AWARENESS AND BELIEF REGARDING BREAST CANCER AMONG WOMEN LIVING IN SELANGOR, MALAYSIA

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INTRODUCTION

Breast cancer is one of the most heated topics of debates among the healthcare community as well as the general public. According to the World Health Organization (WHO), breast cancer is the most common cancer involving high mortality rates among women with reported of 627,000 deaths in 2018. In Malaysia, breast cancer among women is still at large with a reported case of 7,593 Compared to 2018 with a reported case of 6,378. This study was done in Penang, Malaysia among 200 women who studied in a public university was found out that the level of awareness about breast cancer was still inadequate (60.7%). This study concluded that the level of awareness among Malaysian, especially young adults was still not sufficient even though they belong in a group of people with the highest level of education (Tertiary). In a research with respect to breast cancer understanding, results showed that more than two-third of respondents realize that painless breast lump (72%), secretions from nipples (74.5%), mass in the armpit (78.5%) and changes in the size of breast (81.5%) as signs and symptoms of breast malignancy. Even so, only half the number of respondents agreed that retraction of skin around the breast (58.5%) as one of the signs and symptoms. In Malaysia, study done in Shah Alam City among 250 women carried out by (Al-Dubai et al., 2011) has shown that majority of the respondents acknowledged genetic or family history as able to contribute to the possibility of getting breast cancers evidenced by 88%, followed by smoking (65%), consumption of alcohol (56.8%) and prolonged exposure to radiation (67.2%).

INTRODUCTION

Breast cancer is one of the leading causes of mortality among women. The aim of the current study was to find out the level of awareness and belief about breast cancer among women in Selangor, Malaysia. A cross-sectional study was conducted among women living in Selangor aged 18 to 65 years old, with a total of 483 participants. A validated questionnaire regarding awareness and belief was used. The questionnaires consist of 25 questions comprising of sociodemographic, history of other diseases, awareness and belief. The prevalence of poor awareness among women was 63.4% while the poor level of belief was 84.7%. There was a significant association between awareness and educational background, family history of breast cancer (P=0.001, P=0.032) respectively. The association between awareness and belief was significant (P=0.02). A conclusion: There is a high level of poor belief and poor awareness among women in Selangor, Malaysia regarding breast cancer. Source of information such as the internet plays a major role in breast cancer prevention, and the majority of them do not know the technique of breast self-examination. More health promotion is needed to target general population through big campaign of awareness.

KEYWORDS: Awareness, belief, breast cancer, educational level, Selangor, Malaysia.
This is due to the influence of their belief on the choice of treatment, hence enhancing appropriate strategies in dealing with the cancer cases. The aim of the current study was to find out the level of awareness and belief about breast cancer among women in Selangor, Malaysia.

**METHODS**

A cross-sectional study was conducted among 483 women living in Selangor using self-administered questionnaires that consist of sociodemographic details as well as awareness and belief regarding breast cancer. The inclusion criteria include women living in Selangor and age ranging from 18 to 65 years old while exclusion criteria those who have a mental disability, a male and those who refused to give consent. Data was collected using non-probability convince sampling at a Private clinic in Selangor.

Sample size was calculated using single proportion population formula and based on prevalence from previous study \( p = 0.607 \). Total sample size required is 440 respondents.

\[
N = \frac{z^2 (p(1-p))}{d^2}
\]

\[
N = \frac{1.96^2(0.607(1-0.607))}{0.05^2} \quad N = 367+20\% \text{ non respondents} = 440
\]

Questionnaires consist of Part A, B and C. Part A consists part A1 which is about socio-demographic characteristics such as age, race, marital status, family income, education level and occupation. While Part A2 is about family and past medical history. Part A3 is about the source of information. While part B is about awareness of breast cancer among women in Selangor and it was adopted from Hasan et al., 2017 the total number of questions is 18. It consists of 3 parts which are sign and symptoms, risk factors and protective factors. The cut-off value is 9. So those who answered more than 50%, which is > 9 is considered as having good awareness level. Part C is about the belief of breast cancer and it was adopted from Smith et al., 2018. The total number of questions is 12, in which options scoring as follow: not sure, agree, strongly agree is incorrect = 0, strongly disagree or disagree is correct = 1 score. The cut off value is 6 so those who scored > 6 is considered as having good belief. All respondents will fill up a consent form before the questionnaire. Ethical approval was obtained by Management and Science University (MSU-RMC-02/FRO1/04/L1/004). All details will be used for research only.

**Statistical analysis**

Data were analysed using JASP version 0.10 software. Frequency, percentage, mean and SD were used in descriptive statistics while chi-square analysis was used to examine associations between breast cancer awareness and socio-demographic characteristics of the respondents.

**RESULTS**

In our study, the mean age of the women was 32.81 ± 12.90. Most of the respondents were Malay 54.0% followed by Indian and Chinese 29.0%, 14.4% respectively. The majority of women were single, having university degree (75.5%) as shown in table 1. Regarding the breast cancer awareness, out of 483 participants, 350 (72.5%) are aware that painless lump in the breast is a symptom of breast cancer whereas 341(70.6%) respondents stated it is true that bloody secretions from the nipples also a symptom of breast cancer. However, more than one-third of them, which is around 189 of them stated that they were not aware of oedema in the arm and pitting in the areola as a symptom of breast cancer. More than half of the respondents stated true for the presence of a lump in the armpit and change in breast size with a percentage of 57.6% and 53.2% respectively as shown in table 2A.

Three hundred sixty-six respondents stated that having a positive family history as one of the risks of breast cancer with the highest percentage of 75.8%. Almost half of the participants (43.5%) were not aware that using contraceptive pills has a higher risk of developing breast cancer. Many stated that late marriage is not a risk factor in developing breast cancer with a percentage of 40.0%. Only 25.1% aware that irregular menstrual cycle as a risk factor with a frequency of 121 respondents as shown in table 2B.

Out of 483 respondents, 274 participants with a percentage of 72.9% highly aware that proper nutrition and being physically active could protect against breast cancer. Followed by the second highest, about 56.7% of the respondents are aware of proper nutrition and being physically active could protect against breast cancer. More than half of the respondents stated that late marriage is not a risk factor in developing breast cancer with a percentage of 40.0%. Only 25.1% aware that irregular menstrual cycle as a risk factor with a frequency of 121 respondents as shown in table 2B.
Table 1: Socio-demographic characteristics of the respondents

| Variable                        | N   | %    | Min | Max  | Mean (SD) |
|---------------------------------|-----|------|-----|------|-----------|
| Age                             |     |      | 18.0| 65.0 | 32.81 (12.90) |
| **Race**                        |     |      |     |      |           |
| Malay                           | 261 | 54.0 |     |      |           |
| Chinese                         | 69  | 14.3 |     |      |           |
| Indian                          | 29  | 29.0 |     |      |           |
| Others                          | 13  | 2.7  |     |      |           |
| **Marital status**              |     |      |     |      |           |
| Married                         | 198 | 41.0 |     |      |           |
| Divorced                        | 10  | 2.1  |     |      |           |
| Single                          | 264 | 54.6 |     |      |           |
| Widow                           | 11  | 2.3  |     |      |           |
| **Educational level**           |     |      |     |      |           |
| No formal education             | 9   | 1.9  |     |      |           |
| Primary                         | 10  | 2.1  |     |      |           |
| Secondary                       | 99  | 20.5 |     |      |           |
| University                      | 365 | 75.5 |     |      |           |
| **Occupation**                  |     |      |     |      |           |
| Government servant              | 88  | 18.2 |     |      |           |
| Housewife                       | 61  | 12.6 |     |      |           |
| Private employer                | 136 | 28.2 |     |      |           |
| Student                         | 198 | 41.0 |     |      |           |
| **Family history of breast cancer** | |     |     |      |           |
| Yes                             | 118 | 24.4 |     |      |           |
| No                              | 365 | 75.6 |     |      |           |

Table 2a: Awareness regarding breast cancer among females in Selangor

| Sign and symptoms                      | N   | %    |
|----------------------------------------|-----|------|
| **Painless lump in the breast**        |     |      |
| Don’t know                             | 86  | 17.8 |
| False                                  | 47  | 9.7  |
| True *                                 | 350 | 72.5 |
| **Bloody secretions from the nipples** |     |      |
| Don’t know                             | 115 | 23.8 |
| False                                  | 27  | 5.6  |
| True *                                 | 341 | 70.6 |
| **Oedema in the arm**                  |     |      |
| Don’t know                             | 189 | 39.1 |
| False                                  | 95  | 19.7 |
| True *                                 | 199 | 41.2 |
| **Pitting in the areola**              |     |      |
| Don’t know                             | 189 | 39.1 |
| False                                  | 66  | 13.7 |
| True *                                 | 228 | 47.2 |
| **Lump in armpit**                     |     |      |
| Don’t know                             | 134 | 27.7 |
| False                                  | 71  | 14.7 |
| True *                                 | 278 | 57.6 |
| **Change in breast size**              |     |      |
| Don’t know                             | 127 | 26.3 |
| False                                  | 99  | 20.5 |
| True *                                 | 257 | 53.2 |
### Table 2b: Awareness regarding breast cancer among females in Selangor

| Risk factors                          | N  | %    |
|---------------------------------------|----|------|
| Use of contraceptive pills           |    |      |
| Don’t know                            | 210| 43.5 |
| False                                | 102| 21.1 |
| True *                               | 171| 35.4 |
| Positive family history               |    |      |
| Don’t know                            | 58 | 12.0 |
| False                                | 59 | 12.2 |
| True *                               | 366| 75.8 |
| Using infertility drugs               |    |      |
| Don’t know                            | 231| 47.8 |
| False                                | 117| 24.2 |
| True *                               | 135| 28.0 |
| Irregular menstrual cycle             |    |      |
| Don’t know                            | 195| 30.4 |
| False                                | 167| 34.6 |
| True *                               | 121| 25.1 |
| Late marriage                         |    |      |
| Don’t know                            | 180| 37.3 |
| False                                | 193| 40.0 |
| True *                               | 110| 22.8 |
| First child at older age              |    |      |
| Don’t know                            | 176| 36.4 |
| False                                | 183| 37.9 |
| True *                               | 124| 25.7 |
| Protective factors                    |    |      |
| Breast feeding                        |    |      |
| Don’t know                            | 130| 26.9 |
| False                                |  79| 16.4 |
| True *                               | 274| 56.7 |
| Good nutrition and physically active  |    |      |
| Don’t know                            |  72| 14.9 |
| False                                |  59| 12.2 |
| True *                               | 352| 72.9 |
| Late menstruation                     |    |      |
| Don’t know                            | 222| 46.0 |
| False                                | 168| 34.8 |
| True *                               |  93| 19.3 |
| Early menopause                       |    |      |
| Don’t know                            | 251| 52.0 |
| False                                | 140| 29.0 |
| True *                               |  92| 19.0 |
| Pregnancy earlier than 40 years       |    |      |
| Don’t know                            | 254| 52.6 |
| False                                | 120| 24.8 |
| True *                               | 109| 22.6 |
| Early marriage                        |    |      |
| Don’t know                            | 222| 46.0 |
| False                                | 157| 32.5 |
| True *                               |  104| 21.5 |
According to table 4A, about 48.4% with a frequency of 234 respondents highly believe that eating food containing additives, followed by eating food containing artificial sweeteners with 39.3% might cause breast cancer. Participants also believed that being stressed could also be one of the factors with 38.1%.

Many believe that physical trauma (29.4%) followed by using microwave ovens (21.1%), then using mobile phones (20.1%) could not be a factor. The highest number of participants with a frequency of 284 respondents (58.8%) were not sure of using aerosol containers can be one of the causes of breast cancer as shown in table 4B. This was followed by usage of microwave ovens with 46.6% then, living near power lines with 46.0%. Almost half of the respondents with a frequency of 217 (44.9%) were not sure about using clean products could cause this cancer. About 81 of the participants, with 16.8% strongly agreed that eating food containing additives influences the risk of developing breast cancer. About 7.9% were firmly disagreed the fact that living near power lines could be the reason for this problem as shown in table 4A.

Table 3: Awareness about breast self-examination and mammogram among females in Selangor

|                                      | N   | %   |
|--------------------------------------|-----|-----|
| Heard of breast self-examination     |     |     |
| No                                   | 89  | 18.4|
| Yes                                  | 394 | 81.6|
| Heard of mammogram                   |     |     |
| No                                   | 145 | 30.0|
| Yes                                  | 338 | 70.0|
| Perform breast self-examination      |     |     |
| No                                   | 250 | 51.8|
| Yes                                  | 233 | 48.2|
| How often breast self-examination is practised |     |     |
| More than once in quarter of a year  |     |     |
| Not very often                       | 25  | 10.7|
| Once in 3 months                     | 123 | 52.8|
| Once in a month                      | 77  | 33  |
|                                      | 8   | 3.4 |
| Reason for not doing                 |     |     |
| Afraid of finding a lump             | 22  | 8.8 |
| I don’t the technique                | 171 | 68.4|
| I don’t trust my examination         | 26  | 10.4|
| I don’t think it is of benefit       | 31  | 12.4|
| Did Mammogram before                 |     |     |
| No                                   | 405 | 83.9|
| Yes                                  | 78  | 16.1|
| Breast examination by specialist     |     |     |
| No                                   |     |     |
| Yes                                  | 387 | 80.1|
|                                      | 96  | 19.9|

From table 5, it is shown that education level (P=0.001) and family history of breast cancer (P=0.032) have a significant association with awareness compared to race (P=0.392) and marital status (P=0.333). Among the races, Indians have good awareness with, N=39.3% followed by other race with N=38.5%. However, Chinese women have an inferior awareness, with N=72.5% about breast cancer. Single women have very good awareness, with 38.3% and least awareness among divorced women. Women who went to university have a good awareness (41.4%) when compared to those who have no formal education with poor awareness of 88.9%. Those with positive family history has a good awareness (44.9%) compared to those who do not have any family history. Respondents those who gain a source of information about breast cancer via primary healthcare centres have good awareness with 56.0%, followed by their education with 52.3%. However, those who gain a source of information via television and friends have a very poor awareness with 63.2% and 63.0% respectively.
Table 4a: Beliefs regarding breast cancer among females in Selangor

|                                | Frequency | Percentage |
|--------------------------------|-----------|------------|
| **Exposure to electromagnetic force** |           |            |
| Agree                          | 154       | 31.9       |
| Disagree                       | 78        | 16.1       |
| Not sure                       | 163       | 33.7       |
| Strongly Agree                 | 64        | 13.3       |
| Strongly Disagree              | 24        | 5.0        |
| **Eating food containing additives** |           |            |
| Agree                          | 234       | 48.4       |
| Disagree                       | 51        | 10.6       |
| Not sure                       | 96        | 19.9       |
| Strongly agree                 | 81        | 16.8       |
| Strongly disagree              | 21        | 4.3        |
| **Living near power lines**    |           |            |
| Agree                          | 100       | 20.7       |
| Disagree                       | 91        | 18.8       |
| Not sure                       | 222       | 46.0       |
| Strongly agree                 | 38        | 7.9        |
| Strongly disagree              | 32        | 6.6        |
| **Feeling stressed**           |           |            |
| Agree                          | 184       | 38.1       |
| Disagree                       | 66        | 13.7       |
| Not sure                       | 144       | 29.8       |
| Strongly agree                 | 69        | 14.3       |
| Strongly disagree              | 20        | 4.1        |
| **Eating food containing artificial sweeteners** |           |            |
| Agree                          | 190       | 39.3       |
| Disagree                       | 53        | 11.0       |
| Not sure                       | 155       | 32.1       |
| Strongly agree                 | 69        | 14.3       |
| Strongly disagree              | 16        | 3.3        |
| **Using cleaning product**     |           |            |
| Agree                          | 95        | 19.7       |
| Disagree                       | 116       | 24.0       |
| Not sure                       | 217       | 44.9       |
| Strongly agree                 | 30        | 6.2        |
| Strongly disagree              | 25        | 5.2        |
Table 4b: Beliefs regarding breast cancer among females in Selangor

| Using mobile phones                  | Agree | Disagree | Not sure | Strongly agree | Strongly disagree |
|--------------------------------------|-------|----------|----------|----------------|------------------|
| Agree                                | 126   | 26.1     |          |                |                  |
| Disagree                             | 97    | 20.1     |          |                |                  |
| Not sure                             | 187   | 38.7     |          |                |                  |
| Strongly agree                       | 42    | 8.7      |          |                |                  |
| Strongly disagree                    | 31    | 6.4      |          |                |                  |

Eating genetically modified food

| Agree                                | 191   | 39.5     |          |                |                  |
| Disagree                             | 39    | 8.1      |          |                |                  |
| Not sure                             | 166   | 34.4     |          |                |                  |
| Strongly agree                       | 65    | 13.5     |          |                |                  |
| Strongly disagree                    | 22    | 4.6      |          |                |                  |

Using aerosol containers

| Agree                                | 91    | 18.8     |          |                |                  |
| Disagree                             | 77    | 15.9     |          |                |                  |
| Not sure                             | 284   | 58.8     |          |                |                  |
| Strongly agree                       | 16    | 3.3      |          |                |                  |
| Strongly disagree                    | 15    | 3.1      |          |                |                  |

Physical trauma

| Agree                                | 84    | 17.4     |          |                |                  |
| Disagree                             | 142   | 29.4     |          |                |                  |
| Not sure                             | 197   | 40.8     |          |                |                  |
| Strongly agree                       | 23    | 4.8      |          |                |                  |
| Strongly disagree                    | 37    | 7.7      |          |                |                  |

Using microwave ovens

| Agree                                | 103   | 21.3     |          |                |                  |
| Disagree                             | 102   | 21.1     |          |                |                  |
| Not sure                             | 225   | 46.6     |          |                |                  |
| Strongly agree                       | 26    | 5.4      |          |                |                  |
| Strongly disagree                    | 27    | 5.6      |          |                |                  |

Drinking from plastic bottles

| Agree                                | 158   | 32.7     |          |                |                  |
| Disagree                             | 79    | 16.4     |          |                |                  |
| Not sure                             | 188   | 38.9     |          |                |                  |
| Strongly agree                       | 37    | 7.7      |          |                |                  |
| Strongly disagree                    | 21    | 4.3      |          |                |                  |

The association between awareness and belief regarding breast cancer was highly significant (P = 0.02). Most of the respondent has poor awareness and poor belief with 268 and 65% respectively shown in Table 6.

DISCUSSION

The main finding of our research was that the awareness of breast cancer was inadequate or unsatisfying as most of the respondents did not know the various signs, symptoms, risk factors and protective factors of breast cancer. However, the level of breast self-examination practice was low, signifies that the practice of breast self-
examination is not extensive. Few studies have shown that Asian women have low to moderate knowledge with weak to moderate breast self-examination practice \(^9\)\(^-\)\(^{11}\). In our research, most of the respondents had heard of breast self-examination (81.6\%) and mammogram (70\%). However, among a total of 484 respondents, only 171 respondents (36.6\%) have a good awareness of breast cancer, while 306 respondents (63.4\%) have poor awareness of breast cancer.

In our study, knowledge about signs, symptoms, risk factors and protective factors of breast cancer was investigated. The majority of respondents knew about a few signs and symptoms of breast cancer such painless lump in the breast (72.5\%), bloody secretions from the nipples (70.6\%). However, other signs and symptoms like oedema in the arm (41.2\%), pitting in the areola (47.2\%), a lump in armpit (57.6\%) and changing breast size (53.2\%) were not recognized by the majority of respondents. A previous study in Malaysia also showed a similar finding of high knowledge about blood discharge as a symptom of breast cancer and low knowledge about nipple retraction \(^{14}\). A recent study in Singapore found that the most frequent symptoms recognized by respondents were palpable breast lump and nipple discharge. A similar finding was reported whereby a significant increase in the awareness and practices of BSE by 43\% and 53\% respectively were observed after the interventional health education was administered among women in a semi-urban area of India \(^{15}\). According to our research, the most common reason for not performing breast self-examination is not knowing the technique (68.4\%) followed by not thinking it is of benefit (12.4\%), not trusting the examination (10.4\%) and afraid of finding lump (8.8\%).

### Table 5: The association between socio-demographic factors and awareness about breast cancer among females in Selangor

| Social demographic | Awareness | X2 | P |
|--------------------|-----------|----|---|
|                    | Poor | %  | Good | %  |
| **Race**           |      |    |      |    |
| Malay              | 163  | 62.5 | 98  | 37.5 | 2.996 | 0.392 |
| Chinese            | 50   | 72.5 | 19   | 27.5 | 2.996 | 0.392 |
| Indian             | 85   | 60.7 | 55   | 39.3 | 2.996 | 0.392 |
| Others             | 8    | 61.5 | 5    | 38.5 | 2.996 | 0.392 |
| **Marital status** |      |    |      |    |
| Divorced           | 9    | 90.0 | 1    | 10  | 3.407 | 0.333 |
| Married            | 127  | 64.1 | 71   | 35.9 | 3.407 | 0.333 |
| Single             | 163  | 61.7 | 101  | 38.3 | 3.407 | 0.333 |
| Widowed            | 7    | 63.6 | 4    | 36.4 | 3.407 | 0.333 |
| **Education level**|      |    |      |    |
| No formal education| 8    | 88.9 | 1    | 11.1 | 16.24 | 0.001* |
| Primary school     | 6    | 60.0 | 4    | 40.0 | 16.24 | 0.001* |
| Secondary school   | 78   | 78.8 | 21   | 21.2 | 16.24 | 0.001* |
| University         | 214  | 58.6 | 151  | 41.4 | 16.24 | 0.001* |
| **Family history of breast cancer** | | | |
| No                 | 241  | 66.0 | 124  | 34.0 | 4.559 | 0.032* |
| Yes                | 65   | 55.1 | 53   | 44.9 | 4.559 | 0.032* |

*Chi square test was performed. Level of significance at p<0.05

As for the risk factors of developing breast cancer, the vast majority of respondents answered a positive family history of breast cancer (75.8\%). However, many did not recognize other risk factors such as the use of contraceptive pills, using infertility drugs, irregular menstrual cycle, late marriage and having a first child at older age.72\% of respondents answered proper nutrition and being physically active reduces the risk of breast cancer.56.7\% of respondents recognized breastfeeding as a protective factor for developing breast cancer. However protective factors such as late menstruation (19.3\%), early menopause (19\%), pregnancy earlier than 40 years of age (22.6\%) and early marriage (21.5\%) were recognized by a minority of respondents. Inadequate knowledge about risk factors of breast cancer was also reported by previous researches, not only among the general population \(^{16},^{17}\), female teachers and health providers such as nurses were found to have inadequate knowledge on breast cancer \(^{14},^{18}\). These two previous studies
have found that only 55.0% of Malaysian teachers and 35.0% of Pakistani nurses had good knowledge on risk factors of breast cancer. Those studies also have found that breastfeeding, age of menopause and menarche were not recognized as risk factors of breast cancer by the majority of respondents.

| Awareness Level | X2      | P Value |
|-----------------|---------|---------|
| Belief Level    | N   | %   | N   | %   |
| Poor            | 268 | 65.0 | 141 | 35.0 |
| Good            | 38  | 51.4 | 36  | 48.6 |

*Chi square test was performed. Level of significance at p<0.05.

Based on a study done in 2018, it was found that participants have myths like exposure to electromagnetic frequencies, consuming additives meals or food containing artificial sweeteners or genetically modified food, living near powerline, stress emotion, trauma to any parts of the body, drink from plastic bottles, usage of cleansing product, mobile smartphone, aerosol containers & microwave oven. According to our research done on beliefs regarding breast cancer, about 48.4% with a frequency of 234 respondents highly belief that eating food containing additives, then about 39.5% belief eating genetically modified food and followed by eating food containing sweeteners with 39.3% might cause breast cancer. Feeling stressed also believed could be one of the factors with a percentage of 38.1%. However, many participants believe that exposure to electromagnetic with 33.7%, using a mobile phone with (20.1%) and physical trauma with (40.8%) could not be a factor causing breast cancer. The highest number of respondents, with 58.8% were not sure about using aerosol containers. This was followed by living near power lines (46.0%) and using cleaning products (44.9%). Most of the respondents (65%) are found to have poor awareness with poor belief, followed by 51.4% who have poor awareness with good belief, good awareness with good belief (48.6%) and 34.5% having good awareness with poor belief. Lastly, the association between awareness and belief regarding breast cancer was highly significant.

CONCLUSION

In conclusion, the level of poor awareness is 63.4%, while the level of poor belief is 84.7%. This study shows that the internet plays a significant role as a source of information of breast cancer among females in Selangor. Thus, more education should be done using the media to increase the level of awareness and belief on breast cancer.

Conflict of interest

The authors declare no potential conflict of interest.

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