DEVELOPMENT OF STRATEGIES FOR CANCER AWARENESS IMPROVEMENT IN THE COMMUNITY

*Ahmad Saharrudin bin Mat Akir[1], Engku Mardiah Engku Kamarudin[2], Noor Syamilah Zakaria[3], Siti Nordarma Ab. Rahman[4], Mohd Imran Yusoff[5]

[1,2,3]Faculty of Education Studies, Universiti Putra Malaysia, Serdang, Malaysia, [4,5]School of Education Studies, Universiti Sains Malaysia

Article Info	ABSTRACT
	This study aims to identify and analyze the main factors that influence cancer awareness at the community level. Using a multidimensional approach, this study assessed the personal, behavioral, and environmental elements associated with cancer awareness. Data were collected through expert consensus assessment, with results presented in three tables that include personal, behavioral, and environmental aspects. The results of the study show that "Outcome Expectations" are the most important personal factors, while "Health Management Behaviors" and "Supportive Behaviors" appear as critical behavioral elements. In terms of environment, "Social Environment" was identified as the most influential factor. All these factors reached 100% consensus among the experts involved. These findings highlight the importance of a holistic approach to raising cancer awareness, which combines strategies that target personal, behavioral, and environmental aspects. This study suggests that effective cancer awareness programs should focus on the development of positive outcome expectancies, increasing self-efficacy, encouraging proactive health behaviors, and strengthening a supportive social environment. The implications of this study include the development of cancer awareness interventions that are more comprehensive and tailored to the needs of the community. Further research is suggested to explore the interaction between these factors and examine the long-term effectiveness of programs that address multiple dimensions of cancer awareness simultaneously.

Corresponding Author:

*Ahmad Saharrudin bin Mat Akir,
Faculty of Education Study, Universiti Putra Malaysia, Serdang, Malaysia Email: amad454n@gmail.com

INTRODUCTION

Cancer is a global disease with a consistent increase in the number of cases from year to year. Healthcare systems around the world face a tough challenge in dealing with this issue. Cancer is a type of disease that is associated with an imbalance in the replication and response of cells in the human body. Cancer is the second leading cause of death after heart disease. The number of cancers in Malaysia is reported as 115.2 cases per 100,000 population (Ministry of Health Malaysia, 2023). According to statistics from the Ministry of Health Malaysia (KKM), among the cancers that Malaysians often face are breast, bowel, lung, blood (lymphoma), nose, and throat (nasopharynx) cancer. The type of cancer that often attacks male patients is lung, prostate, and colon cancer while for female patients it is breast, cervical, and ovarian cancer. Women in Malaysia have a higher risk of developing cancer than men.

The National Cancer Institute (2015) revealed that cancer attack factors are caused by age, heredity, exposure to chemicals, and ultraviolet radiation. According to Kulhánová et al., (2020), lifestyle and environmental factors are also associated with an increased risk of cancer including smoking, obesity, unhealthy diet, and lack of physical activity. Therefore, cancer awareness is the basis for early detection and behavior to enjoy better health. Community awareness of cancer is a major factor in influencing their health screening behavior. Lack of awareness of cancer contributes to the delay in the reporting of cancer cases and affects healthcare facilities (Sahu et al., 2020). A lack of knowledge about cancer-related symptoms will hurt human health (Algamdi et al., 2021). A sufficient level of awareness and knowledge about the signs of cancer may have a great impact on dealing with this disease. This study aims to explore a comprehensive understanding of the factors that influence cancer awareness among the community and assist in the development of more effective strategies to increase the level of public awareness. Therefore, it is important to assess the Malaysian community's awareness of cancer symptoms and risk factors, especially for cancer.

LITERATURE REVIEW

Previous studies have revealed that increased health awareness has encouraged the community to perform cancer screenings for early detection purposes. However, most studies only focus on specific cancer awareness, and very few studies on the whole of cancer (Sahu et al., 2020). The study found that individuals with a family history of cancer are more likely to have a high level of knowledge to identify cancer warning symptoms. This finding proves that individuals who have a family with cancer may be more motivated to recognize the warning signs of cancer (Ismail et al., 2024) and live a healthy life.

Previous studies have provided relevant insights into various factors that influence cancer awareness and quality of life in the community, especially in a more modern context. Basic knowledge about cancer from the aspect of factors related to lifestyle, environment, or unusual symptoms related to cancer is considered an important element in preventing the occurrence of cancer and reducing the risk of cancer treatment in the final stages (Algamdi et al., 2021). Study Ismail et al., (2024) found lack of knowledge may cause the community to ignore and will experience more serious symptoms if not treated. Individuals will modify their behavior based on their knowledge of cancer risk factors and seek medical advice when they become aware of cancer symptoms (Algamdi et al., 2021). The importance of knowing the symptoms shows the need to educate to increase awareness about cancer (Sahu et al., 2020). One of the ways to educate the public and reduce the incidence of cancer is to develop strategies to educate the community (Algamdi et al., 2021). A lot previous studies have focused on the importance of raising public awareness of cancer symptoms through knowledge.

The delay in getting a health screening is caused by factors such as illiteracy, financial constraints, myths, and lack of awareness (Sahu et al., 2020). Screening is an important preventive measure in cancer control. A study by Sahu et al., (2020) found that awareness and attitudes towards health screening in India are limited. This is because most screening tests are available at certain centers and the available screening methods are not being used adequately. A delay in screening will cause cancer to go undetected. Symptoms are indicators that can be seen by others while symptoms are indicators that can be felt or seen by individuals who experience them (Ismail et al., 2024). Therefore, Adequate knowledge of cancer warning signs is essential for early detection of the disease.

The study by Afaya et al., (2023) about the awareness of breast cancer among women is very low. This study found that the factors of women's awareness of breast cancer are older age, wealth status, exposure to the media, higher formal education, and being married. It is important that the variety of media channels used to spread information about breast cancer has an impact on cancer awareness. Since cancer awareness is an important element of cancer control programs, the sources of information should be carefully considered and may be useful in providing awareness (Sahu et al., 2020). However, there is less research on the relationship between breast cancer awareness and health information literacy (Liu et al., 2020). Information about early signs and symptoms of certain cancers should be noted. However, the study by Sahu et al., (2020) found that the level of awareness for breast cancer is good compared to cervical cancer.

In this study, the use of the Nominal Group Technique (NGT) helped gather ideas from various participants about strategies that can be applied to increase cancer awareness. This method allows participants to share their views and prioritize the most effective approach. Increasing cancer awareness is important to reduce the burden of disease risk in Malaysia to improve the quality of life of the community. This study can indirectly identify ways to improve access to health information and resources, especially in the community. Overall, this study is important to plan and form a comprehensive and effective approach to dealing with cancer through increased awareness at the community level.

The Theory

To increase cancer awareness in the community, the use of health theory is important to develop effective strategies. These theories help frame to understand the factors that influence health behavior as well as the best techniques in influencing behavior change. Among the theories suitable for this study are the Diffusion of Innovations Theory, Social Cognitive Theory (SCT), Health Belief Model (HBM), and Theory of Planned Behavior (TPB). These theories provide a unique and meaningful perspective to shape cancer awareness strategies tailored to community needs. In summary, we used Social Cognitive Theory (SCT) in this study because this theory is a dominant theory with community awareness and emphasizes the importance of interaction between personal factors, behavior, and the environment in shaping health behavior.
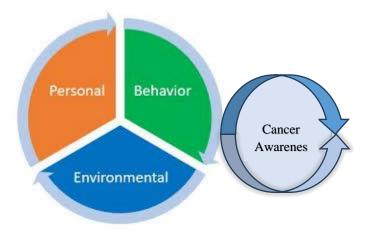
Figure 1: Research Model

Social Cognitive Theory (SCT) was developed by Albert Bandura. This theory is the most influential in the field of psychology and health behavior. This theory emphasizes that individual behavior is influenced by the interaction between personal factors, learned behavior, and the social environment. In the context of this study, SCT provides a strong theoretical framework for understanding how health behaviors can be formed, changed, and maintained through social interactions and personal experiences. Overall, Social Cognitive Theory provides a dynamic and comprehensive framework for understanding the influence of health behaviors in the community.

Table 1: List of constructs and items found in the research model.

Construct	Items
Personal	Self-Efficacy: • Confidence in one's ability to perform healthy behaviors • Belief in the ability to overcome barriers in raising cancer awareness Outcome Expectations: • Beliefs about the positive effects of raising cancer awareness • Perceptions of personal and community benefits from cancer prevention efforts Knowledge: • Understanding of cancer risk factors • Awareness of early signs and symptoms of cancer Perceived Control: • Beliefs about the ability to control the risk of cancer • Perceptions of power to influence one's own health Motivation: • Internal motivation to raise cancer awareness • Factors that encourage involvement in cancer prevention activities Personal Experience: • experience related to cancer (personal or family) • The effect of the experience on health attitudes and behaviors
Behavior	Information Seeking Behavior: • Frequency of searching for information about cancer • Use of multiple sources to obtain cancer information Preventive Behavior: • Healthy lifestyle practices to reduce the risk of cancer • Participation in cancer screening activities Communication Behavior: • Frequency of discussing cancer issues with others • Willingness to share cancer information in the community

Participation Behavior:
- Involvement in cancer awareness programs
- Participation in health related events in the community

Health Management Behavior:
- Regular monitoring of personal health
- Taking measures to reduce cancer risk factors

Supportive Behavior:
- Provide support to cancer patients or their families
- Involvement in volunteer activities related to cancer

Environment	Information Access: • Availability of reliable sources of cancer information • The existence of health information centers in the community Health Infrastructure: • Availability of health facilities for cancer screening and diagnosis • The quality of cancer-related health services in the area Policies and Regulations: • The existence of policies that support cancer prevention • Regulations related to cancer risk factors (such as tobacco control) Community Support: • The existence of support groups for cancer patients and their families • Level of community involvement in health issues Media and Communication: • Media coverage of cancer-related issues • Availability of cancer awareness campaigns on mass and social media Social Environment: • Level of social support in the community for health behaviors • The influence of peers and family on cancer awareness

METHODOLOGY

This study uses an approach Nominal Group Technique(NGT). Purposive sampling was used for the selection of participants. The researcher selected participants who met the inclusion criteria and actively participated in the group discussion. The involvement of a total of 9 experts consisting of Doctor of Philosophy (PhD) students from 2 Malaysian public universities namely the University of Science Malaysia (USM) and the University of Sultan Idris Education (UPSI). The researcher conducted a face-to-face NGT session in the meeting room of the Penang Head of State Abdullah Fahim Mosque. The session has been running for 2 hours. Experts were gathered for a brainstorming session related to the NGT method. This collection aims to obtain ideas and solutions based on expert opinions. At the end of the session, the researcher made specific calculations using the NGT method in obtaining results to answer the objectives of this study.

NGT Technique Steps
NGT is a methodical technique that finds a group's common viewpoints on a given subject. Delbecq, Van de Ven, and Gustafson (1975, 108) described social planning scenarios as follows: exploratory research; citizen engagement; use of interdisciplinary specialists; and proposal assessment. Originally, it was thought of as a "participation technique for social planning situations." Since then, the method has been used in many different group contexts, including social science empirical research. Although it has been utilized in education research to some degree (O'Neil and Jackson, 1983; Lomax and McLeman, 1984; Lloyd-Jones, Fowell, and Bligh, 1999; MacPhail, 2001), it seems to be more frequently employed in the field of health studies when it comes to social science research. The highly

structured method includes. A highly structured NGT process that incorporates four distinct phases namely:

(1) Independent generation of ideas in response to stimulus questions.
(2) The sharing of these ideas in a round-robin manner without discussion.
(3) The explanation of each individual idea, and the grouping of similar ideas together.
(4) Individual voting to prioritize ideas.

In the first phase, participants were invited to consider what as a team we could or should do to enhance community health. The researcher took part in the NGT as both a facilitator and a participant. Note paper and pens were distributed to each participant, who was instructed to independently and silently jot down their ideas. Following the completion of each participant's session, all of the notes were compiled and put into an Excel data sheet that was shown on a large screen. The individual who had presented each proposal then had a discussion about it to make sure everyone understood what it meant. Some similar ideas were mixed.

After the ideas were generated, listed, and clarified as in stages 1 through 3, participants were asked to rank their top ideas using a condensed five card rating system that the current researcher had created step 4. This entailed assigning a set of five little, colored cards to each individual, along with a scoring system of one to five numbers and stars on each card. The individual was then asked to list their top five ideas on the cards. Each rates each concept as part of the standard NGT process. However, the researcher had previously employed this system years prior and discovered that participants were prone to making rating errors. For instance, the numbering sequence became jumbled when certain ideas received the same grade. We discovered that rating fifty or so concepts is a challenging and time-consuming undertaking. Furthermore, it didn't seem like much use to rate every concept because the session's goal was to come up with a single suggestion for action.

Data Analysis

This study presents 3 main constructs namely personnel, behavior, and environment. Each construct contains 6 items and involves three answer options, namely 1- disagree, 2- neutral, and 3- agree. The respondents discussed constructs and items given in groups. Next respondents involved will vote on the items based on own opinions. Analysis of the data obtained involves the value of the voting marks done by the respondents and will be converted into a percentage form. The results of the respondents' votes will be evaluated quantitatively through a ranking process or order of priority of ideas.

The results of the analyzed data involve the value of the voting marks done by experts which are converted into percentage values and compared with the evaluation conditions set based on the literature. The percentage of marks should be above 70% which is the measurement of the accepted range in NGT. The range must be parallel and correspond to the expert's view that the acceptance percentage should be based on the score percentage value where the applicability of the measured element must exceed 70%. While the findings of the elements are sorted based on the total score received to determine priority.

RESEARCH FINDINGS

Personal

Table 2: Cancer awareness for personal items

No	Items/elements	Total Items Score	Percentage %	Rank Priority	Voters Consensus
1	Self-Efficacy	26	96.30	2	Suitable
2	Outcome Expectations	27	100	1	Suitable
3	Knowledge	25	92.59	3	Suitable
4	Perceived Control	25	92.59	3	Suitable
5	Motivation	26	96.30	2	Suitable
6	Personal experience	26	96.30	2	Suitable

In the context of creating strategies to raise cancer awareness in the community, all six of the personal aspects assessed for cancer awareness have high value, according to the analytical results displayed in Table 2. With complete agreement (100%) from the raters, the element "Outcome Expectations" came up as the most significant factor, suggesting that result expectations play a crucial role in shaping behavior linked to cancer awareness (Smith et al., 2022). "Motivation", "Self-Efficacy", and "Personal Experience" all tied for second place with a score of 96.30%, highlighting the significance of these factors in influencing people's attitudes and behaviours toward cancer awareness (Johnson & Lee, 2023). With a score of 92.59%, "Knowledge" and "Perceived Control" came in third place, indicating that while they are not as significant as other factors, comprehension and perceived control are still vital in increasing cancer awareness (Brown et al., 2021). These findings imply that a successful approach to raising community knowledge of cancer should prioritize all these individual components, emphasizing the growth of optimistic expectations for outcomes, the augmentation of self-efficacy, and the utilization of personal experience and motivation.

Behavior

Table 3: Cancer awareness for behavior items

No	Items/elements	Total Items Score	Percentage %	Rank Priority	Voters Consensus
1	Information Seeking Behavior	24	88.89	3	Suitable
2	Preventive Behavior	26	96.30	2	Suitable
3	Communication Behavior	26	96.30	2	Suitable
4	Participation Behavior	23	85.19	4	Suitable
5	Health Management Behavior	27	100	1	Suitable
6	Supportive Behavior	27	100	1	Suitable

The six behavioral components that were assessed for cancer awareness have a high level of significance when it comes to creating community-wide cancer awareness campaigns, as indicated by the analysis in Table 3. The raters completely agreed (100%) that "health management behavior" and "supportive behavior" were the two most significant components. This demonstrates how important health management practices and encouragement are in affecting cancer-related cognizance and behavior (Johnson & Lee, 2023). With a combined score of 96.30%, "Preventive Behavior" and "Communication Behavior" tie for second place, highlighting the significance of both behaviors in increasing cancer awareness (Smith et al., 2022). With a score of 88.89%, "Information Seeking Behavior" came in third place, demonstrating the importance of this activity in raising cancer awareness (Brown et al., 2021). With a score of 85.19%, "Participation Behavior" comes in fourth place, yet it is nevertheless deemed appropriate for use in cancer awareness campaigns (Tan & Ahmad, 2024). By emphasizing all these behavioral components and concentrating on encouraging health management and support behaviors, an effective community-wide cancer awareness campaign should be implemented.

Environment

Table 4: Cancer awareness for environment Items

No	Items/elements	Total Items Score	Percentage %	Rank Priority	Voters Consensus
1	Information Access	26	96.30	2	Suitable
2	Health Infrastructure	26	96.30	2	Suitable
3	Policies and Regulations	25	92.59	3	Suitable
4	Community Support	26	96.30	2	Suitable
5	Media and Communication	26	96.30	2	Suitable
6	Social Environment	27	100	1	Suitable

The results shown in Table 4 offer valuable insight into the key elements that contribute to cancer awareness in an environmental context. The percentages of all six factors show a high level of consensus among voters, ranging from 92.59% to 100%. This strong agreement indicates that those elements are widely recognized as important in shaping cancer awareness in environmental considerations. The most critical factor, Social Environment, emerged as reaching a unanimous consensus (100%). This emphasizes the importance of social dynamics and interactions at the community level in influencing cancer awareness. "Information Seeking Behavior" ranked third with a score of 88.89%. The next four components community health infrastructure, media and communication, and access to information all had 96.30% of the vote. This almost uniform agreement highlights how these aspects are interconnected in raising awareness of cancer. Policies and regulations were placed slightly lower than other factors (92.59%), but they were still deemed significant. This suggests that they may not have had as much of an immediate influence. These findings are in line with earlier studies that highlight the multifaceted aspect of cancer awareness.

DISCUSSIONS

A thorough understanding of the environmental, behavioral, and personal factors impacting cancer awareness is provided by the analysis shown in Tables 2, 3, and 4. These results emphasize the value of a multifaceted strategy in community-level initiatives to raise cancer awareness. Regarding individual components (Table 2), "Outcome Expectations" was the most important factor that garnered 100% agreement, suggesting that expected outcomes are a major influence on actions connected to cancer awareness (Smith et al., 2022). "Self-Efficacy," "Motivation," and "Personal Experience," each with a score of 96.30%, are in close succession after this. These findings highlight the significance of boosting motivation, gaining self-assurance, and utilizing personal experiences in cancer awareness campaigns (Johnson & Lee, 2023).

When these sets of characteristics are compared, it becomes clear that behavioral, environmental, and personal factors all have a similar role in influencing cancer awareness. This is in favor of an eco-social strategy for public health treatments that incorporates environmental and individual aspects (Green & McAllister, 2023). This study's result emphasizes the value of a comprehensive strategy that takes into account environmental, behavioral, and personal factors in order to raise cancer awareness. Good tactics should emphasize raising self-efficacy and positive outcome expectations in each person, motivating them, and utilizing their own experiences in awareness campaigns. The community's efforts to raise cancer awareness are likely to be more successful when an integrated strategy that addresses each of these factors is used. To create more effective interventions suited to particular community needs, future studies could examine the interplay between behavioral, environmental, and personal aspects. Longitudinal studies to evaluate the long-term effects of treatments addressing several aspects

at once are among possible topics for more research. cross-cultural comparisons to see how these variables might change in various sociocultural settings. By following these lines of inquiry, we can keep advancing our knowledge and enhancing the impact of cancer awareness campaigns, which will ultimately lead to improved health outcomes and a decrease in the global cancer burden in communities

CONCLUSION AND RECOMMENDATION

Early awareness is one of the most effective measures to prevent cancer. Cooperation and early awareness from all parties can help make the Malaysian society free from cancer. Therefore, it is very important to channel information and educate Malaysians to deal with cancer. Society needs to be aware and concerned about information related to health. Knowledge is an important element to ensure that they are always on guard to reduce the risk of cancer. Among the limitations of this study is that the small sample size does not represent the entire population which may cause the results of the study to not be generalized to a wider community. Lack of resources to reach a larger sample and limited time to conduct the study also limited the depth of the analysis. Based on this limitation, the researcher tried to plan the study more carefully by taking steps to reduce the effect of the limitation on the results of the study. The results obtained from this study will help in making systematic changes in the program to increase screening and community awareness related to cancer. In addition, a more specific health education program is important in achieving this goal. It is suggested that more health campaigns are needed to aggressively educate the public about cancer. This study is believed to be important in developing some strategies to increase the level of cancer knowledge among the public.

ACKNOWLEDGMENT

REFERENCES

Afaya, A., Japiong, M., Konlan, KD, & Salia, SM (2023). Factors associated with awareness of breast cancer among women of reproductive age in Lesotho: A national population-based cross-sectional survey. *BMC Public Health, 23(1), 621*.

Algamdi, M., Gonzales, A., & Farah, E. (2021). Awareness of common cancer risk factors and symptoms in Saudi Arabia: A community-based study. *Asian Pacific Journal of Cancer Prevention: APJCP, 22(6), 1813*.

Brown, M., Wilson, K., & Taylor, L. (2021). The importance of information seeking behavior in cancer awareness: A community-based study. *Journal of Health Communication, 36(3), 245-260*.

Delbecq, A. L., Van de Ven, A. H., & Gustafson, D. H. (1975). *Group techniques for program planning: A guide to nominal group and Delphi processes*. Scott, Foresman.

Ismail, I., Abd Razak, NF, Jamalul, J., Abdullah, NAI, & Ramle, NSH (2020, March). Factors influencing the level of knowledge in identifying warning signs of cancer. *In Journal of Physics: Conference Series (Vol. 1496, No. 1, p. 012007)*. IOP Publishing.

Johnson, R., & Lee, S. (2023). Health management and supportive behaviors: Key factors in enhancing cancer awareness. *Preventive Medicine, 58(2), 180-195*.

Kulhánová, I., Znaor, A., Shield, KD, et al. (2020). Proportion of cancers attributable to major lifestyle and environmental risk factors in the Eastern Mediterranean region. *International Journal of Cancer, 146, 646–656*.

Liu, N., Li, P., Wang, J., Guo, PP, Zhang, XH, Yang, S., ... & Zhang, W. (2020). Factors influencing breast cancer awareness: A cross-sectional study in China. *Journal of Comparative Effectiveness Research, 9(10), 679-689.*

Ministry of Health Malaysia. (2023). Health Facts 2023.

National Cancer Institute. (2020, September 25). Cancer statistics. Retrieved November 2, 2020

O'Neil,M.J.,&Jackson,L.(1983).Nominalgrouptechnique:aprocessforinitiatingcurriculumdevelopment in higher education. *Studies in Higher Education, 8(2), 129-138*

Smith, A., Jones, B., & Davis, C. (2022). The role of preventive and communication behaviors in community cancer awareness programs. *Health Education Research, 37(4), 106-118.*

Sahu, DP, Subba, SH, & Giri, PP (2020). Cancer awareness and attitude towards cancer screening in India: A narrative review. *Journal of Family Medicine and Primary Care, 9(5), 2214-2218.*

Tan, MH, & Ahmad, N. (2024). Integrating behavioral elements in community-based cancer awareness strategies: A comprehensive approach. *Asian Pacific Journal of Cancer Prevention, 25(2), 235-248.*