Receptivity towards Breast Cancer Awareness Materials: Message Design and Content
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Abstract—Researchers who studied breast cancer awareness have recommended educational programmes but a major gap in knowledge is whether health promotion materials on breast cancer capture the attention of the audience and educate them on the disease. This case study examined women’s receptivity towards breast cancer leaflets produced by Ministry of Health Malaysia based on the Risk Perception Attitude (RPA) Framework. Five breast cancer brochures were presented to 10 female participants to gauge their receptivity towards the leaflets. The leaflets were analysed for the application of message design principles, notably colour, graphics and typographical features as well as the message content based on RPA constructs. The participants were more receptive towards breast cancer leaflets with susceptibility and self-efficacy messages compared to leaflets with only recommended actions for self-protective behaviour. However, for these behavioural change messages to reach the audience, the message design of the leaflets needs to be thematically linked to known breast cancer campaigns; the pink ribbon and the pink colour. There is a strong non-preference for sketches of woman performing breast self-examination on the leaflets. Considering that susceptibility messages are well-received, inclusion of severity and response efficacy messages could heighten intention to take action.

Keywords—breast cancer, health promotion, message design, public receptivity, Risk Perception Attitude framework

I. INTRODUCTION
There is a growing incidence of breast cancer in various regions. In the United Kingdom, one in eight women and one in 870 men are diagnosed with breast cancer during their lifetime [1]. Belgium has the highest rate of breast cancer, followed by Denmark and France, and the lowest incidence is in Africa and Asia [2]. Even so, approximately one in 20 women in Malaysia develop breast cancer in their lifetime [3]. The 2007 National Cancer Registry of Malaysia shows that breast cancer is the most common cancer in Malaysia, accounting for 18.1% of cancer incidences among Malaysian women, and breast cancer accounts for 32.1% of cancer incidences [4]. The commonest age for breast cancer onset is 40–49 years, in the form of lumps in 90% of cases. Incidence varies by ethnicity; fewer Malay women develop breast cancer (1 in 28) compared to Chinese and Indian women (1 in 16) but the breast cancer is diagnosed at late stages and with larger tumours, resulting in poorer outcomes [3]. In the 2003 Cancer Registry of Malaysia report, the age group most affected by breast cancer is 50–59 years. Breast cancer is the main cause of cancer death in women [5].

Many studies have shown lack of awareness as a cause for delayed diagnosis of breast cancer, thereby leading to poor treatment outcomes. A survey in Hong Kong, Malaysia and India found that the late stage diagnosis among Asian women was due to factors such as lack of awareness, unavailability of breast cancer screening, faith in low-cost traditional alternative medicine systems, low priority accorded to healthcare needs of women, and sociocultural barriers of hesitation of women to have their breasts examined [6]. A study of 186 newly diagnosed breast cancer patients in the East Malaysian state of Sabah found that the commonest pathological stage of breast cancer at presentation was Stage III (36.6%), followed by Stage II (30.1%), Stage IV (15.6%) and Stage I (12.9%) [7]. Their findings showed that one fifth of the patients refused the recommended treatment or defaulted follow-up in favour of traditional or alternative therapy, and with the majority being non-Chinese, poor, and from rural and low education backgrounds. A survey among 200 female university students in a Penang university showed that they correctly identified the symptoms of breast cancer and acknowledged family history, old age and cigarette smoking as potential risk factors for breast cancer but not less known factors such as menopause after the age of 55 years, early onset of menses and first child after the age of 30 years (35%) [8]. Awareness of breast self-examination,
clinical breast examination and mammography for early detection but negative perceptions of treatment are linked to embarrassment and fear of pain [9]. However, breast cancer awareness may not translate to uptake of breast cancer screening. A study involving 66 patients in a self-management programme showed infrequent breast self-examination practice despite information from television and the internet [10]. Awareness of breast cancer and practice of screening procedures was significantly lower among those with lower education and living in rural areas [11]. Similar findings emerged from a survey of 1,906 women in Pahang and Perak on greater awareness of breast cancer screening practices among the better educated women but it is interesting that the researchers attributed the better knowledge of Malay women to health promotion materials and methods being conducted in Malay [12]. Their results suggest a link between better knowledge of breast cancer with use of preferred language of communication. The female university students preferred to learn about cancer-related issues from doctors and health organisations, suggesting higher trust for medical or qualified personnel [8]. Some Malaysian women preferred to get information on breast cancer from the social media, hospital, campaigns in malls and schools, newspaper and magazines and people they knew rather than health promotion flyers [13]. These researchers investigating breast cancer awareness advocated educational programmes through radio, television and leaflets to encourage women to take an active responsibility in preventive health.

A major gap in knowledge is whether health promotion materials on breast cancer are read by the target audience. The uptake of cancer risk messages needs to be further explored because few studies have examined public receptivity towards health promotion materials. In the European Union, researchers have found that patients may not be benefiting from patient information leaflets that accompany medication because they are not friendly to lay people and sideline patients’ knowledge and affective needs [14, 15]. By understanding the response of the public, health authorities would be in a better position to tailor the health promotion and intervention programmes to ensure that the health awareness materials achieve the goal of educating the public.

To address these gaps in the literature, this study examined women’s receptivity towards breast cancer leaflets produced by Ministry of Health Malaysia based on the Risk Perception Attitude Framework (RPA) [16]. The specific aspects examined were the message design and content of breast cancer leaflets.

II. THEORETICAL FRAMEWORK

The theoretical framework of the study is the RPA framework posited by Rimal and Real which explains the effect of perceived risk on people’s self-protective motivations and behaviours, moderated by their efficacy beliefs [16]. In the RPA framework, perceived risk was conceptualised as comprising perceived susceptibility and perceived severity, which Rimal et al. measured using three to four-scales in their study on AIDS prevention behaviours [17]. Rimal and Real conceptualised efficacy beliefs as motivations to enact self-protective behaviour, and the efficacy beliefs were operationalised as the product of self-efficacy and response efficacy. In the framework, health behaviours refer to preventive measures that individuals can take or intend to take to avoid certain diseases, including information-seeking behaviours [16].

Based on the RPA framework, individuals’ risk perceptions and efficacy beliefs place them into four attitudinal groups: (1) responsive attitude (high perceived risk, high efficacy beliefs) which motivates them to enact self-protective behaviour; (2) avoidance attitude (high perceived risk, low efficacy beliefs) reflected by dampened motivations despite concern about their health status; (3) proactive attitude (low risk perceptions, high efficacy beliefs) reflected by a desire to remain disease free but the motivations do not come from their perceived risk status; and (4) indifferent attitude (low perceived risk, low efficacy beliefs) reflected by beliefs that they are at low risk and, even if they were, they cannot avert the threat. Some researchers have employed the RPA framework to study intention to seek information on diseases [18]. Hitherto, the RPA framework has not been used to assess breast cancer leaflets to determine the presence or absence of the RPA constructs (risk (including severity), efficacy, and self-protective behaviour) although Rimal et al. stated that the RPA framework can be utilised for designing health messages [17].

III. MATERIALS AND METHOD

Data for this case study came from 10 women, aged 16 to 64 from various ethnic backgrounds in Kuching, located in the Malaysian state of Sarawak (Table 1). They were mostly students and teachers, but one was a retired nurse and another was an entrepreneur. Half of them knew someone with breast cancer but the other half did not. The participants were shown the breast cancer leaflets, produced by Ministry of Health Malaysia. An exhaustive search was made by collecting them from hospitals all over Malaysia and these were the only leaflets on breast cancer that were available at the time of the study.

https://theshillonga.com/index.php/jhed
Figure 1 shows the five breast cancer leaflets produced by the Ministry of Health Malaysia.

The instrument to elicit the participants’ receptivity to the breast cancer leaflets was a semi-structured interview guide comprising the following questions:

1) Do you know anyone who is diagnosed with breast cancer?
2) Which of these five leaflets do you prefer? Please arrange in the order of your preference.
3) How do you think the Ministry of Health can improve these promotional materials?

The interviews were conducted in a language preferred by the participants, usually Chinese, English or Malay, and audiotaped for transcription and subsequent analysis.

The rest of this section describes the two frameworks for analysis of the message design and content of the breast cancer leaflets. As there is currently no single framework for message design principles, a framework was constructed from a review of the related literature. Message design is important to ensure that disease risk information is formulated to be relevant and easily understood by the target audience, having taken into consideration their experiences, needs and knowledge. Table 2 shows the framework on message design principles which detail the colour, graphics and typographical features of text for creating effective messages [19, 20, 21, 22, 23].

Insert Table 2 about here.

The first element of message design principles is colour which can enhance a message if it illustrates the colours of things found in the real world, or if it draws attention to important parts of a message. It can also heighten realism, illustrate similarities and differences or help to elicit emotional responses from the audience [18]. However, colour can also inhibit communication when its use is unclear, when it overshadows the message or when there are too many colours used to illustrate too many points. Secondly, graphics can be used to enhance almost any idea and concept. However, graphics must complement the message rather than just being there to take up space or look attractive because inappropriate graphics can lower the effectiveness of the message. The analysis in this study focussed on the cover of the leaflet because this must capture the audience’s attention for them to want to read the information on the inside pages. The third and last element of message design is typographical features of text which refer to underlining, bolding and italicising, including font size, type and arrangement. Underlining makes text more difficult to read but it was the only way to emphasise certain parts of the text when typewriters were used. Computers have made other ways of emphasis possible. Table 3 shows the analysis framework for the content of the breast cancer leaflets based on the RPA constructs adapted [19]. Following RPA, efficacy was added to their framework.

Insert Table 3 about here.

IV. RESULTS

4.1 Message design of breast cancer leaflets

The results showed the varied use of colour, graphics and typographical features of text on the five breast cancer leaflets to appeal to the target audience.

Leaflet 1 has a matte dark pink background colour, with a small pink cancer ribbon at the top right corner. The headline is “KANSER PAYU DARA menyerang 1 dalam 32 orang Mungkinkah ANDA?” (Breast Cancer Attacks 1 in 32 people. Could it be YOU?). The words were in white, except for “menyerang” and “Mungkinkah anda?” in green to attract attention.

Leaflet 2 has a big shiny pink ribbon which takes up approximately 75% of the space and sits against a greyish woven-like fabric background. The headline “LANGKAH MUDAH PENGESANAN AWAL KANSER PAYUDARA” (Easy Steps to Detect Breast Cancer) is in pink colour and capitalised. The headline is centred, and placed one-third of the way down the cover page.

Leaflet 3 has a picture of a hand showing a “number 3” sign in white against a pink background. The headline “3 Langkah Mudah Untuk Menjaga Kesihatan Payu Dara” (3 Easy Ways to Take Care of the Health of Breast) is printed in black in title case within the white hand. The numbers 1, 2 and 3 are placed at the tip of the little finger, ring finger and middle finger respectively (from left to right) with words “Lihat” (See), “Rasa” (Feel) and “Respon” (Respond) on the tip of the three fingers.

Leaflet 4 titled ‘BREAST CANCER’ in shocking pick is the only leaflet in English. This leaflet was published in 1995 in conjunction with the Healthy Lifestyle Campaign. On the cover is a picture of a nurse holding a writing pad and pen against a background picture of a woman examining her breast with her back to the audience. The subline below the picture, in blue, says “DETECT EARLY THROUGH BREAST SELF-EXAMINATION” in a smaller font size. Below the subline is “BSE”, capitalised, in white font placed against a pink oval shape. Right at the bottom is the Healthy Lifestyle Campaign 1995 logo with the slogan arranged in a circular position, “Stay Ahead of Cancer”.

Leaflet 5 titled “Kanser Payudara” (Breast Cancer) was published in October 2004. The headline is capitalised and red in colour to attract attention. On the
blue cover of the leaflet is a young Asian female doctor pointing to the upper back of a woman. The doctor can be identified through the white doctor coat worn over a baju kurung (Malay formal attire) and a stethoscope hung on her neck. The subline says “KESAN AWAL DENGAN PEMERIKSAAN SENDIRI PAYUDARA” (Detect early through breast self-examination). The subline is in the same shade of red and capitalised, but in a smaller font size than the headline.

Firstly, the analysis of the colour element of the message design showed that two to three colours were used, notably pink but there was one predominantly yellow and another blue leaflet (Leaflets 4 and 5 respectively). These two leaflets were more colourful than the other three which were largely in pink and white but there was no sign of colour overpowering or interfering with the cancer risk messages. Pink colour is associated with breast cancer because the Pink Ribbon connotes breast cancer awareness. Not incidentally, the yellow and blue leaflets were printed earlier, in 1995 and 2004 respectively, whereas the three pink leaflets were printed in 2012-2013. In fact, Susan G. Komen for the Cure ® has used the pink colour since its inception in 1982. The first Komen Race for the Cure ® logo design was an abstract female runner outlined with a pink ribbon and was used during the mid-1980s through to the early 1990s. The change in dominant colours on the breast cancer leaflets over time shows a movement to tap into the association of breast cancer with the Pink Ribbon.

Next, analysis of graphics revealed that the use of human figures and the pink ribbon to illustrate key messages. Two leaflets used sketches of human figures: Leaflets 4 and 5 show a nurse and a doctor respectively, indicating medical personnel are the reference point for information or treatment of breast cancer. In both leaflets, the background picture is that of a woman doing breast self-examination but her back is facing the audience for purposes of decorum. As explained earlier, in recent years, the use of graphics moved away from human figures to the pink ribbon – shown clearly in Leaflets 1 and 2. The pink ribbon takes up 75% of the space on Leaflet 2. The larger the graphics, the more important it is perceived to be [20]. Leaflet 3 used a huge “No. 3” hand gesture to show the three steps to check for breast lumps. Although the pink ribbon, and even the pink colour, may be linked to breast cancer awareness, the replacement of human figures by the pink ribbon makes the graphics more abstract and the exhortation to perform breast self-examination more obscure for audience who are not informed. None of the leaflets used line and bar graphs which are more useful for showing trends and comparisons but research has indicated that the public do not understand such abstract representations of numbers [22].

Finally, the analysis revealed that typographical feature of the leaflets need improvement. Three leaflets overused upper case letters. For example, the whole Leaflet 2 headline is capitalised: “LANGKAH MUDAH PENGENSANAN AWAL KANSER PAYUDARA” (Easy steps to detect breast cancer early). Two leaflets complied with the principle of using capital letters for short headings of not more than three words [21]. Leaflet 1 used capital letters for “breast cancer” and “you” in the headline which says “KANSER PAYU DARA menyerang 1 dalam 32 orang. Mungkinkah Anda?”(Breast cancer attacks 1 in 32 people. Could it be you?). Leaflet 3 used the title case: “3 Langkah Mudah Untuk Menjaga Kesihatan Payu Dara” (3 Easy Steps to Take Care of Breast). Text using lower case letters is easier to read and capital letters are not favoured as it sends an unfriendly message [23]. In the five leaflets, no words were underlined. The only underlining found during the analysis was for the letter “a” in CanCER in Leaflet 4. Instead other text enhancement features such as bolding was used for subtitles, bigger font sizes and selective colours were appropriately used for emphasis.

4.2 Message content of breast cancer leaflets

This section describes the assessment of the message content of breast cancer leaflets based on the RPA framework [16].

Only Leaflet 1 clearly highlights the risk (Breast cancer attacks 1 in 32 people) to create a fear to instigate self-protective actions. Probability is deemed easier to understand than percentages to show the high chance of getting breast cancer. Leaflet 1 contains a risk message but does not send an efficacy message. Therefore, it fails to motivate the audience to develop a responsive attitude towards breast cancer (high perceived risk, high efficacy beliefs) in the form of taking self-protective behaviour. Leaflet 5 can be interpreted to send a risk message. The graphic shows the female breast is at risk of being attacked by breast cancer but the leaflet does not show the risk level. The text exhorts the audience to “Detect [breast cancer] early through breast self-examination” but does not spell out the dangers if no action is taken. The other three leaflets do not contain risk information of any kind, and therefore do not educate the audience on their susceptibility to breast cancer.

Leaflets 2, 3 and 4 send efficacy messages using either text or graphics. Leaflets 2 and 3 addressed self-efficacy by telling the audience that the steps to detect breast cancer are easy. Leaflet 4 used a graphic of a woman performing breast self-examination to suggest that
it is easy. It is important to give the audience confidence in performing breast self-examination because this can create an attitude of proactiveness (low perceived risk, high efficacy). They can be motivated to remain disease free – not because they fear being attacked by breast cancer as such risk information are not found on the leaflets – but to continue to live their normal life.

The leaflets recommend breast self-examination as a self-protective behaviour to guard against breast cancer, and this measure does not cost anything. However, based on the constructs of the RPA framework, leaflets relying on recommended action may not be effective. The audience do not carry out recommended actions just because they are instructed to by a leaflet. Other crucial constructs are missing from the leaflets analysed. The general absence of susceptibility and severity messages can cause the leaflets to be ineffective because the women who come across the leaflets may perceive breast cancer to be mild or themselves to be at low risk, thereby leading to late diagnosis of breast cancer and poorer treatment outcomes. We contend, on the basis of the RPA framework, that the front cover of breast cancer leaflets should send susceptibility, severity and efficacy messages, and recommended actions can be placed on the inside pages. This is because self-protective motivations and behaviours are triggered by risk perceptions, and moderated by efficacy beliefs (Rimal and Real 2003). The absence of response efficacy messages in the breast cancer leaflets can also dampen motivation to detect breast cancer early through breast self-examination because the audience may not believe in the usefulness of such methods to detect lumps or other abnormalities. While the front cover of leaflets cannot be crowded with too much information, this is where planning in the production of health promotion materials is important so that different leaflets have different focus in their risk messages.

4.3 Participants’ receptivity towards breast cancer leaflets
The interview results showed that Leaflet 1 with the risk message and a small pink ribbon against a pink background was the most preferred. Leaflet 4 (yellow background with a picture of a woman performing breast self-examination) was the least preferred. Figure 2 shows the ratings given to the leaflets in decreasing order of preference from left to right. Next, the participants’ reasons for liking or not liking a leaflet are presented to indicate the kind of changes that should be made to the promotional materials for greater effectiveness.

[Insert Fig. 2 about here]

The leaflet with the highest rating is Leaflet 1 with the risk message (breast cancer attacks 1 in 32 people. Could it be you?). The risk statistics and the informativeness in Leaflet 1 are a boon to some (Participants 8 and 9) and a bane to others (Participants 5 and 4 respectively). Participant 1 liked the informativeness of Leaflet 1, particularly the susceptibility statistics. She said, “because the number attracts me, saying that it’s just within 32 women, or people, there might be one that will have breast cancer, regardless of man or woman, not sure” and “…because there’s statistic. It can affect anybody. And, there are pictures of ladies in front [flips the leaflet] and there are many information inside.” The message design principle on attractive colour was followed in Leaflet 1. Participant 2 said, “the colours stood out…it’s pink and it’s a feminine colour. It draws your attention to this one. And you know it’s going to be a female related issue”. The graphic was simple, just a small pink ribbon in the corner, and it appealed to many female participants.

Leaflet 3 with the hand showing a number three sign was the second among the preferred leaflets. To Participant 2, the hand gesture was intriguing, and she wanted to know what the “three” meant. On the other hand, Participant 6 did not even consider the hand a graphic. She said, “It doesn’t draw my attention. It’s just words.” Participant 9 liked the simple leaflet. She said, “I think it’s simple. There are three steps, and the colour is attractive. Oh, because I like pink! [excitedly and giggled] So I put all the pink ones in front [meaning that she rated them highly].” Participant 8 said, “It’s only when, maybe only when you want to know more, only then you read up to know more.”

Leaflet 5 which shows a doctor against a blue background is the leaflet which elicited the most mixed reactions. While Participant 8 was attracted by the graphics, Participant 1 found it not attractive enough and the font too ancient-looking. Participant 2 also said that the drawing was very outdated and the graphics were too dark. On informativeness, Participant 3 stated that “I want to know what is cancer what it is about” but Participants 7, 9 and 10 said that there was too much to read. In terms of message design, informativeness can work for or against the appeal of the leaflet depending on the information need of the audience at a particular time. If they or others they knew had just been diagnosed with breast cancer, then the leaflet would meet their needs.

Leaflet 2 with a huge pink ribbon and the headline “Langkah Mudah Pengesanan Awal Kanser Payudara” (Easy Steps to Detect Breast Cancer Early) was among the less preferred. Participant 1 found it attractive because of the pink colour and the leaflet was informative on the inside pages. Participants 2 and 9 liked the pink ribbon although there are some like Participant 8 who said “…there’s no other pictures that attract me.” Participant 7
found Leaflet 2 easy to read. Simplicity in message design has limited appeal in the case of Leaflet 2.

There is a contradiction between message design analysis and participant reactions to Leaflet 4. It is the least preferred despite it being colourful and having a clear message on the ease of performing breast self-examination. Participant 2 stated, “It’s the yellow colour that stood out”. Participants 4, 6, 8 and 10 were drawn to the graphics. Participant 4 said, “The reason why I choose Breast Cancer, Detect Early as the first choice is because this one you have the visual aids. I think breast cancer can happen to anyone and there might be some people who don’t understand or illiterate and those two brochures (Leaflets 4 and 5) show the way how you can self-examine yourself. And teach you how to do it.” Participant 6 was also drawn to the picture of the nurse and a woman checking her breast. However, Participant 1 did not find the drawing attractive but this was not the majority view. The words “Detect Early” spoke to Participant 8. To Participant 5, Leaflet 1 sent the message that people should learn how to take care of themselves first. The analysis revealed that Leaflet 4 has a good message design in terms of colour, graphics and a clear message on self-protective behaviour but it was rated lowly by the participants.

The participants were more receptive towards leaflet designs in bright pink with icons of breast cancer (the pink ribbon) rather than sketches of women and women performing breast self-examination. It is possible that the participants were not comfortable with sketches of the female breast. However, these results on public receptivity needs to be qualified because the 10 participants in the study were educated and knew the significance of the pink ribbon and this may not be the case with those who are not well-informed. The risk message was well-received because it presented a situation of need to motivate preventive health behaviour.

V. CONCLUSION
Using the RPA framework, this study has identified message design elements and content of breast cancer leaflets which increase the receptivity of women towards messages of behaviour change. The findings showed that the women were more receptive towards breast cancer leaflets with susceptibility and self-efficacy messages on the cover compared to leaflets with only recommended actions for self-protective behaviour. Susceptibility messages activate motivations to enact self-protective behaviour and self-efficacy messages assure the target audience that they are capable of performing recommended actions to detect breast cancer early. The effectiveness of the leaflets can be increased with the inclusion of severity and response efficacy messages to heighten intention to take action. However, for these behavioural change messages to reach the audience, the message design of the leaflets needs to be captivating in the colour and graphics, preferably those that are thematically linked to breast cancer. Although typographical features of the text can influence perceptions of accessibility, this element of message design did not attract the attention of the participants in the study. Admittedly, ten responses to the breast cancer leaflets do not produce findings which add up to enough to drive policy and these preliminary findings should be verified in other contexts. Since the present study sought responses to only the covers of the breast cancer leaflets, it is also important to examine uptake of the leaflet content and whether it affects their intention to take preventive health measures. Since intentions do not often translate into behaviour, researchers can conduct retrospective studies involving women in breast cancer treatment and management conditions to find out the role of breast cancer materials in advancing their knowledge of the disease.

ACKNOWLEDGEMENTS
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REFERENCES


Fig. 1: Five breast cancer leaflets produced by the Ministry of Health Malaysia.

Fig. 2: Most preferred leaflet in decreasing order of preference from left to right

Table 1: Demographic background of participants.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Age</th>
<th>Race</th>
<th>Occupation</th>
<th>Know anyone with breast cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>Bidayuh*</td>
<td>English Teacher</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>Chinese</td>
<td>Entrepreneur</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>64</td>
<td>Chinese</td>
<td>Retired Nurse</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>45</td>
<td>Chinese</td>
<td>English Teacher</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>16</td>
<td>Melanau*</td>
<td>Student</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>16</td>
<td>Iban*</td>
<td>Student</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>16</td>
<td>Malay</td>
<td>Student</td>
<td>No</td>
</tr>
<tr>
<td>8</td>
<td>32</td>
<td>Chinese</td>
<td>Biology Teacher</td>
<td>No</td>
</tr>
<tr>
<td>9</td>
<td>30</td>
<td>Chinese</td>
<td>English Teacher</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>43</td>
<td>Chinese</td>
<td>Science Teacher</td>
<td>No</td>
</tr>
</tbody>
</table>

*Sarawak indigenous groups
Table 2: Analysis framework for principles of message design.

<table>
<thead>
<tr>
<th>Element</th>
<th>Message Design Decision</th>
<th>Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Colour</td>
<td>When should colour be used?</td>
<td>Colour should be used to enhance a message or draw attention to relevant information. It can also provide motivational cues.</td>
</tr>
<tr>
<td></td>
<td>When should colour not be used?</td>
<td>Don’t let colour overpower or interfere with a message [17,18].</td>
</tr>
<tr>
<td></td>
<td>Which colour combination is most legible for printed materials?</td>
<td>Black on white [17].</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Colour graphics are usually preferred over black and white [17,18].</td>
</tr>
<tr>
<td>2. Graphics</td>
<td>When should graphics be used?</td>
<td>Use graphics to enhance a message. Rarely, if ever, use of decoration [17].</td>
</tr>
<tr>
<td></td>
<td>What kind of graphs work best?</td>
<td>Line graphs are best for showing trends while bar graphs are best at showing comparisons [17].</td>
</tr>
<tr>
<td></td>
<td>What size should the graphic be on?</td>
<td>The relative size of graphics is important. The larger the graphics, the more important it is perceived to be [17].</td>
</tr>
<tr>
<td>3. Typographical features of text</td>
<td>When should underlining be used in computer-generated materials?</td>
<td>Do not use underline. Instead use italics or bold for emphasis [18].</td>
</tr>
<tr>
<td></td>
<td>When should capital letters be used?</td>
<td>Almost never. Capital letters can be used for headings of less than three words [18].</td>
</tr>
<tr>
<td></td>
<td>Text using lower case is easier to read [19].</td>
<td></td>
</tr>
<tr>
<td></td>
<td>What are the optimum measurements for the legibility of printed (computer-generated) text?</td>
<td>At a normal reading distance of 15 inches, the optimum legibility for printed text occurs with 10 point type, lines of 19 pica (3.1 inches) and 2 to 4 points leading (space between lines).</td>
</tr>
<tr>
<td></td>
<td>How should text be placed?</td>
<td>Use phrases, not whole sentences. Number phrases for reference instead of using bullet.</td>
</tr>
<tr>
<td></td>
<td>What are the optimum measurements for text legibility and computer projection devices?</td>
<td>Use a landscape orientation and adjust the text size to be comfortably visible from all points of the display venue [18].</td>
</tr>
</tbody>
</table>

Table 3: Analysis framework for the content of the breast cancer leaflets based on RPA constructs

<table>
<thead>
<tr>
<th>RPA constructs</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Susceptibility</td>
<td>Risk of disease happening to them</td>
<td>Malaysians visiting countries affected by Zika virus</td>
</tr>
<tr>
<td>Severity</td>
<td>Consequences of disease</td>
<td>Symptoms such as fever</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Confidence to undertake self-protective behaviour to prevent disease</td>
<td>(No example)</td>
</tr>
<tr>
<td>Response efficacy</td>
<td>Effectiveness of self-protective behaviour in preventing disease</td>
<td>(No example)</td>
</tr>
<tr>
<td>Recommended action for self-protective behaviour</td>
<td>Preventive measures, including seeking treatment and further information</td>
<td>Seek treatment and inform doctor of travel history; avoid unprotected sex.</td>
</tr>
</tbody>
</table>