International Journal of Progressive Sciences and Technologies (IJPSAT)
ISSN: 2509-0119.

Vol. 33 No. 1 June 2022, pp. 58-73

Breast Cancer Awareness among Medical Students in Georgia

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Abstract

Background: As awareness is the key tool for better prognosis, it is important for every kind of population. Being one of the most common cancers, also being associated with the high mortality rates, breast cancer awareness should be prevalent. As future doctors, medical students have the responsibility of educating the general population. To carry out such duties, they should possess enough knowledge about the subject. This study probes the extent of their knowledge.

Methodology: An online questionnaire containing 15 questions of various formats was made and distributed to the students of Tbilisi State Medical University via E-mails. The collected data were processed in Microsoft Excel sheets. Answers from pre-clinical and clinical year students were analyzed separately.

Results: A total of 225 responses were collected. More females (n=167) participated in the survey than males (n=56). A very low number of students selected correct answers to the epidemiological questions regarding the most common cancer among men, women, and the overall Georgian population. Despite attending awareness programs and having close contact with cancer patients, students showed a lack of awareness.

Conclusion: There was no significant difference in knowledge or awareness noticed between pre-clinical and clinical students. Lack of knowledge despite having attended previous awareness programs and having close contact with cancer patients shows the lack of cognizance in students and their inability to retain information. This strongly indicates the need for more intensive activities on cancer awareness not only for students but also for the general population

Keywords – Breast Cancer, Awareness, Medical students, Georgia, Tbilisi.

I. INTRODUCTION

Breast cancer is the most common cancer among the overall Georgian population, and also ranks second in terms of the death rate. As per WHO reports, 1942 (14.7% of all cancers) incidences of breast cancer were recorded across the country, while 910 (11.1% of all cancer deaths) patients are reported to be dead because of the disease in a country with a population of

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approximately 3.7 million [1]. Worldwide, it tops among all the cancers that are affecting women [2]. Almost 1 in 10 cancer incidences are occurring due to breast cancer.

Like many other cancers, breast cancer remains silent till it progresses to stage 3 or more. The socio-economic background which influences the educational quality of an individual plays a major role in awareness among populations. Many females miss out on the early signs and symptoms such as lumps, skin changes, or swelling and also, they lack awareness or interest in routine radiological examinations, considering expenditures. This lack of awareness results in delayed diagnosis, challenges in treatment, poorer prognosis, and reduced 5-year survival rates. Literacy rate and education of an individual directly influence the prognostic factors as educated women are more likely to know about self-examination and are able to identify initial symptoms. They are more likely to take preventive measures and undergo screening too [3][4][5]. Cancer incidence rates are rapidly increasing worldwide yet, even with comparatively higher growth in incidence rates, developed countries show higher recovery rates and better prognosis compared to developing countries [6]. Meanwhile, the knowledge varies among the medical students as well, depending on their seniority or clinical exposure.

There are various risk factors associated with breast cancer, such as alcoholism, parity, age at menarche and menopause, etc. The influence of hormone replacement therapy or oral contraceptives has been proven to increase the risk [7]. Familial inheritance of mutated genes plays a vital role in increasing risk as well. The necessity of awareness about modifiable risk factors is crucial to have better outcomes in a society. It is also crucial for medical students to not only know but also to educate the general population about cancer awareness.

A survey conducted among Indian students regarding human papillomavirus showed that regardless of the novelty of the concept, the majority of the students were aware of the availability of vaccines against HPV [8]. Another survey among health professional students in Saudi Arabia showed a dire need for cervical cancer education [9]. A report on testicular cancer awareness conducted among young polish men also showed a satisfactory level of testicular self-examination which is observed only among the medical students but not common among the general population [10]. This shows the need for overall cancer awareness in the general population and medical students and not just breast cancer.

There has been a recent survey conducted among medical students in Georgia regarding the knowledge about glaucoma shows that clinical year students have more knowledge than non-clinical students [11]. Notably, the above study and this survey were conducted in the same institute-Tbilisi State Medical University.

There has been a lack of epidemiological studies in Georgia that states awareness amongst the common population or medical students. This paper attempts to close the gap to some extent.

II. Methodology

A self-administered, cross-sectional survey had been made to assess breast cancer awareness among the medical students of Georgia. The survey was conducted in both English and Kartuli language (Georgian) for the ease of participants. The survey was made using google forms by the medical students of Tbilisi State Medical University and shared with fellow students via the internet. The target participants include students from all academic years of the medical faculty of Tbilisi State Medical University. There are 6 academic years in the course which are evenly divided into pre-clinical and clinical years - 3 years for pre-clinical subjects (Anatomy, Histology & Embryology, Physiology, Biochemistry, Genetics, Pathology, Pharmacology, etc.) and 3 years for clinical subjects (Surgery, Internal medicine, Gynecology and Obstetrics, Pediatrics, Psychiatry, etc.). E-mail login was made mandatory to avoid any repetition. The identities of the participants were kept anonymous. Consent was taken from participants at the beginning of the survey. Total responses of 225 were obtained from students (n=225) (chart 1: distribution of students) and 2 responses from students who did not give consent were excluded from the study. Layman terms were used for the convenience of the participants, especially for the 1st year students.

The survey included demographic questions including their gender and year of medical school. Then following questions were enquired:

1. Do you have any phobia or fear regarding cancer disease? If yes, why? (Select all that applies)
2. What do you think is the most common cancer in Georgia OVERALL? (Choose the best)
3. What do you think is the most common cancer in Georgian FEMALES? (Choose the best)

4. What do you think is the most common cancer in Georgian MALES? (Choose the best)
5. Do you personally know anyone who had/has cancer?
6. Do any of your close relatives had/have cancer?
7. Have you ever had cancer?
8. Do you think it is expensive to test for breast cancer?
9. What are the tests done for breast cancer that you know? (List them)
10. Which group of people usually will get breast cancer? (Choose the best)
11. Do you think males can get breast cancer?
12. When do you think you should visit the doctor / or take a test for breast cancer? (signs & symptoms) (select all that applies)
13. What do you think can increase the risk of getting breast cancer? (Risk factors) (select all that applies)
14. What are the genes involved in breast cancer? (List them)
15. Which is considered the worst prognosis for breast cancer? (Choose the best)

Appropriate options were provided for the necessary questions. For the questions about symptomatology and risk factors (select all that apply), options had both correct and wrong answers to confirm the clarity and firmness of students' knowledge. Options for the symptomatology question had 14 correct answers and 5 wrong answers. Options for the risk factor question had 16 correct answers and 9 wrong answers. Details are mentioned in table 1 Wrong answers were determined after extensive literature search [12][13][14][15][16][17][18][19]. Wrong options are notified in the table.

A. Statistical analysis

The data was collected in the Microsoft Excel spreadsheet and appropriate graphs and tables were made.

The participants were segregated into pre-clinical and clinical sections. (Pre-clinical, n=118 & clinical, n=107). Both the sections were compared with each other in order to determine any significant difference seen between the pre-clinical and clinical populations.

P-value was determined by calculations using MS Excel software.

III. Results

Out of 225 participants, 56 (24.9%) were males, 167 (74.2%) were females and 2 (0.9%) participants preferred not to answer regarding their gender. Participants from all academic years were almost equally distributed. Yet the most participation was from 1st-year students and least participation was from 5th-year students. There were a total of 118 preclinical and 107 clinical students among participants (52% & 48% respectively).

On querying regarding the fear of cancer, 111 responses were collected selecting various reasons. Most responses were under "due to loss of a close person to cancer". A detailed report of responses is given in Fig.1.

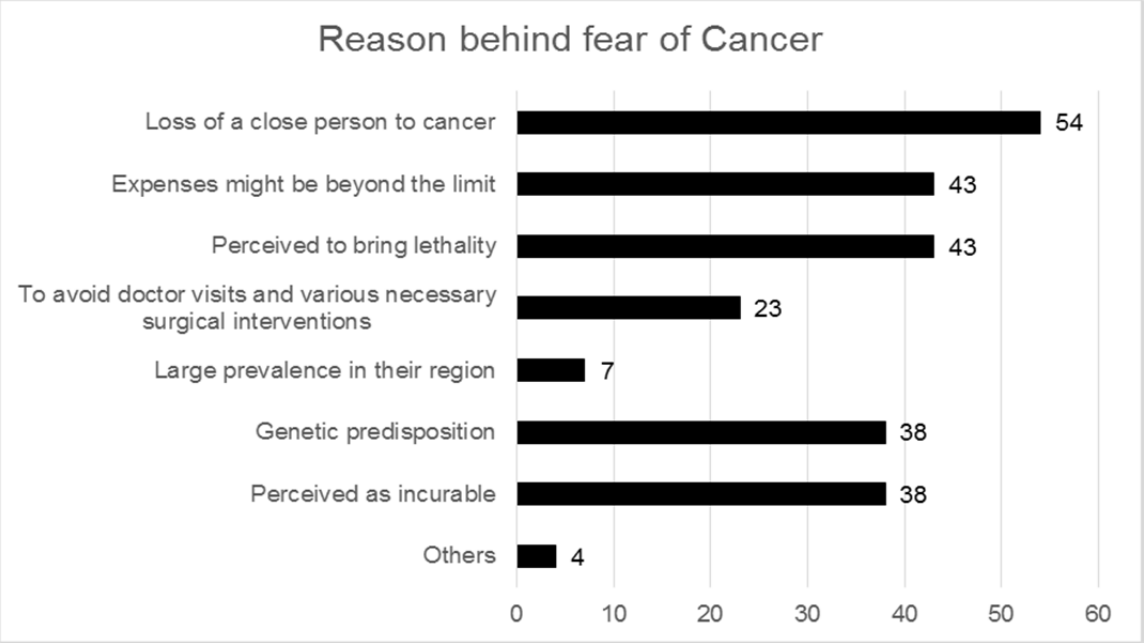

Fig. 1. Reasons for fear towards the cancer (selected by students)

For the question regarding the most common overall (men & women) cancer in Georgia, surprisingly 53.3% of students answered Lung Cancer while as per 2020 WHO data, breast cancer topped the table [1]. Only 22.2% of participants opted for breast cancer. Regarding most common cancers in females and males, the maximum number of participants (80.9% & 49.8% respectively) opted correctly for breast and lung cancer respectively. A complete breakdown of answers given by clinical and preclinical students is given in Table 1.

Table 1. Summary of responses by students (options marked with * are wrong answers)

Symptoms	**Pre-clinical**	**Clinical**	**Total**	**P-value**
Bloody discharge	37	69	106	
Breast pain	84	82	166	
Change in nipple position and size	59	71	130	
chest pain*	32	29	61	
Decrease in breast size*	21	22	43	
Difference in size of two breast	50	51	101	
Numbness of the breast skin*	45	40	85	
Generalized weakness	28	29	57	
Increase in breast size	20	37	57	
Nipple retraction or inversion	48	76	124	
Irritation of breast skin	45	42	87	
Itching in breast	31	35	66	
Milky discharge*	34	41	75	
New lump in breast or underarm	94	96	190	

Peeling of skin	16	24	40	
Redness/ discoloration in a part of breast	65	70	135	
Significant weight loss	35	50	85	
Thickening or swelling of part of breast	71	90	161	
Watery discharge*	25	40	65	
total	840	994	1834	0.276864
Symptoms - Wrong	Pre-clinical	Clinical	Total	P-value
chest pain*	32	29	61	
Decrease in breast size*	21	22	43	
Numbness of the breast skin*	45	40	85	
Milky discharge*	34	41	75	
Watery discharge*	25	40	65	
Total	157	172	329	0.419152
Symptoms - Right	**Pre-clinical**	**Clinical**	**Total**	**P-value**
Bloody discharge	37	69	106	
Breast pain	84	82	166	
Change in nipple position and size	59	71	130	
Difference in size of two breast	50	51	101	
Generalized weakness	28	29	57	
Increase in breast size	20	37	57	
Nipple retraction or inversion	48	76	124	
Irritation of breast skin	45	42	87	
Itching in breast	31	35	66	
New lump in breast or underarm	94	96	190	
Peeling of skin	16	24	40	
Redness/ discoloration in a part of breast	65	70	135	
Significant weight loss	35	50	85	
Thickening or swelling of part of breast	71	90	161	
Total	683	822	1505	0.220348
Risk Factor	**Pre-clinical**	**Clinical**	**Total**	**P-value**

Alcohol	46	46	92	
Breast feeding *	9	6	15	
Decreasing breast feeding or absence of breast feeding	0	1	1	
Diabetes	30	30	60	
Drugs	49	40	89	
First child at an older age	17	28	45	
Frequent sexual activities *	7	8	15	
Genetic / familial	88	90	178	
Getting cosmetic breast surgeries*	42	49	91	
Increasing age	43	66	109	
Less number of children / no child	9	30	39	
Lifestyle & diet	64	70	134	
More number of children*	4	7	11	
Multiple sexual partners*	9	8	17	
Obesity	43	57	100	
Oily foods	20	15	35	
Oral contraceptive tablets	20	50	70	
Previous breast diseases	59	64	123	
Radiation	78	70	148	
Smoking	43	55	98	
Starting menopause at older age	14	24	38	
Starting menopause at younger age*	19	22	41	
Starting your period at elder age*	9	8	17	
Starting your period at much younger age	10	32	42	
Wearing tight bra / clothes*	26	25	51	
Young age*	4	2	6	
Total	762	903	1665	0.010124
Risk Factor - Wrong	**Pre-clinical**	**Clinical**	**Total**	**P-value**
Breast feeding *	9	6	15	
Frequent sexual activities *	7	8	15	
Getting cosmetic breast surgeries*	42	49	91	
More number of children*	4	7	11	

Multiple sexual partners*	9	8	17	
Starting menopause at younger age*	19	22	41	
Starting your period at elder age*	9	8	17	
Wearing tight bra / clothes*	26	25	51	
Young age*	4	2	6	
Total	129	135	264	0.939765
Risk Factor -Right	**Pre-clinical**	**Clinical**	**Total**	**P-value**
Alcohol	46	46	92	
Decreasing breast feeding or absence of breast feeding	0	1	1	
Diabetes	30	30	60	
Drugs	49	40	89	
First child at an older age	17	28	45	
Genetic / familial	88	90	178	
Increasing age	43	66	109	
Less number of children / no child	9	30	39	
Lifestyle & diet	64	70	134	
Obesity	43	57	100	
Oily foods	20	15	35	
Oral contraceptive tablets	20	50	70	
Previous breast diseases	59	64	123	
Radiation	78	70	148	
Smoking	43	55	98	
Starting menopause at older age	14	24	38	
Starting your period at much younger age	10	32	42	
Total	633	768	1401	0.000726
Most Common Cancer Overall According to Students	**Pre-clinical**	**Clinical**	**Total**	**P-value**
Breast	33	17	50	
Cervical / Uterine	4	1	5	
Colon	7	6	13	
Liver	8	12	20	

Lungs	55	65	120	
Oral (oral)	7	3	10	
Prostate	2	1	3	
Stomach	0	1	1	
I don't know	2	1	3	
Total	118	107	225	0.180754
Most Common Cancer in Males According to Students	**Pre-clinical**	**Clinical**	**Total**	**P-value**
Breast	0	0	0	
Cervical / Uterine	0	0	0	
Colon	8	8	16	
Liver	6	19	25	
Lungs	57	55	112	
Oral (oral)	3	2	5	
Prostate	41	21	62	
Stomach	3	1	4	
I don't know	0	1	1	
Total	118	107	225	0.085965
Most Common Cancer in Females According to Students	**Pre-clinical**	**Clinical**	**Total**	**P-value**
	93	89	182	
Cervical / Uterine	11	13	24	
Colon	2	2	4	
Liver	1	0	1	
Lungs	11	2	13	
Oral (oral)	0	0	0	
Prostate	0	0	0	
Stomach	0	0	0	
I don't know	0	1	1	
Total	118	107	225	0.436738

Age Group (in years)	Pre-clinical	Clinical	Total	P-value
<20	4	2	6	
20-30	18	12	30	
31-40	47	37	84	
>40	49	56	105	
Total	118	107	225	0.392677
Previous Knowledge / Experience with Cancer	**Pre-clinical**	**Clinical**	**Total**	**P-value**
Students who had close relationship / friendship with cancer / attended awareness programs	80	90	170	
Students who had NOT close relationship / friendship with cancer / attended awareness programs	38	17	55	
Total	118	107	225	0.004456
Gene Associated with Worst Prognosis	**Pre-clinical**	**Clinical**	**Total**	**P-value**
HER-2	6	11	17	
Estrogen receptor +ve	5	8	13	
Progesterone receptor +ve	6	1	7	
Triple negative	23	19	42	
I don't know	66	68	134	
Skipped	12	0	12	
Total	118	107	225	0.003419
Most Common Cancer Overall According to Students	**Pre-clinical**	**Clinical**	**Total**	**P-value**
	33	17	50	
Cervical / Uterine	4	1	5	
Colon	7	6	13	
Liver	8	12	20	
Lungs	55	65	120	
Oral (oral)	7	3	10	
Prostate	2	1	3	
Stomach	0	1	1	
I don't know	2	1	3	

Total	118	107	225	0.180754
Most Common Cancer in Males According to Students	**Pre-clinical**	**Clinical**	**Total**	**P-value**
Breast	0	0	0	
Cervical / Uterine	0	0	0	
Colon	8	8	16	
Liver	6	19	25	
Lungs	57	55	112	
Oral (oral)	3	2	5	
Prostate	41	21	62	
Stomach	3	1	4	
I don't know	0	1	1	
Total	118	107	225	0.085965
Most Common Cancer in Females According to Students	**Pre-clinical**	**Clinical**	**Total**	**P-value**
	93	89	182	
Cervical / Uterine	11	13	24	
Colon	2	2	4	
Liver	1	0	1	
Lungs	11	2	13	
Oral (oral)	0	0	0	
Prostate	0	0	0	
Stomach	0	0	0	
I don't know	0	1	1	
Total	118	107	225	0.436738
Age Group (in years)	**Pre-clinical**	**Clinical**	**Total**	**P-value**
<20	4	2	6	
20-30	18	12	30	
31-40	47	37	84	
>40	49	56	105	
Total	118	107	225	0.392677

Previous Knowledge / Experience with Cancer	**Pre-clinical**	**Clinical**	**Total**	**P-value**
Students who had close relationship / friendship with cancer / attended awareness programs	74	87	161	
Students who had NOT close relationship / friendship with cancer / attended awareness programs	44	20	64	
Total	118	107	225	0.002016
Gene Associated with Worst Prognosis	**Pre-clinical**	**Clinical**	**Total**	**P-value**
HER-2	6	11	17	
Estrogen receptor +ve	5	8	13	
Progesterone receptor +ve	6	1	7	
Triple negative	23	19	42	
I don't know	66	68	134	
Skipped	12	0	12	
Total	118	107	225	0.003419
Gender	**Pre-clinical**	**Clinical**	**Total**	**P-value**
Female	93	74	167	
Male	23	33	56	
Prefer not to say	2	0	2	
Total	118	107	225	0.066451

To know about previous experience with cancer education, questions were asked if they had attended any awareness programs, had known a cancer patient closely, or had had cancer. 55 participants didn't fall under any category while 170 participants met any one of the above conditions. Despite a significant number of participants having previous exposure to cancer knowledge, there seems to be a general lack of awareness about breast cancer.

Only 20% of the students think that it is expensive for screening breast cancer in Georgia, while 51.6% didn't have an idea about the expenses and 28.4% think it is not expensive.

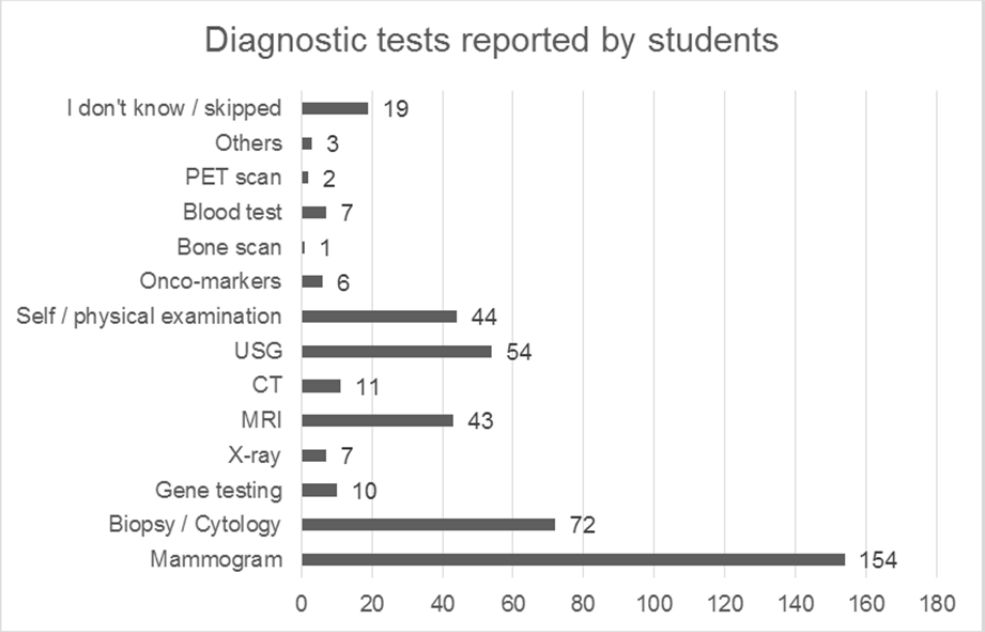

Fig. 2. Diagnostic tests reported by students

The majority of participants reported 'mammography' as a primary choice of investigation (157 responses) and 46.7% opted for more than 40 years as the most common age group of cancer. Fig 2 gives a detailed report regarding the diagnostic tests reported by students.

25.8% (n=58) participants reported that males can't get breast cancer (Fig 3).

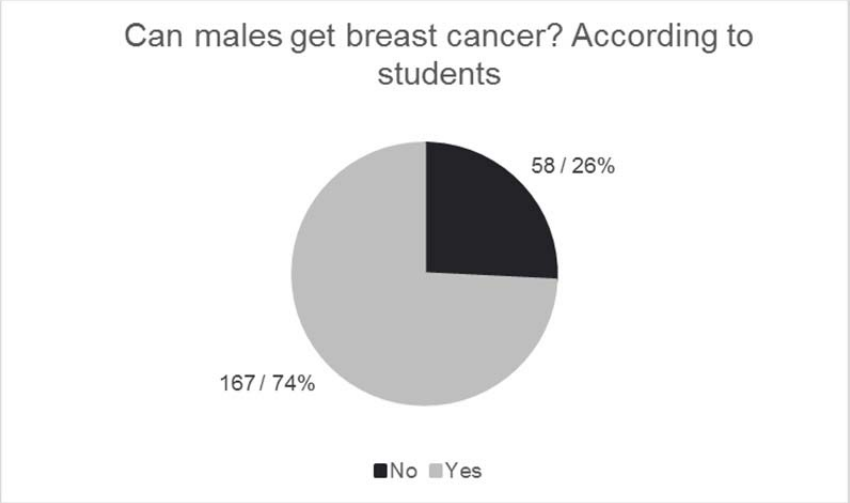

Fig. 3. Students' response for the question 'can males get breast cancer?'

137 responses reported BRCA1&2 as the main gene involved in the cause of breast cancer. Table 1 shows the worst prognosis assumed by students. The majority of students (81.3%) did not know that the triple-negative type of breast cancer has the worst prognosis due to extensive drug resistance.

IV. Discussion

A study conducted in Syria showed a lack of awareness about breast cancer among medical students of Syria and puts forth the necessity of awareness programs [20]. A survey among medical students in Pakistan about breast cancer showed that medical students have similar knowledge compared to the general population [21]. Considering that medical students are not professionals, it is expected that their awareness would be incomplete. A study conducted in India to compare breast and cervical

awareness between medical and non-medical students showed that even though medical students have more awareness than non-medical students, both category people had a similar low level of knowledge about breast self-examination as 77.3% of medical students didn't know how to perform breast self-examination (BSE) [22]. Another similar survey conducted among Pakistani female medical students showed that students from clinical years had comparatively more knowledge than pre-clinical years [21].

A survey conducted among medical students of one of the Malaysian institutes showed that even though there is satisfactory knowledge of breast cancer, students lack performing BSE which shows a lack of teaching programme to create a practice of BSE [23]. Another survey conducted among female students of medical and non-medical institutes in Bangladesh showed a higher knowledge as well as the prevalence of BSE practice in medical students than in the non-medical students [24]. A cross-sectional study conducted in three different faculties of the University of Sharjah showed higher knowledge in medical faculty but still, they lack BSE practice, and their overall knowledge of breast cancer is poor [25].

In our survey, there is no significant difference in knowledge between clinical and non-clinical students in terms of identifying correct symptoms and differentiating among wrong ones ($p=0.220$ & 0.419 respectively). While differentiating correct and wrong risk factors, clinical students could identify more correct risk factors ($p=0.0007$) but both clinical and nonclinical students got confused equally to exclude the wrong ones ($p=0.939$).

Only 74% of students agreed that males can get breast cancer including both clinical and non-clinical students. This shows there is a satisfactory level of knowledge of male breast cancer awareness among medical students, even though medical students are expected to know about this. A study conducted in Brazil regarding male breast cancer awareness showed that only one-third of male undergraduate students (non-medical) knew about the existence of male breast cancer and almost two-thirds of students did not know about breast self-examination [26]. Regardless of rarity, awareness about male breast cancer should also be created prevalently.

66.7% of participants seem to have some at least sort of acquaintance with cancer patients, indicating the increased prevalence of the disease.

Despite the majority of the population having been exposed to some knowledge pertaining to cancer, it has been found that there is poor general awareness overall. This may indicate the ineffectiveness of the awareness programs to make an impact on the attendees' minds or the lack of retention of information of the same by the attendees. Thus, it is imperative to improve the standard and intensity of awareness programs related to cancer, especially in a country with a widespread prevalence of cancer.

In Georgia there are screening programs implemented for the specific group of population. For example, breast cancer screening programs for 40-70-year-old women; Cervical cancer screening for 25-60-year-old women; Prostate cancer screening for 50-70-year-old-men; Colorectal cancer screening in the 50-70-year-old population. Along with screening programs, there are fully or partially state funded treatment programs for target therapies for HER-2 receptor positive breast cancers and metastatic breast cancers [27].

49.7 % of the participants seem to be completely or somewhat associated with a fear of cancer. The most common reason (24%) is noted as the loss of a close person to cancer, which seems to be leaving a mental impact on the person instilling a fear of it. Another important (19.1%) and one of the second most noted reasons seems to be the expenses associated with the diagnosis and consequent cost of treatment of cancer, which shows both the unapproachability and the perception of the common population towards it. This also shows the lack of knowledge regarding insurance programs for cancer. The unpleasant prognosis leading eventually to death/ lethality is found to be another main concern (19.1%) amongst these participants.

Mammogram has been widely chosen as the first-line diagnostic used in breast cancer, followed by biopsy and cytology. This shows the wide awareness and accessibility of mammograms. 44 participants have chosen self-examination. These three methods have been believed to provide a diagnosis of breast cancer with 99% accuracy. Apart from these three, ultrasound was also chosen by 54 participants, which has much lesser significance in the case of identifying a malignancy.

There seems to be a lack of awareness among the students regarding the gene associated with the worst prognosis, as the majority of the students (61.7%) chose 'I don't know' when queried on the same. Following this, triple-negative (19.6%) was noted as the second most chosen option associated with the worst prognosis.

There is decreased awareness in both clinical and preclinical students regarding the age group at risk for developing breast cancer without any significant difference between them (P=0.392).

V. Conclusion

The major problem of any cancer is being diagnosed at a very later stage and especially breast cancer considering the commonest age group of incidences. Even the survivors often suffer from cosmetic problems. Many women from lower socioeconomic backgrounds are unable to afford cosmetological breast surgery and this leaves a permanent physical and emotional scarring impact due to their change in appearance. Women from developing countries are still having the idea that breasts are the symbol of their motherhood and losing them to cancer affects them psycho-emotionally. Because of such reasons, awareness of breast cancer is important in all kinds of populations. Future doctors have the responsibility to know not only the clinical aspects but also psychological aspects and should be able to create awareness among the people around them. Thus, we find that there is a lack of awareness about breast cancer amongst the medical students in Georgia.

VI. Limitations

Most students are foreign citizens and came to Georgia to pursue medical education. This might influence the local epidemiological awareness seen in those students. Contact of native students studying in the institute could not be obtained due to various reasons which can influence the result to an extent.

Their knowledge about the existence of cancer screening programs available in the country wasn't enquired. Information on whether or not the participants made use of the screening programs were not asked as well.

VII. Author Contributions

Conception of idea: Pavithra Balakrishnan

Designing the study: Pavithra Balakrishnan, Sreesha Phani Durga Rithika Kodamanchili, Arsha Anil Kumar; **Assisted:** Keziah Raju

Data collection: Pavithra Balakrishnan, Sreesha Phani Durga Rithika Kodamanchili, Arsha Anil Kumar; **Assisted:** Keziah Raju

Statistical analysis: Pavithra Balakrishnan, Sreesha Phani Durga Rithika Kodamanchili; **Assisted:** Arsha Anil Kumar

Interpretation: Pavithra Balakrishnan, Sreesha Phani Durga Rithika Kodamanchili, Arsha Anil Kumar

Theoretical formalization: Pavithra Balakrishnan, Sreesha Phani Durga Rithika Kodamanchili, Arsha Anil Kumar, Keziah Raju

Supervision: Luiza Gabunia

Ethical approval: Online consent was obtained from each participant before beginning the survey. Approval by the ethics board is not applicable.

Funding: Not Applicable

Conflict of interest: No conflict of interest

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