# ORIGINAL ARTICLE

# RELATIONSHIP BETWEEN PATIENT FACTORS AND SPECIFIC LEARNING NEEDS OF WOMEN ON BREAST CANCER

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## ABSTRACT

*The type of specific learning needs of women with breast cancer using the Information Needs Questionnaire (INQ) had been identified prior to developing a breast cancer education package. It is also important to determine the types of patient factors such as demographic and clinical factors that influence women's specific learning needs on breast cancer. This study thus reports the findings on what type of patient factors influence women's specific learning needs related to the types of INQ.  A total of 140 women with breast cancer who sought treatment at Universiti Kebangsaan Malaysia Medical Centre participated in this cross sectional study. Age showed a significant relationship with specific learning needs on sexual attractiveness (p=0.001) and self-care (p=0.048). Duration of illness was related to information on spread of breast cancer (p=0.040) and self-care (p=0.047). Education level showed a significant relationship with cure (p=0.001), sexual attractiveness (p=0.007) and spread of breast cancer (p=0.003). Occupation showed a significant relationship with specific learning needs on sexual attractiveness (p=0.005), chemotherapy (p=0.043), radiotherapy (p=0.039) and hormonal therapy (p=0.043). On treatment received, a significant relationship was noted with sexual attractiveness (p=0.009), radiotherapy (p=0.029), hormonal therapy (p=0.038) and targeted therapy (p=0.047). Ethnicity and Marital status showed no significant relationship with all the specific learning needs. Findings of this study concluded that certain patient factors had significant relationship with certain specific learning needs. All the patient factors studied and their influence on the specific learning needs were taken into consideration prior to developing the breast cancer education package.*

*Keywords: breast cancer, information needs, specific learning needs, patient factors.*

## INTRODUCTION

Breast cancer is the most common cancer and the leading cause of cancer death among women population in Malaysia irrespective of age, ethnicity and other socio demographic factors[1]. The incidence of breast cancer is increasing in Malaysia where 1:19 women are found to be at risk for breast cancer. In relation to ethnicity, the incidence of breast cancer is highest among Chinese women where the age-standardized incidence rates (ASR) is 38.1 per 100,000 population followed by Indian and Malay with the ASR of 33.7 and 25.4 per 100,000 population respectively[2]. This averages up to 1432 new breast cancer cases identified among Malay women, followed by 1343 among Chinese and 297 among Indian.

The increasing number in the incidence of new cases, spread of breast cancer to other organs and breast cancer recurrence, can instill a lot of fear towards a breast cancer diagnosis, causing women to demand for information upon their diagnosis[3,4]. The diagnosis of breast cancer gives a threatening experience for all women irrespective of age, ethnic group, marital status, educational background and social class. This is because breast cancer is a fatal disease and affects women's general well-being in many ways, mentally, physically, psychologically and socially[5]. It could also be due to the fact that a breast cancer diagnosis is often associated with disfigurement, poor quality of life and an early death. Women thus need information and knowledge to deal with this

fatal disease. They would seek in-depth information on various aspects of breast cancer after a diagnosis, before and after treatment and throughout their breast cancer journey [6]. Most women want to equip themselves with breast cancer knowledge so that they can involve themselves in decision making and manage treatment side-effects effectively. Patients who are well informed on breast cancer treatment and disease often take an active role in symptom management and participate actively in decision making, resulting in desired health outcomes[7].

Educating women on breast cancer is an important component in the management of breast cancer. Women upon being diagnosed with breast cancer often face a high level of uncertainty on what type of treatment would be rendered[3,8]. Subsequently, upon being scheduled for breast surgery, chemotherapy and radiotherapy they would experience multiple fears and expect to be told everything about the recommended treatment. In addition, being vulnerable at that point of time and combined with fear and shock, it would prevent them from asking more questions[3,8.]. It has been reported that women with breast cancer demand detailed and timely information to enable them to cope with any immediate problems[9].

The type of specific learning needs of women with breast cancer using the Information Needs Questionnaire (INQ)[3] had been identified prior to developing a breast cancer education package[4]. The specific learning needs on spread of breast cancer received the highest of importance followed by specific learning needs on types of breast cancer treatment and side-effects, cure, sexual attractiveness, self-care, genetic risk, impact on family and friends and social life. From the findings, it can be concluded that women had placed high importance on certain specific learning needs and less importance on others.

The information needed by women with breast cancer and the influence of socio-demographic characteristics of women with breast cancer and their information needs have been widely reported in many studies [6,10,11,12]. These studies have also reported the importance of information needs for women with breast cancer irrespective of age and educational background [6,10,11,12]. The amount and types of information needs were reported to vary with their stage of breast cancer [13,14]. The information needs of Korean women [6] and Malaysian

women[4] with breast cancer were high where majority of the women were concerned about disease stage at diagnosis and spread of breast cancer. Korean women diagnosed with stage 3 breast cancer had the highest information needs while women who had no clue about their breast cancer stage had lower information needs[6]. According to the study done by Yi et al.[10], Korean women, irrespective of age showed high information needs related to disease whereas in the study of Galloway et al.[15], a slightly lower information needs related to diagnostic procedures and treatment procedures were identified. Similar findings were also noted among Malaysian women [5].

Patient factors of a study sample are often researched to determine its influence on the study outcomes. The common patient factors considered as significant predictors in all health science research studies related to breast cancer consisted of age, ethnicity, marital status, education level, occupation, duration of illness and treatment received. The demographic age factor is often commonly used as a predicting factor in most studies of cancer epidemiology[16]. Cancer is often considered as an age-related disease with the very reason that the incidence of breast cancer increases with age [17]. In Malaysia, the young and old are not deprived of breast cancer. Most Malaysian women were found to present at a young age, the youngest being at the age of 29 [18]. According to Omar & Ibrahim-Tamim [18], this age denoting factor, however, differs between the three main races in Malaysia, the Malay, Chinese and Indian. The incidence age is highest among Chinese and Indian (38 years old) followed by Malay (25 years old). In addition, from the total of 3242 cases of breast cancer detected among Malaysian women, 48% were below the age of 50 years, the prevalence being between 40 to 49 years[18]. The highest incidence was found in women between the age of 50 to 59 and which increased further beyond this age [18]. Age of women plays an important role in determining the importance of information needs. Younger women were found to have more important learning needs compared to older women [4]. Moreover, Malaysian women generally present with late stage of breast cancer compared to their counterparts in developing countries. It has been reported that 61% of Malaysian women present in stages 2 and 3 [18,19,20].

It is thus important to determine the types of patient factors that influence women's specific

learning needs on breast cancer. This study reports the findings on what type of demographic factors such as age, ethnicity, marital status, education level, occupation and clinical factors such as duration of illness and treatment received influence women's specific learning needs on breast cancer using the INQ.

## MATERIALS AND METHODS

This cross-sectional study was undertaken on 140 women diagnosed with breast cancer in Universiti Kebangsaan Malaysia Medical Centre (UKMMC). UKMMC was chosen as the research setting because it is a well-known tertiary hospital and a referral centre for cancer treatment outside Kuala Lumpur. A purposive sampling method was used to recruit the women who fitted into the inclusion criteria which were: women undergoing breast cancer treatment and attending follow up care in any of the breast surgery clinic or oncology breast clinic, aged between 29 and 65 years, having a breast cancer diagnosis of 3 months and above and had received surgery and more than one type of adjuvant therapy. Consent from women were taken prior to their recruitment and ethics approval was obtained prior to conducting this study.

Data were collected using the INQ which comprised of information on cure (9 items), sexual attractiveness (12 items), spread of breast cancer (9 items), types of breast cancer treatment and side-effects and aim (2 items) -'surgery' (6 items), 'chemotherapy' (8 items), 'radiotherapy' (8 items) and 'targeted therapy' (8 items), genetic risk (11 items), self-care (4 items), social life ( 8 items) and impact on family and friends (9 items). The details of the questionnaire in relation to development, validity and reliability had been comprehensively discussed in the study of Gopal et al.[4]. The demographic factors such as age, ethnicity, marital status, education level, occupation and clinical factors such as duration of illness and types of treatment received were included in the questionnaire.

## Data Analysis

Data were analysed using IBM SPSS version 22.0. Three different tests were used to analyse the relationship between demographic and clinical factors and specific learning needs: Spearman Rho for age and duration of illness; ANOVA for ethnicity and marital status; and independent t-test for education level, occupation and treatment received. Statistical significance was set at $p<0.05$.

## RESULTS

A response rate of 100% was received upon recruitment. Women's age ranged from 29 to 64 years (mean 49.19, SD 8.709) and duration of illness ranged from 6 months to 4 years (mean 2.54, SD 1.115). Most respondents fell within the 2 to 3 years group. Majority of the respondents were Malay (57.9%), married (67.1%), had at least secondary education (63.6%) and working (59.3%). A total of 95 women (67.9%) in this study received treatment one and 32.1% received treatment two. Table 1 presents the descriptive analysis of the demographic and clinical data of the respondents.

Age was found significantly related to specific learning needs on sexual attractiveness (rho= -0.288, p=0.001) and self-care (rho= 0.141, p=0.048). There were no significant relationship between age and other specific learning needs (p>0.05) (See Table 2). In relation to education level, the findings showed a significant difference between higher and lower education group for cure (t= 3.105, p=0.001), sexual attractiveness (t=2.728, p=0.007) and spread of breast cancer (t=2.770, p=0.003). Other specific learning needs were not significantly different between higher and lower education group (p >0.05) (Table 4). No significant difference was also found between ethnicity, marital status and specific learning needs on cure, sexual attractiveness, spread of breast cancer, types of breast cancer treatment and side-effects, genetic risk, self-care, social life and impact on family and friends (p >0.05) (Table 3).

**Table 1: Demographic and Clinical Characteristics of Respondents (n=140).**

| Parameter | Mean | Std. Deviation (±) | Frequency (n) | Percentage (%) |
|---|---|---|---|---|
| **Age**(29 to 64 years) | **49.19** | **±8.709** | | |
| <50 | | | 80 | 57.1 |
| >50 | | | 60 | 42.9 |
| **Ethnicity** | | | | |
| Malay | | | 81 | 57.9 |
| Chinese | | | 41 | 29.2 |
| Indian | | | 18 | 12.9 |
| **Married Status** | | | | |
| Single | | | 21 | 15.0 |
| Married | | | 94 | 67.1 |
| Divorced/Widowed | | | 25 | 17.9 |
| **Educational level** | | | | |
| Higher education | | | 51 | 36.4 |
| Secondary education | | | 89 | 63.6 |
| **Occupation** | | | | |
| Working | | | 83 | 59.3 |
| Non-working | | | 57 | 40.7 |
| **Treatment received** | | | | |
| Treatment 1 (Surgery & < than 3 adjuvant) | | | 95 | 67.9 |
| Treatment 2 (Surgery & > than 3 adjuvant) | | | 45 | 32.1 |
| **Duration of Illness** | **2.54** | **±1.115** | | |
| <than 1 year | | | 31 | 22.1 |
| >1 to 2 years | | | 40 | 28.7 |
| >2 to 3 years | | | 31 | 22.1 |
| >3 to 4 years | | | 38 | 27.1 |

**Table 2: Relationship between Age and Duration of Illness with Types of Specific Learning Needs.**

| Specific Learning needs | Age | | | Duration of Illness | | |
|---|---|---|---|---|---|---|
| | Mean (SD) | rho | p | Mean (SD) | rho | P |
| Cure | 4.43±0.457 | 0.053 | 0.269 | 4.43±0.457 | 0.042 | 0.309 |
| Sexual | 3.98±0.446 | -0.288 | **0.000*** | 3.98±0.446 | 0.058 | 0.250 |
| Spread | 4.47±0.544 | -0.023 | 0.394 | 4.47±0.544 | 0.148 | **0.040*** |
| Treatment | 4.45±0.286 | -0.054 | 0.264 | 4.45±0.286 | 0.018 | 0.416 |
| Surgery | 4.32±0.500 | -0.022 | 0.400 | 4.32±0.500 | -0.023 | 0.393 |
| Chemotherapy | 4.48±0.253 | -0.038 | 0.327 | 4.48±0.253 | 0.019 | 0.414 |
| Radiotherapy | 4.50±0.274 | -0.063 | 0.229 | 4.50±0.274 | 0.015 | 0.429 |
| Hormonal T | 4.49±0.286 | -0.071 | 0.203 | 4.49±0.286 | 0.024 | 0.391 |
| Targeted T | 4.48±0.281 | -0.044 | 0.304 | 4.48±0.281 | 0.033 | 0.350 |
| Genetic Risk | 3.53±0.458 | 0.080 | 0.173 | 3.53±0.458 | 0.131 | 0.061 |
| Self-care | 3.70±0.375 | 0.141 | **0.048*** | 3.70±0.375 | 1.142 | **0.047*** |
| Social Life | 3.04±0.660 | -0.030 | 0.363 | 3.04±0.660 | 1.106 | 0.107 |
| Impact on family & friends | 3.32±0.469 | -0.042 | 0.310 | 3.32±0.469 | 0.016 | 0.426 |

SD=standard deviation, rho= Spearman Rho Correlation Coefficient: * Significant at p<0.05

A significant difference was found between working and non-working women for specific learning needs on sexual attractiveness (t=2.839, p=0.005), chemotherapy (t=2.042, p=0.043), radiotherapy (t=2.079, p=0.039) and hormonal therapy (t=2.045, p=0.043). No significant difference was seen between occupation and other specific learning needs (p >0.05) (Table 4).

Similarly, duration of illness showed a significant relationship with spread of breast cancer (t=0.148, p=0.040) as well as self-care (t=1.142, p=0.047), as presented in Table 2. However, Duration of illness did not show any significant difference with the other specific learning needs.

It is also important to note that a significant difference was noted between treatment one and treatment two for sexual attractiveness (t=2.642, p=0.009), radiotherapy (t=2.206, p=0.029), hormonal therapy (t=2.096, p=0.038), and targeted therapy (t=2.004, p=0.047). There was no significant difference between types of treatment received and specific learning needs for cure, spread of breast cancer, surgery, chemotherapy, genetic risk, self-care, social life and impact on family and friends (p >0.05). Table 5 presents the relationship between types of treatment received and the specific learning needs.

## DISCUSSION

This study examined the relationship between patient factors and specific learning needs related to information on cure, sexual attractiveness, treatment and side-effects, spread of breast cancer, self- care, genetic risk, social life and impact on family and friends. Findings of this study demonstrated that certain demographic and clinical factors had significant relationship with certain specific learning needs.

However, limited studies were found on the types of patient factors that could influence specific learning needs on breast cancer. In general, however, information preferences and women's specific learning needs were reported to be related with age[21]. Similarly, in this study, age was found to be an important predictor in seeking specific learning needs congruent to the study of Yi et al.[10]. The age group of women in this study ranged from 29 to 64 years and in this modern world they can be considered to fall into young category as they are still active mentally, physically and socially, even

though elderly has been defined as those who are 60 years and above [22]. Studies have shown that older patients prefer information less frequently than younger women [15,23,24], but it has also been reported that older women do seek information on breast cancer[25] .

Findings of this study showed that age is significantly related to the specific learning needs on sexual attractiveness which was of utmost importance followed by self-care. This is because sexual attractiveness encompasses body image and sexual functioning [26]. The breast acts as a sex organ for all women irrespective of age. For the productive age group, it is a milk producing organ after childbirth. When a woman is told that she has breast cancer, uppermost in her mind would be losing her breast hence sexual attractiveness and ability to function as a woman and mother matter. Sexuality is an important issue to all women but as the women grow older the desire towards the importance of body image and sexuality takes a second role while more attention is given to other issues such as treatment and side-effects, spread of breast cancer or self-care. The findings of this study showed that as age increases the need for information on sexual attractiveness decreases. Younger women are usually sexually active compared to older women[27] and sexual attractiveness becomes an important need for all women irrespective of being unmarried or married[26,28]. Possible reasons for older women to show less importance to specific learning needs for sexual attractiveness could be that they feel uncomfortable when discussing issues related to sexuality, intimacy and body image[29]. Many young unmarried health care professionals may also be uncomfortable about starting a conversation with older women on sex related issues.

Although it can be considered that specific learning needs on sexual attractiveness are important for all women irrespective of age, educational level, occupation and treatment received, cultural and religious differences may play a big role in determining the importance of sexuality. For example, for a Malay married woman, she may have to preserve sexual attractiveness in order to secure her marriage or face the consequence of her husband entering into a second marriage, which is culturally permissible. For this woman, sexual attractiveness and sexuality are of utmost importance, irrespective of her age. A Chinese married woman, on the other hand, may not face

the same pressure to secure her marriage because second marriages are culturally not permissible.

Specific learning needs on self-care are shown to have a significant relationship with age and duration of illness. This could probably be because understanding self-care for any age group and at any stage of the disease will result in positive outlook about breast cancer and its treatment and that this positive thinking will help them to accept the diagnosis as well as help them to learn to live productively as a cancer patient. This finding is consistent with the findings of Almyroudi et al.[30] where younger women were likely to prefer more active roles in breast cancer management including wellness activities[31].

Education level of women were found to have a significant association with the specific learning needs on Cure, Sexual attractiveness and Spread of breast cancer. This finding is congruent to the study of Kim et al.[12]. The information need on Cure was identified to be the most important and priority information need, not only among Malaysian women[5] but also among Caucasians[32,33]. Thus, early detection of breast cancer and early treatment, complying to all the breast cancer treatment without any episode of delay may promise cure in early stage of breast cancers.

Occupation was significantly associated with sexual attractiveness, chemotherapy, radiotherapy and hormonal therapy. Working patients reported higher information needs than non-working patients irrespective of whether the information was on sexual attractiveness or breast cancer treatment[34]. However, there are limited studies to support this as many studies did not explore these issues.

In general, women were reported to seek as much information as possible about their disease and treatment[23,32]. Breast cancer treatment received after a diagnosis of breast cancer can have a negative impact on body image[35], irrespective of surgery, chemotherapy, radiotherapy, hormonal and targeted therapy. According to Gopal et al.[5] breast cancer treatment especially surgery and chemotherapy have been strongly associated with body image issues among Malaysian women. More specifically, breast cancer treatment does reduce sexual activity, increase problem with body image and sexuality[26,36]. Body image problems have been reported by 47 - 50% of the younger women in the study of Ganz et al.[26,36]. Lack of sexual interest

among women were also reported in the studies of Fobair et al.[26] and Ganz et al.[36]. Breast cancer treatment such as surgery, chemotherapy and hormonal therapy does have an impact on sexuality and body image of women with breast cancer. In fact, most women have been found to be unhappy with mastectomy and often have opted for breast reconstruction surgery because mastectomy has been found to have a negative impact on women's sex lives[37]. This could be true for all women irrespective of age, religion, culture or educational background. Pre-menopausal symptoms and fertility issues may also instill fear among younger women compared to older women and this could be the reason why the specific learning needs on sexual attractiveness are less important and decrease as they grow older.

Duration of illness were found to have a significant relationship with specific learning needs on spread of breast cancer. This could probably be because understanding the benefits of early breast cancer treatment would prevent the loss of their breast, prevent spread of breast cancer to the nearby tissues and organ and increase the chance for cure. Some 49.2% of respondents in this study, had breast cancer for more than 2-4 years and which probably could have spread. The fact that the majority of respondents were at secondary education level, understanding through reading about spread of cancer, could prove critical to their survival. There is little literatures to support this finding. However, one finding showed that long-term survivors of breast cancer often continues to have high informational needs[38]. (Vivar & McQueen. 2005).

Overriding everything else, demographic data related to ethnicity and marital status in this study showed no significant relationship with all types of specific learning needs. This could indicate the general feelings of women that cancer of the breast could affect everyone irrespective of ethnic group, single, married or divorced. Assumptions could also be made that be it a Malay, Chinese or Indian woman, all the specific learning needs may be of average importance and not of significance to them. However, In the studies of Lee et al. [23] and Fielding et al.[39] married women were found to have more demand for breast cancer information but findings in this study showed otherwise. Similarly, marital status was associated with sexual attractiveness in the studies of Ganz et al.[28] and Meyerowitz et al.[40] .

**Table 3: Relationship between Ethnicity and Marital Status with Specific Learning Needs (n=140)**

| Specific Learning needs | Ethnicity | | | | | Marital Status | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Malay Mean (SD) | Chinese Mean (SD) | Indian Mean (SD) | f | p | Single Mean (SD) | Married Mean (SD) | Divorcee/Widow | f | P |
| Cure | 4.45±0.393 | 4.34±0.598 | 4.53±0.331 | 1.291 | 0.278 | 4.44±0.555 | 4.39±0.460 | 4.56±0.329 | 1.404 | 0.249 |
| Sexual | 3.97±0.469 | 3.92±0.433 | 4.13±0.335 | 1.426 | 0.244 | 3.98±0.421 | 3.98±0.466 | 3.97±0.402 | 0.006 | 0.994 |
| Spread | 4.48±0.547 | 4.38±0.587 | 4.59±0.409 | 1.013 | 0.366 | 4.52±0.616 | 4.43±0.530 | 4.56±0.540 | 0.657 | 0.520 |
| Treatment | 4.45±0.288 | 4.44±0.317 | 4.51±0.193 | 0.453 | 0.636 | 4.48±0.335 | 4.44±0.277 | 4.48±0.287 | 0.265 | 0.767 |
| Surgery | 4.29±0.487 | 4.34±0.532 | 4.42±0.498 | 0.514 | 0.599 | 4.32±0.666 | 4.33±0.451 | 4.30±0.540 | 0.629 | 0.972 |
| Chemotherapy | 4.48±0.264 | 4.46±0.268 | 4.52±0.152 | 0.397 | 0.673 | 4.50±0.278 | 4.47±0.251 | 4.51±0.244 | 0.303 | 0.739 |
| Radiotherapy | 4.50±0.283 | 4.47±0.298 | 4.55±0.155 | 0.482 | 0.618 | 4.52±0.297 | 4.48±0.273 | 4.53±0.263 | 0.382 | 0.683 |
| Hormonal T | 4.48±0.293 | 4.47±0.298 | 4.53±0.229 | 0.235 | 0.791 | 4.52±0.297 | 4.47±0.290 | 4.53±0.263 | 0.689 | 0.504 |
| Targeted T | 4.47±0.286 | 4.46±0.312 | 4.55±0.167 | 0.674 | 0.511 | 4.52±0.297 | 4.45±0.282 | 4.52±0.264 | 0.875 | 0.419 |
| Genetic Risk | 3.57±0.456 | 3.46±0.464 | 3.54±0.457 | 0.770 | 0.465 | 3.41±0.462 | 3.56±0.447 | 3.54±0.494 | 0.843 | 0.433 |
| Self-care | 3.68±0.376 | 3.73±0.397 | 3.72±0.325 | 0.302 | 0.739 | 3.68±0.369 | 3.68±0.380 | 3.80±0.359 | 1.112 | 0.332 |
| Social Life | 3.02±0.630 | 3.06±0.742 | 3.04±0.626 | 0.060 | 0.941 | 2.83±0.649 | 3.07±0.682 | 3.08±0.570 | 1.237 | 0.293 |
| Family & Friends. | 3.33±0.469 | 3.32±0.506 | 3.28±0.406 | 0.069 | 0.934 | 3.22±0.435 | 3.34±0.475 | 3.34±0.484 | 0.590 | 0.556 |

SD=standard deviation          f = One-way ANOVA          * Significant at p<0.05

**Table 4: Relationship between Education level and Occupation with Types of Specific Learning Needs (n=140)**

| Specific Learning Needs | Education Level | | | | Occupation | | | |
|---|---|---|---|---|---|---|---|---|
| | Higher Mean (SD) | Secondary Mean (SD) | t | p | Working Mean (SD) | Non-working Mean (SD) | t | p |
| Cure | 4.58±0.278 | 4.34±0.514 | 3.105 | 0.001* | 4.43±4.360 | 4.43±4.900 | 0.039 | 0.960 |
| Sexual | 4.11±3.770 | 3.90±0.466 | 2.728 | 0.007* | 4.06±0.409 | 3.85±0.471 | 2.839 | 0.005* |
| Spread | 4.63±0.418 | 4.37±0.586 | 2.770 | 0.003* | 4.50±0.509 | 4.43±0.594 | 2.730 | 0.467 |
| Treatment | 4.50±0.229 | 4.43±0.312 | 1.394 | 0.133 | 4.49±0.273 | 4.40±0.299 | 1.766 | 0.076 |
| Surgery | 4.38±0.442 | 4.29±0.530 | 1.047 | 0.092 | 4.34±0.481 | 4.29±0.530 | 0.668 | 0.505 |
| Chemotherapy | 4.48±0.264 | 4.46±0.278 | 1.255 | 0.174 | 4.52±0.233 | 4.43±0.273 | 2.042 | 0.043* |
| Radiotherapy | 4.52±0.201 | 4.48±0.303 | 1.263 | 0.168 | 4.54±0.262 | 4.44±0.284 | 2.079 | 0.039* |
| Hormonal T | 4.53±0.224 | 4.46±0.314 | 1.345 | 0.144 | 4.53±0.276 | 4.43±0.292 | 2.045 | 0.043* |
| Targeted T | 4.52±0.218 | 4.55±0.309 | 1.528 | 0.096 | 4.52±0.271 | 4.42±0.288 | 1.964 | 0.052 |
| Genetic Risk | 3.59±0.480 | 3.50±0.443 | 1.236 | 0.219 | 3.53±0.464 | 3.54±0.452 | -0.134 | 0.894 |
| Self-care | 3.72±0.390 | 3.69±0.368 | 0.398 | 0.398 | 3.70±0.387 | 3.70±0.360 | -0.040 | 0.968 |
| Social Life | 2.98±0.638 | 3.07±0.674 | -0.716 | -0.716 | 3.05±0.667 | 3.02±0.655 | 0.302 | 0.763 |
| Family & Friends. | 3.31±0.487 | 3.33±0.462 | -0.241 | -0.241 | 3.34±0.448 | 3.29±0.502 | 0.613 | 0.541 |

SD=standard deviation          t= Independent t-test          * Significant at p<0.05

The only limitation in this study is the reduced sample size of the Chinese and Indian ethnic group. At minimum the number of the Malay, Chinese and Indian respondents should correspond with the percentage of the population. There is a possibility that different findings could have been generated related to the relationship between the three ethnic groups and their specific learning needs.

**CONCLUSION**

From the study findings, it can be concluded that certain demographic and clinical factors do influence certain specific learning needs on breast cancer. The study findings demonstrate the importance of specific learning needs on sexual attractiveness for young women and less important for older women. Information is needed by all women throughout the stages of breast cancer including after completion of breast cancer treatment and recovering phase. It is important to determine which type of learning needs are important for women with different socio demographic characteristics when developing breast cancer education packages as learning needs vary from person to person. This evidence based information gathered can facilitate Breast Cancer Nurses and other Health care professionals to provide appropriate information to women during diagnosis and when seeking breast cancer treatment. By taking into consideration the influence of patient factors on specific learning needs, health care professionals can develop a more interactive and useful breast cancer education materials for women with breast cancer. These findings will also assist the researcher to consider all patient factors of women when developing the Breast Cancer Education Package.

**Table 5: Relationship between Treatment Received with Types of Specific Learning Needs (n=140)**

| Specific Learning Needs | Treatment One | Treatment Two | | |
| --- | --- | --- | --- | --- |
| | Mean (SD) | Mean (SD) | t | p |
| Cure | 4.43±0.452 | 4.43±0.473 | -0.038 | 0.970 |
| Sexual | 4.04±0.421 | 3.84±0.469 | 2.642 | 0.009* |
| Spread | 4.52±0.521 | 4.37±0.582 | 1.730 | 0.467 |
| Treatment | 4.48±0.280 | 4.39±0.291 | 1.911 | 0.058 |
| Surgery | 4.35±0.481 | 4.29±0.530 | 0.688 | 0.505 |
| Chemotherapy | 4.51±0.249 | 4.42±0.254 | 0.887 | 0.058 |
| Radiotherapy | 4.53±0.267 | 4.43±0.267 | 2.206 | 0.029* |
| Hormonal Therapy | 4.52±0.287 | 4.41±0.273 | 2.096 | 0.038* |
| Targeted Therapy | 4.51±0.284 | 4.41±0.266 | 2.004 | 0.047* |
| Genetic Risk | 3.57±0.468 | 3.45±0.428 | -1.517 | 0.132 |
| Self-care | 3.70±0.389 | 3.70±0.348 | -0.091 | 0.928 |
| Social Life | 3.03±0.664 | 3.04±0.658 | -0.107 | 0.915 |
| Impact on Family | 3.35±0.462 | 3.25±0.483 | 1.268 | 0.207 |

SD=standard deviation          t = Independent t-test          * Significant at $p<0.05$

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