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A Preliminary Psychometric Assessment of the Attitude of Health Trainee Undergraduate Students towards Breast - Self Examination in Ghana.

CHRISTIAN AMOAH

AMOAH CHRISTIAN holds an MPhil in Psychology (Clinical option) from the University of Ghana, Legon, Accra, Ghana. He is a Lecturer and a Clinical Psychologist in the Department of Behavioural Sciences, School of Medicine and Dentistry (SMD), Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana and has been a Consultant Clinical Psychologist at Komfo Anokye Teaching Hospital (KATH, Psychiatric Clinic), Directorate of Medicine, and Kumasi, Ghana since 2002.

NCEBA Z. SOMHLABA

NCEBA Z. SOMHLABA holds a D.Phil. from the Stellenbosch University in South Africa. He is an Associate Professor and a Clinical Psychologist in the Department of Psychology, Faculty of Community and Health Sciences, University of Western Cape, Cape Town, South-Africa.

FRIMPONG-MANSO ADDO

FRIMPONG-MANSO ADDO is a Consultant Psychiatrist, a Member of the Royal College of Psychiatrists (MRCPsych), United Kingdom. He is a Lecturer in the Department of Behavioural Sciences, SMD, KNUST, Kumasi, Ghana, and a Consultant Psychiatrist at Komfo Anokye Teaching Hospital (KATH, Psychiatric

Clinic), Directorate of Medicine, as well as Kwame Nkrumah University of Science and Technology (KNUST) Hospital, Kumasi, Ghana.

EBENEZER OTU AYEBOAFO ANSAH

EBENEZER OTU AYEBOAFO ANSAH holds a Bachelor of Applied Technology (Health Option) from Kumasi Technical University, Ghana. He is currently working as a Bio-Statistician with the Records Department, Kwame Nkrumah University of Science and Technology Hospital, Kumasi, Ghana.

BENJAMIN AMOAH

BENJAMIN AMOAH holds a Masters in Employment & Labour Studies from the institute of Social Studies at The Hagues, The Netherlands. He is an independent Researcher and an expert in Human Resource with Seljen Consult in Accra, Ghana.

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Abstract

Breast self-Examination (BSE) is the cheapest most recommended Breast Cancer (BC) preventive tool for resource-deprived settings. There is paucity in the attitude research domain and comparative gender assessments of the BSE knowledge, attitude and performance (KAP) literature. The purpose of this study was to assess the combined and exclusive gender BSE attitude of undergraduate health trainees and to determine significant differences between scores of both genders.The study used an online cross-sectional survey method. 336 health undergraduate students of the College of Health Sciences (CoHS) of Kwame Nkrumah University of Science and Technology (KNUST) were purosively sampled for assessment of their BSE knowledge, attitude and performarmance (KAP). The study found that compared to the construction groups' average norm of 101.17 (SD = 9.55), our study participants' (SPs) BSE attitude was lower (92.51; SD = 11.80). However, using popular mid-point and 3- part attitude scoring methods, our SPs' attitude scores were comparable to sub-regional and national findings. Moreover,the male participants scored a generally high BSE attitude but significantly lower compared to their female counterparts ($p < 0.5$). The study recommend the need to adjust the curricula of all health trainees in developing nations such as Ghana to reflect relevant BC preventive measures. Furthermore, BSE research, education and advocacy should involve more males as important BC BSE stake holders.

Keywords: *Psychometric Assessment, Attitude, Breast Self- Examination, Health Trainee, Undergraduate Students.*

Introduction

Breast Cancer (BC) is a life-threatening malignant tumor that starts from the cells of the breast tissue (Ali & Coombes, 2002 ; Kudzawu et al., 2016), and spreads through the lymphatic system to invade important body parts and organs through metastasis (Peepliwal & Tandale, 2013). This disease causes very high morbidity and mortality among many females and relatively fewer males. Undoubtedly, global BC incidence is on the increase and currently form 12.5% of all 2020 cancer cases in all ages globally and 6.9 % mortality of all ages as well as all sexes according to the International Agency for Research on Cancer (IARC) report (Globocan, 2020). IARC also predicts an increase in future breast cancer incidence and mortality burden worldwide from the 2020 estimates of 2.26 Million and 685 000 to increase to 3.19 Million and 1.04 million respectively by 2040, IARC (2020). There is also evidence that male BC incidence is on the rise globally (Al-Naggar, Al-Naggar, 2012; Giordano et al.,2004 ; RamBihariLal Shrivastava et al., 2013; Stang et al., 2008) and on the African continent, Al-Naggar, Al-Naggar, (2012). Currently in Ghana, BC is the commonest female malignancy accounting for the majority of cancer related mortalities (Korankye et al., 2016; Ohene -Yeboah & Adjei, 2012). The statistics do not look good, and are increasing at an alarming rate. The American Cancer Society (2016) recommends clinical breast examination (CBE), mammography and breast self-examination (BSE) as the most effective

prevention tools against the high rising BC morbidity and mortality. Ideally, women above 20 should undergo a thorough CBE by a qualified health care provider every three years (Abdul-Lateef & Shabaan, 2019 ; Wieland & Hartman, 2011). However, the high cost makes it inaccessible for women in low and middle income countries (LMICs) such as Ghana which contributes to over 60% late discovery and treatments of BC cases (Black & Richmond 2019; Mena et al., 2014), a hallmark of BC health seeking behaviour with poor outcomes, Opoku, Benwell & Yarney (2012). Thus, for women in LMICs, BSE is by far the cheapest non-intrusive BC preventive tool.

Although BSE knowledge, attitude and performance (KAP) have received a fair share of research effort around the globe, they are froth with some innadequacies. Two of these are male gender and non – nursing health trainee underrepresentation in research participation. These warrant urgent change as currently a particular gender-domination of all health professions has changed, and every health professional, male or female, is duty bound to offer clients life-saving BSE education. The evidence is, compared to women who become cognizant of BSE from other sources, those that obtained instructions from health care professionals, exhibited superior knowledge, portrayed higher confidence and higher propensity to routinely practise BSE (Misauno et al., 2011). Again, female knowledge of BC and BSE are generally quite high but actual BSE performance is low globally. The key to understanding this abysmal translation of BC/ BSE knowledge into BSE practice is attitude, simply defined as a propensity to act positively or negatively towards an attitude object (e.g., issue, place, person or preventive behaviour such as BSE, etc). Attitude encompasses 3 aspects, namely; cognition comprising covert mental processes such as knowledge; emotions or feelings, and overt behaviour (Passer & Smith, 2011; Lahey (2012). Attitude informs an individual's propensity to personally engage in, and/or encourage other people to engage in important preventive health behaviour such as BSE.

Statement of the Research Problem

While globally BSE has received much research effort among various female professionals (Ali et al., 2019; Azaiza & Cohen, 2006 ; Didarloo, A., Nabilou, B., & Khalkhali, H. R. 2017; Ibnawadh et al., 2017; Kalliguddi, Sharma, & Gore 2019 ; Kudzawu et al., 2016; Nde et al., 2015b; Race & Silverberg, 1996) etc., and a few among males (Al-Naggar & Al-Naggar 2012;Giordano, Buzdar & Hortobagyi 2002; Stang & Thomssen, 2008, etc), the same cannot be said of sub-saharan Africa (SSA). A recent very comprehensive systematic review conducted by Udoh et al., (2020, p.6), on BSE KAP studies done in the SSA, concluded among others that there is "…*limited literature on women's attitudes towards BSE*…". Thus, even among the predominantly female BSE literature, there is paucity in the attitude aspect of the whole BSE KAP research areas.In Ghana BSE KAP research is not encouraging. Even though some BC/ BSE studies have been conducted, only 2; Fondjo et al., (2018) andSarfo et al., (2013), met the inclusion criteria in Udoh et al.'s review. Sarfo et al's research among female university students of the Presbyterian University College of Ghana, Asante Akyem Campus found that the majority (95%) had heard of both BC and BSE from media and their curricular sources, only 80% out of that number knew how to perform the latter.

Also they found an unspecified majority having a good attitude towards BC but was silent on attitude towards BSE. Fondjo et al. (2018), recently compared knowledge of BC and BSE KAP among 1,036 female KNUST undergraduate and secondary students in a very comprehensive study. They also found that although 90.9% of their participants were aware and 54% highly knowledgeable of BSE, only 8.1% practiced BSE monthly as recommended. Also comparatively, the undergraduate female students were more knowledgeable, had a more positive attitude and practiced BSE more often and accurately than their secondary counterparts even though most (96.3%) agreed BSE was a good preventive breast- health practice. More so, they reported almost 97% of all female undergraduates and secondary school participants had a good attitude with the former having significantly higher.

In Kumasi, a study conducted among Garden City University College (GUCC) undergraduate midwifery students has been published by Nsemo et al., (2020). Among others, they reported all 50 students (100%) of the students had good knowledge of BSE, 84% positive attitude and 68% ever performed BSE prior to the research. However, 52% did not engage in BSE regularly due in part to forgetfulness (28%) and fear of finding a mass (6%). Thus, not only is research evidence on BSE KAP among KNUST undergraduate nursing trainees lacking, research among non-nursing health professional trainees has not been carried out to the best of the authors' knowledge.As far as the authors are concerned, no study has assessed mixed and exclusive gender attitudes towards BSE among tertiary health professional trainees in KNUST and in Ghana. This study therefore aims to:

(i) determine the attitude of mixed gender health trainee undergraduate students towards breast self-examination,

(ii) determine the attitude of exclusive male and female health trainee undergraduate students towards breast self-examination and

(iii) determine if there is a significant difference between average breast self-examination attitude scores of female and male health trainee undergraduate students. For this 3rd objective, we hypothesized that:

H_0: There are no significant differences between the mean scores for breast self-examination of both genders, and

H_1: There are significant differences between the mean scores for breast self-examination of both genders.

Materials & Methods

Being a preliminary study and focusing on undergraduate health trainees, a purposive sampling method was used to select participants from 5 undergraduate classes from 2 faculties in the CoHS, KNUST. To qualify to participate in this research, participants had to be students in KNUST, must be in undergraduate level, must be a health trainee student in CoHS, 17 years and above. Online cross – sectional method was used in this study to ascertain the attitude toward BSE among 336 voluntary participants. For the entire research, the questionnaire was developed into a 5 section Google form link, giving participants access to respectively demographic characteristics consisting of 8 questions, BSE attitude measure consisting of 24 items, 18-item Multidimensional Health

Locus of Control scale (MHLC), 5-item Satisfaction with Life Scale (SWL), and 5 self-constructed questions assessing actual BSE performance. The Google link was forwarded to participants for voluntary participation after going through the participants' information sheet which included more information about the study and guarantees of confidentiality. The first voluntary 20 participants were used to pretest all measures used and their Cronbach's Alpha values reported with the description of each of the measures used for achieving the objectives above.

Measures Used

The measure used for this manuscript is Breast Self-Examination (BSE) obtained from Corcoran & Fisher (2000). This BSE attitude psychometric measure was developed by Race and Silverberg (1996), consists of 24 items and measures attitude towards BSE. Drawing from the attitude category of previous research based on an adapted version of the Health Belief Model (Champion 1992; Salazar & Carter 1993). Race and Silverberg developed this BSE to cover perceived seriousness, BC susceptibility, health motivation, breast abnormality activities, performance issues (i.e., time availability, difficulty, self-touch etc.) and concern for others. Each item is a 6 – point likert scale from strongly disagree (1) to strongly agree (6) with 6 representing the most positive. The scoring is done by simply summing participants' score on each item to obtain a score between 24 and 144 with the highest reflecting a more positive attitude towards BSE per the constructor's guideline. The sourcebook reported a reliability coefficient of 0.83 as a single scale. Pretesting yielded a Cronbach's alpha of 0.709 (70.9%). The sourcebook reported a good concurrent validity. It must be mentioned that the rest of the psychological measures (i.e., Multidimensional Health Locus of Control scale (MHLC) and Satisfaction with Life Scale (SWL) used to measure other objectives have been described under material and measures in the follow-up article**.**

Procedure

The researchers solicited voluntary participation from purposively sampled CoHS undergraduate students. Ethical consent process was undertaken in two ways; either online or in hard copy through the class representatives. After giving them information including objectives of the study and assurances of confidentiality, the investigators appealed for their voluntary participation. Those that accepted to participate through direct contact were required to fill a hard copy consent form, and those contacted indirectly through their class representatives and social media were given a link to the soft copy of the exact consent form to fill. After consent, the link to the Google form was distributed to participants to logon to complete. Ethics clearance (ref number CHRPE/AP/066/21) was obtained from the Committee on Human Research, Publication and Ethics (CHRPE) in KNUST, Kumasi, Ghana. On the whole 336 students responded excluding 20 of the early participants used for pretesting to determine if the questionnaire and instructions of measures were comprehensible and suitable. The data was analyzed using SPSS version 20.

Data Analysis

A descriptive analysis was used to determine the overall attitude of all study participants, and that of exclusive male and female health undergraduate students towards BSE. For the 3rd objective an independent sample t -test was used to determine if there was a significant difference between average attitude scores of both genders.

Results

This study had 336 participants and out of that majority (59.8%) of them were females while the male respondents were 40.2%. The participants' age range was between 17 and 38 years (*M* = 21 years, *SD* = 2.9). Table 1 summarizes the demographic characteristics of the Study Participants (SPs).

Table 1: Demographic Characteristics of Study Participants (SPs)

Variables	Responses	Frequency	Percentage
Age	17-19	96	29.10
	20-22	201	60.90
	23-25	17	05.20
	>25	16	04.80
Gender	Male	135	40.20
	Female	201	59.80
Prog. of Study	Human Biology	213	63.40
	Physician Assistant	19	05.70
	Nursing & Midwifery	101	30.06
	Missing	03	00.90
Level of Study	1st Year	63	18.70
	2nd Year	108	32.30
	3rd Year	163	48.70
	4th Year	01	00.30
Religion	Christianity	314	93.50
	Islam	22	06.50
Occupation	Student	327	97.60
	Health Professional	08	02.40

Source: Researcher's construct

For objective 1 and 2, the psychometric test instruction, popular BSE researchers' mid-point cut-off and the 3 range attitude scoring criteria were used for easy comparison and discussion with extant BSE attitude research evidence.

Objective 1

3.1.1 Using the psychometric test instruction

The overall average mixed gender score of the current study participants' (SPs) on the breast self-examination measure (BSE) is 92.51 (SD = 11.80).

3.1.2 Using Mid –Point Cut - Off

With a maximum BSE attitude score of 144, 72 is the midpoint (median) and scores below and above indicate low and high attitude respectively. The average attitude scores of all participants, exclusive male and female participants are as summarized in Table 2 below.

TABLE 2: A table of the average BSE attitude scores of combined (all), exclusive male and female genders

Study Participants	Average BSE Attitude Score	Standard Deviation
Combined study participants	92.51	11.80
Exclusive male gender	89.42	12.29
Exclusive female gender	94.59	11.02

Source: Researcher's construct

Objective 2

The exclusive gender averages above and below the median BSE attitude score of 72 were computed and tabulated in table 3 below.

TABLE 3: A distribution ofgender BSE average scores above and below the 72 midpoint.

Gender	Overall Average	% above midpoint (72.00)	% below midpoint (72.00)
Male	89.42 (SD = 12.29)	96.3 %	3.7%;
Female	94.59 (SD = 11.02)	98.5%	1.5%;

Source: Researcher's construct

From Table 3 above the exclusive male BSE average score was 89.42 (SD = 12.29) and 3.7% as well as 96.3% of the male participants had BSE average scores below and above the 72 mark cutoff point with respective means of 48.40 (SD= 17.60) and 91.00 (SD= 8.91). Similarly, the exclusive female BSE average score was 94.59 (SD= 11.02) and 1.5% and 98.5% of the female participants scored below and above the 72 cutoff point with mean scores of 43.67 (SD = 20.13) and 95.36 (SD= 8.91) respectively.

3.2.1Using the 3 range attitude scoring method

Using the 3 range attitude scores of low (1-48), moderate (49-96) and high (97-144), the BSE scores of all participants were computed and summarized in Table 4 below.

Table 4: A table of all participants (mixed gender) attitude toward breast self-examination.

Attitude towards Breast Self-Examination	Frequency	Percentage (%)
Low Attitude (1-48)	4	01.20
Moderate Attitude (49-96)	208	61.90
High Attitude (97-144)	124	36.90
Total	336	100.00

Source: Researcher's construct

Thus, 61.9%, 36.9% and 1.2% of the study participants had moderate, high and low attitude to breast self- examination, respectively. Also a cross tabulation was performed on gender and the results reported in Table 5 below.

Table 5: Cross tabulation between Gender and Breast Self-Examination

			1-48= LOW ATTITUDE	49-96= MODERATE ATTITUDE	97-144= HIGH ATTITUDE	Total
Gender	Males	Count	2	99	34	135
		% within Gender	1.5%	73.3%	25.2%	100.0 %
	Females	Count	2	109	90	201
		% within Gender	1.0%	54.2%	44.8%	100.0 %
Total		Count	4	208	124	336
		% within Gender	1.2%	61.9%	36.9%	100.0 %

Source: Researcher's construct

It was deduced that 1.5% of the male participants had a low attitude, 73.3% had a moderate attitude while 25.2% had a high attitude towards BSE. Similarly, the majority (54.2%) of the female participants had a moderate attitude, 44.8% had a high attitude while 1% had a low attitude to BSE.

Objective 3:

The current study also sought to determine whether there was significant difference between the mean scores of both genders using an independent sample t-test. The results are as reported in Table 6 below.

Table 6: Independent t-test to determine significant differences between the mean gender attitude scores

Breast Self-Examination	Levene's Test for Equality of Variances				
	F	**Sig**	**t**	**df**	**Sig**
Equal Variance Assumed	0.823	0.365	-4.024	334	0.000
Equal Variance not Assumed			-3.939	265.947	0.000

Source: Researcher's construct

From the hypotheses in objective 3 above, the p-value (0.365) was greater than the significance level of 0.05, hence we fail to reject the null hypothesis and conclude equal variance assumed at 95% level of confidence. Finally, since the p-value (0.000) obtained was less than the significance level of 0.05, the null hypothesis was rejected at 95% confidence interval, and therefore conclude that there is a significant difference between the mean attitude scores towards BSE for both genders.

Discussion

The objectives of the current study were to psychometrically determine the overall attitude of study participants (SPs), determine the exclusive male and female health trainee undergraduate students' attitude towards BSE and determine if there was a significant difference between scores of both genders. The female participants in the current study out-numbered their male compatriots by a nearly 3:2 ratio. The SPs' age range was between 17 and 38 years and their mean age was 21 years (SD ± 2.9) – well within the prescribed age of practice of BSE. Per the preamble under results above objective 1, the Study Participants' (SPs) scores are discussed based on 3 different approaches of attitude measurement namely; the psychometric test instruction, popular mid-point cut- offs and the 3 - range criterion of attitude assessment. A significant finding is that the overall average score on the Breast self-Examination (BSE) measure obtained by the combined mixed gender SPs is 92.51 (Table 2). This figure is lower compared with Race and Silverberg's (1996) USA construction proups' (CG's) mean BSE score of 101.17 [(SD=9.55), (Corcoran and Fishers, 2000; 131)]. This finding may be explained by the cultural, demographic and gender differences between the American CG and the current SPs. Mixed gender participation in this current study may have lowered our SPs' overall average score on this BSE psychometric measure. Future research could focus on validation and standardization of this BSE measure to develop culturally relevant norms to allow for use with many more Ghanaian who do not understand english language and for easy interpretation of local test scores to guide and enhance BSE research.

Another significant finding is that based on the mid-point criterion, 98.5% of the female SPs' scored high attitude with an average score of 94.54 above the cut-off (Table 3). This finding agrees with research evidence by (Ibnawadh, et al., 2017) who had 98.2% medical students and 96.4% of the non-medical students having a high attitude to endorse BSE as a necessity in Saudi Arabia. In the sub - saharan Africa (SSA), this finding is in line but higher than 73.6% of Nigerian secondary students who had positive attitudes, (Ifediora & Azuike, 2018). It is also similar but higher than findings by Sarfo et al., (2013) and Fondjo et al., (2018) who found "majority" and 97.1 % respectively having "good attitude" in female university undergraduate students in the Presbyterian University College of Ghana, Asante Akyem Campus and combined undergraduate and Senior Secondary School (SSS) female students in KNUST, Kumasi, Ghana respectively. This finding however contradicts findings by Kalliguddi, Sharma & Gore (2019). who found 68% of Indian female Information Technology (IT) professionals to have poor attitude. The difference may be attributable to varying cultural and religious factors such as social stigma and norms. A female minority (1.5%) of the current SPs maintain a very low attitude towards BSE and future research should not only be intensified to identify them and their reasons for such a low BSE attitude, but also urgently educate them. Psychoeducation about BSE should remain a priority given that they may soon graduate and become important BC BSE stakeholders.

Similarly, even though it is a well-known fact that male hardly engage in BSE for obvious reasons of low incidence of, or general ignorance about BC, the current study results revealed a surprising high average attitude score of 91.00 (SD=8.91) for the overwhelming majority (96.3%) of males who scored above the 72 mid-point cutoff. This is a welcoming result for BC interventions, education, advocacy and research since more males possibly control funding and breast health delivery systems. Also as husbands and family heads, this high male attitude, if replicated in the general population, would go a long way to conscientize males about their own and female sexual, reproductive and physical health, minimize the fear of divorce, reduce stigma, enhance quick interventions and reduce the male gender negative socio-cultural factor contributing to undue delays in BC orthodox health seeking behaviour observed by Opoku, Benwell & Yarney (2012). This finding of high male attitude towards BSE supports the objectives of the current study and the call for the involvement of many more males in BC advocacy, education and research. It must be added however that 3.7% of males have a low attitude, and similarly, there is the urgent need for replication of this study to find the actual percentage of the general male population to guide BC BSE education.

Another finding worth noting is that using the 3 range (Low, Moderate and High) attitude scoring method, 1.2%, 61.9% and 36.9% of our SPs maintain respectively low, moderate and high overall attitude ranges towards BSE (Table 4). This replicates similar findings by Nde et al, (2015b; p.4), who observed an overall, 2.4% low, 63.3% moderate and 34.3% high attitude in Cameroonian female undergraduate students. A similar study using similar attitude scoring found a reverse trend of 9% low, 29% neutral (moderate) and 62% positive attitude among 183 female Malaysian Pharmacy Students towards BSE which may be explained by cultural differences since they had nearly 82% Chinese among their SPs, Ali et al., (2019). Again, cross tabulation figures in (Table

5) confirmed the general perception that females maintained a relatively higher attitude towards BSE. Thus, their percentages (1.5% versus 1 % low; 73.3% versus 54.2% moderate, and 25.2% versus 44.8%) of high attitude for males and females respectively reflect the trend discussed above. Although most males perceived BSE as not necessary citing low incidence of BC among same gender, they maintained a surprisingly 98.5% moderate to high BSE attitude compared with 99% for females' overall score.

Another important finding is that there is a gender-based significant difference between their mean BSE attitude scores in favor of female gender with a p-value of (0.000) at 95% confidence interval (Table 6). Even though there are no studies comparing attitude of both genders, this finding is in line with qualitative research evidence by Al-Naggar & Al-Naggar, (2012) in Malaysia which suggests that males maintain a relatively lower attitude towards BSE because of lower BC incidences among them. They noted a similar global masculine attitude towards BSE when they wrote their participants *"…considered that BSE is not important for men because they have a low probability of getting breast cancer…",* Al-Naggar & Al-Naggar (2012: 243). That notwithstanding, they reported the majority of their SPs encouraged their family members to practise BSE. The fact that majority of their male participants encourage their significant family members to perform BSE is an attestation to the point being made in this research to include and encourage male participation in BSE KAP research and education as they are becoming important stakeholders.

Limitations

The outcomes of the current research must be carefully interpreted because the study is not without limitations. In the first place, the evidence so adduced were obtained from only 336 purposely sampled undergraduate health trainee student participants, which may not be very generalizable to the entire KNUST and Ghanaian population. That notwithstanding, this has provided a basis for a much bigger BSE attitude study in Ghana to involve different health trainees and mixed gender at a time and the general populace as a whole. This will also hopefully encourage the use of psychometric tests in the assessment of BSE KAP concepts and spur much more interdisciplinary collaborative research efforts.

Conclusion and Recommendations

BSE KAP research has previously justifiably focused on the female population, but it is time to rope in many more males who are fast becoming important stakeholders as male BC incidents increase. Moreover, with more males taking on previously female dominated professions that require them to educate their clients on BC and BSE, as heads of families and possibly majority decision makers of organizations and boards on issues affecting BC BSE research and education, it becomes critically important to involve them in research and education on the subject. There is also the potential for males to be involved by reminding their significant others of life saving BSE. Also, healthcare professionals and trainees have received enough research attention, more effort must be focused on the non-health professional population. More so, we reiterate the call by

Misauno et al. (2011), for the need to adjust the curriculum used for training not only for nurses but all health trainee students in developing nations around the globe to reflect relevant BC preventive measures. Moreover, from the evidence adduced in the current study, researchers, advocates and activists must involve males at all levels in BC BSE KAP research and education for reasons given above. Finally, to make the conclusions of the current study more generalisable, an expanded follow-up multidisciplinary investigation with bigger randomly sampled SP drawn the entire university student population is highly recommended. This is because there may have been a potential bias that health undergraduate students were more knowledgeable of BC and may have been inclined to show acceptable attitudes towards BC BSE issues. This could also be replicated in the general populace to achieve a better evidenced-based knowledge on BSE KAP in Ghana.

References

Abdul- Lateef, S., & Shabaan, M. (2019). Assessment of Female Nursing Students knowledge and practice about breast self-examination in Mosul University. *Mosul Journal of Nursing*, *5*(1), 29–35. https://doi.org/10.33899/mjn.2019.162123.

Al-Naggar, R. A., & Al-Naggar, D. H. (2012). Perceptions and opinions about Male Breast Cancer and Male Breast Self-Examination: A qualitative Study. *Asian Pacific Journal of Cancer Prevention*, *13*(1), 243–246. https://doi.org/10.7314/APJCP.2012.13.1.243.

Ali, A. N., Yuan, F. J., Ying, C. H., & Ahmed, N. Z. (2019). Awareness, knowledge and attitude towards breast self-examination: A cross-sectional Study Among Female Pharmacy Students in Malaysia. *International Research Journal of Oncology*, *2*(4), 1–10.

Ali, S. and Coombes, R.C. (2002). *Endocrine-Responsive Breast Cancer and Strategies for Combating Resistance Nature Reviews Cancer*. 2, 101-112. http://dx.doi.org/10.1038/nrc721.

American Cancer Society (2016). *Breast cancer early Detection and diagnosis – can Breast cancer be found early?* available online: https://www.cancer.org/content/dam/CRC/PDF/Public/8579.00.pdf accessed on 6th March, 2021].

Azaiza A, Cohen M. (2006). Health beliefs and rate of breast cancer screening among Arab women". *J Women's Health*. 15(5):520–30.

Bhagwandeen SB. (1972). Carcinoma of the male breast in Zambia. *East African Medical Journal*. Feb; 1972; 49(2):89-93.

Black, E., & Richmond, R. (2019). Improving early detection of breast cancer in sub-Saharan Africa: Why mammography may not be the way forward. *Globalization and Health*, *15* (1), 1–11. https://doi.org/10.1186/s12992-018-0446-6.

Champion, V. L. (1992). Relationship of age to factors influencing breast self-examination

Practices. *Health Care for Women International.* 13:1-9.

Corcoran, K., and Fisher, J. (2000). *Measure for clinical practice A Sourcebook* Vol 2.Adult,

The Free Press, A Division of Macmillan Inc, 3rd Ed.

Crano, W. D., & Prislin, R. (2006). Attitudes and Persuasion. *Annual Review of Psychology*. 57,

345–374.

Didarloo, A., Nabilou, B., & Khalkhali, H. R. (2017). Psychosocial predictors of breast self-examination behavior among female students: An application of the health belief model using Logistic Regression. *BMC Public Health*, *17*(1), 1–8. https://doi.org/10.1186/s12889-017-4880-9.

Fondjo, L. A., Owusu-Afriyie, O., Sakyi, S. A., Wiafe, A. A., Amankwaa, B., Acheampong, E., Ephraim, R. K. D., & Owiredu, W. K. B. A. (2018). Comparative Assessment of knowledge, attitudes, and practice of breast self-examination among female secondary and Tertiary school students in Ghana. *International Journal of Breast Cancer*, *2018*. https://doi.org/10.1155/2018/7502047.

Ibnawadh, S.K. Alawad, M.A., Alharbi, S.S. Alduawihi, N.A. Alkowiter, F.S. Alsalhy, A.E. Alzahrani, A.A. Alenizy, L. .(2017). Knowledge, attitude and practice of breast self-examination among females in medical and Non-medical Colleges in Qassim University. *Journal of Health Specialties*, *5*(4), 219-24. https://doi.org/10.4103/jhs.JHS.

Ifediora, C. O., & Azuike, E. C. (2018). Tackling breast cancer in developing countries: insights from the knowledge, attitudes and practices on breast cancer and its prevention among Nigerian teenagers in secondary schools. *Journal of Preventive Medicine and Hygiene*, *59*(4), E282–E300. https://doi.org/10.15167/2421-4248/jpmh2018.59.4.964.

Kalliguddi, S. Sharma, S & Gore, C. A. (2019). Knowledge, attitude, and practice of breast self-examination amongst female IT professionals in Silicon Valley of India. *Journal of Family Medicine and Primary Care*, *6*(2), 568–572. https://doi.org/10.4103/jfmpc.jfmpc.

Kalliguddi, S., Sharma, S. &, & Gore, C. A. (2017). Universal health coverage - There is more to it than meets the eye. *Journal of Family Medicine and Primary Care*, *6*(2), 169–170. https://doi.org/10.4103/jfmpc.jfmpc.

Kudzawu, E., Agbokey, F., & Ahorlu, C. S. K. (2016). A Cross sectional study of the knowledge and practice of self-breast examination among market women at the Makola shopping Mall, Accra, Ghana. *Advances in Breast Cancer Research*, *05*(03), 111–120. https://doi.org/10.4236/abcr.2016.53013.

Korankye, A. A., Abada, A., & Imoro, F. (2016). Assessment of breast cancer awareness in Tamale Metropolis in Ghana. *World Scientific Research*, *3*(1), 1–5. https://doi.org/10.20448/journal.510/2016.3.1/510.1.1.5.

Florence, A. O., Felicia, A. E., Dorcas, A. A., & Ade-Aworetan, F. A. (2016). An Assessment of the Knowledge and Practice of Self Breast Examination (BSE) amongst University Students. *Health,*; *08*(05), 409–415. https://doi.org/10.4236/health.2016.85043.

Fondjo, L. A., Owusu-Afriyie, O., Sakyi, S. A., Wiafe, A. A., Amankwaa, B., Acheampong, E., Ephraim, R. K. D., & Owiredu, W. K. B. A. (2018). Comparative assessment of knowledge, attitudes, and practice of breast self-examination among female secondary and tertiary school students in Ghana. *International Journal of Breast Cancer,*; *2018*. https://doi.org/10.1155/2018/7502047.

Giordano S, H., Cohen D, S., Buzdar A, U., Perkins G., Hortobagyi G N. (2004). Breast carcinoma in men: a Population-Based Study. *Cancer*. Jul 1; 101(1):51-7. doi: 10.1002/cncr.20312. PMID: 15221988a

Giordano SH, Buzdar AU, Hortobagyi GN. (2002). Breast cancer in men. *Ann Intern Med*. Oct 15; 137(8):678-87. doi: 10.7326/0003-4819-137-8-200210150-00013. PMID: 12379069.

Globocan (2020). *All cancers excl. non-melanoma skin cancer*. Available online: https://gco.iarc.fr/today/data/factsheets/cancers/40-All-cancers-excluding-non-melanoma-skin-cancer-fact-sheet.pdf (accessed on 17th May, 2021)].

GLOBOCAN (2020*). Estimated number of prevalent cases (1-year) as a proportion in 2020, breast, females, ages 0-74, Ghana*, available online:https://gco.iarc.fr/today/online-analysis-map?projection=globe (accessed on 28th july, 2020)].

[IARC (2020). *Estimated Number of new cases from 2020 to 2040,females, age [0-85+], breast, world*. available online: https://gco.iarc.fr/tomorrow/en/dataviz/isotype?cancers=20&single_unit=100000. (accessed on 17th May, 2021)].

Ibnawadh, S.K. Alawad, M.A., Alharbi, S.S. Alduawihi, N.A. Alkowiter, F.S. Alsalhy, A.E. Alzahrani, A.A. Alenizy, L. (2017). Knowledge, attitude and practice of breast Self-examination among memales in medical and non-medical colleges in Qassim University. *Journal of Health Specialties,*; *5*(4), 219-24. https://doi.org/10.4103/jhs.JHS.

Kalliguddi, S. Sharma, S & Gore, C. A. (2019). Knowledge, attitude, and practice of breast self-examination amongst female IT professionals in Silicon Valley of India. *Journal of Family Medicine and Primary Care, 6*(2), 568–572. https://doi.org/10.4103/jfmpc.jfmpc

Lahey, B.B (2012). Psychology an Introduction. New York, McGraw-Hill, 11th International Ed.

Mena, M., Wiafe-Addai, B., Sauvaget, C., Ali, I. A., Wiafe, S. A., Dabis, F., Anderson, B. O.,Malvy, D., & Sasco, A. J. (2014). Evaluation of the impact of a breast cancer awareness program in rural Ghana: A cross-sectional survey. *International Journal of Cancer*, *134*(4), 913–924. https://doi.org/10.1002/ijc.28412.

Misauno, M., Anosike, I., Ojo, E., & Ismaila, B. (2011). Knowledge and attitude to breast self-examination among a cohort of medical students in Nigeria. *Journal of Medicine in the Tropics*, *13*(1). https://doi.org/10.4314/jmt.v13i1.69330.

Nde, F. P., Assob, J. C. N., Kwenti, T. E., Njunda, A. L., & Tainenbe, T. R. G. (2015). Knowledge, attitude and practice of breast self-examination among female undergraduate students in the University of Buea Womens Health. *BMC Research Notes*, *8*(1), 4–9. https://doi.org/10.1186/s13104-015-1004-4.

Nsemo, A., Ojong, I., Esienumoh, E. E., & Ramatu, A. (2020). *Breast self-examination among Undergraduate Student Midwives in a Tertiary Institution in Ashanti Region, Kumasi, Ghana*. *May*.

Ohene-Yeboah, M., & Adjei, E. (2012). Breast cancer in Kumasi, Ghana. *Ghana Medical Journal*, *46*(1), 8–13.

Ojara EA. (1978). Carcinoma of the male breast in Mulago hospital, Kampala. East Afr Med J. Oct; 55(10):489-91. PMID: 738189.

Opoku S.Y., Benwell & Yarney J. (2012). Knowledge, attitudes, beliefs, behaviour and breast cancer screening practices in Ghana, West Africa. *Pan African Medical Journal*, 2012; *11*, 28. https://doi.org/10.11604/pamj.2012.11.28.548.

Passer, M.W & Smith, P.E (2011). Psychology the science of mind and behavior, McGraw-Hill,; 5th International Ed.

Peepliwal, A.K. and Tandale, P. (2013). Breast cancer in India: etiology, diagnosis and therapy. Research & Reviews: *Journal of Medical and Health Sciences*, 2, 31-42.

Race, K.H & Silverberg, J. A (1996). Toward a reliable measure of breast self-examination attitudes and performance barriers. *Evaluation Review*,; *20* (5), 541–551.

RamBihariLal Shrivastava S, Saurabh Shrivastava P, Ramasamy J. (2013). Self breast examination: A tool for early diagnosis of breast cancer. Am J Public Heal Res.;1(6):135–9

Salazar, M., and W. Carter. (1993). Evaluation of breast self-examination beliefs using a decision model. *Western Journal of Nursing Research,* 15:403-21.

Sasco, A. J., Lowenfels A, B., Pasker-de Jong P. (1993). Review article: epidemiology of male breast cancer. A Meta-Analysis of published case-control studies and discussion of selected etiological factors. *Int J Cancer.* Feb 20; 53(4):538-49. doi: 10.1002/ijc.2910530403.PMID: 8436428. r

Sarfo, L. A., Awuah-Peasah, D., Acheampong, E., & Asamoah, F. (2013). Knowledge, Attitude, and Practice of Self-Breast Examination Among Female University Students at Presbyterian University College, Ghana. *American Journal of Research Communication, 1*(11), 395–404. ajrc.journal@gmail.com

Sheikh Alaudeen, S. R. B., & Ganesan, K. (2019). Knowledge, attitude, and practice of Malaysian medical students towards breast cancer: A cross-sectional study. *Internal Medicine and Care,*; *3*(1). https://doi.org/10.15761/imc.1000125

Stang, A., & Thomssen, C. (2008). Decline in breast cancer incidence in the United States: what about male breast cancer?. *Breast Cancer Research and Treatment,*; *112*(3), 595–596. https://doi.org/10.1007/s10549-007-9882-3.

Udoh, R. H., Tahiru, M., Ansu-Mensah, M., Bawontuo, V., Danquah, F. I., & Kuupiel, D. (2020). Women's knowledge, attitude, and practice of breast self- examination in sub-Saharan Africa: A scoping review. *Archives of Public Health, 78*(1), 1–10. https://doi.org/10.1186/s13690-020-00452-9.

Wieland,P. A and Hartman R (2011). *Maternal and child nursing care, breast self-examination.* 3rd edition, USA; 103-106.