University of South Carolina Upstate Student Research Journal

Volume 13 Article 10

8-1-2020

Breast Cancer Knowledge among University Students ★

Shimia Hunter
University of South Carolina Upstate

Calvin Odhiambo

Breast Cancer Knowledge among University Students

ABSTRACT. Breast cancer is the most common cancer among women worldwide and the second-leading cause of death among women in the United States. While lack of knowledge about breast cancer is a key factor in breast cancer mortality, little is known about breast cancer knowledge among women under the age of 30. The goal of the current study was to investigate the knowledge and awareness of breast cancer among undergraduate students in the United States. This was a cross-sectional survey of 265 male and female undergraduate students at the University of South Carolina Upstate. Logistic regression analysis was conducted to predict breast cancer knowledge using gender, academic major, marital status, age, family household income, and race as predictors. All analyses were performed using SPSS version 24. Overall, a majority of study participants did not demonstrate adequate knowledge about breast cancer. There were significant differences by gender and race. All other predictors were not statistically significant. This study highlights the need to formulate educational programs to increase breast cancer awareness among undergraduate college students, in general, and to specifically focus on creating awareness among males, reducing the racial gap in breast cancer knowledge and, consequently, reducing existing racial disparities.

SHIMIA HUNTER is a 2019 graduate of the University of South Carolina Upstate, earning a Bachelor's degree in Sociology with a dual minor in Nonprofit Administration and Health Communications with honors. After taking a sociology course taught by Dr. Calvin Odhiambo, an Associate Professor of Sociology at USC Upstate, Shimia was encouraged to examine the multiple facets of the sociological field, gained interest in public health-focused research, and changed her major to Sociology. Since then, Shimia has worked with Dr. Odhiambo as a research assistant on two separate research projects: Breast Cancer Knowledge Among University Students and Racial Disparities in Maternal Mortality: A Systematic Review. Both research projects shared the common finding that racial disparities continue to exist in one of the world's wealthiest countries and highlight the need for health education and reform. Shimia found that one of the most interesting parts of her research experience was learning about the health disparities which occur in her home state of South Carolina. This ultimately led her to further pursue studies in public health.

Shimia's intentions are to obtain a Master's of Medical Science and Public Health degree in hopes of improving the health of individuals, contribute to new policies that will combat public health issues in the United States, and better understand the relationships between public health and medicine. She intends to utilize the knowledge, experience, and collaboration skills gained through her research experience at USC Upstate throughout her graduate studies to help communicate and discuss diseases affecting minority populations nationally and globally. If she could give any advice to students interested in research, it would be to allow themselves to try something new. At times, research can sound like a task intended only for professionals. However, Shimia soon realized that with the mentorship of faculty, students have the potential to learn and experience an opportunity which could greatly impact their future career.

In her free time, Shimia enjoys being outdoors and often likes hiking or playing tennis when the weather is nice. She also enjoys playing with her two dogs named Hunter and Pup, photography, and spending time with her family.

CALVIN ODHIAMBO is an Associate Professor of Sociology and has taught at USC Upstate since Fall 2007. Dr. Odhiambo holds BA and MA degrees in Sociology from the University of Nairobi in Kenya, where he was born, and a PhD in Sociology from Indiana University, Bloomington. A Medical Sociologist by training, his basic research is in the area of health disparities. Dr. Odhiambo's current research examines gender disparities in the Covid-19 severity in the United States. His most recent publication, "Risk for Cardiovascular Disease in Blacks with HIV/AIDS in America" appeared in the Journal of Health Disparities Research and Practice. Dr. Odhiambo attends and presents at regional, national, and international conferences, the most recent being a paper on the risk factors associated with depression among University students which was presented at the International Conference of Arts, Education, and Social Science in Nairobi, Kenya.

Dr. Odhiambo considers Shimia a model student research assistant who has demonstrated exceptional research, writing, and oral communication skills. It is little wonder that she was declared winner of best student paper in her presentation at the Carolina Undergraduate Social Science Symposium in 2017 and winner of best student presentation in social sciences at the 15th Annual South Carolina Upstate Research Symposium in 2019. Dr. Odhiambo considers it an honor to have mentored Shimia and is extremely proud of where she is headed.

1. Introduction

Breast cancer is one of the most common cancers affecting women worldwide and the second leading cause of cancer deaths among women in the United States [1]. Over 270,000 new cases of breast cancer occur in the United States each year, claiming the life of more than 40,000 women annually. However, this disease does not affect all woman in the same way. For instance, black women have higher breast cancer mortality rates than white women, despite having relatively lower breast cancer incidence [2]-[4]. Even though black women are not diagnosed more often than other populations, they have a higher mortality rate than women in other racial and ethnic groups [5]. These disparities are widening throughout much of the United States [6]. Reasons for the disparities in breast cancer mortality include: cultural barriers, socioeconomic status, access to health care, tumor biology, lifestyle factors, diet, and knowledge of breast cancer and its risks, among other factors [7]-[9].

Lack of knowledge about breast cancer is considered a key factor in breast cancer mortality [10]. Lack of adequate knowledge has also been associated with failure to screen, whether through mammogram, clinical breast examination, or breast self-examination (BSE). In addition, lack of adequate knowledge has also been associated with delay in seeking treatment, which leads to poor prognosis. Women who delay seeking medical attention for breast cancer are at risk of developing a more advanced stage cancer, which is often untreatable [11]. Even though studies have consistently shown that breast cancer knowledge is key to early detection, there is an overall lack of knowledge about breast cancer risk among women [12]. Previous studies have focused on women above 40 years of age, in part due to the general notion that breast cancer risks tend to increase after age 40 [13]. This focus on older women invariably means that younger women remain underrepresented in breast cancer research [14].

Breast cancer among younger women tends to be diagnosed in its later stages, resulting in a more aggressive type. In addition, young women have a higher breast cancer mortality rate and higher risk of metastatic recurrence [6], [15]-[16]. However, little is known about breast cancer knowledge among women under the age of 30. This gap of information is critical especially in light of the more adverse outcomes noted among this age group.

Studies that have assessed breast cancer knowledge and awareness among college students have mainly been done outside of the United States in countries such as Ethiopia [15], Malaysia [17], Yemen [18], Saudi Arabia [19], Nigeria [20], Pakistan [21], and Angola [22], among others. Despite the United States having one of the highest breast cancer rates in the world, little is known about breast cancer knowledge and awareness among younger women in the U.S. The current study seeks to fill this gap of information by investigating the knowledge and awareness of breast cancer among undergraduate students in the United States.

2. Methodology

2.1 Study design and sample

This study was based on a cross-sectional survey of undergraduate University of South Carolina Upstate students. Respondents were selected through a convenience sample of students from different disciplines across the campus. Informed written consent was obtained from each student who voluntarily agreed to participate. Participants were given a self-administered questionnaire in a classroom setting and asked to complete the questionnaire anonymously. The questionnaire assessed participants' knowledge and perceptions of breast cancer and its risks. Furthermore, the questionnaire also collected appropriate demographic information for each respondent.

2.2 Instruments

This study used a modified version of the Breast Cancer Perceptions and Knowledge Survey previously used by Sambanje and Mafuvadze [22]. The instrument was first pilot-tested on a convenience sample of 20 female students selected on campus. Results of the pilot test were used to revise the questionnaire prior to being administered to the target population.

Overall, the questionnaire contained three parts, including sociodemographic characteristics of the participants such as gender, age, annual household income, race, marital status, academic major, and academic year. Based on our literature review, it was hypothesized that these specific factors would influence the participants' knowledge of breast cancer and their understanding of its risks. The questionnaire also included a total of 27 breast cancer specific questions/statements - 13 which assessed general knowledge and perceptions about breast cancer, and 14 which assessed understanding of breast cancer risks factors. Study participants were asked to indicate which statements were true or false. Their answers were then scored based on facts about the disease as stated by the American Cancer Society, Centers for Disease Control and Prevention, and the Susan G. Komen Organization. Each correct/expected answer was assigned a score of 1, while an incorrect answer, or "don't know", was assigned a score of 0. The dependent variable was computed by summing up scores from each correct response to create a total score for basic breast cancer knowledge and for understanding of breast cancer risk. The total score for basic breast cancer knowledge was used to create a binary variable coded '0' for low knowledge (for total scores of 0-6) and '1' for high knowledge (for total scores of 7-13). To measure overall breast cancer knowledge, we took the total score from the 27 items and created three categories of "poor overall knowledge" (scores of 0-8), "satisfactory overall knowledge" (scores of 9-18), and "good overall knowledge (scores of 19-27).

2.3 Statistical analysis

Data was analyzed using the Statistical Package for Social Sciences (SPSS) version 24. Descriptive statistics with cross-tabulations were performed and frequencies generated for correct and incorrect answers for each measurement of breast cancer knowledge and risk factors.

Association between the variables was analyzed using multiple logistic regression with the significance level set at $p<0.05$ for all variables used in the analysis.

3. Results

3.1 Socio-demographic Characteristics

As presented in Table 1, out of the 265 students who were included in the study, a majority were women (63%), under 20 years of age (52%), single (92%), white (55%), in their freshman or senior year (28%), and from families with a household income of $25,000-$49,999 (34%).

3.2 Perceptions and Knowledge of Breast Cancer

Regarding perceptions and knowledge of breast cancer, our results show that there was a general basic knowledge about breast cancer among study participants (see Table 2). In general, a majority of study respondents gave correct responses to questions regarding breast cancer perceptions and knowledge. A majority of the students gave correct answers to 11 of 13 (or 85%) of the statements used to assess basic knowledge and perceptions about breast cancer. The only statements where a majority of students did not exhibit correct basic knowledge were statements relating to whether black women are more likely to develop breast cancer than white women (where only 37% of the respondents gave the correct answer) and whether study participants personally knew someone who had died from breast cancer (only 42% of respondents answered in the affirmative).

3.3 Understanding of Breast Cancer Risk Factors

We found a widespread lack of knowledge about the risks for breast cancer among the respondents. As Table 3 shows, out of the 14 statements used to assess breast cancer risks, a majority of the study participants demonstrated a correct understanding in only 5 (or 36%) of the statements. For instance, a majority of the students incorrectly assumed that physical height (being tall), wearing tight bras, or a hard blow to the breast could lead to breast cancer. On the other hand, a majority of students were generally not aware of the risks or predispositions associated with obesity, breast implants, and race and/ethnicity. The best-known risk factor was a family history of breast cancer, where 90% of study respondents provided the correct answer (see the appendix for the correct answers to each of the statements used to assess basic breast cancer knowledge and risks).

3.4 Overall Knowledge

We combined responses from the students' basic knowledge of breast cancer with their understanding of breast cancer risk factors to come up with an overall breast cancer knowledge (see Table 4). Our study found a low overall knowledge of breast cancer among students. As shown in Table 4, only 24% of the respondents had "good" overall breast cancer knowledge. The majority (76%) had poor or only satisfactory overall knowledge about breast cancer. We used multiple logistic regression analysis to examine factors that could have a significant effect on breast cancer knowledge. Of the predictors tested (see Table 5), the two factors that had a statistically significant effect on breast cancer knowledge were gender ($OR = 2.563$, $p = 0.017$) and race ($OR = 0.450$, $p = 0.044$). Female students were more than twice as likely to have correct breast cancer knowledge compared to males. On the other hand, breast cancer knowledge decreased by 55% among racial minority groups, compared to whites. None of the other predictors had any significant effect on overall breast cancer knowledge in our study.

4. Discussion

This study was designed to assess breast cancer knowledge and awareness among undergraduate college students. As previous studies have argued, lack of adequate breast cancer knowledge negatively affects whether one will seek breast cancer care, the timing of the care, the development of the disease, and the prognosis [23]-[24]. In addition, lack of awareness of breast cancer also results in failure to seek medical care or to undergo treatment [25], thus resulting in a more aggressive cancer [23]. Our results show a widespread lack of adequate knowledge about breast cancer among undergraduate college students. In this sense, our results are consistent with studies that have investigated breast cancer knowledge among college students in other countries [15], [17]-[22]. A lack of adequate breast cancer knowledge was detected regardless of respondents' academic major, marital status, age, or family income. On the other hand, our study found that breast cancer knowledge varied by respondents' gender and race.

Regarding gender, our study found that being female was associated with increased breast cancer knowledge. It is not surprising that female students have a better overall breast cancer knowledge than male students. This finding reflects the misconception in the general public that only women are at risk for breast cancer. Although male breast cancer is rare [26]-[28], males do develop breast cancer. About 2,600 new cases of invasive breast cancer in men are diagnosed each year. In addition, over 500 males die from breast cancer annually [29]. In many ways, the risks for breast cancer among men mirror some of the risk factors in women, though there are some differences as well. Some of these risks include aging, family history of breast cancer, radiation exposure, obesity, race, estrogen treatment, and presence of a rare genetic condition known as Klinefelter Syndrome, among other factors [30]. Lack of awareness of the risk of breast cancer in men contributes to late diagnosis and poor prognosis [31]. This highlights the need to increase breast cancer awareness among male students. Such awareness could include information on how to identify symptoms and perform appropriate screening [32].

Regarding race, our study found that white undergraduate students demonstrated better overall breast cancer knowledge than black students. For instance, our study found that 54% of the white students had "good" overall breast cancer knowledge, compared to only 40% of black students. In addition, the odds of having good breast cancer knowledge decreased by 55% among non-white students, compared to their white counterparts. In this sense, our finding is consistent with studies in the general population that have found that African Americans (especially women) suffer from a deficit in knowledge related to breast cancer [33]-[35]. Since, as discussed earlier in this study, black women have higher breast cancer mortality rates than their white counterparts, the observed black-white disparity in breast cancer knowledge among college students should be of concern. The disparities in breast cancer knowledge can only exacerbate existing racial disparities in breast cancer mortality, especially considering the critical role that adequate breast cancer knowledge plays in early detection and intervention [21]. Since the family is considered as the primary unit of health socialization, without adequate knowledge about breast cancer, college students who may themselves be future parents will not be in a position to pass on that knowledge to their offspring. This will only perpetuate the cycle of breast cancer illiteracy and the concomitant racial disparities.

Some research on health socialization has found important racial and ethnic differences in family discourse relating to certain health experiences. For instance, in a qualitative study to understand several racial and ethnic group members' experience as breast cancer survivors, Ashing-Giwa and others [36] found that there was a code of silence about cancer among certain racial and ethnic minority families. This sentiment was best captured in a statement made by an African American respondent in the study who pointed out that historically, when diagnosed with cancer, African Americans did not discuss the disease. This was due to the cultural belief that in African American families it was considered "a disgrace to have such a disease as cancer." Other

respondents attributed this code of silence to "lack of knowledge about cancer." It is easy to see how the culture of silence about breast cancer that Ashing-Giwa [36] found among racial minority families could affect black students' overall knowledge about breast cancer. The general lack of breast cancer awareness among older African American women, coupled with cultural beliefs that inhibit family discourse about breast cancer, highlight the need for concerted efforts in developing educational programs to increase breast cancer awareness among younger minority women.

5. Conclusion

Our results show a widespread lack of overall knowledge among university students regarding breast cancer and risks related to it. However, this general lack of knowledge is more pronounced among males than females, and non-white than white students. This underscores the need for effective breast cancer awareness and prevention programs that reach all students, in general, but that is also targeted towards specific at-risk groups identified in this study. In particular, given the observed racial disparity in breast cancer knowledge, it is evident that existing awareness campaigns are not reaching all racial and ethnic groups in the same way. This suggests the need to specifically focus such campaigns towards racial minority groups through the use of means and measures that are more culturally appropriate, accessible and effective. Our findings also suggest that breast cancer awareness programs should not simply focus on females but should also target males.

6. Acknowledgements

This research was made possible by a Research Assistantship Grant awarded through the USC Upstate Office of Sponsored Awards and Research Support (SARS).

7. Tables

Table 1. Socio-demographic characteristics of participants

Characteristics		**N=265**
		%
Gender	Male	37
	Female	63
Age (Years)	<20	52
	21-25	40
	26-30	4
	Over 30	4
Marital Status	Single	92
	Married	7
	Divorced	1
Race	Black	34
	White	55
	Asian	3
	Hispanic	4
	Other	4

Class	Freshman	28
	Sophomore	21
	Junior	22
	Senior	28
Family Income	Less than $25,000	23
	$25,000-$49,999	34
	$50,000-$99,000	26
	$100,000 or more	17

Table 2. Perceptions and knowledge of breast cancer

Question	**Study Participants (N=265) %**		
	Correct	**Incorrect**	**Don't Know**
Breast cancer can affect men	89	5	6
Women younger than 30 years of age cannot get breast cancer	92	4	4
*I know personally someone who has been diagnosed with breast cancer	76	11	13
Even if found early, the chance of surviving breast cancer is low	71	11	18
Black women are more likely than white women to develop breast cancer	37	17	46
Only women with large breasts can get breast cancer	95	1	4
A lump always means having breast cancer	92	2	6
Breast Cancer is the second most common cancer among women in the U.S.	69	7	24
A family history with breast cancer increases risk	83	6	11
The risk of developing breast cancer increases with age	57	15	28
About 1 in 8 women will develop breast cancer in the course of their lifetime	55	8	37
Chemotherapy is the only form of treatment for breast cancer	66	11	23
*I personally know someone who has died from breast cancer	42	43	15
NOTE *See explanatory note on these two statements in Appendix 1			

Table 3. Understanding of breast cancer risk factors

Risk Factor	Study Participants (N=265) %		
	Correct	Incorrect	Don't Know
A stressful life	57	20	23
A hard blow to the breast	29	41	30
Having children before age 30	50	10	40
Being overweight	47	22	31
A family history of breast cancer	90	5	5
Breast implants	28	38	34
Wearing tight bras	31	30	39
Breast feeding	57	11	32
Radiation to the chest or face before age 30	69	9	22
Race/ethnicity	43	30	27
Eating grilled food; food containing chemicals	40	25	35
Height (being too tall)	8	62	30
Smoking	67	14	19
Physical activity	32	43	25

Table 4. Distribution of Students' Overall Breast Cancer Knowledge

Level of Knowledge	Scores	Study Participants N=265 %
Poor	0 – 8	5
Satisfactory	9 – 18	71
Good	19 – 27	24

Table 5. Logistic Regression Analysis of Predictors of Breast Cancer Knowledge

Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for Exp(B)	
							Lower	Upper
Gender	.941	.396	5.664	1	.017	2.563	1.181	5.566
Academic Major	-.279	.504	.307	1	.579	.756	.282	2.031
Marital Status	1.509	1.166	1.674	1	.196	4.520	.460	44.430
Age	.703	.764	.846	1	.358	2.019	.452	9.026
Family Household Income	-.653	.418	2.435	1	.119	.520	.229	1.182
Race	-.798	.396	4.054	1	.044	.450	.207	.979
Constant*	1.569	.958	2.679	1	.102	4.800		

NOTES:
*Predicted probability is high breast cancer knowledge.
Reference categories for predictors are: Gender=Female; Academic Major=Non-Medical; Marital Status=Married; Age=Age 25 or younger; Household Income=Under $50k; Race=Females.
B – This is the unstandardized regression weight. *S.E.* – This is the standard error
Wald –This is the test statistic for the individual predictor variables. *Df* – This is the degree of freedom.
Sig – This is the significance level. Exp(B) – This are the odds rations for the predictors

8. References

[1] American Cancer Society, 2020. "How Common is Breast Cancer." 2020 [cited October 23, 2020], retrieved from World Wide Web:https://www.cancer.org/cancer/breast-cancer/about/how-common-is-breast-cancer.html.

[2] C.E. DeSantis, J. Ma, M. M. Gaudet… and R. L. Siegel, "Breast Cancer Statistics, 2019." CA: Cancer Journal for Clinicians, vol. 69, 2019, pp. 438-451.

[3] C.H. Kroenke, C. Sweeney, M.L. Kwan… and B.J. Caan, 2014. "Race and Breast Cancer Survival by Intrinsic Subtype Based on PAM50 Gene Expression," Breast Cancer Research and Treatment, vol. 144, no. 3, 2014, pp. 689-699.

[4] C. A. Parise, and V. Caggiano, "Disparities in Race/Ethnicity and Socioeconomic Status: Risk of Mortality of Breast Cancer Patients in the California Cancer Registry, 2000-2010," BMC Cancer, vol. 13, 2013, pp. 438-499.

[5] American Cancer Society, "Breast Cancer Facts & Figures 2019-2020," 2019 [cited October 26, 2020], retrieved from World Wide Web: https://www.cancer.org/research/cancer-facts-statistics.html.

[6] American Cancer Society, "Special Section: Cancer in Adolescents and Young Adults," 2020 [cited October 28, 2020], retrieved from World Wide Web: https://www.cancer.org/research/cancer-facts-statistics/all-cancer-facts-figures/cancer-facts-figures-2020.html.

[7] J. E. Cunningham, C.A. Walters, E.G. Hill… and C.L. Bennet, "Mind the Gap: Racial Differences in Breast Cancer Incidence and Biologic Phenotype, But Not Stage, Among Low-income Women Participating in a Government-funded Screening Program," Breast Cancer Research & Treatment, vol. 137, no. 2, 2013, pp. 589-598.

[8] M.A. Gerend, and M. Pai, "Social Determinants of Black-White Disparities in Breast Cancer Mortality: A Review." Cancer Epidemiological Biomarkers and Prevention, vol. 17, no. 11, 2008, pp. 2913-2923.

[9] S. G. Komen, "The Who, What, Where, When, And Sometimes Why of Breast Cancer," 2016 [cited November 22, 2016], retrieved from World Wide Web: http://ww5.komen.org/BreastCancer/DisparitiesInBreastCancerScreening.html.

[10] R. Conway-Phillips, "Breast Cancer Screening Behaviors of African American Women: A Comprehensive Review, Analysis, and Critique of Nursing Research," ABNF Journal, vol. 20, no. 4, 2009, pp. 97-101.

[11] J. F. Akinyemiju, A.S. Soliman, G. Copeland,… and S.D. Merajver, "Trends in Breast Cancer Stage and Mortality in Michigan (1992-2009) by Race, Socioeconomic Status, and Area Healthcare Resources," PLos One, vol. 8, no. 4, 2013, pp. e61879

[12] D. Hughes, 2013. "Majority of Women Lack Accurate Knowledge of Their Own Breast Cancer Risk," 2013, [cited November 15, 2016], retrieved from World Wide Web: http://www.cancertherapyadvisor.com/conference-coverage/majority-of-womenlack-accurate-knowledge-of-their-own-breast-cancer-risk/article/310898/

[13] S. G. Komen, 2015. "Age and Breast Cancer Risk," 2015 (cited July 19, 2016], retrieved from World Wide Web: http://ww5.komen.org/BreastCancer/GettingOlder.html.

[14] J. Harris, M.E. Lippman, M. Morrow, and C.K. Osborne, Diseases of the Breast, 4th ed. Philadelphia, PA: Lippincott Williams & Wilkins, 2010.

[15] K. Ameer, S.M. Abdulie, S.K. Pal… and G.G. Kassa, "Breast Cancer Awareness and Practice of Breast Self-Examination among Female Medical Students in Haramaya University, Harar, Ethiopia," International Journal of Interdisciplinary and Multidisciplinary Studies, vol. 2, no. 2, 2014, pp. 109-119.

[16] C. K. Anders, R. Johnson, J. Litton… and A. Bleyer, "Breast Cancer Before 40 Years." Seminars in Oncology, vol. 36, no. 3, 2010, pp. 237-249.

[17] A. Abu Samah, M. Ahmadian, and L.A. Latiff, "Insufficient Knowledge of Breast Cancer Risk Factors Among Malaysian Female University Students," Global Journal of Health Science, vol. 8, no. 1, 2016, pp. 277-285.

[18] B.A. Ahmed, “Awareness and Practice of Breast Cancer and Breast-Self Examination Among University Students in Yemen,” Asian Pacific Journal of Cancer Prevention, vol.11, no. 1, 2009, pp. 101-105.
[19] R. Latif, "Knowledge and Attitude of Saudi Students Towards Breast Cancer: A Cross-Sectional Study, " Journal of Taibah University Medical Sciences, vol. 9, no. 4, 2014, pp. 328-334.
[20] F.N. Nde, J.C.N. Assob, T.E. Kwenti… and T.R.G. Tainenbe, "Knowledge, Attitude and Practice of Breast Self-examination Among Female Undergraduate Students in the University of Buea," BMC Research Notes, 2015 [cited November 22, 2016], retrieved from World Wide Web: http://bmcresnotes.biomedcentral.com/articles/10.1186/s13104-015-1004-4.
[21] M.S. Murad, M. Furqan, A. Sultan, and P. Bloodsworth, "Knowledge and Awareness about Breast Cancer and its Early Symptoms among Medical and Non-Medical Students of Southern Punjab, Pakistan, " Asian Pacific Journal of Cancer Prevention, vol. 16, no. 3, 2015, pp.979-984.
[22] M.N. Sambanje and B. Mafuvadze, "Breast Cancer Knowledge and Awareness Among University Students in Angola," PanAfrican Medical Journal, vol. 11, 2012, pp.70.
[23] L. Caplan, "Delay in Breast Cancer: Implications for Stage at Diagnosis and Survival," Front Public Health, vol. 2, 2014, pp. 87
[24] M.E. Peek, J.V. Sayad, and R. Markwardt, "Fear, Fatalism and Breast Cancer Screening in Low-Income African-American Women: The Role of Clinicians and the Health Care System," Journal of General Internal Medicine, vol. 23, no. 11, 2008, pp. 1847-1853.
[25] K. Kaiser, K.A. Cameron, G. Curry, and M, Stolley, "Black Women's Awareness of Breast Cancer Disparity and Perceptions of the Causes of Disparity." Journal of Community Health, vol. 38, no. 4, 2013, pp. 766-772.
[26] M. Chavez-Mcgregor, C.A. Clarke, D. Lichensztain… and S.H. Giordano, "Male Breast Cancer According to Tumor Subtype and Race: A Population-based Study," Cancer, vol. 119, no. 9, 2013, pp. 1611-1617.
[27] L. Ottini, "Male Breast Cancer: A Rare Disease that Might Uncover Underlying Pathways of Breast Cancer," Nature Reviews Cancer, vol, 14, 2014, pp. 643-644.
[28] J.R. Weiss, K.B. Moysich and H. Swede, "Epidemiology of Male Breast Cancer," Cancer Epidemiology, Biomakers & Prevention, vol. 14, no. 1, 2005, pp. 20-26.
[29] American Cancer Society, “Breast Cancer in Men,” 2020 [cited October 31, 2020], retrieved from World Wide Web: https://www.cancer.org/cancer/breast-cancer-in-men.html.
[30] M.H. Khan, R. Allerton, and L. Pettit, "Hormone Therapy for Breast Cancer in Men," Clinical Breast Cancer, vol. 15, no. 4, 2015, pp. 245-250.
[31] F. Wang, X. Shu, and I. Meszeoly, “Overall Mortality After Diagnosis of Break Cancer in Men vs Women,” Journal of American Medical Association Oncology, vol. 5, no. 11, 2019, pp. 1589-1596.
[32] M. Al-Haddah, "Breast Cancer in Men: The Importance of Teaching and Raising Awareness," Clinical Journal of Oncology Nursing, vol. 14, no. 1, 2010, pp. 31-32.
[33] M. Altpeter, "Advancing Social Workers' Responsiveness to Health Disparities: The Case of Breast Cancer Screening," Health Social Work, vol. 30, no. 3, 2005, pp. 221-232.
[34] R.A. Freedman, E.M. Kouri, D. West, and N.L. Keating, "Racial/Ethnic Disparities in Knowledge about One's Breast Cancer Characteristics," Cancer, vol. 121, no. 5, 2016, pp. 724-732.
[35] M.A. Manning, N. Duric, P. Pittrup… and T.L. Albrecht, "Knowledge of Breast Cancer Density and Awareness of Related Breast Cancer Risk." Journal of Cancer Education, vol. 28, 2013, pp. 270-274.
[36] K.T. Ashing-Giwa, G. Padilla, J. Tejero… and D. Hills, 2004. "Understanding the Breast Cancer Experience of Women: A Qualitative Study of African American, Asian American, Latina, and Caucasian Cancer Survivors," Psychooncology, vol. 13, no. 6, 2004, pp. 408-428.