Perceived Factors Related to Delayed Presentation of Breast Cancer among Women with Stage III and IV Breast Cancer in Sri Lanka

Rathnayake Mudiyanselage Chamila Manike Rathnayake, Halyale Mudiyanselage Maheshika Gothami Priyadarshi Halyale, Koththalbadde Vidanalage Nimali Tharanga, Herath Mudiyanselage Sayuri Prabodika Herath, Badurakada Sunil Santha De Silva*

Department of Nursing, Faculty of Health Sciences, The Open University of Sri Lanka, Nawala, Sri Lanka

Abstract

The most common cancers to be diagnosed in women are breast, lung, and colorectal cancers, which when combined represent one-half of all the cancer cases; breast cancer alone accounts for 30% of all new cancer diagnoses in women. Hence breast cancer becomes the most common cause for cancer deaths worldwide among women. Delay in presentation of breast cancer causes increase morbidity, mortality and decreased survival rate of these patients. Therefore, this study was conducted to examine the perceived factors related to delayed presentation of breast cancer among women. One hundred

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*Corresponding should be addressed to **Mr. B. S. S. De Silva**, Department of Nursing, Faculty of Health Sciences, The Open University of Sri Lanka, Nawala, Sri Lanka*
Email*: bssil@ou.ac.lk*
https://orcid.org/0000-0002-8824-9833

and fifty-one female patients with breast cancer stage III and IV, admitted to the Oncology ward and Oncology clinic in the Teaching Hospital, Kandy, were purposively recruited for this quantitative descriptive study. Self-administered questionnaire was used to collect data. Study was conducted during the period January to April 2016. The results highlighted that 67% of patients were unaware of the symptoms of breast cancer. Further, 29% of patients deliberately delayed treatment due to perceived embarrassment in exposing their breasts to medical practitioners; 44% of patients followed the same course of action due to perceived fear of partner abandonment. Significantly, 76% of patients were not aware of self-breast examination method whereas 78% never attended the "Well Women Clinic" (*Suwa Nari Sayanaya*) which is conducted for the improvement of women's health. Furthermore, 83% of the patients did not have family histories of breast cancer. The findings concluded that the lack of awareness among patients on symptoms and the self-breast examination method, never attending Well Women Clinic, fear of partner abandonment, perceived embarrassment in disclosing breasts to medical practitioners and negative family histories were common factors related to delayed presentation of breast cancer among women. Therefore, it is recommended to establish effective public awareness programs to increase early diagnosis, prognosis, survival rate and improve overall quality of life among patients with breast cancer.

Key words: Breast cancer, delayed presentation, women and perceived factors

Introduction

Cancer is an abnormal growth of the cells. When it occurs in the glandular breast tissue, it is known as breast cancer (Asoogo & Duma, 2015). Breast cancer is the most commonly occurring cancer in women and the second most common cancer overall. It is constantly increasing worldwide. Breast cancer accounts for 16% of adult deaths in the world (World Health Organization, 2008). It is estimated that annually, more than one million women are diagnosed with breast cancer (Ferlay et al., 2010). Approximately 40,290 women were expected to die from breast cancer in 2015 (Tarver, 2012). There were over two million new breast cancer cases in 2018 (Bray at el., 2018).

According to the World Health Organization (2008), breast cancer deaths in Sri Lanka reached 1,361 per year or 1.07% of total deaths. A study conducted in Sri Lanka found that most of the patients with

breast cancer were detected at an advanced stage which lowered the five-year survival rate (Kumari & Goonewardena, 2011).

Breast cancer can be classified into five stages based on the characteristics of cancer. The stage of the breast cancer further indicates the average five-year survival rate (Table 1). It is also important to determine prognosis and to decide the best treatment option for cancer (National Cancer Control Programme, 2016).

Table 1. Classification of breast cancer based on cancer Characteristics

Stage	Extent of spread	Average 5 years survival rate (%)
0	Non-invasive cancer	99
I	Small invasive cancer (less than 2 cm without spreading to the axillary lymph nodes)	90
II	Invasive cancer (between 2-5 cm or/with lymph nodes invasion)	70
III	Large invasive cancer (more than 5 cm with skin invasion or spread to multiple lymph nodes)	40
IV	Widespread or metastatic cancer	20

(Note. Reprinted from *Cancer Incidence Data, Sri Lanka, 2010* of the National Cancer Control Programme Sri Lanka, 2016, Ministry of Health*, 56)*

According to the classification of breast cancer based on cancer characteristics, stage III and IV considered for this study are patients presented with those stages which are irreversible and difficult to cure (Tarver, 2012). Delayed presentation of breast cancer is defined as patients who do not undergo medical consultation even after detecting breast abnormalities by themselves within a 3-month duration (Khan et al., 2015). There are two types of delayed presentation for the diagnosis of breast cancer, namely Patient Delay and System Delay (Asoogo & Duma, 2015). Patient delay is the time interval from onset of symptoms to the act of seeking medical advice. System or Provider Delay is the delay between first clinical appointments to initiation of proper treatment (Asoogo & Duma, 2015). However, in many occasions both types were present together (Montazeri et al., 2003).

Delayed diagnosis of breast cancer causes larger tumor size, increase involvement of the lymph nodes and organ metastases (Asoogo & Duma, 2015). Therefore, the delayed presentation and detection of breast cancer causes poor prognosis thus lowering the rate of survival. It can also have negative effects on the quality of life due to increase psychological stress and the use of more toxic treatment due to the severity of the cancer (Asoogo & Duma, 2015). Therefore, early diagnosis of breast cancer is essential for the proper management and treatment of the disease (Norsa'adah et al., 2011). Early diagnosis increases access to mammographic screening and access to effective treatment that have been reported in developed countries. However, in developing countries low screening and absence of mammography facilities have affected the delayed presentation of breast cancer.

Many factors are associated with delayed presentation of breast cancer such as lack of awareness regarding the symptoms (breast lump, nipple discharge, breast pain, nipple retraction), poor knowledge of screening methods (eg. self-breast examination which includes regular examination of one's own breasts to detect any breast abnormalities), financial difficulties and social stigma (Asoogo & Duma, 2015; Stapleton et al., 2011). Furthermore, majority of patients have delayed seeking medical consultation due to fear for cancer treatment, traditional and spiritual believes; they have also wasted time using alternative medication; social stigma attached to exposing their breasts to health care professionals, poor family support, thoughts or misconceptions such as symptoms were not serious and it would go away immediately (Ali et al., 2008; Asoogo & Duma, 2015; Malik & Gopalan, 2003; Stapleton et al., 2011).

Ferlay et al. (2014) pointed out that almost 50% of breast cancer patients and 58% of breast cancer deaths in the world occurred in the developing countries. This highlighted that breast cancer is a major public health concern and needs the attention of relevant authorities urgently. In Sri Lanka, studies conducted on breast cancer are limited. However, a study conducted in Colombo has found that low income and not attending the Well Women Clinic which is conducted for women's health, causes delayed presentation of breast cancer among Sri Lankan women (Kumari & Gunawardhana, 2011). Perera et al. (2004) revealed that lack of national breast cancer screening programme was one of the main reasons for delayed diagnosis of breast cancer in Sri Lanka. Kuruppu et al. (2015) mentioned that knowledge of risk factors, symptoms, screening/diagnosis methods and services provided to general public through the Well Women Clinic were poor. Therefore, understanding the perceived factors related to delayed presentation of breast cancer is vital in order to establish public awareness programs to encourage women to seek proper health care as early as possible. Women need

to be aware about the clinical symptoms and proper knowledge regarding breast cancer to increase the chance of early detection and thereby minimize mortality and morbidity rates. Therefore, the purpose of the study was to examine the perceived factors related to delayed presentation of breast cancer among female patients with breast cancer stage III and IV in the Kandy Teaching Hospital. The specific objectives of the study were to determine the perceived factors leading to delayed presentation of breast cancer in relation to socio demographic, knowledge, attitudes and socio-economic aspects of these patients.

Methodology

Study design
A quantitative descriptive research design was utilized in this study. The quantitative research approach is best suited to focus on determining factors and examining causes (Kothari, 2008) on the delayed presentation of breast cancer. As the nature of the descriptive research design, it helps the exploration and description of phenomena in real-life situations of these women with breast cancer. Therefore, the descriptive design helps to describe the perceived socio demographic, knowledge, attitudes and socio-economic factors leading to delayed presentation of breast cancer among women with Stage III and IV breast cancer in Teaching Hospital, Kandy.

Ethical considerations
Ethical approval was granted by the Ethics Review Committee, Teaching Hospital Kandy. Institutional approval was also obtained from the director of the hospital. Permission was sort from the consultants in female Oncology wards and clinic at Teaching Hospital, Kandy, prior to commencement of the study. Voluntary participation was encouraged. Written informed consent was obtained from every participant after informing benefits and risks of the study (Bailey, 2008). Privacy and confidentiality of participants were assured throughout the study. Participants were convinced about their right to withdraw from study at any time without any penalty.

Study setting and participants
The study was conducted at the female Oncology wards and clinic at Teaching Hospital Kandy. The Oncology wards and clinic in Teaching Hospital Kandy is responsible for treatment and minimizing of all

cancer incidents in the Kandy district. The female Oncology ward consists of three sections coming under three consultants. Participants were purposively selected for this study as researchers wanted to identify the patients who were in the late stages of breast cancer (stage III and IV). The sample size was calculated based on the Cochran formula (Statistics, 2018) and accordingly 151 female patients attending Oncology wards and clinic at the Teaching Hospital, Kandy were recruited for this study. The women who were histologically diagnosed as breast cancer stage III and IV and aged above 20 years were used as the inclusion criteria.

Data collection and analysis
Data collection was carried out from January to May 2016. Pre-tested self-administered questionnaire was used to collect data from the study participants. The questionnaire was prepared in English language and translated into Sinhala and Tamil language. It consisted of 47 questions in four parts which contained socio demographic information such as age, education, and religion, knowledge related to symptoms of breast cancer and early diagnosis methods, attitudes such as fear and embarrassment, and socio-economic factors like transport difficulties and low income which contribute to delayed presentation of breast cancer. Content validity of the questionnaire was assessed by referring to the standard literature and subject experts in the field of Oncology and Community Medicine. Test-retest reliability was maintained. Data analysis was carried out with descriptive statistics using Statistical Package for the Social Science (SPSS) version 22 software.

Results and Discussion
The response rate was 98.05%. The data was presented under four main categories: socio demographic factors, factors related to knowledge, attitudes and socio-economic factors.

Socio demographic factors
Among the study participants, majority (55%, n=83) were above 51 years. They were the high-risk group that is vulnerable to breast cancer among the study participants. The mean age of all participants was 45.5 $\pm$ 1.6 years (range 27-59 years). Age is considered as the most important risks factor for breast cancer as it gradually increases with age. It is rare for those who are under twenty years. Majority of cases are reported between 45 and 65 years. This is most probably attributed to hormonal imbalance in this age due to menopause (Mensah et al., 2015).

Seventy five percent of patients were married. Furthermore, 83 % of patients were followers of Buddhism. Besides, 33% of patients were educated up to the Advanced Level of General Certificate of Education (G.C.E A/L). The study results further revealed that over one third of

late presented patients with breast cancer were educated only up to grade eight (Table 2). This might have highlighted that their deficiency of understanding the symptoms and severity of the disease.

Table 2. Socio demographic factors related to delayed presentation of breast cancer

Socio demographic factors		Frequency (n=151)	(%)
Age	20 – 30 years	3	2.0
	31 – 40 years	23	15.2
	41 - 50 years	42	27.8
	>51 years	83	55.0
Religion	Buddhism	126	83.4
	Hindu	14	9.3
	Islam	11	7.3
Education level	No formal education	17	11.3
	Up to grade 8	48	31.8
	Up to G.C.E O/L	29	19.2
	Up to G.C.E A/L	49	32.5
	Higher education	8	5.3
Civil status	Single	10	6.6
	Married	114	75.5
	Widowed	13	8.6
	Divorced	14	9.3

Knowledge related to delayed presentation of breast cancer
In view of the knowledge regarding breast cancer, 67% (n=101) of delay-presented patients were not aware of breast cancer symptoms. Only 19% (n=28) of patients were aware that the lump could be a breast cancer. The same finding was presented by Montazeri et al. (2003). According to the present study findings, 50% of the participants knew that the breast cancer can be cured if detected early. The study findings highlighted that 60% (n=90) of delay-presented patients with breast cancer have taken medical consultation after three month of initiation symptoms while 21% (n=32) of patients received medical consultation after it became worse.

Table 3. Knowledge related to delayed presentation of breast Cancer

Knowledge related to delayed presentation	Frequency (n=151)	(%)
Knowledge of symptoms of breast cancer		
breast lump may be due to a breast cancer	28	18.5
breast pain may be due to a breast cancer	15	9.9
breast enlargement may be due to a breast cancer	5	3.3
nipple discharge may be due to a breast cancer	12	8
not known	101	66.9
Seeking medical consultation for symptoms		
after it got worse	32	21.2
after three months	90	59.6
as soon as possible	29	19.2
Known that breast cancer can be cured by early detection	75	49.7
Having knowledge of self-breast examination	36	24
Not having knowledge of self-breast examination	115	76.2
Never done self-breast examination	120	79.5
Knowledge regarding the Well Women Clinic		
detect illnesses of women	49	32.5
giving health education	14	9.3
Not aware about Well Women Clinic	96	63.6
Never attending Well Women Clinic	118	78.1

Moreover, 51% (n=77) of patients had thought their symptoms were normal and delayed medical consultation. Fourteen percent of patients delayed taking medical consultation due to heavy work load at home or work place.

The patients who knew self-breast examination method were 24% (n=36). However, out of these 36 patients, 5 patients did not practice it. Significantly, 80% (n=120) of patients had never carred out a self-breast examination. Similar results were presented by a contemporary research carried out in Jordan (Suleiman, 2014). It disclosed that majority of patients with breast cancer presented delay was due to lack of screening for breast cancer or performing self-breast examination. In Egypt, approximately half of women with breast cancer suffered a similar fate due to the lack of knowledge of self-breast examination (Stapleton et al., 2011). Lannin et al. (1998) pointed out that majority of patients with breast cancer delayed seeking medical consultation due to the failure of identifying initial breast cancer symptoms and not practicing self-breast examination regularly.

Further, the study illustrated that 78% of patients never attended to Well Women Clinic and 64% (n=96) patients had not known about

this clinic. Even in the United State, it was found that patients with poor attendance to early breast cancer diagnosis centers were reported (Grunfeld et al., 2002). However, the authors further highlighted that the society should be informed that deaths related to breast cancer are attributed to the advanced stages of the disease and reporting too late for medical treatment.

According to the present study 20 % of patients wasted time on indigenous and alternative traditional medication after detecting symptoms (Fig. 1). Globally, complementary and alternative medicines are common among women with breast cancer due to cultural influences. This is one of the main reasons for delayed presentation of breast cancer (Donker et al. 2015). Two main types of alternative medicine were identified by Donker et al. (2015). These were local based therapies (spiritual/prayer/traditional healer/herbal therapy), and foreign-based therapies (acupuncture/homoeopathy/Chinese medicine). Many studies have shown that patients with breast cancer relied mainly on alternative medicine after detecting breast cancer symptoms, to heal or cure the disease especially in the initial stage of the breast cancer (Ali, et al., 2008; Asoogo & Duma, 2015; Malik & Gopalan, 2003; Stapleton et al., 2011).

Reasons for delay to seek proper medical
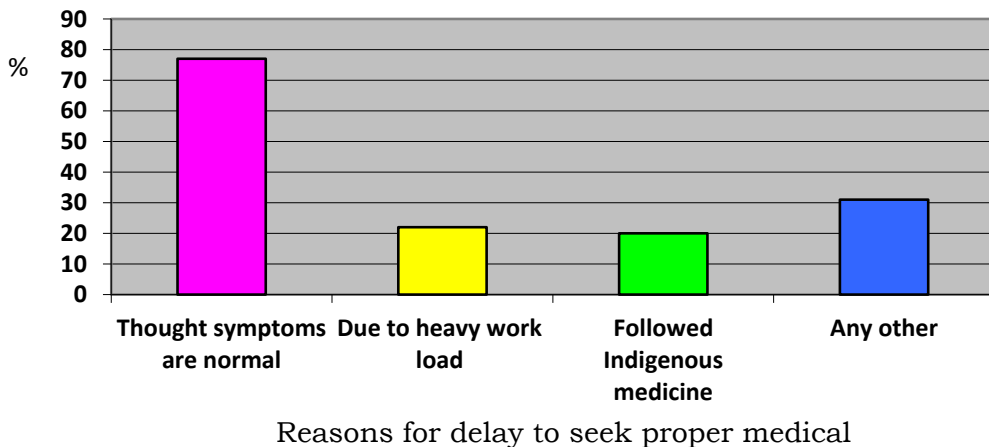
Figure 1. Reasons for delay to seek proper medical consultation

Attitudes related to delayed presentation of breast cancer
When considering the attitudes of delayed presented patients, 38% (n=58) were afraid of hospitalization and surgery. As shown in the table 4, 29% (n=43) of participants were embarrassed at exposing their breast to a medical practitioner. It was one of the main causes for seeking medical consultation quite late. However, contribution of

other psychological factors such as: fear of unbearable pain during treatments (30%, n=46), fear of losing a breast (29%, n=43), fear of partner abandonment (44%, n=67) cannot be disregarded. Study results further highlighted that 31% of participants believed that after getting cancer treatment, the disease condition could get worse (Table 4). Asogo & Duma (2015) argues that the negative thoughts such as fear of detecting breast abnormality, fear of partner abandonment, social stigma attached to exposing breasts to health care professionals were barriers to early detection of breast cancer cases. Moreover, the results highlighted that about one third of the patients with breast cancer delayed seeking medical consultations due to the fear for loss of the breast/mastectomy and chemotherapy which are the most common treatments for breast cancer management (Table 4).

Table 4. Attitudes related to delayed presentation of breast Cancer

Attitudes related to delayed presentation	Frequency (n=151)	(%)
Fear of hospitalization and surgery	58	38.4
Embarrassment in exposing breasts to a medical practitioner	43	28.5
Believe about prayers	48	31.8
Afraid of losing a breast	44	29.1
Fear for cancer treatment	46	30.4
Fear of partner abandonment	67	44.4
After treatment disease get worse	64	42.4

Socio economic factors related to the delayed presentation of breast cancer

When considering the living area, 62% (n=94) of patients belonged to rural areas. Twenty four percent of patients had more than 10 kilometers from their home to nearest medical center. Eighty six percent of study participants had therefore used public vehicles as their transport method to reach a hospital. Therefore, the study results emphasized that living in rural areas, distance from the medical center (more than 10 kilometers) and use of public transport also triggered for delayed presentation of breast cancer. Even a study conducted in the United State found that majority of patients sought medical advice late as a result of transportation problems (Lannin et al., 1998). Stapleton et al. (2011) found that majority of the Egyptian women delayed seeking medical consultation due to the long distance between their homes to the cancer center. Longer travelling time and use of public transport system may limit access to health care. Similar studies carried out in India (Ali et al., 2008) and Pakistan (Khan et al., 2015) supported this study findings.

The study results further revealed that 83% (n=125) of patients did not have family histories of breast cancer. The patients who had family histories of breast cancer were only 17.2% (n=26). However, they also delayed seeking proper medical consultation. Moreover, only 22% of patients with breast cancer stage III and IV were employed while 56% had monthly family income less than 10,000 Sri Lankan rupees. (Table 4). Thus, poverty and financial difficulties have been the causes for the delay in seeking medical treatment in the developing as well as developed countries (Anyanwu, 2008; Arndt et al*.,* 2002). Donker et al. (2015) identified that there were two main dimensions of access to health care: physical access and economic access. Moreover, the economic access to health care also affected the seeking medical consultation for breast cancer as it was expensive (Donker et al., 2015). However, in Sri Lanka free health care facilities are available but the overcrowding and the time it takes to obtain treatments (eg. Mammography) might influence the use of such facilities.

Table 5. Socio economic factors related to the delayed presentation of breast cancer

Socio Economic Factors	Frequency (n=151)	(%)
Living in rural area	94	62.3
Transport by public vehicles	129	85.4
Monthly income below Rs. 10,000.00	54	35.8
Distance for medical center above 10 Km	37	24.5
Negligence by family members	119	78.8
Family history of breast cancer	26	17.2

Conclusion

The results of the study highlighted that the lack of awareness among patients regarding the symptoms such as breast lump, nipple discharge, breast or nipple pain, breast enlargement, and nipple retraction. Early detection methods such as self-breast examination and lack of awareness about the Well Women Clinic were common perceived factors related to delayed presentation of breast cancer among women in the Teaching Hospital Kandy. The study results further emphasized that socio economic factors such as low family income, living in rural areas, use of public transport system to reach

health centres, and negative family history were common. Negative attitudes such as the fear of losing a breast, fear of partner abandonment, perceived embarrassment in exposing breasts to health care professionals, belief that the disease would get worse after treatment were contributed to delayed presentation of breast cancer. Moreover, use of indigenous and traditional medication cannot also be disregarded.

The study recommends the establishment of effective public awareness programs about breast cancer thus addressing early detection through self-breast examination and the need for seeking health care as early as possible. Furthermore, expansion of health care facilities all over the country for diagnosis and treatment of breast cancer is essential. Extending the role of nurse and allied health professionals may also be a way of strengthening the health care services related to breast cancer diagnosis and management. Moreover, establishment of mammography services and advancement of breast reconstruction techniques could minimize delayed presentation and optimize cancer treatment outcomes. This will help to increase prognosis, survival rate and improve quality of life among patients with breast cancer. Further studies on the topic should be carried out to expand and to collaborate with the present findings of this study to minimize delayed presentation of breast cancer. Ultimately this will further help to minimize morbidity and mortality associated with breast cancer in Sri Lanka.

Acknowledgments

References

Ali, R., Mathew, A., & Rajan, B. (2008). Effects of socio-economic and demographic factors in delayed reporting and late-stage presentation among patients with breast cancer in a major cancer hospital in South India. *Asian Pacific Journal of Cancer Prevention, 9*(4), 703-7.

Anyanwu, S. (2008). Temporal trends in breast cancer presentation in the third world. *Journal of Experimental & Clinical Cancer Research, 27*(1), 17-20.
https://doi.org/10.1186/1756-9966-27-17

Arndt, V., Stürmer, T., Stegmaier, C., Ziegler, H., Dhom, G., & Brenner, H. (2002). Patient delay and stage of diagnosis among breast cancer patients in Germany – a population-based study. *British Journal of Cancer*, *86*(7), 1034-1040. doi: 10.1038/sj.bjc.6600209

Asoogo, C., & Duma, S. E. (2015). Factors contributing to late breast cancer presentation for health care amongst women in Kumasi, Ghana. *Curationis*, *38*(1), 1-7. https://doi.org/10.4102/curationis.v38i1.1287

Bailey, L. (2008). A Review of: Inhabited Silence in Qualitative Research: Putting Poststructural Theory to Work; A Practical Guide to the Qualitative Dissertation. *Educational Studies*, *44*(3), 282-288. https://doi.org/ 10.1080/00131940802511567

Bray, F., Ferlay, J., Soerjomataram, I., Siegel, R. L., Torre, L. A., & Jemal, A. (2018). Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians*. https://doi.org/ 10.3322/caac.21492

Donkor, A., Lathlean, J., Wiafe, S., Vanderpuye, V., Fenlon, D., Yarney, J., Opoku, S., Antwi, W., & Kyei, A. (2015). Factors Contributing to Late Presentation of Breast Cancer in Africa: A Systematic Literature Review. *Archives of Medicine*, 8, 2. https://doi.org/ 10.1007/s12609-018-0278-7

Ferlay, J., Shin, H., Bray, F., Forman, D., Mathers, C., & Parkin, D. (2010). Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *International Journal of Cancer*, *127*(12), 2893-2917. https://doi.org/ 10.1002/ijc.25516

Ferlay, J., Soerjomataram, I., Dikshit, R., Eser, S., Mathers, C., & Rebelo, M. (2014). Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. *International Journal of Cancer*, *136*(5), 359-386. http://dx.doi.org/10.1002/ijc.29210

Grunfeld, E., Ramirez, A., Hunter, M., & Richards, M. (2002). Women's knowledge and beliefs regarding breast cancer. *British Journal of Cancer*, *86*(9), 1373-1378.

https://doi.org/ 10.1038/sj.bjc.6600260

Khan, M., Shafique, S., Khan, M., Shahzad, M., & Iqbal, S. (2015). Presentation Delay in Breast Cancer Patients, Identifying the Barriers in North Pakistan. *Asian Pacific Journal of Cancer Prevention*, *16*(1), 377-380.
https://doi.org/10.7314/apjcp.2015.16.1.377

Kothari, C. (2008). *Research methodology: methods and techniques.* Delhi: New Age International.

Kumari, P. B. V. R. & Goonewardena, C. S. E. (2011). Delay among women reporting symptoms of Breast cancer. *Journal of the College of Community Physicians of Sri Lanka*, *16*(1). 17-22. https://doi.org/10.4038/jccpsl.v16i1.3867

Kuruppu, D. C., Wijerathna, C. N., Gunawardhana, C. & Amarasinghe I. (2015). Knowledge on breast cancer: a population - based study in Sri Lanka. *Asian Pacific Journal of Health Science, 2*, 41-47.

Lannin, D. R., Mathews, H. F., Mitchell, J., Swanson, M. S., Swanson, F. H., & Edwards, M. S. (1998). Influence of socioeconomic and cultural factors on racial differences in late-stage presentation of breast cancer. *Jama, 279*(22), 1801-1807.
https://doi.org/10.1001/jama.279.22.1801

Malik, I. A., & Gopalan, S. (2003). Use of CAM results in delay in seeking medical advice for breast cancer. *European Journal of Epidemiology*, *18*(8), 817-822.
https://doi.org/10.1023/a:1025343720564

Mensah, S., Dogbe, J., Kyei, I., Addofoh, N., Paintsil, V., & Osei, T. L. (2015). Determinants of late presentation and histologic types of breast cancer in women presenting at a teaching hospital in Kumasi, Ghana. *Journal of Cancer Prevention & Current Research*, 3(4).https://doi.org/10.15406/jcpcr.2015.03.00089

Montazeri, A., Ebrahimi, M., Mehrdad, N., Ansari, M., & Sajadian, A. (2003). Delayed presentation in breast cancer: a study in Iranian women. *BMC Women's Health*, *3*(1), 4.
https://doi.org/10.1186/1472-6874-3-4

National Cancer Control Programme (2016). *Cancer Incidence Data, Sri Lanka 2001-2010.* Colombo

Norsa'adah, B., Rampal, K. G., Rahmah, M. A., Naing, N. N., & Biswal, B. M. (2011). Diagnosis delay of breast cancer and its associated factors in Malaysian women. *BMC cancer*, *11*(1), 141. https://doi.org/10.1186/1471-2407-11-141

Perera, N., Amarasinghe, I. & Wijesundara, N. (2004) Establishing a breast clinic in a developing country: effect of a collaborative project. *European Journal of Surgical Oncology (EJSO). 30*(3):229–32. https://doi.org/10.1016/j.ejso.2003.10.019

Stapleton, J. M., Mullan, P. B., Dey, S., Hablas, A., Gaafar, R., Seifeldin, I. A., Mousumi Banerjee... & Soliman, A. S. (2011). Patient-mediated factors predicting early-and late-stage presentation of breast cancer in Egypt. *Psycho-Oncology*, *20*(5), 532-537.

Statistics How To (2018). *Sample Size in Statistics (How to Find it): Excel, Cochran's Formula, General Tips - Retrieved November 06, 2018, from* https://www.statisticshowto.datasciencecentral.com/probability-and-statistics/find-sample-size/ [Accessed 6 Nov. 2018].

Suleiman, A. K. (2014). Awareness and attitudes regarding breast cancer and breast self-examination among female Jordanian students. *Journal of Basic and Clinical Pharmacy*, *5*(3), 74. https://doi.org/10.4103/0976-0105.139730

Tarver, T. (2012). Cancer Facts & Figures 2012. American Cancer Society (ACS). *Journal of Consumer Health on the Internet, 16*(3), 366-367. https://doi.org/10.1080/15398285.2012.701177

World Health Organization. (2008). *World health statistics 2008*, Geneva: Author.