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Original Article

Screening For Breast Cancer Amongst High-Risk Population At A Tertiary Care Hospital from Rawalpindi

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ABSTRACT

Objective: To identify high-risk for breast cancer population amongst entitled females and to detect breast disease/cancer by screening tests (mammography or sonomammography) in the high-risk/symptomatic group.
Study Design: Cross-sectional study.
Place and Duration of Study: Breast Surgery Department, Combined Military Hospital Rawalpindi, Pakistan, from Sep 2022 to Feb 2023.
Methodology: In 3 phases, questionnaire based on the Gail model (translated to Urdu) were sent to entitled female Rawalpindi area and its periphery. A "Yes" response indicated high-risk/symptomatic females, who were then called to the department for screening. Bilateral (B/L) Sonomammography in women less than 40 years and B/L mammography for over 40 years females was done.
Results: Out of 2000 questionnaires sent, 1418(70.9%) responded. Nine hundred and twenty-two (65.0%) of these were below 40 years of age. Seventy-four high-risk cases underwent 41 sonomammographies and 33 mammograms. Twenty-four (32.0%) of results were unremarkable, 23(31.0%) benign breast lesions, 2 ductal carcinoma in-situ (DCIS) requiring excision. Fifteen (20.0%) newly diagnosed breast cancers were detected. Pre-diagnosed cases of 9(12.0%) breast cancers were also checked, including a BRCA1 patient. The predominant stage for new cancers was Stage-II (46.0%), while it was III (44.0%) for old cases. Total of 24 (32.0%) breast cancer cases from high-risk screened population accounted for 1.8% of the studied group.
Conclusion: The study emphasized the need for screening program in Pakistan, and indicated that more young females in spite of no risk factors developed breast cancer.

Keywords: Breast Cancer, Mammography, Screening, Sonomammography.

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INTRODUCTION

Breast Cancer incidence is on the rise, with an estimated risk in Pakistan to affecting every ninth woman.[1,2] The risk factors are female gender, age, family history, early menarche, nulliparity, no breast-feeding, intake of combined estrogen and progestin menopausal hormones, alcohol consumption, physical inactivity.[3,4]

As people are becoming more aware, earl- stage detection is increasing but still a vast majority present at an advanced stage.[5] This unfortunate occurrence has various causes including social, financial, mythic association and neglect.[6]

To reduce mortality, Screening programmes must detect life-threatening disease at an earlier, more curable stage.[7] Effective cancer-screening programs therefore both increase the number of cases detected at an early stage and decrease the number of cases presenting at a late stage. Yearly screening by mammography for every female above 40 years of age, is the standard to be followed. The US Preventive Services Task Force has modified it to 2 yearly screening after 50 years and individualized according to risk in 40 to 49 years.[8] National health Service, United Kingdom recommends 3 yearly screening from 47 years till 73 years.[9] In Pakistan and many developing nations, however, despite of the observed steep rise in breast cancer cases, an organized screening program would face many hurdles, including huge financial burden.[10]

Our objective was to create awareness about breast cancer, to gather data of our entitled female population as per GAIL MODEL, thereby identifying high-risk cases for breast cancer population amongst them at Combined Military Hospital, Rawalpindi.

METHODOLOGY

This cross-sectional study was carried out at Breast Clinic, Combined Military Hospital Rawalpindi, Pakistan from September 2022 to

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February 2023, after obtaining approval from the Institutional Ethical Review Board (IRB Ser. No: 289 dated: 18th August 2022).

Inclusion Criteria: Adult females, irrespective of age, marital status and previous history of breast disease were included.

Exclusion Criteria: Non-entitled women were excluded.

Sample Size was calculated using OpenEpi calculator using reported prevalence of Breast Cancer at 11%, which came to 1350 participants.[11] We sent 2000 letters to accommodate for non-response. Nearly 71% of the letters received response i.e. 1418 participants were enrolled as per non-probability convenience sampling strategy, slightly exceeding our calculated sample. Pre-Study Awareness sessions were held at Combined Military Hospital (CMH), Rawalpindi.

A brief questionnaire was prepared in Urdu, which replicated the questions of Gail model for risk assessment of breast cancer. It was distributed to female entitled population in 3 phases via post. Initially, the study included health-insured/entitled mothers and wives of a major employee/division, residing near Rawalpindi. The second phase was expanded to different cities of Pakistan including; Akora Khattak, Risalpur, Jhehlum, Quetta. Third phase was for different villages of Pakistan.

The questionnaire was received through post and was checked. The questions answered in "Yes" identified some risk factors and so, those females were called to report to the Breast Clinic of CMH Rawalpindi and were subjected to intervention for screening for breast disease. After Clinical Examination, Bilateral (B/L) Sonomammography was done for women less than 40 years as they have dense breasts and B/L mammography for women more than 40 years. Telephonic collection of data was also done if response of letter wasn't received.

Data was analyzed using Statistical Package for Social Science (SPSS) version 23, and descriptive statistics including frequency of findings were displayed in the form of graphs.

RESULTS

A total of 2000 letters were sent by post for entitled mother and wife, 900(45.0%) in Phase-I to women of different areas of entitled families in and around Rawalpindi area and 700(35.0%) in Phase-II, expanded to different cities of Pakistan including Akora Khattak, Risalpur, Jhehlum, Quetta. Phase-III, 400(20.0%) letters were sent to different villages of Pakistan. One thousand four hundred and eighteen (70.9%) letters were received back. Response of 1160(81.0%) was received through post, while 258(18.0%) were approached through phone calls. Three hundred and fifteen (22.0%) respondents could not be approached in spite of multiple phone calls. The overall age distribution is shown in Table-I.

Table-I: Demographic Distribution of Respondents (n=1418)

Age range (years)	n(%)
20-29	380(27%)
30-39	542(38.2%)
40-49	183(12.8%)
50-59	165(11.6%)
60-69	99(7%)
70-79	38(2.6%)
80-89	11(0.8%)

Seventy-four (5.2%) high-risk cases were identified after screening by clinical examination combined with bilateral sonomammographies for less than 40 years and mammograms for more than 40 years.

According to age-wise distribution, we performed 32 mammographies for age 40 years and above and 42 Sonomammographies.

The results showed 24(32.0%) unremarkable results (BIRADS 1), out of which 17(71.0%) were below 40 years and 7(29.0%) were above 40 years. The rest of the Breast Imaging and Reporting Data Systems (BIRADS) Score distribution is shown in Figure-1.

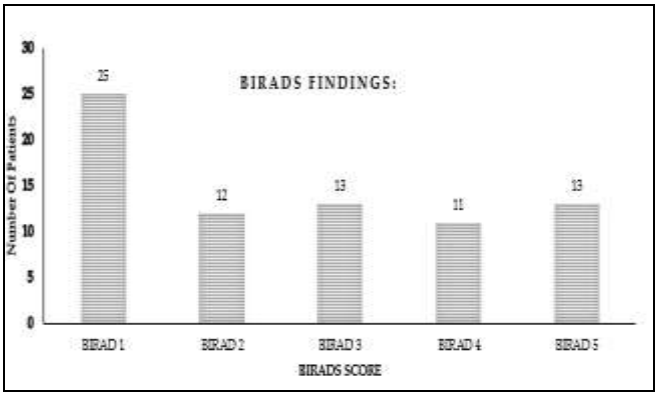

Figure-1: Breast Imaging, Reporting and Data Systems (BIRADS) SCORE Distribution (n=74)

Additional tests were performed in order to reach a diagnosis in around 40 patients.

Two (2.7%) Ductal Carcinoma in Situ (DCIS) cases were detected which required wide local excision. Fortunately, they were not upgraded on final histopathology and had clear margins. The details of benign, pre-invasive and invasive breast disease in summarized in Figure-2.

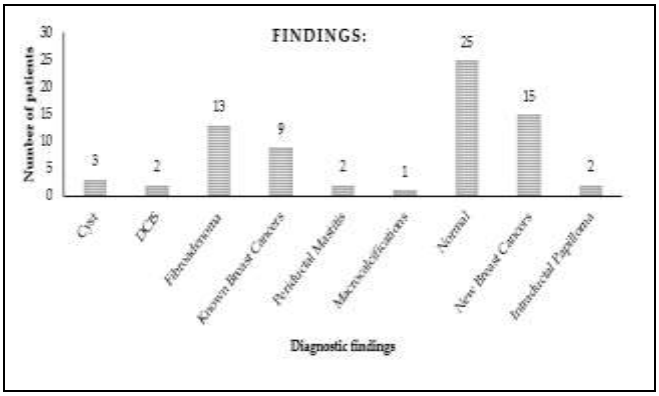

Figure-2: Distribution of Diagnostic Findings on Imaging (n=72)

Fifteen (20%) newly diagnosed breast cancers were detected; majority were Stage-II. Nine (12%) old cases of breast cancers also were checked, already under treatment, out of which 1 came out to be BRCA 1 positive and underwent reconstructive surgery. These cancers were detected in a relatively later stage, predominantly Stage-III. Figure-3 shows stage wise distribution of all the breast cancers.Total of 24(32%) breast cancer cases were recorded, which amongst the high-risk screened population undergoing testing is a high percentage of 35%, and 1.8% of the total population studied.

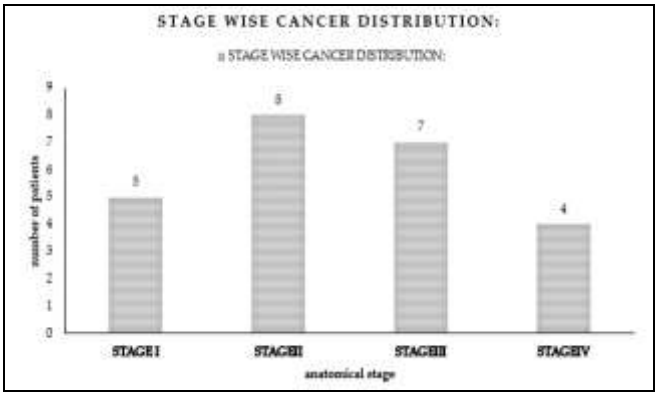

Figure-3: Stage-Wise Distribution of Cancer (n=24)

DISCUSSION

According to GLOBOCAN online database published in 2020, 2.3 million new breast cancers are diagnosed each year and contribute to 685000 deaths worldwide.[12] In Pakistan the number of cases was 119,710.[13]

There is high variability in incidence of breast cancer worldwide. Most of the breast cancer burden comes from high-income countries, as life expectancy is higher.[12] However, low-income countries are suffering as well. Pakistan has a higher incidence compared to its neighbors matched with similar lifestyles and environment.[13]

According to a study, the incidence of breast cancer was relatively high in economically developed countries, such as Belgium, Denmark, the USA, Australia, the United Kingdom, and Italy, but comparatively low in transitioning countries like Iran, China, and Mexico.[14] Lifetime risk of developing breast cancer in every woman in the United States is 12.4% or one in eight women.4 The future worldwide breast cancer burden will be strongly influenced by large predicted rises in incidence throughout parts of Asia due to an increasingly westernized lifestyle.[14]

In the developed world, screening programs are working to get annual mammographies and additional tests for high-risk population. In developing nations like ours, the value of self-breast examination cannot be ignored and must be encouraged.[15] Our study, as well as many studies conducted throughout Pakistan related to breast cancer screening, knowledge and awareness, had various limitations. Developing countries have limited resources, and screening every woman is not possible, even in developed nations as it puts huge financial constraints on the countries' health budget and also due to lack of expertise in, and accessibility to, peripheries.[14,15]

Inspite of awareness campaigns held pre-screening, our uptake rate was only 70%, which was comparable to UK's uptake rate of 71%.[16]

The NCCN recommends yearly screening above 40 years. The UK guidelines recommend screening from 47 to 73 years every 3 years, and achieved upto 40% reduction in mortality.17 Other countries have similar guidelines.[17,18]

Comparing to the global screening frequencies, we suppose that to offer 3-yearly screening for women aged 50-69 (as this population derives maximum benefit related to reduction in mortality), considering our resource-limited setting, would be feasible.[19] However, to validate this would need study with a

bigger set of population with longer follow-up. Depending on level of risk, screening can be offered more frequently.

LIMITATION OF STUDY

Our study had certain limitations. One was a lack of randomization, even though the study population was included from every sect and different areas. Though we were fortunate to reach out to many people, few women could not be reached due to lack of methods of communication and residence in periphery areas. Low education and difficulty in filling questionnaires by male family members might have resulted in reporting bias. Our study respondents mainly included younger women, who had low chances of developing breast cancer, which could have affected the results.

CONCLUSION

The study highlighted the importance of breast cancer screening program in Pakistan due to the surging incidence. Our study also indicated that more young females in spite of no risk factors developed breast cancer, which points to additional unknown risk factors in our population.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

MMJ & SQRN: Data acquisition, data analysis, critical review, approval of the final version to be published.

ZA & SG: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

MT & SZ: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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