0 (0.0%)	1 (100%)
Cervical Cancer	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100%)	0 (0.0%)	1 (100%)
Sexual Activity	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Pap smear	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100%)	0 (0.0%)	1 (100%)
HPV Prevention	0 (0.0%)	1 (33.3%)	2 (66.7%)	0 (0.0%)	0 (0.0%)	3 (100%)
Awareness	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (100%)	2 (100%)

Symptoms of Cancer Cervix	0 (0.0%)	0 (0.0%)	1 (100%)	0 (0.0%)	0 (0.0%)	1 (100%)
HPV Virus	0 (0.0%)	0 (0.0%)	1 (100%)	0 (0.0%)	0 (0.0%)	1 (100%)
No Side Images	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100%)	1 (100%)

Tables 8 and 9 present the findings for the main image and secondary image categories. In Table 8, the "healthy lifestyle" message category in the "call to action" message strategy has the highest frequency value compared to other categories, which is two (66.7%). For the "educate about risks" strategy, the "cervical cancer" category has a frequency of four (100%), which is the highest frequency category compared to other categories. For the "educate about solutions and risks" message strategy, the categories with the highest frequency are "health screening" and "sexual activity" with a frequency of one (100.0%) each, and finally, the "educate about solutions" message strategy, where no frequency was recorded.

Table 9 shows the total frequency of secondary image categories in the poster message strategies for the cervical cancer health campaign by MOH based on message categories. Based on Table 9, the "health screening" message category in the "call to action" message strategy has the highest frequency value compared to other categories, which is one (33.3%). For the "educate about solutions" strategy, the "HPV prevention" category has a frequency of 33.3%, which is the category with the highest frequency compared to other categories. For the "educate about risks" message strategy, the category with the highest frequency is also "HPV prevention" with a frequency of two (66.7%), and finally, the "educate about solutions and risks" message strategy, with the highest total frequency seen in the "cervical cancer" and "pap smear" categories, each with one occurrence (100%).

Based on these study findings, the researchers can see that the display of cervical cancer health campaign posters by MOH largely applies images with threat elements to evoke feelings of fear and knowledge about the threat of this disease. This is because increasing the level of knowledge is very important to develop a better understanding to influence women's attitudes toward performing pap smear screening tests for early prevention and early treatment of cervical cancer (Marlow et al., 2019). Therefore, the findings of this study clearly show that threat becomes one of the reasons women become aware of the dangers of cervical cancer and make changes to their lifestyle.

CONCLUSION

In conclusion, this study has answered all research questions using the EPPM theory. Each message strategy in the model has been linked to the research findings, supported by previous studies conducted by other researchers. The results clearly show that most posters displayed by the Ministry of Health Malaysia (MOH) mostly apply the "educate about risks" and "call to action" message strategies for both main and secondary message categories. The posters only focus on the "educate about risks" message strategy for the image categories. However, according to the EPPM model, the "call to action" message strategy is considered the best approach in motivating individuals to implement changes in health behaviour.

Nevertheless, this study demonstrates that the EPPM model can be useful in analysing message strategies in cervical cancer health posters. Based on the four message strategies in the EPPM model, namely "call to action," "educate about solutions", "educate about risks",

and "educate about solutions and risks", the researchers of this study can evaluate how messages in these cervical cancer campaign posters can influence public perception and action towards preventing this disease. Furthermore, using the EPPM in the context of other diseases and the field of health communication can be delivered more strategically and potentially change public behaviour.

Therefore, this study should be used as a reference by other researchers in the future to conduct more detailed studies on the same subject. This is important because the research results can significantly contribute to the development of health message strategies, particularly in other media platforms such as advertising and journalism related to cervical cancer in the future.

BIODATA

Noor Sahila Mohamed Sulaiman was an undergraduate student at the Center for Research in Media and Communication, and was a student under the supervision of Dr. Shamsiah Abd Kadir. The thesis and research area conducted were related to message strategies in health communication. Email: nrsahila34@gmail.com

Shamsiah Abd Kadir is a senior lecturer at the Centre for Research in Media & Communication and a research fellow in Komunikasi Kesihatan (Healthcomm)-UKM Research Group, Universiti Kebangsaan Malaysia. Her research interests include Health Communication, Kansei Engineering, Big Data Analytics, Emotion & Well-being, and Media & Information Warfare. Email: shamkadir@ukm.edu.my

REFERENCES

Abbas, J., Aman, J., Nurunnabi, M., & Bano, S. (2019). The impact of social media on learning behavior for sustainable education: Evidence of students from selected universities in Pakistan. *Sustainability*, *11*(6), 1683.

Atkin, C. K., & Rice, R. E. (2012). *24 Advances in public communication campaigns*. Blackwell Publishing Ltd. https://doi.org/10.1002/9781444361506.wbiems129

Backholer, K., Browne, J., Wright, A., Grenfell, R., & Peeters, A. (2021). Chapter 6 Digital determinants of health: The digital transformation. *Deakin University*.

Balqis-Ali, N. Z., Anis-Syakira, J., Fun, W. H., Mohd Said, Z., ..., & Sararaks, S. (2024). Achieving cervical cancer elimination: The simulated impacts of HPV vaccination and transitioning from liquid-based cytology to HPV-based screening test. *PloS One*, *19*(7).

Barrett T. (2010). Posting the right message. *The Lancet,* 375(9717). https://doi.org/ftncvt

Idris, I. I. B. M., Rahamad, M. S., & Syed, M. A. M. (2021). Perbincangan orientalisme melalui analisis semiotika dalam animasi. *JKMJC*, *37*(1), 295–313.

Happer, C., & Philo, G. (2013). The role of the media in the construction of public belief and social change. *Journal of Social and Political Psychology*, *1*(1), 321-336.

Hastings, G., & Domegan, C. (2023). *Social marketing: Principles and practice for delivering global change*. Routledge.

HPV Information Centre. (2023). Human Papillomavirus and related diseases report. https://hpvcentre.net/statistics/reports/MYS.pdf

Jackson, M., Brennan, L., & Parker, L. (2021). The public health community's use of social media for policy advocacy: A scoping review and suggestions to advance the field. *Public Health, 198*, 146-155.

Johnson, B. T., & Eagly, A. H. (1989). *Effects of involvement on persuasion: A meta-analysis*. *Journal of Consumer Research, 15*(2), 135-146.

Khoo, S. P., Lim, W. T., Rajasuriar, R., Nasir, N. H., Gravitt, P., & Woo, Y. L. (2021). The acceptability and preference of vaginal self-sampling for human papillomavirus (HPV) testing among a multi-ethnic Asian female population. *Cancer Prevention Research, 14*(1), 105-112. https://doi.org/10.1158/1940-6207.CAPR-20-0280

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

Marlow, L., McBride, E., Varnes, L., & Waller, J. (2019). Barriers to cervical screening among older women from hard-to-reach groups: A qualitative study in England. *BMC Women's Health, 19*, 1-10.

Meade, C., Christy, S. M., & Gwede, C. (2019). Cancer education communications: Emphasizing culture, health literacy, and theory and incorporating technology. 2019 International Cancer Education Conference Program and Abstracts with EACE, *Journal of Cancer Education, 34*, 1-58. https://doi.org/10.1007/s13187-019-01590-7

Ministry of Health Malaysia. (2023). *National Health and Morbidity Survey 2023: Women's Health*. Institute for Public Health, Ministry of Health Malaysia.

Mohamad Hafifi Jamri, Nurzali Ismail, Jamilah Hj. Ahmad, & Darshan Singh. (2017). Kempen kesedaran kesihatan awam: Satu tinjauan literatur dari sudut penggunaan media dan komunikasi di Malaysia. *Jurnal Komunikasi: Malaysian Journal of Communication, 33*(3), 1-20.

Mohsin, F. M., Ali, S. H., Chong, S. K., Parikh, R. S., DiClemente, R. J., & Hu, L. (2023). Social Media Utilization within Asian American Families and its role in healthy lifestyle behavioral influence: results from a Nationwide Survey. *Social Media+ Society*, *9*(3).

Nurul Asyiqin Ab Rashid, & Shamsiah Abd Kadir. (2023). Strategi mesej dalam poster kempen diabetes Kementerian Kesihatan Malaysia. *Jurnal Komunikasi: Malaysian Journal of Communication, 39*(3), 180-201.

Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. Springer-Verlag New York Inc. https://doi.org/bdvtfr

Rabiatul Adawiyah Koh Abdullah. (2023, January 15). Kanser erviks kerap serang wanita muda. *Utusan Malaysia*. https://www.utusan.com.my/gaya/kesihatan/2023/01/kanser-serviks-kerap-serang-wanita-muda/

Riaz, L., Manazir, S., Jawed, F., Ali, S. A., & Riaz, R. (2020). Knowledge, perception, and prevention practices related to human papillomavirus-based cervical cancer and its socioeconomic correlates among women in Karachi, Pakistan. *Cureus*, *12*(3).

Rosli, H. (2017). Preventing childhood obesity campaign: The Ministry of Health (Malaysia) health poster campaign. *International Journal of Multidisciplinary Thought*, *6*(1), 177-183.

Schliemann, D., Su, T. T., Paramasivam, D., Somasundaram, S., Ibrahim Tamin, N. S. B., Dahlui, M., & Donnelly, M. (2019). The systematic cultural adaptation of a UK public health cancer awareness raising programme for Malaysia: The Be Cancer Alert Campaign. *Translational Behavioral Medicine*, *9*(6), 1087-1099.

Sharma, M. (2021). *Theoretical foundations of health education and health promotion*. Jones & Bartlett Learning.

Srikar, K., Chowdary, K. R., & Tejaswini, M. (2020). Transfer of technology through social media in pandemic perspective. *Current Journal of Applied Science and Technology*, *39*(47), 78-84.

Sukrong, M., Prapaisilp, P., Juntamongkol, T., Siranart, N., Phoolcharoen, N., Assavapokee, N., & Santibenchakul, S. (2024). Knowledge regarding human papillomavirus and cervical cancer prevention among medical students from Chulalongkorn University in Thailand. *BMC Women's Health*, *24*(1), 129.

Sunguya, B. F., Munisamy, M., Pongpanich, S., Yasuoka, J., & Jimba, M. (2016). Ability of HIV advocacy to modify behavioral norms and treatment impact: a systematic review. *American Journal of Public Health*, *106*(8), e1-e8.

Townsend, B., Tenni, B. F., Goldman, S., & Gleeson, D. (2023). Public health advocacy strategies to influence policy agendas: Lessons from a narrative review of success in trade policy. *Globalization and Health*, *19*(1), 60.

Witte, K. (1992). Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs, 59*(4), 329–349. https://doi.org/fkh9kh

World Health Organization (WHO). (2024, March 5). Cervical cancer fact sheet. https://www.who.int/news-room/fact-sheets/detail/cervical-cancer

Worthington, A. K. (2021). *Persuasion theory in action: An open educational resource*. UA Pressbooks.

Zoller, H. M., & Kline, K. N. (2008). Theoretical contributions of interpretive and critical research in health communication. In C. Beck (Ed.), *Communication yearbook* (Vol. 32, pp. 89-136). New York: Routledge.